2018 Can-Am Outlander 570 Pro/650/850/1000 Series

This manual may cover later years than listed above.

BRP often reuses sections from previous manuals when procedures do not change

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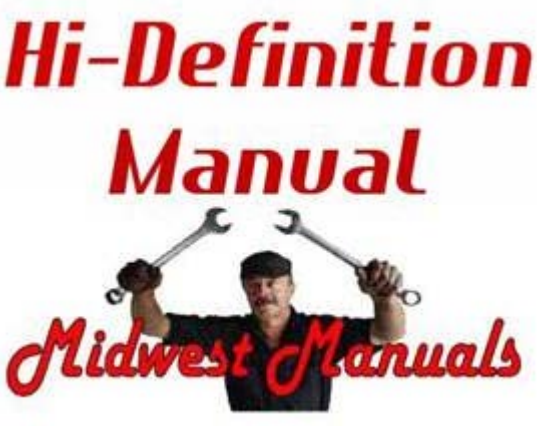


SAFETY NOTICE

This manual has been prepared as a guide to correctly service and repair the Can-Am™ Outlander™ and Renegade™ ATV.

This edition was primarily published to be used by mechanics and technicians who are already familiar with all service procedures relating to BRP products. Technicians should attend training courses given by BRPTI.

Please note that the instructions in this manual will apply only if proper hand tools and special service tools are used.

The contents of this manual depicts parts and procedures applicable to the particular product at the time of writing. Service and warranty bulletins may be published to update the content of this manual. Dealer modifications that were carried out after manufacturing of the product, whether or not authorized by BRP, are not included.

In addition, the sole purpose of the illustrations throughout the manual, is to assist identification of the general configuration of the parts. They are not to be interpreted as technical drawings or exact replicas of the parts.

The use of BRP parts is most strongly recommended when considering replacement of any component. Dealer and/or distributor assistance should be sought in case of doubt.

The engines and the corresponding components identified in this document should not be utilized on product(s) other than those mentioned in this document.

It is understood that certain modifications may render use of the ATV illegal under existing federal, provincial and state regulations.

This manual emphasizes particular information denoted by the following wording and symbols:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

⚠ CAUTION Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE Indicates an instruction which, if not followed, could result in severe damage to vehicle components or other property.

NOTE: Indicates supplementary information required to fully complete an instruction.

Although the mere reading of such information does not eliminate the hazard, your understanding of the information will promote its correct use.

Always observe common shop safety practice.

Unless otherwise noted, the engine must be stopped and the key must be removed prior to performing any services.

Torque wrench tightening specifications must be strictly adhered to. Use the torque values and service products as in the exploded views or in the procedures when noted.

Locking devices when removed must be replaced (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.).

Hoses, cables and locking ties removed during a procedure must be reinstalled as per factory standards.

When ordering parts always refer to the specific model *PARTS CATALOGS*.

We strongly recommend that any services be carried out and/or verified by a highly skilled professional mechanic.

It is understood that this manual may be translated into another language. In the event of any discrepancy, the English version shall prevail.

BRP disclaims liability for all damages and/or injuries resulting from the improper use of the contents of this publication.

INTRODUCTION

GENERAL INFORMATIONS

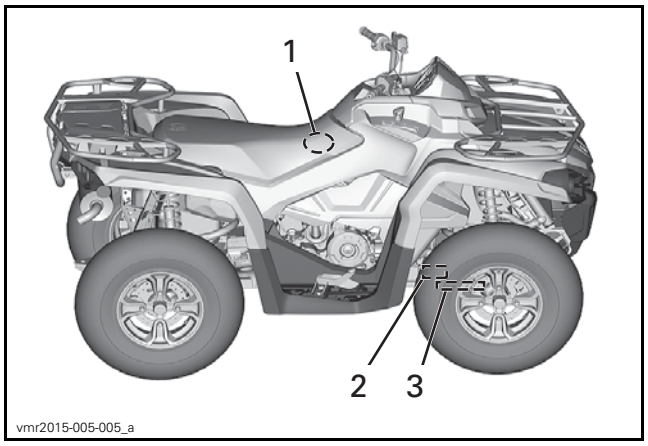
The information and component/system descriptions contained in this manual are correct at time of publication. BRP however, maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured.

Due to late changes, it may have some differences between the manufactured product and the description and/or specifications in this document.

BRP reserves the right at any time to discontinue or change specifications, designs, features, models or equipment without incurring obligation.

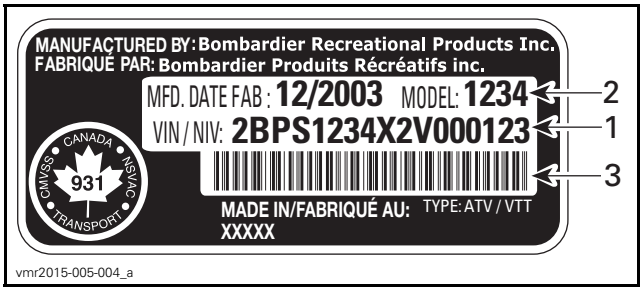
VEHICLE INFORMATION

VEHICLE IDENTIFICATION NUMBER (VIN) LOCATIONS



VIN LOCATIONS
1. *VIN decal under seat*
2. *VIN decal on lower frame member, RH side*
3. *VIN stamped on lower frame member, RH side*

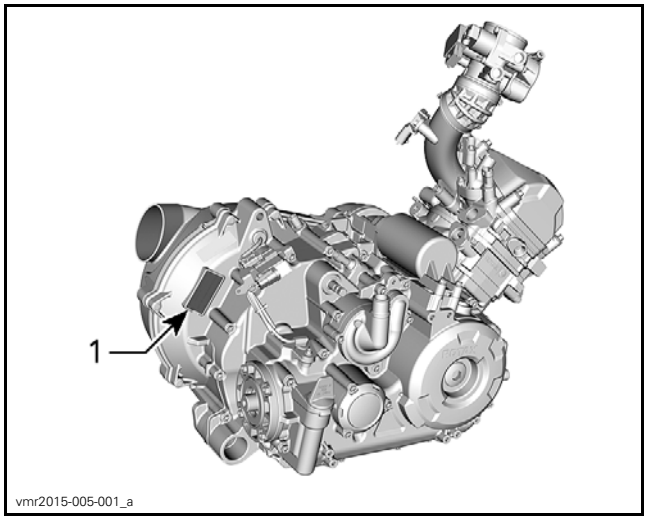
VIN Decal Description



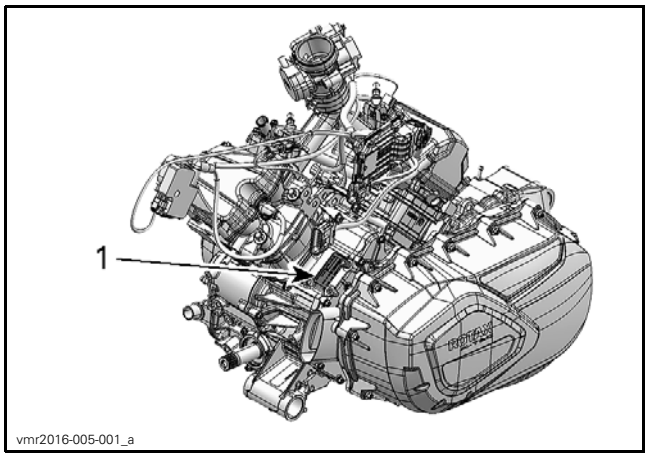
TYPICAL — VEHICLE SERIAL NUMBER DECAL UNDER SEAT
1. *VIN (Vehicle Identification Number)*
2. *Vehicle manufacturing date and model number*
3. *VIN bar code*

TYPICAL — VEHICLE SERIAL NUMBER DECAL ON RH SIDE OF FRAME
1. *VIN (Vehicle Identification Number)*
2. *Vehicle manufacturing date and model number*

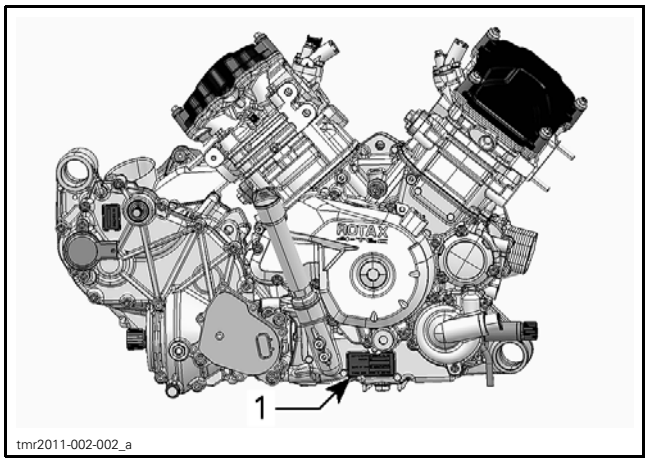
ENGINE IDENTIFICATION NUMBER (EIN)



BACK OF 450 ENGINE
1. *EIN (Engine Identification Number)*



LH SIDE OF 570 ENGINE
1. EIN (Engine Identification Number)



TYPICAL - RH SIDE OF OTHER ENGINES
1. Engine Identification Number (EIN)

ENGINE EMISSIONS INFORMATION

MANUFACTURER'S RESPONSIBILITY

Manufacturers of engines must determine the exhaust emission levels for each engine horsepower family and certify these engines with the United States of America Environmental Protection Agency (EPA). An emissions control information label, showing emission levels and engine specifications, must be placed on each vehicle at the time of manufacture.

DEALER RESPONSIBILITY

When servicing any vehicle that carry an emissions control information label, adjustments must be kept within published factory specifications.

Replacement or repair of any emission related component must be executed in a manner that maintains emission levels within the prescribed certification standards.

Dealers are not to modify the engine in any manner that would alter the horsepower or allow emission levels to exceed their predetermined factory specifications.

Exceptions include manufacturer's prescribed changes.

OWNER RESPONSIBILITY

The owner/operator is required to have engine maintenance performed to maintain emission levels within prescribed certification standards.

The owner/operator is not to, and should not allow anyone else to modify the engine in any manner that would alter the horsepower or allow emissions levels to exceed their predetermined factory specifications.

EMISSION REGULATIONS

The vehicle you are servicing may have been certified to applicable emission regulations in your country or state. Not as an exhaustive list; this may include standards for engine exhaust emissions, crankcase emissions, permeation emissions and evaporative emissions. Servicing procedures in this manual must be strictly followed in order to keep the vehicle within the factory specifications. Failure to follow servicing procedures in this manual may lead a vehicle to be out of compliance with applicable emission regulations.

When servicing any vehicle; adjustments must be kept within published factory specifications. Replacement or repair of any emission related component must be executed in a manner that maintains emission levels within the applicable certification standards. Nobody is allowed to modify the engine in any manner that would alter the horsepower or allow emission levels to exceed their predetermined factory specifications. Exceptions include manufacturer’s prescribed changes.

The owner/operator is required to have engine maintenance performed to maintain emission levels within the prescribed certification standards. The owner/operator is allowed and should not allow anyone else to modify the engine in any manner that would alter the horsepower or allow emissions levels to exceed their predetermined factory specifications.

MANUAL INFORMATION

MANUAL PROCEDURES

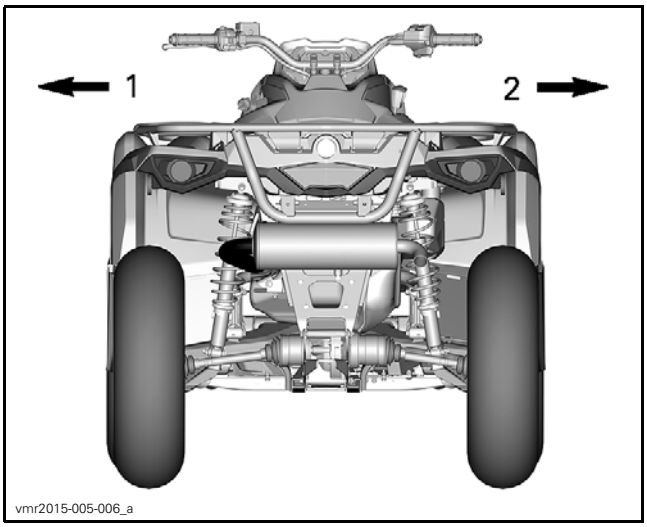
Many of the procedures in this manual are interrelated. Before undertaking any task, you should read and thoroughly understand the entire section or subsection in which the procedure is contained.

⚠ WARNING

Unless otherwise specified, the engine should be turned OFF and cold for all maintenance and repair procedures.

A number of procedures throughout the book require the use of special tools. Before starting any procedure, be sure that you have on hand all required tools, or their approved equivalents.

The use of RIGHT and LEFT indications in the text are always referenced to the driving position (sitting on the vehicle).



TYPICAL
1. *Left*
2. *Right*

This manual uses technical terms which may be different from the ones of the parts catalogs.

When ordering parts always refer to the specific model *PARTS CATALOGS*.

NOTICE **Most fasteners are metric, and most components are built with parts dimensioned using the metric system. Consult the appropriate *PARTS CATALOG* to obtain and use the correct parts and fasteners. Mismatched or incorrect fasteners could cause damage to the vehicle.**

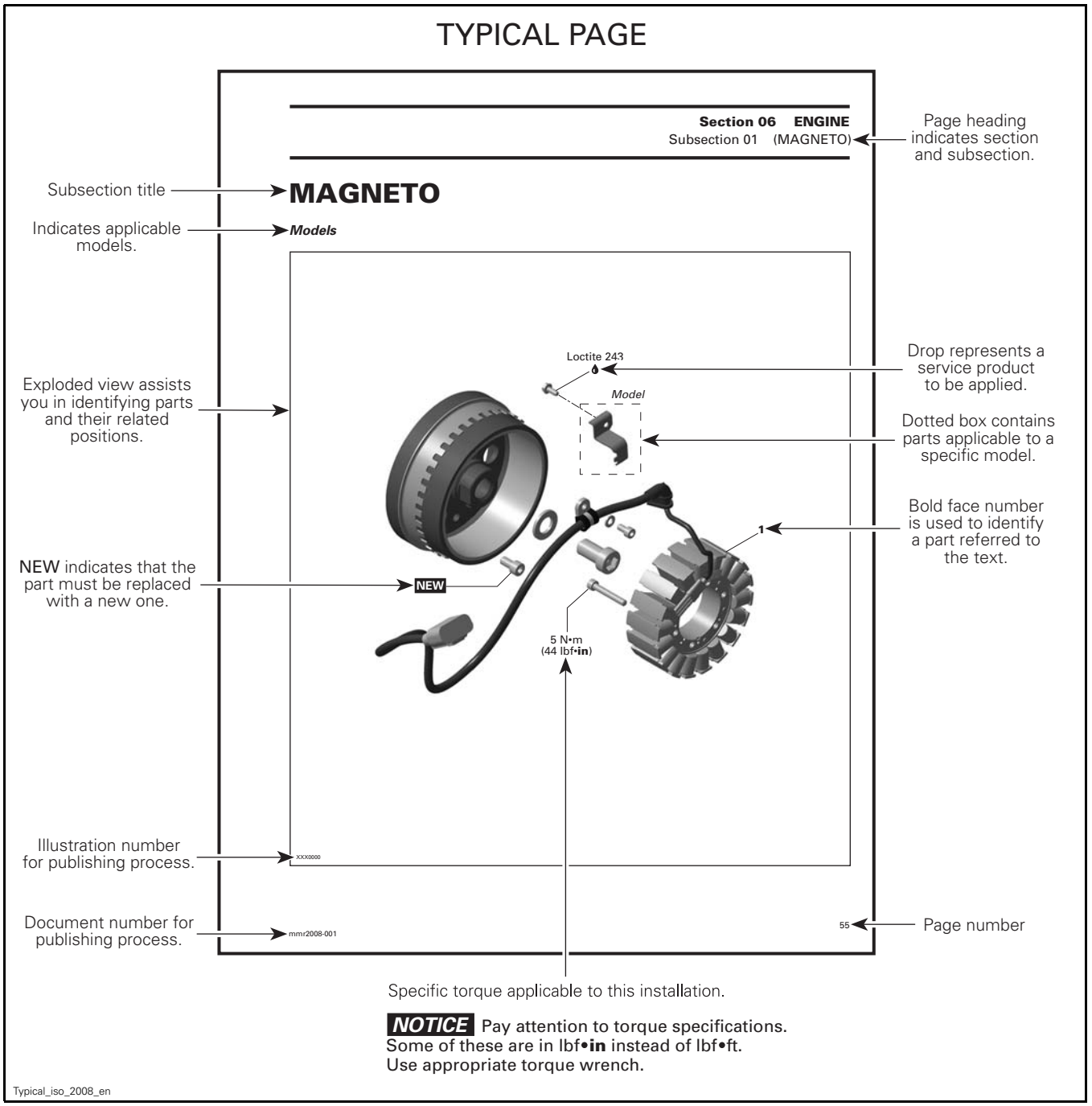
MANUAL LAYOUT

This manual is divided into many major sections as can be seen in the main table of contents at the beginning of the manual.

Each section is divided into various subsections, and again, each subsection has one or more divisions.

Illustrations and photos show the typical construction of various assemblies and, in all cases, may not reproduce the full detail or exact shape of the parts used in a particular model vehicle. However, they represent parts which have the same or a similar function.

TYPICAL PAGE



TYPICAL PAGE

Tittle in bold indicates category of information to be carried out.

GENERAL

NOTE: The following procedures can be done without removing the engine.

During assembly/installation, use the torque values and service products as in the exploded views.

Reference to a specific section or subsection.

Clean threads before applying a threadlocker. Refer to the *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* sections at the beginning of this manual for complete procedure.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, etc.) must be replaced with new ones.

PROCEDURES

Indicates component procedures apply to.

MAGNETO FLYWHEEL

Magneto Flywheel Cleaning

Clean all metal components in a non-ferrous metal cleaner.

CAUTION: Clean magneto flywheel using only a clean cloth.

Indicates specific procedure to be carried out.

Magneto Flywheel Removal

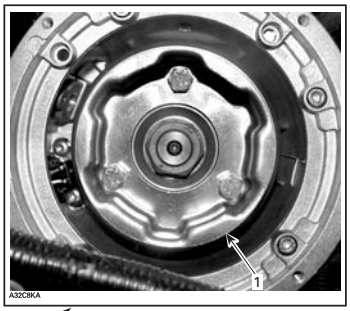
Remove muffler, refer to the *EXHAUST SYSTEM* section.

Remove acoustic panel.

Remove rewind starter.

Remove starting pulley **no. 2**.

Bold face number following part name refers to exploded view at beginning of subsection.



TYPICAL
1. Starting pulley

"TYPICAL" indicates a general view which may not represent exact details.

Call-outs pertaining to above illustration.

NOTE: To remove starting pulley bolts, hold magneto flywheel with a socket as shown.

TYPICAL

Illustration always follows text to which it applies.

Models

Remove the connecting flange retaining the rewind starter to the engine housing.

Italic bold face typesetting indicates a procedure applicable to a specific model(s).

typical_txt_2008_en

TIGHTENING TORQUE

Tighten fasteners to the torque specified in the exploded view(s) and/or in the written procedure. When a torque is not specified, refer to the following table.

⚠ WARNING

Torque wrench tightening specifications must be strictly adhered to.
Locking devices must be replaced when removed (e.g.: locking tabs, elastic stop nuts, self-locking fasteners, cotter pins, etc.).

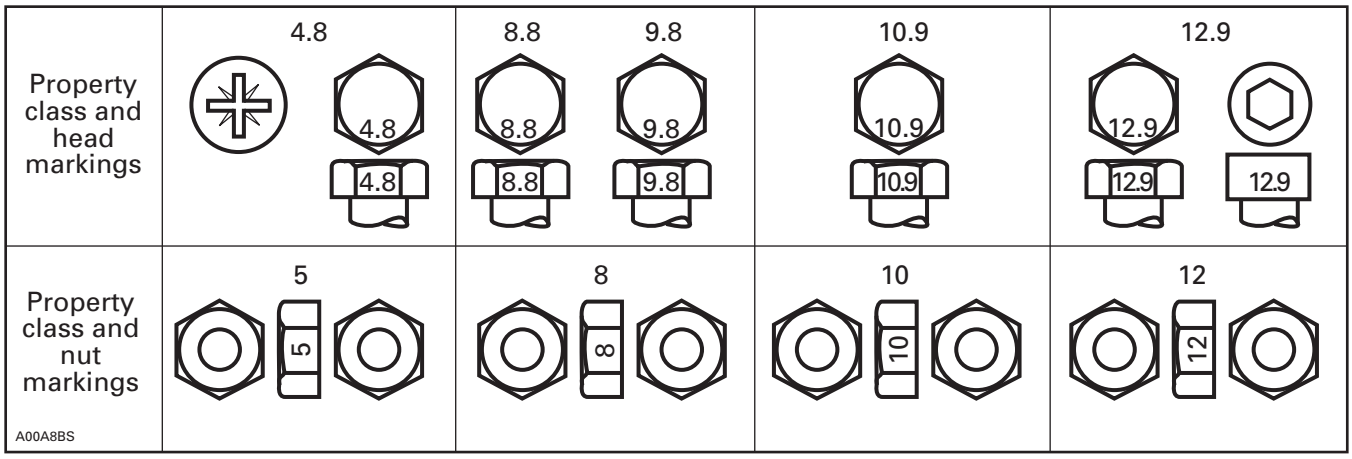
In order to avoid a poor assembly, tighten screws, bolts, or nuts in accordance with the following procedure:

1. Manually screw in all screws, bolts and/or nuts.
2. Apply half the recommended torque value.
3. Tighten fastener to the recommended torque value.

NOTICE **Be sure to use the recommended tightening torque for the specified fastener used.**

Whenever possible, always apply torque on the nut.

Always torque screws, bolts and/or nuts using a crisscross pattern when multiple fasteners are used to secure a part (eg. a cylinder head). Some parts must be torqued according to a specific sequence and torque pattern as detailed in the installation procedure.

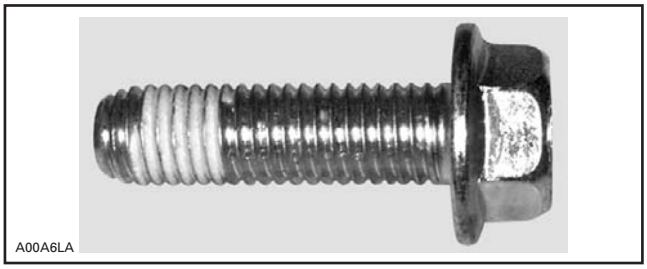


FASTENER SIZE	FASTENER GRADE/TORQUE			
	5.8 Grade	8.8 Grade	10.9 Grade	12.9 Grade
M4	1.5 – 2 N•m (13 – 18 lbf•**in**)	2.5 – 3 N•m (22 – 27 lbf•**in**)	3.5 N•m - 4 N•m (31 lbf•**in** - 35 lbf•**in**)	4 N•m - 5 N•m (35 lbf•**in** - 44 lbf•**in**)
M5	3 N•m - 3.5 N•m (27 lbf•**in** - 31 lbf•**in**)	4.5 N•m - 5.5 N•m (40 lbf•**in** - 49 lbf•**in**)	7 N•m - 8.5 N•m (62 lbf•**in** - 75 lbf•**in**)	8 N•m - 10 N•m (71 lbf•**in** - 89 lbf•**in**)
M6	6.5 N•m - 8.5 N•m (58 lbf•**in** - 75 lbf•**in**)	8 N•m - 12 N•m (71 lbf•**in** - 106 lbf•**in**)	10.5 – 15 N•m (93 – 133 lbf•**in**)	16 N•m (142 lbf•**in**)
M8	15 N•m (133 lbf•**in**)	25 N•m (18 lbf•ft)	32 N•m (24 lbf•ft)	40 N•m (30 lbf•ft)
M10	29 N•m (21 lbf•ft)	48 N•m (35 lbf•ft)	61 N•m (45 lbf•ft)	73 N•m (54 lbf•ft)
M12	52 N•m (38 lbf•ft)	85 N•m (63 lbf•ft)	105 N•m (77 lbf•ft)	128 N•m (94 lbf•ft)
M14	85 N•m (63 lbf•ft)	135 N•m (100 lbf•ft)	170 N•m (125 lbf•ft)	200 N•m (148 lbf•ft)

FASTENER INFORMATION

NOTICE Most components in the vehicles are built with parts dimensioned in the metric system. Most fasteners are metric and must not be replaced by customary fasteners or vice-versa. Mismatched or incorrect fasteners could cause damage to the vehicle or possible personal injury.

SELF-LOCKING FASTENER PROCEDURE



TYPICAL — SELF-LOCKING FASTENER

The following describes common procedures used when working with self-locking fasteners.

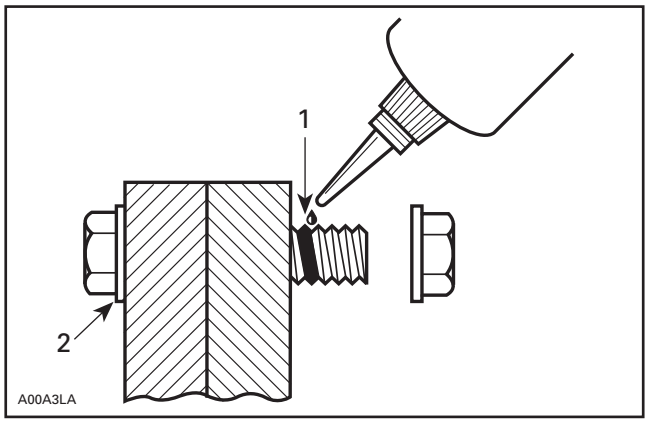
Use a metal brush or a tap to properly clean a threaded hole, then use a solvent. Allow the solvent time to act, approximately 30 minutes, then wipe off. Solvent utilization is to ensure proper adhesion of the product used for locking the fastener.

LOCTITE® THREADLOCKER APPLICATION PROCEDURE

The following describes common procedures used when working with Loctite products.

NOTE: Always use proper strength Loctite product as recommended in this Shop Manual.

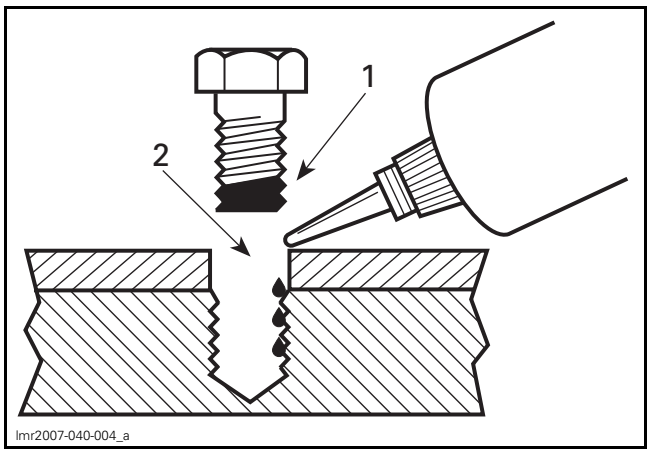
Threadlocker Application for Uncovered Holes (Bolts and Nuts)



1. Apply here
2. Do not apply

1. Clean threads (bolt and nut) with solvent.
2. Apply LOCTITE 7649 (PRIMER) (P/N 293 800 041) on threads and allow to dry.
3. Choose proper strength Loctite threadlocker.
4. Fit bolt in the hole.
5. Apply a few drops of threadlocker at proposed tightened nut engagement area.
6. Position nut and tighten as required.

Threadlocker Application for Blind Holes

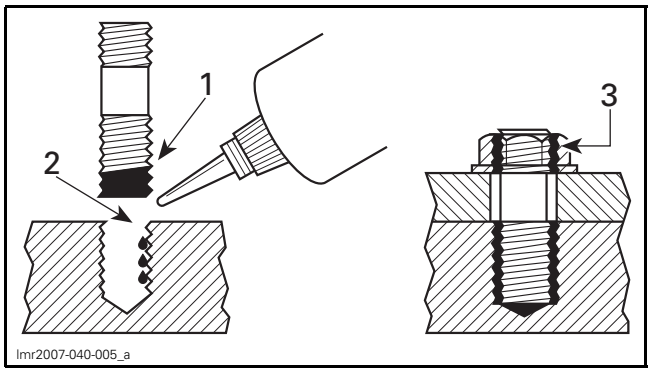


1. On fastener threads
2. On threads and at the bottom of hole

1. Clean threads (bolt and hole) with solvent.
2. Apply LOCTITE 7649 (PRIMER) (P/N 293 800 041) on threads (bolt and nut) and allow to dry for 30 seconds.
3. Choose proper strength Loctite threadlocker.

4. Apply several drops along the threaded hole and at the bottom of the hole.
5. Apply several drops on bolt threads.
6. Tighten as required.

Threadlocker Application for Stud Installation in Blind Holes



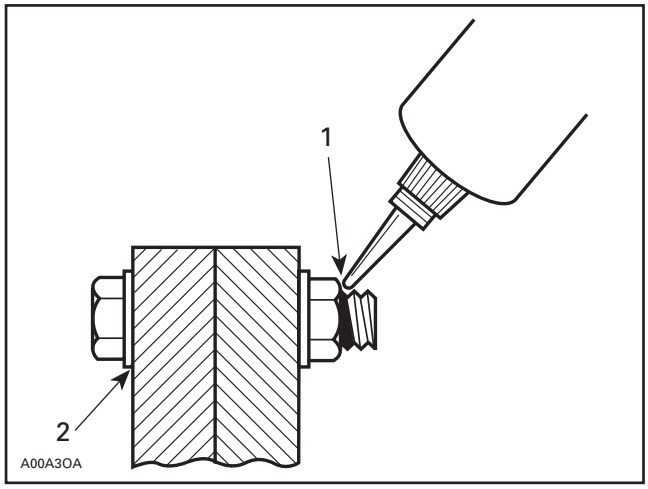
1. On stud threads
2. On threads and in the hole
3. On retaining nut threads

1. Clean threads (stud and hole) with solvent.
2. Apply LOCTITE 7649 (PRIMER) (P/N 293 800 041) on threads and allow to dry.
3. Apply 2 or 3 drops of proper strength Loctite threadlocker on female threads and in hole.

NOTE: To avoid a hydro lock situation, do not apply too much Loctite.

4. Apply several drops of proper strength Loctite on stud threads.
5. Install stud.
6. Install cover, part, etc.
7. Apply a few drops of proper strength Loctite on uncovered stud threads.
8. Install and tighten retaining nut(s) as required.

Threadlocker Application for Pre-Assembled Parts

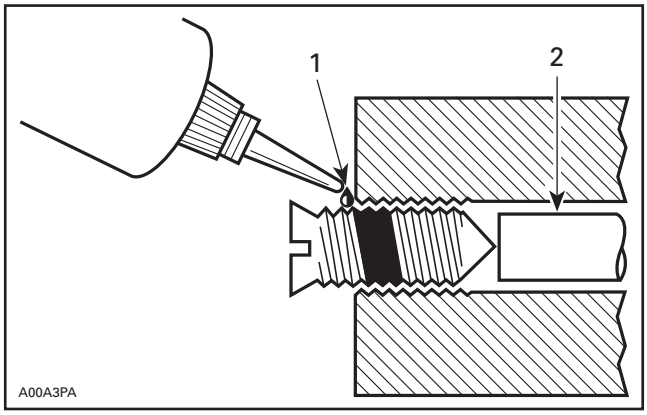


1. Apply here
2. Do not apply

1. Clean bolts and nuts with solvent.
2. Assemble components.
3. Tighten nuts.
4. Apply a few drops of proper strength Loctite on bolt/nut contact surfaces.
5. Avoid touching metal with tip of flask.

NOTE: For preventive maintenance on existing equipment, retighten nuts and apply proper strength Loctite on bolt/nut contact surfaces.

Threadlocker Application for an Adjustment Screw

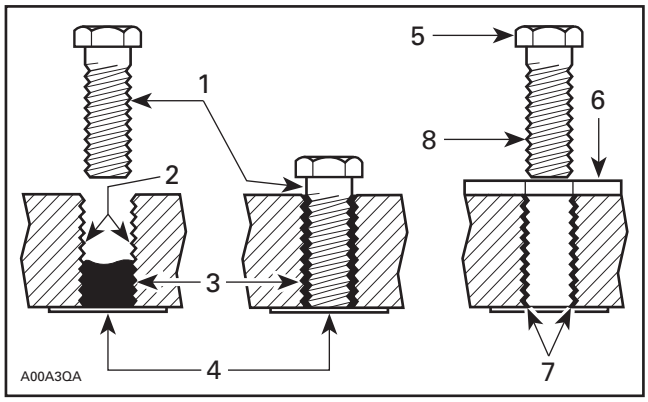


1. Apply here
2. Plunger

1. Adjust screw to proper setting.
2. Apply a few drops of proper strength Loctite threadlocker on screw/body contact surfaces.
3. Avoid touching metal with tip of flask.

NOTE: If it is difficult to readjust, heat screw with a soldering iron (232°C (450°F)).

Application for Stripped Thread Repair



1. *Release agent*
2. *Stripped threads*
3. *Form-A-Thread*
4. *Tape*
5. *Cleaned bolt*
6. *Plate*
7. *New threads*
8. *Threadlocker*

Standard Thread Repair

Follow instructions on Loctite FORM-A-THREAD 81668 package.

If a plate is used to align bolt:

1. Apply release agent on mating surfaces.
2. Put waxed paper or similar film on the surfaces.
3. Twist bolt when inserting it to improve thread conformation.

NOTE: NOT intended for engine stud repairs.

Repair of Small Holes/Fine Threads

Option 1: Enlarge damaged hole, then follow *STANDARD THREAD REPAIR* procedure.

Option 2: Apply FORM-A-THREAD on the screw and insert in damaged hole.

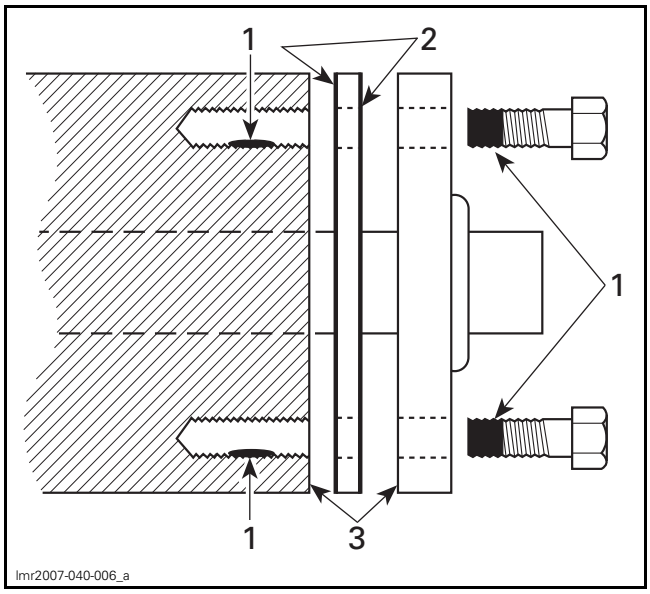
Permanent Stud Installation (Light Duty)

1. Use a stud of the desired thread length.

NOTE: DO NOT apply release agent on stud.

2. Follow Standard Thread Repair procedure.
3. Allow 30 minutes for Loctite FORM-A-THREAD to cure.
4. Complete part assembly.

Gasket Compound Application



1. *Proper strength Loctite*
2. *Loctite Primer N (P/N 293 800 041) and Gasket Eliminator 518 (P/N 293 800 038) on both sides of gasket*
3. *Loctite Primer N only*

1. Remove old gasket and other contaminants using LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500). Use a mechanical means only if necessary.

NOTE: Avoid grinding.

2. Clean both mating surfaces with solvent.
3. Spray Loctite Primer N on both mating surfaces and on both sides of gasket and allow to dry 1 or 2 minutes.
4. Apply LOCTITE 518 (P/N 293 800 038) on both sides of gasket, using a clean applicator.
5. Place gasket on mating surfaces and assemble parts immediately.

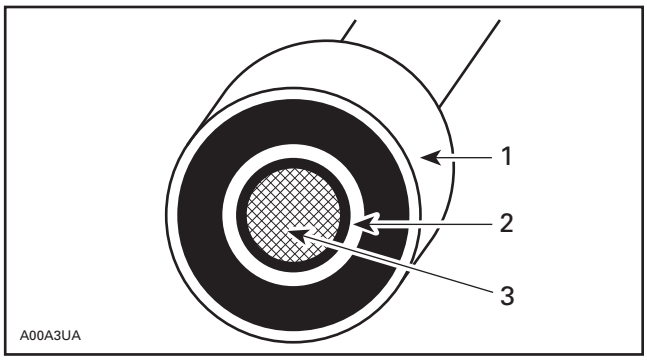
NOTE: If the cover is bolted to blind holes, apply proper strength Loctite in the hole and on threads. Tighten fastener.

NOTE: If holes are sunken, apply proper strength Loctite on bolt threads.

6. Tighten as usual.

Threadlocker Application for Mounting on a Shaft

Mounting with a Press



1. Bearing
2. Proper strength Loctite
3. Shaft

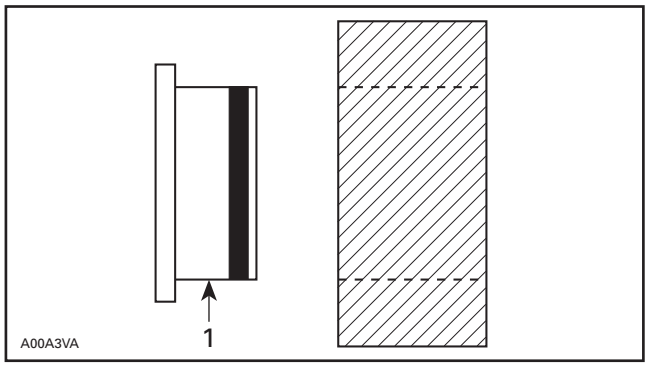
1. Clean shaft external contact surface.
2. Clean internal contact surface of part to be installed on shaft.
3. Apply a strip of proper strength Loctite on circumference of shaft contact surface at insertion or engagement point.

NOTE: Retaining compound is always forced out when applied on shaft. DO NOT use Loctite antiseize or any similar product. No curing period is required.

Mounting in Tandem

1. Apply retaining compound on internal contact surface (bore) of parts to be installed.
2. Continue parts assembly in the prescribed order.

Threadlocker Application for Case-In Components (Metallic Gaskets)



1. Proper strength Loctite

1. Clean inner housing diameter and outer gasket diameter.
2. Spray housing and gasket with LOCTITE 7649 (PRIMER) (P/N 293 800 041).
3. Apply a strip of proper strength Loctite on leading edge of outer metallic gasket diameter.

NOTE: Any Loctite product can be used here. A low strength liquid is recommended as normal strength and gap are required.

4. Install according to standard procedure.
5. Wipe off excess product.
6. Allow 30 minutes for product to cure.

NOTE: Normally used on worn-out housings to prevent leaking or sliding.

It is generally not necessary to remove gasket compound applied on outer gasket diameter.

PERIODIC MAINTENANCE SCHEDULE

GENERAL

Maintenance is very important for keeping your vehicle in safe operating condition. The vehicle should be serviced as per the maintenance schedule.

The maintenance schedule does not exempt the pre-ride inspection.

A repair shop or person of the owner's choosing may maintain, replace, or repair emission control devices and systems. These instructions do not require components or service by BRP or authorized Can-Am dealers. Although an authorized Can-Am dealer has an in-depth technical knowledge and tools to service the Can-Am ATV, the emission-related warranty is not conditioned on the use of an authorized Can-Am dealer or any other establishment with which BRP has a commercial relationship. For emission-related warranty claims, BRP is limiting the diagnosis and repair of emission-related parts to the authorized Can-Am dealers. For more information, please refer to the *US EPA EMISSION-RELATED WARRANTY* contained herein. Proper maintenance is the owner's responsibility. A warranty claim may be denied if, among other things, the owner or operator caused the problem through improper maintenance or use.

You must follow the instructions for fuel requirements in the fueling section of this manual. Even if gasoline containing greater than ten volume percent ethanol is readily available, the US EPA issued a prohibition against the use of gasoline containing greater than 10 vol% ethanol that applies to this vehicle. The use of gasoline containing greater than 10 vol% ethanol with this engine may harm the emission control system.

⚠ WARNING

Failure to properly maintain the vehicle according to the maintenance schedule and procedures can make it unsafe to operate.

SEVERE DUSTY CONDITIONS

Engine Air Filter Maintenance Guideline

Air filter maintenance should be adjusted according to riding conditions.

Air filter maintenance must be increased in frequency in the following dusty conditions:

– Riding on dry sand
– Riding on dry dirt covered surfaces
– Riding on dry gravel roads or similar conditions.

NOTE: Riding in a group in these conditions would increase even more the air filter maintenance.

MAINTENANCE SCHEDULE LEGEND

Operation in trail riding conditions
Operation in severe riding conditions (dusty or muddy) or carrying heavy loads condition

MAINTENANCE SCHEDULE

Make sure to perform proper maintenance at recommended intervals as indicated in the tables. Some items of the maintenance schedule must be performed in function of the calendar, regardless of the distance or time of operation.

EVERY 1 500 KM (1,000 MI) OR 50 HOURS (whichever comes first)
EVERY 750 KM (500 MI) OR 25 HOURS (whichever comes first)
Verify and clean engine air filter. Replace as needed
Verify battery connections
Lubricate rear propeller shaft joint
Inspect tie rod ends and ball joints for play and boots condition
Lubricate front suspension arm bushings
Lubricate rear stabilizer bar bushings
Inspect the drive shaft boots and protectors
Inspect brake pads. Replace as needed
Inspect wheel bearings for abnormal play
Inspect and clean CVT air filter. Replace as needed. (If equipped)
Tighten wheel beadlock bolts (If equipped)
Lubricate lower shock absorber spherical bearings (Outlander LTD and XT-P and Renegade Xxc)
Lubricate upper shock absorber spherical bearings (Outlander LTD)

EVERY 3 000 KM (2,000 MI) OR 100 HOURS (whichever comes first)
EVERY 1 500 KM (1,000 MI) OR 50 HOURS (whichever comes first)
Adjust valve clearance
Clean muffler spark arrester
Verify and clean throttle body
Replace fuel vent breather filter
Verify CVT drive belt and clean CVT pulleys
Lubricate the one way bearing of the drive pulley
Inspect ACS suspension hoses condition (LTD)
The following must be performed at least once a year:
Change engine oil and filter
Lubricate throttle cable
Inspect and clean brake system
Inspect battery condition
Verify steering system for abnormal play
Verify front differential and rear final drive oil level and look for contamination
Verify gearbox oil level and look for contamination (except 450)

PERFORM AT THE FIRST 3 000 KM (2,000 MI)AND AT 6 000 KM (4,000 MI) THEN FOLLOW THE REGULAR SCHEDULE
PERFORM AT THE FIRST 1 500 KM (1,000 MI) AND AT 3 000 KM (2,000 MI) THEN FOLLOW THE REGULAR SCHEDULE
Replace gearbox oil (except 450)
Clean the vehicle speed sensor (VSS) (except 450)

EVERY 6 000 KM (4,000 MI) OR 200 HOURS (whichever comes first)
EVERY 3 000 KM (2,000 MI) OR 100 HOURS (whichever comes first)
Verify the cooling system
Test engine coolant strength
Verify fuel system for leaks
Verify fuel pump pressure
Replace spark plugs
Replace front differential oil
Replace rear final drive oil
Replace gearbox oil (except 450)
Inspect input and output shaft seals (gearbox, differential and final drive)
Clean vehicle speed sensor
Clean and lubricate lower and upper steering column half bushings
The following must be performed every 2 years:
Replace the brake fluid

EVERY 12 000 KM (8,000 MI) OR 5 YEARS (whichever comes first)
EVERY 6 000 KM (4,000 MI) OR 5 YEARS (whichever comes first)
Replace engine coolant

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PERIODIC MAINTENANCE PROCEDURES (OUTLANDER)

SERVICE TOOLS

Description	Part Number	Page
TEST CAP	529 035 991	9
VACUUM/PRESSURE PUMP	529 021 800	9, 22

SERVICE PRODUCTS

Description	Part Number	Page
AIR FILTER OIL	219 700 340	3
BRAKE FLUID GTLMA DOT4	293 600 131	20, 22
LOCTITE 767 (ANTISEIZE LUBRICANT)	293 800 070	16
LONG LIFE ANTIFREEZE(F)	619 590 204	7
LONG LIFE ANTIFREEZE	219 702 685	7
SUSPENSION GREASE	293 550 033	18–19
XPS 4-STROKE SYNTH. BLEND OIL (F)	619 590 109	5
XPS 4-STROKE SYNTH. BLEND OIL	293 600 121	5
XPS 4-STROKE SYNTHETIC OIL (F)	619 590 114	5
XPS 4-STROKE SYNTHETIC OIL	293 600 112	5
XPS BRAKES AND PARTS CLEANER (USA)	219 701 705	20
XPS BRAKES AND PARTS CLEANER	219 701 776	20
XPS SYNTHETIC GEAR OIL (75W 140)	293 600 140	12, 17
XPS SYNTHETIC GEAR OIL (75W 90)	293 600 043	16
XPS SYNTHETIC GREASE	293 550 010	21

GENERAL

This subsection provides:

– Fluid level verifications

– Maintenance procedures.

The following systems should be serviced according to the *PERIODIC MAINTENANCE SCHEDULE*.

PROCEDURES

AIR INTAKE SYSTEM

Engine Air Filter Maintenance Guideline

As with any ATV, air filter maintenance is critical to ensure proper engine performance and life span.

Air filter maintenance should be adjusted according to riding conditions.

Air filter maintenance must be increased in frequency and oil must be added to the foam filter for the following dusty conditions:

– Riding on dry sand

– Riding on dry dirt covered surfaces

– Riding on dry gravel trails or similar conditions.

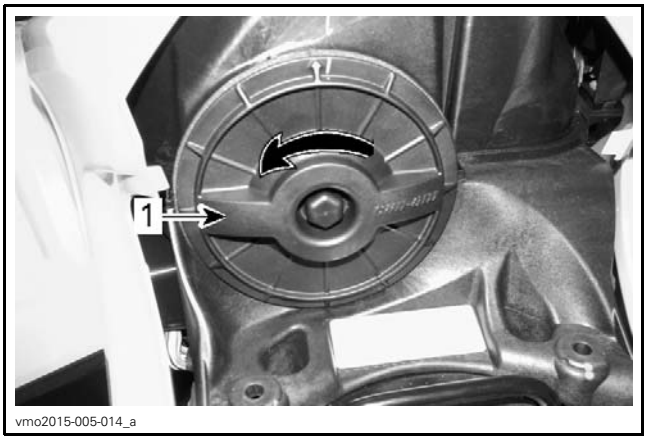
NOTE: Riding in a group in these conditions would increase even more the air filter maintenance.

Removing the Engine Air Filter

NOTICE **Never remove or modify any component in the air filter housing. Otherwise, engine performance degradation or damage can occur. The engine is calibrated to operate specifically with these components.**

1. Remove seat.
2. Remove console. Refer to *BODY* subsection.
3. Rotate air filter cover counterclockwise to remove it.

NOTE: A socket wrench may be used to ease removal of the air filter cover.



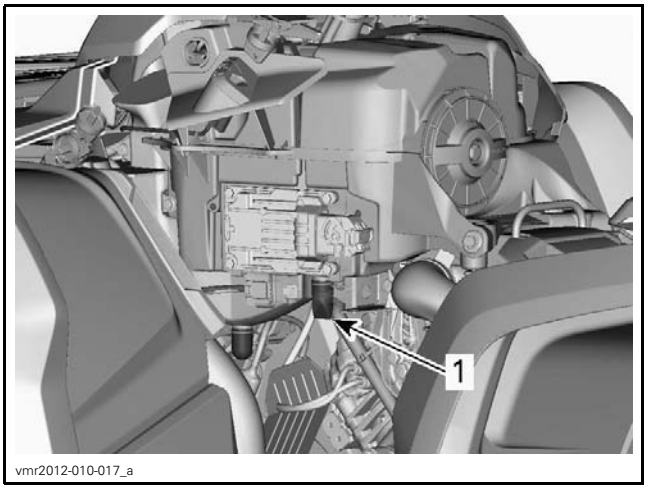
1. Air filter cover

4. Remove air filter.

AIR FILTER REMOVAL

Inspecting and Draining the Engine Air Filter Housing

1. Remove LH side panel and extension. Refer to *BODY* subsection.
2. Drain air filter housing drain tube.

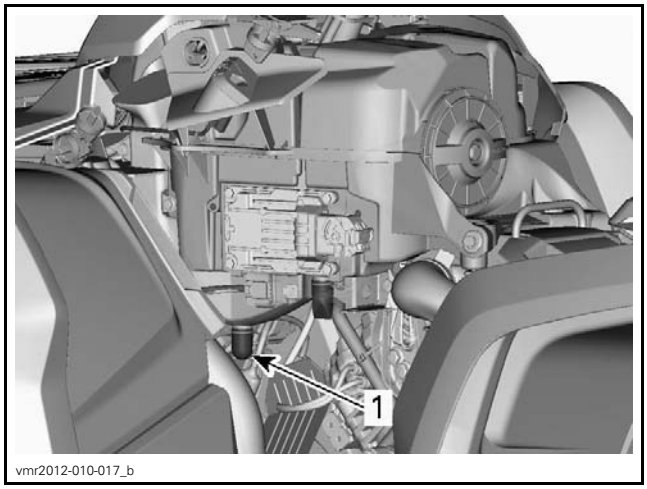


TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Air filter housing drain tube

3. Check air filter dirty chamber for cleanliness.
   – If any debris or water are found, clean air filter chamber using a vacuum cleaner.

NOTICE **Do not blow compressed air into air filter chamber.**

4. Check air filter housing drain tube (clean chamber).
   – If any debris or water are found, refer to *SPECIAL PROCEDURES* subsection.
   – Investigate for contamination source.



TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Air filter drain tube

Cleaning the Paper Filter

1. Ensure that the foam filter is removed from paper filter.
2. Tap out heavy dust from the paper filter.

This will allow dirt and dust to get out of the paper filter.

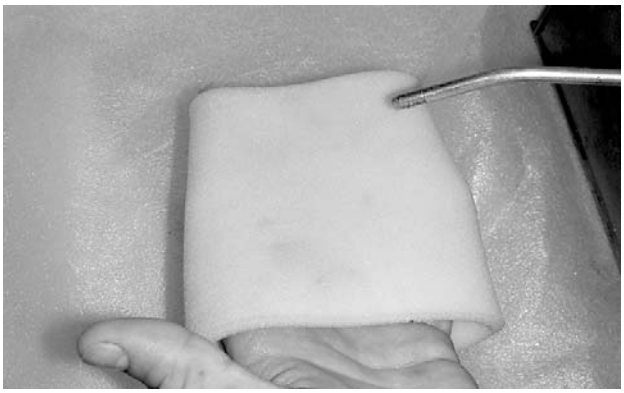
NOTE: Paper filter have a limited life span; replace filter if too dirty or clogged.

NOTICE **It is not recommended to blow compressed air on the paper filter; this could damage the paper fibers and reduce its filtration ability when used in dusty environments.**

NOTICE **Do not wash the paper filter with any cleaning solution.**

Cleaning the Foam Filter

1. Spray the foam filter inside and out with air filter cleaner and follow manufacturer's instructions.
2. Dry the foam filter completely.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TYPICAL - DRY

NOTE: A second application may be necessary for heavily soiled elements.

Oiling the Foam Filter

1. Spray the recommended air filter oil on the foam filter previously cleaned and dried. Follow manufacturer's informations.

RECOMMENDED PRODUCT	
AIR FILTER OIL (P/N 219 700 340)	

vbs2009-012-014

TYPICAL - OIL THE FOAM FILTER

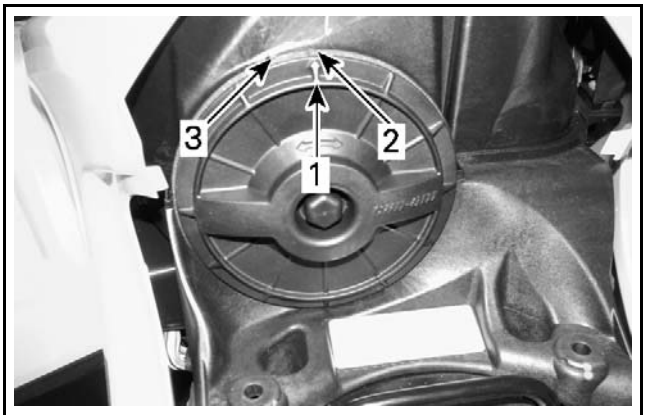
Reinstall oiled foam filter over the paper filter.

Installing the Engine Air Filter

Slightly grease O-ring seal and plastic body of air filter. Refer to *AIR INTAKE SYSTEM* exploded view.

Install filter assembly in air filter housing.

Ensure air filter cover is properly locked onto the air filter housing. See indications on filter cover and housing.



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1. *Cover position arrow*
2. *Locked*
3. *Unlocked*

Reinstall the console.

EXHAUST SYSTEM

Cleaning and Inspecting the Muffler Spark Arrester

The muffler must be periodically purged of accumulated carbon.

⚠ WARNING

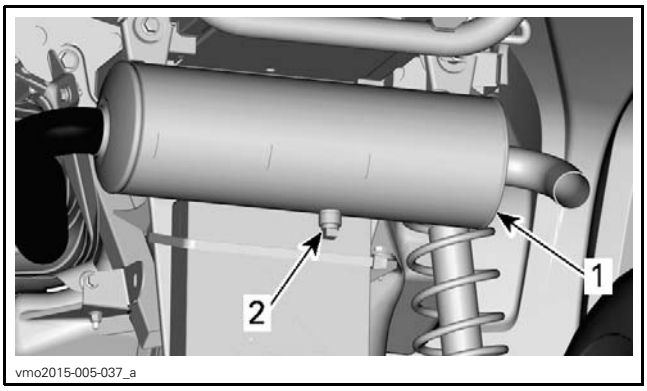
Never run engine in an enclosed area. Never perform this operation immediately after the engine has been run because exhaust system is very hot. Make sure that there are no combustible materials in the area. Wear eye protection and gloves. Never stand behind the vehicle while purging exhaust system. Respect all applicable laws and regulations.

Select a well-ventilated area and make sure the muffler is cool.

⚠ CAUTION **Never perform this operation immediately after the engine has been running as exhaust system is very hot.**

Muffler (Transversal Mounting)

1. Place transmission on PARK position.
2. Remove the clean out plug of the muffler.

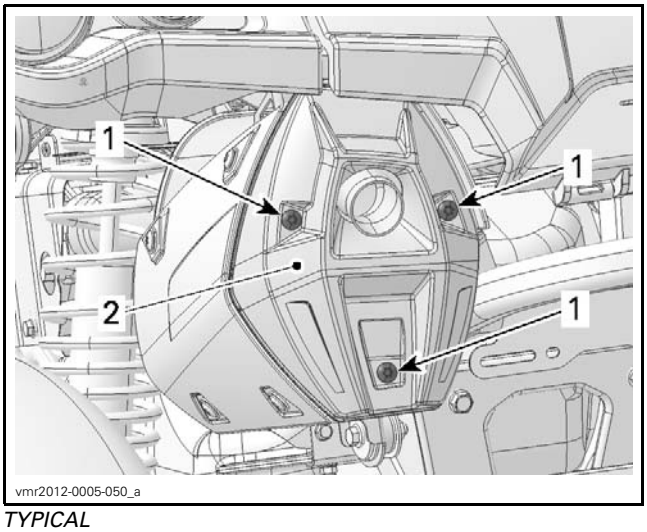


TYPICAL
1. *Muffler*
2. *Clean out plug*

3. Block the end of the muffler with a shop rag and start engine.
4. Momentarily increase engine RPM several times to purge accumulated carbon out of the muffler.
5. Stop engine and allow muffler to cool.
6. Reinstall the clean out plug.

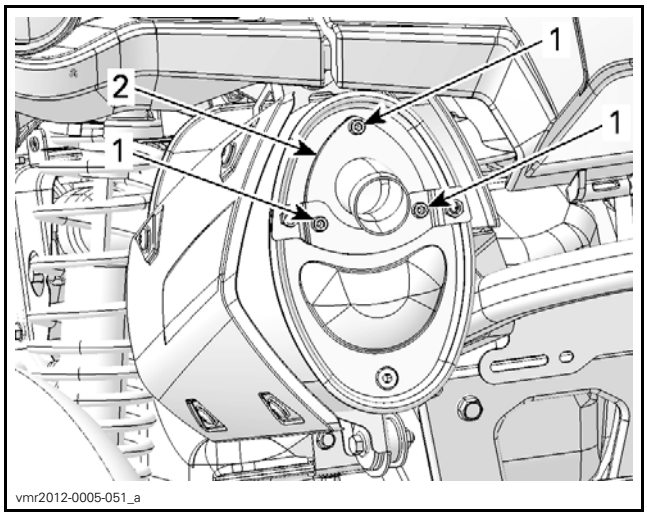
Muffler (Longitudinal Mounting)

1. Remove the muffler cover and discard the screws.



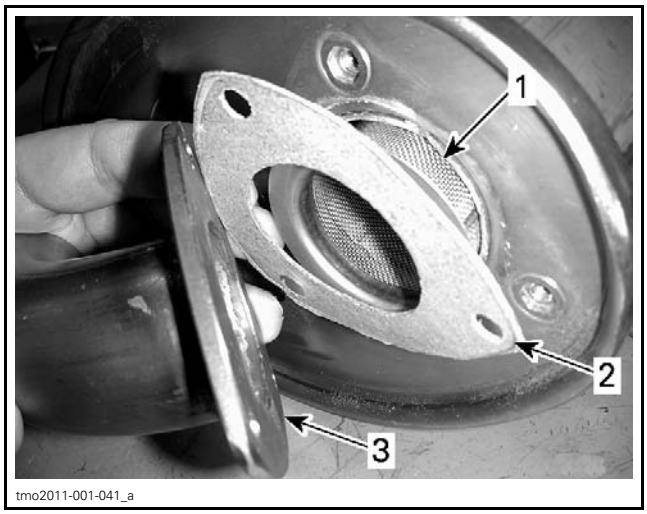
TYPICAL
1. *Remove and discard screws*
2. *Cover*

2. Remove and discard the tail pipe retaining screws.



TYPICAL — ALL MODELS
1. *Screws*
2. *Tail pipe*

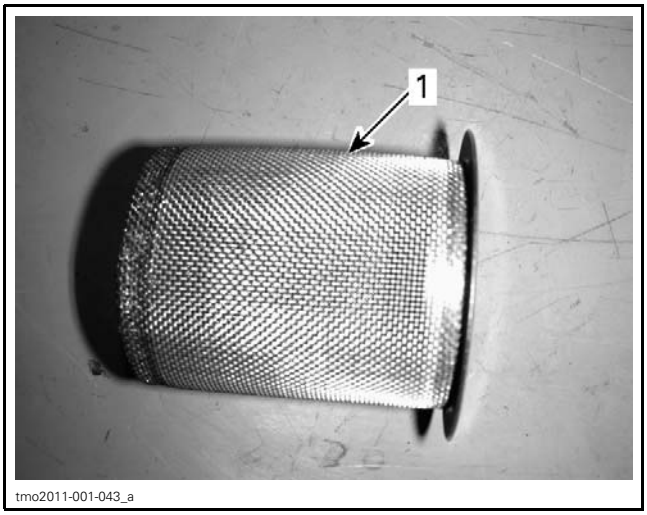
3. Remove exhaust tail pipe, gasket (discard) and spark arrester.



1. *Spark arrester*
2. *Gasket*
3. *Exhaust tail pipe*

4. Remove carbon deposits from the spark arrester using a brush.

NOTICE **Use a soft brush and be careful to avoid damaging spark arrester mesh.**



1. Clean spark arrester

5. Inspect mesh of spark arrester for any damage. Replace as required.
6. Inspect spark arrester chamber in muffler. Clean as required.

For installation, reverse the removal procedure. However pay attention to the following.

Install new gasket and new retaining screws.

TIGHTENING TORQUE	
Tail pipe retaining screws	11 N•m ± 1 N•m (97 lbf•**in** ± 9 lbf•**in**)

LUBRICATION SYSTEM

Recommended Engine Oil

For the summer season, use:

RECOMMENDED SERVICE PRODUCT	
Outside of the U.S.	XPS 4-STROKE SYNTH. BLEND OIL (F) (P/N 619 590 109)
Within the U.S.	XPS 4-STROKE SYNTH. BLEND OIL (P/N 293 600 121)

For all season, use:

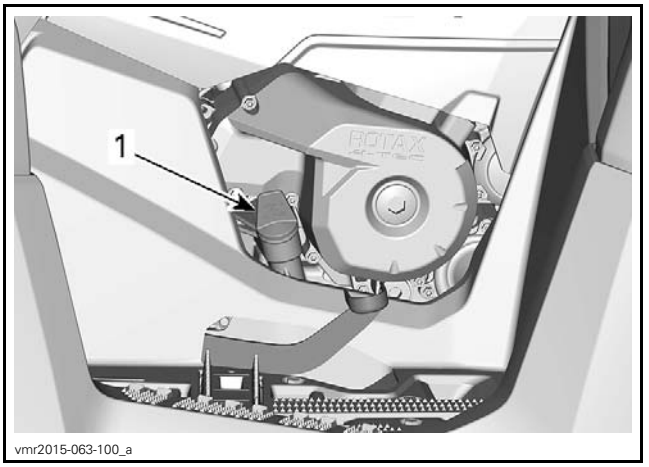
RECOMMENDED SERVICE PRODUCT	
Outside of the U.S.	XPS 4-STROKE SYNTHETIC OIL (F) (P/N 619 590 114)
Within the U.S.	XPS 4-STROKE SYNTHETIC OIL (P/N 293 600 112)

If recommended XPS oil is not available, use a 4-stroke SAE 5W 40 engine oil that meets or exceeds the requirements for API service classification SJ, SL, SM or SN. Always check the API service label certification on the oil container, it must contain at least one of the above standards.

Verifying the Engine Oil Level

NOTICE Operating the engine with an improper level may severely damage engine.

NOTE: While checking the oil level, visually inspect engine area for leaks.

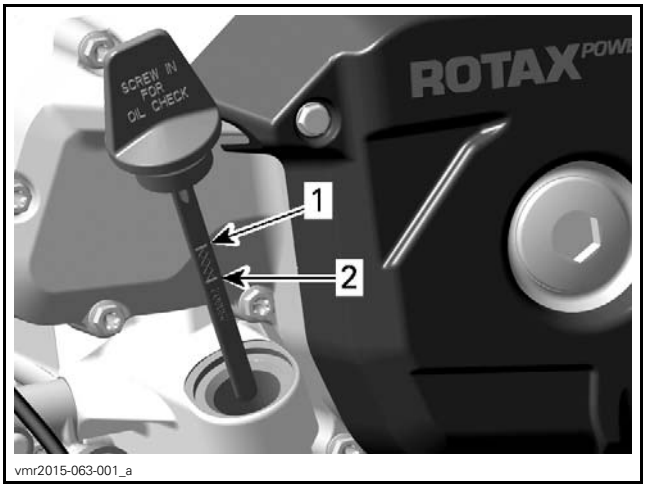


TYPICAL - RH SIDE OF ENGINE
1. Dipstick

NOTE: Do not lose the O-ring placed on the dipstick.

With vehicle on a level surface and engine cold, not running, check the oil level as follows:

1. Unscrew dipstick then remove it and wipe clean.
2. Reinstall dipstick, screw in it completely.
3. Remove and check oil level. It should be near or equal to the upper mark.



1. Full
2. Add

To add oil, remove the dipstick. Place a funnel into the dipstick orifice.

Add a small amount of recommended oil and recheck oil level.

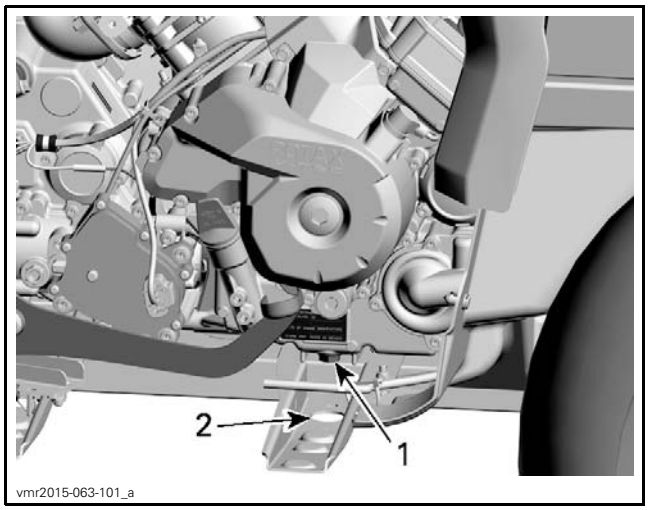
Repeat the above procedures until oil level reaches the dipstick's upper mark. **Do not overfill. Wipe off any spillage.**

Properly tighten dipstick.

Changing the Engine Oil

1. Start and warm-up engine.
2. Stop engine.
3. Ensure vehicle is on a level surface.
4. Remove dipstick.
5. Place a drain pan under the engine drain plug area.
6. Clean the magnetic drain plug area.
7. Unscrew magnetic drain plug and discard the gasket ring.

⚠ CAUTION The engine oil can be very hot.



TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Magnetic drain plug
2. Access through frame

Allow oil to drain completely from the crankcase.

8. Clean the magnetic drain plug from metal shavings and residue. Presence of debris gives an indication of internal engine damage.
9. Install a **NEW** gasket ring on the magnetic drain plug.

NOTICE **Never use the gasket ring a second time. Always replace by a new one.**

10. Install and tighten magnetic drain plug to the recommended torque.

TIGHTENING TORQUE	
Magnetic drain plug	20 N•m ± 1 N•m (15 lbf•ft ± 1 lbf•ft)

11. Replace oil filter. Refer to *ENGINE OIL FILTER REPLACEMENT* in this subsection.
12. Refill engine with recommended engine oil.

MODEL	ENGINE OIL CAPACITY
450 engines	3 L (3.2 qt (U.S. liq.))
All engines except 450	2 L (2.1 qt (U.S. liq.))

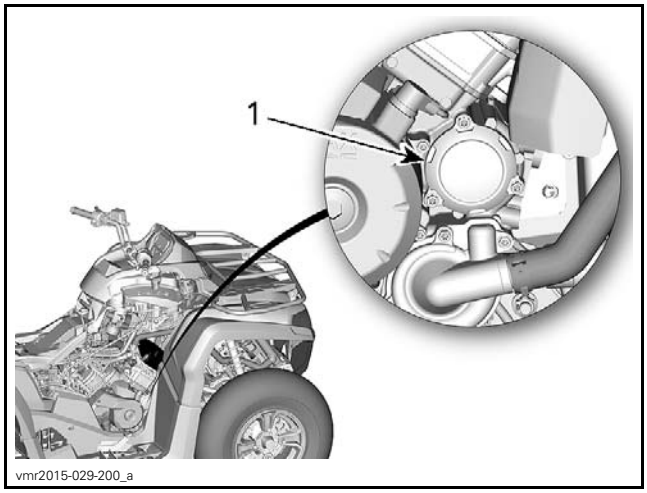
13. After filling, check the oil level, refer to *ENGINE OIL LEVEL VERIFICATION* in this subsection.
14. Start engine and let it idle for a few minutes.
15. Ensure oil filter and drain plug areas are not leaking.
16. Stop engine.
17. Wait a while to allow oil to flow down to crankcase, then check oil level again.
18. Refill as necessary.
19. Dispose oil and filter as per your local environmental regulations.

Replacing the Engine Oil Filter

Engine Oil Filter Access

To reach oil filter, refer to *BODY* subsection and remove the following parts:

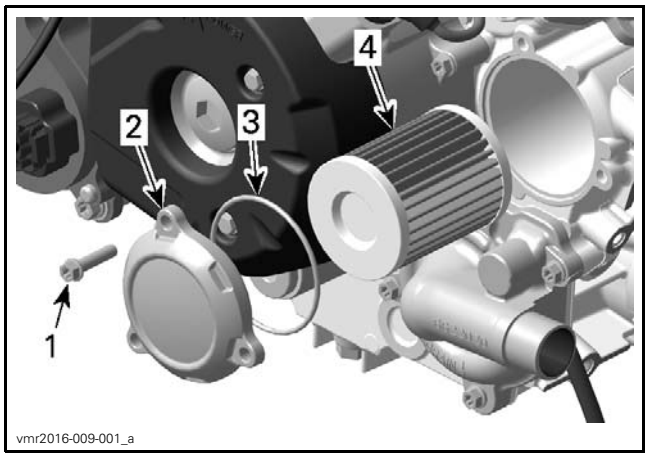
– Seat
– Console
– RH side panel and extension
– RH inner fender panel.



1. Oil filter cover

Removing the Engine Oil Filter

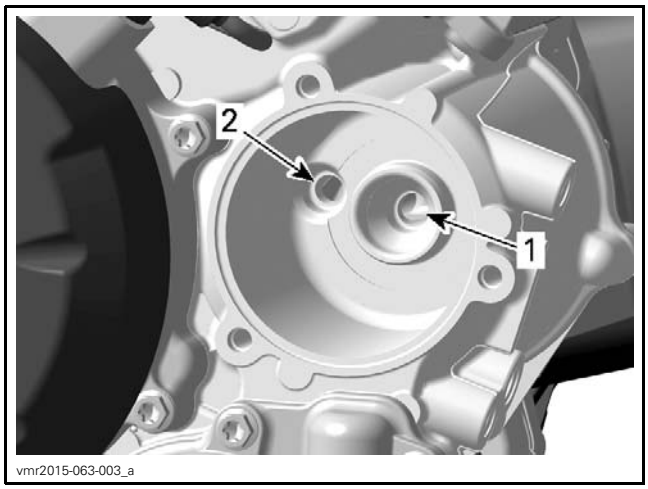
1. Clean oil filter area.
2. Remove oil filter cover.
3. Remove oil filter.



1. *Oil filter screw*
2. *Oil filter cover*
3. *O-ring*
4. *Oil filter*

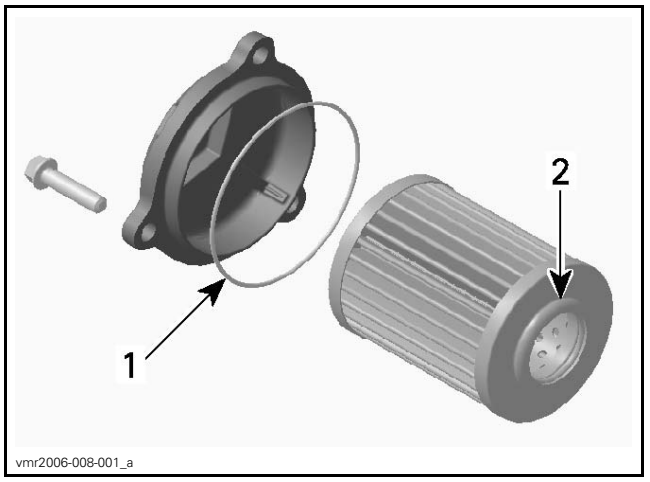
Installing the Engine Oil Filter

1. Check and clean the oil filter inlet and outlet area of dirt and other contaminations.



1. *Outlet bore to the engine oil providing system*
2. *Inlet bore from the oil pump to the oil filter*

2. Install a **NEW** O-ring on oil filter cover.
3. Install the filter into the cover.
4. Apply engine oil on O-ring and on end of filter.



1. *O-ring - slightly oil*
2. *End of filter - slightly oil*

5. Install the cover on the engine.
6. Tighten oil filter cover screws to recommended torque.

TIGHTENING TORQUE	
Oil filter cover screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

7. Reinstall remaining parts if applicable.

COOLING SYSTEM

Recommended Engine Coolant

COOLANT		
BRP recommended product	Finland, Norway and Sweden	LONG LIFE ANTIFREEZE(F) (P/N 619 590 204)
	All Other Countries	LONG LIFE ANTIFREEZE (P/N 219 702 685)
Alternative, or if not available	–	Distilled water and antifreeze solution (50% distilled water, 50% antifreeze)

NOTICE **Always use ethylene-glycol antifreeze containing corrosion inhibitors specifically formulated for internal combustion aluminum engines.**

To prevent antifreeze deterioration, always use the same brand. Never mix different brands or type of antifreeze. Always use the same antifreeze unless cooling system is completely flushed and refilled.

Do not use tap water, straight antifreeze or straight water in the system. Tap water contains minerals and impurities which build up in the system. During cold weather, straight water causes the system to freeze while straight antifreeze thickens and does not have the same efficiency.

Verifying the Engine Coolant Level

⚠ WARNING

In order to avoid potential burns, check coolant level with engine cold. Do not remove the radiator cap if the engine is hot.

1. Place vehicle on a level surface.
2. Remove gauge support. Refer to *BODY* subsection.

With the vehicle on a level surface, coolant level should be between the MIN. and MAX. marks of the reservoir.

TYPICAL
1. Engine coolant reservoir

NOTE: When checking level at temperature lower than 20°C (68°F), it may be slightly lower than MIN. mark.

3. Add coolant up to MAX. mark if required.
4. Use a funnel to avoid spillage. **Do not overfill.**
5. Properly reinstall and tighten reservoir cap.
6. Reinstall gauge support.

NOTICE **Do not store any objects under the gauge support.**

Checking the Engine Coolant Specific Gravity

1. Remove gauge support. Refer to *BODY* subsection.
2. Remove pressure cap.

⚠ WARNING

To avoid potential burns, do not remove the pressure cap if the engine is hot.

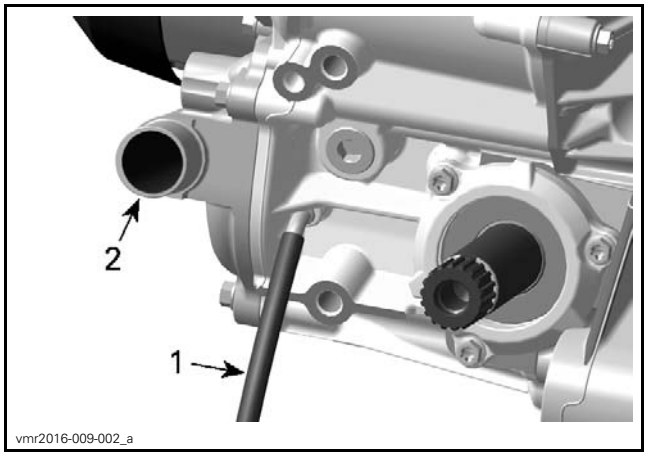
3. Using an antifreeze tester, test coolant strength.

MINIMUM RECOMMENDED COOLANT STRENGTH
-30°C (-22°F)

Inspecting the Engine Cooling System

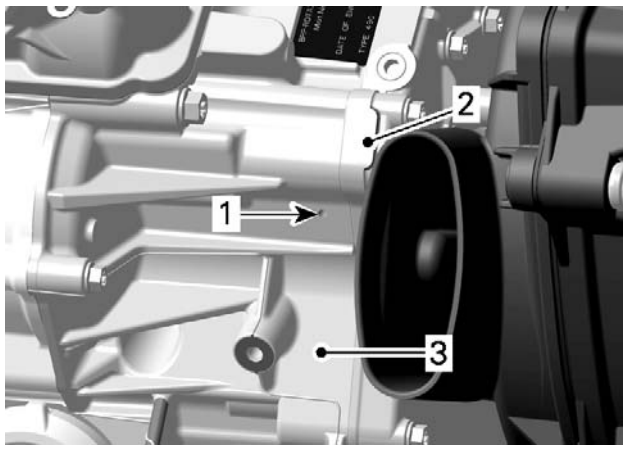
1. Check general condition of hoses and clamps for tightness.
2. Check the leak indicator hose for oil or coolant.

Leaking coolant indicates a defective rotary seal. Leaking oil indicates a defective oil seal. If either seal is leaking, both seals must be replaced at the same time. Refer to *WATER PUMP SHAFT AND SEALS* in the *COOLING SYSTEM* subsection.



1. Leak indicator hose
2. Water pump

Another leak indicator hole is visible on the PTO side. It provides an indication of the PTO gasket condition. If a liquid leaks from this hole, PTO gasket replacement is necessary.



TYPICAL
1. *Leak indicator hole*
2. *PTO cover*
3. *Crankcase PTO, front side*

3. Ensure vent hose on coolant expansion tank is not obstructed.

Testing the Engine Cooling System Pressure Cap

1. Remove gauge support. Refer to *BODY* subsection.
2. Remove pressure cap.

⚠ WARNING

To avoid potential burns, do not remove the pressure cap if the engine is hot.

3. Test the pressure cap using a cooling system tester.
4. Replace the cap if it does not hold the pressure, or if it opens at a relief pressure that is too low or too high.

PRESSURE CAP RELIEF PRESSURE
Approximately 110 kPa (16 PSI)

Testing the Engine Cooling System Leak

1. Remove gauge support. Refer to *BODY* subsection.
2. Remove pressure cap.

⚠ WARNING

To avoid potential burns, do not remove the pressure cap if the engine is hot.

3. Pressurize cooling system as follows.

REQUIRED TOOLS	
TEST CAP (P/N 529 035 991)	
VACUUM/PRESSURE PUMP (P/N 529 021 800)	

COOLING SYSTEM LEAK TEST
110 kPa (16 PSI)

If there is no pressure drop after 10 minutes, there is no leak in the cooling system.

If the pressure drops, check all hoses, radiator, cylinders and engine base for coolant leaks or air bubbles.

Replacing the Engine Coolant

Draining the Engine Cooling System

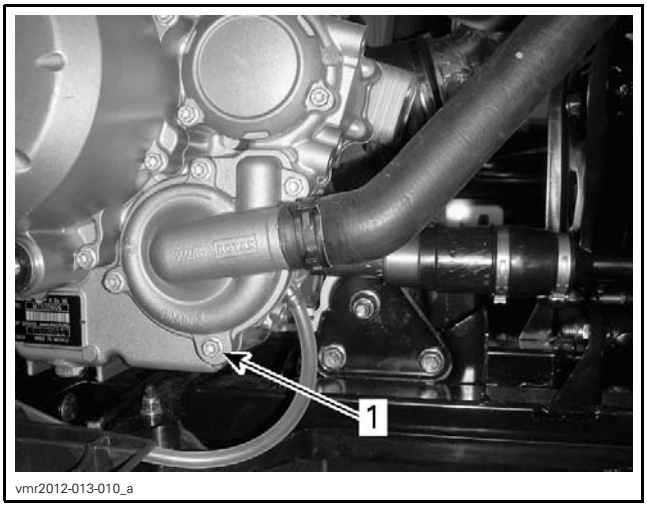
⚠ CAUTION Engine coolant can be very hot. Coolant draining should be carried out on a cold engine.

1. Remove gauge support. Refer to *BODY* subsection.
2. Remove cooling system pressure cap.

TYPICAL
1. *Cooling system pressure cap*

3. Unscrew coolant drain plug.

NOTE: Coolant drain plug is accessible from underneath RH footrest panel.



TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Coolant drain plug

4. Drain cooling system into a suitable container.
5. Disconnect the lower radiator hose and drain the remaining coolant.

NOTE: Take note of the hose clamp position before it is loosened for hose removal.

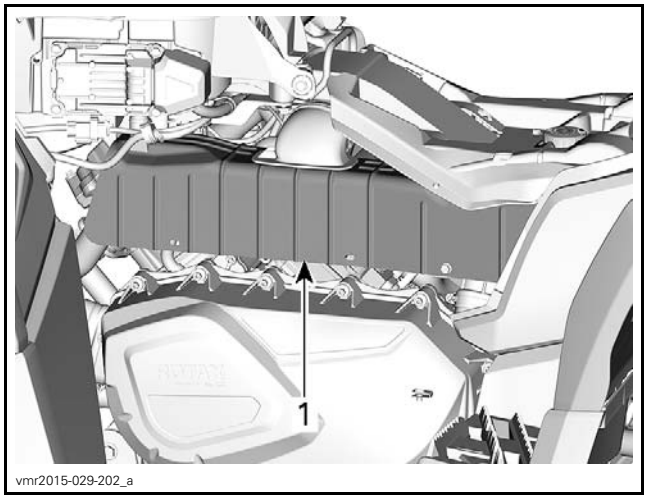
6. Reinstall coolant drain plug with a NEW sealing washer.
7. Tighten coolant drain plug to specification.

TIGHTENING TORQUE	
Coolant drain plug	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

8. Fill cooling system with recommended coolant, refer to *COOLING SYSTEM FILLING AND BLEEDING* procedure.

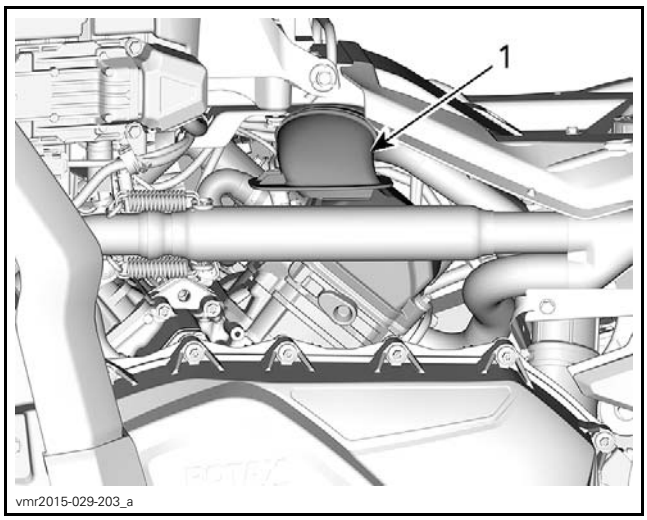
Filling and Bleeding the Engine Cooling System

1. Remove cooling system pressure cap.
2. Remove RH and LH side panels. Refer to *BODY* subsection.
3. On LH side of engine, remove outer exhaust heat shield. Refer to *EXHAUST SYSTEM* subsection.



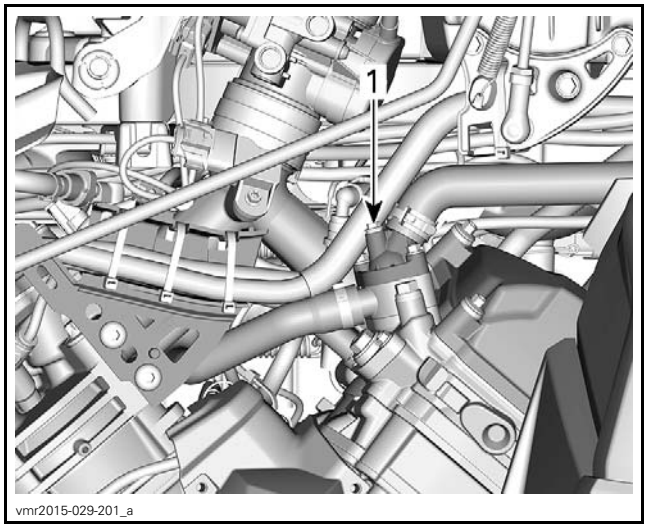
1. Outer exhaust heat shield

4. Remove CVT duct outlet.

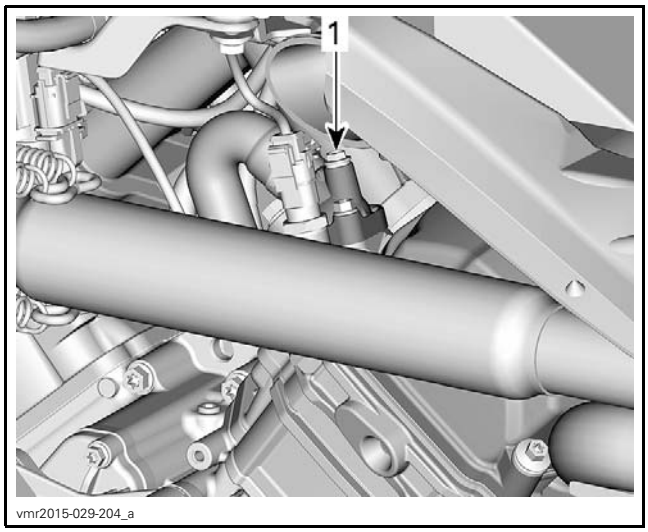


1. CVT duct outlet

5. Unscrew bleed screws on thermostat housing covers of both front and rear cylinders.



RH SIDE
1. Front cylinder bleed screw



LH SIDE
1. Rear cylinder bleed screw

6. Fill cooling system until coolant comes out of bleed screws.
7. Squeeze the top of the coolant hose between the radiator and coolant pump several times to bleed all air from the highest point of the hose.
8. Install bleed screws using NEW gasket rings.
9. Tighten bleed screws.

TIGHTENING TORQUE	
Bleed screws	5.0 N•m ± 0.6 N•m (44 lbf•**in** ± 5 lbf•**in**)

10. Refill coolant tank up to MAX level mark.
11. Install cooling system pressure cap.
12. Run engine at idle until the cooling fan cycles on for a second time.
13. Stop the engine and let it cool down.

⚠ WARNING

Do not remove the pressure cap if the engine is hot.

14. Check coolant level in the coolant tank. Refer to *VERIFYING THE ENGINE COOLANT LEVEL* in this subsection.
15. Add coolant if required.

CYLINDER HEAD

Inspecting and Adjusting the Engine Valve Clearance

NOTE: Check and adjust valve clearance only when engine is cold.

1. Remove valve covers, refer to *TOP END* subsection.
2. Before checking or adjusting the valve clearance, turn crankshaft clockwise to TDC ignition of the respective cylinder, refer to *CAMSHAFT TIMING GEAR* in the *TIMING CHAIN* subsection.

NOTICE **Crankshaft must be turned clockwise only to avoid loosening the magneto retaining bolt.**

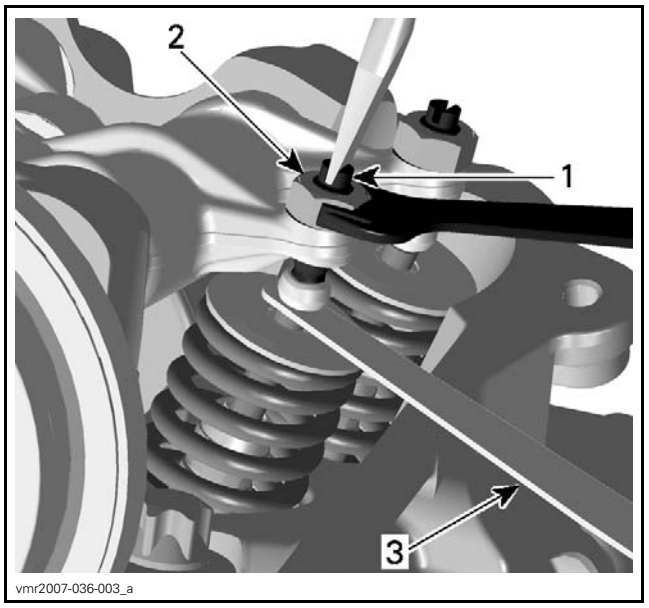
3. Using a feeler gauge, check the valve clearance.

VALVE CLEARANCE	
EXHAUST	0.11 mm to 0.19 mm (.0043 in to .0075 in)
INTAKE	0.06 mm to 0.14 mm (.0024 in to .0055 in)

If the valve clearance is out of specification, adjust valves as follows.

NOTE: Use the center value of exhaust/intake specification to ensure a proper valve adjustment.

4. Hold the adjustment screw at the proper position and torque the locking nut.



1. Adjustment screw
2. Locking nut
3. Feeler gauge

5. Repeat the procedure for each valve.
6. Before installing valve covers, recheck valve clearance.

GEARBOX

Recommended Gearbox Oil (Except 450 Engines)

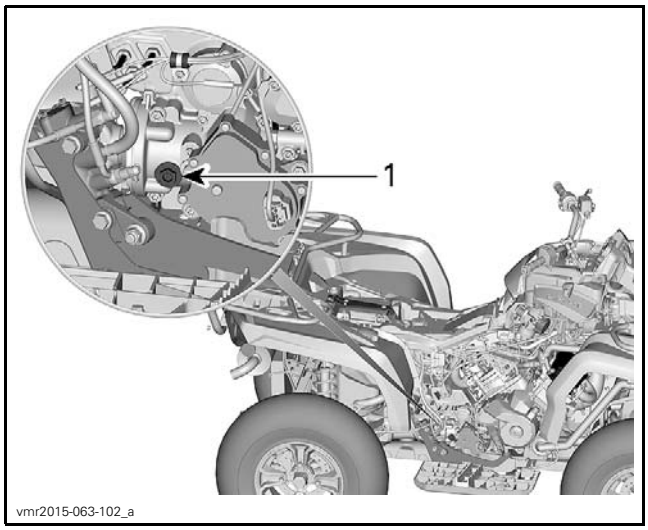
RECOMMENDED PRODUCT	QUANTITY
XPS SYNTHETIC GEAR OIL (75W 140) (P/N 293 600 140)	Approximately 450 ml (15.2 U.S. oz)

If the recommended oil is not available, use a 75W140 gearbox oil that meets the API GL-5 specification.

Verifying the Gearbox Oil Level

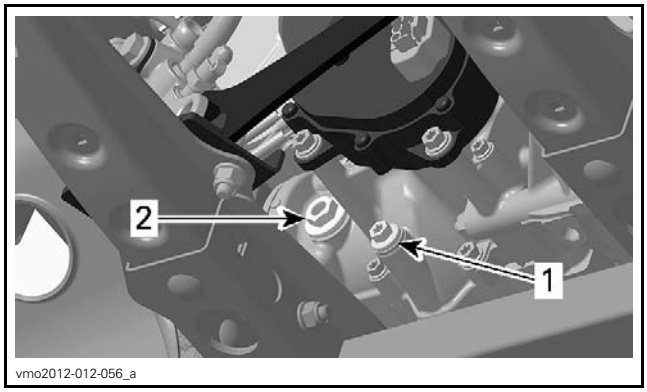
NOTE: Prior checking the gearbox oil level, ensure vehicle is on a level surface.

1. To access gearbox oil level plug, refer to *BODY* subsection and remove the following parts:
   - Seat
   - Console
   - RH side panel and extension(s)
   - RH footrest panel.



TYPICAL
1. Oil level plug

2. Remove the gearbox oil level plug.



1. Drain plug
2. Oil level plug

3. Check oil level.

The oil should be level with the bottom of the oil level hole.

NOTICE **Operating the gearbox with an improper oil level may severely damage gearbox.**

4. Install the oil level plug with its O-ring. Tighten plug as per table.

TIGHTENING TORQUE	
Oil level plug	5 N•m ± 0.6 N•m (44 lbf•**in** ± 5 lbf•**in**)

Replacing the Gearbox Oil

Draining the Gearbox Oil

1. Start engine and operate vehicle to warm-up the gearbox oil.

NOTE: Running engine at idle is not sufficient, vehicle transmission must be operated.

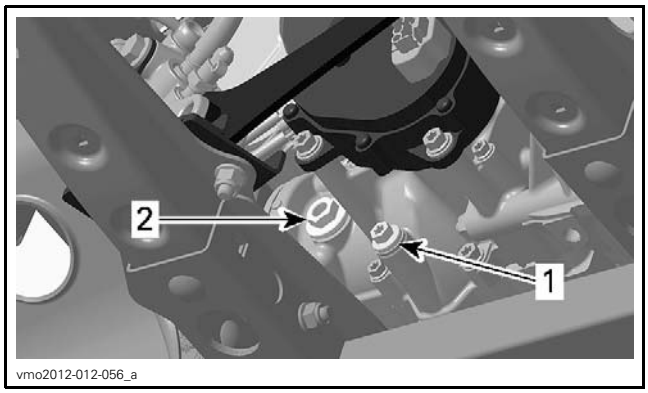
2. Position vehicle on a level surface.
3. Place a drain pan under the gearbox drain plug area.
4. Clean drain plug area.
5. Remove magnetic drain plug and sealing washer. Discard sealing washer.

⚠ WARNING

The gearbox oil can be very hot.

6. Remove oil level plug and its O-ring.

NOTE: Allow oil to completely flow out of gearbox.



1. Magnetic drain plug
2. Oil level plug

7. Clean magnetic drain plug and pay attention to any debris present on drain plug.

NOTE: Presence of excessive debris provides an indication of a gearbox problem.

8. Reinstall magnetic drain plug with a NEW sealing washer.

TIGHTENING TORQUE	
Magnetic drain plug	20 N•m ± 2 N•m (15 lbf•ft ± 1 lbf•ft)

9. Dispose gearbox oil as per your local environmental regulations.

Filling the Gearbox Oil

1. Fill the gearbox through the oil level hole until the oil reaches the bottom of the oil level hole.
2. Install the oil level plug with its O-ring. Tighten plug as per table.

TIGHTENING TORQUE	
Oil level plug	5 N•m ± 0.6 N•m (44 lbf•**in** ± 5 lbf•**in**)

Cleaning the Vehicle Speed Sensor (VSS)

Remove the VSS. Refer to *GEARBOX AND 4X4 COUPLING UNIT* subsection.

Remove all metal particles and oil from the VSS magnet.

NOTE: A dirty VSS will cause erratic speedometer readings.

CONTINUOUSLY VARIABLE TRANSMISSION (CVT)

Cleaning the CVT Air Inlet/Outlet

1. Remove CVT cover, refer to *CONTINUOUSLY VARIABLE TRANSMISSION (CVT)* subsection.
2. Inspect and clean the air inlet and outlet openings from inside the CVT cover.
3. Inspect and clean the air outlet duct connected to the exhaust system heat shield under the seat.

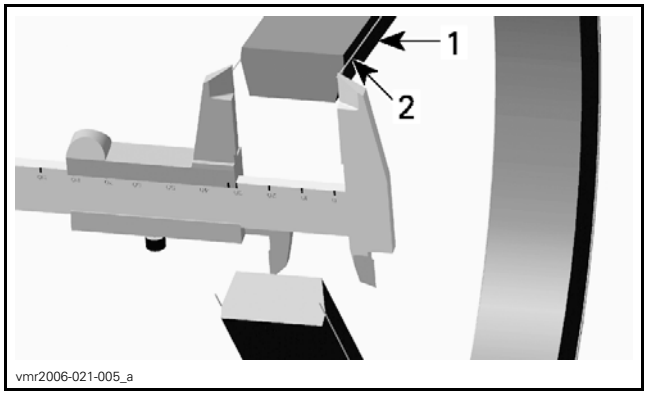
NOTE: If a lot of debris or grime are found in the CVT system, it may be necessary to remove the ducts and thoroughly clean them.

4. Reinstall CVT cover.

Inspecting the Drive Belt

1. Inspect belt for cracks, fraying or abnormal wear. Replace if necessary.
2. Check drive belt width at cord level. Replace if it is out of specification.

DRIVE BELT WIDTH	
SERVICE LIMIT	30 mm (1.181 in)



1. Drive belt
2. Cord in drive belt

Drive Pulley, Driven Pulley and One-Way Bearing Maintenance

Refer to *CONTINUOUSLY VARIABLE TRANSMISSION (CVT)* subsection.

FUEL SYSTEM

Inspecting and Cleaning the Throttle Body

1. Remove the air intake housing, refer to *AIR INTAKE SYSTEM* subsection.
2. Visually inspect throttle plate and throttle body venturi for cleanliness.
3. Clean inside throttle body if necessary. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

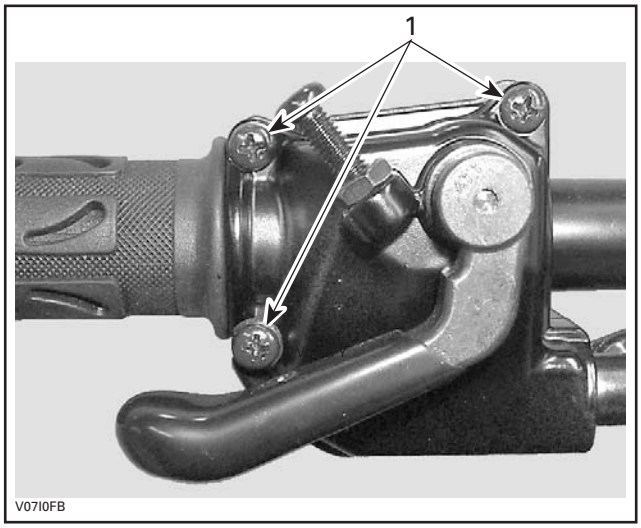
Lubricating the Throttle Cable

The throttle cable must be lubricated with a silicone based lubricant.

⚠ WARNING

Always use a silicone-based lubricant. Using another lubricant (like a water-based lubricant) could cause the throttle lever/cable to become sticky and stiff.

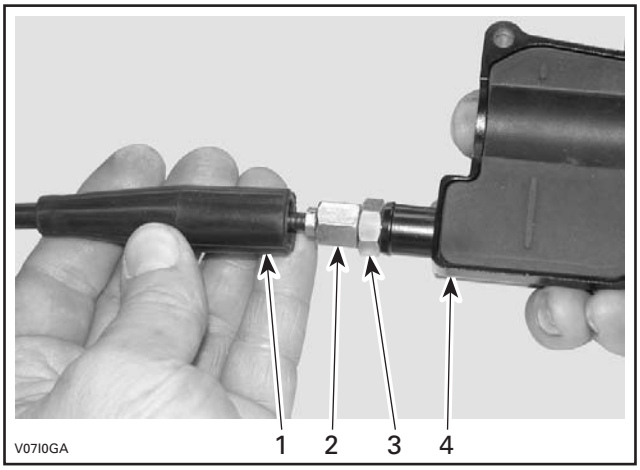
Open the throttle lever housing.



1. Remove these screws

Separate the housing.

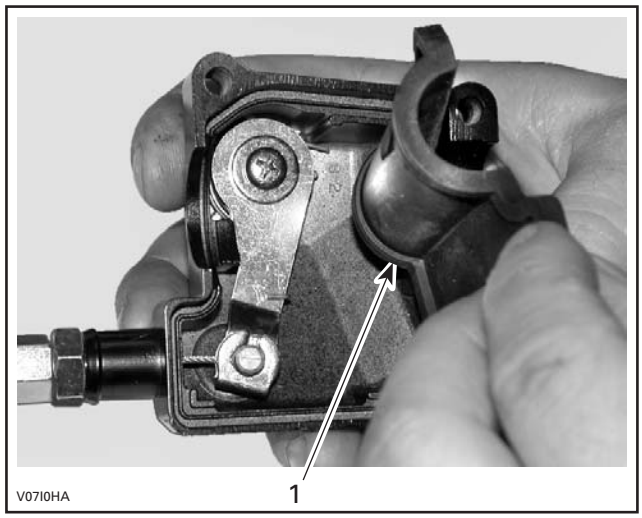
Slide rubber protector back to expose throttle cable adjuster.



1. Cable protector
2. Throttle cable adjuster
3. Lock nut
4. Throttle lever housing

Screw in the throttle cable adjuster.

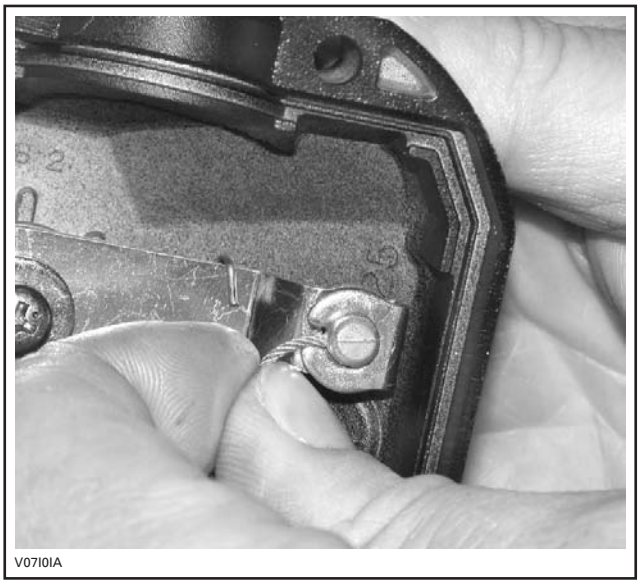
Remove inner housing protector.



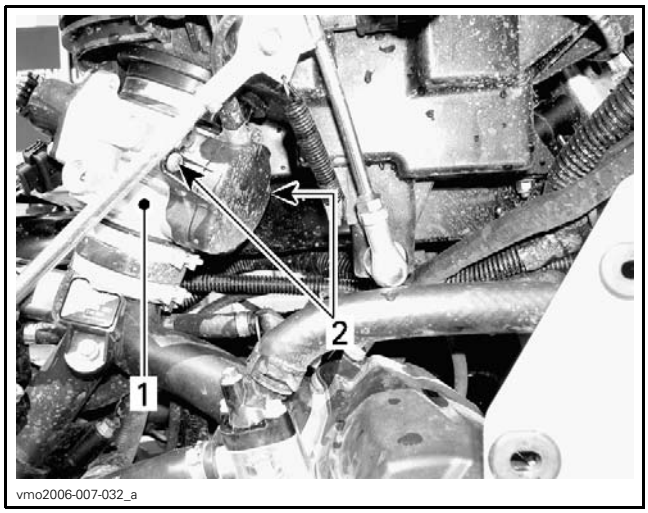
1. Inner housing protector

Remove the cable from the throttle lever housing.

NOTE: Slide cable in clip slot and remove the end of cable from clip.



Remove the throttle body side cover.



1. Throttle body
2. Side cover screws

Insert the needle of the lubricant can in the end of throttle cable adjuster.

TYPICAL

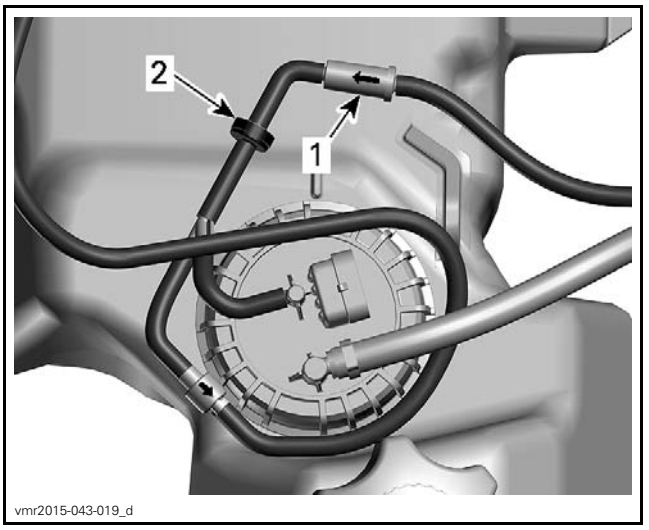
NOTE: Place a rag around the throttle cable adjuster to prevent the lubricant from splashing.

Add lubricant until it runs out at throttle body end of the throttle cable.

Reinstall and adjust the cable. Refer to *ELECTRONIC FUEL INJECTION* subsection.

Replacing the Fuel Tank Vent Breather Filter

Ensure breather filter is installed with the flow arrow pointing towards the vent inlet check valve.



1. Vent breather filter
2. Vent inlet check valve

Inspecting the Fuel System

1. Visually inspect fuel tank for cracks, wear marks, signs of leakage or any other damages.
2. Visually inspect fuel system hoses for proper rooting, cracking, wear marks, signs of leakage or any other damages.
3. Carry out a *FUEL TANK LEAK TEST*, refer to *FUEL TANK AND FUEL PUMP* subsection.

⚠ WARNING

All fuel system leaks must be repaired. Damaged, worn or leaking fuel system components should be replaced to ensure fuel system tightness.

Testing the Fuel Pump Pressure

Refer to *FUEL TANK AND FUEL PUMP* subsection for procedure.

ELECTRICAL SYSTEM

Inspecting the Battery

Visually inspect battery casing for cracks or other damage. If casing is damaged, replace battery and thoroughly clean battery rack with water and sodium bicarbonate (baking soda).

Inspect battery posts condition and battery retainer plate.

For battery testing, refer to *CHARGING SYSTEM* subsection.

Replacing the Spark Plug

Spark Plug Access

For access to the LH spark plug, remove the LH inner fender panel.

For access to the RH spark plug, remove the RH side panel and extension(s).

Removing the Spark Plug

1. Remove spark plug cable from spark plug.
2. Clean the spark plug area using pressurized air.
3. Remove spark plug.

Installing the Spark Plug

Prior to installation, ensure that contact surfaces of the cylinder head and spark plug are free of grime.

1. Using a wire feeler gauge, set electrode gap as specified in *TECHNICAL SPECIFICATIONS*.
2. Apply LOCTITE 767 (ANTISEIZE LUBRICANT) (P/N 293 800 070) over the spark plug threads to prevent possible seizure.

NOTICE **Do not apply antiseize lubricant on the first 2 spark plug threads.**

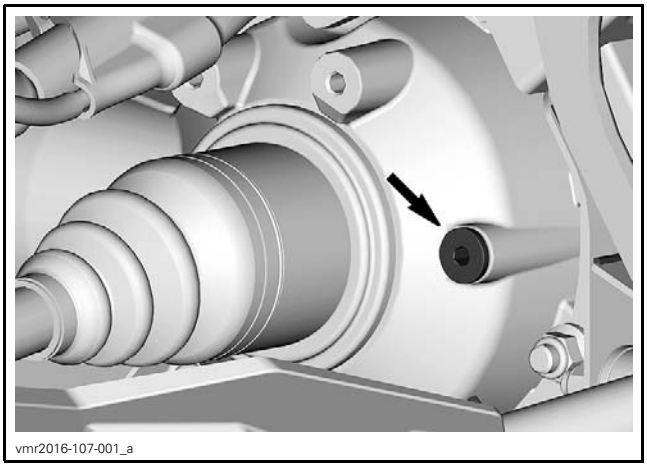
3. Hand screw spark plug into cylinder head, then tighten to specification using a torque wrench and an appropriate socket.

TIGHTENING TORQUE	
Spark plug	20 N•m ± 2 N•m (15 lbf•ft ± 1 lbf•ft)

DRIVE SYSTEM

Verifying the Front Differential Oil Level

1. Clean filler plug prior to checking oil level.



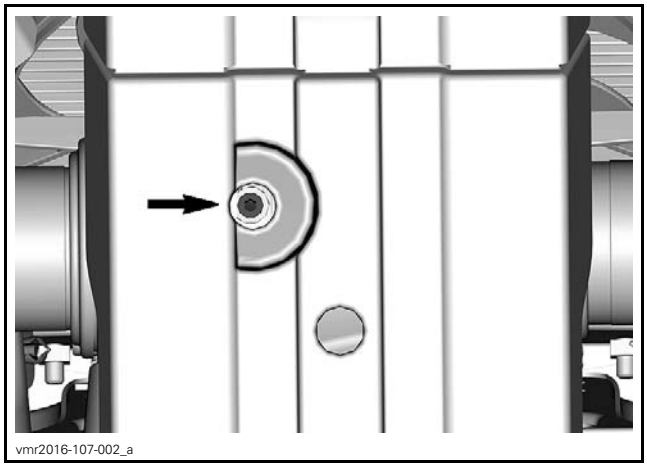
RH SIDE OF VEHICLE

2. With vehicle on a level surface, check oil level by removing filler plug. Oil level must reach the lower edge.
3. Reinstall filler plug with a NEW sealing washer.

TIGHTENING TORQUE	
Filler plug	22.5 N•m ± 2.5 N•m (17 lbf•ft ± 2 lbf•ft)

Replacing the Front Differential Oil

1. Place vehicle on a level surface. Set transmission in park position.
2. Clean filler and drain plug areas.
3. Place a drain pan under the front differential.
4. Remove filler plug.
5. Remove drain plug.



BOTTOM VIEW OF VEHICLE

NOTE: Allow enough time for oil to flow out.

6. Install and tighten drain plug to specification.

TIGHTENING TORQUE	
Drain plug	7.5 N•m ± 0.5 N•m (66 lbf•**in** ± 4 lbf•**in**)

7. Refill front differential with recommended oil.

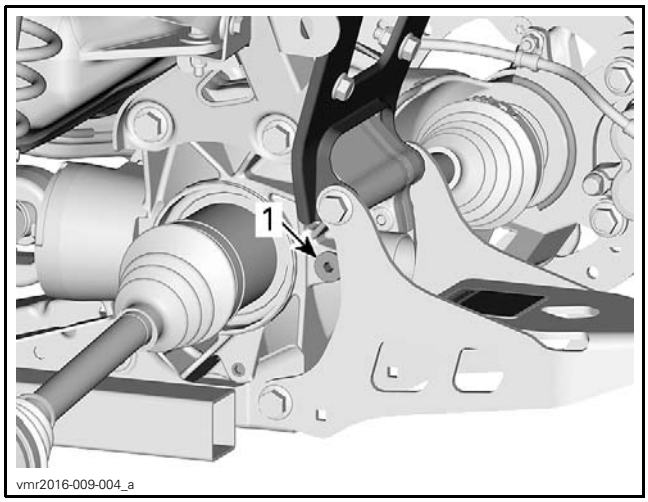
CAPACITY	RECOMMENDED OIL
500 ml (17 U.S. oz)	XPS SYNTHETIC GEAR OIL (75W 90) (P/N 293 600 043) or a 75W 90 (API GL-5) gear oil

8. Reinstall filler plug with a NEW sealing washer.
9. Tighten filler plug to specification.

TIGHTENING TORQUE	
Filler plug	22.5 N•m ± 2.5 N•m (17 lbf•ft ± 2 lbf•ft)

Verifying the Rear Final Drive Oil Level

1. Ensure vehicle is on a level surface.
2. Clean filler plug area.
3. Remove filler plug.



LH REAR SIDE OF VEHICLE
1. Filler plug

4. Verify the oil level by inserting a wire with a 90° bend through the oil filler hole.
5. Oil level must be within the following specification from the bottom of oil filler hole.

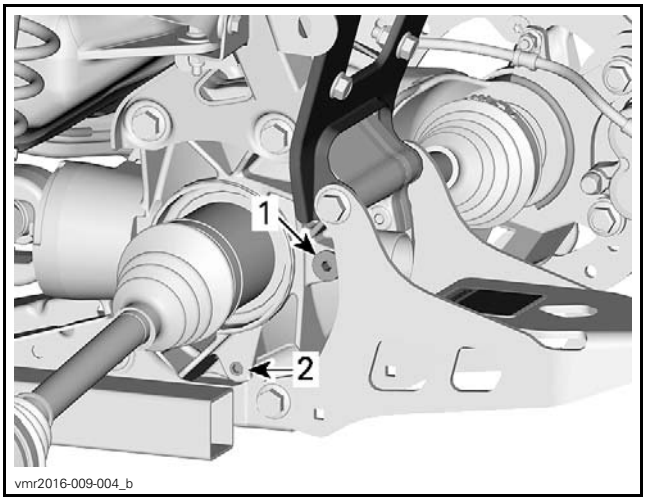
OIL LEVEL
20 mm ± 5 mm (9/16 in ± 3/16 in)

6. Reinstall filler plug with a **NEW** sealing washer.

TIGHTENING TORQUE	
Filler plug	22.5 N•m ± 2.5 N•m (17 lbf•ft ± 2 lbf•ft)

Replacing the Rear Final Drive Oil

1. Ensure vehicle is on a level surface.
2. Clean filler and drain plug areas.
3. Place a drain pan under rear final drive.
4. Unscrew filler plug.
5. Remove drain plug.



LH REAR SIDE OF VEHICLE
1. Filler plug
2. Drain plug

NOTE: Allow enough time for oil to flow out.

6. Install drain plug.

TIGHTENING TORQUE	
Drain plug	7.5 N•m ± 0.5 N•m (66 lbf•**in** ± 4 lbf•**in**)

7. Refill the rear final drive.

QUANTITY	RECOMMENDED OIL
250 ml (8 U.S. oz)	XPS SYNTHETIC GEAR OIL (75W 140) (P/N 293 600 140) or a 75W 140 (API GL-5) gear oil

8. Reinstall filler plug with a **NEW** sealing washer.

TIGHTENING TORQUE	
Filler plug	22.5 N•m ± 2.5 N•m (17 lbf•ft ± 2 lbf•ft)

Inspecting Drive Shaft Boot and Protector

1. Visually inspect each drive shaft boot for grease leak, cracks or opening.
2. Check if the drive shaft boot protectors are fixed firmly, not torn or otherwise damaged.
3. Replace if necessary.

Inspecting Drive Shaft Joint

Turn and move drive shaft back and forth to detect excessive play.

Inspecting Rear Propeller Shaft U-Joint

Check yoke U-joints for wear, backlash or axial play. Replace if necessary.

Lubricating Rear Propeller Shaft U-Joint

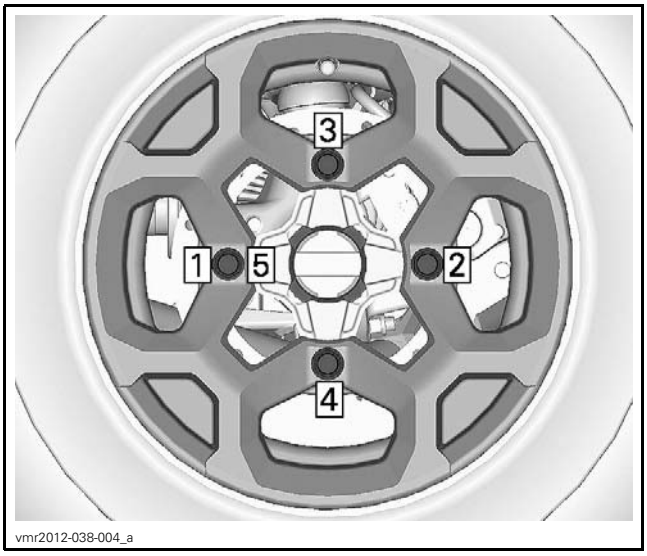
PROPELLER SHAFT U-JOINT LUBRICATION
Use Hi-temp bearing grease NLGI-2 or an equivalent

WHEELS AND TIRES

Checking the Wheel Lug Nut Torque

Tighten wheel lug nuts to the specified torque using the illustrated sequence.

TIGHTENING TORQUE	
Wheel lug nuts	100 N•m ± 10 N•m (74 lbf•ft ± 7 lbf•ft)



TIGHTENING SEQUENCE

Inspecting Wheel Bearing

1. Safely lift and support the vehicle.
2. Hold wheel by the top and the bottom and try to move it by pulling and push alternately with both hands. Check for any play.
3. If there is any looseness detected, replace the wheel bearing. refer to *STEERING SYSTEM* subsection.

NOTE: To properly locate play during this inspection, be sure to check other components for wear or looseness (ball joints, suspension pivots, etc). If necessary repair or replace all defective parts before checking the wheel bearing condition. Be careful not to misinterpret a loose ball joint as a loose wheel bearing.

STEERING SYSTEM

Inspecting the Steering System

Steering Column

Turn and move steering column back and forth to detect any abnormal play.

If abnormal play is detected, inspect upper and lower steering column half bushings. Replace halve bushings and O-rings as necessary, refer to *STEERING SYSTEM* subsection.

If steering column feels stiff, refer to *STEERING COLUMN HALF BUSHING CLEANING AND LUBRICATION* in this subsection.

Tie-Rod End

Check tie-rod end ball joint for:
– Damage
– Pitting
– Abnormal play.

Replace if necessary.

Cleaning and Lubricating Steering Column Half Bushing

Clean, inspect and lubricate upper and lower steering column half bushings and O-rings. Refer to *STEERING SYSTEM* subsection.

SUSPENSION

Inspecting Shock Absorber

Check shock absorber for any leaks, replace if necessary.

HPG Shock Absorber (without Remote Reservoir)

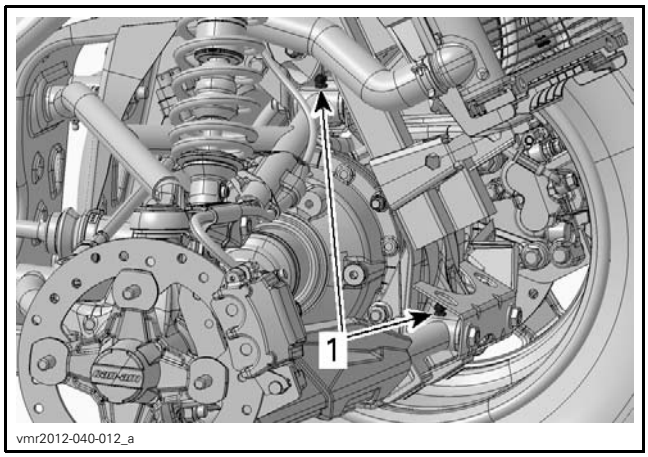
Check shock absorber for abnormal play:
– Front to back
– Up and down.

If any play is detected, replace shock absorber bushings. Refer to *REAR SUSPENSION* subsection.

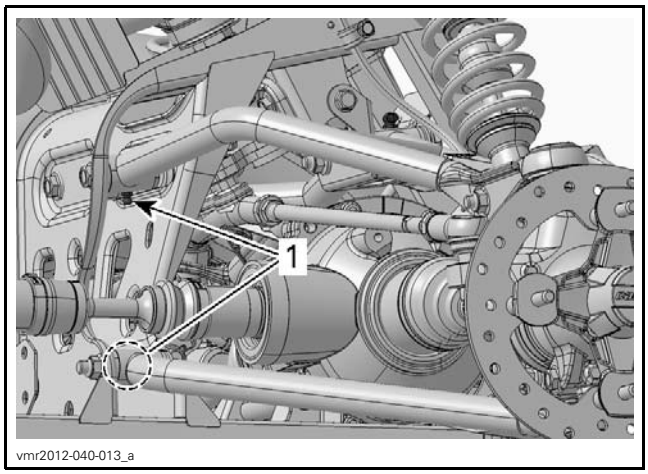
Lubricating Front Suspension Arm

Lubricate suspension arm at grease fittings.

SUSPENSION ARM LUBRICATION
SUSPENSION GREASE (P/N 293 550 033)



TYPICAL
1. Grease fittings



TYPICAL
1. Grease fittings

Inspecting Front Suspension Arm

1. Check suspension arm for:
   – Cracks
   – Pitting
   – Bending
   – Distortion.
2. Check suspension arm for abnormal play:
   – Side to side
   – Up and down.
3. If any play is detected, inspect:
   – Wear plates
   – Bushings
   – Sleeves.
4. Check ball joint for:
   – Damage
   – Pitting
   – Play.
5. Check ball joint bellows for:
   – Damage
   – Cracks.

Inspecting Rear Suspension Trailing Arm

1. Check trailing arms for:
   – Cracks
   – Pitting
   – Bending
   – Distortion.
2. Check trailing arm for abnormal play:
   – Side to side
   – Up and down.
3. If any play is detected, inspect:
   – Spacers
   – Bearings
   – Inner spacers.

Inspecting and Lubricating Rear Stabilizer Bar Bushing

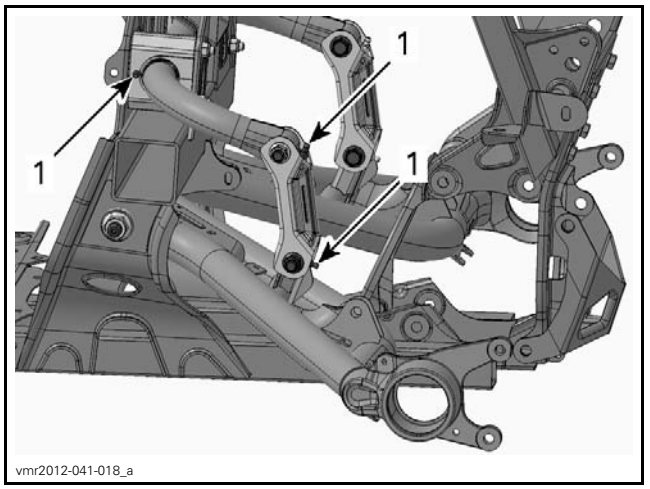
Rear Stabilizer Bar Bushing Inspection

Inspect bushings for:
– Cracks
– Damage
– Abnormal wear.

Lubricating Rear Stabilizer Bar Bushing

Lubricate bushings at grease fittings.

LUBRICATION	
Stabilizer bar bushing	SUSPENSION GREASE (P/N 293 550 033)



TYPICAL
1. Grease fittings

BRAKES

Recommended Brake Fluid

Always use brake fluid meeting the specification DOT 4 only such as the BRAKE FLUID GTLMA DOT4 (P/N 293 600 131) or an equivalent.

⚠ WARNING

To avoid damage to the braking system, do not use other brake fluid types.

Verifying the Brake Fluid Reservoir Level

With vehicle on a level surface, check brake fluid in reservoirs for proper level.

NOTE: A low level may indicate leaks or worn brake pads.

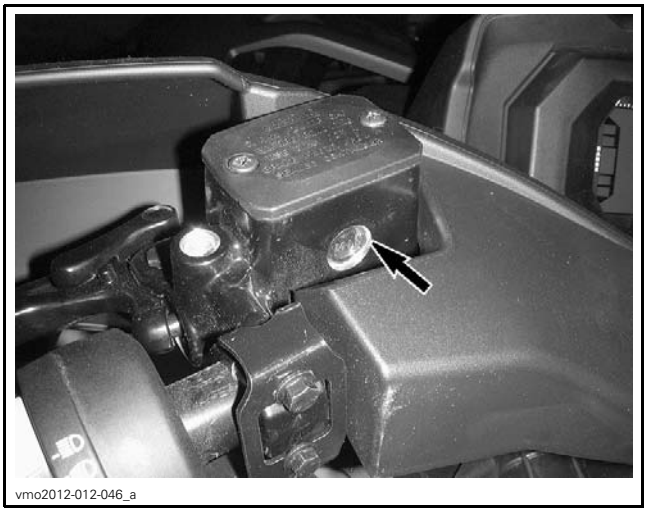
Front Brake Reservoir

Turn steering in the straight-ahead position to ensure reservoir is level.

Check the brake fluid level, the reservoir is full when the fluid reaches of the top of window.

Visually inspect lever boot condition.

Check for cracks, tears, etc. Replace if damaged.

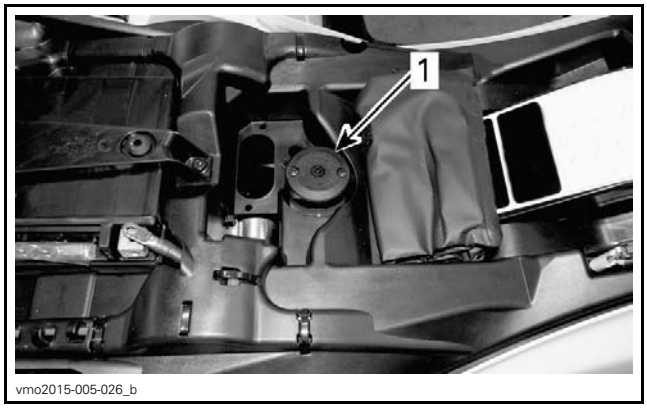


TYPICAL

Rear Brake Reservoir

Remove the seat.

With vehicle on a level surface, liquid should be between MIN. and MAX. level marks of brake pedal fluid reservoir.



1. Rear brake fluid reservoir

Adding Brake Fluid

Clean filler cap.

⚠ WARNING

Clean filler cap before removing.

Remove screws retaining the reservoir cap.

Remove reservoir cap.

Add fluid as required using a clean funnel. **Do not overfill.**

NOTICE **Brake fluid can damage plastic and painted surface. Wipe off and clean any spillage.**

Reinstall reservoir cap and tighten screws.

NOTE: Ensure filler cap diaphragm is pushed inside the cap before closing the brake fluid reservoir.

Inspecting and Cleaning Brake System

NOTICE **Do not clean brake components in petroleum based solvent. Use brake system cleaner only. Soiled brake pads must be replaced with new ones.**

To clean parts from the brake system, use the following recommended products or an equivalent.

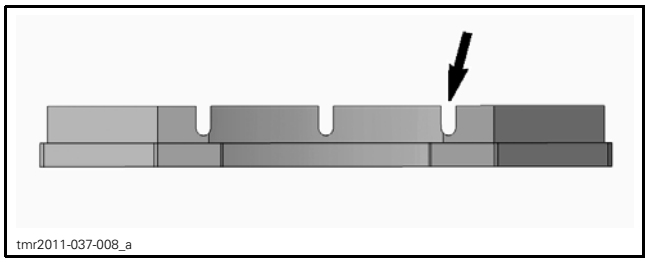
RECOMMENDED PRODUCT	
For United States of America	XPS BRAKES AND PARTS CLEANER (USA) (P/N 219 701 705)
For all other countries	XPS BRAKES AND PARTS CLEANER (P/N 219 701 776)

Brake Pads

1. Measure brake pad lining thickness.

BRAKE PAD MINIMUM THICKNESS
1 mm (1/32 in)

NOTE: The brake pad grooves are wear indicators.



BRAKE PAD GROOVE

NOTICE Brake pads must always be replaced in pairs.

Brake Caliper

1. Remove caliper then check the following components:
   – Check brake pad pin
   – Check caliper boots for cracks
   – Check caliper movement on its support
   – Check pistons movement
   – Check pistons for scratches, rust or other damages.
2. Clean the following components using the recommended product or an equivalent:
   – Brake pads
   – Caliper support and slider
   – Caliper pistons and pin.

NOTE: Do not remove pistons from caliper for cleaning them.

3. Lubricate caliper slider using an appropriate *BRAKE CALIPER SYNTHETIC GREASE*.

Brake Disc

1. Check brake disc as follows:
   – Check disc thickness
   – Check disc surfaces
   – Check disc warpage.

NOTE: Refer to *BRAKE DISC INSPECTION* in *BRAKES* subsection for details.

2. Clean brake disc using the recommended product or an equivalent.

Master Cylinder

1. Check master cylinder as follows:
   – Leaks or damages.
   – Brake fluid level.
   – Check cleanliness of master cylinder rod and boot.
   – Check master cylinder boot for cracks or damage. Replace as necessary.

Hand Lever

Check hand lever as follows:
– Lever pivot bolt cleanliness
– Lever pivot bolt movement.

Brake Pedal

1. Check brake pedal as follows:
   – Brake pedal pivot movement
   – Brake pedal pivot cleanliness.
2. If required, clean then lubricate brake pedal pivot using XPS SYNTHETIC GREASE (P/N 293 550 010).

Brake Hoses

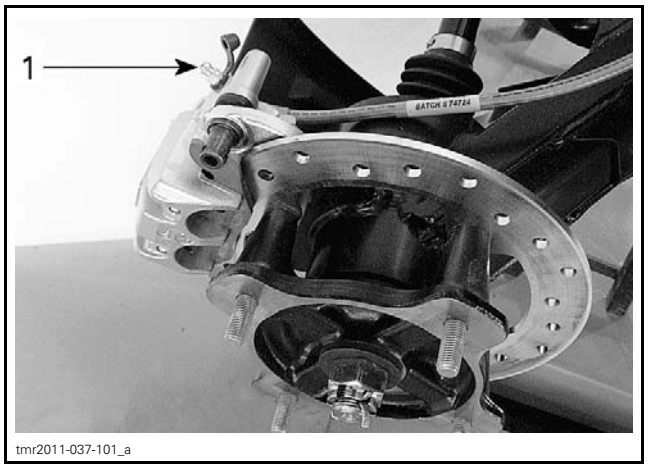
1. Check hoses for leaks, crushed, deformations, cracking or scrapes.

NOTE: Any deformation can restrict the proper flow of fluid and cause braking problems.

Replacing the Brake Fluid

Draining the Brake Fluid

1. Clean and remove reservoir cover with its diaphragm.
2. Connect a clear hose onto bleeder.



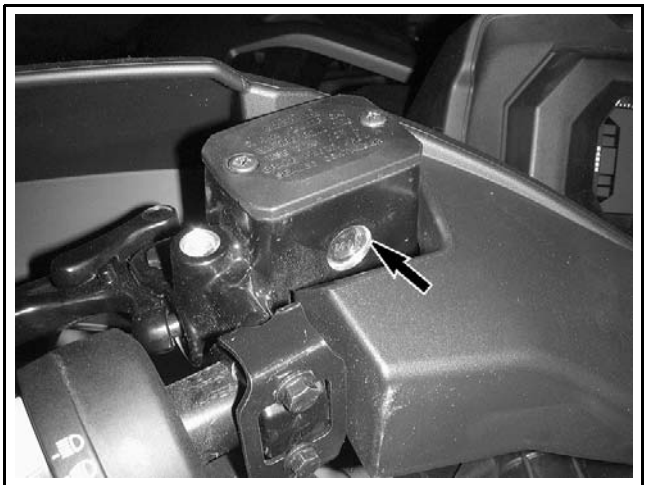
TYPICAL
1. Caliper bleeder

3. Loosen bleeder.
4. Pump brake lever(s) and/or brake pedal until no more fluid flows out.
5. Repeat draining procedure for the other bleeders.

NOTE: To locate all bleeders according to vehicle configuration, refer to *EXPLODED VIEW* and *BRAKE CIRCUIT CONFIGURATIONS*. See *BRAKES* subsection.

Filling the Brake Fluid

1. Add recommended brake fluid to MAX. mark. Do not overfill.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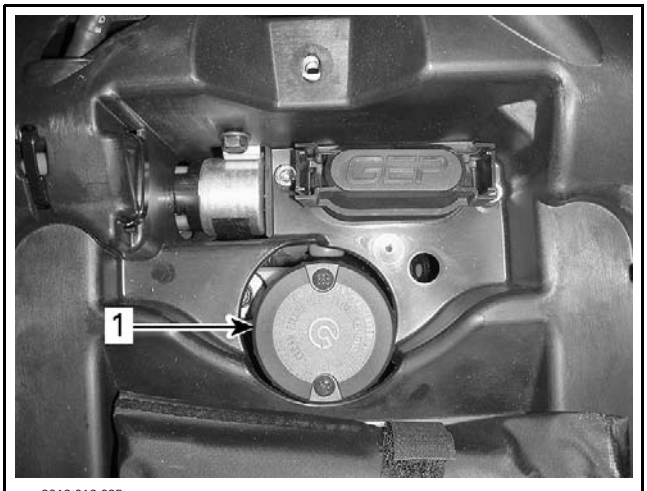
TYPICAL - BRAKE FLUID RESERVOIR



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TYPICAL - UNDER THE SEAT
1. Brake fluid reservoir

NOTE: If applicable, ensure filler cap diaphragm is fully retracted before closing the cap.

RECOMMENDED BRAKE FLUID
BRAKE FLUID GTLMA DOT4 (P/N 293 600 131)

⚠ WARNING

Use only DOT 4 brake fluid from a sealed container.
Do not use brake fluid from an old or already opened container.

Bleeding the Brake System (Using a Vacuum Pump)

NOTE: Brake fluid reservoir must be kept full to prevent air from being pumped into the system.

1. Unscrew all bleeders until brake fluid comes out then close it.

NOTE: To locate all bleeders according to vehicle configuration, refer to *EXPLODED VIEW* and *BRAKE CIRCUIT CONFIGURATIONS*. See *BRAKES* subsection.

2. Install the Vacuum/pressure pump onto bleeder.

REQUIRED TOOL	
VACUUM/PRESSURE PUMP (P/N 529 021 800)	

3. Place pump to vacuum position.
4. Pump vacuum pump a few times.
5. Loosen bleeder.
6. Continue to pump until no more air bubbles appear in clear hose.
7. Close then tighten bleeder.

TIGHTENING TORQUE	
Bleeder	5.5 N•m ± 1.5 N•m (49 lbf•**in** ± 13 lbf•**in**)

8. Add recommended brake fluid to MAX. mark. Do not overfill.
9. Perform bleeding procedure for the other bleeders.
10. Check brakes operation:
    – If brakes feel spongy, bleed system again then carry out the *BRAKE SYSTEM PRESSURE VALIDATION* as detailed in *BRAKES* subsection.

Bleeding the Brake System (Manual Procedure)

NOTE: Brake fluid reservoir must be kept full to prevent air from being pumped into the system.

1. Connect a clear hose onto bleeder.
2. Pump up system pressure slowly using brake pedal and/or lever(s) until resistance is felt.
3. Depress and hold brake pedal and/or lever(s).
4. Open bleeder and then close it.
5. Release brake pedal and/or lever(s) slowly.

NOTE: Do not release brake pedal and/or lever(s) until bleeder has been closed.

6. Repeat procedure until fluid flows out without any air bubbles.
7. Tighten bleeder.

TIGHTENING TORQUE	
Bleeder	5.5 N•m ± 1.5 N•m (49 lbf•**in** ± 13 lbf•**in**)

8. Perform bleeding procedure for the other bleeders.

NOTE: To locate all bleeders according to vehicle configuration, refer to *EXPLODED VIEW* and *BRAKE CIRCUIT CONFIGURATIONS*. See *BRAKES* subsection.

9. Check brakes operation:
   – If brakes feel spongy, bleed system again then carry out the *BRAKE SYSTEM PRESSURE VALIDATION* as detailed in *BRAKES* subsection.

BODY

Inspecting Seat Latch Operation

Ensure seat latch functions properly and that seat is properly secured when latched.

FRAME

Inspecting the Frame

Inspect frame for damages such as:
– Cracks
– Dents
– Twisting
– Deformation
– Corrosion
– Loose fasteners.

Pay particular attention to:
– Front and rear frame extensions (body modules)
– Underside of frame
– Suspension attachment points
– Engine attachment points.

Inspecting the Tow Hitch

1. Ensure tow hitch receptacle module is solidly mounted.
2. Inspect hitch for cracks and other damages.
3. Repair or replace if necessary.

STORAGE PROCEDURE

SERVICE PRODUCTS

Description	Part Number	Page
BRP HEAVY DUTY CLEANER	293 110 001	3
XPS FUEL STABILIZER	413 408 601	1
XPS LUBE	293 600 016	1, 3
XPS MULTI-PURPOSE CLEANER	219 701 709	3
XPS STORAGE OIL (EXCEPT U.S. COUNTRY)	413 711 600	1
XPS STORAGE OIL (U.S. COUNTRY ONLY)	413 711 900	1

GENERAL

If the ATV is not used or is to be stored for an extended period of time, more than 4 months, be sure to perform the storage procedures described below.

Where applicable, refer to the appropriate subsections in this manual for details of the required tasks as outlined in these procedures.

PROCEDURES

NOTE: To facilitate the inspection and ensure adequate lubrication of components, it is recommended to clean the entire vehicle. Refer to *VEHICLE CLEANING* in this subsection.

FUEL SYSTEM

Fuel System Protection

Pour fuel stabilizer in fuel tank and fill up fuel tank.

Start vehicle to allow for fuel stabilizer to spread through the fuel system.

Follow the manufacturer's instructions for proper use.

RECOMMENDED FUEL SYSTEM PROTECTION
XPS FUEL STABILIZER (P/N 413 408 601)

NOTICE **Fuel stabilizer should be added prior to engine lubrication to ensure fuel system components protection against varnish deposits.**

ENGINE

Engine Internal Lubrication

Engine internal parts must be lubricated to protect them from rust formation during the storage period.

Proceed as follows:

1. Remove side body panels.
2. Remove spark plugs.
3. Spray storage oil into each cylinder (see following table).

NOTE: Use the storage oil as per country availability.

RECOMMENDED PRODUCTS
XPS STORAGE OIL (EXCEPT U.S. COUNTRY) (P/N 413 711 600)
XPS STORAGE OIL (U.S. COUNTRY ONLY) (P/N 413 711 900)

4. Press start button, 1 or 2 seconds maximum, to lubricate cylinders.
5. Reinstall spark plugs.

NOTE: Do not run engine during storage period.

Engine Air Intake System

Remove parts required for access to engine air inlet hose, refer to *AIR INTAKE SYSTEM* subsection.

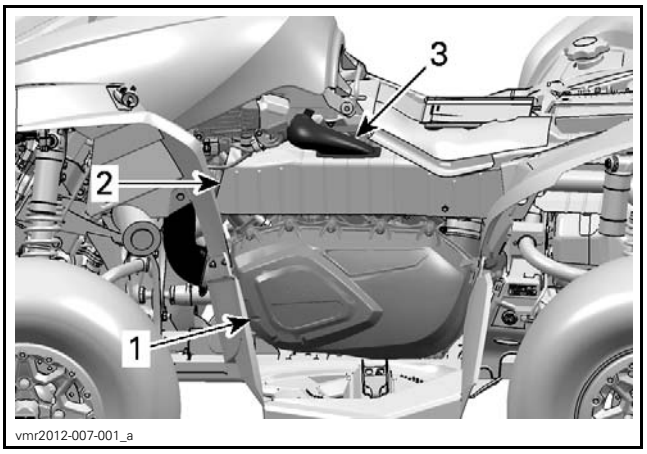
Block engine air inlet hose using a rag to prevent intrusion of small animals.

CVT Protection

1. Remove drive belt. Refer to *CONTINUOUSLY VAIABLE TRANSMISSION (CVT)*.
2. Inspect and clean pulleys.
3. Protect pulleys by spraying XPS LUBE (P/N 293 600 016) on pulley faces.

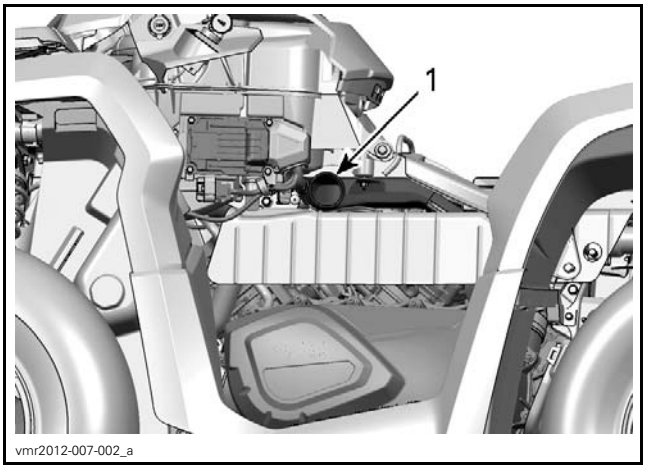
NOTE: Do not reinstall drive belt.

4. Close CVT cover.
5. Remove CVT outlet from exhaust system heat shield and from CVT outlet hose.



TYPICAL
1. *CVT cover*
2. *Exhaust system heat shield*
3. *CVT outlet*

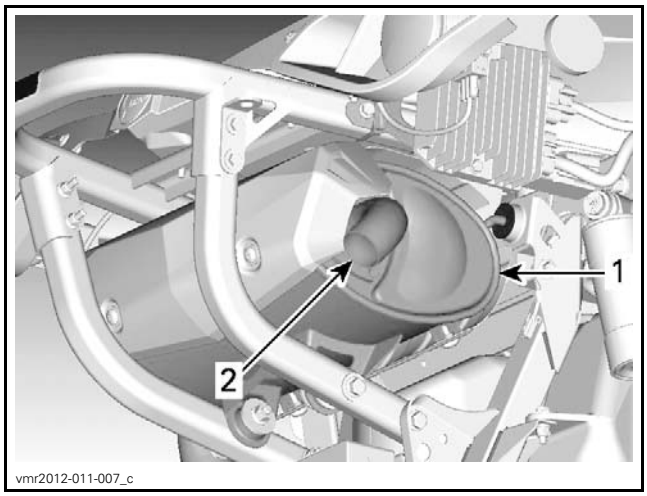
6. Block CVT outlet hose using a rag.



TYPICAL
1. *CVT outlet hose*

Exhaust System

Block muffler outlet using a rag to avoid intrusion of small animals.



TYPICAL - RENEGADE MODEL ILLUSTRATED
1. *Muffler*
2. *Block with rag here*

ELECTRICAL SYSTEM

Battery Removal

Remove battery from ATV.

Store and charge battery as per battery manufacturer's recommendations.

DRIVE SYSTEM

Lubricate rear propeller shaft U-joints.

CHASSIS

Lubrication

Lubricate front and rear suspension.

Tire Pressure

Inflate tires to recommended pressure.

Vehicle Cleaning

Wash and dry the vehicle.

NOTICE **Never use a high pressure washer to clean the vehicle. USE LOW PRESSURE ONLY (such as a garden hose). The high pressure can cause electrical or mechanical damages.**

Remove any dirt or rust.

To clean plastic parts, use only flannel cloths and XPS ATV Wash (P/N 219 701 702) or soapy water.

To clean vinyl parts, use only flannel cloths and a mild non abrasive multipurpose cleaner.

RECOMMENDED PRODUCT FOR PLASTIC PARTS
XPS ATV Wash (P/N 219 701 702)
Soapy water

NOTICE It is necessary to use flannel cloths on plastic parts to avoid damaging surfaces. Never clean plastic parts with strong detergent, degreasing agent, paint thinner, acetone, products containing chlorine, etc. To avoid damaging the glossy finish on Polypropylene body parts, never use:

– Petroleum based cleaning products
– XP-S ATV Finishing Spray (P/N 219 701 704)
– XP-S ATV Cleaning Kit (P/N 219 701 713).

RECOMMENDED PRODUCT FOR VINYL PARTS
XPS MULTI-PURPOSE CLEANER (P/N 219 701 709)

To clean heavily soiled parts of the vehicle, including metallic parts use the following.

RECOMMENDED PRODUCT FOR HEAVILY SOILED PARTS
BRP HEAVY DUTY CLEANER (P/N 293 110 001)

Inspect the vehicle and repair any damage. Touch up all metal spots where paint has been scratched off.

Spray all metal parts with an appropriate lubricant for rust protection.

RECOMMENDED RUST PROTECTION
XPS LUBE (P/N 293 600 016)

Vehicle Protection

Protect the vehicle with a cover to prevent dust accumulation during storage.

NOTICE The vehicle has to be stored in a cool and dry place, and covered with an opaque tarpaulin. This will prevent sun rays and grime from affecting plastic components and vehicle finish.

PRESEASON PREPARATION

Proper vehicle preparation is required after a storage period.

Any worn, broken or damaged parts found must be replaced.

Remove rags that were installed for storage: engine air inlet hose, CVT outlet hose and muffler.

Clean drive and driven pulleys to remove storage protective lubricant, then reinstall drive belt. Refer to *CONTINUOUSLY VARIABLE TRANSMISSION (CVT)*.

Remove parts required to allow inspection of entire engine air inlet system. Check for animal nests and other foreign material. Reinstall removed parts.

Drain fuel tank and fill with fresh fuel if a fuel stabilizer was not used for storage.

Reinstall battery. Refer to *CHARGING SYSTEM* subsection.

Inflate tires to the recommended pressure.

Do each items indicated in the table entitled:

EVERY 3 000 KM (2,000 MI) OR 100 HOURS (whichever comes first)
EVERY 1 500 KM (1,000 MI) OR 50 HOURS (whichever comes first)

NOTE: If the EVERY 6 000 km (4,000 mi) OR 200 HOURS OF OPERATION maintenance service is due, also perform the related items as per the *MAINTENANCE SCHEDULE*.

Test drive vehicle.

SPECIAL PROCEDURES

SERVICE PRODUCTS

Description	Part Number	Page
XPS LUBE	293 600 016	2

GENERAL

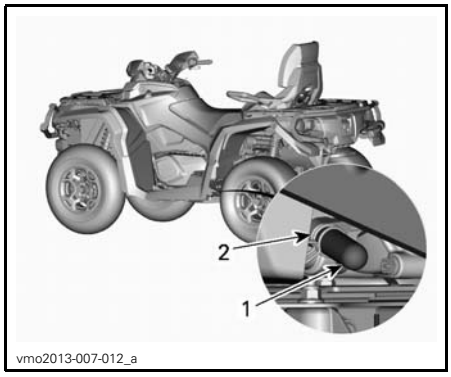
NOTE: Component failures resulting from these events are not warrantable.

Refer to the appropriate subsections in this manual for details of the required tasks as outlined in these procedures.

WHAT TO DO IF WATER IS IN THE CVT

The CVT drain plug is located on the rear portion of the CVT cover. It is accessible from the rear LH fender.

Inspect the CVT drain plug to validate if water is present.



1. Drain plug
2. Spring clamp

NOTICE If water is present in the CVT, it could result in belt slippage. The engine will accelerate but the vehicle will remain still.

If water is present, remove CVT drain plug to expel water.

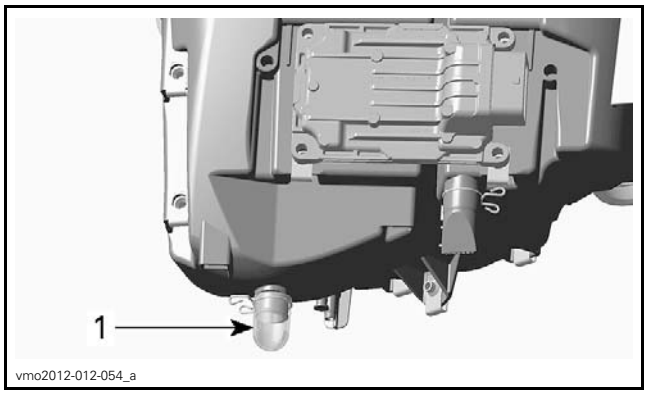
Reinstall the drain plug and secure it using the spring clamp.

NOTE: Make sure hose is properly inserted on CVT cover nipple.

If an appreciable amount of water is drained from the CVT cover, remove the cover and properly service the CVT.

WHAT TO DO IF WATER IS IN THE AIR FILTER HOUSING

Inspect the drain reservoir underneath the air filter housing to validate if water is present.



TYPICAL
1. Air filter housing drain reservoir

If water is present, press clamp and remove reservoir to drain water from air filter housing.

If one of the following conditions is met, refer to *WHAT TO DO IF VEHICLE IS IMMERSED IN WATER*:

- If more than 50 ml (2 U.S. oz) of water (approximately 5 drain reservoirs) is found in the air filter housing.
- If any deposits are present in the drain reservoir.

NOTICE Failure to service vehicle properly may lead to component permanent damage.

WHAT TO DO IF VEHICLE IS TURNED OVER

In the event the vehicle was rolled over tilted on it's side; put the vehicle back on its wheel, wait 3 to 5 minutes, then check the following:

- Inspect air filter housing for oil accumulation, if any oil is found, clean air filter and air filter housing.
- Check engine oil level and refill if necessary.
- Check engine coolant level and refill if necessary.
- Check gearbox oil level and refill if necessary.

– Check rear final drive oil level and refill if necessary.
– Inspect suspension components and steering system components.
– Inspect body and chassis for any damages.
– Start engine. If the oil pressure light stays on, stop engine immediately and investigate the problem.
– After restarting engine, check for indicator lights or messages displayed in the multifunction gauge. Correct as required.

Limited model: Inspect ACS intake hose for any trace of oil. Clean thoroughly if oil is found in hose. If oil reached compressor, disassemble compressor and clean thoroughly.

⚠ WARNING

Do not use vehicle if any of the controls, steering, suspension or brakes are damaged or inoperative.

WHAT TO DO IF VEHICLE IS IMMERSED IN WATER

In the event the vehicle was immersed, proceed with the following.

NOTICE **A vehicle that was immersed may be damaged or prone to malfunctions (short and long term) if not serviced promptly and appropriately. Do not crank or start engine.**

Drain the entire air intake system. Inspect the throttle body. Remove parts as required.

Inspect and clean air box as needed. Remove parts as required.

Replace the air filter.

Drain, inspect and clean the CVT.

Limited model: Inspect ACS hose. If water is present, disassemble and dry compressor.

Inspect front differential and rear final drive vents. Clean or replace as necessary

Drain muffler and exhaust pipes (removal required).

Clean muffler spark arrester..

Remove fuse box covers. Check for presence of water. Dry as necessary.

Disconnect, clean and dry the following electrical connectors:
– ECM
– Multifunction gauge
– DPS.

Replace the engine oil (without starting the engine).

Replace gearbox oil.

Inspect fuel tank for water intrusion. If in doubt, flush fuel tank and refill with new fuel.

Inspect fuel tank vent system for water intrusion. Clean as required. Replace breather filter. Carry out a fuel pump pressure test.

Inspect brake system for water intrusion. Replace brake fluid as required.

Inspect all lights for water intrusion. Dry as required.

Inspect multifunction switch for water intrusion. Dry as required.

Remove spark plugs. Crank engine in drowned mode to expel any water.

⚠ CAUTION Keep away from spark plug holes to avoid being splashed when cranking engine.

Add a small quantity of engine oil in cylinders (approximately 2 teaspoonfuls).

Install spark plugs (replace if required).

⚠ WARNING

Before starting engine, use B.U.D.S. and check vehicle for fault codes.

Start the engine and allow it to run at idle speed until the engine reaches its operating temperature.

Stop the engine.

Change engine oil and filter.

NOTE: Change oil as many times as necessary, until there is no whitish appearance in engine oil.

Replace front differential oil.

Replace rear final drive oil.

Lubricate front and rear suspensions and propeller shaft joints.

Spray all metal parts with XPS LUBE (P/N 293 600 016).

Test drive to confirm proper operation.

ENGINE REMOVAL AND INSTALLATION

SERVICE TOOLS

Description	Part Number	Page
ENGINE LIFTING TOOL	529 036 022	5

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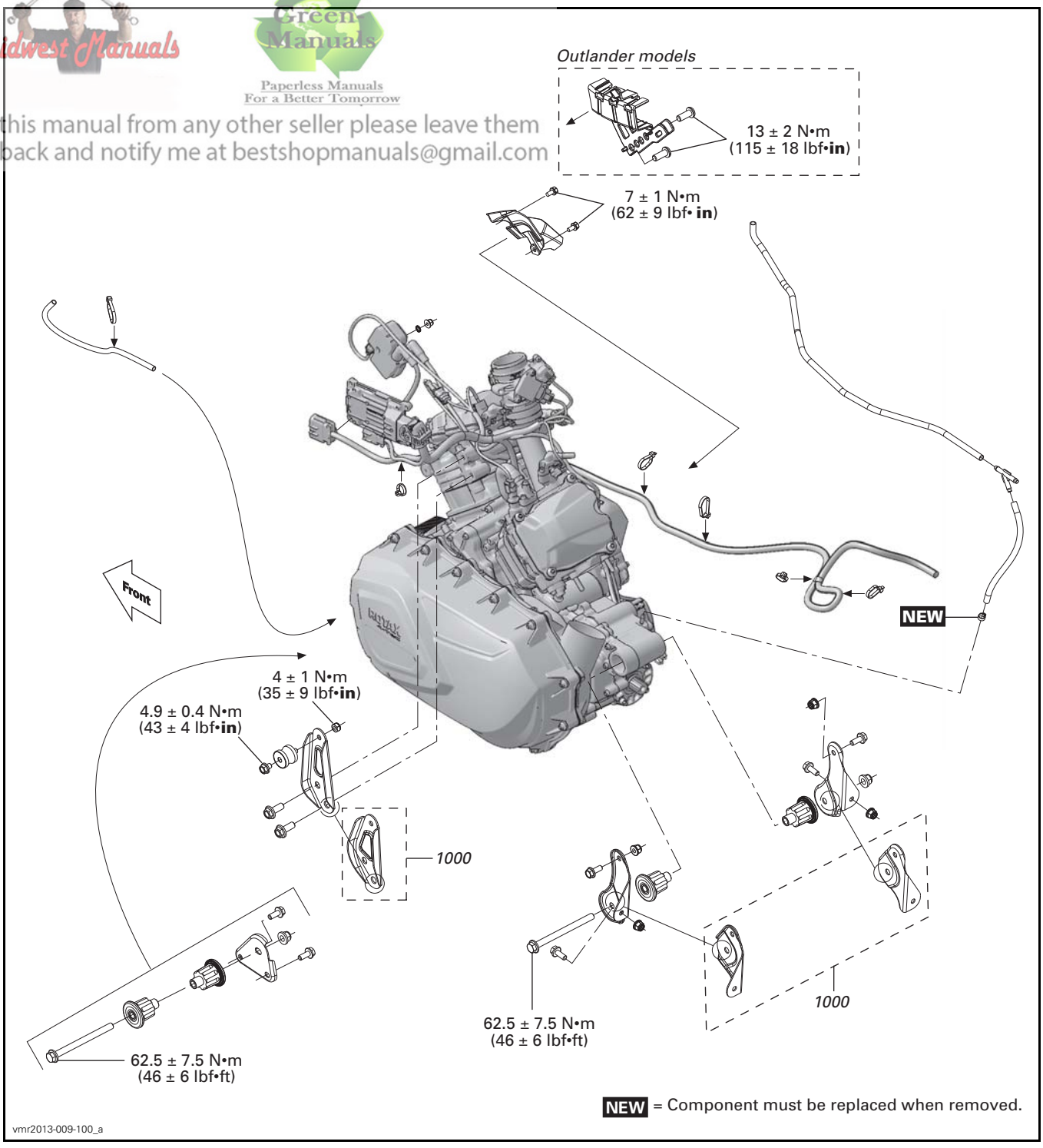


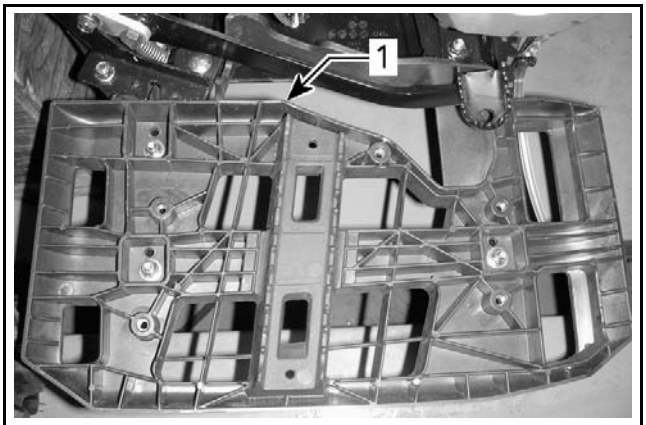
PROCEDURES

ENGINE REMOVAL

1. Place vehicle on a workstation equipped with an engine-lifting hoist.
2. Disconnect negative (-) cable from battery.
3. Carry out the following operations. Refer to table.

OPERATIONS	REFERENCES (SUBSECTION)
Safely lift and support the vehicle	*INTRODUCTION*
Release fuel pressure	*FUEL TANK AND FUEL PUMP*
Drain engine coolant	*PERIODIC MAINTENANCE PROCEDURES*
Remove front body module	*BODY*
Remove RH footrest panel	
Remove air filter housing	*AIR INTAKE SYSTEM*
Remove muffler	*EXHAUST SYSTEM*
Remove exhaust pipes	
Remove CVT air inlet	*CONTINUOUSLY VARIABLE TRANSMISSION (CVT)*
Remove CVT air outlet	
Disconnect positive (+) starter cable	*STARTING SYSTEM*
Disconnect TPS connector	*ELECTRONIC FUEL INJECTION (EFI)*
Disconnect MAPTS connector	
Remove intake manifold	*INTAKE MANIFOLD*
Remove spark plug cables	*IGNITION SYSTEM*

4. Remove RH footrest support.



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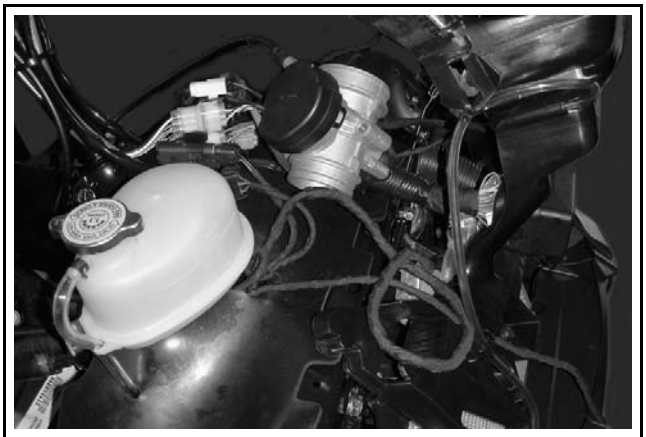
TYPICAL - OUTLANDER SHOWN
1. RH footrest support

5. Move throttle body aside to make room.


vmr2012-009-001

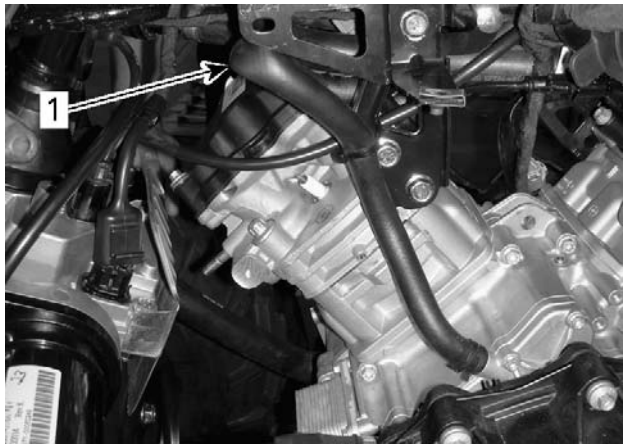
TYPICAL - THROTTLE BODY ATTACHED ON FRAME

6. Move master cylinder aside to make room.

vmr2012-009-002

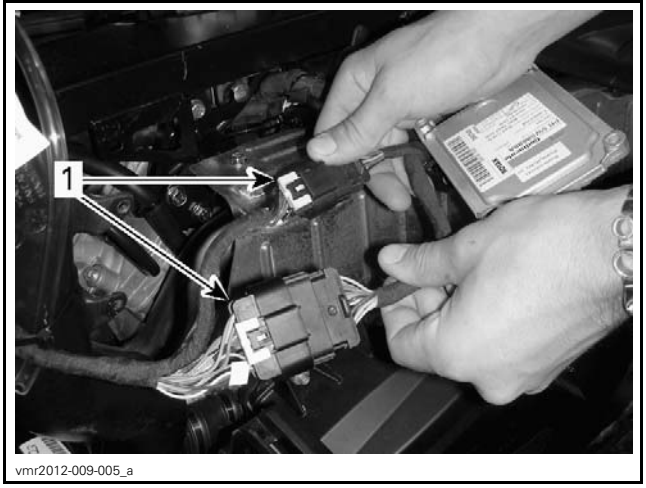
TYPICAL - MASTER CYLINDER ATTACHED ON REAR FENDER

7. Move crankcase vent hose as illustrated.



TYPICAL
1. Crankcase vent hose

8. Disconnect both engine harness connectors (HIC).



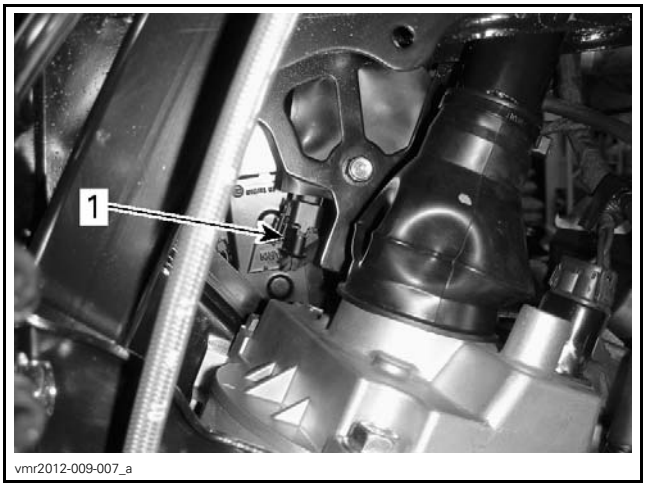
TYPICAL
1. Engine harness connectors (HIC)

9. Move ECM as illustrated.

TYPICAL

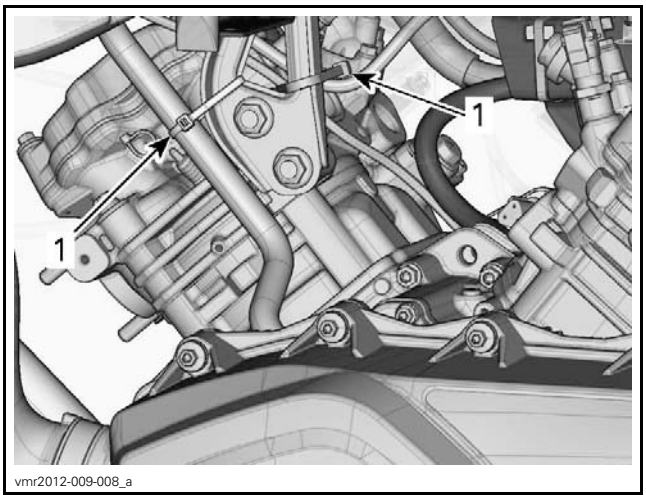
10. Cut locking ties from ignition coil harness.

11. Disconnect ignition coil connector.



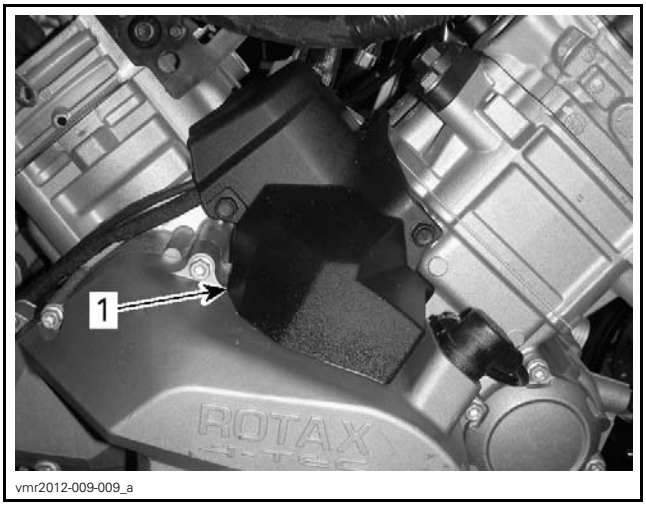
TYPICAL - FROM LH SIDE
1. Ignition coil connector

12. Remove the following locking ties.



TYPICAL
1. Locking ties

13. Remove plastic cover from engine.

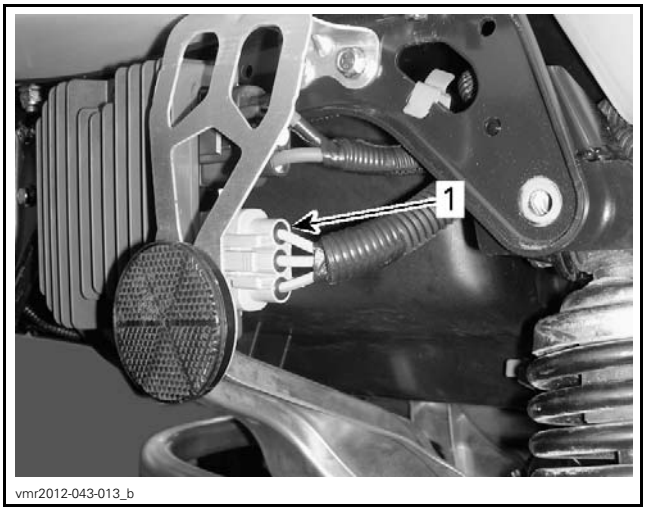


TYPICAL
1. Plastic cover

14. Remove harnesses support from engine.

TYPICAL
1. Harnesses support

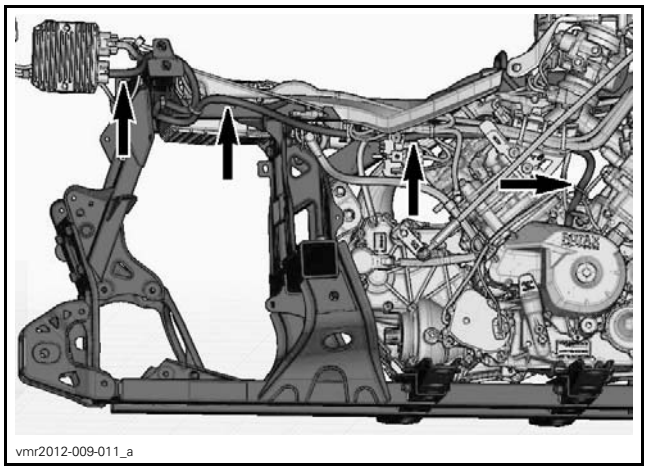
15. Disconnect magneto connector from voltage regulator rectifier.



TYPICAL - OUTLANDER SHOWN
1. Magneto connector

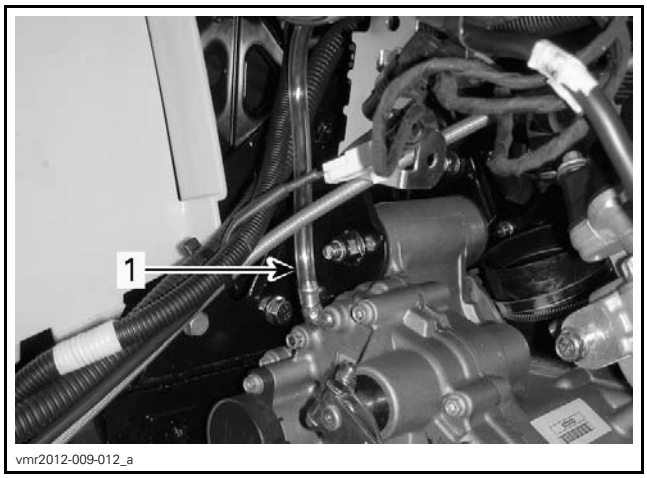
16. Remove magneto harness from its location along vehicle and gather it in a bundle near engine.

NOTE: It may be necessary to slightly lift the rear body module to ease magneto harness removal. Refer to *BODY* subsection.



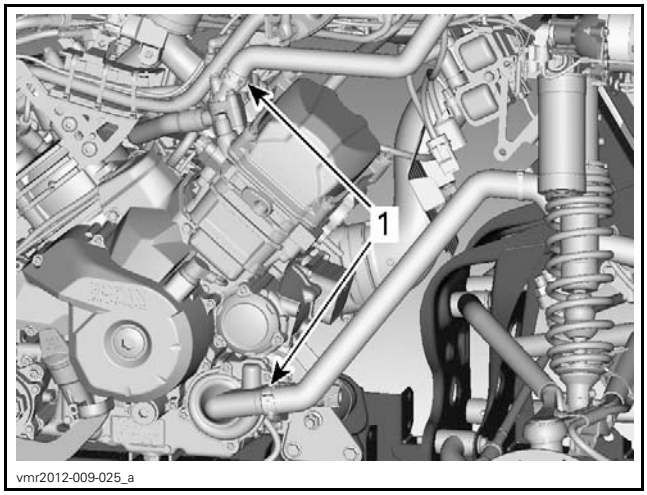
MAGNETO HARNESS (SOME PARTS REMOVED FOR CLARITY)

17. Disconnect vent hose from gearbox.

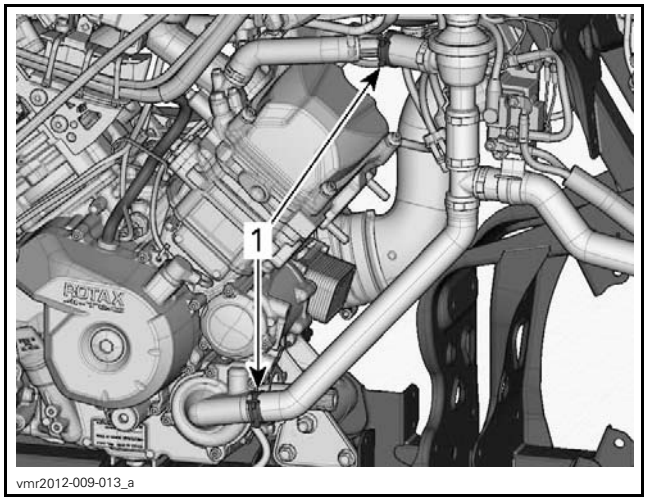


TYPICAL - OUTLANDER SHOWN
1. Vent hose

18. Disconnect coolant hoses as illustrated.

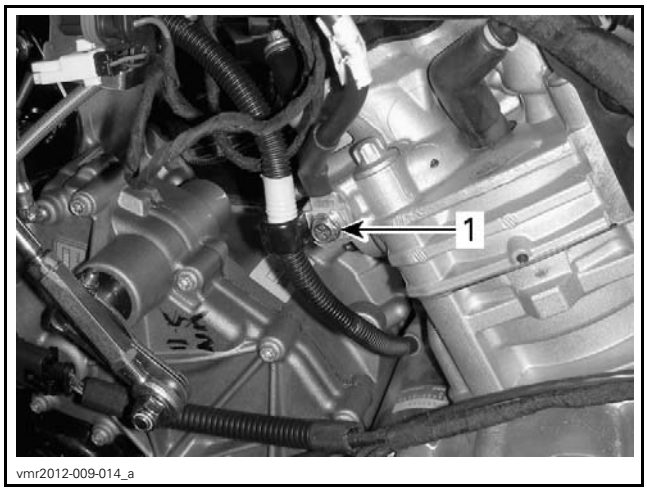


500/650/800R ENGINES - SOME PARTS REMOVED FOR CLARITY
1. Disconnect the following coolant hoses



1000 ENGINE - SOME PARTS REMOVED FOR CLARITY
1. Disconnect the following coolant hoses

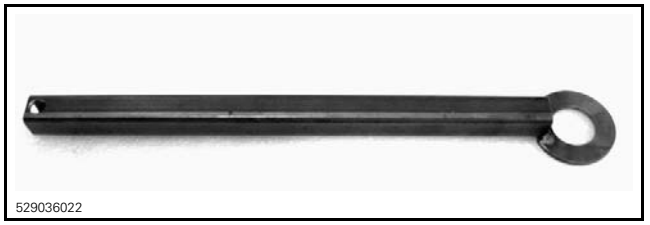
19. Remove main ground wire from engine.

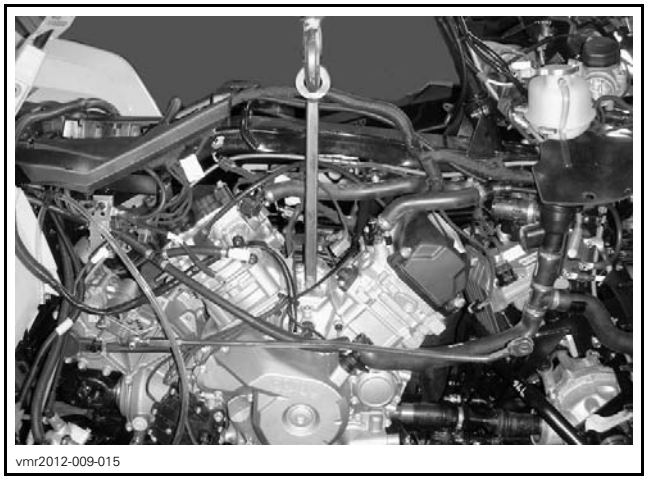


TYPICAL - OUTLANDER SHOWN
1. Main ground wire

Engine Lifting

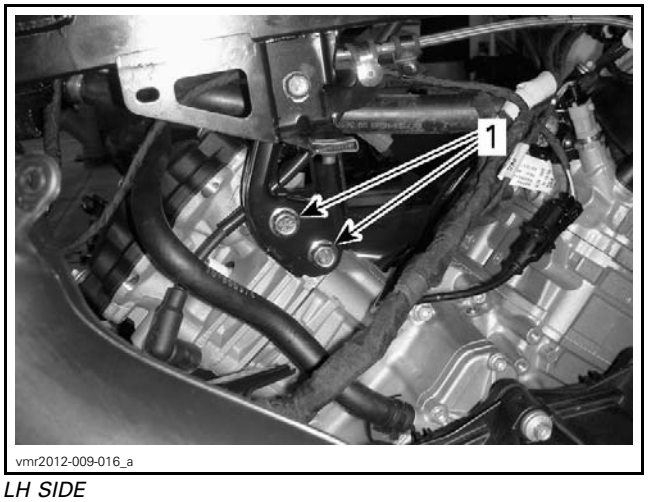
1. Install the ENGINE LIFTING TOOL (P/N 529 036 022) on engine.





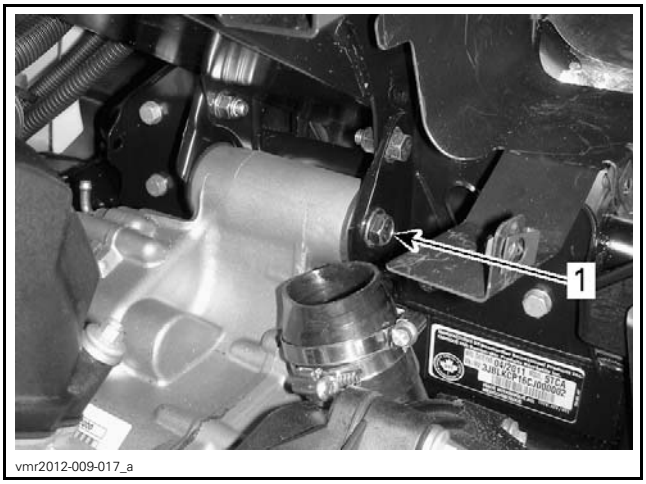
TYPICAL

2. Remove upper retaining screws from engine.



LH SIDE
1. Upper retaining screws

3. Remove rear retaining bolt from engine.



vmr2012-009-017_a

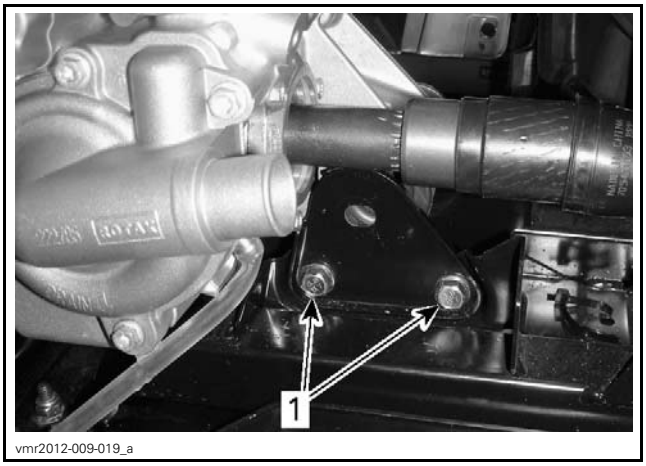
LH SIDE
1. *Rear retaining bolt*

4. Remove front retaining bolt from engine.

vmr2012-009-018_a

LH SIDE
1. *Front retaining bolt*

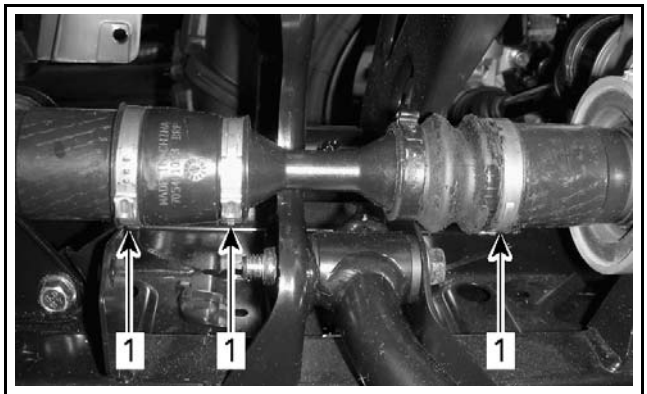
5. Remove engine support plate from frame.



vmr2012-009-019_a

RH SIDE
1. *Engine support plate screws*

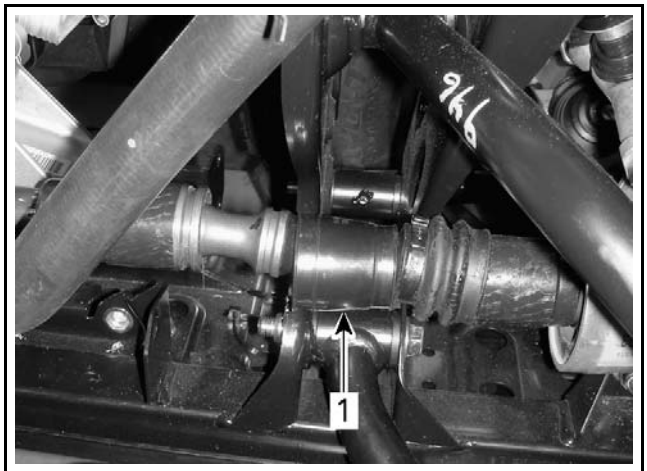
6. Remove the following Oetiker clamps from front propeller shaft.



vmr2012-009-020_a

1. *Oetiker clamps*

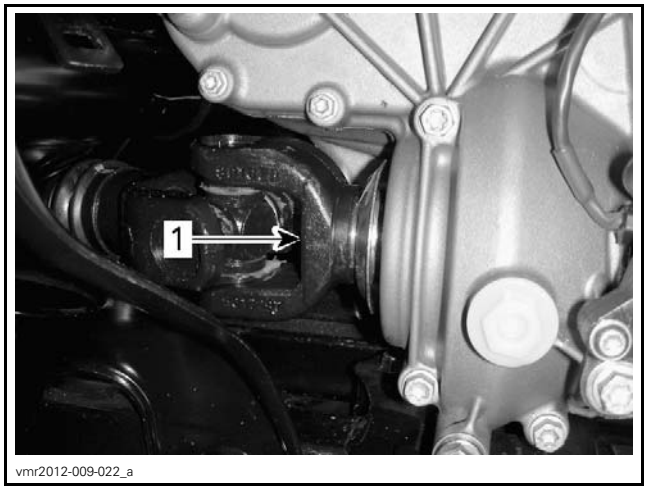
7. Move front propeller shaft bellows forward.



vmr2012-009-021_a

1. *Front propeller shaft bellows*

8. Remove propeller shaft screw from gearbox output shaft.

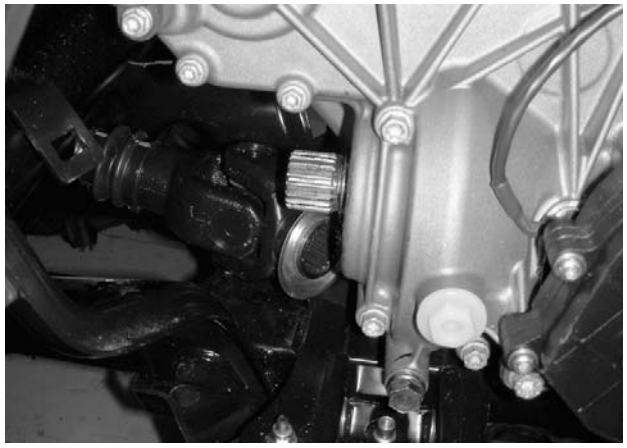


vmr2012-009-022_a

1. *Rear propeller shaft screw*

9. Slightly lift engine and move it forward to disconnect rear propeller shaft from engine.

10. Move propeller shaft yoke downwards to make room.



vmr2012-009-023

TYPICAL

11. Move engine rearward to disconnect front propeller shaft from engine.
12. Remove engine by the RH side.

vmr2012-009-024

TYPICAL

ENGINE INSTALLATION

The installation is the reverse of the removal procedure. However, pay attention to the following.

1. Inspect condition of engine mounts.
2. Install engine on vehicle.
3. Install all engine retaining bolts loosely.
4. Install and tighten propeller shaft screw. Refer to *REAR DRIVE* subsection.
5. Tighten engine retaining bolts to specification.

TORQUE	
Engine retaining bolts	62.5 N•m ± 7.5 N•m (46 lbf•ft ± 6 lbf•ft)

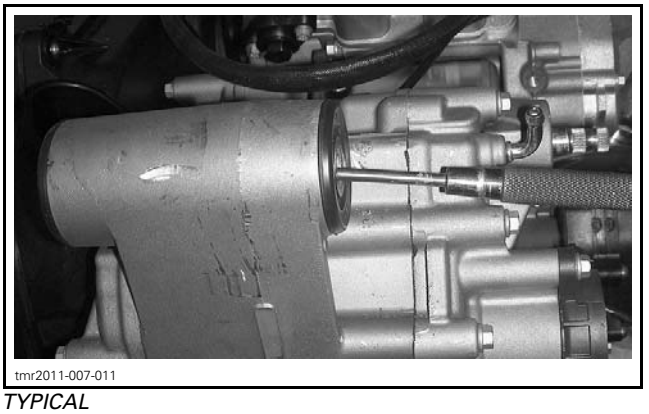
6. If applicable, fill engine as per specification. Refer to *LUBRICATION SYSTEM* subsection.
7. Fill and bleed cooling system. Refer to *PERIODIC MAINTENANCE PROCEDURE* subsection.
8. Check for any leaks.
9. Reinstall all the remaining parts as the reverse of removal procedure. Refer to exploded views and proper subsections.
10. Test drive vehicle to confirm proper operation.

ENGINE MOUNTS REPLACEMENT

NOTE: Use the same procedure for the front and rear engine mounts.

Engine Mount Removal

Insert a punch into engine mount bushing and push the opposite engine mount out.



tmr2011-007-011

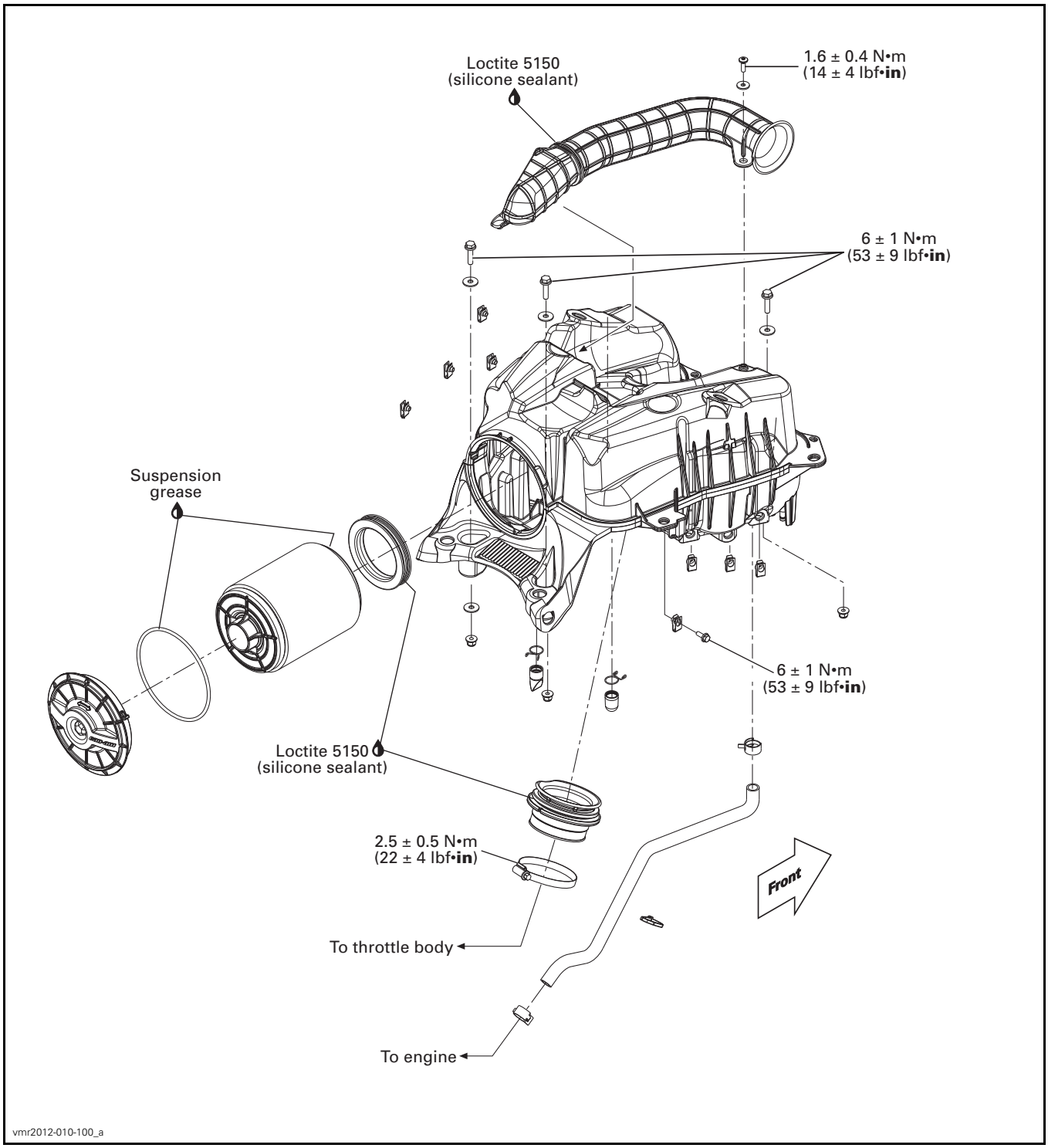
TYPICAL

Engine Mount Installation

The installation is the reverse of the removal procedure.

AIR INTAKE SYSTEM

AIR FILTER HOUSING



GENERAL

NOTICE Never modify the air intake system. Otherwise, engine performance degradation or damage can occur. The engine is calibrated to operate specifically with these components.

PROCEDURES

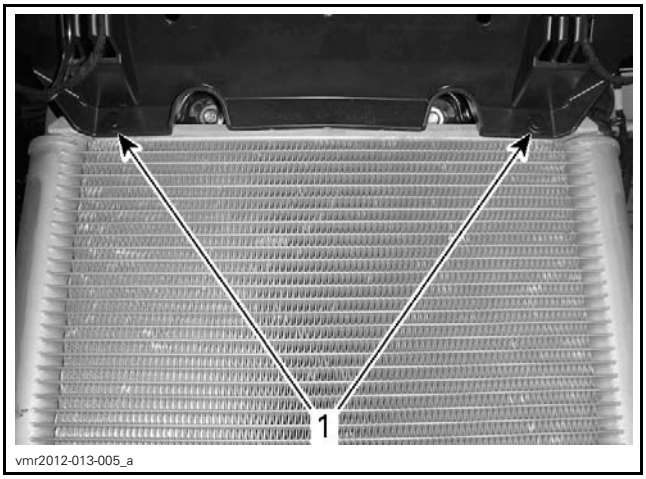
AIR FILTER

For air filter servicing, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

AIR FILTER HOUSING

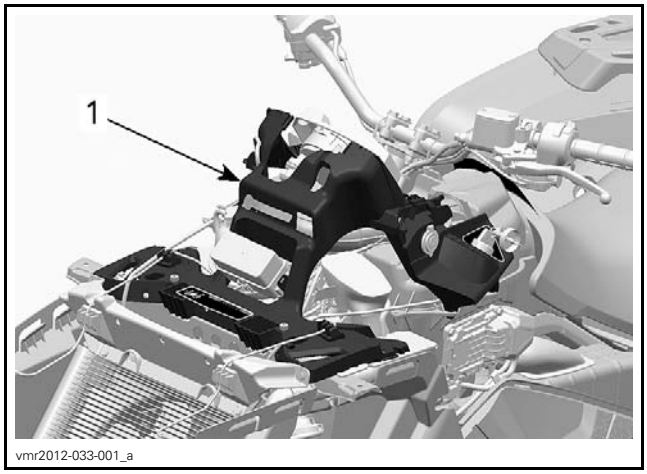
Air Filter Housing Removal

1. Remove front body module. Refer to *BODY* subsection.
2. On applicable models, remove the following plastic rivets.



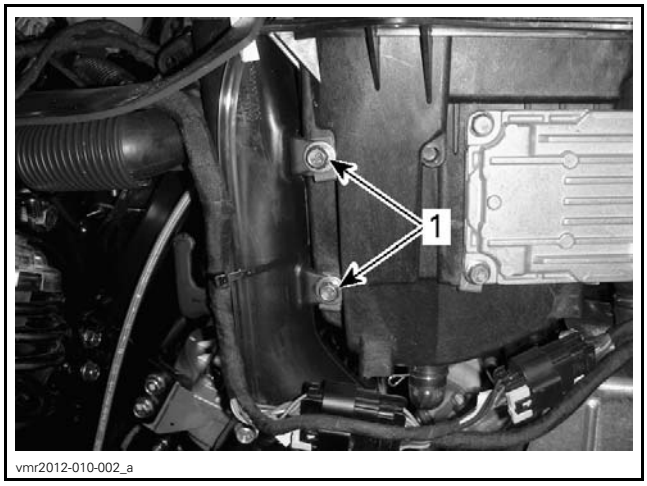
TYPICAL
1. Plastic rivets

3. On applicable models, move dashboard support toward front.



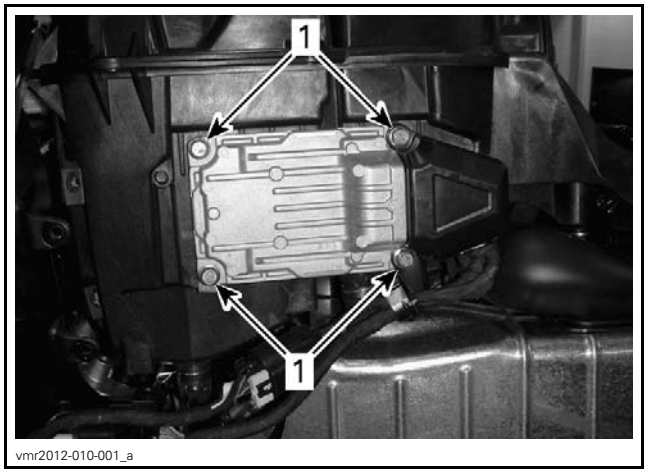
TYPICAL
1. Dashboard support

4. Remove screws securing CVT air inlet to air filter housing.



TYPICAL
1. CVT air inlet screws

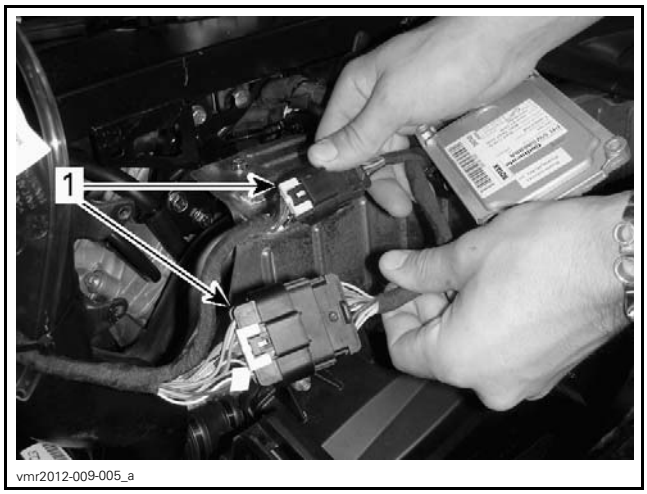
5. Remove ECM retaining screws.



1. ECM retaining screws

6. Disconnect both engine harness connectors (HIC).

7. Move ECM aside.



vmr2012-009-005_a

TYPICAL
1. Engine harness connectors (HIC)

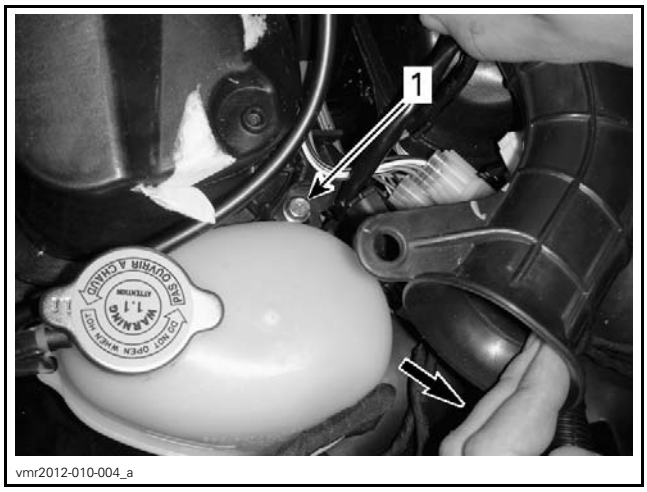
8. Remove air intake tube retaining screw.

vmr2012-010-003_a

1. Air intake tube retaining screw

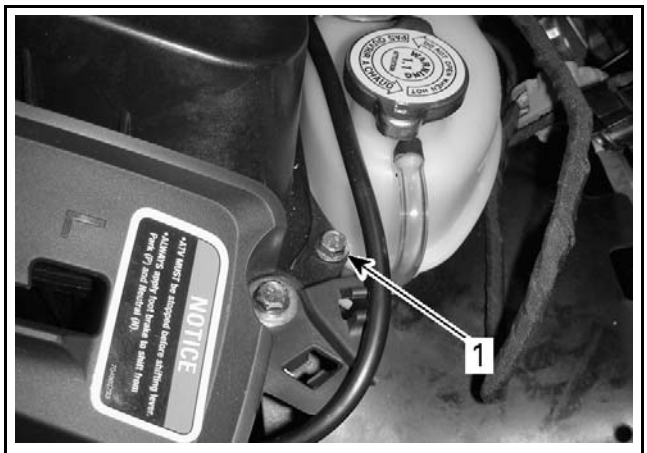
9. Move air intake tube to gain access to coolant tank LH screw.

10. Remove coolant tank retaining screws.



vmr2012-010-004_a

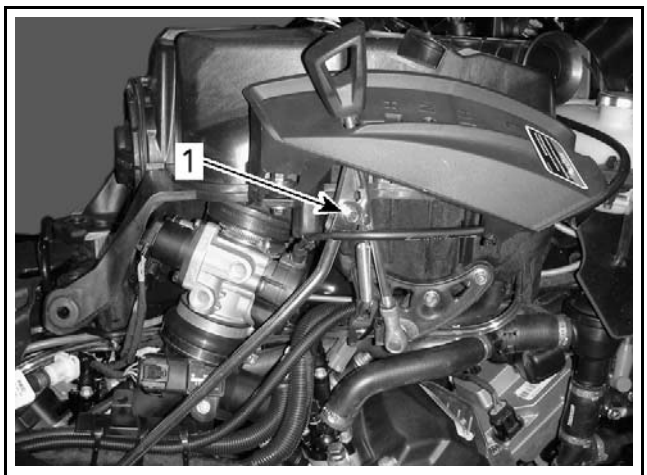
AIR INTAKE TUBE MOVED TO GAIN ACCESS
1. Coolant tank LH retaining screw



vmr2012-010-005_a

1. Coolant tank RH retaining screw

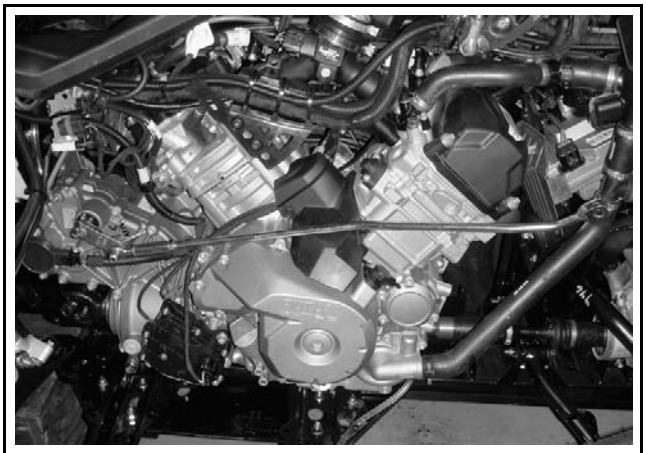
11. Detach link rod from shift lever.



vmr2012-010-006_a

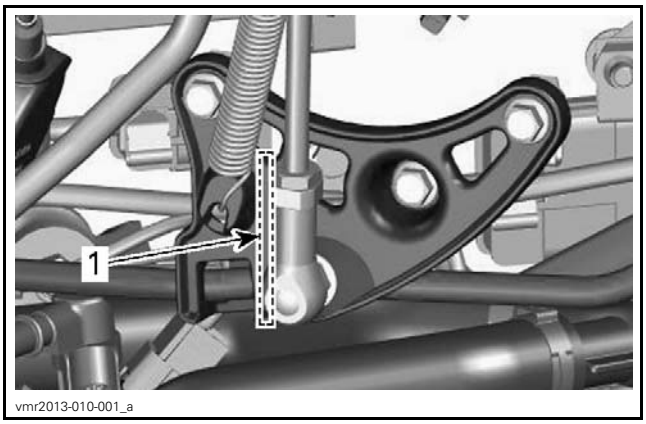
TYPICAL - OUTLANDER SHOWN
1. Link rod retaining bolt

12. Carefully move link rod downward.


vmr2012-010-007

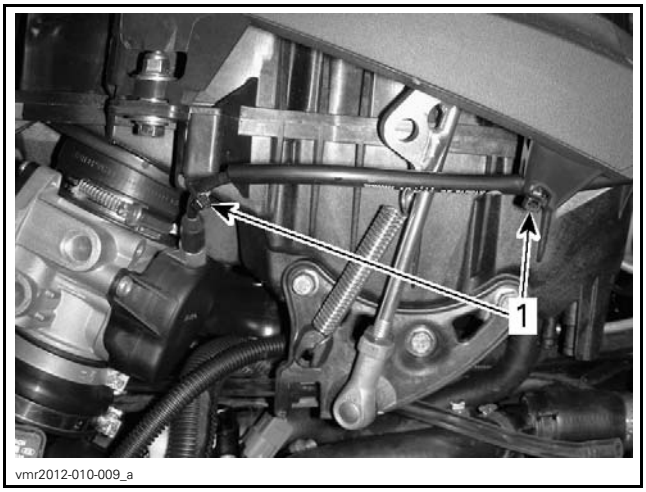
TYPICAL - OUTLANDER SHOWN

13. Remove the following locking ties.



vmr2013-010-001_a

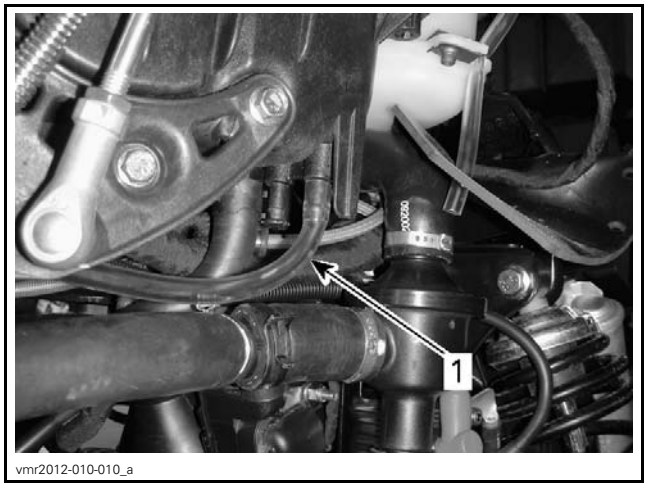
TYPICAL - OUTLANDER SHOWN
1. Locking tie to remove - location shown



vmr2012-010-009_a

TYPICAL - OUTLANDER SHOWN
1. Locking ties to remove

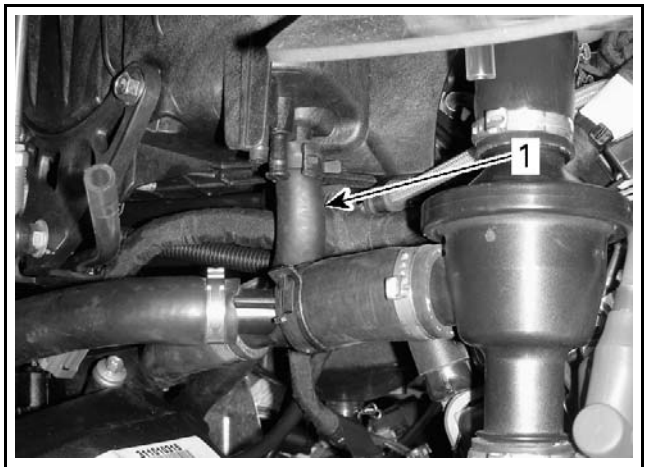
14. Detach gearbox vent hose from air filter housing.



vmr2012-010-010_a

TYPICAL
1. Gearbox vent hose

15. Detach crankcase vent hose from air filter housing.



vmr2012-010-011_a

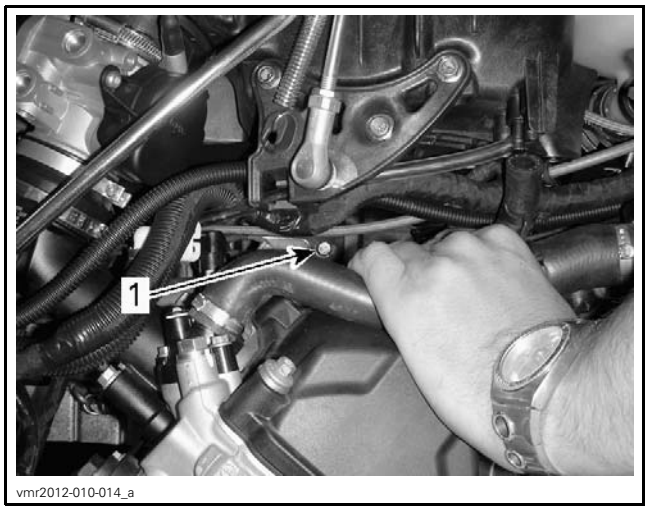
TYPICAL
1. Crankcase vent hose

16. Remove air filter housing retaining screws.

vmr2012-010-012_a

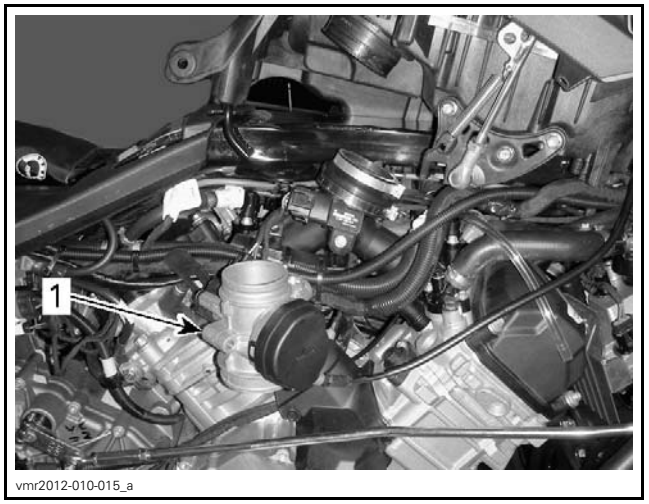
SCREWS LOCATED NEAR SEAT ANCHORAGE
1. Air filter housing retaining screws

SCREW LOCATED UNDER COOLANT TANK
1. Air filter housing retaining screw



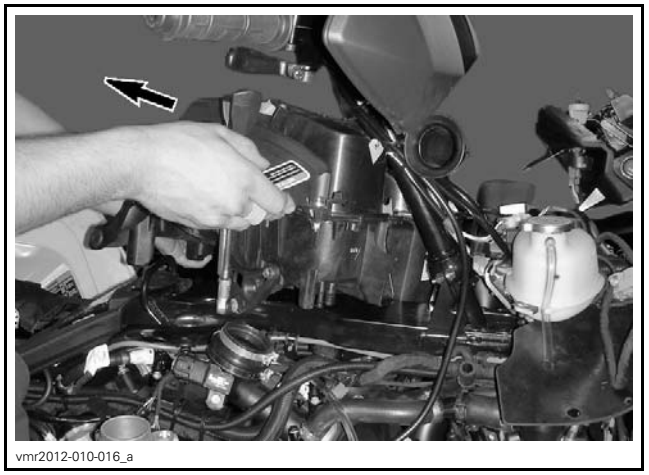
SCREW LOCATED ON LH SIDE - ACCESS FROM UNDER SHIFT LEVER
1. Air filter housing retaining screw

17. Detach throttle body from intake adapters.
18. Slightly lift air filter housing upward.
19. Move throttle body aside to make room.



TYPICAL - OUTLANDER SHOWN
1. Throttle body

20. Remove air filter housing by pulling it towards rear.



AIR FILTER HOUSING REMOVAL

21. Remove remaining components from air filter housing.

Air Filter Housing Inspection

Check air filter housing for cracks or other damage. Replace if necessary.

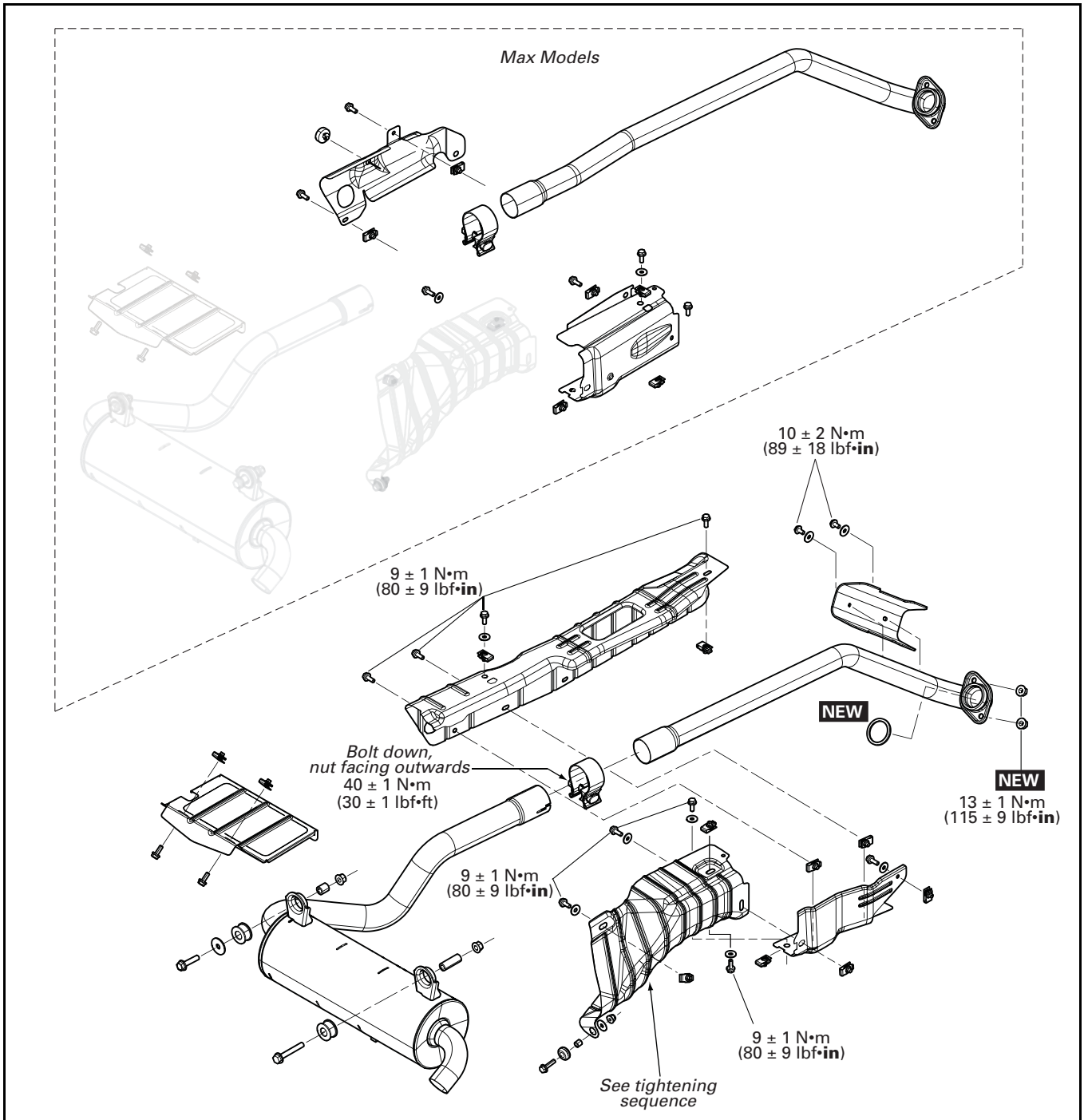
Air Filter Housing Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Refer to applicable exploded views for tightening torque.

EXHAUST SYSTEM (TRANSVERSAL MOUNTING)

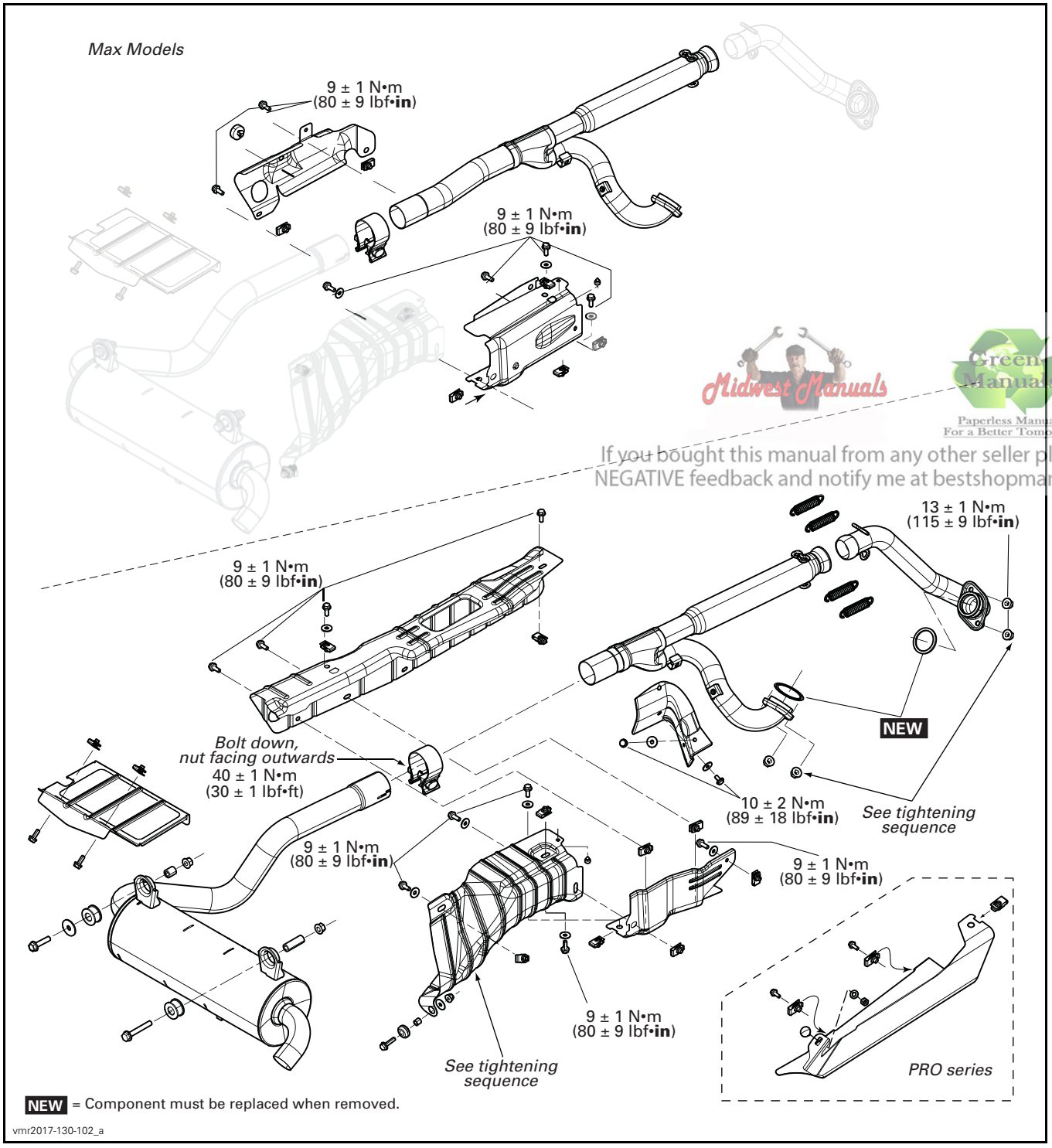
Single Cylinder Models



NEW = Component must be replaced when removed.

vmr2017-130-101_a

Twin Cylinder Models



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GENERAL

⚠ WARNING

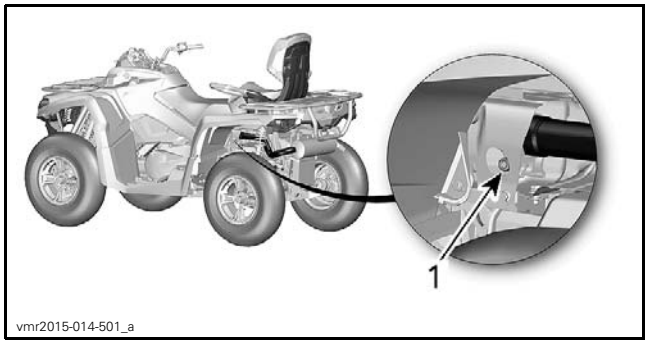
Never touch exhaust system components immediately after the engine has run.

PROCEDURES

MUFFLER

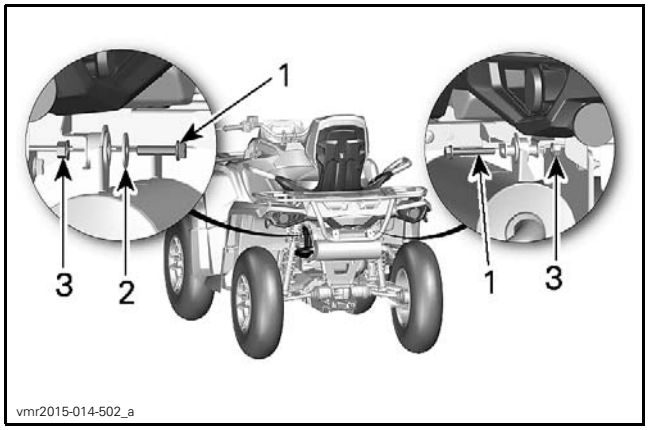
Removing the Muffler

1. Loosen exhaust pipe clamp.



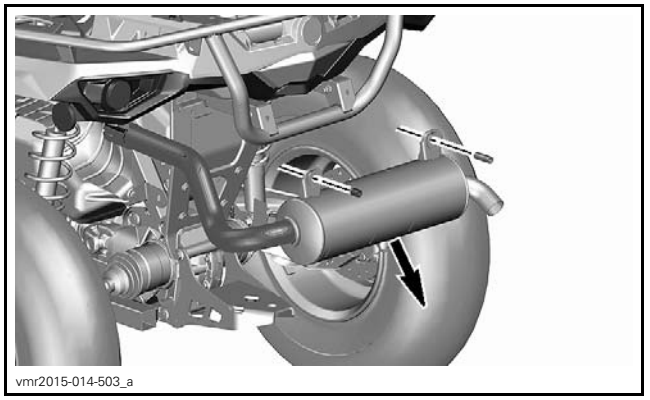
1. Clamp nut

2. Remove muffler retaining bolts.



1. Bolt
2. Washer
3. Nut

3. Remove the muffler.



Inspecting the Muffler

Check muffler and cover for cracks or other damages. Replace if necessary.

Check if the rubbers support are brittle, hard or otherwise damaged. Replace if needed.

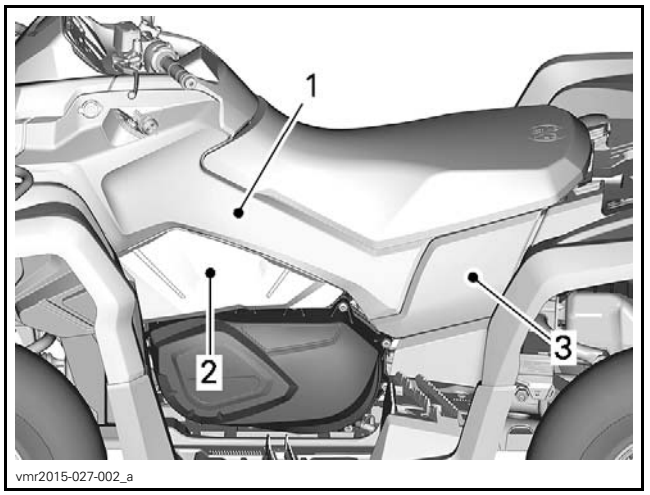
Installing the Muffler

Reverse the removal procedure.

HEAT SHIELD

Removing the Heat Shield

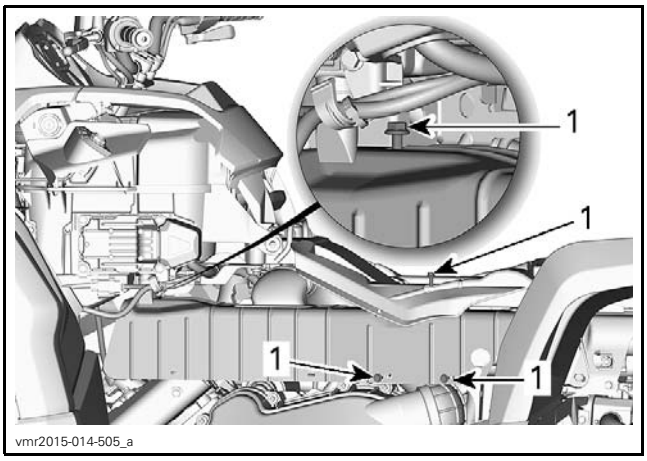
1. Refer to *BODY* and remove following LH body panels.



LH SIDE
1. Side panel
2. Side panel extension
3. Rear panel extension (Max models)

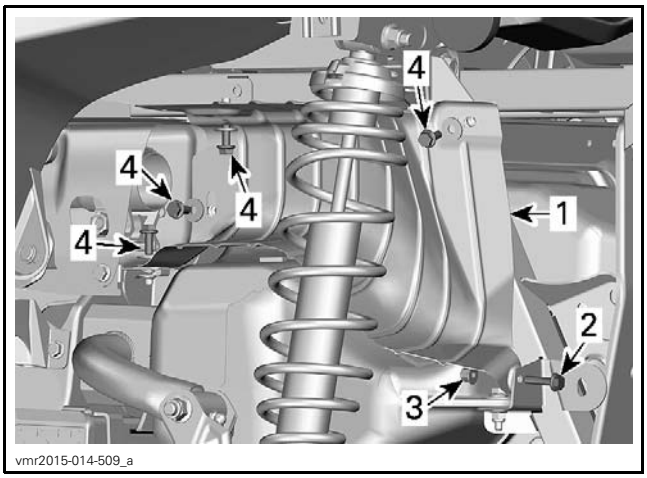
2. Remove outer heat shield retaining bolts.

NOTICE Do not use an impact tool to remove or install heat shield bolts.

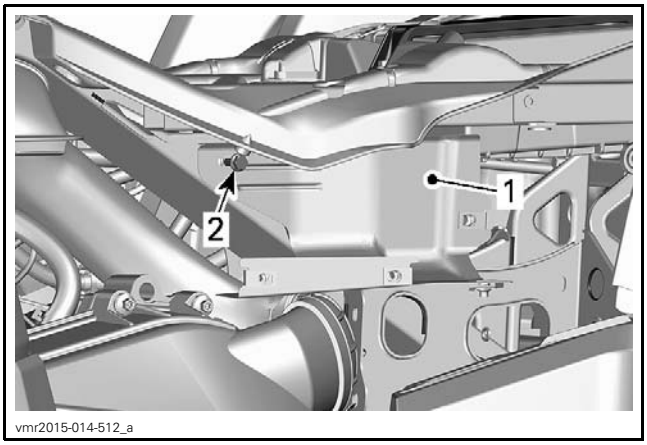


TYPICAL - OUTER HEAT SHIELD - SHORT MODEL SHOWN
1. *Heat shield bolts*

3. Remove muffler for rear and inner heat shield removal.



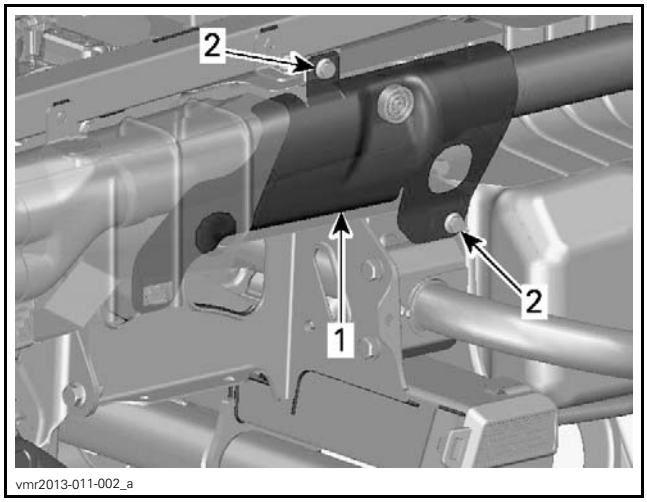
TYPICAL - REAR HEAT SHIELD REMOVAL
1. *Rear heat shield*
2. *M6 x 25 bolt*
3. *M6 elastic nut*
4. *M6 x 16 bolts with washers*



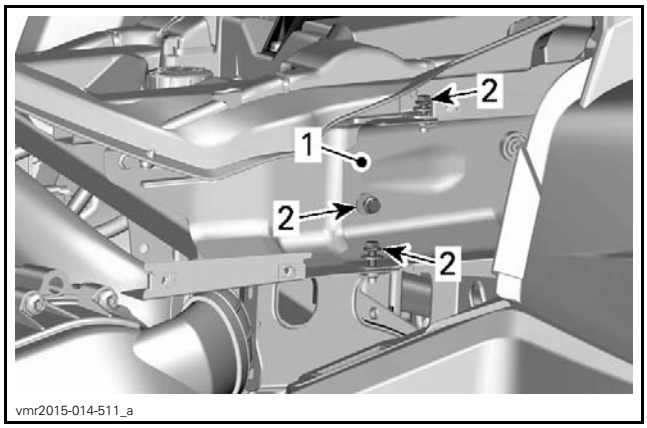
TYPICAL - INNER HEAT SHIELD REMOVAL
1. *Inner heat shield*
2. *M6 x 16 bolts*

MAX Models

4. Remove heat shield extension retaining bolts.



1. *Outer heat shield extension*
2. *M6 x 16 bolts*

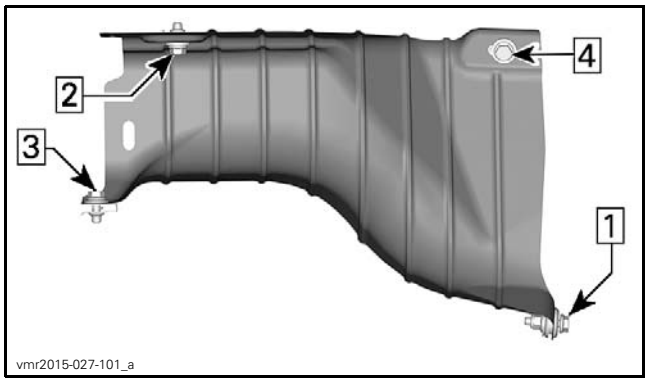


TYPICAL
1. *Inner heat shield extension*
2. *M6 x 16 bolts*

Installing the Heat Shield

Reverse the removal procedure. However, pay attention to the following.

Refer to exploded view for torque specifications, and following illustration for rear heat shield tightening sequence.

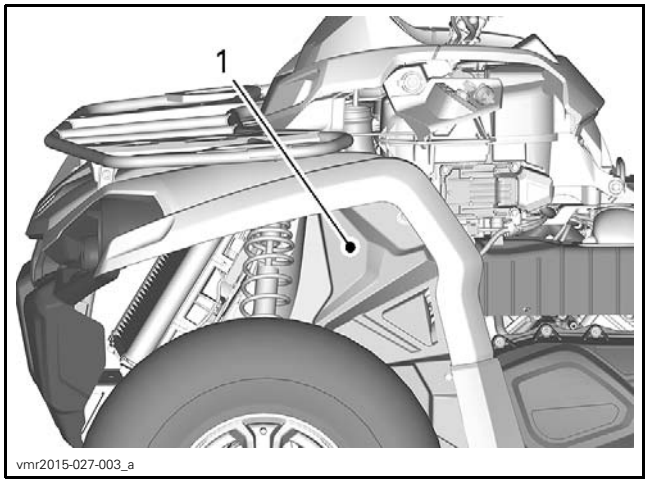


REAR HEAT SHIELD TIGHTENING SEQUENCE

HEAD PIPE (SINGLE CYLINDER MODELS)

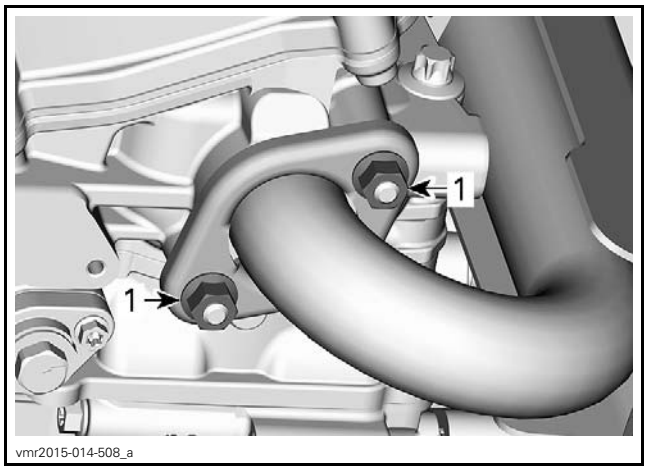
Removing the Head Pipe

1. Remove *MUFFLER* See procedure in this subsection.
2. Refer to *BODY* and remove RH and LH inner fender panels.



LH ILLUSTRATED, RH SIMILAR
1. Remove inner fender panel (both sides)

3. From RH side of vehicle, remove head pipe retaining nuts.



1. Retaining nuts

4. Remove front head pipe from vehicle.

NOTE: The space to remove the front head pipe is limited. Remove it without forcing it.

Inspecting the Head Pipe

Check head pipe for cracks, bending or other damages. Replace if needed.

Installing the Head Pipe

Reverse the removal procedure. However, pay attention to the following.

Install NEW exhaust gasket and pipe exhaust retaining nuts.

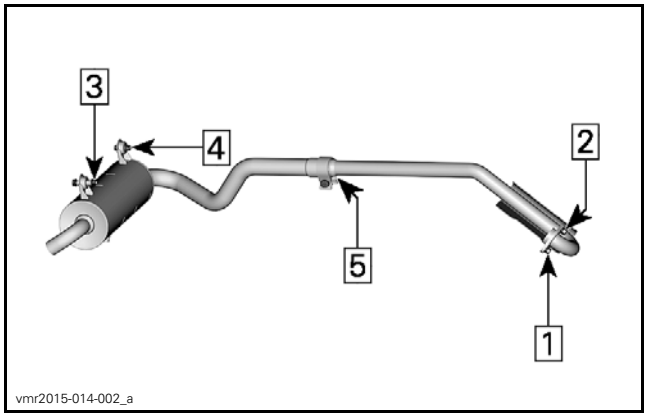
TIGHTENING TORQUE	
Head pipe nuts	13 N•m ± 1 N•m (115 lbf•**in** ± 9 lbf•**in**)

Exhaust System Tightening Sequence

Install all nuts and bolts loosely.

Install springs.

Tighten all fasteners as per following tightening sequence. Refer to exploded view for torque specifications.

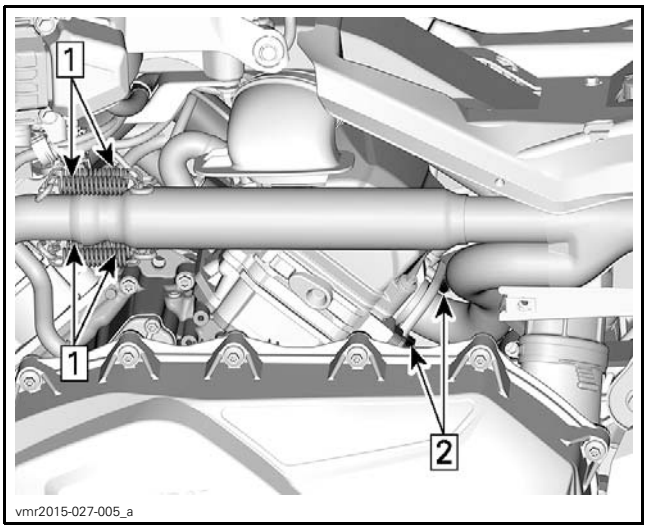


EXHAUST SYSTEM TIGHTENING SYSTEM SEQUENCE

Y-PIPE (TWIN CYLINDER MODELS)

Removing the Y-Pipe

1. Remove *MUFFLER*. See procedure in this subsection.
2. Remove *OUTER HEAT SHIELD*. See procedure in this subsection.
3. Remove the following parts:
   – Springs from head pipe
   – Y-pipe retaining nuts on rear cylinder
   – Y-pipe from vehicle.



1. Springs (4)
2. Y-pipe retaining nuts on rear cylinder (2)

Inspecting the Y-Pipe

Check Y-pipe for cracks, bending or other damages. Replace if needed.

Installing the Y-Pipe

Reverse the removal procedure. However, pay attention to the following.

Install NEW exhaust gasket and exhaust pipe retaining nuts.

Properly position exhaust pipe before tightening.

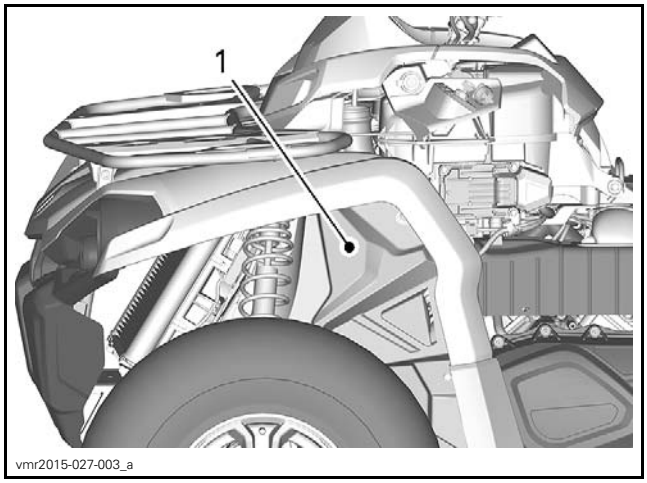
Refer to *EXHAUST SYSTEM TIGHTENING SEQUENCE*.

TIGHTENING TORQUE	
Head pipe nuts (rear cylinder)	13 N•m ± 1 N•m (115 lbf•**in** ± 9 lbf•**in**)

HEAD PIPE (TWIN CYLINDER MODELS - FRONT CYLINDER)

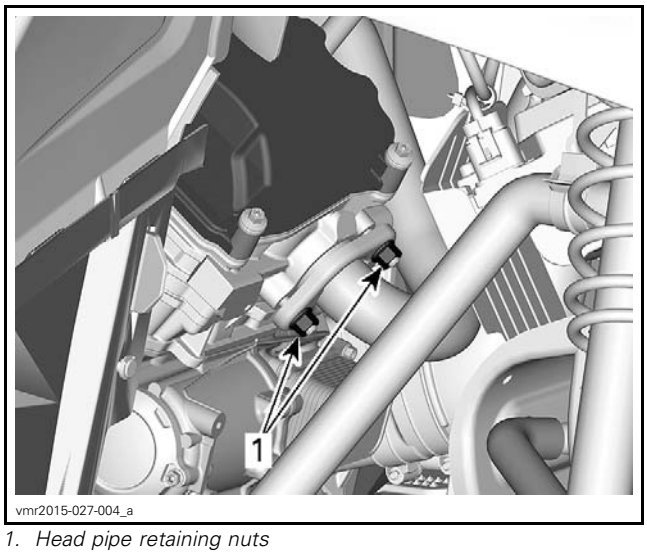
Removing the Front Head Pipe

1. Remove *Y-PIPE* See procedure in this subsection.
2. Refer to *BODY* and remove LH and RH inner fenders.



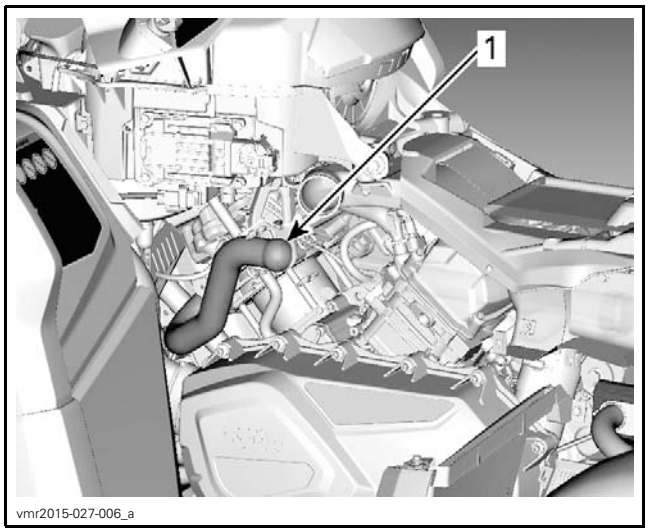
1. Remove inner fender panel (both sides)

3. From RH side of vehicle, remove head pipe retaining nuts.



1. Head pipe retaining nuts

4. Remove front head pipe from vehicle.



1. Head pipe

NOTE: The space to remove the front head pipe is limited. Remove it without forcing it.

Inspecting the Front Head Pipe

Check head pipe for cracks, bending or other damages. Replace if needed.

Installing the Front Head Pipe

Reverse the removal procedure. However, pay attention to the following.

Install NEW exhaust gaskets and nuts.

Refer to *EXHAUST SYSTEM TIGHTENING SEQUENCE*.

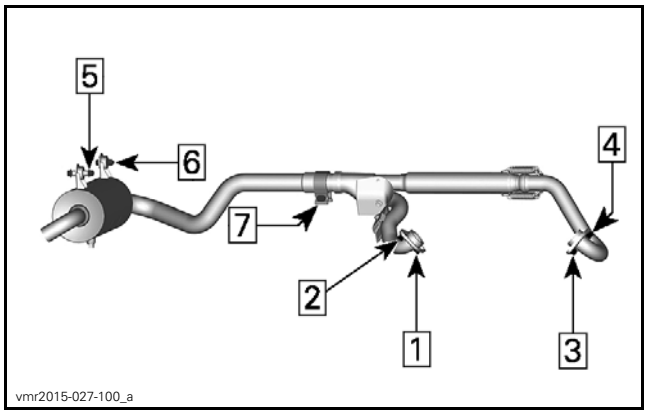
TIGHTENING TORQUE	
Head pipe nuts	13 N•m ± 1 N•m (115 lbf•**in** ± 9 lbf•**in**)

Exhaust System Tightening Sequence

Install all nuts and bolts loosely.

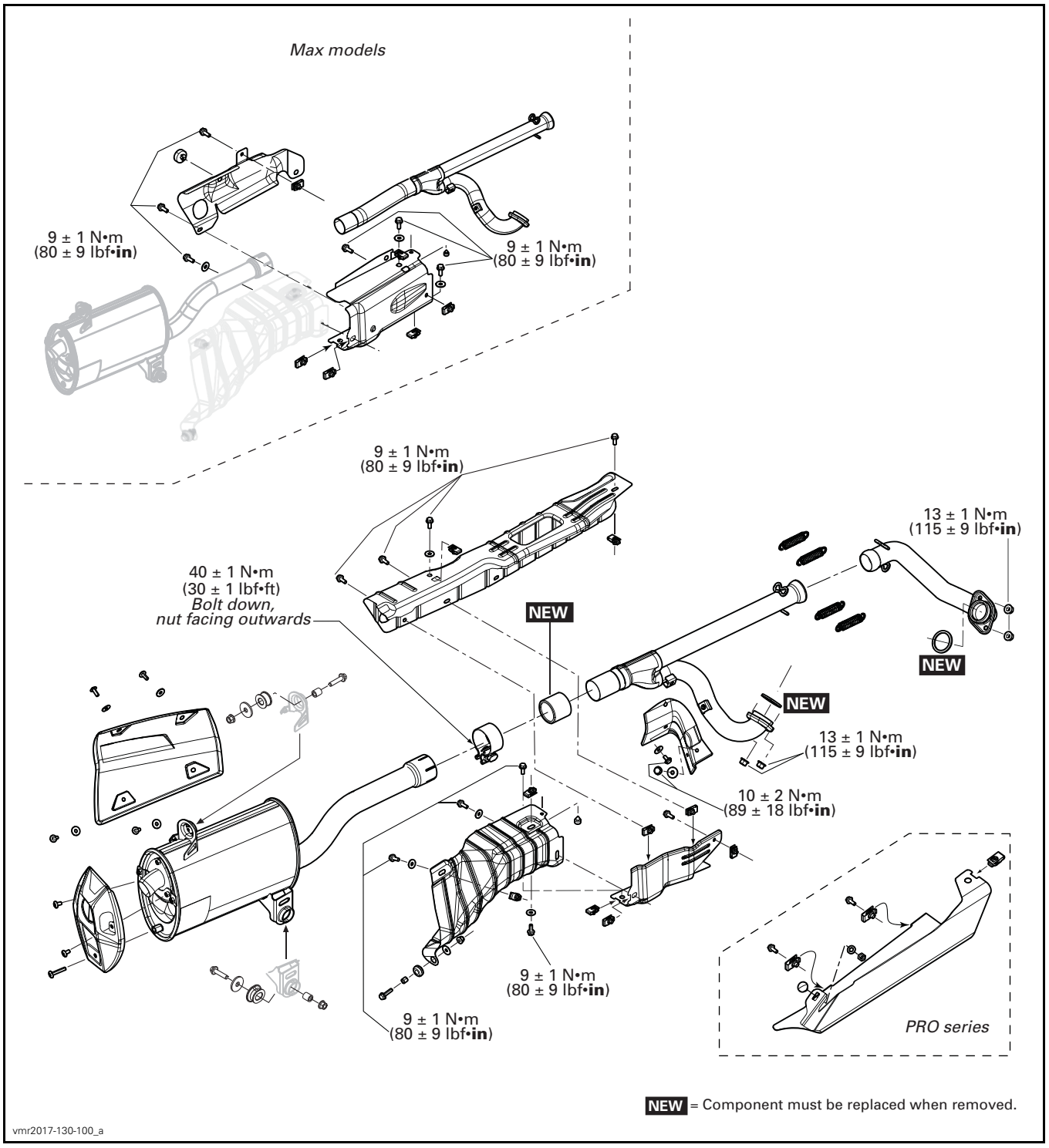
Install springs.

Tighten all fasteners as per following tightening sequence. Refer to exploded view for torque specifications.



EXHAUST SYSTEM TIGHTENING SYSTEM SEQUENCE

EXHAUST SYSTEM (LONGITUDINAL MOUNTING)



GENERAL

⚠ WARNING

Never touch exhaust system components immediately after the engine has run.

PROCEDURES

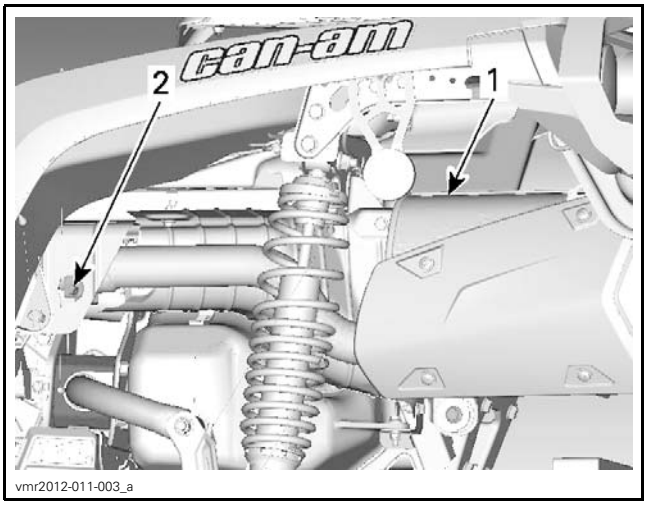
SPARK ARRESTER

For spark arrester servicing, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

MUFFLER

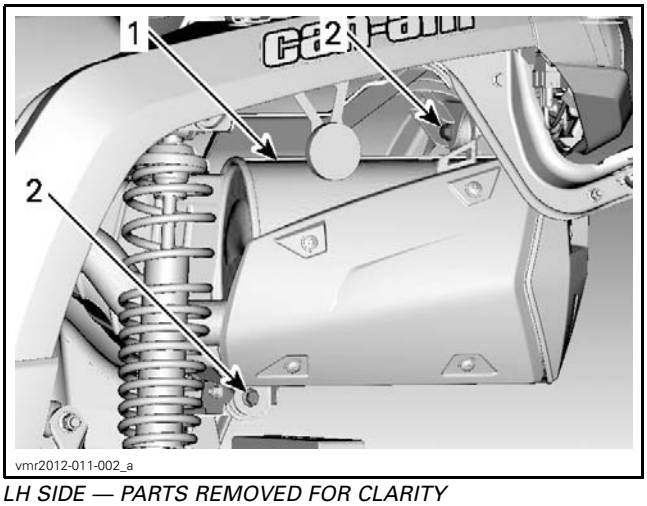
Removing the Muffler

1. Loosen exhaust pipe clamp.



LH SIDE — PARTS REMOVED FOR CLARITY
1. *Muffler*
2. *Loosen clamp*

2. Remove muffler retaining bolts.



LH SIDE — PARTS REMOVED FOR CLARITY
1. *Muffler*
2. *Remove bolts*

3. Remove the muffler.

Inspecting the Muffler

Check muffler and cover for cracks or other damages. Replace if necessary.

Check if the rubber support is brittle, hard or otherwise damaged. Replace if needed.

Installing the Muffler

For the installation, reverse the removal procedure. However, pay attention to the following.

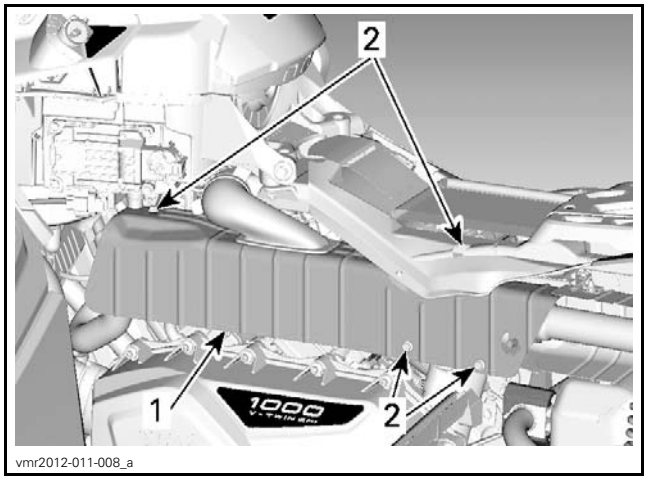
Install new exhaust gasket.

HEAT SHIELD

Removing the Heat Shield

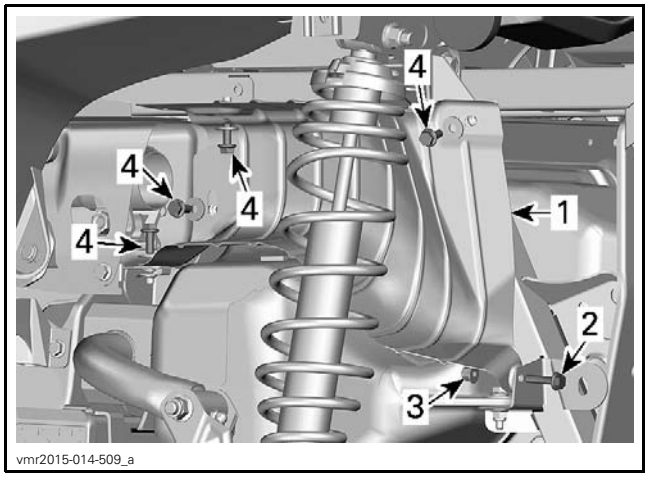
1. Refer to *BODY* and remove LH panel.
2. Remove heat shield retaining bolts.

NOTICE **Do not use an impact tool to remove or install heat shield bolts.**

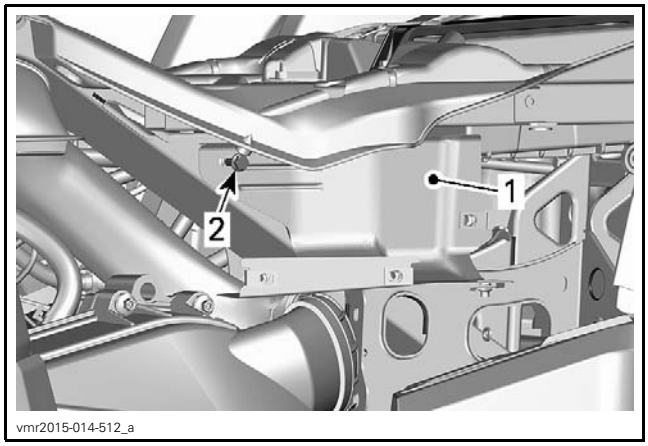


TYPICAL LH SIDE — PARTS REMOVED FOR CLARITY
1. *Heat shield*
2. *Remove bolts*

3. Remove muffler for rear and inner heat shield removal.



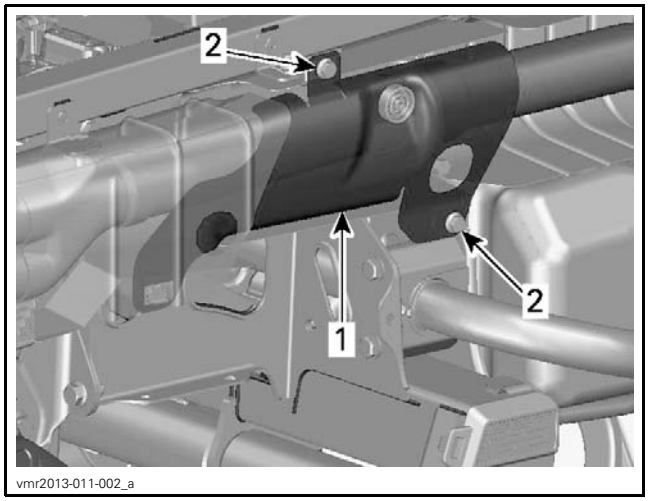
TYPICAL - REAR HEAT SHIELD REMOVAL
1. *Rear heat shield*
2. *M6 x 25 bolt*
3. *M6 elastic nut*
4. *M6 x 16 bolts with washers*



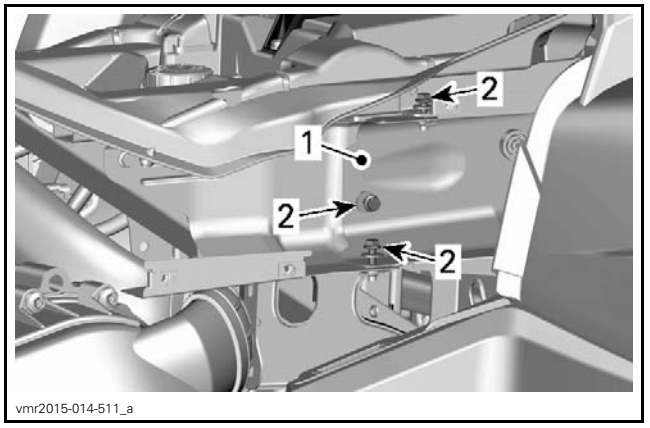
TYPICAL - INNER HEAT SHIELD REMOVAL
1. *Inner heat shield*
2. *M6 x 16 bolts*

Max Models

4. Remove heat shield extensions retaining bolts.



LH SIDE — PARTS REMOVED FOR CLARITY
1. *Outer heat shield extension*
2. *M6 x 16 bolts*

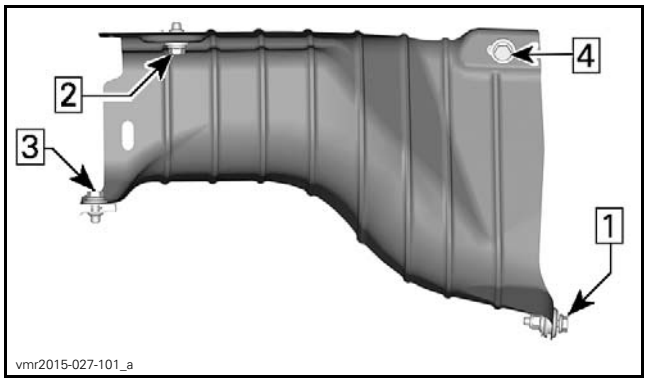


TYPICAL
1. *Inner heat shield extension*
2. *M6 x 16 bolts*

Installing the Heat Shield

For the installation, reverse the removal procedure. However, pay attention to the following.

Refer to exploded view for torque specifications, and following illustration for rear heat shield tightening sequence.

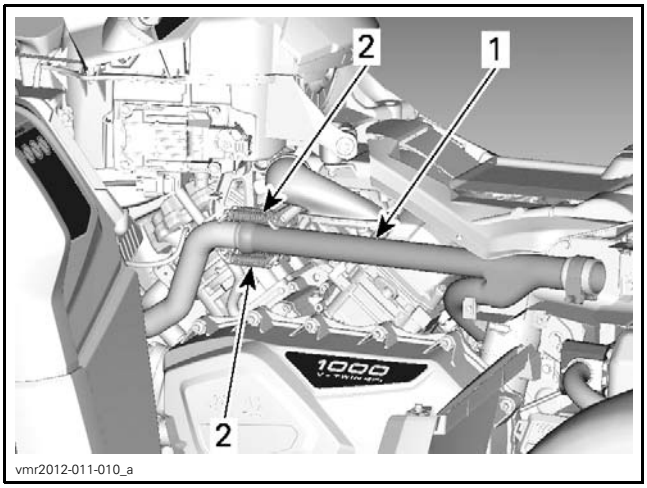


REAR HEAT SHIELD TIGHTENING SEQUENCE

Y-PIPE

Removing the Y-Pipe

1. Remove *MUFFLER*. See procedure in this subsection.
2. Remove *HEAT SHIELD*. See procedure in this subsection.
3. Remove the following parts:
   - Springs from head pipe
   - Y-pipe retaining nuts on rear cylinder.
   - Y-pipe from vehicle.



TYPICAL LH SIDE — PARTS REMOVED FOR CLARITY
1. Y-pipe
2. Springs

Inspecting the Y-Pipe

Check Y-pipe for cracks, bending or other damages. Replace if needed.

Installing the Y-Pipe

The installation is the reverse of the removal procedure.

Install NEW exhaust gaskets and exhaust pipe retaining nuts.

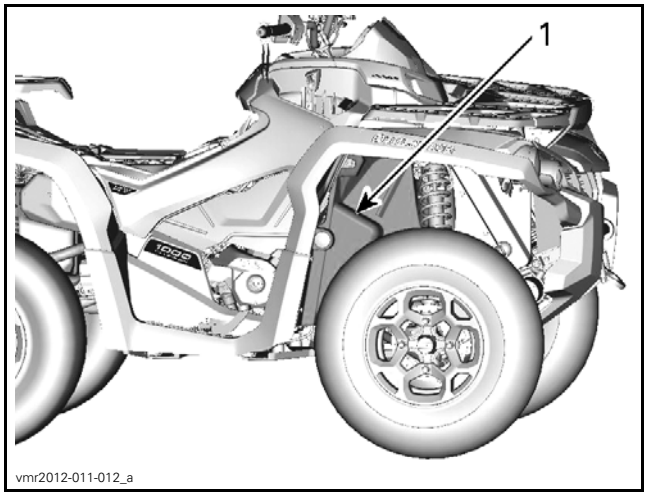
Properly position exhaust pipe before tightening.

TIGHTENING TORQUE	
Head pipe nuts (rear cylinder)	13 N•m ± 1 N•m (115 lbf•**in** ± 9 lbf•**in**)

HEAD PIPE (FRONT CYLINDER)

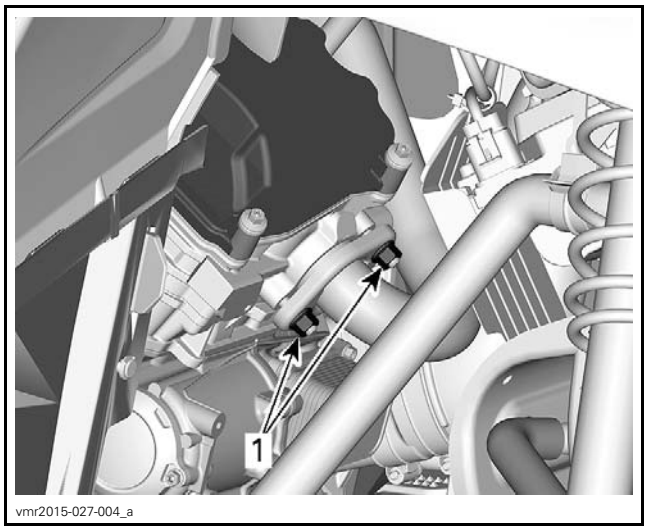
Removing the Front Head Pipe

1. Remove *Y-PIPE* See procedure in this subsection.
2. Refer to *BODY* and remove rear part of RH inner fender to reach head pipe screws (Outlander series only).



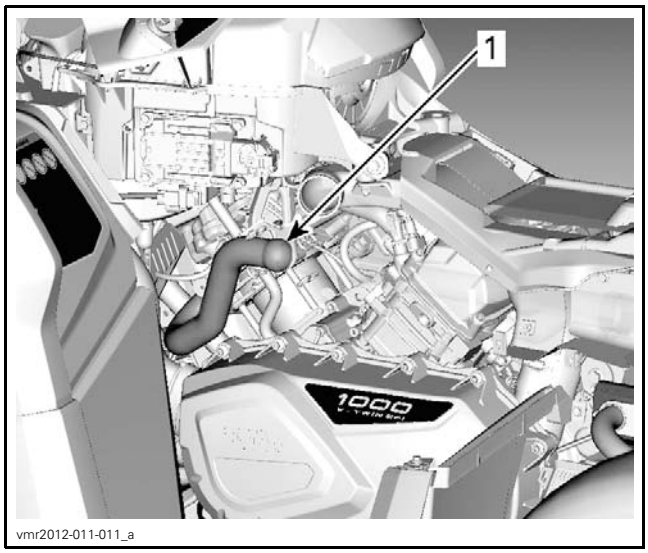
TYPICAL
1. Remove

3. From RH side of vehicle, remove head pipe retaining nuts.



TYPICAL
1. Head pipe retaining nuts

4. Remove front head pipe from vehicle.



TYPICAL LH SIDE — PARTS REMOVED FOR CLARITY
1. Head pipe

NOTE: The space to remove the front head pipe is limited. Remove it without force.

Inspecting the Front Head Pipe

Check head pipe for cracks, bending or other damages. Replace if needed.

Installing the Front Head Pipe

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install NEW exhaust gaskets.

Refer to *EXHAUST SYSTEM TIGHTENING SEQUENCE*.

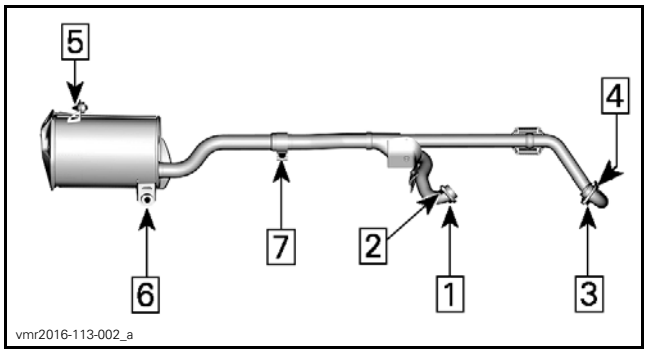
TIGHTENING TORQUE	
Head pipe nuts	13 N•m ± 1 N•m (115 lbf•**in** ± 9 lbf•**in**)

Exhaust System Tightening System Sequence

Install all nuts and bolts loosely.

Install springs.

Tighten all fasteners as per following tightening sequence. Refer to exploded view for torque specifications.



EXHAUST SYSTEM TIGHTENING SYSTEM SEQUENCE

LUBRICATION SYSTEM

SERVICE TOOLS

Description	Part Number	Page
ADAPTER HOSE	529 035 652	5
DISCONNECT TOOL	529 035 714	5
PRESSURE GAUGE	529 035 709	5

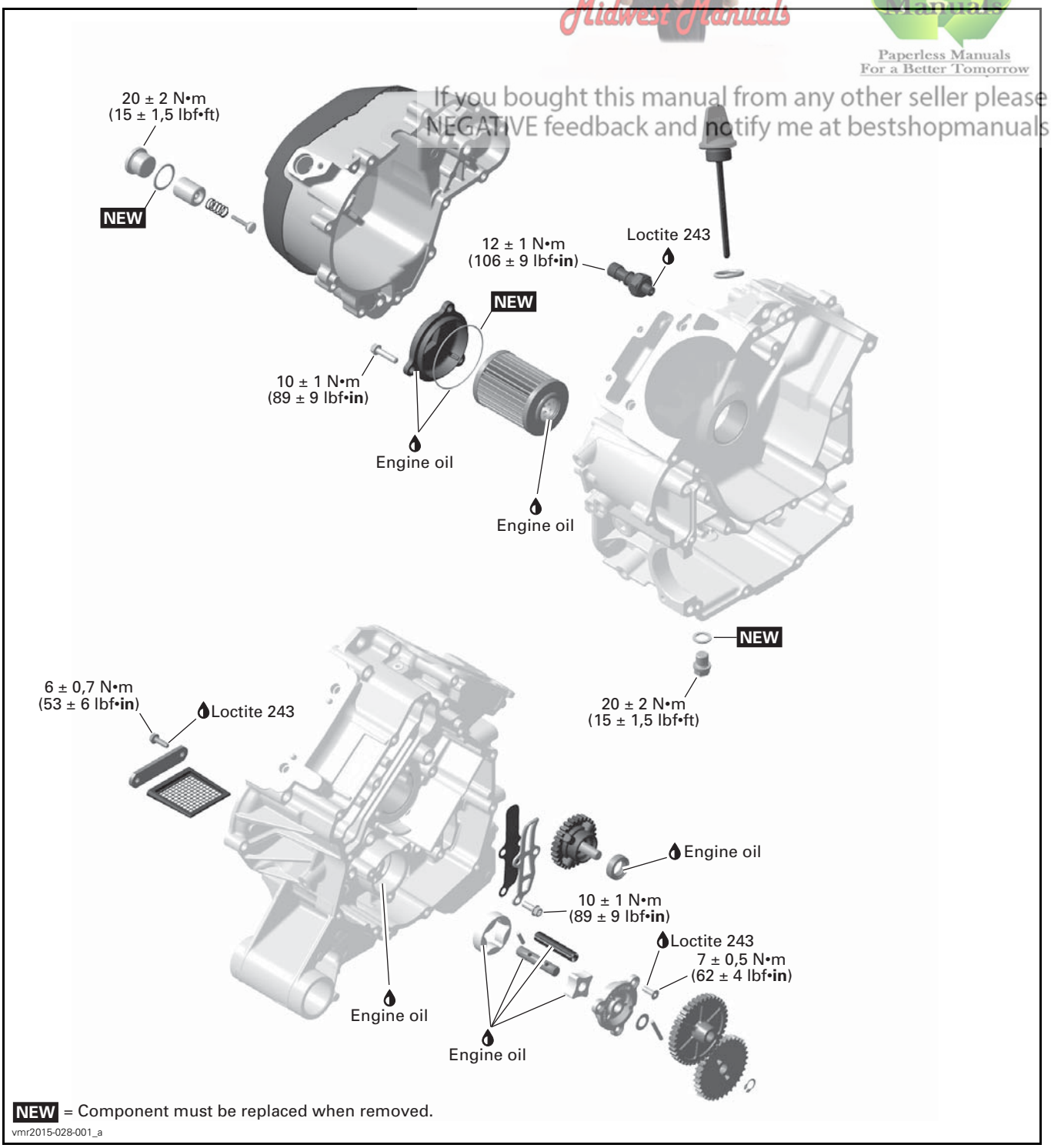
SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	8, 12

COMPONENTS

Outlander 570/650 (except PRO package)

Midwest Manuals
Green Manuals
Paperless Manuals For a Better Tomorrow
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify me at bestshopmanuals@gmail.com



NEW = Component must be replaced when removed.

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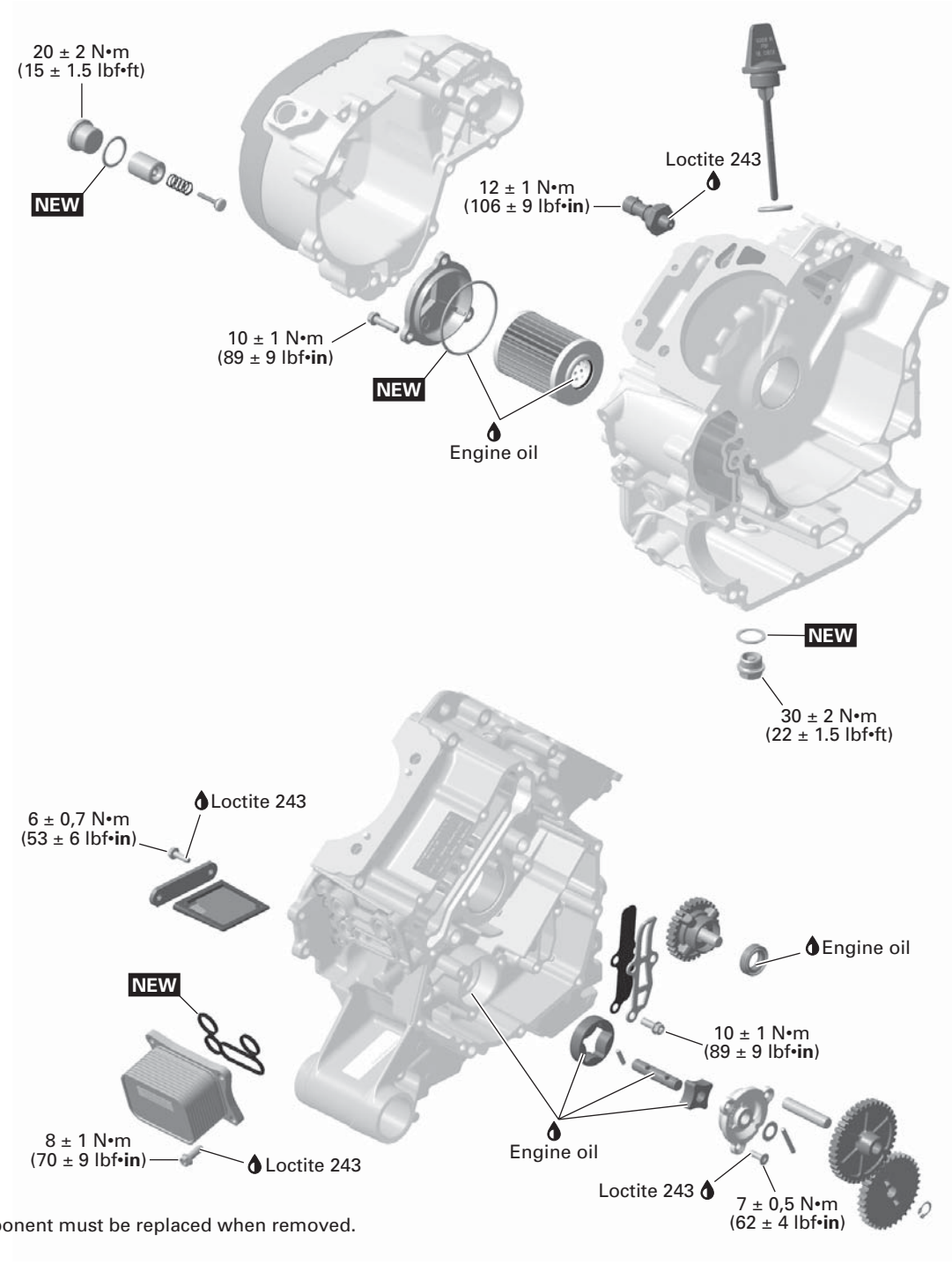
COMPONENTS

Outlander 850/1000R and all models with PRO Package



NEW = Component must be replaced when removed.

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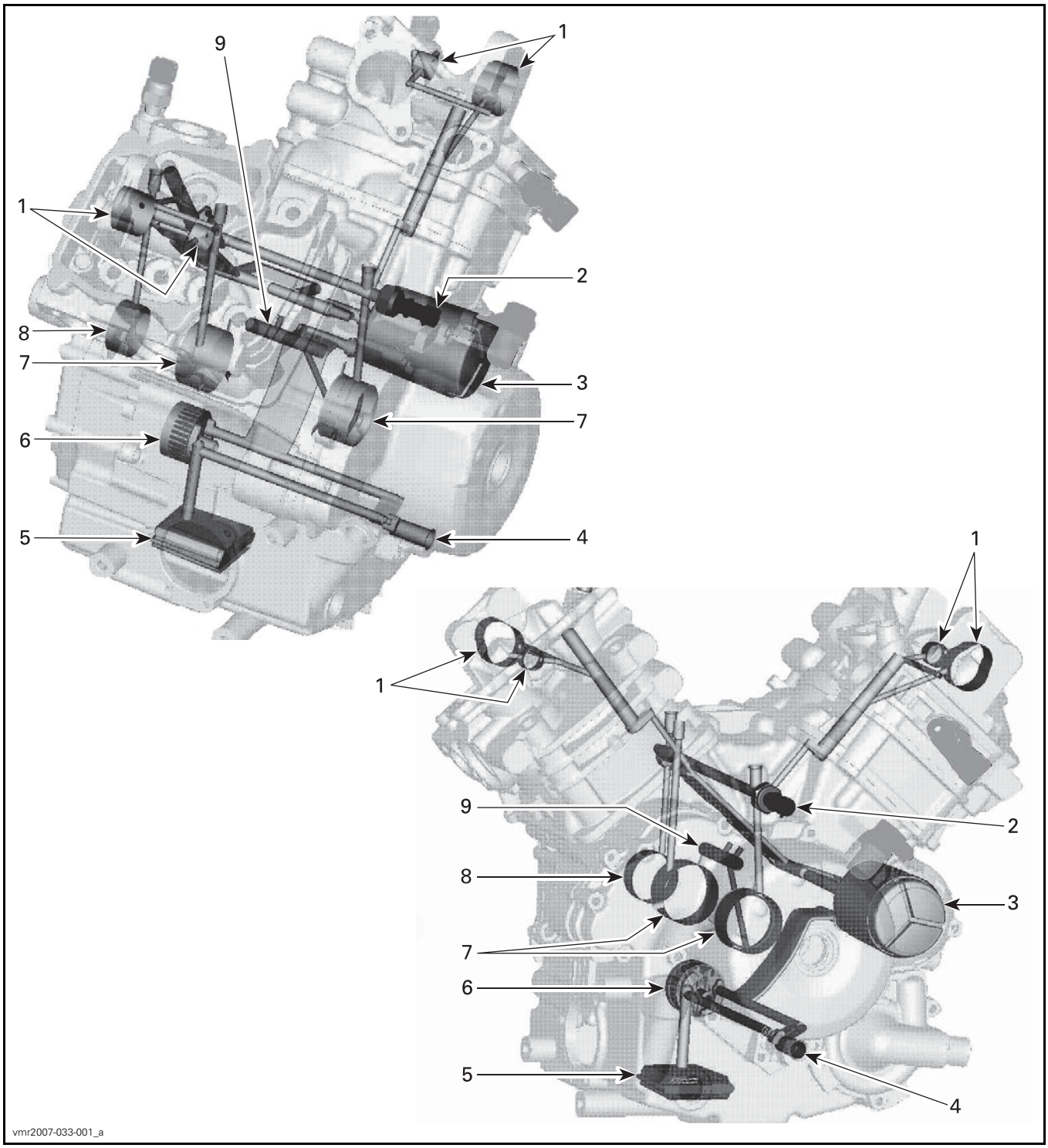
ENGINE LUBRICATION CIRCUIT



1. *Camshaft bearings*
2. *Oil pressure switch*
3. *Oil filter*
4. *Oil pressure regulator valve*
5. *Oil strainer*
6. *Oil pump*
7. *Crankshaft main bearings*
8. *Crankshaft support bearing*
9. *Connecting rod bearings*

INSPECTION

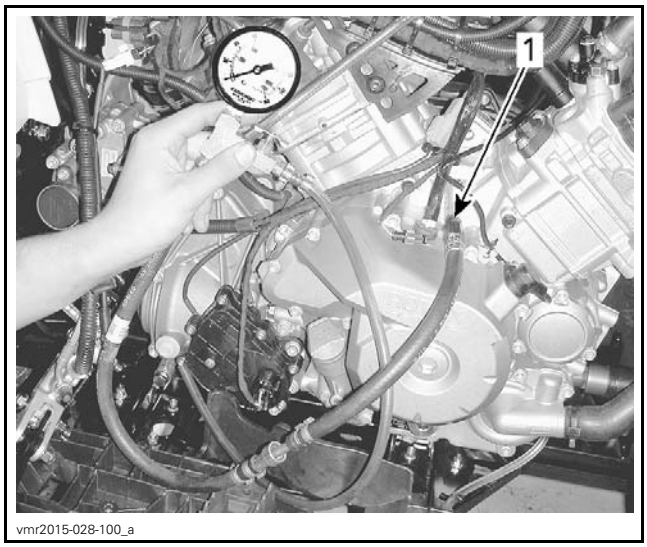
TESTING THE ENGINE OIL PRESSURE

NOTE: The engine oil pressure test should be done with a warm engine 100°C (212°F) and the recommended oil.

Remove the oil pressure switch. Refer to *OIL PRESSURE SWITCH* in this subsection.

Install the pressure test gauge with the proper adapter hose in the OPS engine bore.

REQUIRED TOOL	
PRESSURE GAUGE (P/N 529 035 709)	
ADAPTER HOSE (P/N 529 035 652)	



TYPICAL
1. Gauge connected in OPS engine bore

The engine oil pressure should be within the following values.

OIL PRESSURE	1250 RPM	6000 RPM
MINIMAL	70 kPa (10 PSI)	300 kPa (44 PSI)
NOMINAL	150 kPa (22 PSI)	350 kPa (51 PSI)
MAXIMAL	250 kPa (36 PSI)	450 kPa (65 PSI)

If the engine oil pressure is out of specifications, check the points described in *TROUBLESHOOTING* in this subsection.

Remove oil pressure gauge and adapter hose.

NOTE: To remove adapter hose from oil pressure gauge, use the disconnect tool.

REQUIRED TOOL	
DISCONNECT TOOL (P/N 529 035 714)	

Reinstall the oil pressure switch and remaining components.

TROUBLESHOOTING

LOW OR NO OIL PRESSURE

1. Oil level is too low.
   - *Refill engine with recommended engine oil. Refer to OIL LEVEL VERIFICATION in the PERIODIC MAINTENANCE PROCEDURES subsection.*
   - *Check for high oil consumption, refer to HIGH OIL CONSUMPTION in this TROUBLESHOOTING.*
   - *Check for engine oil leaks. For leak indicator hose and leak indicator hole, refer to COOLING SYSTEM INSPECTION in the PERIODIC MAINTENANCE PROCEDURES subsection. Repair if necessary.*
2. Use of unsuitable engine oil type.
   - *Replace engine oil by the recommended engine oil.*
3. Clogged oil filter.
   - *Replace oil and oil filter at the same time.*
4. Defective oil pressure switch.
   - *Test oil pressure switch, see procedure in this subsection.*
5. Defective or worn oil pump.
   - *Check oil pump, see procedure in this subsection.*
6. Defective engine oil pressure regulator.
   - *Check engine oil pressure regulator, see procedure in this subsection.*
7. Worn plain bearings in crankcase.
   - *Check plain bearing clearance, refer to BOTTOM END subsection.*
8. Clogged engine oil strainer.
   - *Clean engine oil strainer, see procedure in this subsection.*

OIL CONTAMINATION

1. Defective water pump seal ring or rotary seal.
   - *Check for oil or coolant leak from indicator near water pump, refer to COOLING SYSTEM INSPECTION in the PERIODIC MAINTENANCE PROCEDURES subsection. Replace seal if necessary.*

2. Cylinder head or cylinder base gasket leak.
   - *Retighten cylinder head to specified torque, refer to TOP END subsection. Replace gasket if tightening does not solve the problem.*
3. Engine internal damage.
   - *Repair engine.*
4. Oil cooler gasket leak.
   - *Replace oil cooler gasket and change engine oil.*

HIGH OIL CONSUMPTION

1. Leaking breather oil seal.
   - *Check if the oil seal of the breather is brittle, hard or damaged. Refer to BOTTOM END subsection.*
2. Valve stem seals worn or damaged.
   - *Replace valve stem seals.*
3. Worn piston rings (blue exhaust smoke).
   - *Replace piston rings.*

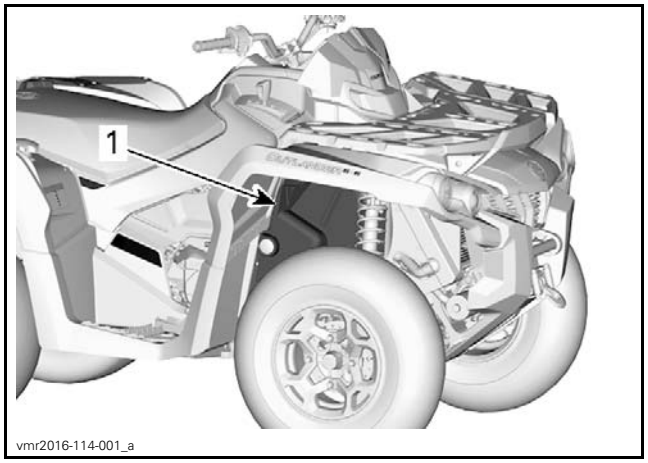
PROCEDURES

OIL COOLER

Outlander 850/1000R and all models with PRO Package

Oil Cooler Access

Refer to *BODY* and remove rear part of RH inner fender panel.



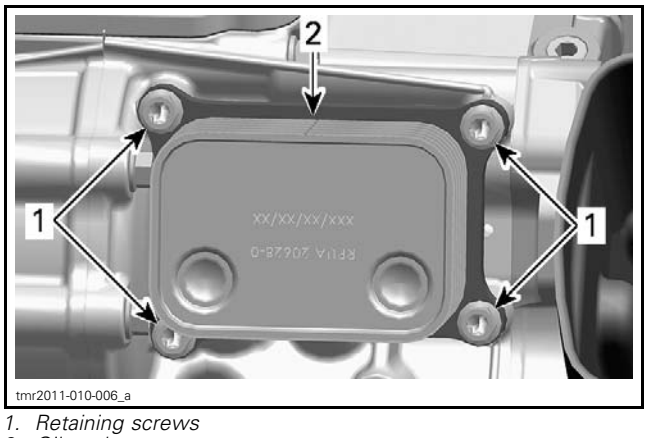
1. Remove

Removing the Oil Cooler

Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection to:

– Drain engine oil. Refer to *ENGINE OIL CHANGE*
– Drain coolant. Refer to *ENGINE COOLANT REPLACEMENT*.

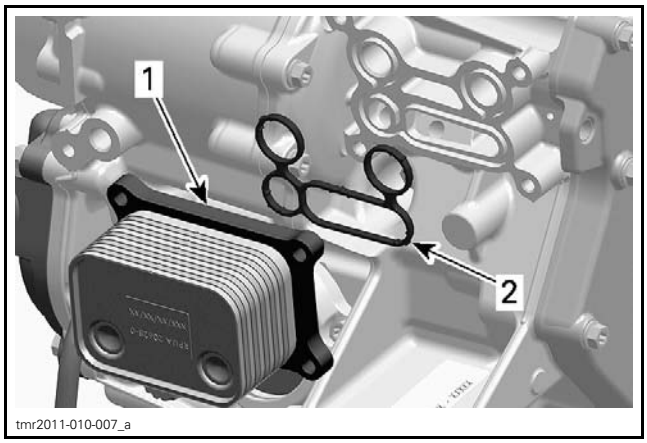
Remove oil cooler retaining screws.



1. Retaining screws
2. Oil cooler

Place rags or towels under oil cooler to catch remaining oil and coolant.

Remove oil cooler and discard gasket.



1. Oil cooler
2. Gasket

Inspecting the Oil Cooler

Check oil cooler for cracks or other damage.

Replace if necessary.

Installing the Oil Cooler

For installation, reverse the removal procedure. Pay attention to the following details.

Wipe off any oil and coolant spillage.

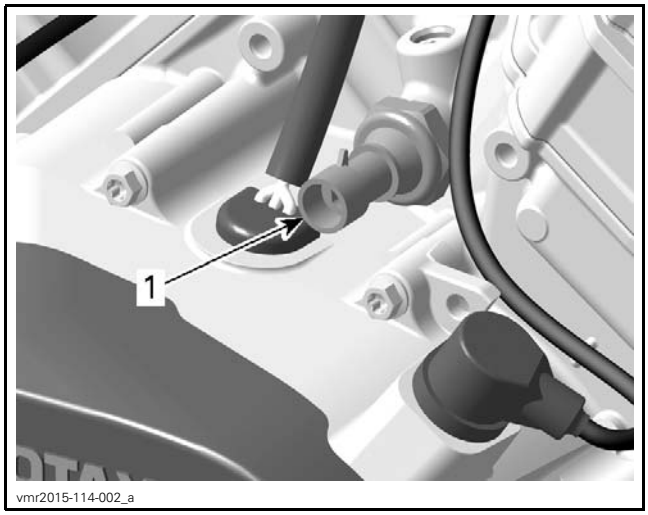
Install a NEW gasket.

Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection and carry out the following:

– Refill engine with recommended oil. See *ENGINE OIL CHANGE*.
– Refill and bleed cooling system. See *ENGINE COOLANT REPLACEMENT*.

OIL PRESSURE SWITCH (OPS)

Oil Pressure Switch Location



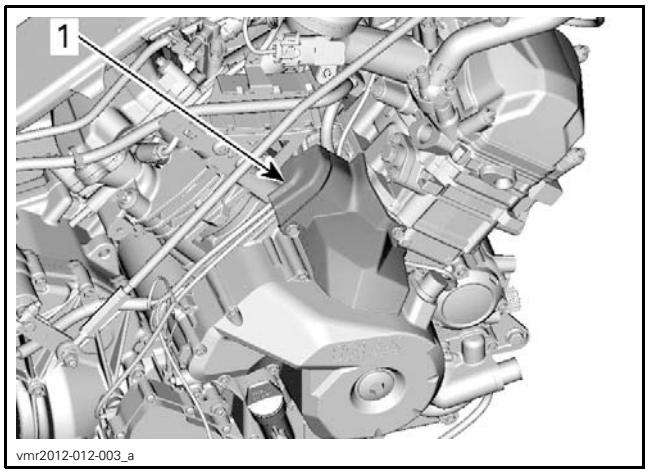
1. Oil pressure switch

Oil Pressure Switch Access

Refer to *BODY* subsection and remove the following

– Seat
– Console
– RH side panel and extension.

Remove OPS cover.



TYPICAL
1. Remove

Oil Pressure Switch Activation

The oil pressure switch activates when the engine oil pressure is lower than following specified pressure range.

OIL PRESSURE SWITCH ACTIVATION RANGE
30 kPa ± 10 kPa (4.35 PSI ± 1.45 PSI)

To check the function of the oil pressure switch, an oil pressure test has to be performed. Refer to *ENGINE OIL PRESSURE* in this subsection.

If the engine oil pressure is good, perform the oil pressure switch resistance test.

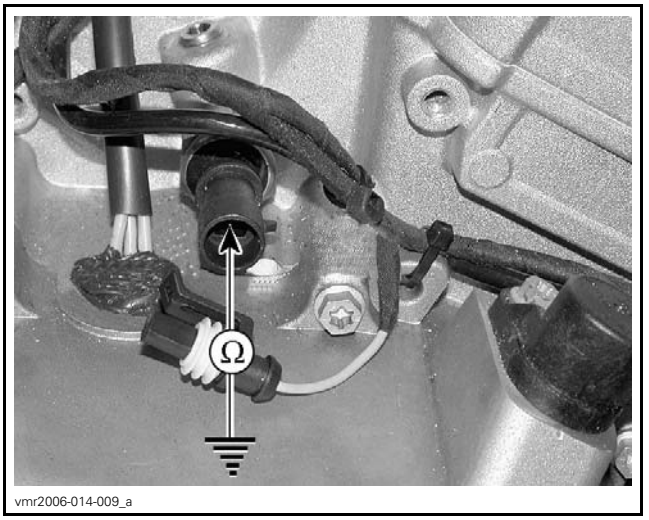
Testing the Oil Pressure Switch Resistance

Disconnect the connector from the oil pressure switch.

Check resistance as per following tables.

OPS CONNECTOR	ENGINE	ENGINE NOT RUNNING
PIN		RESISTANCE (Ω)
1	Engine ground	Close to 0 Ω (normally closed switch)

OPS CONNECTOR	ENGINE	ENGINE RUNNING
PIN		RESISTANCE (Ω)
1	Engine ground	Infinite (open) when pressure reaches 30 kPa ± 10 kPa (4.35 PSI ± 1.45 PSI)



If resistance values are incorrect, replace the oil pressure switch.

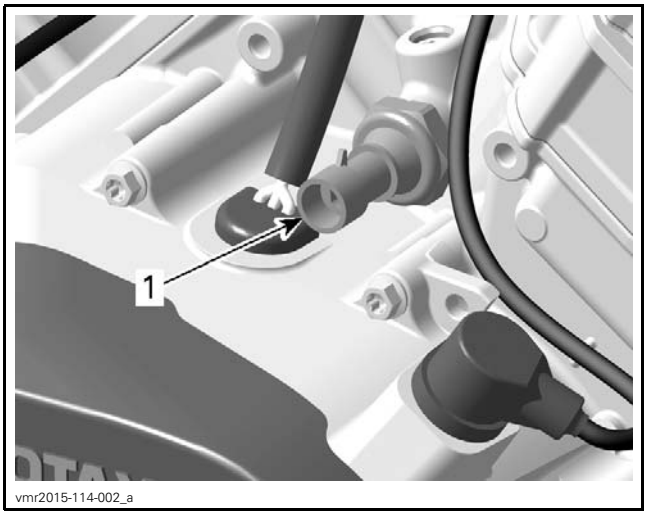
If the values are correct, check wiring.

Removing the Oil Pressure Switch

Unplug the oil pressure switch connector.

Unscrew and remove oil pressure switch.

Installing the Oil Pressure Switch



1. Oil pressure switch

Apply required service product on threads of oil pressure switch.

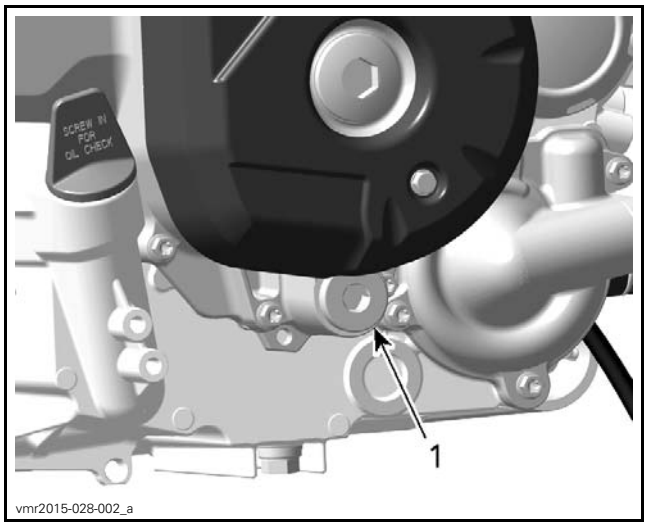
Tighten oil pressure switch to specification.

TIGHTENING TORQUE	
Service product	LOCTITE 243 (BLUE) (P/N 293 800 060)
Oil pressure switch	12 N•m ± 1 N•m (106 lbf•**in** ± 9 lbf•**in**)

ENGINE OIL PRESSURE REGULATOR

Oil Pressure Regulator Location

The oil pressure regulator is located on the engine magneto side, integrated in the magneto cover.



1. Engine oil pressure regulator

NOTE: The oil pressure regulator system works when the oil pressure exceeds 400 kPa (58 PSI).

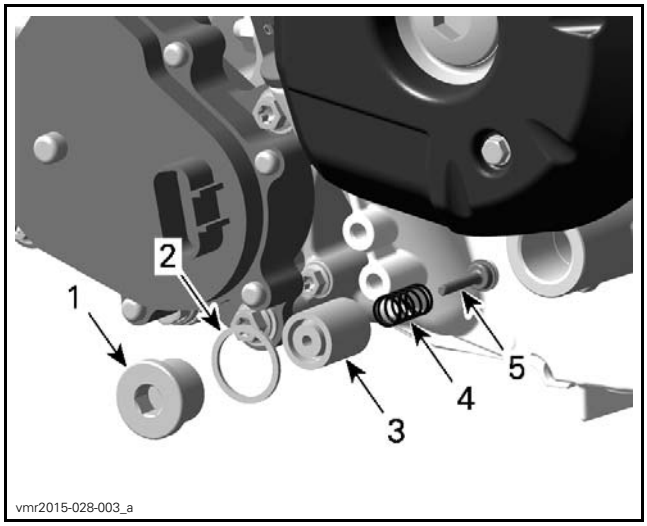
Oil Pressure Regulator Access

Refer to *BODY* subsection and remove the following:

– Seat
– Console
– RH side panel and extension
– RH footboard panel.

Removing the Oil Pressure Regulator

Remove plug screw and pull oil pressure regulator out.



1. Plug screw
2. Gasket ring
3. Pressure regulator housing
4. Spring
5. Pressure regulator valve

Inspecting the Oil Pressure Regulator

Inspect pressure regulator housing and valve for scoring or other damages.

Check spring for free length.

SPRING FREE LENGTH	
NEW NOMINAL	39 mm (1.535 in)
SERVICE LIMIT	37 mm (1.457 in)

NOTE: Replace worn or damaged components.

Clean bore and thread in the magneto housing from metal shavings and other contaminations.

Installing the Oil Pressure Regulator

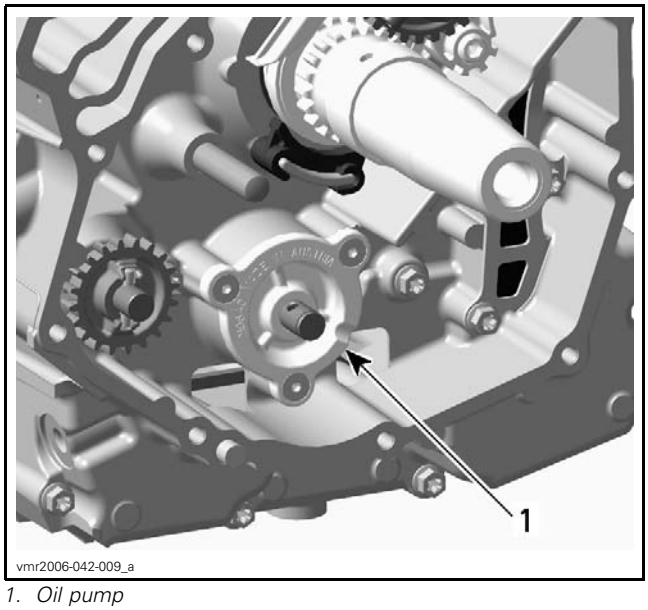
For installation, reverse the removal procedure. Pay attention to the following details.

NOTE: At installation always replace the gasket ring of the plug screw by a NEW one.

OIL PUMP

Oil Pump Location

The oil pump is located on the engine PTO side (behind PTO cover).

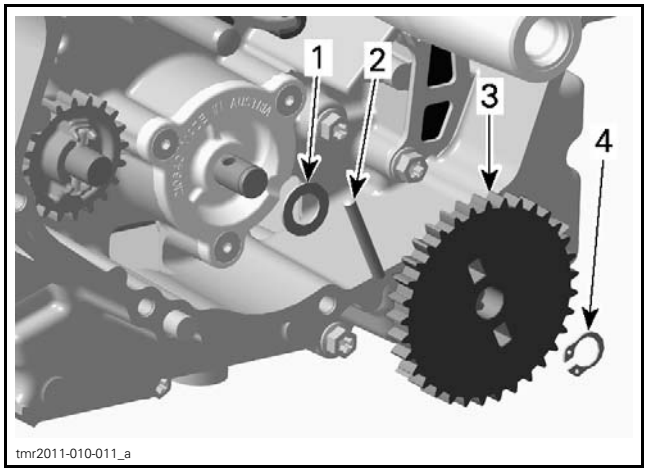


1. Oil pump

Removing the Oil Pump

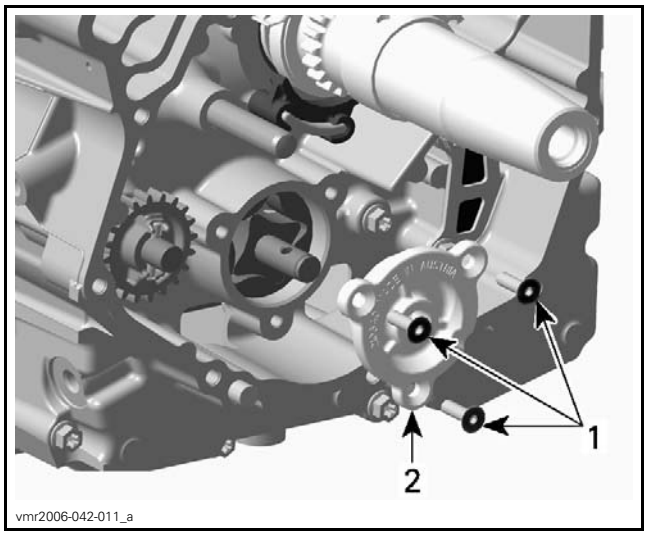
Remove the PTO cover. Refer to *PTO COVER* in the *BOTTOM END* subsection.

1. Remove:
   - Retaining ring
   - Oil pump gear
   - Needle pin
   - Thrust washer.



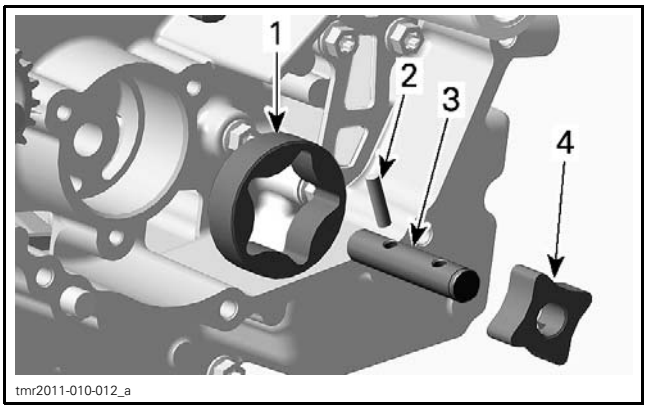
1. Thrust washer
2. Needle pin
3. Oil pump gear
4. Retaining ring

2. Remove oil pump cover screws and pull oil pump cover out.



1. Retaining screws
2. Oil pump cover

3. Remove oil pump shaft with needle pin and inner rotor.
4. Remove outer rotor.

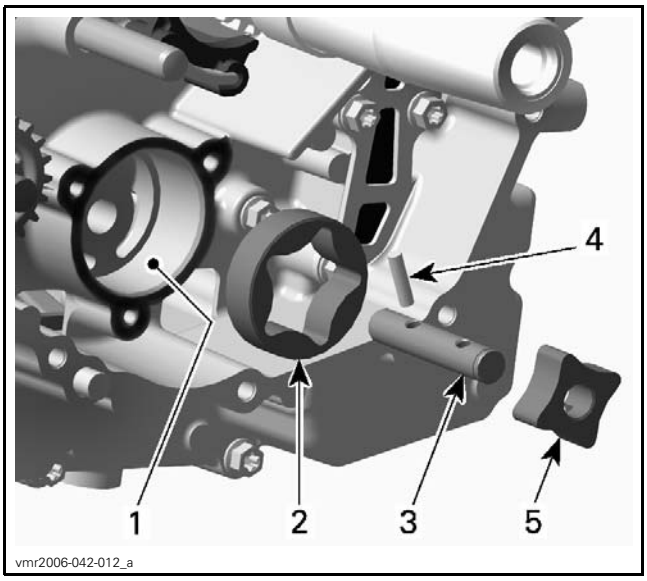


1. *Outer rotor*
2. *Needle pin*
3. *Oil pump shaft*
4. *Inner rotor*

Inspecting the Oil Pump

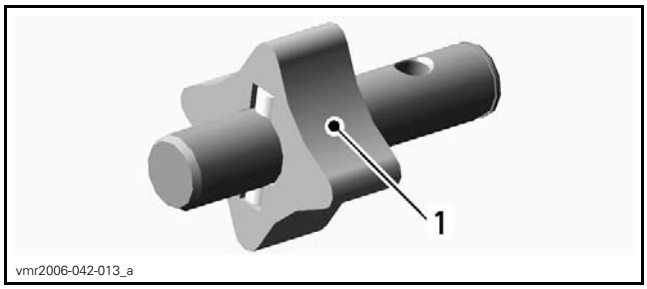
Inspect oil pump and oil pump cover bore for marks, scratches or other damages. Check for scratches in crankcase between outer rotor and oil pump bore. If so, replace damaged parts.

Check oil pump cover for damages and for surface straightness with a straightedge.



1. *Oil pump bore*
2. *Outer rotor*
3. *Oil pump shaft*
4. *Needle pin*
5. *Inner rotor*

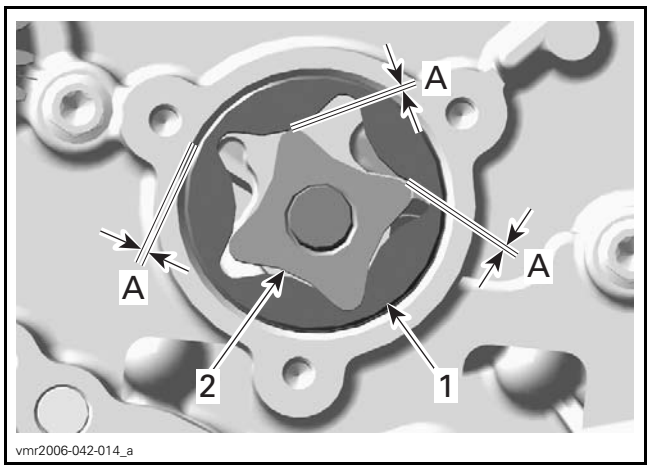
Check inner rotor for corrosion pin holes or other damages. If so, replace oil pump shaft assembly.



1. *Pittings on the teeth*

Using a feeler gauge, measure the clearance of inner and outer rotors as shown.

CLEARANCE OF INNER AND OUTER ROTOR	
SERVICE LIMIT	0.25 mm (.0098 in)



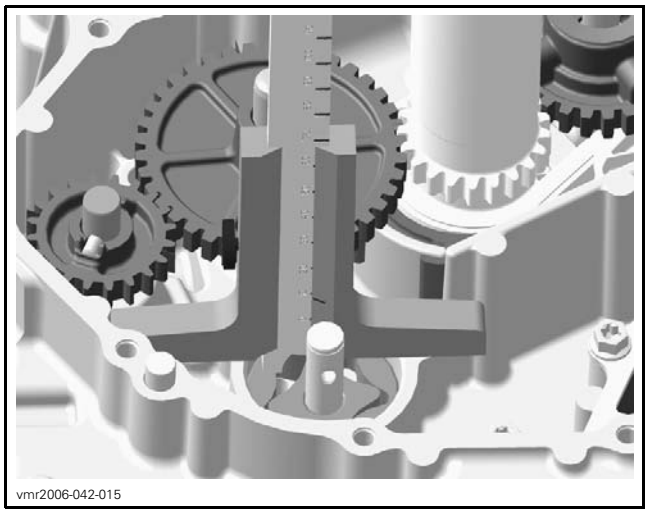
1. *Outer rotor*
2. *Inner rotor*

A. 0.25 mm (.0098 in)

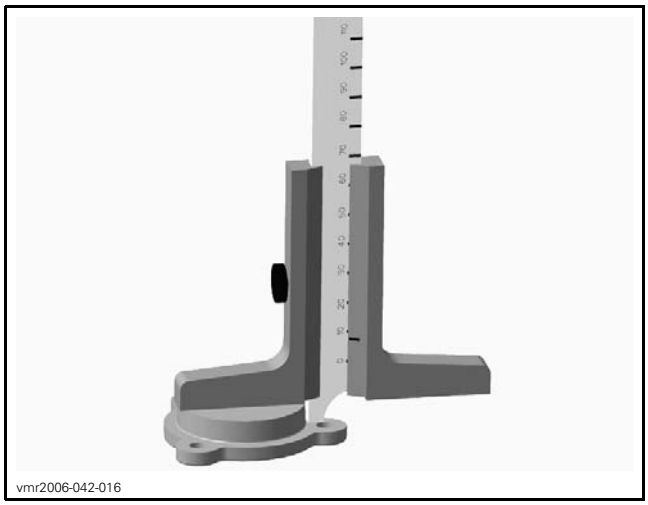
If clearance of inner and outer rotors exceeds the tolerance, replace oil pump rotors. Ensure to also check oil pump cover. If damaged, replace the complete oil pump assembly.

If clearance between outer rotor and its bore in crankcase exceeds the tolerance, replace the complete oil pump rotors and/or the crankcase.

Using a depth gauge, measure the axial clearance of the oil pump as shown.



OIL PUMP — MEASUREMENT "A"



OIL PUMP COVER — MEASUREMENT "B"

Substract measurement B from measurement A to obtain axial clearance.

OIL PUMP AXIAL CLEARANCE	
SERVICE LIMIT	0.20 mm (.008 in)

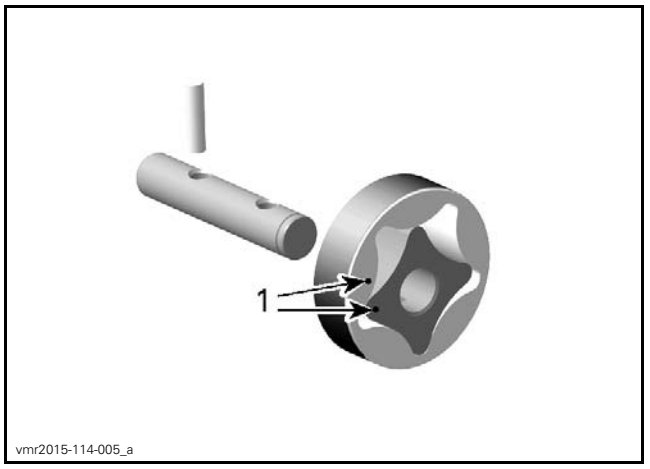
NOTE: When the axial clearance of the oil pump assembly increases, the oil pressure decreases.

Installing the Oil Pump

For installation, reverse the removal procedure.

Pay attention to the following details.

NOTE: When installing the oil pump rotors, make sure both markings are on the outer side.



1. Markings

After reinstallation of the remaining parts, check for smooth operation of the oil pump assembly.

Testing the Oil Pump Function

After engine is completely reassembled, start engine and make sure oil pressure is within specifications (refer to *ENGINE OIL PRESSURE* in this subsection).

ENGINE OIL STRAINER

Oil Strainer Location

The engine oil strainer is located between both crankcase halves.

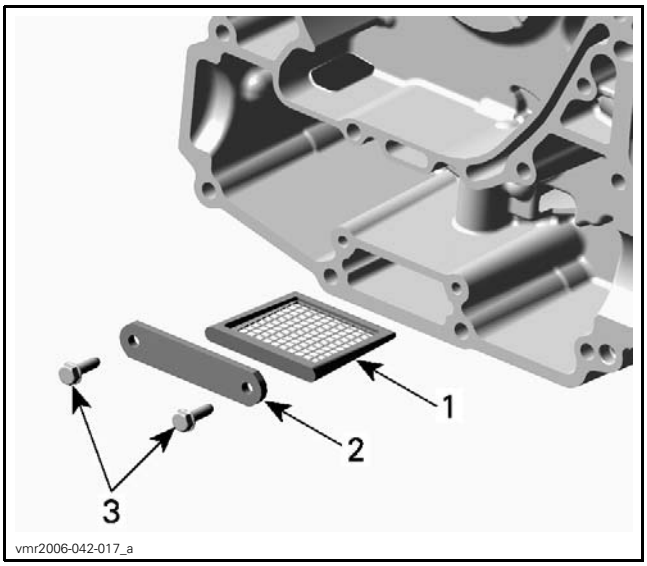
Removing the Oil Strainer

Remove engine from vehicle.

Separate crankcase halves. Refer to *BOTTOM END* subsection.

Remove screws and retaining plate.

Pull out engine oil strainer.



1. Engine oil strainer
2. Retaining plate
3. Screws

Cleaning and Inspecting the Oil Strainer

Clean engine oil strainer with a part cleaner then use an air gun to dry it.

⚠ WARNING

Always wear eye protector. Chemicals can cause a rash break out and injure your eyes.

Check engine oil strainer for cracks or other damage. Replace if damaged.

Installing the Oil Strainer

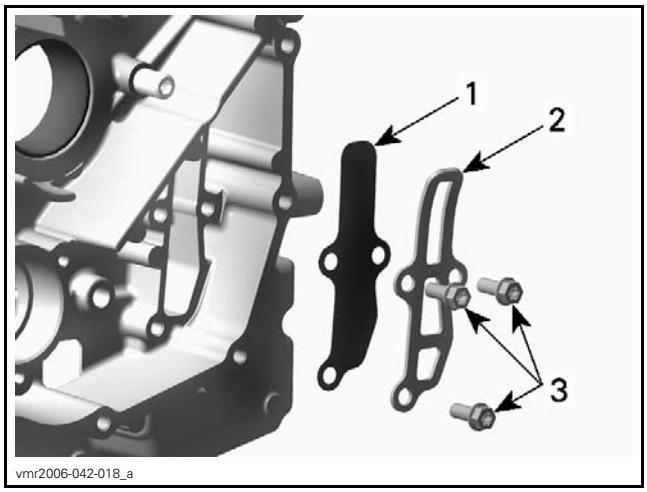
The installation is the reverse of the removal procedure.

SERVICE PRODUCT	
Oil Strainer screws	LOCTITE 243 (BLUE) (P/N 293 800 060)

TIGHTENING TORQUE	
Oil strainer screws	6 N•m ± 0.7 N•m (53 lbf•**in** ± 6 lbf•**in**)

REED VALVE

The engine is equipped with a reed valve which prevents accumulation of larger oil quantities in the crankcase. The reed valve is fitted into the crankcase.



1. Reed valve
2. Stopper
3. Screws

Removing the Reed Valve

Remove:
- Engine from vehicle
- PTO cover (refer to *PTO COVER* in the *BOTTOM END* subsection)
- Reed valve retaining screws
- Stopper plate
- Reed valve.

Inspecting the Reed Valve

Check reed valve for cracks or other damage.

Replace reed valve if damaged.

Installing the Reed Valve

The installation is the reverse of the removal procedure.

COOLING SYSTEM

SERVICE TOOLS

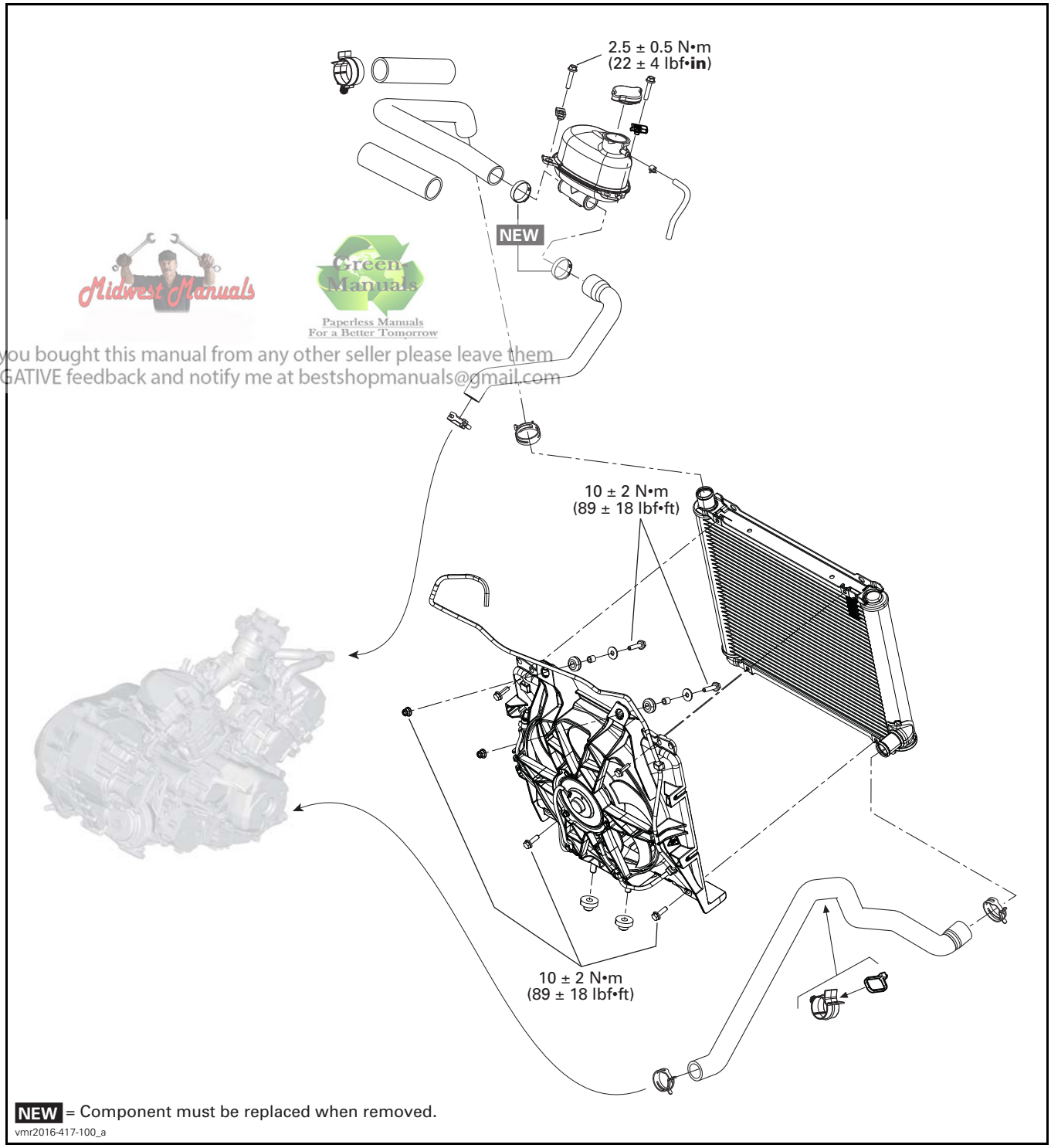
Description	Part Number	Page
HANDLE	420 877 650	17
OIL SEAL PUSHER	529 035 757	17
ROTARY SEAL PUSHER PLATE	529 036 130	14
SEAL PUSHER	529 035 766	14, 17

SERVICE PRODUCTS

Description	Part Number	Page
DOW CORNING 111	413 707 000	17
LOCTITE 243 (BLUE)	293 800 060	7

RADIATOR

570 and 650 Engines



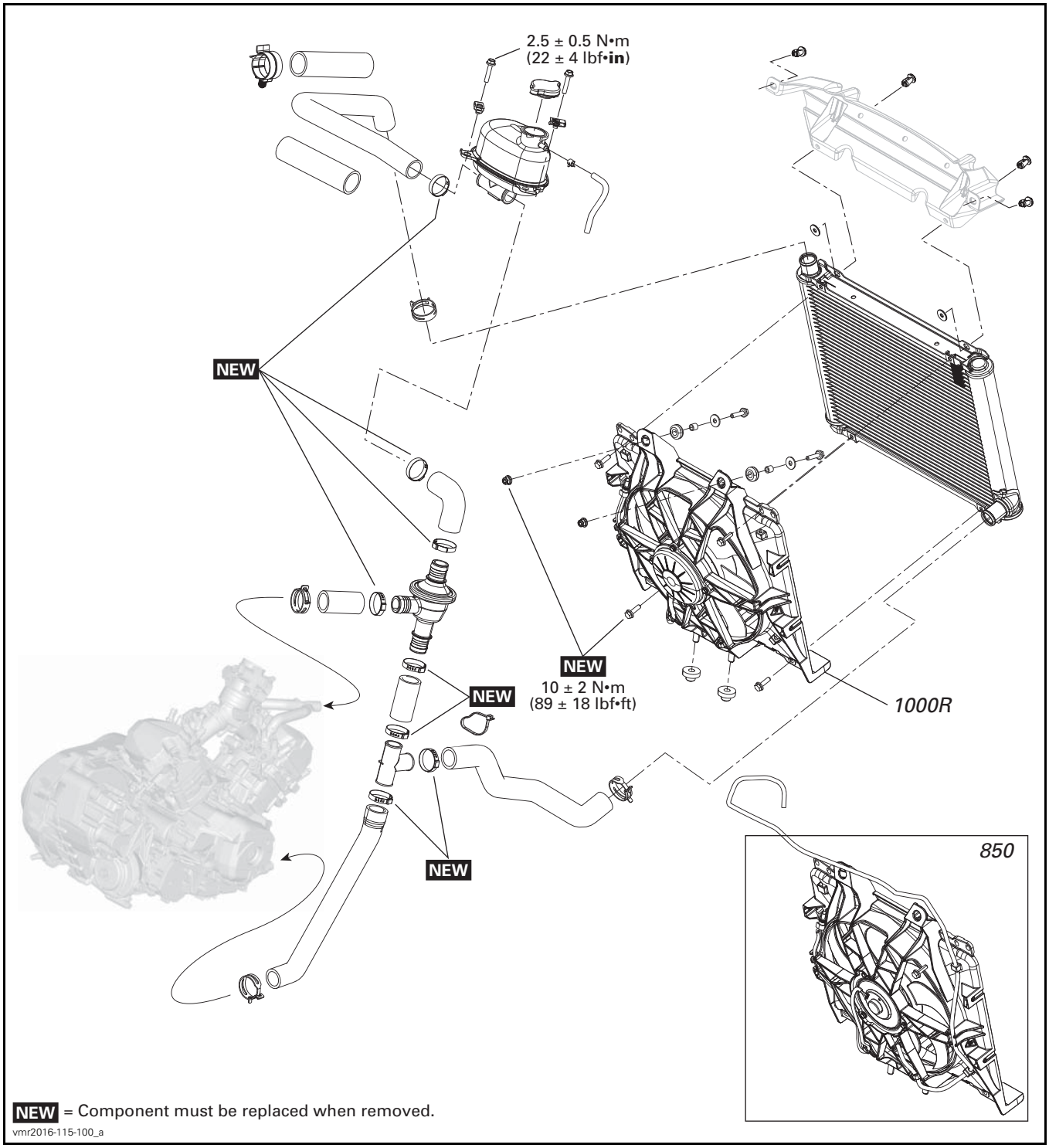
Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
If you bought this manual from any other seller please leave them
NEGATIVE feedback and notify me at bestshopmanuals@gmail.com

NEW = Component must be replaced when removed.

vmr2016-417-100_a

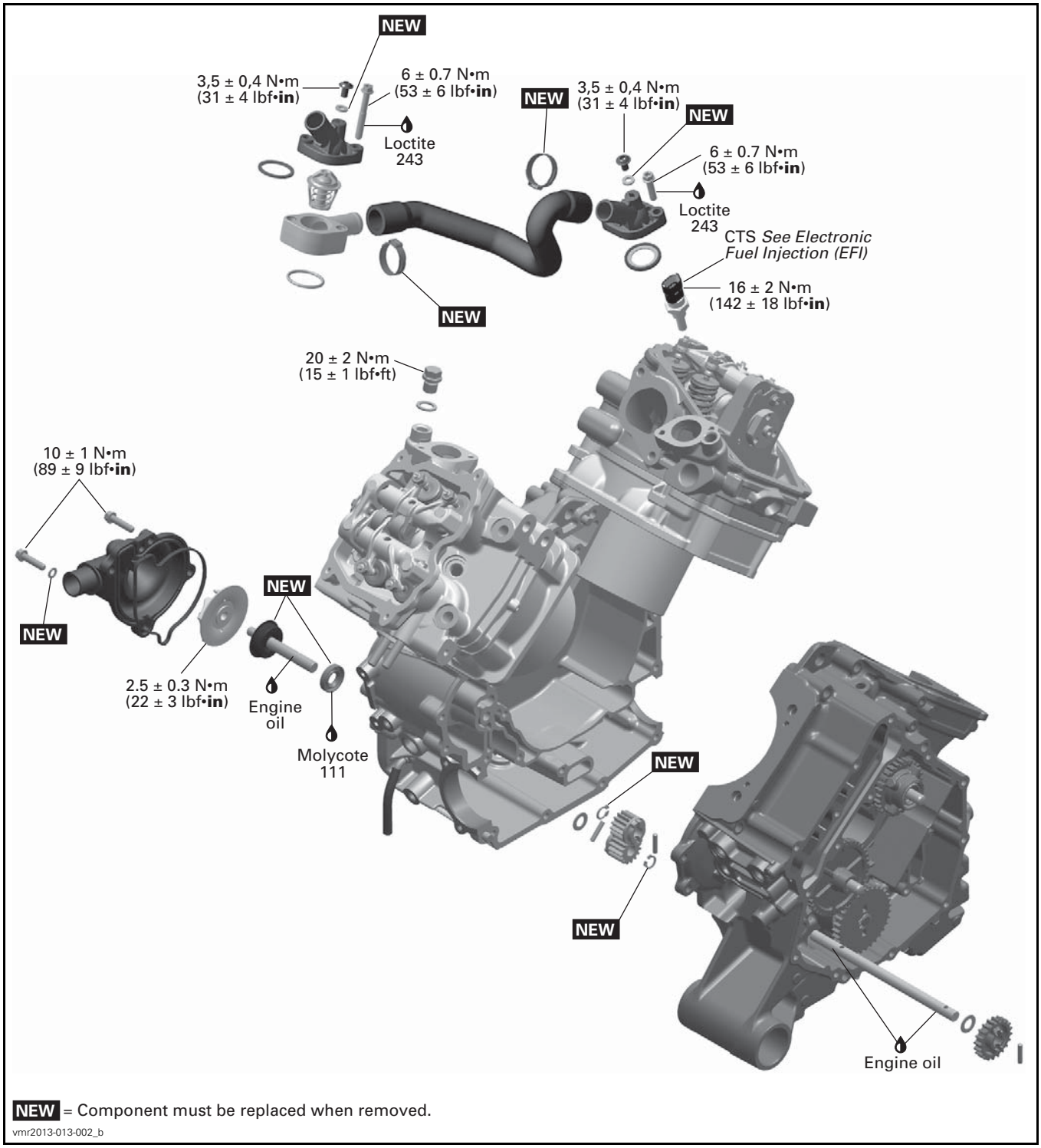
RADIATOR AND THERMOSTAT

850 and 1000R Engines



WATER PUMP AND THERMOSTAT

570 and 650 Engines



NEW = Component must be replaced when removed.

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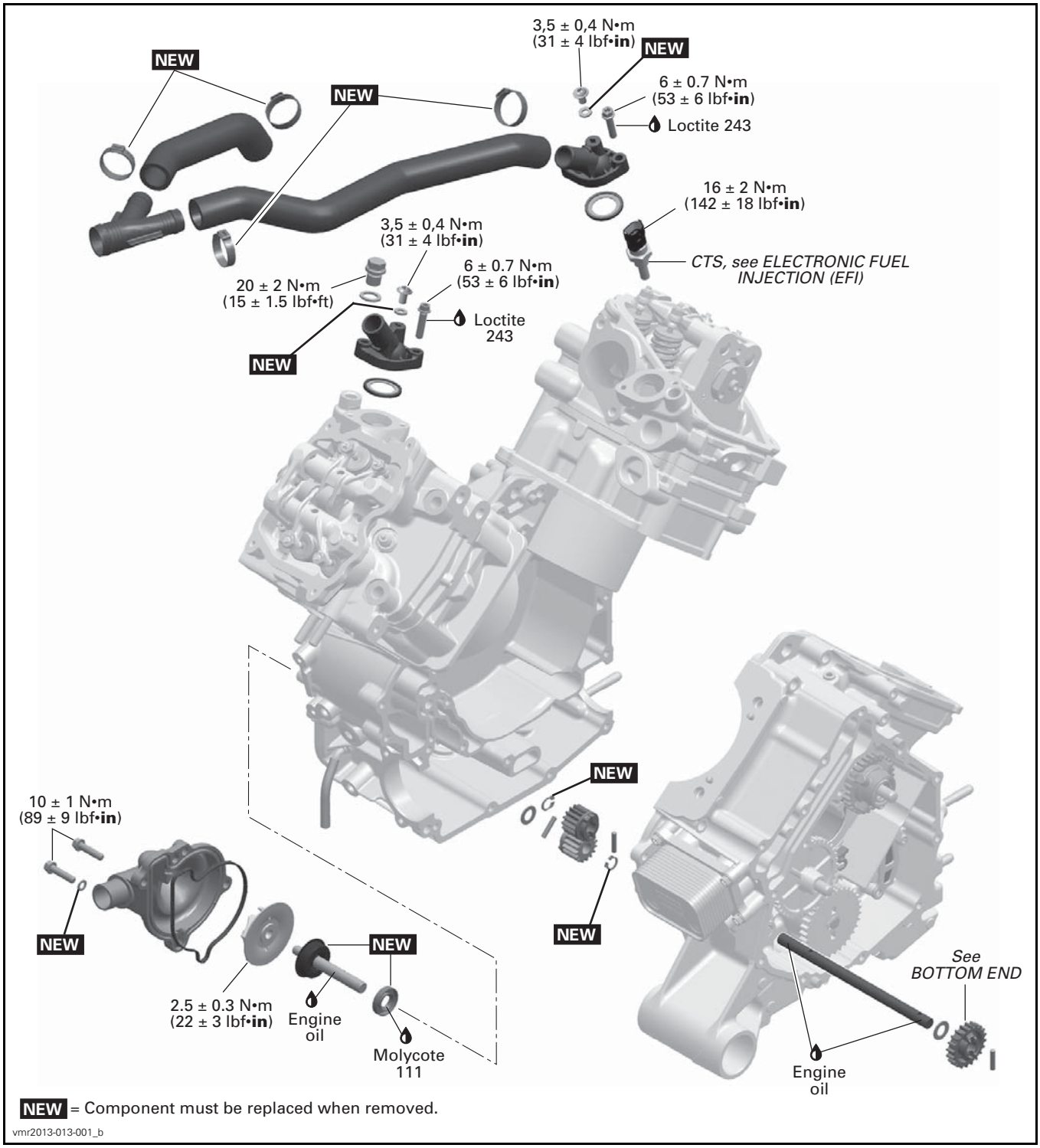
WATER PUMP

850 and 1000R Engines



GENERAL

NOTICE Never start engine without coolant. Some engine parts such as the rotary seal on the water pump shaft can be damaged.

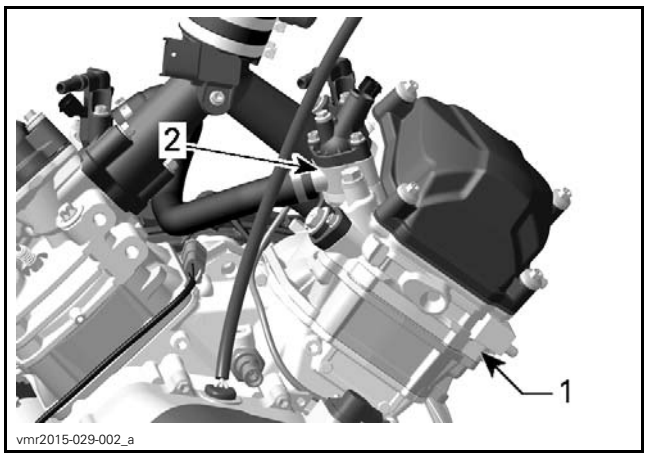
PROCEDURES

THERMOSTAT

Thermostat Location

570 and 650 Engines

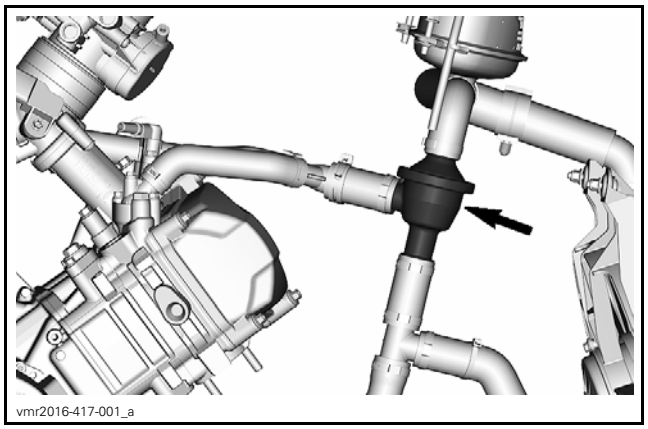
The thermostat is located in the thermostat housing at the top of the front cylinder (RH side).



1. Front cylinder
2. Thermostat housing

850 and 1000R Engines

The thermostat is located between the front cylinder and the radiator, behind the RH front inner fender.

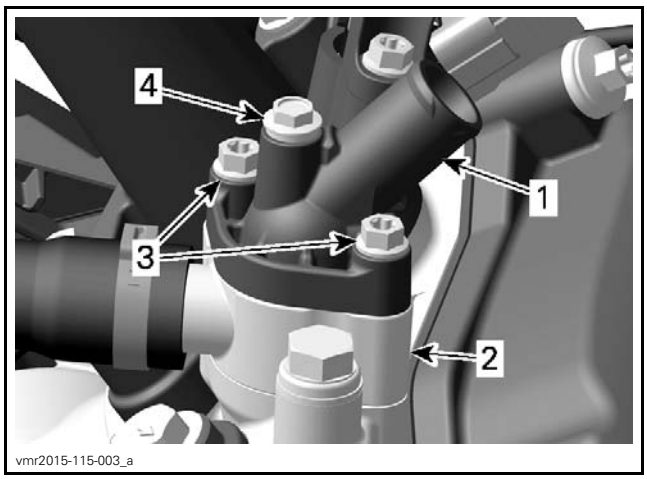


Removing the Thermostat

Drain engine coolant, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

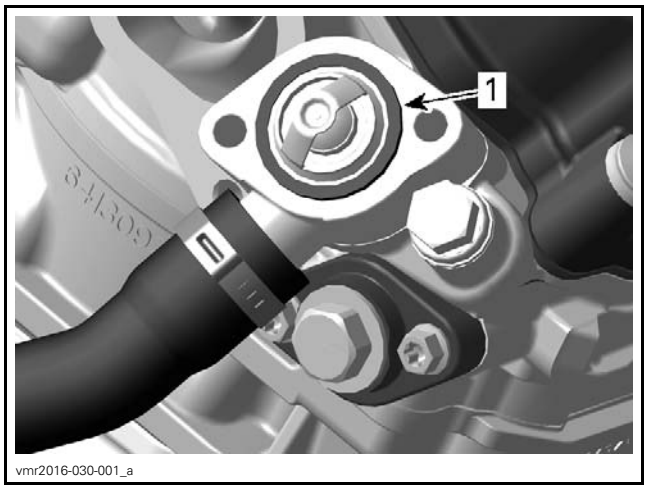
570 and 650 Engines

1. Remove thermostat housing screws and remove thermostat cover.



1. Thermostat cover
2. Thermostat housing
3. Cover screws
4. Bleed screw

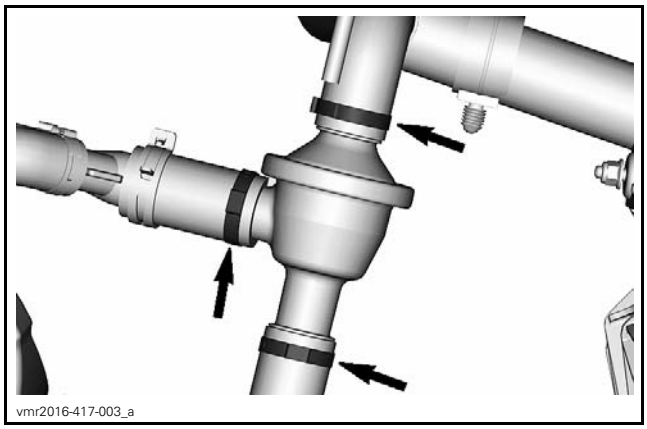
2. Pull thermostat and gasket.



1. Thermostat with gasket

850 and 1000R Engines

1. Remove the RH front inner fender.
2. Remove Oetiker clamps.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3. Remove the thermostat and its housing as a unit.

Testing the Thermostat

To check thermostat, put it in water and heat the water.

THERMOSTAT OPENING TEMPERATURE	
STARTS TO OPEN	FULLY OPEN
65°C (149°F)	75°C (167°F)

Replace thermostat if it does not begin to open at specified temperature.

Check if gasket is brittle, hard or damaged. If so, replace gasket.

Installing the Thermostat

The installation is the reverse of the removal procedure. However, pay attention to the following.

570 and 650 Engines

SERVICE PRODUCT	
Thermostat cover retaining screws	LOCTITE 243 (BLUE) (P/N 293 800 060)

TIGHTENING TORQUE	
Thermostat cover retaining screws	6 N•m ± 0.7 N•m (53 lbf•**in** ± 6 lbf•**in**)

850 and 1000R Engines

Install **NEW** Oetiker clamps.

All Models

Refill and bleed cooling system, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

Check cooling system for leaks.

RADIATOR

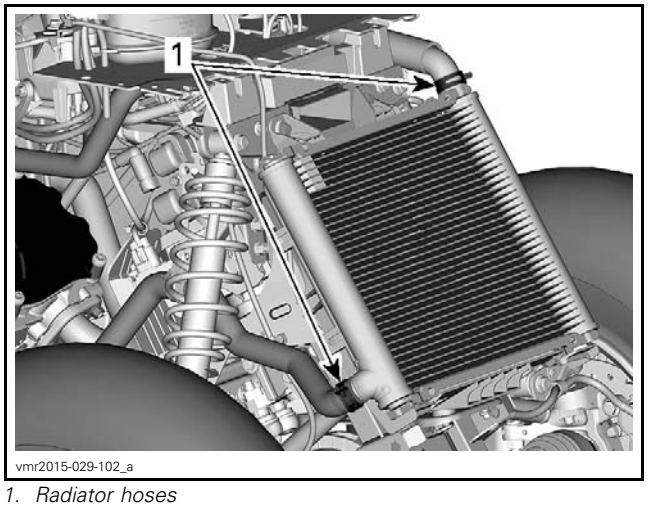
Inspecting the Radiator

Check radiator fins for clogging or damage.

Remove insects, mud or other obstructions with compressed air or low pressure water.

Removing the Radiator

1. Drain engine coolant. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.
2. Remove front body module. Refer to *BODY* subsection.
3. Disconnect radiator and fan assembly.



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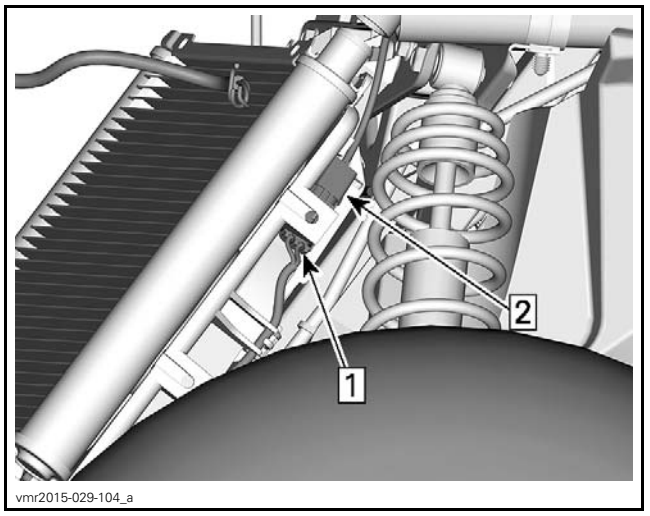
1. Radiator hoses



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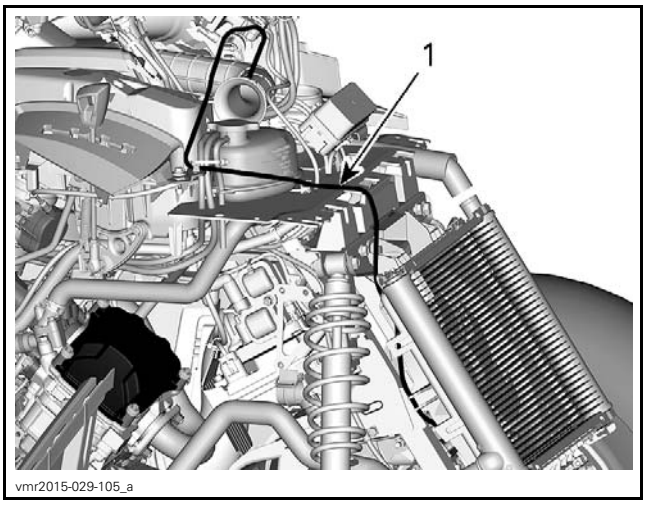
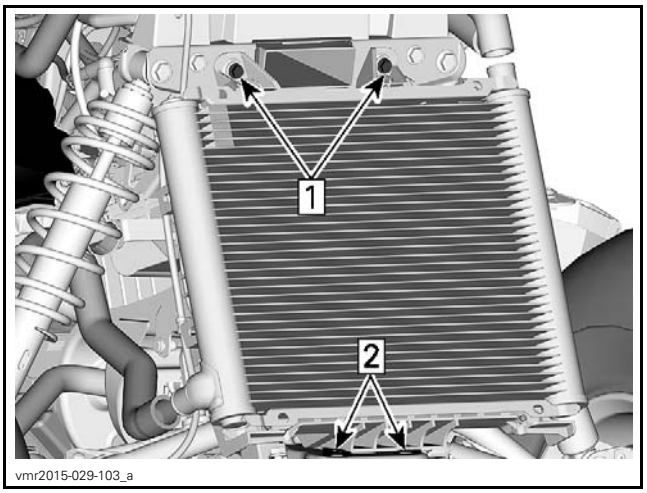
Step 1: Disconnect cooling fan connector
Step 2: Remove the harness connector from the fan shroud



1. Remove fan motor vent hose (if so equipped)

NOTE: Take note of the rooting of vent hose on vehicle to ease reinstallation.



Step 1: Remove upper retaining bolts
Step 2: Remove radiator from bushings

Installing the Radiator

Reverse the removal procedure. However, pay attention to the following.

Ensure that rubber bushings are properly installed between frame and fan shroud.

Ensure that vent hose of the cooling fan motor is properly rooted as prior to removal (if so equipped).

NOTICE **If the vent hose of the cooling fan motor is not properly rooted, the fan motor may be damaged due to improper venting.**

Tighten radiator upper retaining bolts to specification.

TIGHTENING TORQUE	
Radiator upper retaining bolts	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)

Refill and bleed cooling system, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

Check cooling system for leaks.

COOLANT TEMPERATURE SENSOR (CTS)

Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

RADIATOR COOLING FAN

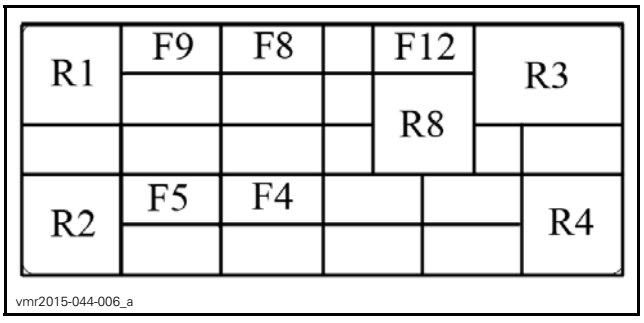
Radiator Cooling Fan Operation

The ECM controls the radiator cooling fan via the input of the coolant temperature sensor (CTS). Refer to the following table.

ENGINE TEMP.	COOLING FAN	CHECK ENGINE LIGHT	GAUGE MESSAGE
95°C (203°F)	Turns ON	—	—
93°C (199°F)	Turn OFF	—	—
115°C (239°F)	ON	Turns ON	Check engine Hi Temp
118°C (244°F)	ON	Flashes	Limp Home

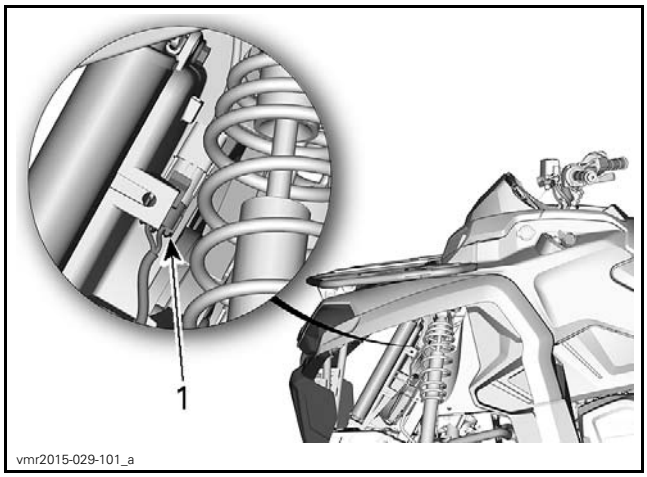
Radiator Cooling Fan Fuse Location

The radiator cooling fan fuse (F9) is located in the front fuse box, under the gauge support.



Testing the Radiator Cooling Fan

1. Disconnect radiator cooling fan connector.



1. Cooling fan connector

2. Connect cooling fan connector pin B to a suitable 20 A fuse jumper and then directly to the positive battery post.
3. Connect cooling fan connector pin A (BK wire) directly to the negative battery post.
4. Check if cooling fan works properly.
   - If cooling fan does not work, replace it.
   - If cooling fan works properly, refer to *RADIATOR COOLING FAN TROUBLESHOOTING CHART*.
5. Reconnect radiator cooling fan connector.

Troubleshooting the Radiator Cooling Fan

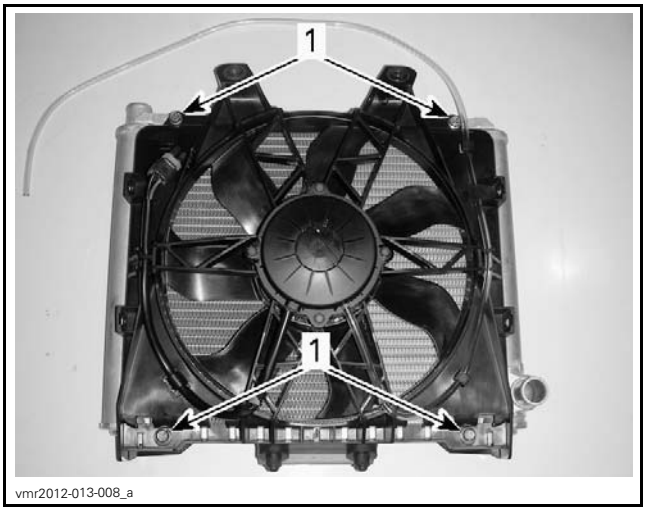
NOTE: The following troubleshooting chart assumes that the engine is operating in the fan activation temperature range. Refer to *RADIATOR COOLING FAN OPERATION*.

COOLING FAN TROUBLESHOOTING CHART		
Is fan working?	YES →	Everything is OK
NO ↓		
Check FAN fuse (F9) Is fuse burnt?	YES →	Replace fuse Is fan working?
NO ↓		
Bypass fan relay R1 (refer to *RELAY OPERATION TEST*)		
↓		
Fan turns?	YES →	Replace relay Is fan working?
NO ↓		
Apply 12 Vdc and a ground to fan connector (refer to *RADIATOR COOLING FAN TEST*)		
↓		
Fan turns?	NO →	Replace fan Is fan working?
YES ↓		
Check CTS (refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection)		
↓		
CTS works?	NO →	Replace CTS Is fan working?
YES ↓		
Check wiring harness and connectors (refer to *WIRING DIAGRAM*)		
↓		
Harness and connectors good?	NO →	Repair or replace defective part(s)
YES ↓		
Try a new ECM	→	Is fan working?

Removing the Radiator Cooling Fan

1. Proceed with *RADIATOR REMOVAL*. See procedure in this subsection.

2. Remove radiator cooling fan retaining screws.



1. Cooling fan retaining screws

3. Remove radiator cooling fan.

Installing the Radiator Cooling Fan

The installation is the reverse of the removal procedure. However, pay attention to the following.

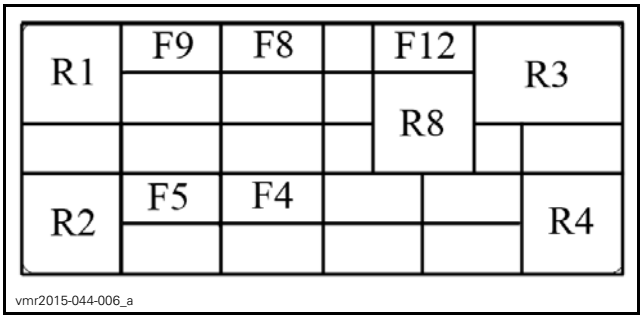
Tighten cooling fan retaining screws to specification.

TIGHTENING TORQUE	
Radiator cooling fan screws	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)

RADIATOR COOLING FAN RELAY (R1)

Relay Location (Radiator Cooling Fan)

The radiator cooling fan relay (R1) is located in the front fuse box, under the gauge support.



Testing the Radiator Cooling Fan Relay

Relay Operation Test

1. Remove relay (R1).
2. Bypass relay using a jumper. Refer to *WIRING DIAGRAM* to locate proper terminals.
3. If the radiator cooling fan is activated, replace the relay.

Relay Continuity Test

Refer to *POWER DISTRIBUTION AND GROUNDS* subsection.

WATER PUMP HOUSING

Water Pump Housing Location

The water pump housing is located on the engine MAG side.

Water Pump Housing Access

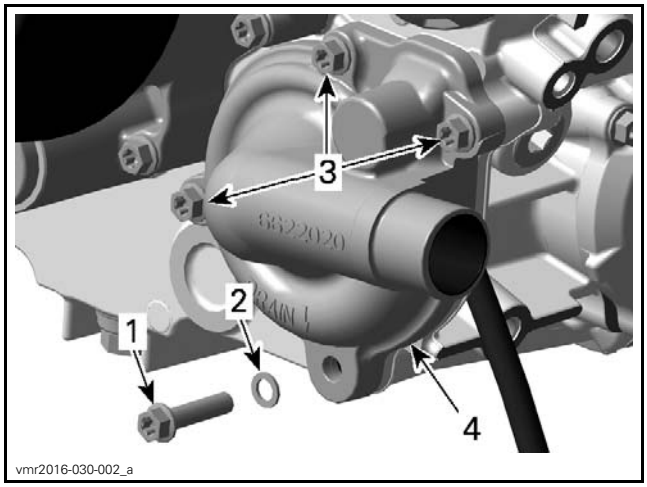
Remove RH footrest panel, refer to *BODY* subsection.

Removing the Water Pump Housing

⚠ WARNING

To avoid potential burns, do not remove the radiator cap or loosen the coolant drain plug if the engine is hot.

1. Drain engine coolant. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.
2. Remove radiator outlet hose from water pump housing.
3. Remove screws retaining water pump housing.

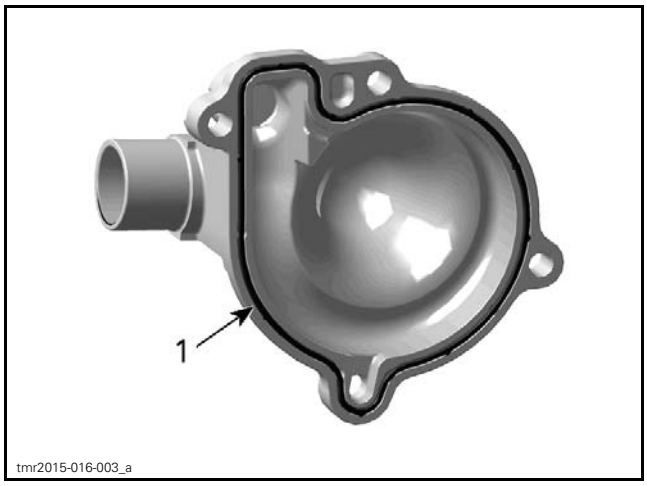


1. Coolant drain plug
2. Sealing ring
3. Screws
4. Water pump housing

4. Pull water pump housing to remove it.

Inspecting the Water Pump Housing

Check if gasket is brittle, hard or damaged and replace as necessary.



1. Gasket

Installing the Water Pump Housing

The installation is the reverse of the removal procedure. However, pay attention to the following.

NOTICE **To prevent leaking, take care that the gasket is exactly in groove when you reinstall the water pump housing.**

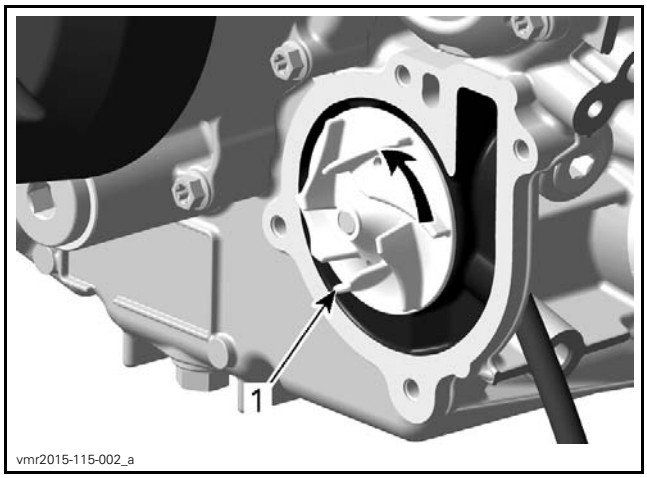
Tighten screws of water pump housing in a criss-cross sequence to specification.

TIGHTENING TORQUE	
Water pump housing screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

WATER PUMP IMPELLER

Removing the Water Pump Impeller

1. Proceed with *WATER PUMP HOUSING REMOVAL*. See procedure in this subsection.
2. Remove impeller by unscrewing it counterclockwise.



1. Turn counterclockwise to unscrew

NOTICE **Water pump shaft and impeller have right-hand threads.**

Inspecting the Water Pump Impeller

Check impeller for cracks or other damage. Replace impeller if damaged.

Installing the Water Pump Impeller

The installation is the reverse of the removal procedure. However, pay attention to the following.

NOTICE **Be careful not to damage impeller fins during installation.**

WATER PUMP SHAFT AND SEALS

Use these guidelines to service these parts.

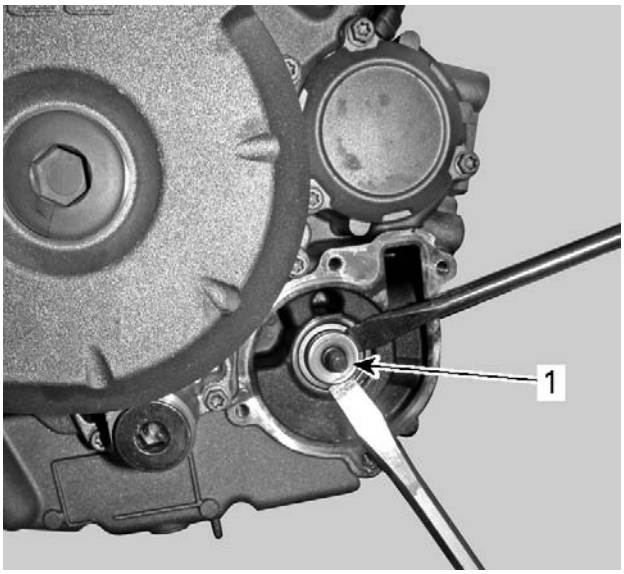
DEFECTIVE PART	ACTION
Rotary seal	Replace: - Rotary seal - Oil seal (assembled engine)
Oil seal	Replace: - Rotary seal - Oil seal (assembled engine)
Water pump shaft	Replace: - Water pump shaft assembly (including rotary seal) - Oil seal (engine disassembled)

Water Pump Seals Replacement (Assembled Engine)

NOTE: Read and thoroughly understand the entire procedure before starting it.

Seals Removal

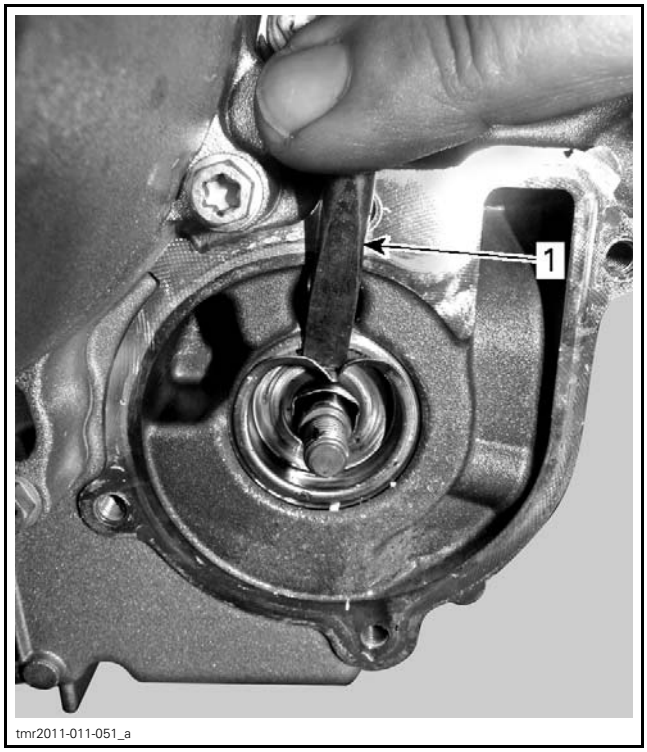
1. Remove the following parts, see procedure in this subsection.
   – *WATER PUMP HOUSING*
   – *WATER PUMP IMPELLER*.
2. Carefully pry out inner part of the rotary seal using 2 screwdrivers.



1. Inner part of rotary seal

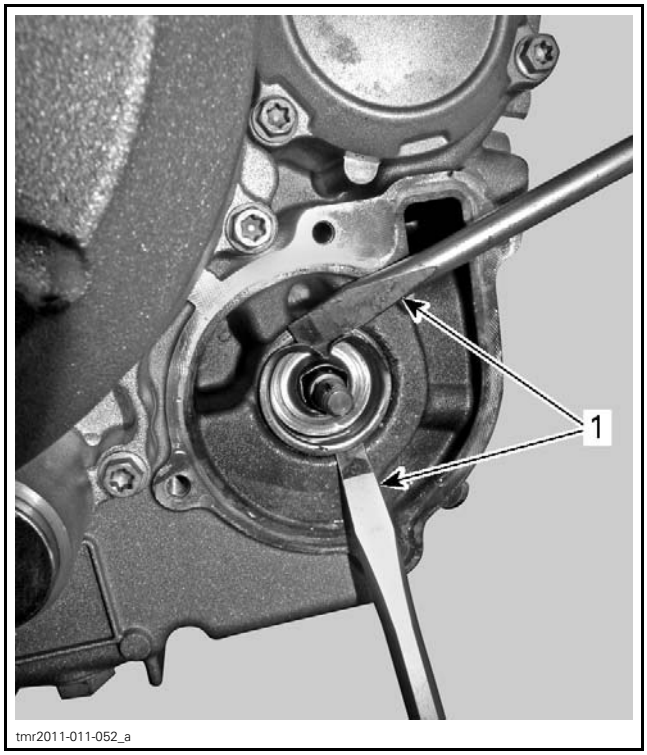
TYPICAL - INNER PART OF ROTARY SEAL REMOVED

3. Carefully bend down the outer part of rotary seal lip using a small chisel.



1. Small chisel

4. Use 2 screwdrivers and carefully remove the outer part of the rotary seal.

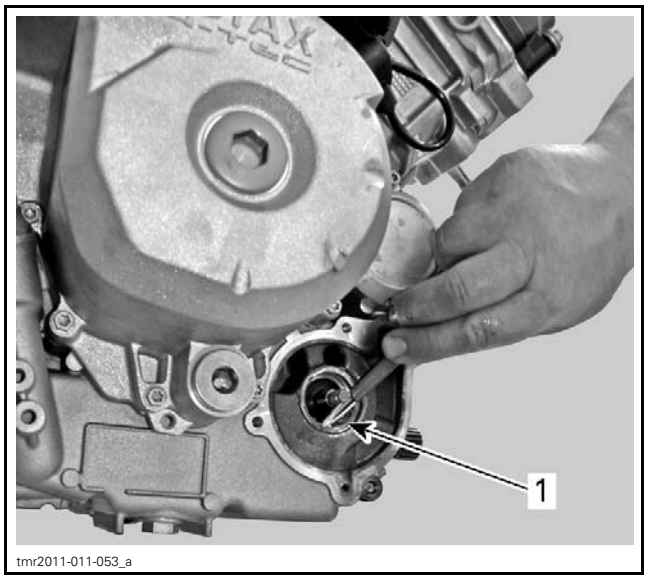


1. Screwdrivers

NOTICE Be careful not to damage the crankcase while removing outer part of the rotary seal.

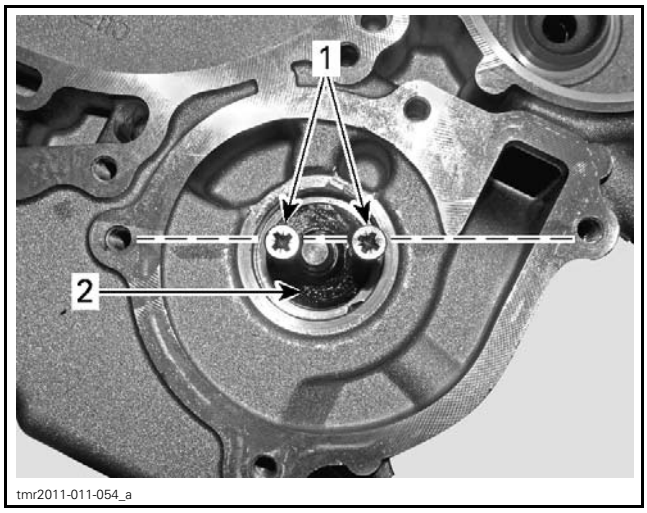
5. Thoroughly remove sealing residue and burr of rotary seal using a scraper.

NOTICE Be careful not to damage water pump shaft.



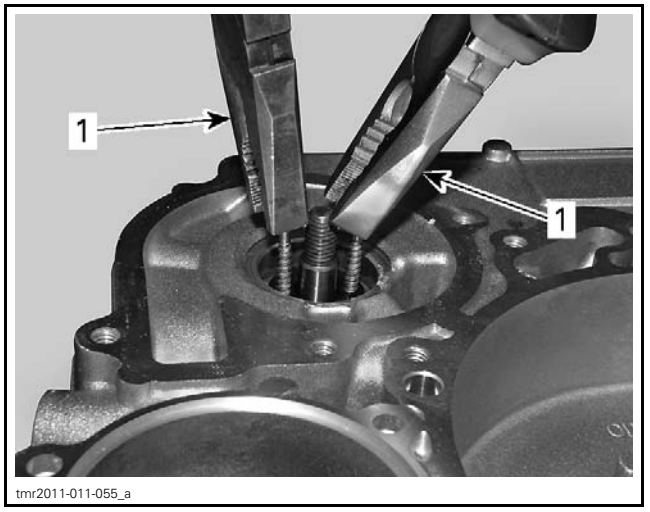
1. Scraper

6. Install 2 wooden screws in the seal.



1. Wooden screws
2. Oil seal

7. Remove oil seal from crankcase by pulling screws with pliers.

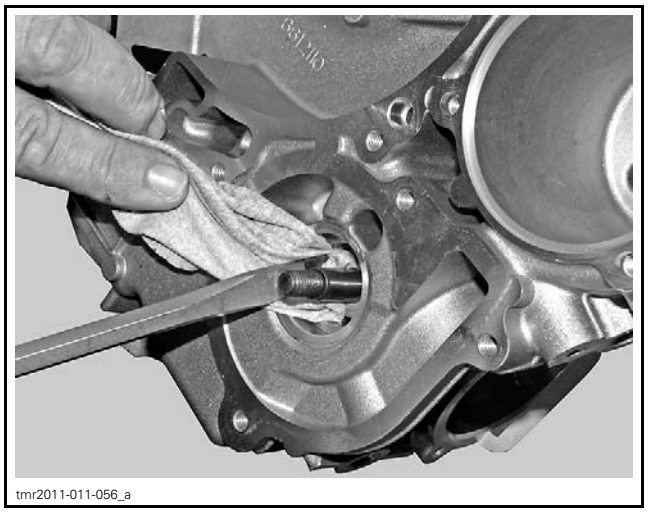


1. Pull on screws to remove seal

8. Check water pump shaft axial play.

NOTE: If axial play is not adequate, engine must be disassembled to replace water pump shaft.

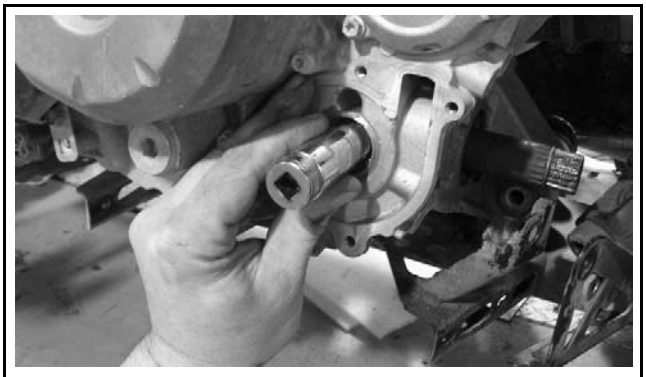
9. Clean oil seal seat.



Seals Installation

1. Apply engine oil on water pump shaft.
2. Apply grease on the lips of the oil seal.
3. Carefully install oil seal over the water pump shaft.
4. Push oil seal into the water pump cavity.

REQUIRED TOOL
17 mm (11/16 in) deep socket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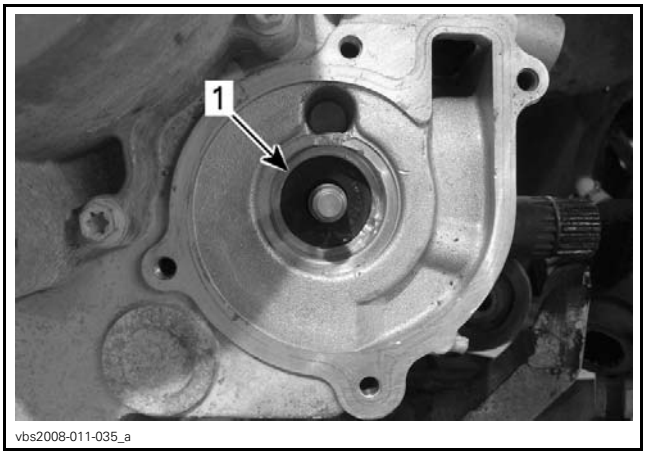
OIL SEAL INSTALLATION

5. Ensure that the oil seal is properly seated in water pump cavity.



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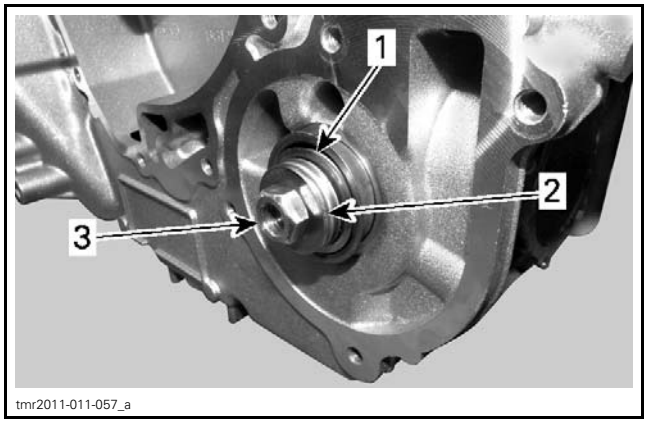
TYPICAL
1. Oil seal properly seated

6. Apply engine oil on water pump shaft.
7. Place rotary seal onto water pump shaft and pull out water pump shaft by hand.

NOTICE **Do not install the rotary seal completely into the crankcase to prevent the water pump shaft plastic gear from breaking. Push it partially in, then pull the shaft.**

8. Place a robust M8 flat washer (P/N 420 227 935) onto water pump shaft.
9. Install a M8 x 1.25 nut (P/N 233 281 414) onto water pump shaft by hand.
10. Thread nut **1-1/2 turns** to pull the shaft into rotary seal.



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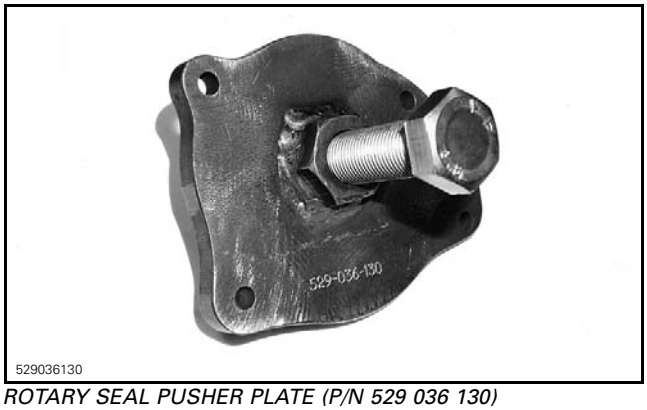
1. Rotary seal
2. M8 robust flat washer (P/N 420 227 935)
3. M8 x 1.25 nut (P/N 233 281 414)

11. Remove M8 nut.

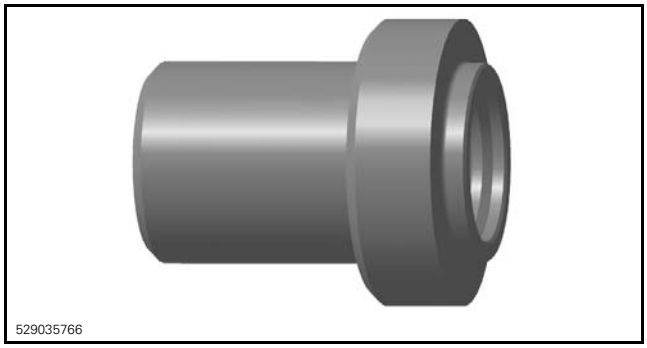
NOTE: The robust M8 flat washer must remain on water pump shaft.

REQUIRED TOOLS
ROTARY SEAL PUSHER PLATE (P/N 529 036 130)
4x M6 x 85 screws (P/N 420 440 347)
4x tubes 70 mm (2.75 in)
SEAL PUSHER (P/N 529 035 766)



529036130

ROTARY SEAL PUSHER PLATE (P/N 529 036 130)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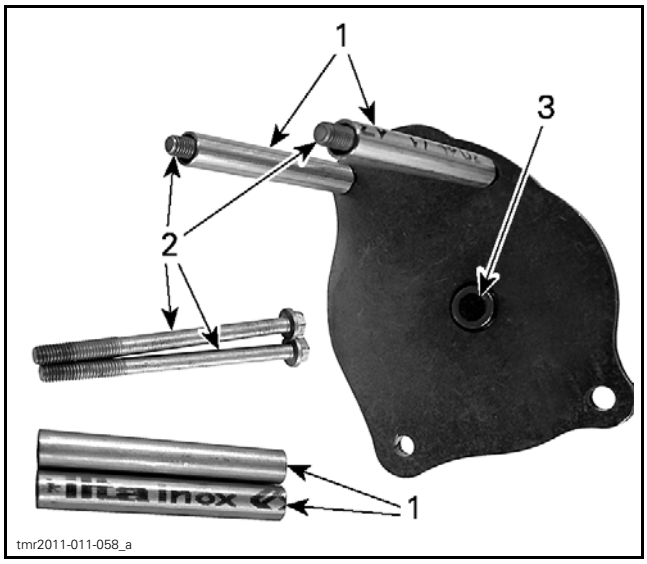
SEAL PUSHER (P/N 529 035 766)



ROTARY SEAL PUSHER PLATE ASSEMBLY
1. *4 x tubes (70 mm (2.75 in) length)*
2. *4 x screws M6 x 85*
3. *Plane surface on pusher bolt*

12. Install rotary seal installation tools on crankcase as follows.

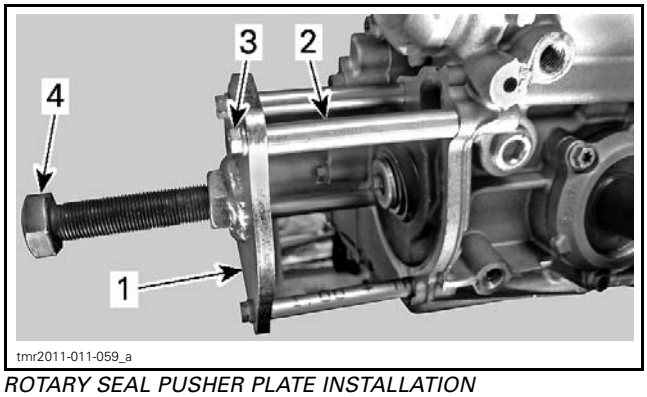
    NOTE: Make sure pusher bolt has a plane surface.

    12.1 Apply a little grease at the end of tool pusher bolt.

    12.2 Ensure that pusher bolt is completely unscrewed.

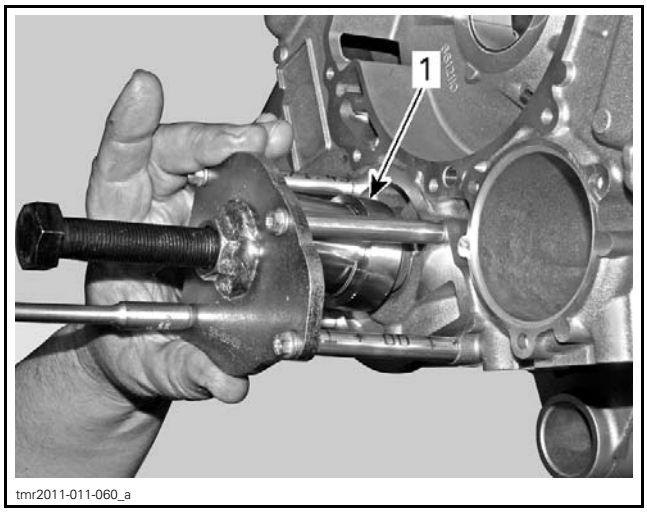
    12.3 Install rotary seal pusher plate on crankcase by tightening M6 screws.

    NOTICE **Do not use pneumatic or electric tools for tightening screws.**



ROTARY SEAL PUSHER PLATE INSTALLATION
1. *Rotary seal pusher plate*
2. *Tube (70 mm (2.75 in) length)*
3. *M6 x 85 screw*
4. *Pusher bolt*

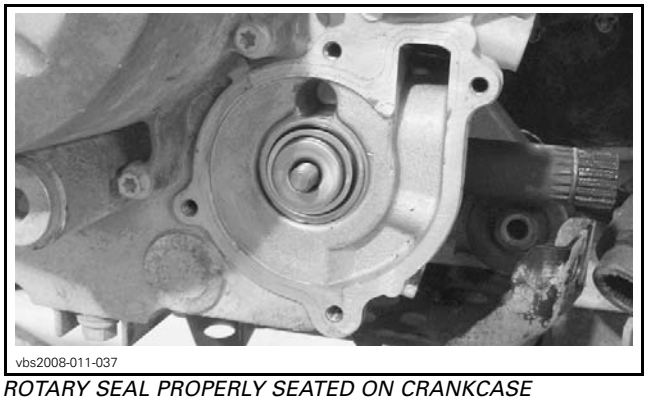
    12.4 Install seal pusher between rotary seal pusher plate and water pump shaft.



SEAL PUSHER INSTALLATION
1. *Seal pusher aligned with pusher bolt*

    12.5 Tighten the pusher bolt by hand until it stops against the seal pusher.

13. Carefully thread the pusher bolt **1-1/2 turns**.
14. Ensure that the rotary seal is going straight into crankcase.
15. Remove rotary seal installation tools from crankcase.
16. Repeat steps *9 TO 15* until rotary seal is completely seated in the crankcase.

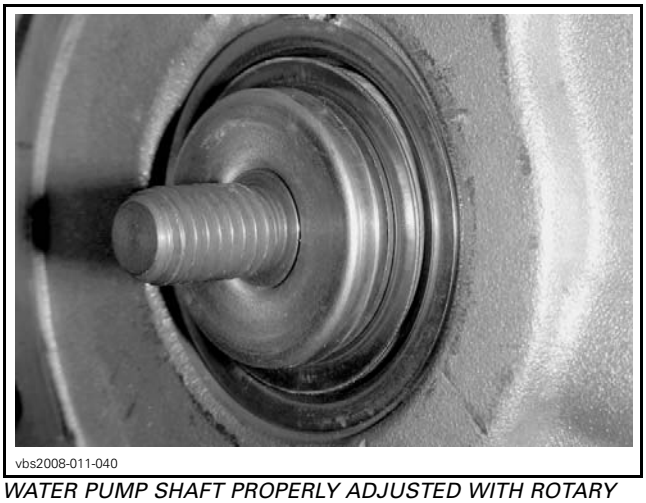


ROTARY SEAL PROPERLY SEATED ON CRANKCASE

17. Carry out the final adjustment of the water pump shaft as follows.

    17.1 Install M8 x 1.25 nut (P/N 233 281 414) onto water pump shaft.

    17.2 Carefully thread M8 nut until the rotary seal is flush with the end of water pump shaft threads.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WATER PUMP SHAFT PROPERLY ADJUSTED WITH ROTARY SEAL

NOTICE The water pump shaft must be properly adjusted with rotary seal. The water pump shaft must move freely while pushing it toward the crankcase.

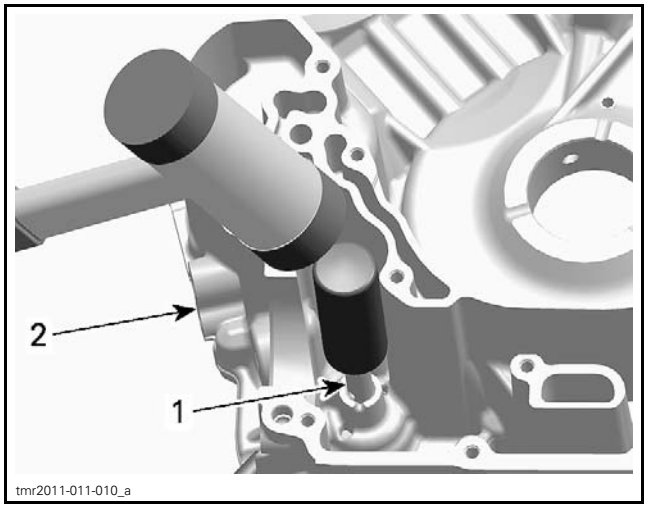
18. Install the following parts, see procedure in this subsection.
    - *WATER PUMP IMPELLER*
    - *WATER PUMP HOUSING*.
19. Refill and bleed cooling system. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.
20. Check cooling system for leaks.

Water Pump Shaft and Seals Replacement (Disassembled Engine)

Water Pump Shaft and Seals Removal

1. Remove the following parts, see procedure in this subsection:
    - *WATER PUMP HOUSING*
    - *WATER PUMP IMPELLER*
    - *WATER PUMP GEARS*.
2. Push out water pump shaft with inner portion of rotary seal from inside of crankcase MAG side.

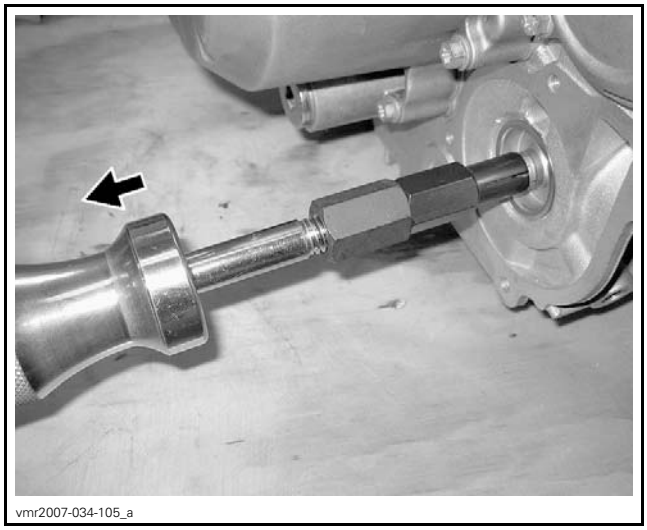
REQUIRED TOOL
Soft hammer



tmr2011-011-010_a

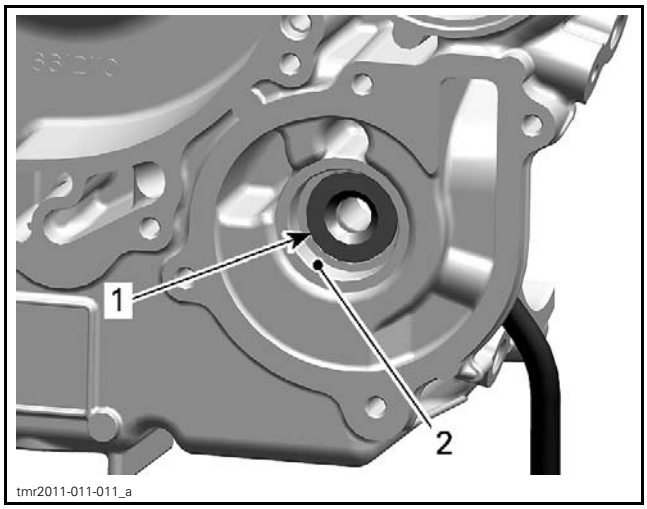
1. Water pump shaft
2. Crankcase MAG side

3. Install a blind hole puller expander snugly against outer part of rotary seal and pull seal out.

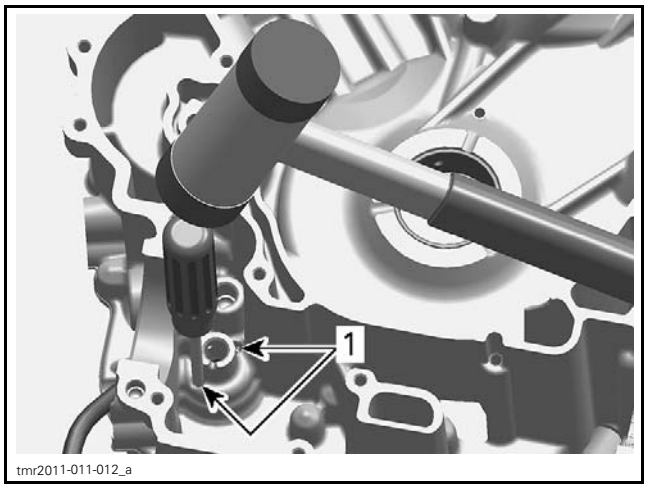

vmr2007-034-105_a

4. Remove oil seal from inside of crankcase MAG side using a pusher tool.

NOTICE Be careful not to damage the rotary seal surface in crankcase.



1. *Oil seal*
2. *Machined surface for rotary seal*



OIL SEAL REMOVAL - VIEW FROM INSIDE CRANKCASE MAG SIDE

1. *Orifices for oil seal removal*

Water Pump Shaft and Seals Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Use tightening torque values specified in the exploded view.

NOTE: Never apply oil on the press fit area of the oil seal and rotary seal.

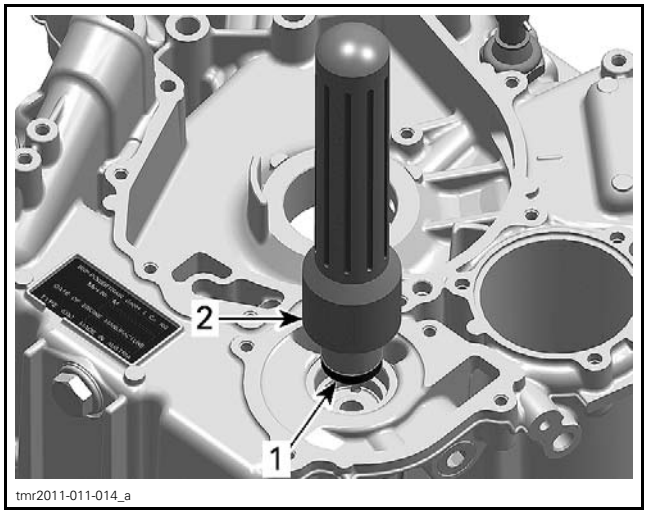
Clean rotary seal surface of any old sealant.

Install oil seal.

REQUIRED TOOL	
OIL SEAL PUSHER (P/N 529 035 757)	
HANDLE (P/N 420 877 650)	

When installing the oil seal on the pusher, make sure the sealing lip points outwards.

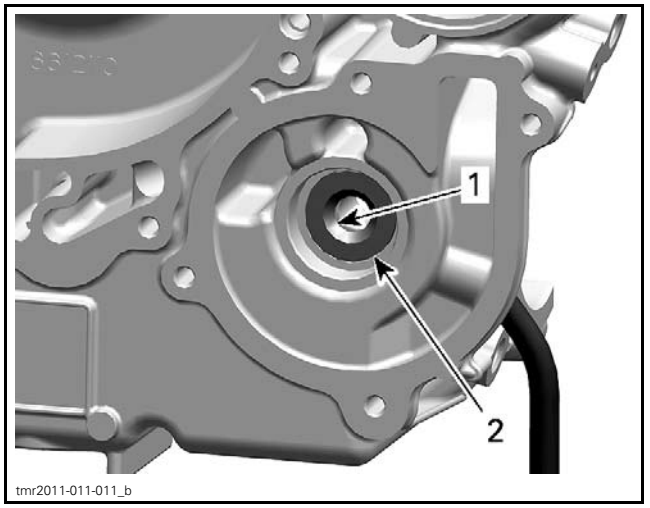
Push NEW oil seal in place.



1. *Oil seal*
2. *Installer handle with oil seal pusher*

Lubricate sealing lip of the oil seal.

SERVICE PRODUCT	
Sealing lip of the oil seal	DOW CORNING 111 (P/N 413 707 000)

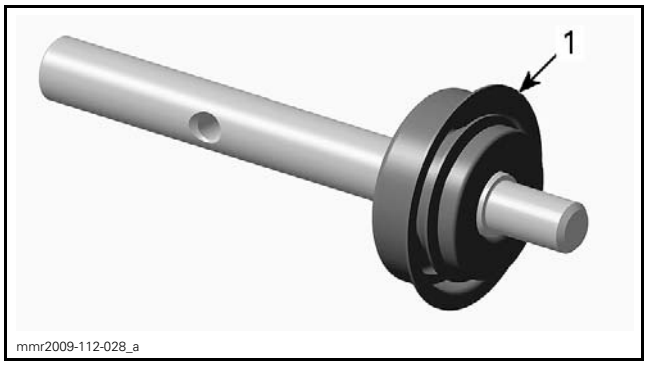


1. *Sealing lip*
2. *Oil seal properly installed*

Apply engine oil on the water pump shaft and intermediate shaft.

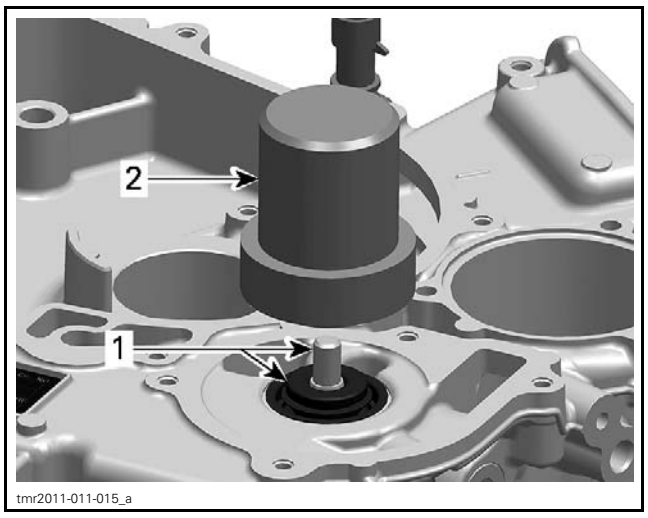
Slide NEW water pump shaft assembly into crankcase.

REQUIRED TOOL	
SEAL PUSHER (P/N 529 035 766)	



WATER PUMP SHAFT ASSEMBLY
1. *Surface where rotary seal is pushed by tool*

NOTICE Never use a hammer for rotary seal installation. Only use a press to avoid damaging the ceramic component.

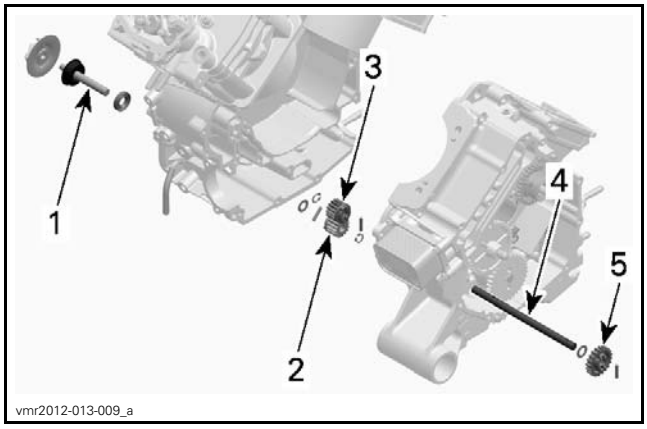


1. *Water pump shaft with rotary seal*
2. *Water pump seal installer*

NOTICE After installation, water pump shaft with rotary seal must rotate freely.

WATER PUMP GEARS

Water Pump Gears Identification

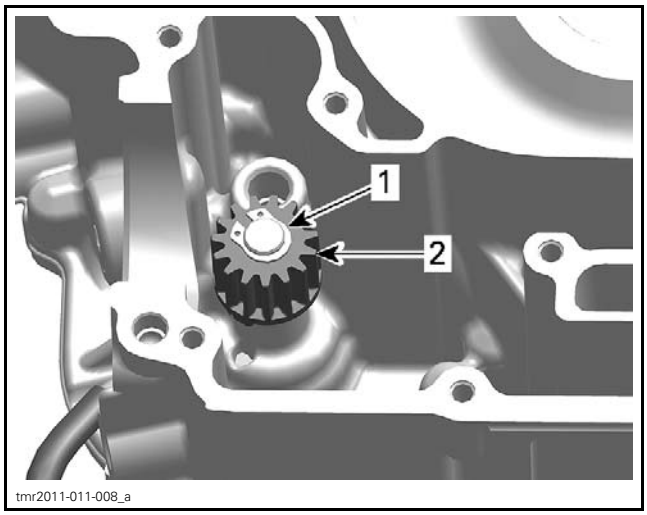


1. *Water pump shaft*
2. *Water pump gear*
3. *Water pump* **intermediate drive** *gear*
4. *Water pump* **intermediate** *shaft*
5. *Water pump* **drive** *gear (See BOTTOM END subsection)*

Inspecting the Water Pump Gears

Water Pump Gear

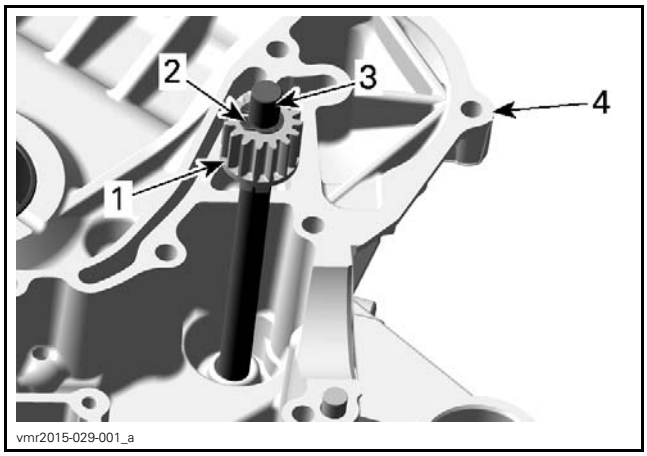
Inspect water pump gear for wear and damage on the snap mechanism to the needle pin. Replace if damaged.



CRANKCASE MAG SIDE
1. *Circlip*
2. *Water pump gear*

Water Pump Intermediate Drive Gear

Check water pump intermediate drive gear for wear or broken teeth. Replace if damaged.



CRANKCASE PTO SIDE
1. *Water pump intermediate drive gear*
2. *Circlip*
3. *Water pump intermediate shaft*
4. *Crankcase PTO side*

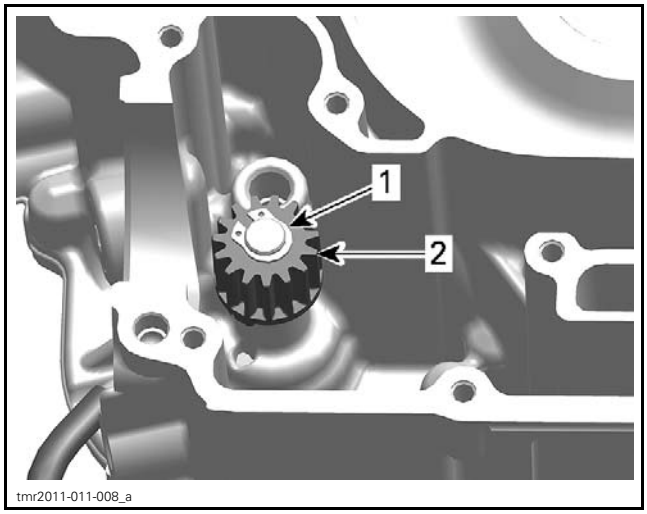
Water Pump Drive Gear

See *BOTTOM END* subsection.

Removing the Water Pump Gears

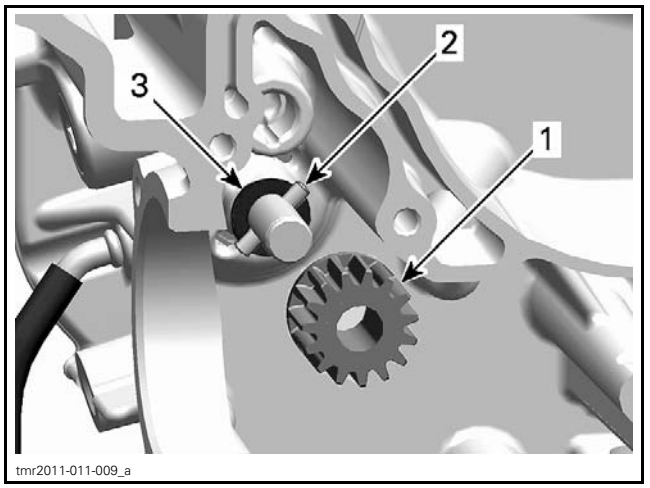
Water Pump Gear

1. Remove circlip retaining water pump gear and discard it.



CRANKCASE MAG SIDE
1. *Circlip*
2. *Water pump gear*

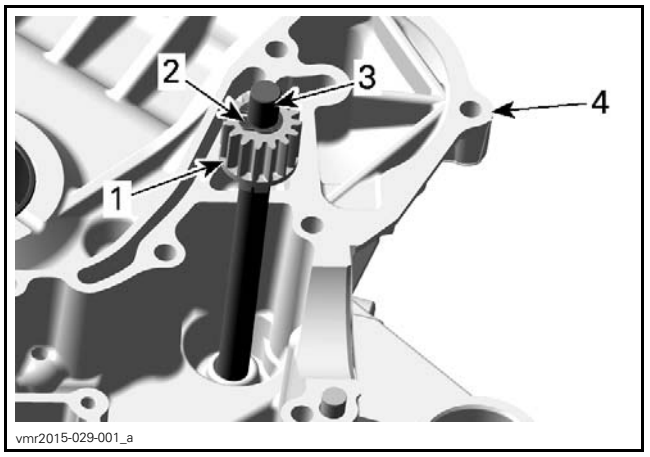
2. Remove the following parts:
   – Water pump gear
   – Needle pin
   – Thrust washer.



CRANKCASE MAG SIDE
1. *Water pump gear*
2. *Needle pin*
3. *Thrust washer*

Water Pump Intermediate Drive Gear

1. Remove circlip retaining water pump intermediate drive gear and discard it.



CRANKCASE PTO SIDE
1. *Water pump intermediate drive gear*
2. *Circlip*
3. *Water pump intermediate shaft*
4. *Crankcase PTO side*

2. Remove the following parts:
   – Water pump intermediate drive gear
   – Needle pin.

Water Pump Drive Gear

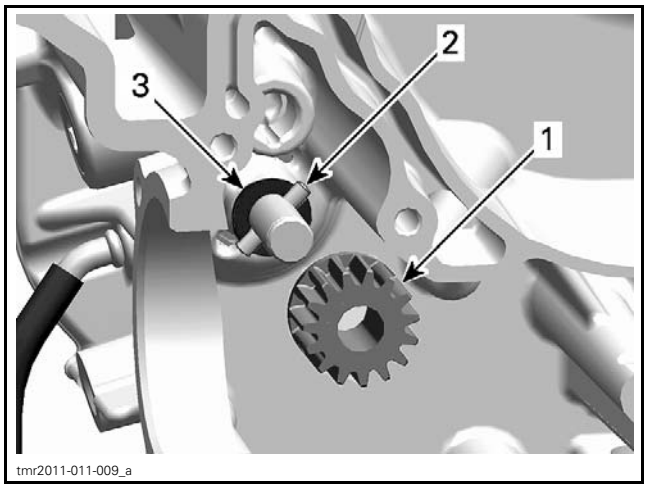
See *BOTTOM END* subsection.

Installing the Water Pump Gears

Water Pump Gear

Install the following parts on water pump shaft.
– Thrust washer
– Needle pin
– Water pump gear.

NOTICE A missing thrust washer will cause a leaking rotary seal.

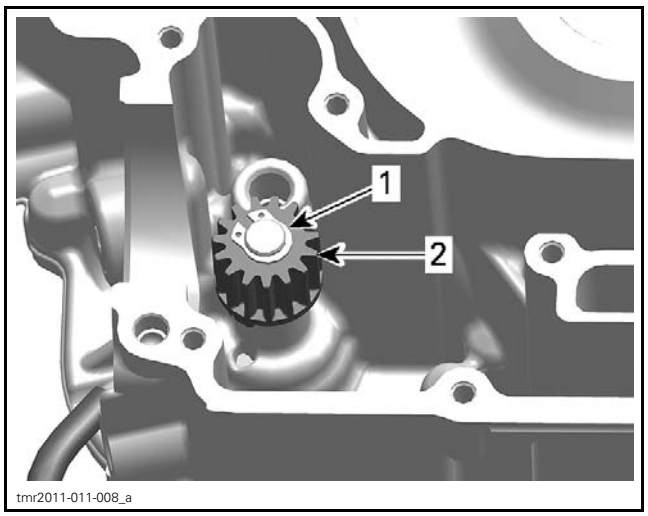


1. *Water pump gear*
2. *Needle pin*
3. *Thrust washer*

NOTE: Ensure water pump gear snaps properly onto needle pin.

Install NEW circlip to retain water pump gear.

NOTICE Never use the circlip a second time. Always install a NEW one.



1. *Circlip*
2. *Water pump gear*

Water Pump Intermediate Drive Gear

Install the following parts on water pump intermediate shaft.

– Needle pin
– Water pump intermediate drive gear.

Install NEW circlip to retain water pump intermediate drive gear.

NOTICE Never use the circlip a second time. Always install a NEW one.

Water Pump Drive Gear

See *BOTTOM END* subsection.

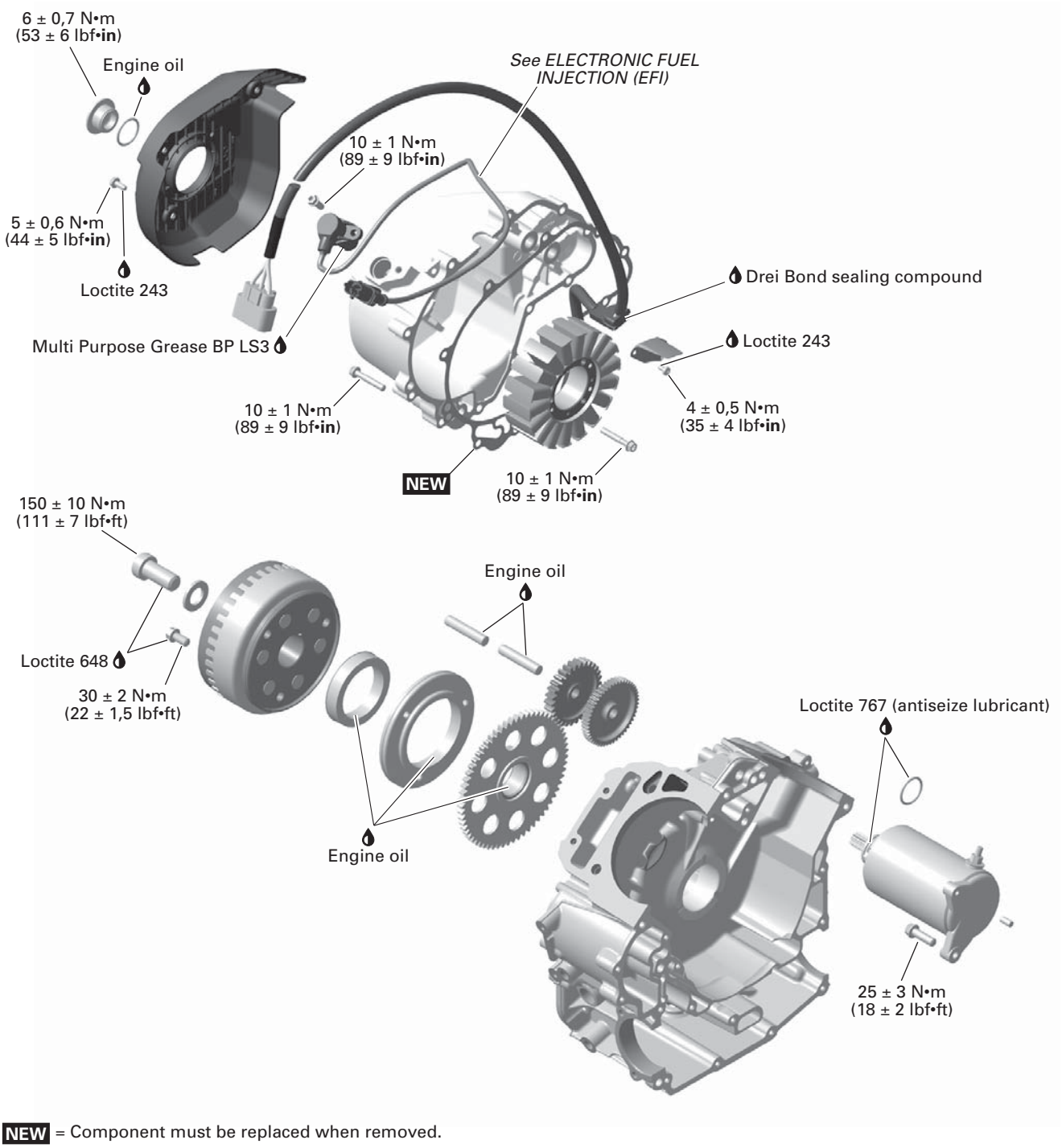
MAGNETO AND STARTER

SERVICE TOOLS

Description	Part Number	Page
CRANKSHAFT LOCKING BOLT	529 035 617	6
CRANKSHAFT PROTECTOR	529 036 034	6
FLUKE 115 MULTIMETER	529 035 868	4–5
MAGNETO PULLER	529 035 748	6

SERVICE PRODUCTS

Description	Part Number	Page
DIELECTRIC GREASE	293 550 004	11
DREI BOND SEALING COMPOUND	420 297 906	3
LOCTITE 243 (BLUE)	293 800 060	6
LOCTITE 648 (GREEN)	413 711 400	7–8
LOCTITE 767 (ANTISEIZE LUBRICANT)	293 800 070	10–11
LOCTITE CHISEL (GASKET REMOVER)	413 708 500	3
PULLEY FLANGE CLEANER	413 711 809	7–8



NEW = Component must be replaced when removed.

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PROCEDURES

MAGNETO COVER

Magneto Cover Access

Refer to *BODY* subsection and remove the following:
- Seat
- Console
- RH side panel and extension panel
- RH footboard panel.

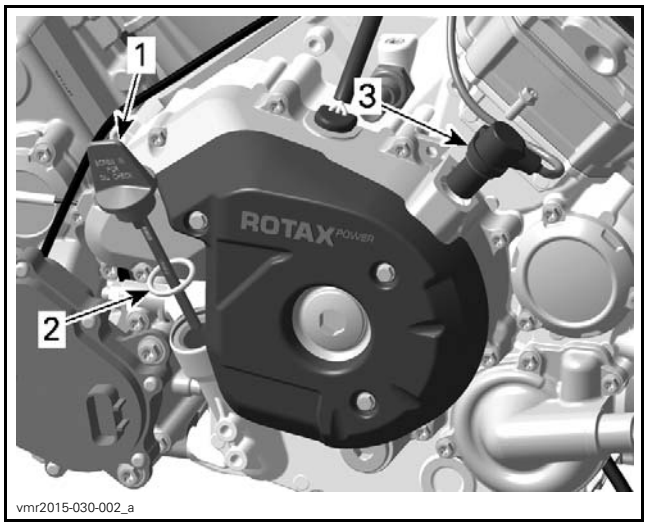
Removing the Magneto Cover

Drain engine oil (refer to *ENGINE OIL CHANGE* in the *PERIODIC MAINTENANCE PROCEDURES* subsection).

Remove crankshaft position sensor (CPS) and cut tie raps.

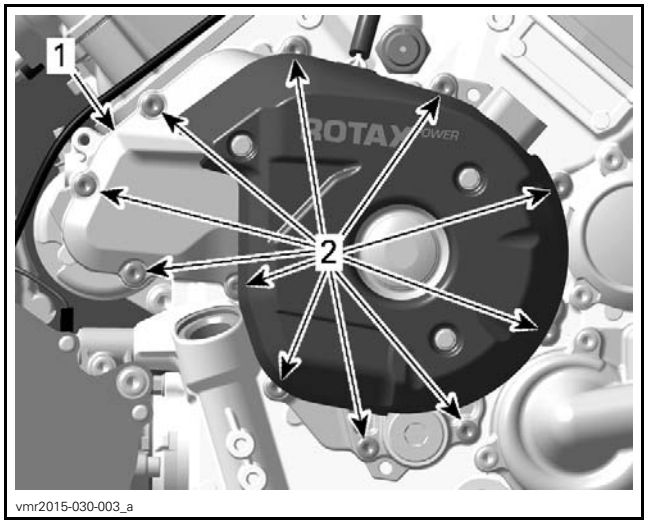
Disconnect the stator connector on the voltage regulator/rectifier, refer to *STATOR CONNECTOR ACCESS* in this subsection.

Remove dipstick with O-ring.



1. Dipstick
2. O-ring
3. Crank position sensor (CPS)

Remove magneto cover retaining screws.



1. Magneto cover
2. Retaining screws

Pull out magneto cover.

Inspecting and Cleaning the Magneto Cover

Check magneto cover for cracks or other damage. Replace if necessary.

NOTE: Clean all metal components in a non-ferrous metal cleaner. Use LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500), or suitable equivalent.

⚠ WARNING

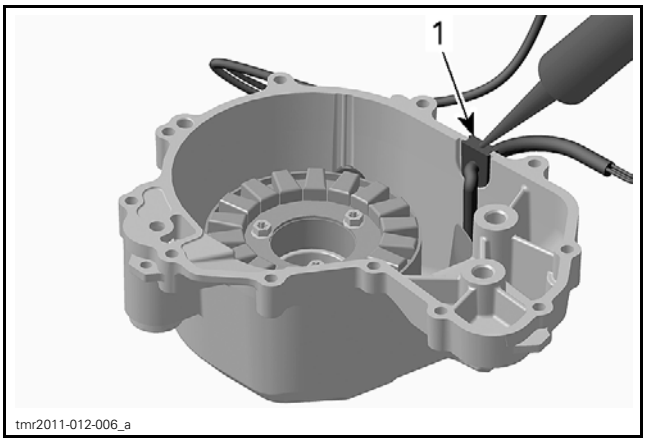
Wear safety glasses and work in a well ventilated area when working with strong chemical products. Also wear suitable non-absorbent gloves to protect your hands.

Installing the Magneto Cover

For installation, reverse the removal procedure. However, pay attention to the following.

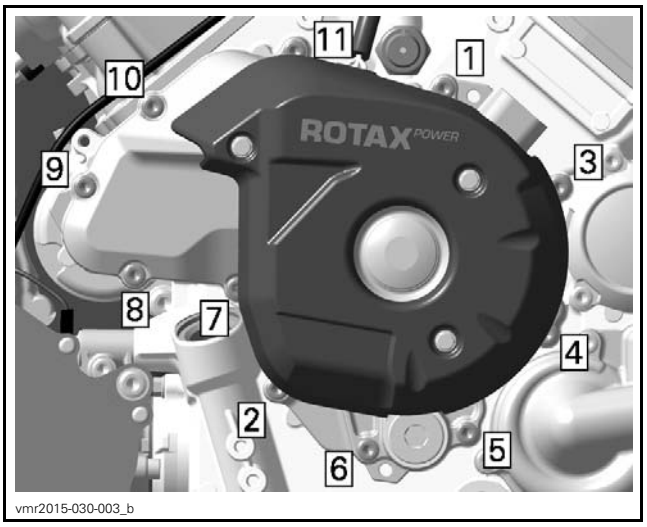
Install a NEW magneto cover gasket.

Apply DREI BOND SEALING COMPOUND (P/N 420 297 906) on stator cable grommet as shown in next illustration.



1. Stator cable grommet (apply Drei Bond sealing compound)

Tighten screws using the following sequence.



TIGHTENING SEQUENCE

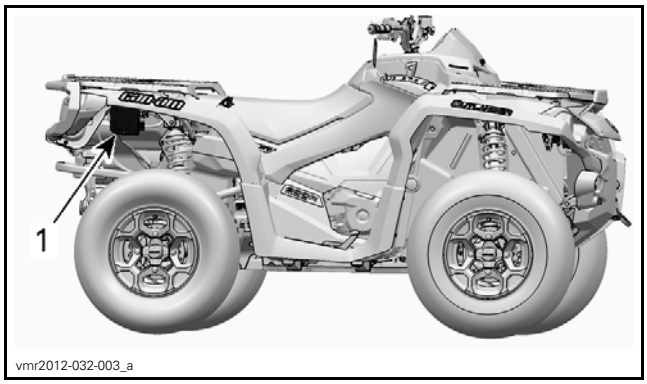
TIGHTENING TORQUE	
Magneto cover screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

Refill engine with recommended oil.

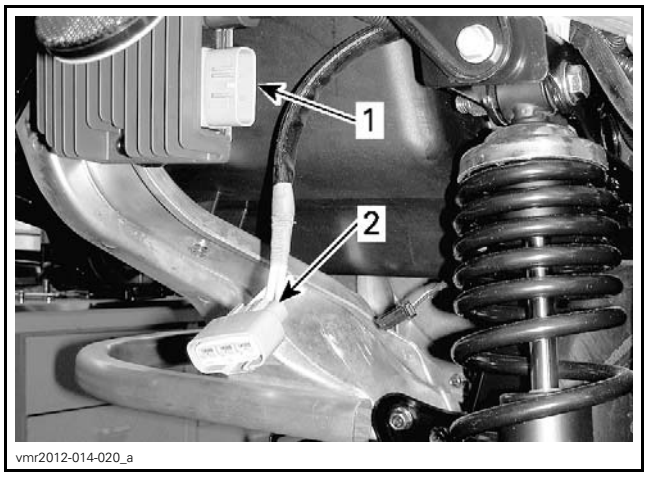
STATOR

Stator Connector Access

NOTE: The stator is directly connected to the voltage regulator/rectifier.



TYPICAL
1. Voltage regulator/rectifier location



1. Voltage regulator/rectifier
2. Three YELLOW wires

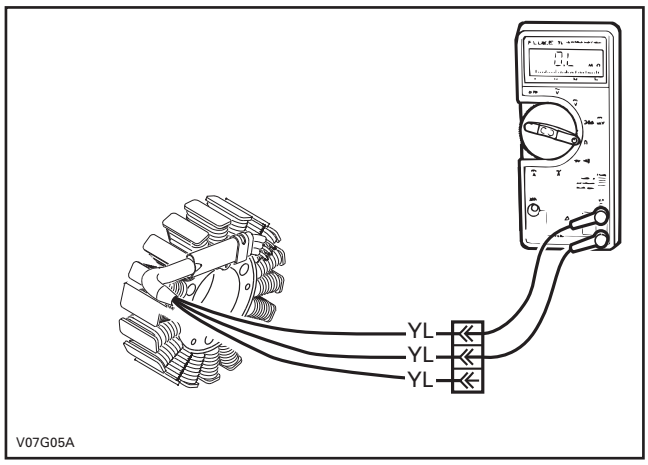
Testing the Stator Static Continuity

1. Disconnect the stator connector on the voltage regulator/rectifier.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

2. Set multimeter to Ω.
3. Connect multimeter between YELLOW wires.
4. Read resistance.

TERMINAL	RESISTANCE @ 20°C (68°F)
1 and 2	0.15 - 0.30 Ω
1 and 3	
2 and 3	



TYPICAL

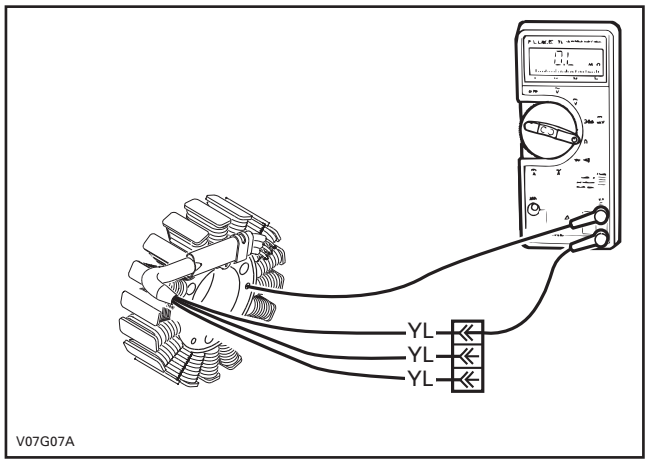
5. If any reading is out of specification, replace stator.
6. Re-plug connectors properly.

Testing the Stator Insulation

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

1. Set multimeter to Ω.
2. Connect multimeter between any YELLOW wire (on stator connector) and engine ground.
3. Read resistance.

TEST PROBES	RESISTANCE @ 20°C (68°F)
Any YELLOW wire and engine ground	Infinite (open circuit)



TYPICAL

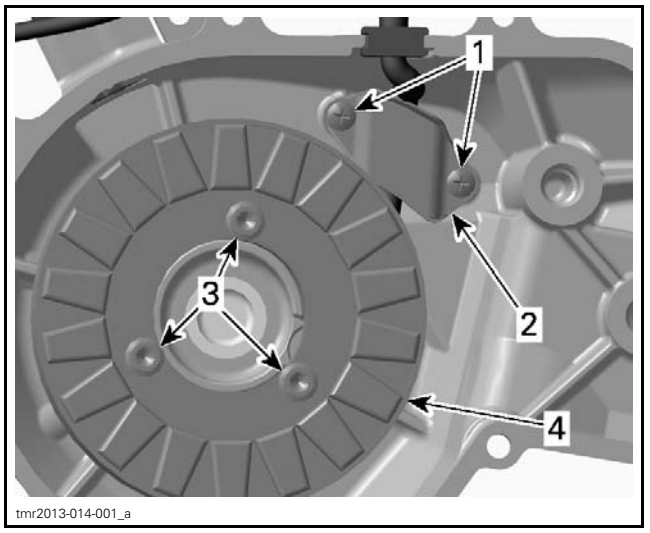
4. If there is a resistance or continuity, the stator coils and/or the wiring is shorted to ground and needs to be repaired or replaced.
5. Re-plug connectors properly.

Removing the Stator

Remove *MAGNETO COVER*. See procedure in this subsection.

Remove screws securing the wire holding strip.

Remove stator retaining screws then the stator.



1. Holding strip screws
2. Wire holding strip
3. Stator retaining screws
4. Stator

Inspecting the Stator

Check stator windings and insulation for cracks or other damages. If damaged replace it.

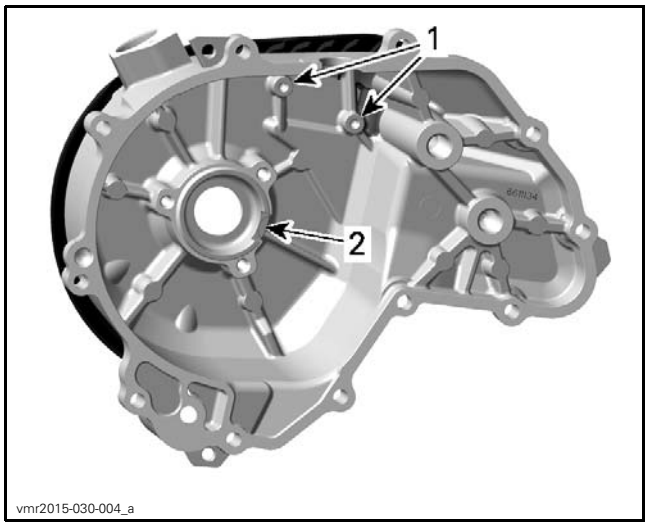
Check if stator wires are brittle, hard or otherwise damaged.

Installing the Stator

For installation, reverse the removal procedure. However, pay attention to the following.

NOTICE **When installing the stator take care to route wires properly and install retaining strip.**

NOTE: There is only one position for the stator (notch in the magneto housing cover).



1. Threads for cable holding strip
2. Notch for stator

TIGHTENING TORQUE	
Service product	LOCTITE 243 (BLUE) (P/N 293 800 060)
Holding strip screws	4 N•m ± 0.5 N•m (35 lbf•**in** ± 4 lbf•**in**)

TIGHTENING TORQUE	
Stator retaining screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

ROTOR

Removing the Rotor

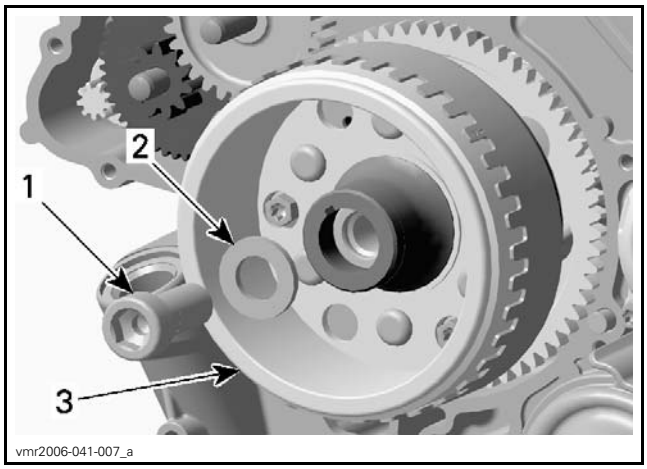
Remove *MAGNETO COVER*. See procedure in this subsection.

Lock crankshaft (refer to *CRANKSHAFT LOCKING PROCEDURE* in the *BOTTOM END* subsection).

REQUIRED TOOL	
CRANKSHAFT LOCKING BOLT (P/N 529 035 617)	

Heat screw in order to break the Loctite.

Remove screw and washer securing rotor to crankshaft.

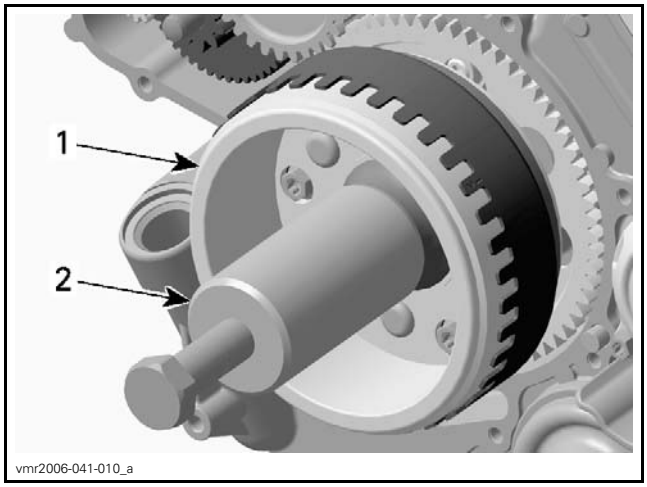


1. Screw M16
2. Washer
3. Rotor

Remove rotor.

REQUIRED TOOL	
CRANKSHAFT PROTECTOR (P/N 529 036 034)	
MAGNETO PULLER (P/N 529 035 748)	

NOTE: Use grease to place protector on crankshaft end prior to screw on the magneto puller.



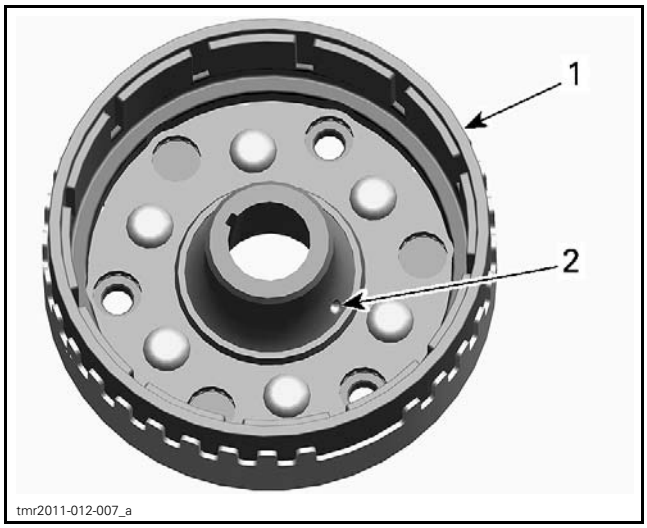
1. Rotor
2. Magneto puller

Screw magneto puller bolt to remove rotor.

Inspecting the Rotor

Check inner side of rotor for scratches or other damage.

Blow pressurized air in the rotor oil bore and make sure it is not clogged.



1. Rotor
2. Oil bore

Check keyway of the rotor for wear or damages.

Check if trigger wheel teeth are bent or otherwise damaged.

Check woodruff key and keyway on the crankshaft for wear or damages.

Replace parts as necessary.

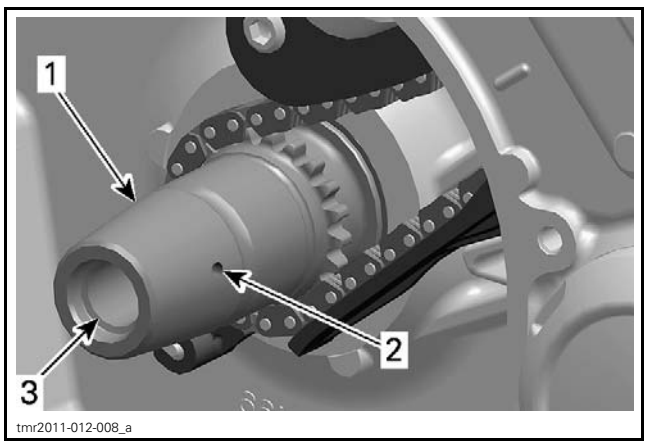
Installing the Rotor

For installation, reverse the removal procedure. However, pay attention to the following.

Use PULLEY FLANGE CLEANER (P/N 413 711 809) to clean following parts:

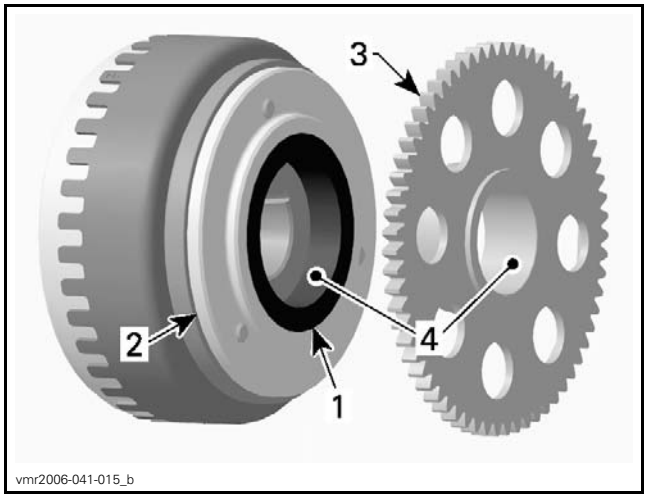
– Crankshaft taper
– Oil passage in crankshaft taper
– Thread in crankshaft
– Rotor taper
– Oil bore in rotor.

NOTICE **Taper on crankshaft and rotor must be free of grease.**



1. Crankshaft (MAG side)
2. Oil passage
3. Threads

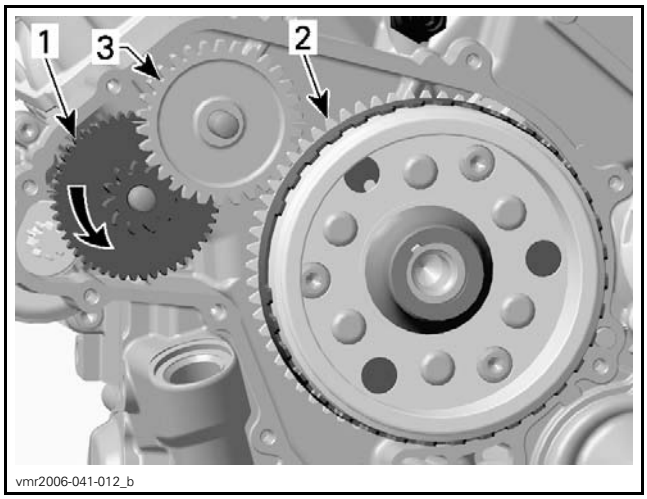
Oil sprag clutch and install sprag clutch gear.



1. Sprag clutch
2. Sprag clutch housing
3. Sprag clutch gear
4. Apply engine oil here

Slide rotor onto crankshaft. The woodruff key and the keyway must be aligned.

Rotate starter double gear counterclockwise to align intermediate gear teeth with sprag clutch gear.



1. Starter double gear
2. Sprag clutch gear
3. Intermediate gear

TIGHTENING TORQUE	
Service product	LOCTITE 648 (GREEN) (P/N 413 711 400)
Rotor retaining screw	150 N•m ± 10 N•m (111 lbf•ft ± 7 lbf•ft)

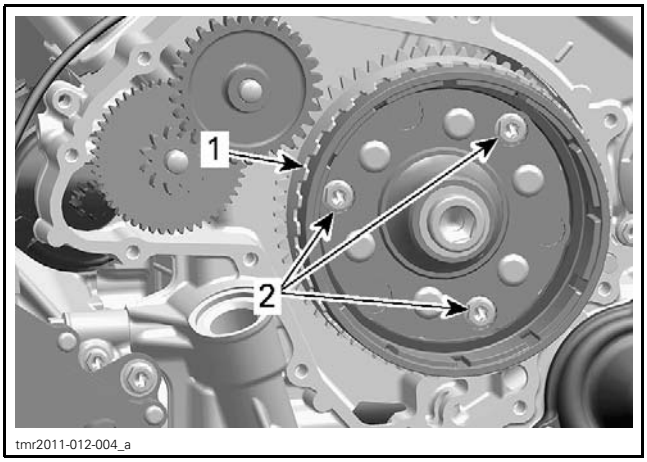
SPRAG CLUTCH

Removing the Sprag Clutch

Remove *MAGNETO COVER*. See procedure in this subsection.

Heat screws in order to break the Loctite.

Loosen sprag clutch housing screws located inside rotor.

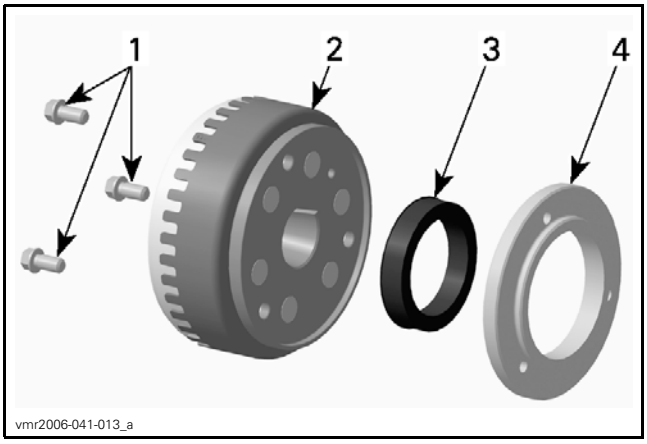


1. Rotor
2. Sprag clutch housing screws

Remove rotor (refer to *ROTOR* in this subsection).

Remove sprag clutch gear.

Remove sprag clutch housing screws and sprag clutch housing.



1. Sprag clutch housing screws
2. Rotor
3. Sprag clutch
4. Sprag clutch housing

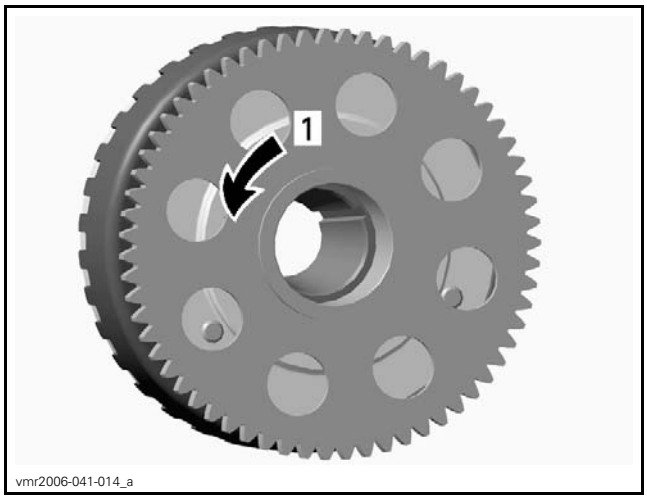
Inspecting the Sprag Clutch

Inspect sprag clutch and sprag clutch housing for wear and damage.

Also check the collar of the sprag clutch gear.

Rotate sprag clutch gear in sprag clutch.

NOTE: Sprag clutch must lock in counterclockwise direction.



SPRAG CLUTCH FUNCTIONAL TEST
1. Lock

NOTE: Sprag clutch, housing and gear must be replaced at the same time, if damaged.

Installing the Sprag Clutch

For installation, reverse the removal procedure. However, pay attention to the following details.

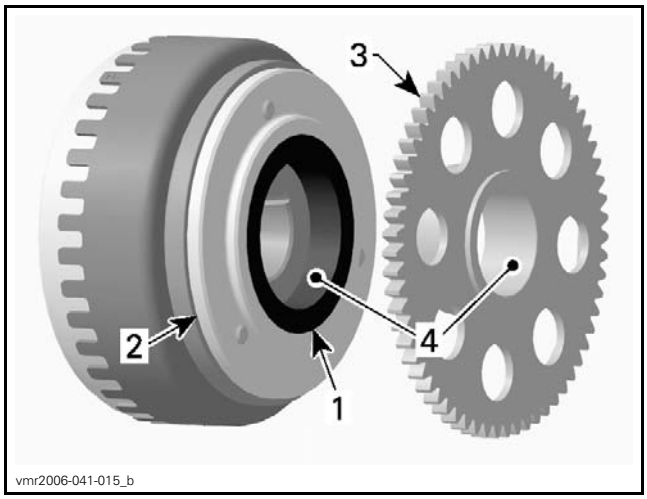
Use PULLEY FLANGE CLEANER (P/N 413 711 809)to clean following:

– Threads in sprag clutch housing
– Threads of sprag clutch housing screws.

Apply LOCTITE 648 (GREEN) (P/N 413 711 400) on threads of sprag clutch housing screws.

Install screws but do not torque yet.

Apply engine oil on sprag clutch and sprag clutch gear needle bearing.



1. Sprag clutch
2. Sprag clutch housing
3. Sprag clutch gear
4. Apply engine oil here

Install rotor, refer to *ROTOR* in this subsection.

Tighten sprag clutch housing screws to specification.

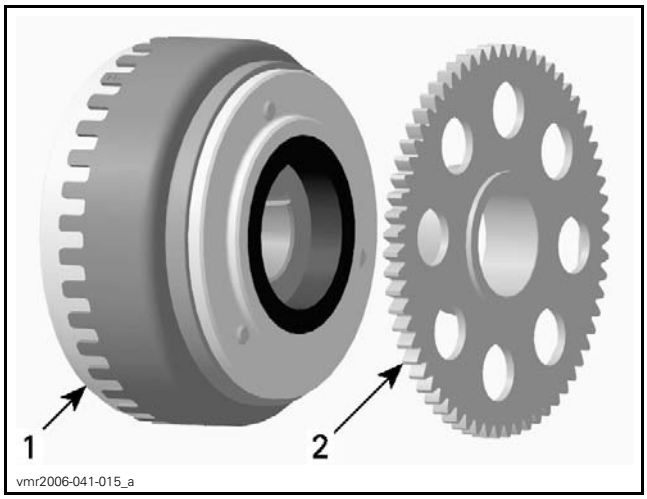
TIGHTENING TORQUE	
Sprag clutch housing screws	30 N•m ± 2 N•m (22 lbf•ft ± 1 lbf•ft)

SPRAG CLUTCH GEAR

Removing the Sprag Clutch Gear

Remove *ROTOR*. See procedure in this subsection.

Pull sprag clutch gear out of the rotor.

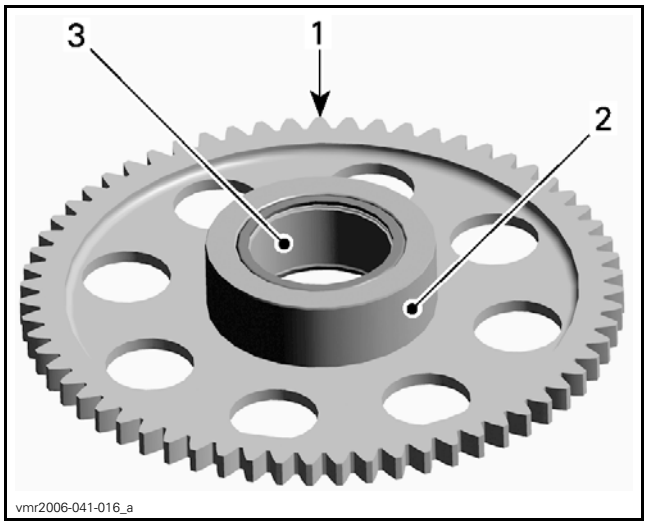


1. Rotor
2. Sprag clutch gear

Inspecting the Sprag Clutch Gear

Inspect gear, especially teeth and sprag clutch collar, for wear and other damage.

Check needle bearing condition. Replace sprag clutch gear if necessary.



1. Teeth
2. Collar
3. Needle bearing

Installing the Sprag Clutch Gear

The installation is the reverse of the removal procedure. However, pay attention to the following.

NOTE: Apply engine oil on needle bearing and collar of sprag clutch gear.

STARTER DRIVE GEARS

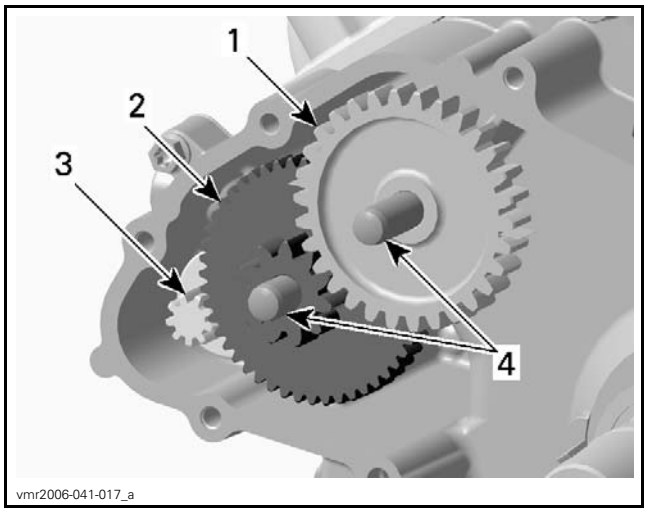
Starter Drive Gear Location

The starter drive gears are located on the engine MAG side behind the magneto cover.

Removing the Starter Drive Gear

Remove *MAGNETO COVER*. See procedure in this subsection.

Remove location pins, starter double gear and intermediate gear.



1. *Intermediate gear*
2. *Starter double gear*
3. *Starter gear*
4. *Location pins*

Inspecting the Starter Drive Gear

Inspect gears and location pins for wear and damage.

Replace parts as necessary.

Installing the Starter Drive Gear

The installation is the reverse of the removal procedure. Pay attention to the following details.

Apply LOCTITE 767 (ANTISEIZE LUBRICANT) (P/N 293 800 070) on starter gear before installing the starter double gear.

Apply engine oil on location pins.

ELECTRIC STARTER

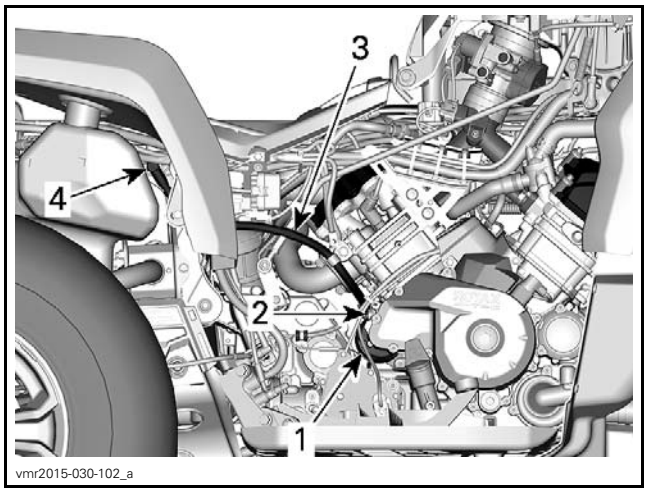
Starter Access for Testing

To access starter electrical terminal, refer to *BODY* subsection and remove the following:

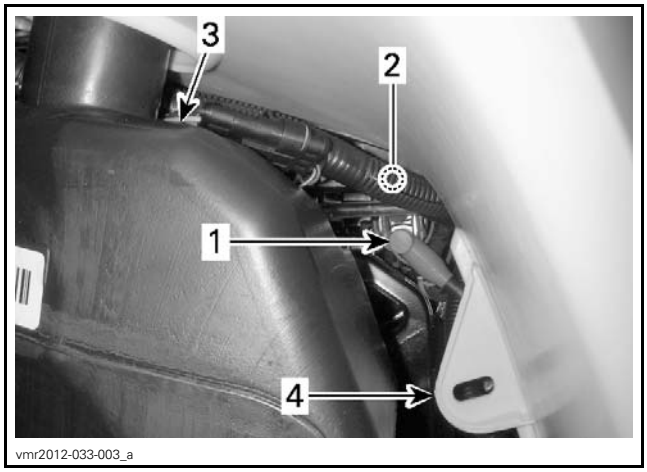
– Seat
– Console
– RH side panel and extension panel
– RH footboard panel.

Testing the Starter Operation

1. Disconnect starter power cable from starter solenoid and pull cable out to RH side of the vehicle.



TYPICAL
1. *Starter*
2. *Starter power cable connection at starter*
3. *Starter power cable*
4. *Starter power cable connection at solenoid*



TYPICAL
1. *Power cable from starter solenoid to starter*
2. *Power cable from battery to starter solenoid (not visible)*
3. *Fuel tank*
4. *RH rear fender*

2. Using booster cables, carefully supply current from a 12 volt battery directly to the starter power cable.

NOTICE **First connect the red jumper cable from the booster battery to the starter cable. Momentarily connect the BLACK (-) cable from the booster battery to engine ground last.**

If the starter turns, test other starting system components.

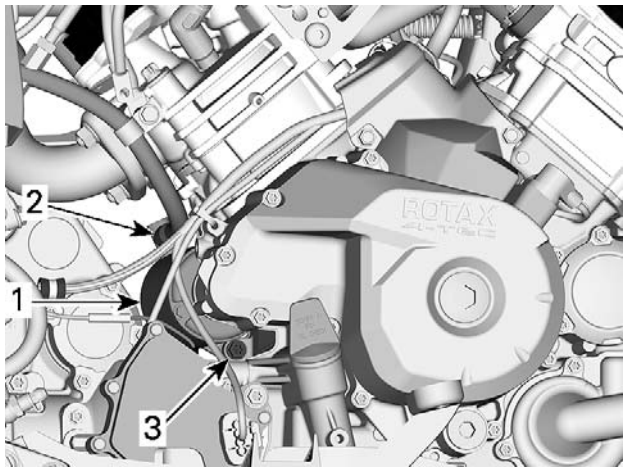
Removing the Starter

1. Ensure ignition switch is set to OFF.
2. Disconnect BLACK (-) cable from battery.

⚠ WARNING

Always disconnect BLACK (-) cable first and reconnect last.

3. Remove body parts as listed in *STARTER ACCESS*.
4. For models using the gearbox with GBPS, refer to *CONTINUOUSLY VARIABLE TRANSMISSION (CVT)* subsection and remove the:
   – Drive pulley
   – Driven pulley
   – CVT back cover.
5. Disconnect RED (+) cable from starter.
6. Clean starter area.
7. Remove starter retaining screw (from RH side of engine).



1. Starter
2. Starter power cable to disconnect
3. Starter retaining screw to remove

8. Carefully pry the starter from the engine crankcase.

Installing the Starter

Reverse the removal procedure. However, pay particular attention to the following.

Make sure the starter and engine mating surfaces are free of debris. Serious problems may arise if the starter is not properly aligned.

Lubricate starter O-ring.

STARTER O-RING AND MATING SURFACE	
Service product	LOCTITE 767 (ANTISEIZE LUBRICANT) (P/N 293 800 070)

Bring starter close to its location. Rotate it so that its mounting ear allows installation in engine crankcase and on its alignment pin.

Push starter in place and align mounting ear to install screw.

TIGHTENING TORQUE	
Starter mounting screw	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)

NOTICE **When connecting the RED (+) cable to the starter motor, make sure the battery cables are disconnected.**

TIGHTENING TORQUE	
Service product	DIELECTRIC GREASE (P/N 293 550 004)
Starter terminal and retaining nut	6 N•m ± 0.5 N•m (53 lbf•**in** ± 4 lbf•**in**)

When installing remaining removed parts, refer to applicable subsections.

Connect battery cables.

⚠ WARNING

Always connect RED (+) cable first then BLACK (-) cable last.

Test starter operation.

INTAKE MANIFOLD

Midwest Manuals
Green Manuals
Paperless Manuals For a Better Tomorrow
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify me at bestshopmanuals@gmail.com

NEW = Component must be replaced when removed.

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PROCEDURES

INTAKE MANIFOLD

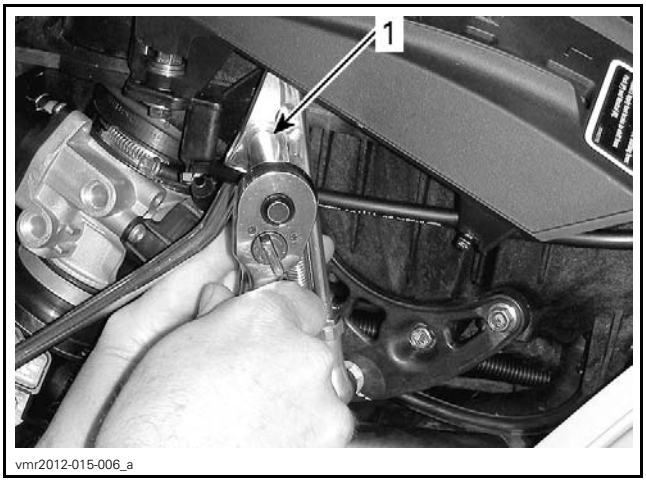
Intake Manifold Access

Refer to *BODY* subsection and remove the following:

– Console
– RH side panel and extension.

Removing the Intake Manifold

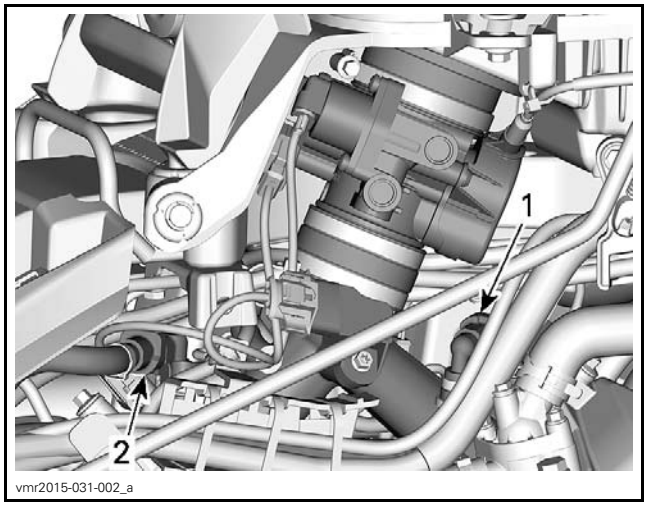
1. Release fuel pressure. Refer to *FUEL TANK AND FUEL PUMP* subsection.
2. Disconnect top of shift rod.



TYPICAL - SHIFT ROD DISCONNECT
1. Remove screw, nut, and bushing

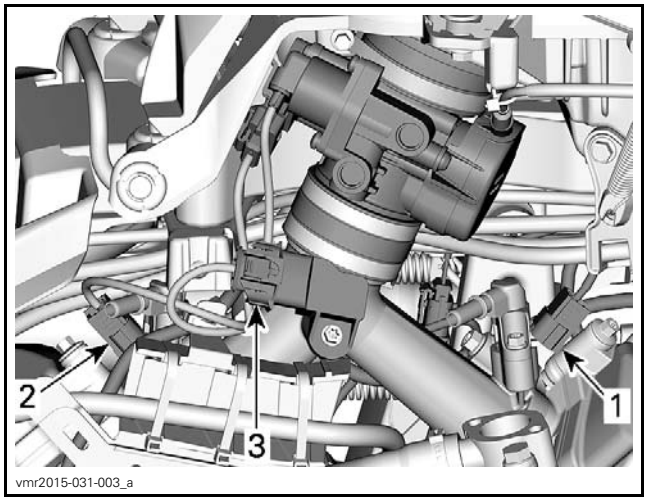
3. Disconnect the fuel hoses from fuel rails, refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

⚠ CAUTION **The fuel hose may still be under pressure.**



1. Forward fuel rail disconnect
2. Rear fuel rail disconnect

4. Disconnect fuel injector electrical connectors.
5. Disconnect MAPTS connector.

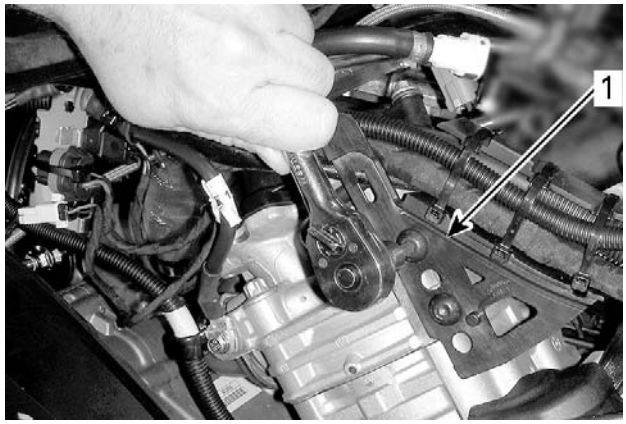


1. Forward fuel injector connector
2. Rear fuel injector connector
3. MAPTS connector

6. Disconnect throttle body from intake manifold and air intake silencer. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

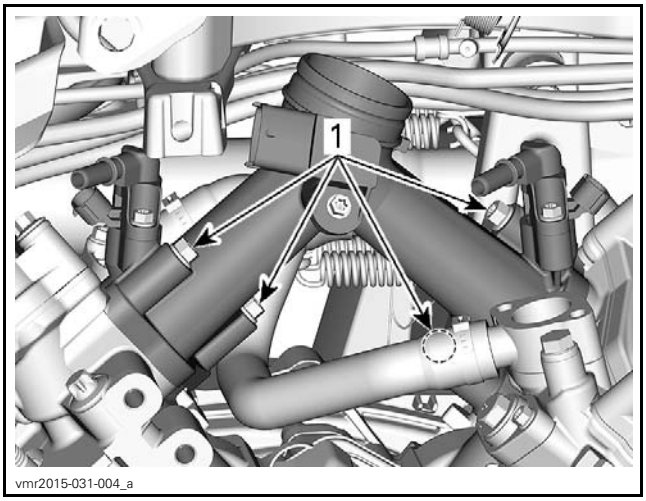
NOTE: Do not disconnect throttle cable needlessly.

7. Remove wiring harness support from engine.



1. Remove

8. Remove intake manifold from engine.



1. Manifold retaining screws (4x)

Inspecting the Intake Manifold

Check intake manifold for cracks, warping at flanges or any other damage. Replace if necessary.

Installing the Intake Manifold

The installation is the reverse of the removal procedure. However, pay attention to the following.

Tighten intake manifold retaining screws to specified torque one cylinder at a time.

TIGHTENING TORQUE	
Intake manifold retaining screws	20 N•m ± 2 N•m (15 lbf•ft ± 1 lbf•ft)

Enable fuel pump using B.U.D.S.

TOP END

SERVICE TOOLS

Description	Part Number	Page
CRANKSHAFT LOCKING BOLT	529 035 617	21
DIAL INDICATOR ADAPTER	529 036 159	6
ENGINE LEAK DOWN TEST KIT	529 035 661	6
PISTON CIRCLIP INSTALLER	529 035 921	25
PISTON CIRCLIP INSTALLER	529 036 083	25
PISTON CIRCLIP INSTALLER	529 036 153	25
TDC DIAL INDICATOR	414 104 700	6
VALVE GUIDE INSTALLER	529 036 140	19
VALVE GUIDE INSTALLER	529 036 269	19
VALVE GUIDE REMOVER (6 MM)	529 036 074	18
VALVE GUIDE REMOVER 5 MM	529 035 924	18
VALVE SPRING COMPRESSOR CUP	529 035 764	14
VALVE SPRING COMPRESSOR CUP	529 036 270	14
VALVE SPRING COMPRESSOR	529 035 724	14

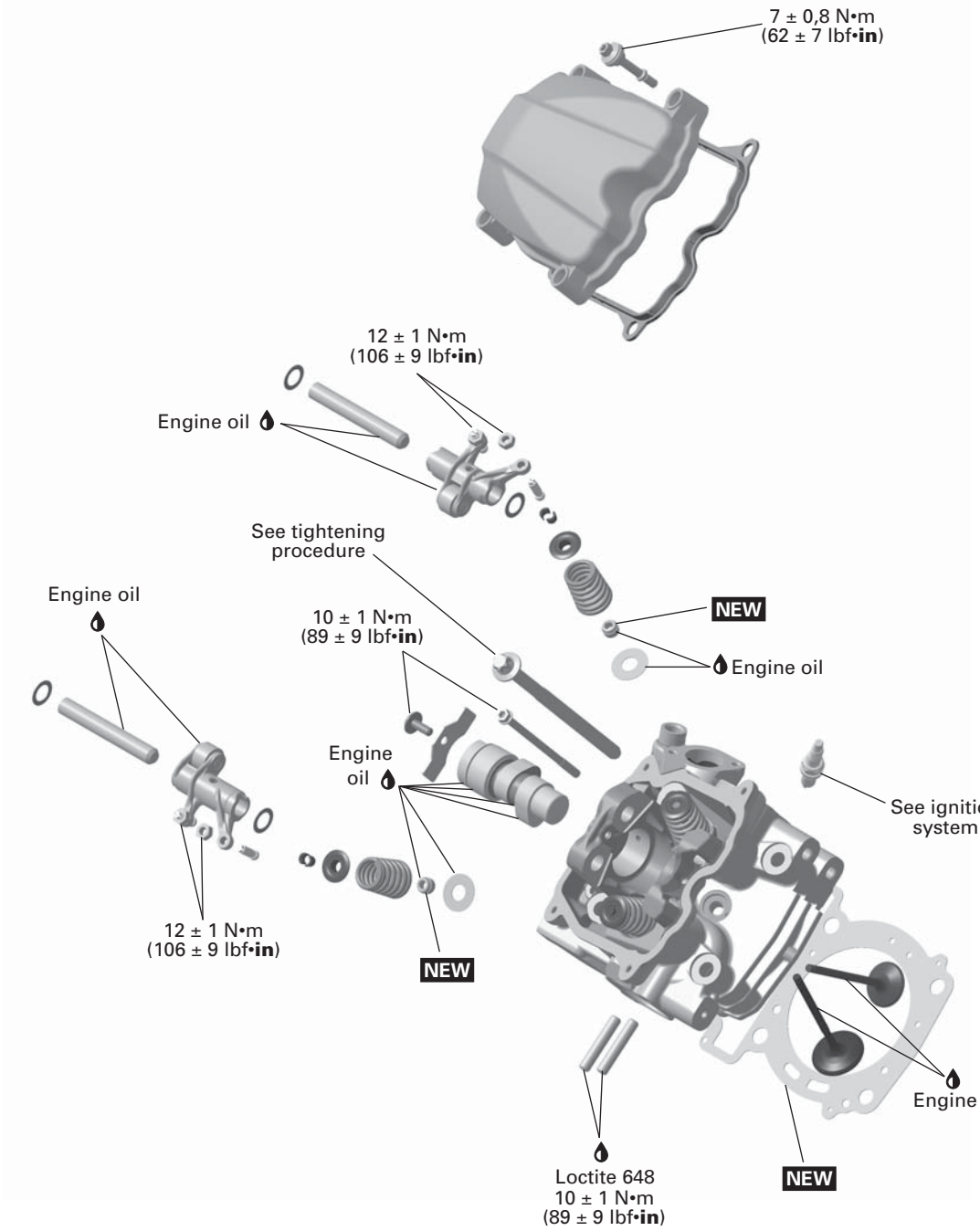
SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
SNAP-ON PLIERS	YA 8230	16

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 767 (ANTISEIZE LUBRICANT)	293 800 070	19

CYLINDER HEAD NO. 1



NEW = Component must be replaced when removed.

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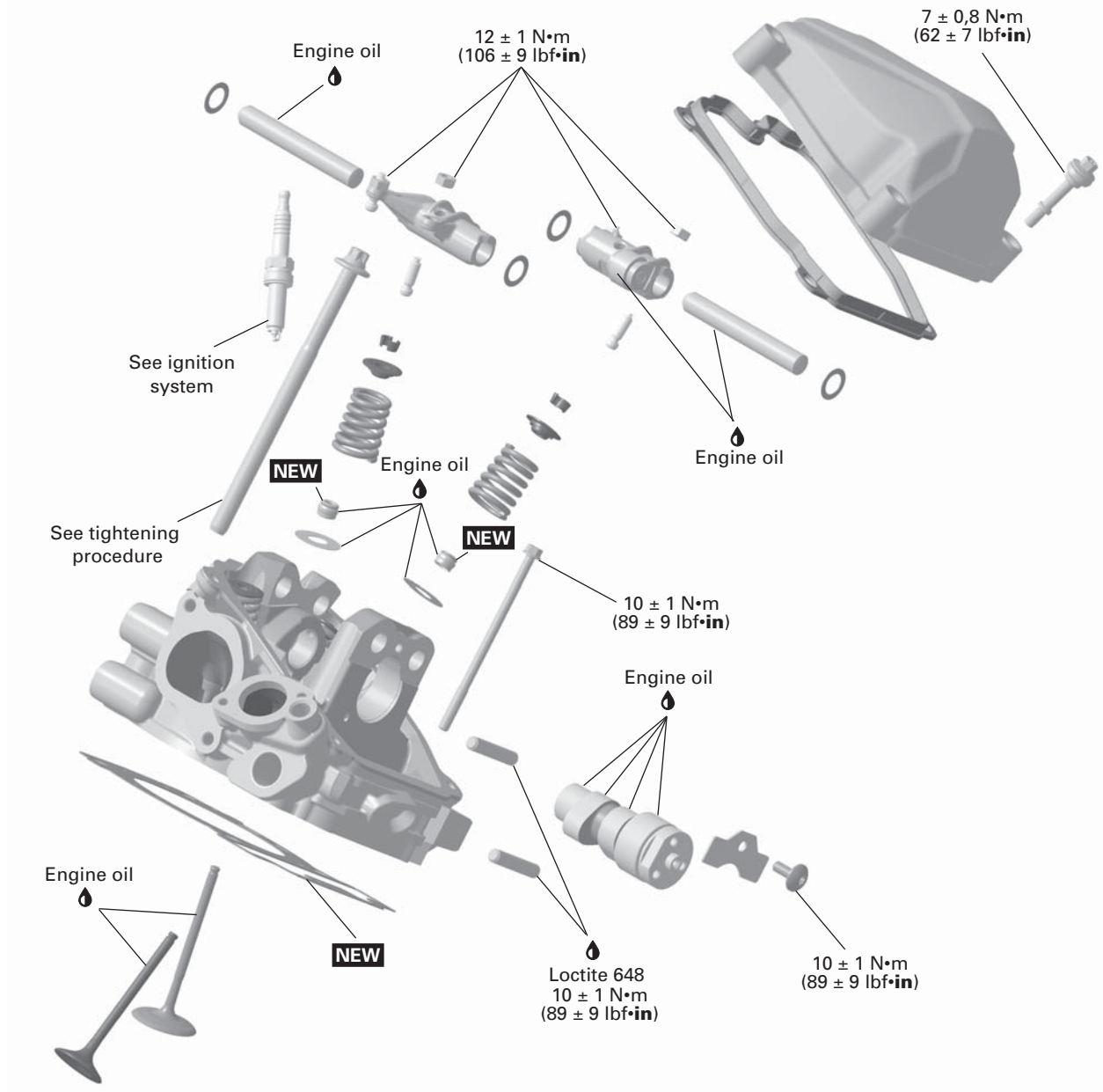
CYLINDER HEAD NO. 2



NEW = Component must be replaced when removed.

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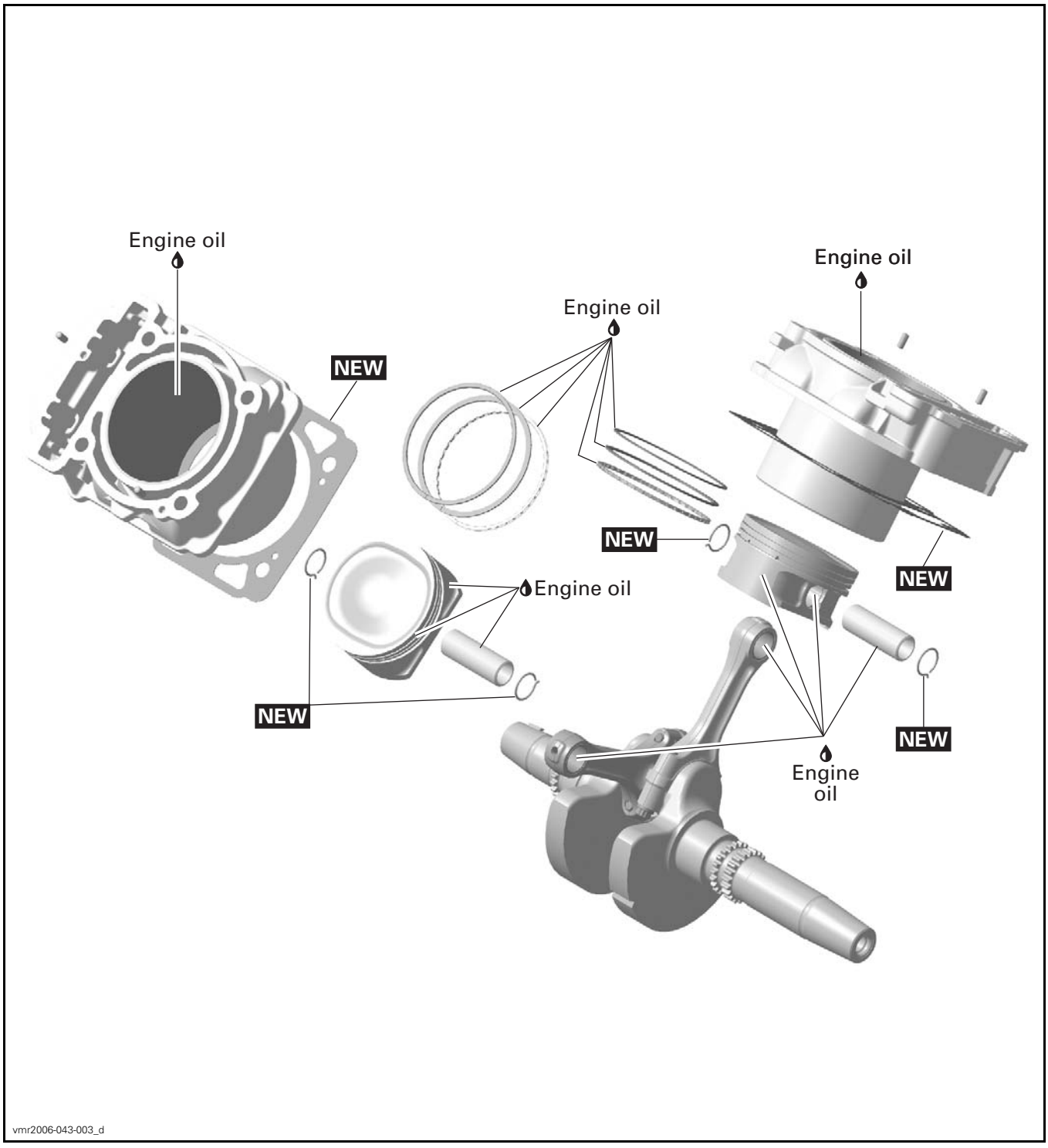
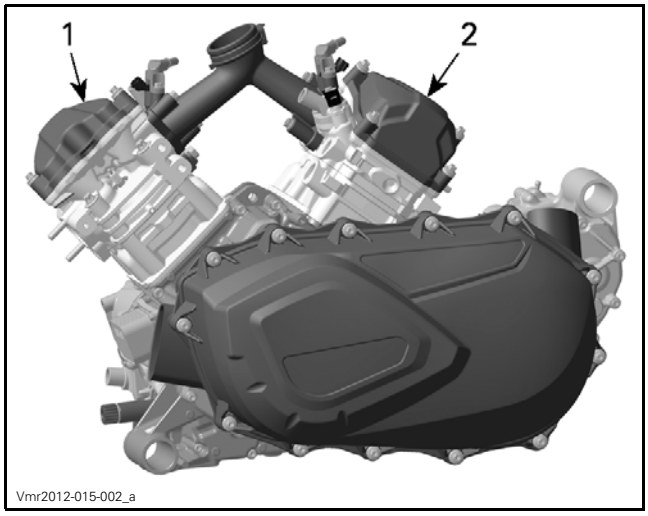
CYLINDERS AND PISTONS



GENERAL

Special reference are made in the text for procedures which are different for cylinder no. 1 and cylinder no. 2.



TYPICAL
1. Cylinder 1 (front)
2. Cylinder 2 (rear)

When diagnosing an engine problem, always perform a cylinder leak test.

NOTE: Even though the following procedures do not require the engine removal, many illustrations show the engine out of the vehicle for more clarity.

IMPORTANT: Note position of parts upon disassembly. This may help to find the root cause of a problem. A component that is not replaced should be reinstalled in the same position as originally mounted.

INSPECTION

LEAK TEST

Before performing the cylinder leak test, verify the following:

– Clamp(s) tightness
– Radiator and hoses.

NOTE: For best accuracy, the leak test should be done with the engine at normal operating temperature.

⚠ WARNING

Prevent burning yourself on hot engine parts.

Preparing the Leak Test

1. Disconnect battery.

⚠ WARNING

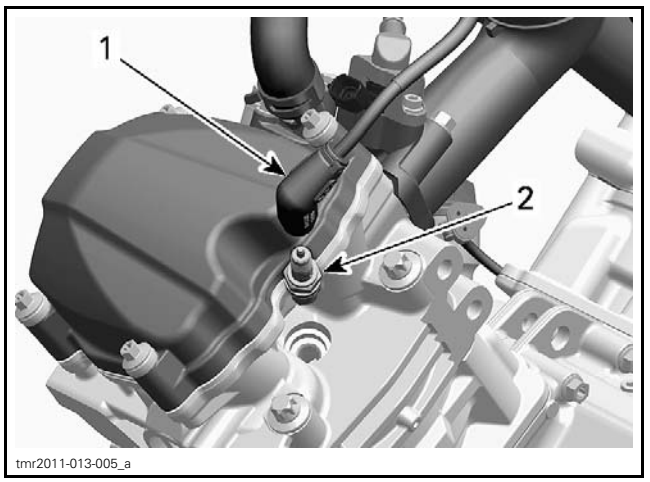
Always respect this order for disassembly; disconnect BLACK (-) cable first.

2. Remove radiator cap.

⚠ WARNING

To prevent being burned, ensure the radiator is cool and wear the appropriate safety equipment before removing the radiator cap.

3. Unplug spark plug cable.
4. Clean spark plug area and remove spark plug from cylinder head.



1. Spark plug cable
2. Spark plug

5. Remove *VALVE COVER*. See procedure in this subsection.
6. Rotate crankshaft until piston is at ignition TDC.
7. Turn crankshaft using one of the following two procedures.

First Procedure

Turn the drive pulley.

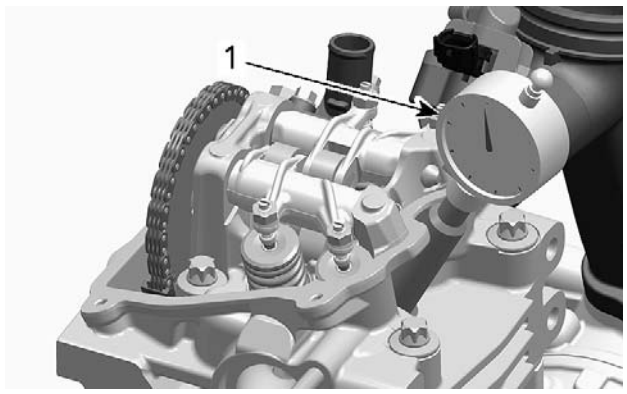
Second Procedure

1. Remove plug screw with O-ring from magneto cover.
2. Use a 14 mm Allen key and turn crankshaft.

NOTICE **Turn only clockwise to avoid loosening of magneto flywheel Allen screw.**

3. Set the piston to precisely ignition TDC.

ENGINE	REQUIRED TOOL	
All	TDC DIAL INDICATOR (P/N 414 104 700)	
850 1000R	DIAL INDICATOR ADAPTER (P/N 529 036 159)	

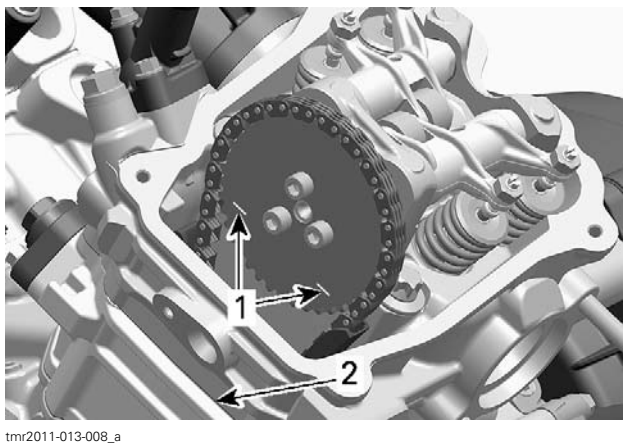


1. TDC dial indicator

NOTE: If a dial gauge is not available, use a screwdriver or another similarly suitable tool.

NOTICE **Do not scratch or damage piston/cylinder surface.**

NOTE: At ignition TDC the marks on the camshaft timing gear have to be parallel to cylinder head base as per following illustration.



1. Marks on camshaft timing gear
2. Cylinder head base

Leak Test

1. Install the gauge adapter in the spark plug hole.

REQUIRED TOOL	
ENGINE LEAK DOWN TEST KIT (P/N 529 035 661)	

2. Connect to an adequate air supply.
3. Set needle of measuring gauge to zero.

NOTE: All testers have specific instructions on gauge operation and required pressure.

4. Supply combustion chamber with air pressure.
5. Note the amount or percentage of leakage (depending on tester).

LEAKAGE PERCENTAGE	ENGINE CONDITION
0% to 15%	Excellent condition
16% to 25%	Good condition
26% to 40%	Fair condition; reduced engine performance
41% and higher	Poor condition, diagnose and repair engine

NOTE: To make sure there is no false reading due to a valve not being perfectly seated, tap each valve adjustment screw (on the rocker arm) using a soft hammer.

Diagnosis

Listen for air leaks.

- Air escaping in intake port/throttle body means leaking intake valve(s).
- Air escaping in exhaust port means leaking exhaust valve(s).
- Air bubbles in the coolant (radiator) means leaking cylinder head gasket.
- Air/coolant escaping from cylinder/head means damaged gasket(s) and/or loosened screws.
- Air escaping into crankcase area means excessively worn cylinder and/or broken piston rings.
- Air/oil escaping from crankcase means damaged gasket and/or loosened screws (refer to *BOTTOM END* subsection).

NOTE: For all checkpoints mentioned above, see appropriate engine section to diagnose and repair the engine.

Reassembly

Reverse the preparation procedure. Ensure to respect torque values and use of appropriate products/lubricants. Refer to exploded views in other subsections of this manual as required.

PROCEDURES

VALVE COVER

Valve Cover Access

Front Cylinder

Refer to *BODY* subsection and remove the following.
- Seat
- Console
- RH side panel
- RH side panel extension
- RH inner fender panel

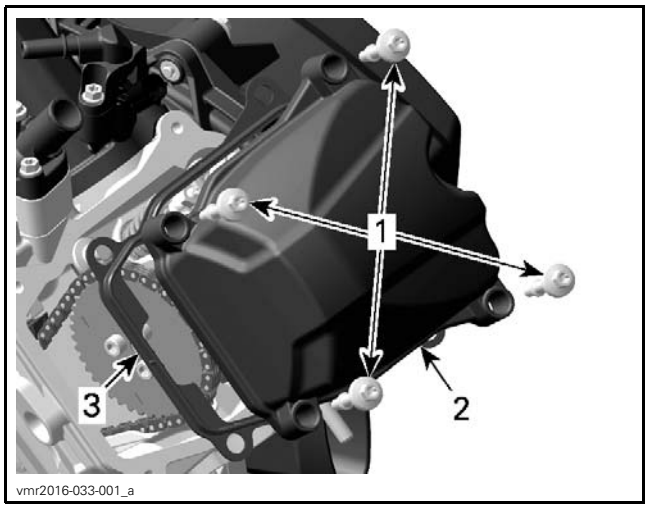
Rear Cylinder

Refer to *BODY* and remove:
- Seat
- Console
- RH side panel and extension(s)
- LH side panel and extension(s).

Refer to *EXHAUST SYSTEM* and remove exhaust pipe.

Removing the Valve Cover

Remove:
- Valve cover screws
- Valve cover
- Gasket.



TYPICAL — FRONT CYLINDER SHOWN
1. *Valve cover screws*
2. *Valve cover*
3. *Gasket*

Inspecting the Valve Cover

Check the gasket on the valve cover if it is brittle, cracked or hard. If so, replace the gasket.

Installing the Valve Cover

For installation, reverse the removal procedure. However, pay attention to the following.

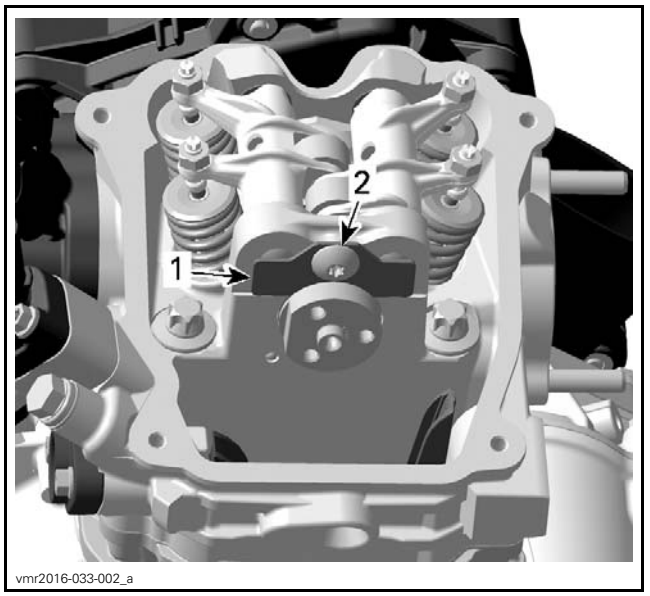
Tighten valve cover retaining screws to specified torque in a criss-cross sequence.

TIGHTENING TORQUE	
Valve cover retaining screws	7 N•m ± 0.8 N•m (62 lbf•**in** ± 7 lbf•**in**)

ROCKER ARM

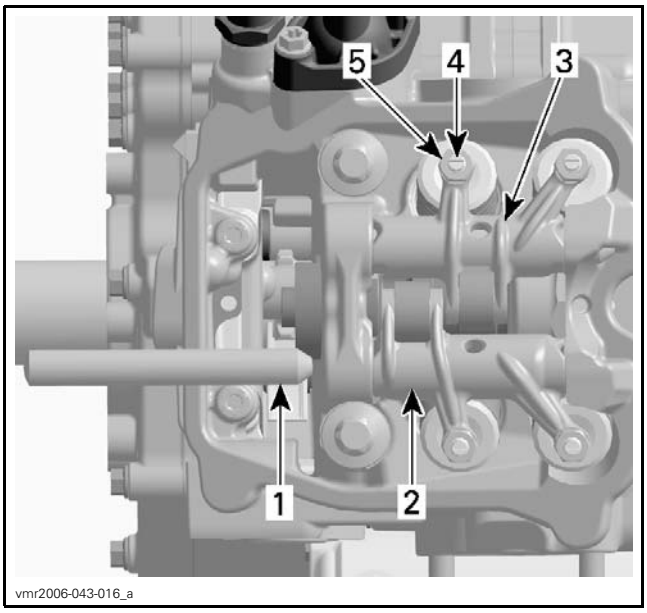
Removing the Rocker Arm

1. Remove *VALVE COVER*. See procedure in this subsection.
2. Refer to *TIMING CHAIN* subsection and remove following parts:
   - Timing chain tensioner
   - Camshaft timing gear.
3. Remove pan head screw and camshaft retaining plate.



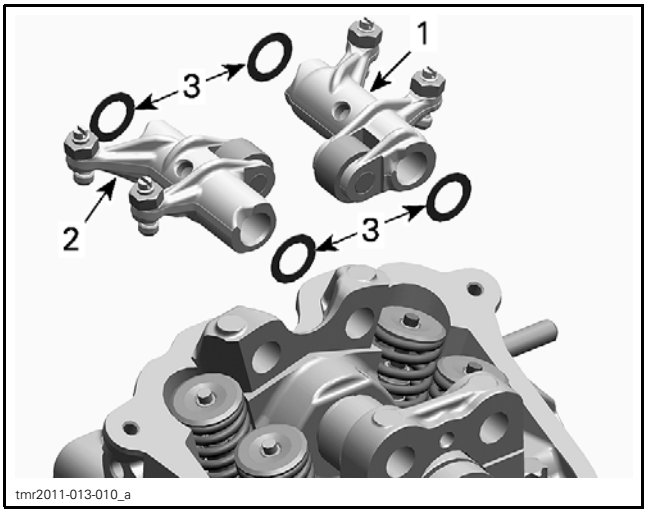
TYPICAL
1. *Camshaft retaining plate*
2. *Pan head screw*

4. Remove rocker arm shafts.



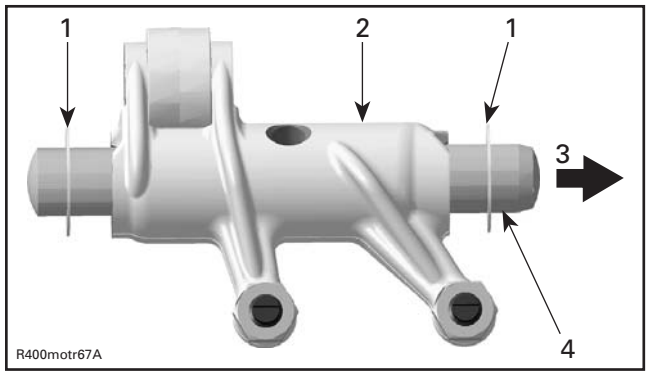
1. Rocker arm shaft
2. Rocker arm (exhaust side)
3. Rocker arm (intake side)
4. Adjustment screw
5. Lock nut

5. Remove rocker arm assembly (exhaust side and intake side) with adjustment screws and lock nuts.
6. Remove thrust washers.



1. Rocker arm (exhaust side)
2. Rocker arm (intake side)
3. Thrust washers

NOTICE Pay attention not to lose thrust washers or drop them into the timing chain compartment.

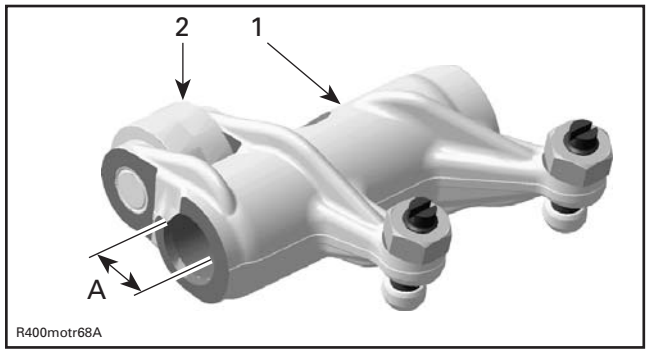


1. 2 thrust washers
2. Rocker arm (exhaust side)
3. Cylinder head (spark plug side)
4. Big taper to spark plug side

Inspecting the Rocker Arm

Inspect each rocker arm for cracks and scored friction surfaces. If so, replace rocker arm assembly.

Check the rocker arm rollers for free movement, wear and excessive radial play. Replace rocker arm assembly if necessary.

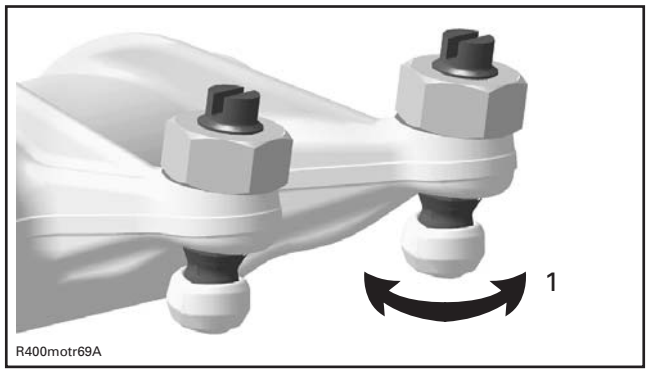


1. Rocker arm (exhaust side)
2. Roller
A. Bore for rocker arm shaft

Measure rocker arm bore diameter. If diameter is out of specification, change the rocker arm assembly.

ROCKER ARM BORE DIAMETER	
NEW	12.036 mm to 12.050 mm (.4739 in to .4744 in)
SERVICE LIMIT	12.060 mm (.4748 in)

Check adjustment screws for free movement, cracks and/or excessive play.

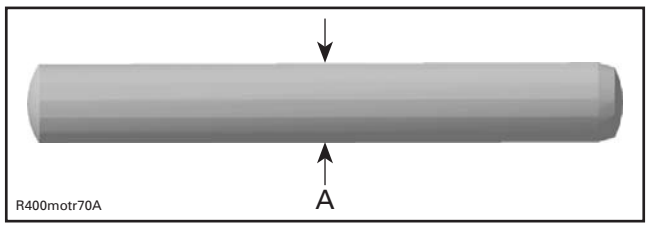


1. Free movement of adjustment screw top

Rocker Arm Shaft Inspection

Check for scored friction surfaces; if so, replace parts.

Measure rocker arm shaft diameter.



A. Measure rocker arm shaft diameter here

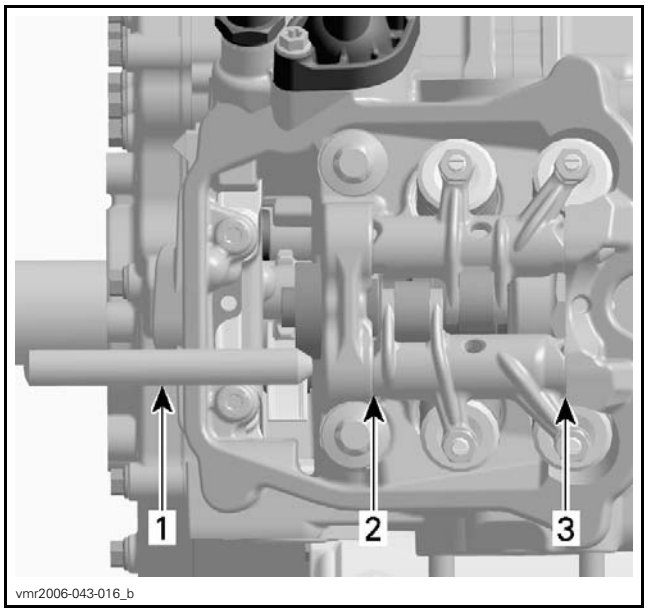
ROCKER ARM SHAFT DIAMETER	
NEW	12.000 mm to 12.018 mm (.4724 in to .4731 in)
SERVICE LIMIT	11.990 mm (.472 in)

Any area worn excessively will require parts replacement.

Installing the Rocker Arm

NOTE: Use the same procedure for exhaust and intake rocker arm.

1. Apply engine oil on rocker arm shaft.
2. Insert a rocker arm shaft with the chamfered edge first through rocker arm pin bore.
3. Install a thrust washer at timing chain side, then the proper rocker arm (exhaust side or intake side).
4. Push in rocker arm shaft until its chamfer reaches the end of rocker arm bore.

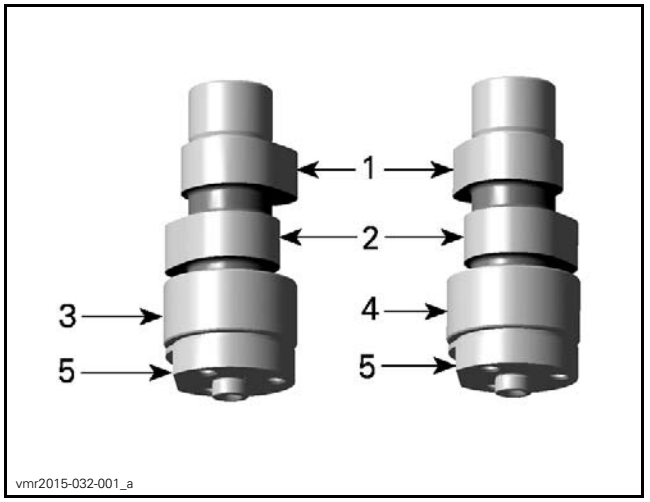


1. Rocker arm shaft
2. Thrust washer (timing chain side)
3. Thrust washer (spark plug side)

5. Place the other thrust washer and push rocker arm shaft to end position.
6. Install the camshaft retaining plate.
7. Adjust valve clearance, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

CAMSHAFT

NOTE: The engine is equipped with two different camshafts.



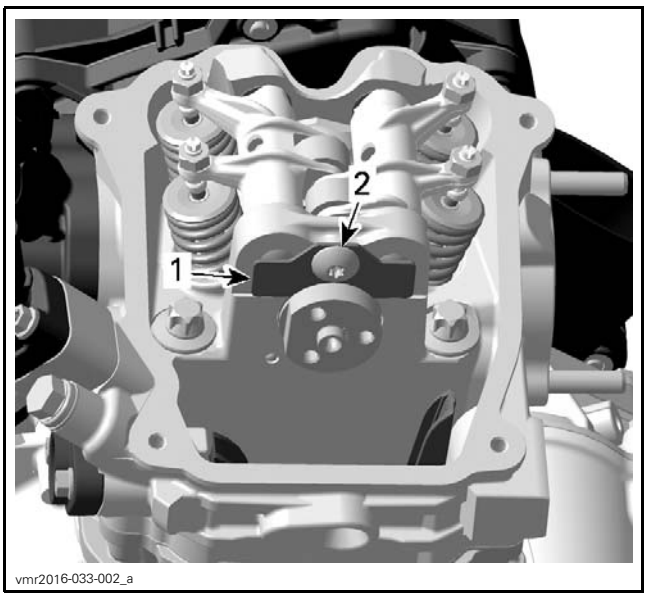
1. Intake cam
2. Exhaust cam
3. Camshaft of cylinder 1
4. Camshaft of cylinder 2
5. Flat spot

Removing the Camshaft

The removal procedure is the same for both camshafts.

NOTICE Each camshaft is different in design. Thus, it is important not to mix up any parts of the camshaft assembly with that of the other cylinder. Keep parts as a group.

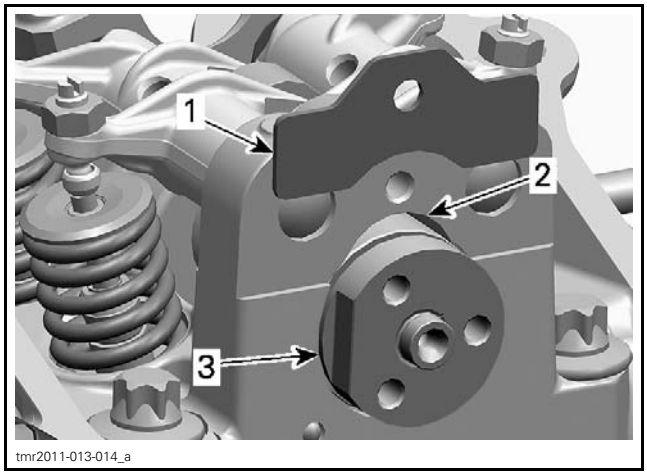
1. Remove valve cover (see *VALVE COVER* in this subsection).
2. Refer to the *TIMING CHAIN* subsection to remove the following parts:
   - Chain tensioner
   - Camshaft timing gear.
3. Remove the camshaft retaining plate.



1. Camshaft retaining plate
2. Pan head screw
3. Cylinder head

4. Remove rocker arms (see *ROCKER ARM* in this subsection).
5. Remove the camshaft.

NOTE: For removal rotate camshaft so that intake/exhaust lobe shows to upper side of cylinder head.



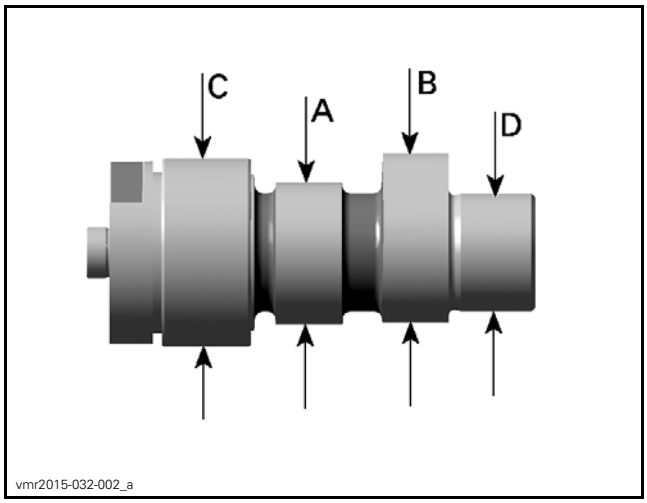
1. Camshaft retaining plate
2. Area for camshaft lobes
3. Camshaft

Inspecting the Camshaft

Inspecting the Camshaft Lobe

Check each lobe for scoring, scuffing, cracks or other signs of wear.

Measure camshaft lobe height using a micrometer.



A. Camshaft lobe (exhaust valves)
B. Camshaft lobe (intake valves)
C. Camshaft journal (timing chain side)
D. Camshaft journal (spark plug side)

CAMSHAFT LOBE (INTAKE)		
570	NEW	31.830 mm to 32.030 mm (1.2531 in to 1.261 in)
	SERVICE LIMIT	31.810 mm (1.2524 in)
650	NEW	32.110 mm to 32.310 mm (1.2642 in to 1.272 in)
	SERVICE LIMIT	32.090 mm (1.2634 in)

CAMSHAFT LOBE (INTAKE)		
850	NEW	32.890 mm to 33.090 mm (1.2949 in to 1.3028 in)
	SERVICE LIMIT	32.870 mm (1.2941 in)
1000 1000R	NEW	32.960 mm to 33.160 mm (1.2976 in to 1.3055 in)
	SERVICE LIMIT	32.940 mm (1.2969 in)

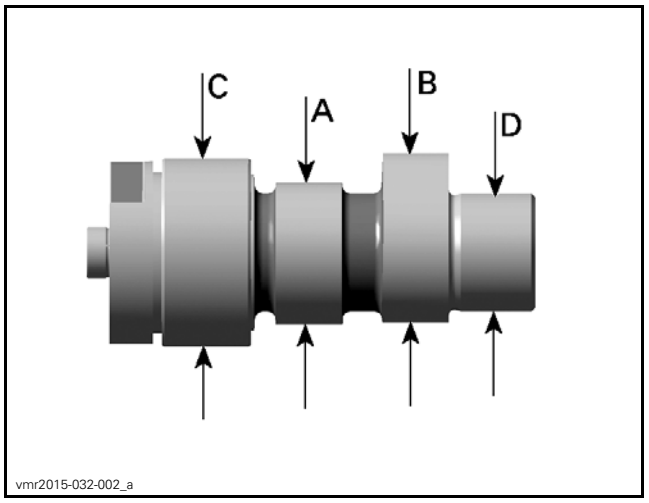
CAMSHAFT LOBE (EXHAUST)		
570	NEW	31.730 mm to 31.930 mm (1.2492 in to 1.2571 in)
	SERVICE LIMIT	31.710 mm (1.2484 in)
650	NEW	31.940 mm to 32.140 mm (1.2575 in to 1.2654 in)
	SERVICE LIMIT	31.920 mm (1.2567 in)
850	NEW	32.950 mm to 33.150 mm (1.2972 in to 1.3051 in)
	SERVICE LIMIT	32.930 mm (1.2965 in)
1000 1000R	NEW	32.860 mm to 33.060 mm (1.2937 in to 1.3016 in)
	SERVICE LIMIT	32.840 mm (1.2929 in)

Measure camshaft bearing in cylinder head. Refer to *CYLINDER HEAD INSPECTION* in this subsection.

Inspecting the Camshaft Journal

Check each journal for scoring, scuffing, cracks or other signs of wear.

Measure camshaft journal using a micrometer.



A. Camshaft lobe (exhaust valves)
B. Camshaft lobe (intake valves)
C. Camshaft journal (timing chain side)
D. Camshaft journal (spark plug side)

CAMSHAFT JOURNAL (TIMING CHAIN SIDE)	
NEW	34.959 mm to 34.975 mm (1.3763 in to 1.377 in)
SERVICE LIMIT	34.950 mm (1.376 in)

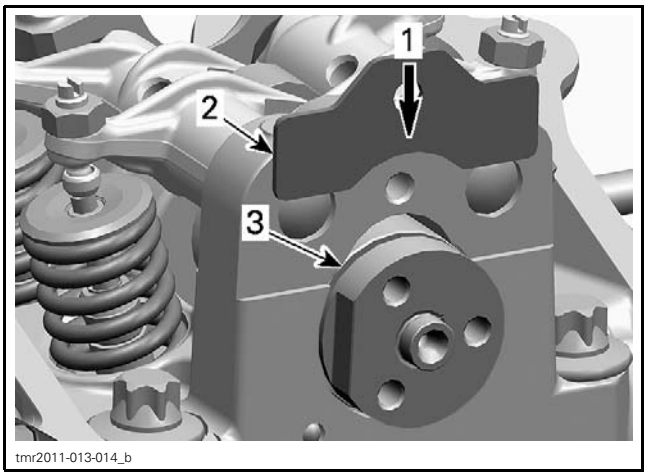
CAMSHAFT JOURNAL (SPARK PLUG SIDE)	
NEW	21.959 mm to 21.980 mm (.8645 in to .8654 in)
SERVICE LIMIT	21.950 mm (.8642 in)

Installing the Camshaft

Reverse the removal procedure. Pay attention to the following details.

NOTICE **The camshafts are not identical in design. Do not invert the camshafts during assembly. Any mix-up of the components will lead to engine damage.**

Place the camshaft retaining plate in the slot of the camshaft.



1. Direction of movement
2. Camshaft retaining plate
3. Slot retaining camshaft

For other parts, refer to proper installation procedure.

CYLINDER HEAD

Cylinder Head Access

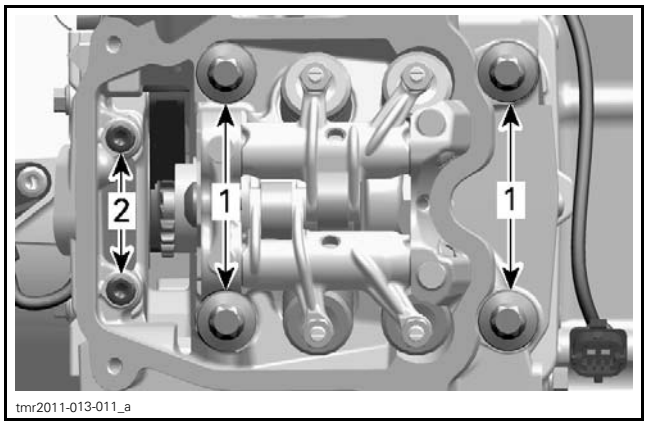
Refer to *VALVE COVER* in this subsection.

Removing the Cylinder Head

1. The removal procedure is the same for both cylinder heads.
2. Drain coolant (refer to *PERIODIC MAINTENANCE PROCEDURES* subsection).
3. Disconnect the coolant hose from the thermostat housing.

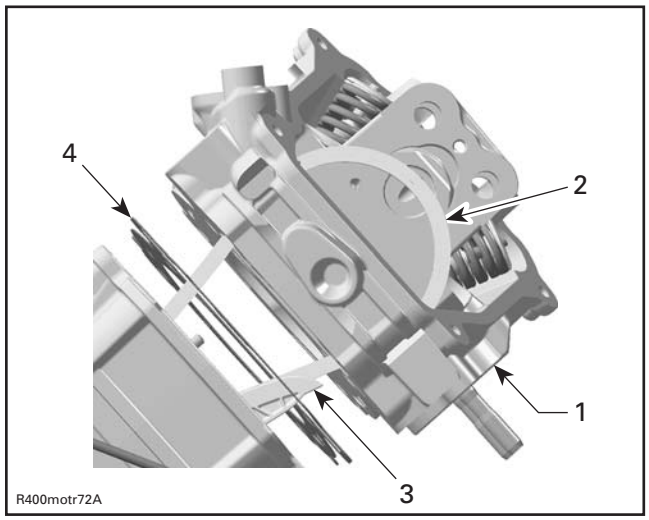
NOTE: Before removing cylinder head, blow out remaining coolant by air pressure. During cylinder head removal, the remaining coolant in cylinder head could overflow into the engine and a little quantity of coolant could drop into the engine. In this case, the engine oil will be contaminated.

4. Refer to *EXHAUST SYSTEM* subsection and disconnect exhaust system head pipe from cylinder head.
5. Disconnect spark plug wire.
6. Disconnect temperature sensor connector, located at rear cylinder head.
7. Remove the intake manifold. Refer to *INTAKE MANIFOLD* subsection.
8. Remove the valve cover and its gasket (see *VALVE COVER* in this subsection).
9. Refer to the *TIMING CHAIN* subsection to remove the following parts:
   – Chain tensioner
   – Camshaft timing gear.
10. First remove the M6 cylinder head screws, then the cylinder head screws M10.



1. Cylinder head screws M10
2. Cylinder head screws M6

11. Pull up cylinder head.
12. Remove timing chain guide (fixed).
13. Remove and discard the cylinder head gasket.



1. Cylinder head
2. Timing chain
3. Chain guide (fixed)
4. Cylinder head gasket

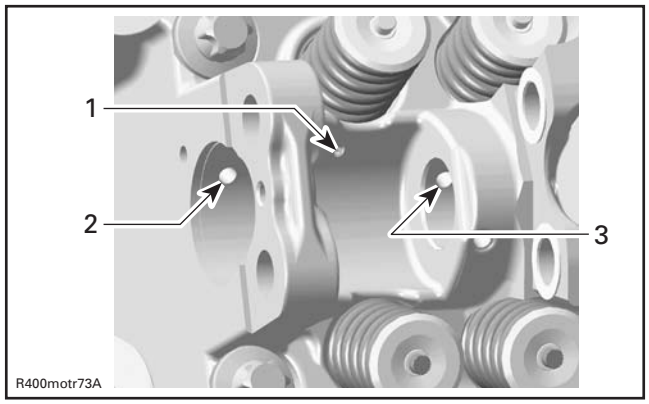
Inspecting the Cylinder Head

Inspect timing chain guide (fixed) for wear, cracks or other damages. Replace if necessary.

Check for cracks between valve seats, if so, replace cylinder head.

Check mating surface between cylinder and cylinder head for contamination. If so, clean both surfaces.

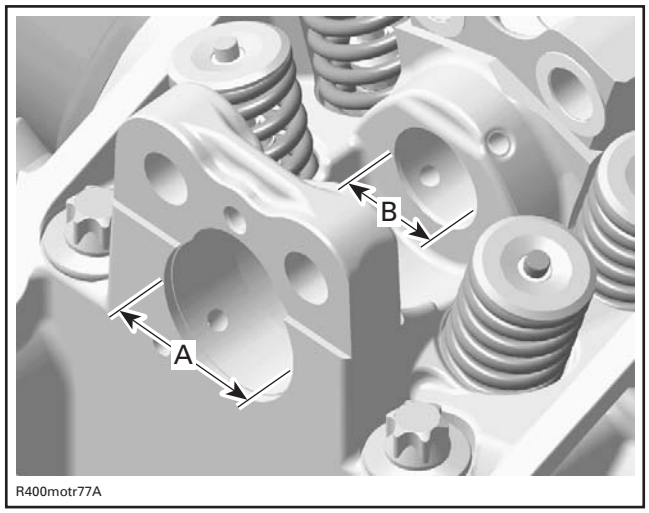
Clean oil support through the cylinder head from contamination.



1. Oil port to lubricate camshaft lobes intake/exhaust
2. Oil supply to camshaft bearing journal (timing chain side)
3. Oil supply to camshaft bearing journal (spark plug side)

Inspecting the Cylinder Head Camshaft Bearing

Measure camshaft bearing in cylinder head.



A. Camshaft bearing (timing chain side)
B. Camshaft bearing (spark plug side)

CAMSHAFT BEARING (TIMING CHAIN SIDE)	
NEW	35.000 mm to 35.025 mm (1.378 in to 1.3789 in)
SERVICE LIMIT	35.040 mm (1.3795 in)
CAMSHAFT BEARING (SPARK PLUG SIDE)	
NEW	22.000 mm to 22.021 mm (.8661 in to .867 in)
SERVICE LIMIT	22.040 mm (.8677 in)

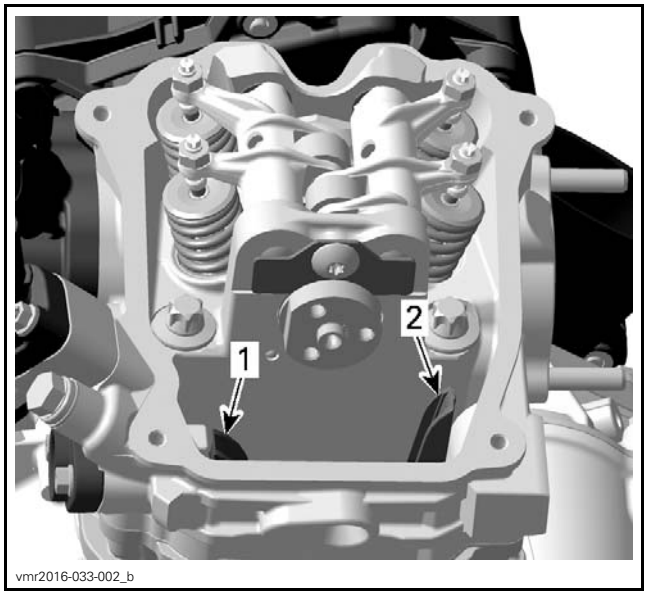
Installing the Cylinder Head

NOTE: Front and rear cylinder heads are not identical. **Never** interchange cylinder heads.

Reverse the removal procedure. Pay attention to the following details.

Ensure dowel pins are in place.

NOTICE **Timing chain guide (fixed) has to be fixed between cylinder and cylinder head.**

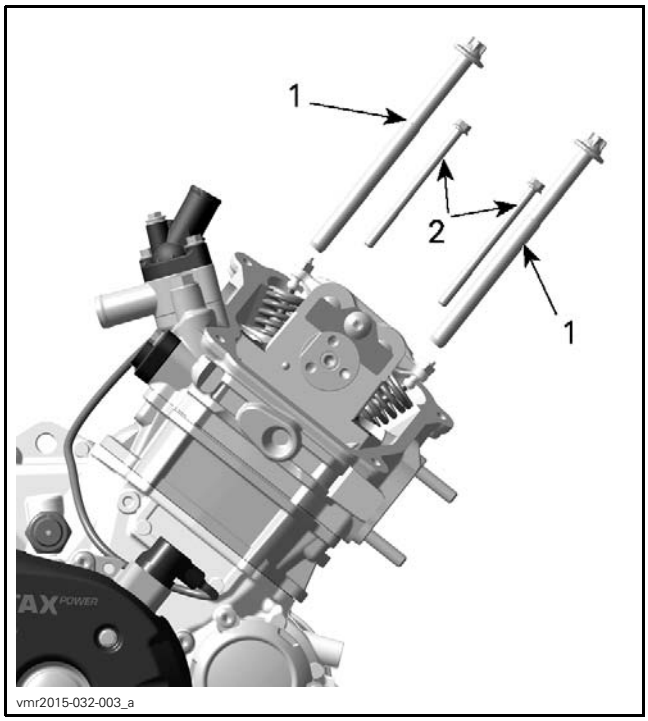


1. Timing chain guide (tensioner side) mounted in crankcase
2. Timing chain guide (fixed) between cylinder and cylinder head

Install a NEW cylinder head gasket.

Install cylinder head screws in correct position.

NOTICE **Cylinder head screws have different sizes and lengths.**

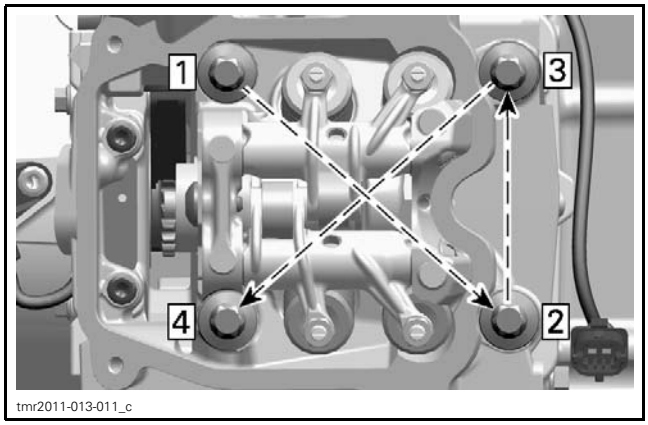


1. Location no. 1
2. Location no. 2

CYLINDER HEAD SCREW IDENTIFICATION		
570 650 850	Location no. 1	M10 x 140
	Location no. 2	M6 x 85
1000 1000R	Location no. 1	M10 x 159
	Location no. 2	M6 x 105

Tighten M10 cylinder head screws FIRST as per following specifications.

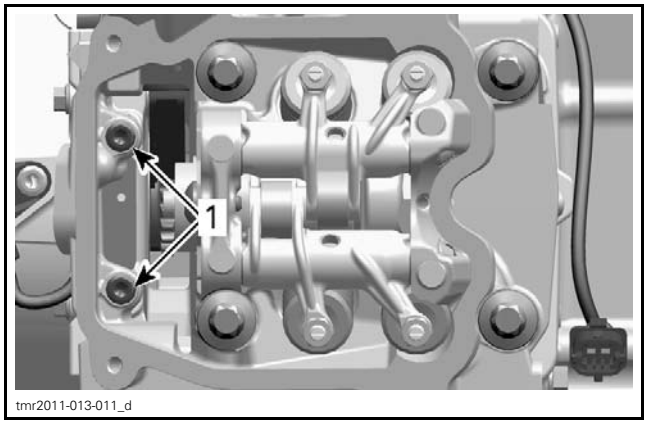
NOTE: Always perform one step on all M10 cylinder head screws before going to the next step.



TIGHTENING SEQUENCE - M10 CYLINDER HEAD SCREWS

TIGHTENING TORQUE		
M10 cylinder head screws	STEP A	20 N•m ± 1 N•m (15 lbf•ft ± 1 lbf•ft)
	STEP B	180° +/- 5°

Tighten M6 cylinder head screws as per following specification.



1. M6 Screws

TIGHTENING TORQUE	
M6 cylinder head screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

Check timing chain guide (tensioner side) for movement.

Refer to applicable subsection for installation details of remaining removed parts.

VALVE SPRINGS

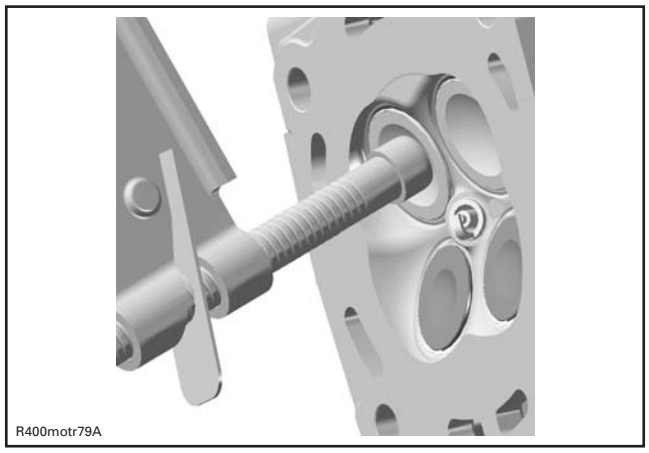
Removing the Valve Spring

1. Refer to following procedures in this subsection to remove:
   – *CAMSHAFT*
   – *CYLINDER HEAD*.
2. Remove valve spring.

ENGINE	REQUIRED TOOL	
All	VALVE SPRING COMPRESSOR (P/N 529 035 724)	
570 650 1000	VALVE SPRING COMPRESSOR CUP (P/N 529 035 764)	
850 1000R	VALVE SPRING COMPRESSOR CUP (P/N 529 036 270)	

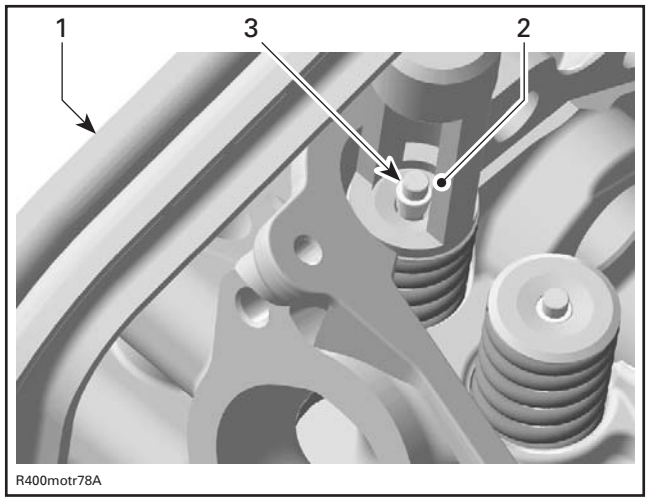
⚠ WARNING

Always wear safety glasses when disassembling valve springs. Be careful when unlocking valves. Components could fly away because of the strong spring preload.



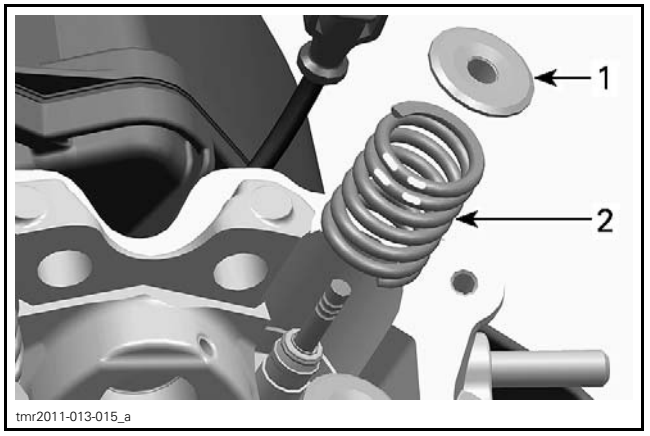
LOCATE VALVE SPRING COMPRESSOR CLAMP IN CENTER OF THE VALVE

3. Remove valve cotters.



1. *Valve spring compressor clamp*
2. *Valve spring compressor cup*
3. *Valve cotter*

4. Remove tools and withdraw valve spring retainer and valve spring.

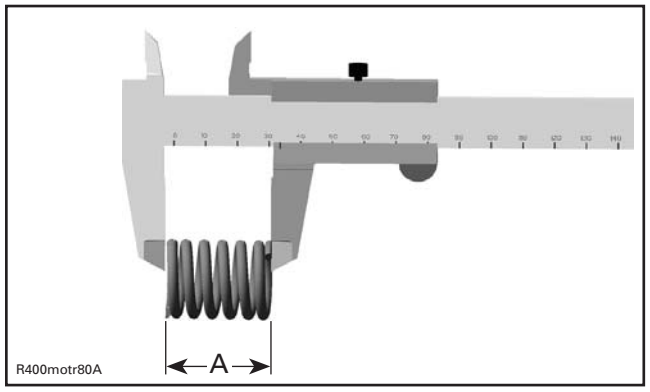


1. *Valve spring retainer*
2. *Valve spring*

Inspecting the Valve Spring

Check valve spring for visible damage. If so, replace valve spring.

Check valve spring for free length and straightness.



A. Valve spring length

VALVE SPRING FREE LENGTH		
570 650 1000	NOMINAL NEW	40.81 mm (1.607 in)
850 1000R		40.41 mm (1.591 in)
All	Service limit	39.00 mm (1.535 in)

Replace valve springs if not within specifications.

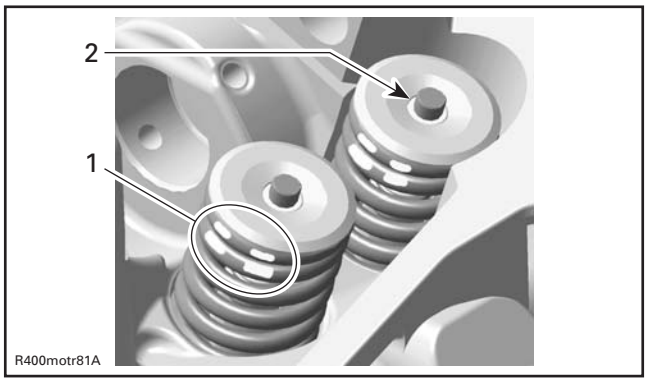
Installing the Valve Spring

For installation, reverse the removal procedure. Pay attention to the following details.

Colored area of the valve spring must be placed on top.

To ease installation of cotters, apply oil or grease on them so that they remain in place while releasing the spring.

NOTE: Valve cotter must be properly engaged in valve stem grooves.



1. Position of the valve spring
2. Valve cotter

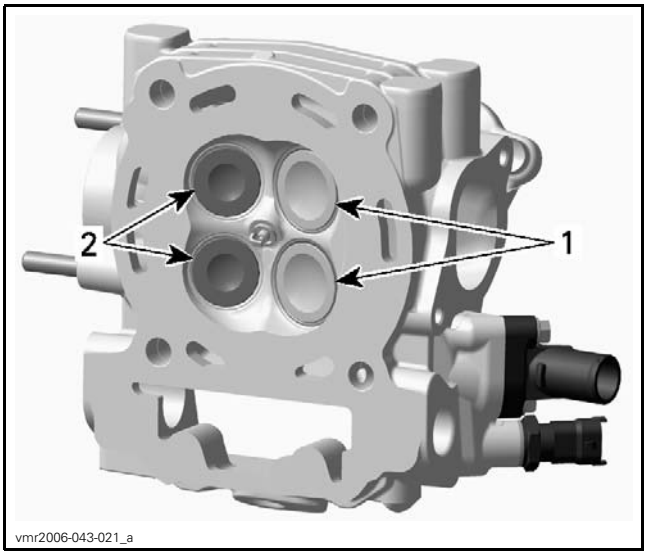
After spring is installed, ensure it is properly locked by tapping on valve stem end with a soft hammer so that valve opens and closes a few times.

NOTICE **An improperly locked valve spring will cause engine damage.**

VALVES

Removing the Valve

1. Remove valve spring, see *VALVE SPRING* in this subsection.
2. Push valve stem, then pull valves (intake and exhaust) out of valve guide.



1. Intake valves 31 mm
2. Exhaust valves 27 mm

3. Remove valve stem seal and discard it.

REQUIRED TOOL
SNAP-ON PLIERS (P/N YA 8230)

Inspecting the Valve

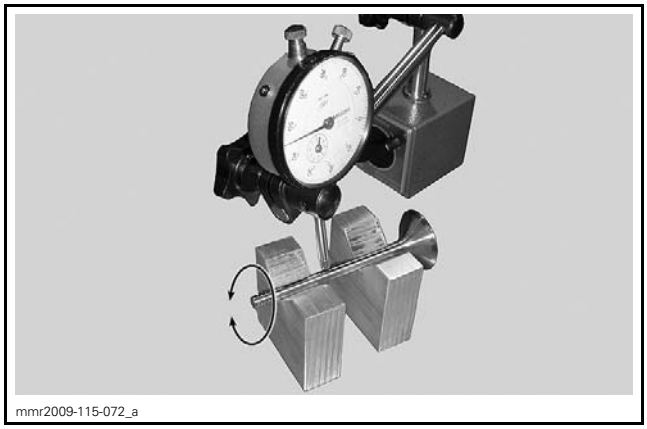
Whenever valves are removed always inspect valve guides. Refer to *VALVE GUIDES* in this subsection.

Valve Stem Seal

Always install NEW seals whenever valves are removed.

Inspecting the Valve

Inspect valve surface, check for abnormal stem wear and bending. If out of specification, replace by a new one.

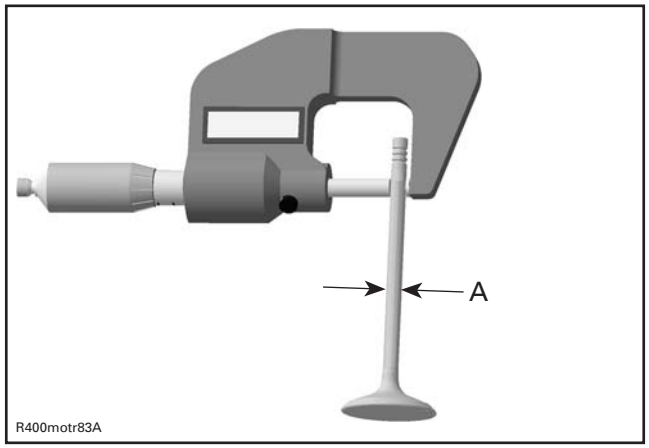


VALVE OUT OF ROUND (INTAKE AND EXHAUST VALVES)	
NEW	0.005 mm (.0002 in)
SERVICE LIMIT	0.06 mm (.0024 in)

Inspecting the Valve Stem

Measure valve stem in three places using a micrometer.

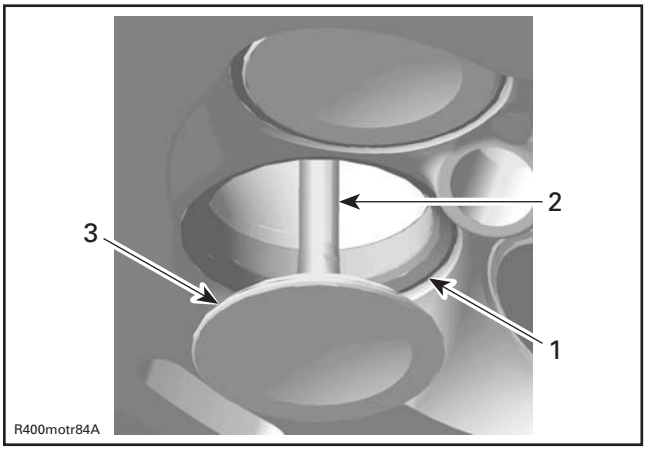
Replace valve if valve stem is out of specification or has other damages such as wear or friction surface.



A. Valve stem diameter

VALVE STEM DIAMETER		
EXHAUST VALVE		
570 650 1000	NEW	4.956 mm to 4.970 mm (.1951 in to .1957 in)
	SERVICE LIMIT	4.930 mm (.1941 in)
850 1000R	NEW	5.461 mm to 5.476 mm (.215 in to .2156 in)
	SERVICE LIMIT	5.440 mm (.2142 in)
INTAKE VALVE		
570 650 1000	NEW	4.966 mm to 4.980 mm (.1955 in to .1961 in)
	SERVICE LIMIT	4.930 mm (.1941 in)
850 1000R	NEW	5.472 mm to 5.486 mm (.2154 in to .216 in)
	SERVICE LIMIT	5.450 mm (.2146 in)

Inspecting the Valve Face and Seat



1. Valve seat
2. Exhaust valve contaminated area
3. Valve face (contact surface to valve seat)

Check valve face and seat for burning or pitting and replace valve or cylinder head if there are signs of damage.

Ensure to seat valves properly. Apply some lapping compound to valve face and work valve on its seat with a lapping tool (see *VALVE GUIDES* in this subsection).

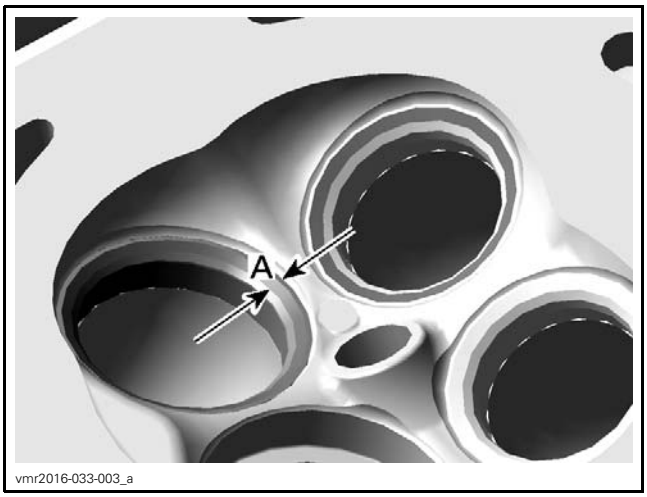
Measure valve face contact width.

NOTE: The location of contact area should be in center of valve seat.

Measure valve seat width using a caliper.

VALVE SEAT CONTACT WIDTH	
EXHAUST VALVE	
NEW	1.25 mm to 1.55 mm (.049 in to .061 in)
SERVICE LIMIT	2.00 mm (.079 in)
INTAKE VALVE	
NEW	1.05 mm to 1.35 mm (.041 in to .053 in)
SERVICE LIMIT	1.80 mm (.071 in)

If valve seat contact width is too wide or has dark spots, replace the cylinder head.



A. Valve seat contact width

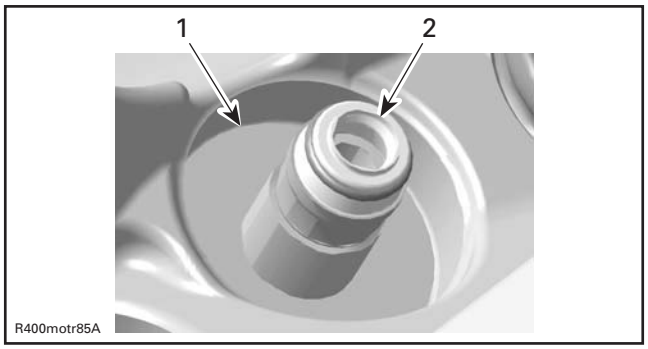
Installing the Valve

Reverse the removal procedure. Pay attention to the following details.

Install a NEW valve stem seal. Make sure thrust washer is installed before installing seal.

Apply engine oil on valve stem and install it.

NOTICE Be careful when valve stem is passed through sealing lips of valve stem seal.



1. Thrust washer
2. Sealing lips of valve stem seal

To ease installation of cotters, apply oil or grease on them so that they remain in place while releasing the spring.

After spring is installed, ensure it is properly locked by tapping on valve stem end with a soft hammer so that valve opens and closes a few times.

NOTICE An improperly locked valve spring will cause engine damage.

VALVE GUIDES

Inspecting the Valve Guide

Always replace valve stem seals whenever valve guides are removed.

Measure valve guide in three places using a small bore gauge.

NOTE: Clean valve guide to remove carbon deposits before measuring.

Replace valve guide if it is out of specification or has other damages such as wear or friction surface.

VALVE GUIDE DIAMETER (INTAKE AND EXHAUST VALVES)		
570 650 1000	New	4.998 mm to 5.018 mm (.1968 in to .1976 in)
	Service limit	5.050 mm (.1988 in)
850 1000R	New	5.506 mm to 5.518 mm (.2168 in to .2172 in)
	Service limit	5.568 mm (.2192 in)

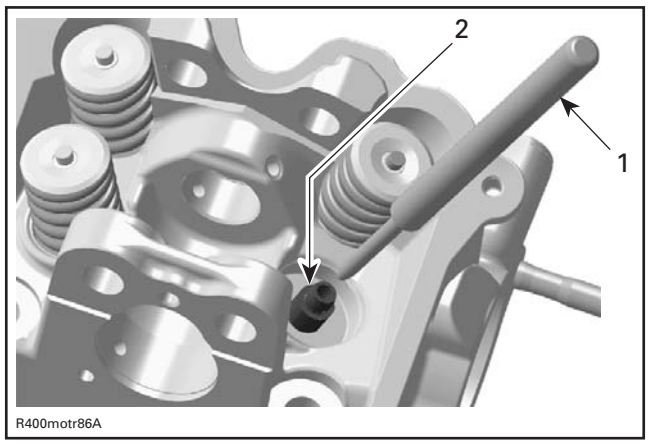
Removing the Valve Guide

1. Remove cylinder head (see *CYLINDER HEAD* in this subsection).
2. Remove valves (see *VALVES* in this subsection).

NOTE: Clean valve guide area from contamination before removal.

3. Drive valve guide out of cylinder head using specified tool.

ENGINE	REQUIRED TOOL	
570 650 1000	VALVE GUIDE REMOVER 5 MM (P/N 529 035 924)	
850 1000R	VALVE GUIDE REMOVER (6 MM) (P/N 529 036 074)	
All	Hammer	



1. *Valve guide remover*
2. *Valve guide*

Installing the Valve Guide

For installation, reverse the removal procedure. Pay attention to the following details.

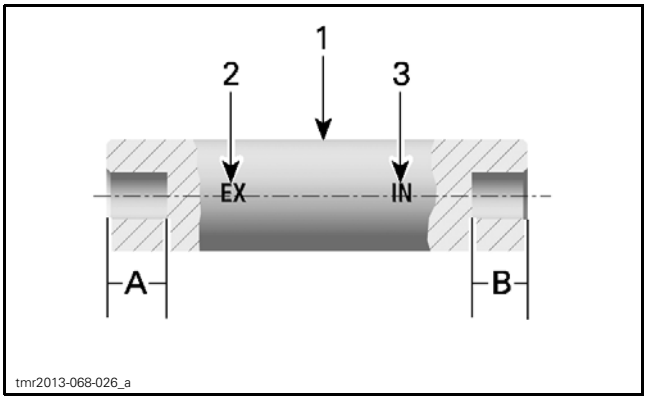
Clean the valve guide bore before reinstalling the valve guide into cylinder head.

Install valve guide.

ENGINE	REQUIRED TOOL	
570 650 1000	VALVE GUIDE INSTALLER (P/N 529 036 140)	
850 1000R	VALVE GUIDE INSTALLER (P/N 529 036 269)	

850 and 1000R Engines

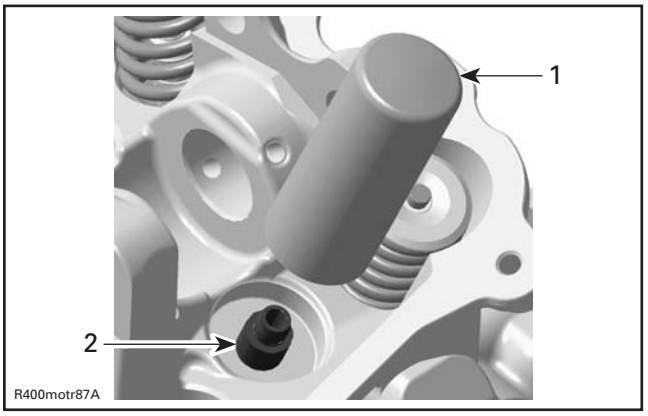
NOTICE Valve guide installer is used for intake and exhaust valve guides. Choose proper side for installation.



1. *Valve guide installer*
2. *Mark "EX" - exhaust valve guide installer*
3. *Mark "IN" - intake valve guide installer*

A. 14.5 mm (.571 in)
B. 13.3 mm (.524 in)

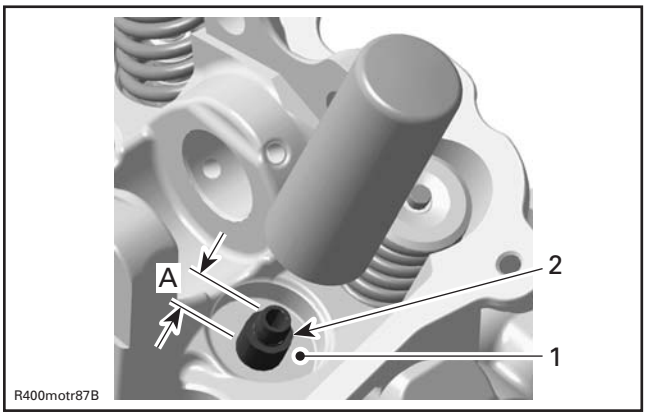
All Engines



1. *Valve guide installer*
2. *Valve guide*

NOTE: Apply LOCTITE 767 (ANTISEIZE LUBRICANT) (P/N 293 800 070) on valve guide prior to install it into the cylinder head.

NOTICE Push valve guide in the cold cylinder head as per following illustration.

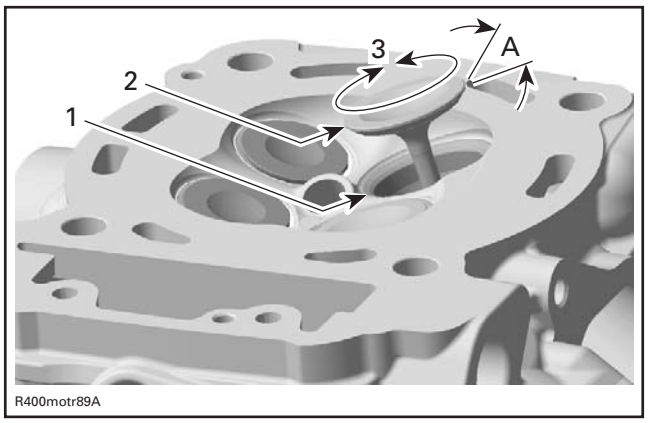


1. *Thrust surface of cylinder head*
2. *Valve guide*

A. Measurement from thrust surface to valve guide top

VALVE GUIDE (MEASUREMENT A)		
570 650 1000	Intake and Exhaust	14.00 mm to 14.40 mm (.5512 in to .5669 in)
850 1000R	Intake	13.1 mm to 13.5 mm (.5157 in to .5315 in)
	Exhaust	14.3 mm to 14.7 mm (.563 in to .579 in)

Apply some lapping compound to valve face and work valve on its seat with a lapping tool.



1. *Valve seat*
2. *Valve face (contact surface to valve seat)*
3. *Turn valve while pushing against cylinder head*

A. Valve seat angle 45°

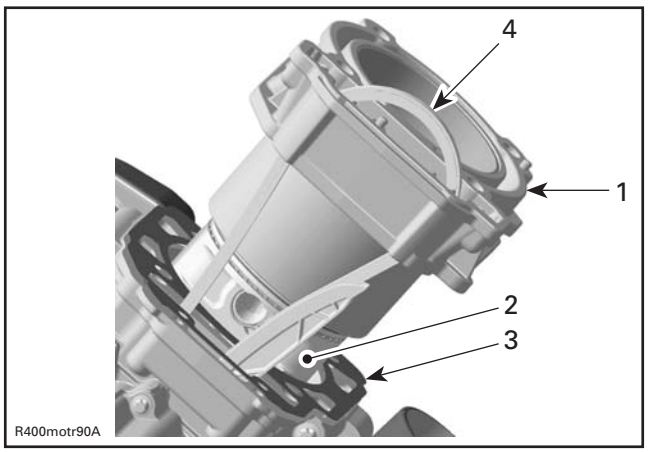
NOTE: Ensure to seat valves properly. Apply marking paste to ease checking contact pattern.

Repeat procedure until valve seat/valve face fits together.

CYLINDER

Removing the Cylinder

1. Refer to the *TIMING CHAIN* subsection to remove the following parts:
   – Chain tensioner
   – Camshaft timing gear.
2. Remove the cylinder head (see *CYLINDER HEAD* in this subsection).
3. Pull cylinder.
4. Discard cylinder base gaskets.



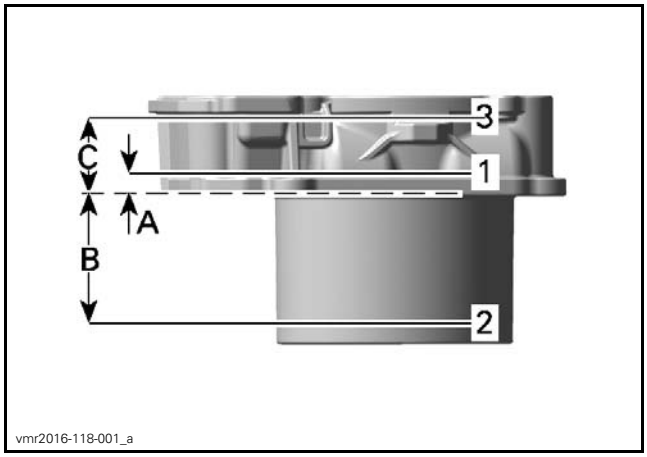
1. *Cylinder*
2. *Piston assembly*
3. *Cylinder base gasket*
4. *Camshaft timing chain*

Inspecting the Cylinder

Check cylinder for cracks, scoring and wear ridges on the top and bottom of the cylinder. If so, replace cylinder.

Cylinder Taper

Measure cylinder bore at recommended positions.



A. First measurement
B. Second measurement
C. Third measurement

CYLINDER TAPER MEASUREMENTS		
ENGINE	MEASUREMENT	SPECIFICATION
570 650 850	A	5 mm (.197 in)
	B	58 mm (2.28 in)
	C	37 mm (1.46 in)
1000 1000R	A	5 mm (.197 in)
	B	53 mm (2.09 in)
	C	57 mm (2.24 in)

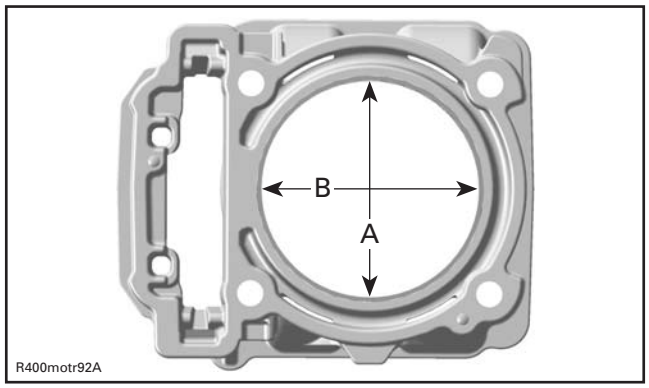
CYLINDER TAPER SPECIFICATION	
NEW (MAXIMUM)	0.038 mm (.0015 in)
SERVICE LIMIT	0.090 mm (.0035 in)

Distance between measurements should not exceed the service limit. Otherwise, replace cylinder and piston rings.

Cylinder Out of Round

Measure cylinder diameter:
– in piston axis
– perpendicular to piston axis.

NOTE: Use the same measuring points as described in *CYLINDER TAPER*.



A. Perpendicular to crankshaft axis
B. Parallel to crankshaft axis

CYLINDER OUT OF ROUND	
NEW (MAXIMUM)	0.015 mm (.0006 in)
SERVICE LIMIT	0.020 mm (.0008 in)

Installing the Cylinder

Reverse the removal procedure. Pay attention to the following details.

NOTICE **Always replace cylinder base gasket before installing the cylinder.**

NOTE: Make sure piston rings are properly spaced, refer to *PISTON RINGS* in this subsection.

Apply engine oil:
– In the bottom area of the cylinder bore
– On the piston rings
– On the piston ring compressor.

Compress piston rings.

REQUIRED TOOL
Piston ring compressor with band width of 15 mm to 20 mm (.59 in to .79 in)

First mount cylinder 2.

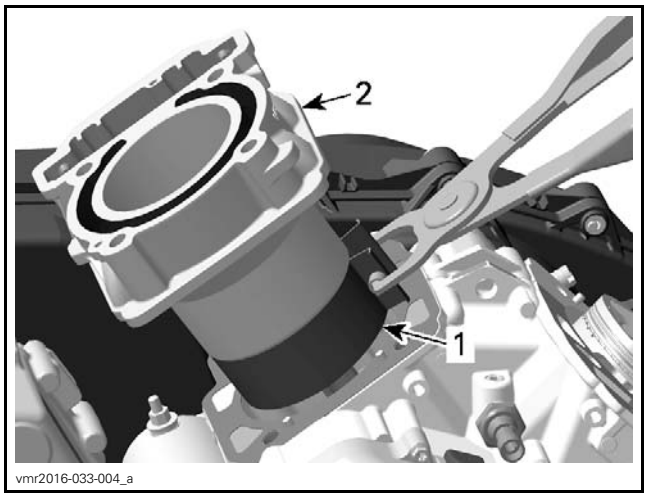
NOTE: The cylinder can not be pushed fully over the piston unless the piston is located at TDC.

Then remove the CRANKSHAFT LOCKING BOLT (P/N 529 035 617).

Crank the engine further and position piston 1 at TDC.

Mount cylinder 1.

Put timing chain through the chain passage, then slide cylinder over piston.



1. Piston ring compressor
2. Cylinder

NOTICE **Chain guide has to be fixed between cylinder and cylinder head.**

NOTE: After both cylinders are installed, turn crankshaft until piston of cylinder 2 is at TDC and lock crankshaft. Refer to *CRANKSHAFT* in the *BOTTOM END* subsection.

Install cylinder head and the other parts in accordance with the proper installation procedures.

PISTON

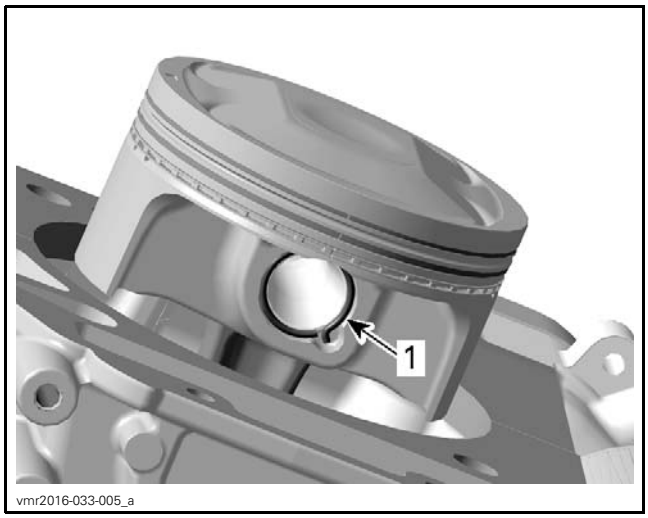
Removing the Piston

1. Refer to following procedures in this subsection and remove following parts:
   – Cylinder head
   – Cylinder.
2. Place a rag under piston and in the area of timing chain compartment.

⚠ WARNING

Piston circlips are spring loaded.

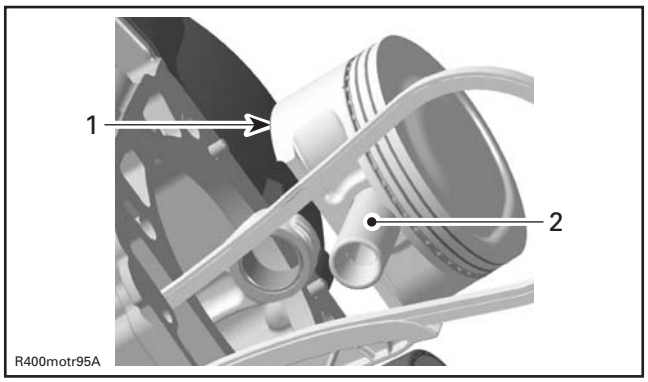
3. Remove one piston circlip and discard it.



1. Piston circlip

NOTE: The removal of both piston circlips is not necessary to remove piston pin.

4. Push piston pin out of piston.



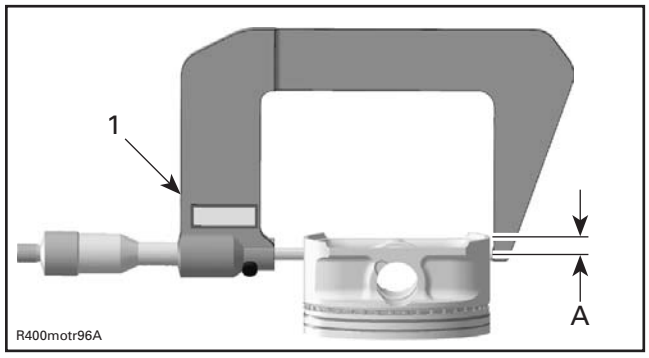
1. Piston
2. Piston pin

5. Detach piston from connecting rod.

Inspecting the Piston

Inspect piston for scoring, cracking or other damages. Replace piston and piston rings if necessary.

Using a micrometer, measure piston at 8 mm (.315 in) perpendicularly (90°) to piston pin.



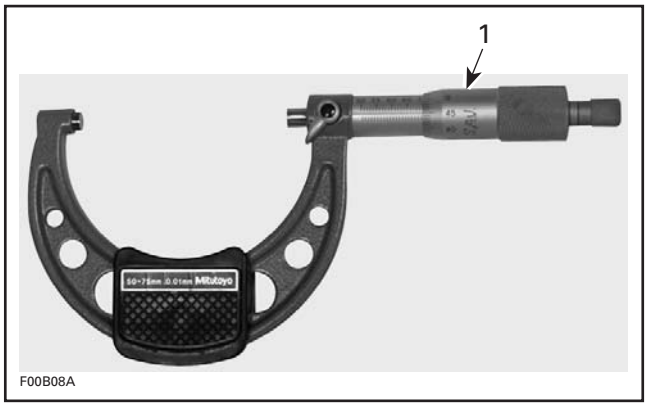
1. Measuring perpendicularly (90°) to piston pin
A. 8 mm (.315 in)

The measured dimension should be as described in the following tables. If not, replace piston.

PISTON MEASUREMENT		
570	New	83.950 mm to 83.966 mm (3.3051 in to 3.3057 in)
	Service limit	83.850 mm (3.3012 in)
650	New	81.950 mm to 81.966 mm (3.2264 in to 3.227 in)
	Service limit	81.850 mm (3.2224 in)
850	New	93.950 mm to 93.966 mm (3.6988 in to 3.6994 in)
	Service limit	93.900 mm (3.6969 in)
1000 1000R	New	90.950 mm to 90.966 mm (3.5807 in to 3.5813 in)
	Service limit	90.900 mm (3.5787 in)

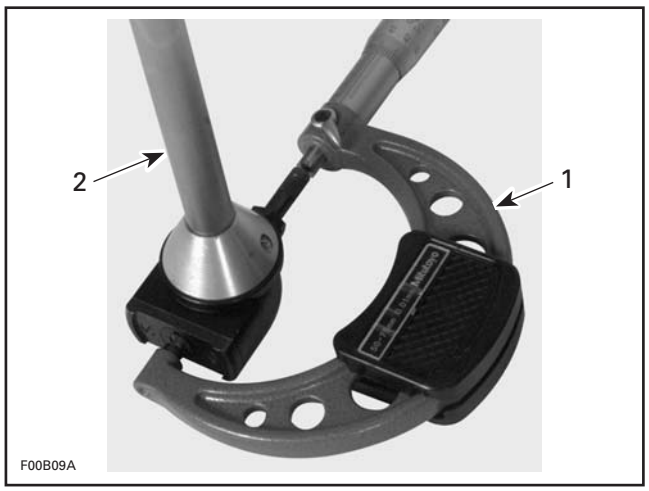
Piston/Cylinder Clearance

Adjust and lock a micrometer to the piston dimension.

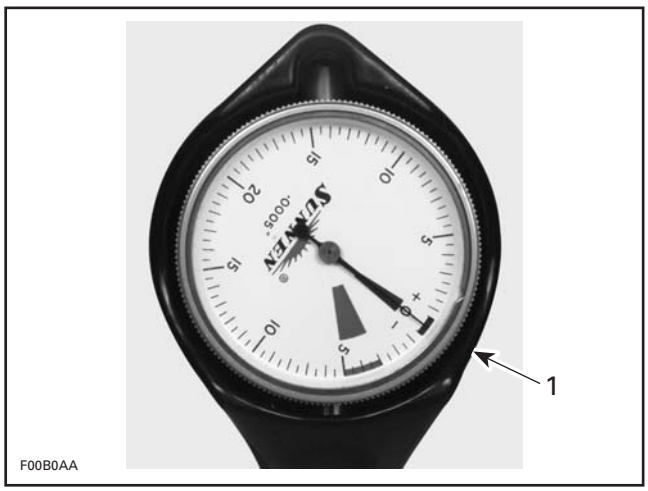


1. Micrometer set to the piston dimension

With the micrometer set to the dimension, adjust a cylinder bore gauge to the micrometer dimension and set the indicator to 0 (zero).



1. *Use the micrometer to set the cylinder bore gauge*
2. *Dial bore gauge*



TYPICAL
1. *Indicator set to 0 (zero)*

Position the dial bore gauge 20 mm (.787 in) above cylinder base, measuring perpendicularly (90°) to piston pin axis.

Read the measurement on the cylinder bore gauge. The result is the exact piston/cylinder wall clearance.

PISTON/CYLINDER CLEARANCE		
570 650	New	0.057 mm to 0.087 mm (.0022 in to .0034 in)
	Service limit	0.130 mm (.0051 in)
850 1000 1000R	New	0.027 mm to 0.057 mm (.0011 in to .0022 in)
	Service limit	0.100 mm (.0039 in)

NOTE: Make sure used piston is not worn.

If clearance exceeds specified tolerance, replace piston by a new one and measure piston/cylinder clearance again.

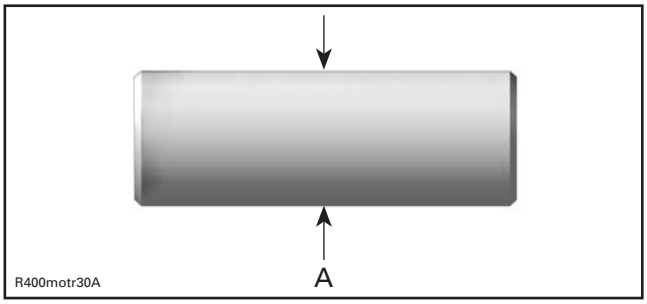
NOTE: Make sure the cylinder bore gauge indicator is set exactly at the same position as with the micrometer, otherwise the reading will be false.

Connecting Rod/Piston Pin Clearance

Using synthetic abrasive woven, clean piston pin from deposits.

Inspect piston pin for scoring, cracking or other damages.

Measure piston pin. See the following illustration for the proper measurement positions.

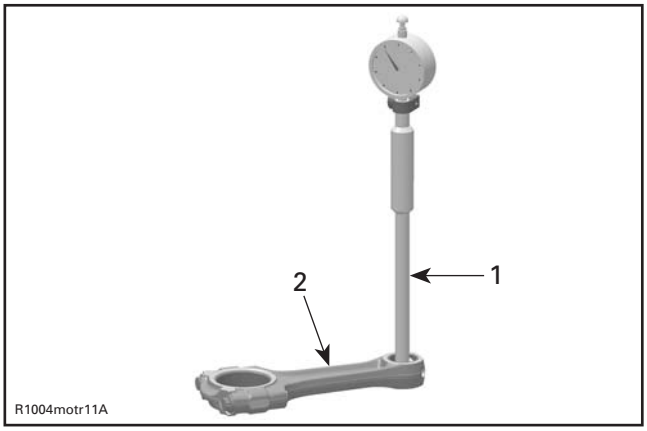


A. Piston pin diameter

PISTON/CYLINDER CLEARANCE		
570 650 850	New	19.996 mm to 20.000 mm (.7872 in to .7874 in)
	Service limit	19.980 mm (.7866 in)
1000 1000R	New	21.996 mm to 22.000 mm (.866 in to .866 in)
	Service limit	21.980 mm (.8654 in)

Replace piston pin if diameter is out of specifications.

Measure inside diameter of connecting rod small end bushing.



1. *Bore gauge*
2. *Connecting rod*

CONNECTING ROD SMALL END DIAMETER		
570 650 850	New	20.010 mm to 20.020 mm (.7878 in to .7882 in)
	Service limit	20.060 mm (.7898 in)
1000 1000R	New	22.010 mm to 22.020 mm (.8665 in to .8669 in)
	Service limit	22.050 mm (.8681 in)

Replace connecting rod if diameter of connecting rod small end is out of specifications. Refer to *BOTTOM END* subsection for removal procedure.

Compare measurements to obtain the connecting rod/piston pin clearance.

CONNECTING ROD/ PISTON PIN CLEARANCE	
SERVICE LIMIT	0.080 mm (.0031 in)

Installing the Piston

Reverse the removal procedure. Pay attention to the following details.

Apply engine oil on the piston pin.

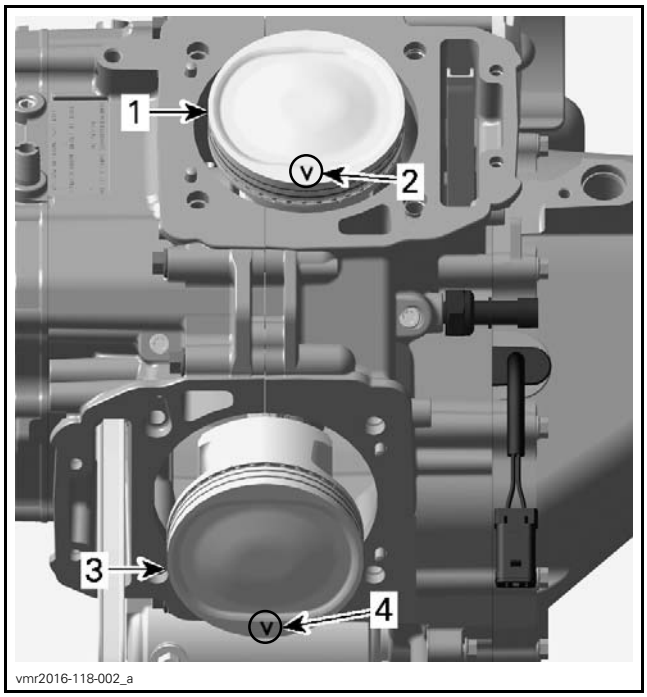
Insert piston pin into piston and connecting rod.

570, 850, 1000 and 1000R Engines

For each cylinder, install piston with the punched arrow on piston dome pointing towards the rear side of the engine.

Front cylinder: Mark on top of piston must show to intake side.

Rear cylinder: Mark on top of piston must show to exhaust side.



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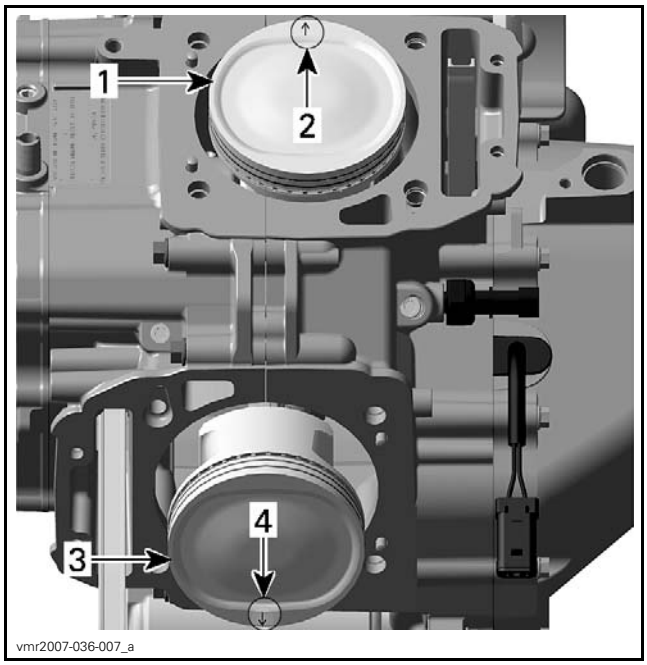
570 , 850, 1000 AND 1000R ENGINES
1. *Piston of cylinder 1 (front)*
2. *Mark on piston must show to intake side of cylinder 1*
3. *Piston of cylinder 2 (rear)*
4. *Mark on piston must show to exhaust side of cylinder 2*

650 Engines

For each cylinder, install the piston with the arrow on the piston dome pointing towards the exhaust side of the engine.

Front cylinder: Mark on top of piston must show to exhaust side.

Rear cylinder: Mark on top of piston must show to exhaust side.



650 ENGINE
1. *Piston of cylinder 1 (front)*
2. *Mark on piston must show to exhaust side of cylinder 1*
3. *Piston of cylinder 2 (rear)*
4. *Mark on piston must show to exhaust side of cylinder 2*

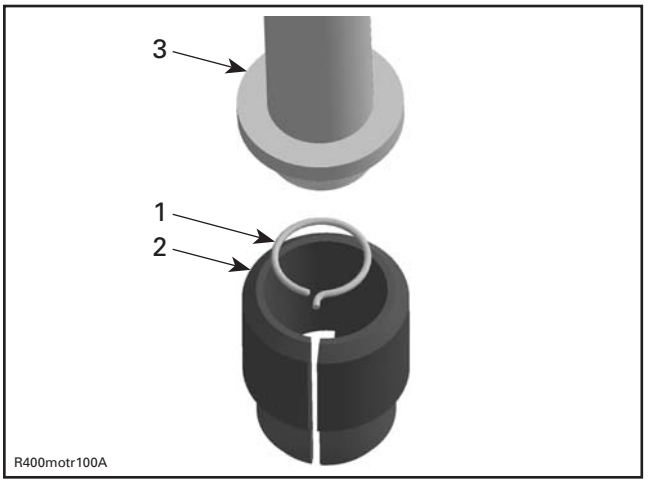
All Engines

Use the piston appropriate circlip installer to assemble the NEW piston circlip as per following procedure:

REQUIRED TOOL		
570 650	PISTON CIRCLIP INSTALLER (P/N 529 035 921)	
850	PISTON CIRCLIP INSTALLER (P/N 529 036 083)	
1000 1000R	PISTON CIRCLIP INSTALLER (P/N 529 036 153)	

NOTICE **Always replace disassembled piston circlip(s) by NEW ones. Place a rag on cylinder base to avoid dropping the circlip inside the engine.**

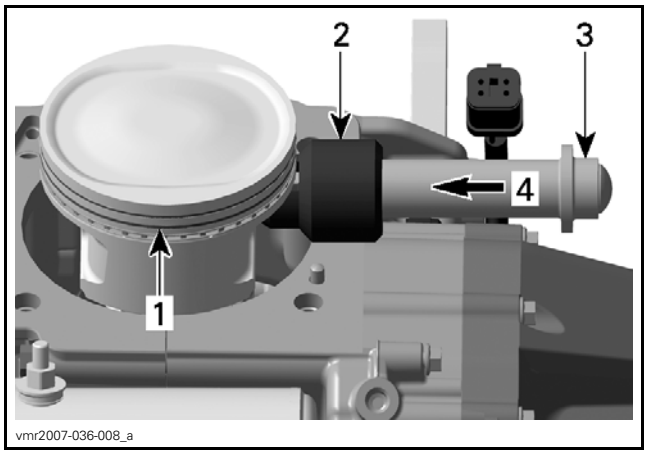
Place circlip in sleeve as per following illustration.



1. *Circlip*
2. *Sleeve*
3. *Assembly jig from piston clip installer*

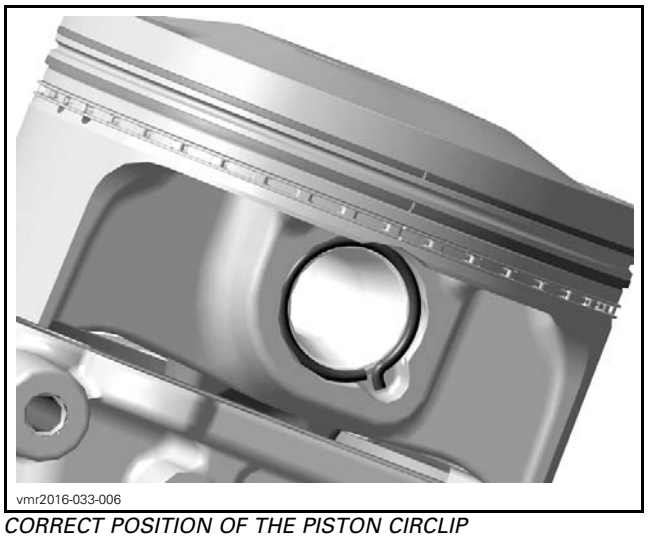
Push taper side of assembly jig until circlip reaches middle of sleeve.

Align sleeve with piston pin axis and push assembly jig until circlip engages in piston.



1. *Hold piston while pushing circlip in place*
2. *Sleeve*
3. *Assembly jig*
4. *Direction to push circlip*

NOTE: Take care that the hook of the piston circlip is positioned properly.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CORRECT POSITION OF THE PISTON CIRCLIP

PISTON RINGS

Removing the Piston Rings

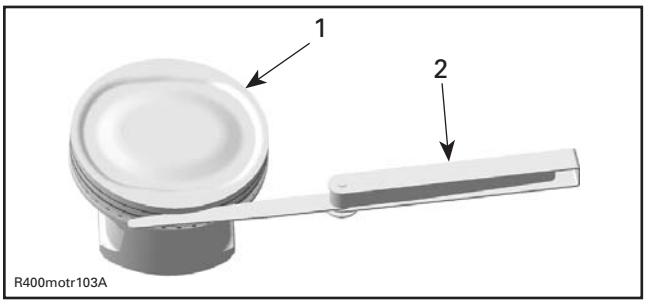
Remove the piston (see *PISTON* in this subsection).

Inspecting the Piston Rings

Ring/Piston Groove Clearance

Using a feeler gauge measure each ring/piston groove clearance. If the clearance is too large, the piston and the piston rings should be replaced.

RING/PISTON GROOVE CLEARANCE		
UPPER COMPRESSION RING		
570	NEW	0.025 mm to 0.070 mm (.001 in to .0028 in)
	SERVICE LIMIT	0.100 mm (.0039 in)
650 850 1000 1000R	NEW	0.030 mm to 0.070 mm (.0012 in to .0028 in)
	SERVICE LIMIT	0.150 mm (.0059 in)
LOWER COMPRESSION RING		
All	NEW	0.020 mm to 0.060 mm (.0008 in to .0024 in)
	SERVICE LIMIT	0.150 mm (.0059 in)
OIL SCRAPER RING		
All	NEW	0.010 mm to 0.180 mm (.0004 in to .0071 in)
	SERVICE LIMIT	0.250 mm (.0098 in)



1. Piston
2. Feeler gauge

Ring End Gap

RING END GAP		
UPPER COMPRESSION RING		
570	NEW	0.10 mm to 0.30 mm (.004 in to .012 in)
	SERVICE LIMIT	0.50 mm (.02 in)
850	NEW	0.20 mm to 0.35 mm (.008 in to .014 in)
	SERVICE LIMIT	0.60 mm (.024 in)
650 1000 1000R	NEW	0.20 mm to 0.40 mm (.008 in to .016 in)
	SERVICE LIMIT	0.60 mm (.024 in)
LOWER COMPRESSION RING		
570 850	NEW	0.35 mm to 0.55 mm (.014 in to .022 in)
	SERVICE LIMIT	0.85 mm (.033 in)
650 1000 1000R	NEW	0.20 mm to 0.40 mm (.008 in to .016 in)
	SERVICE LIMIT	0.70 mm (.028 in)
OIL SCRAPER RING		
All	NEW	0.20 mm to 0.70 mm (.008 in to .028 in)
	SERVICE LIMIT	1.00 mm (.039 in)

To measure the ring end gap place the ring in the cylinder in the area of 8 mm to 16 mm (5/16 in to 5/8 in) from top of cylinder.

NOTE: In order to correctly position the ring in the cylinder, use piston as a pusher.

Using a feeler gauge, check ring end gap. Replace ring if gap exceeds specified tolerance.

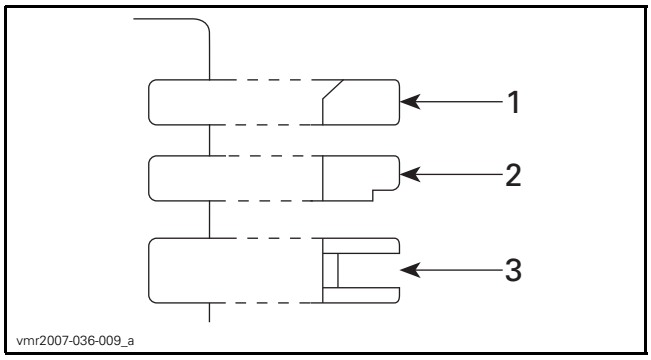
Installing the Piston Rings

For installation, reverse the removal procedure. Pay attention to the following details.

NOTE: First install spring and then rings of oil scraper ring.

NOTE: Use a ring expander to prevent breakage during installation. The oil ring must be installed by hand.

Install the oil scraper ring first, then the lower compression ring with the word "N and TOP " facing up, then the upper compression ring with the word "N and TOP" facing up.

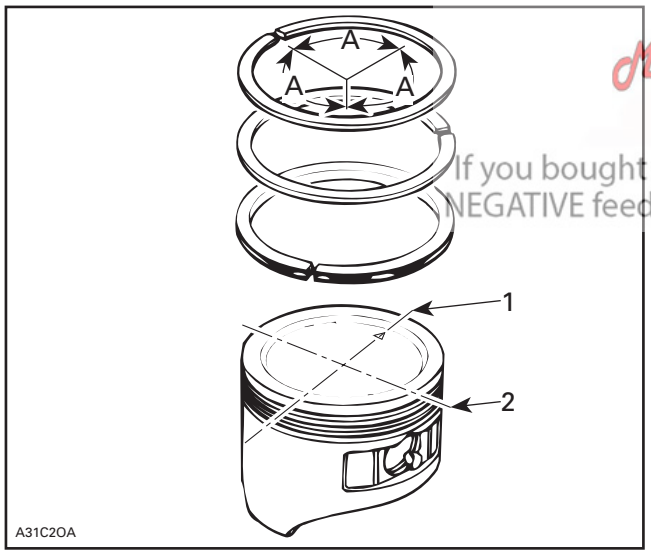


1. Upper compression ring
2. Lower compression ring
3. Oil scraper ring

NOTICE Ensure that top and second rings are not interchanged.

Check that rings rotate smoothly after installation.

Space the piston ring end gaps 120° apart and do not align the gaps with the piston pin bore or the thrust side axis.



1. DO NOT align ring gap with piston thrust side axis
2. DO NOT align ring gap with piston pin bore axis
A. 120°

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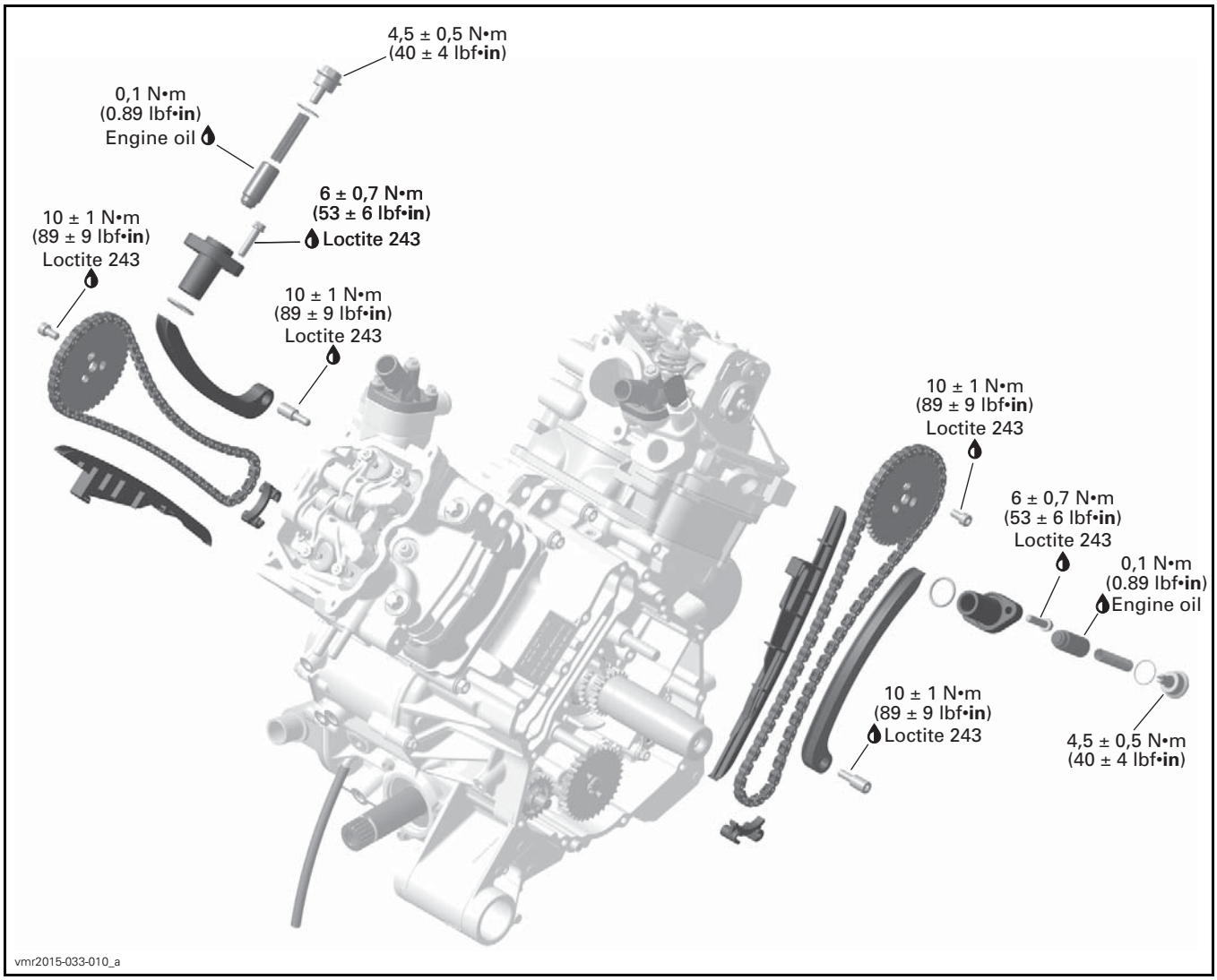
TIMING CHAIN

SERVICE TOOLS

Description	Part Number	Page
CAMSHAFT TIMING TOOL	529 036 268	6
CRANKSHAFT TDC POSITION TOOL	529 036 201	6, 9

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	7, 12



TROUBLESHOOTING

UNUSUAL ENGINE NOISE OR VIBRATION

1. IMPROPER VALVE CLEARANCE ADJUSTMENT AND/OR WORN OUT ROCKER ARM(S)
   - *Readjust valve clearance and/or replace defective part(s), refer to TOP END subsection.*
2. DEFECTIVE CHAIN TENSIONER
   - *Replace chain tensioner.*
3. WORN OUT TIMING CHAIN GUIDE(S)
   - *Replace timing chain guide(s).*
4. STRETCHED TIMING CHAIN OR WORN OUT TIMING GEARS
   - *Replace timing chain and timing gears.*
5. LOOSE TIMING GEAR RETAINING SCREWS
   - *Retighten screws to recommended torque.*
6. INCORRECT CAMSHAFT TIMING
   - *Replace damaged components and readjust camshaft timing.*

ENGINE LACKS ACCELERATION OR POWER

1. INCORRECT CAMSHAFT TIMING
   - *Replace damaged components and readjust camshaft timing.*

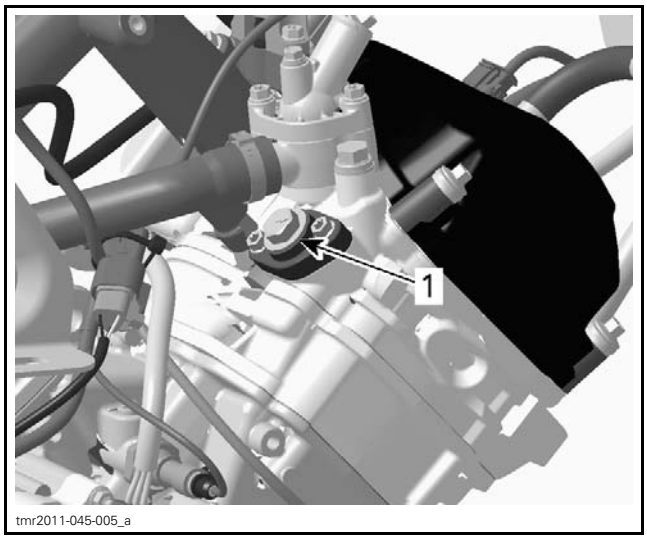
PROCEDURES

TIMING CHAIN TENSIONERS

Timing Chain Tensioner Location

570 and 650 Engines

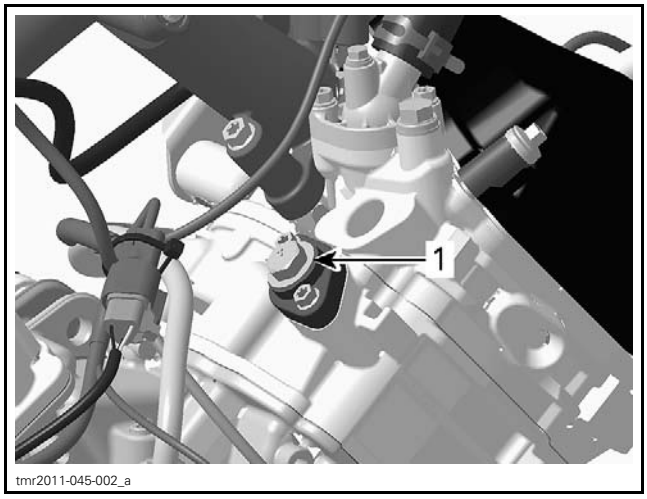
The timing chain tensioner is located on the back of each cylinder head.



570 AND 650 ENGINES (FRONT CYLINDER SHOWN)
1. Timing chain tensioner

850, 1000 and 1000R Engines

The timing chain tensioner is located in the cylinder.



850, 1000 AND 1000R ENGINES (FRONT CYLINDER SHOWN)
1. Timing chain tensioner

Timing Chain Tensioner Access

For the front cylinder chain tensioner, refer to *BODY* subsection and remove the following:

– Seat

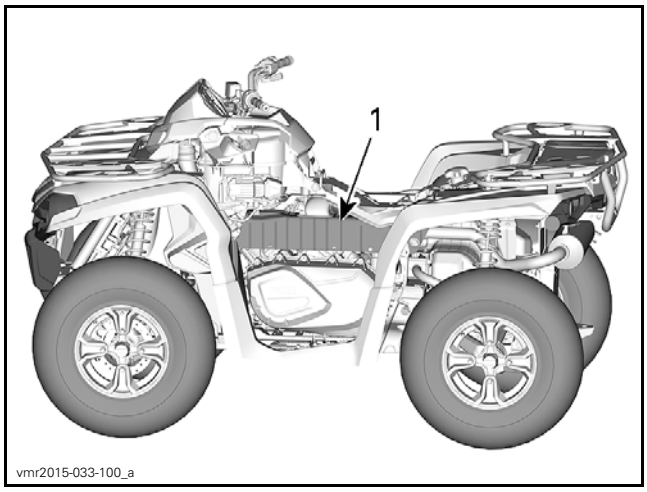
– RH side panel and extension.

For the rear cylinder chain tensioner, refer to *BODY* subsection and remove the following:

– Seat

– LH side panel and extension.

For the rear cylinder chain tensioner, also remove the outer exhaust system heat shield. Refer to *EXHAUST SYSTEM* subsection.



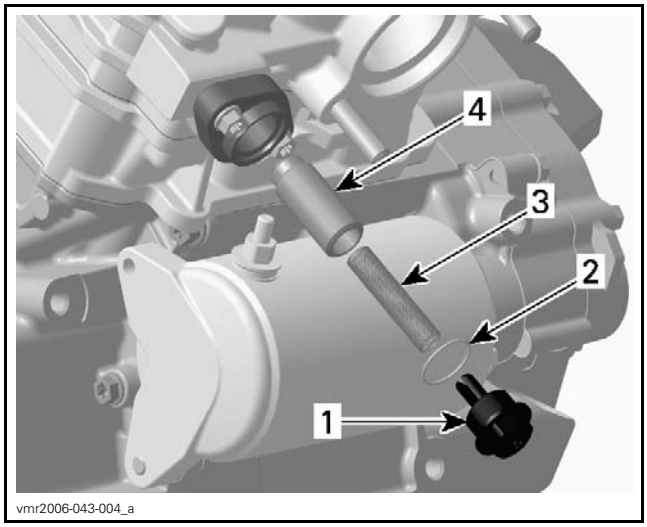
1. Heat shield to remove

Removing the Timing Chain Tensioner

1. Make sure the applicable piston is set to TDC ignition. Refer to *CAMSHAFT TIMING GEARS* in this subsection.
2. Carefully remove chain tensioner screw plug and release spring tension.

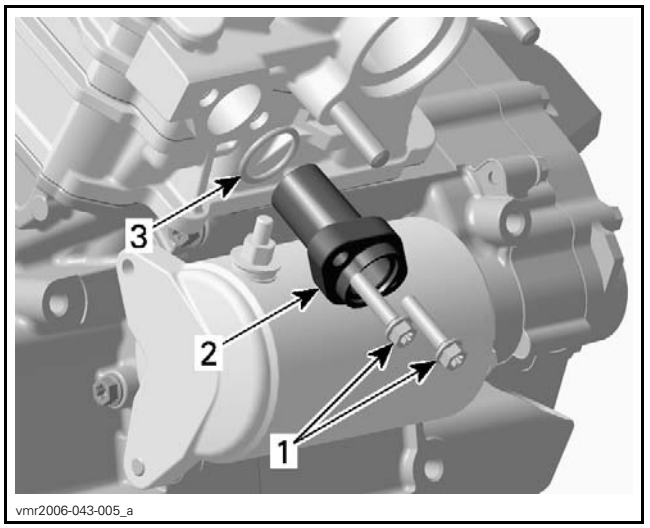
⚠ CAUTION Tensioner is spring loaded.

3. Remove:
   – O-ring
   – Spring
   – Chain tensioner plunger.



1. Chain tensioner screw plug
2. O-ring
3. Spring
4. Chain tensioner plunger

4. Remove:
   – Chain tensioner housing retaining screws
   – Chain tensioner housing
   – O-ring.



1. Screws
2. Chain tensioner housing
3. O-ring

Inspecting the Timing Chain Tensioner

Check chain tensioner housing and screw plug for cracks or other damages. Replace if necessary.

Check chain tensioner plunger for freedom of movement and/or scoring.

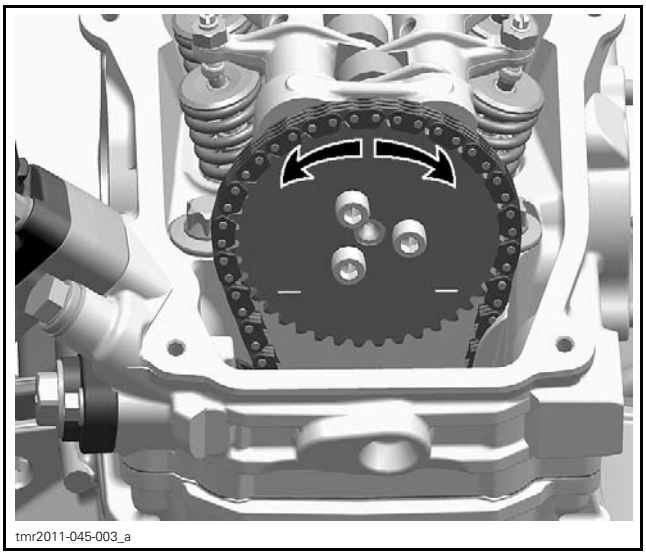
Ensure O-rings are not brittle, cracked or hard. Replace if necessary.

Check spring condition. Replace if bent, broken or worn.

Installing the Timing Chain Tensioner

Reverse the removal procedure. However, pay attention to the following.

NOTE: Before installing the chain tensioner, make sure the camshaft timing gear can be moved back and forth.



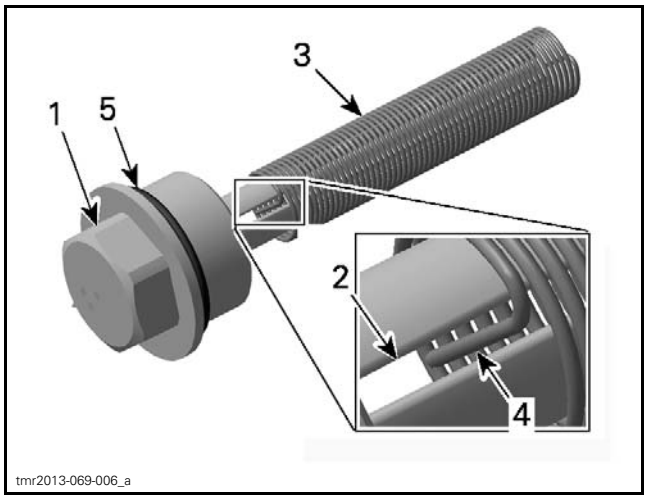
MOVE GEAR BACK AND FORTH

1. Apply engine oil on the chain tensioner plunger before installation.
2. Slightly turn the camshaft timing gear in order to move the timing chain excess play to the tensioner side.
3. Slightly screw in the plunger until the timing chain does not allow back and forth movement of the camshaft timing gear.
4. Screw the plunger in an additional 1/8 turn to obtain the required specified torque.

TIMING CHAIN TENSIONER ADJUSTMENT (TIGHTENING TORQUE)
0.1 N•m (.9 lbf•**in**)

NOTICE **Improper adjustment of the timing chain will lead to severe engine damage.**

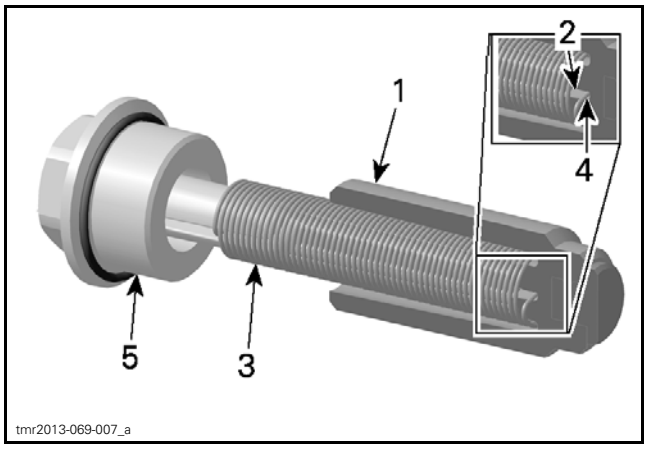
5. Place the O-ring on chain tensioner screw plug.
6. Fit the spring on one side into the slot of the chain tensioner screw plug.



1. Plug
2. Slot
3. Spring
4. Spring end
5. O-Ring

7. Fit the spring on the other side into the plunger.

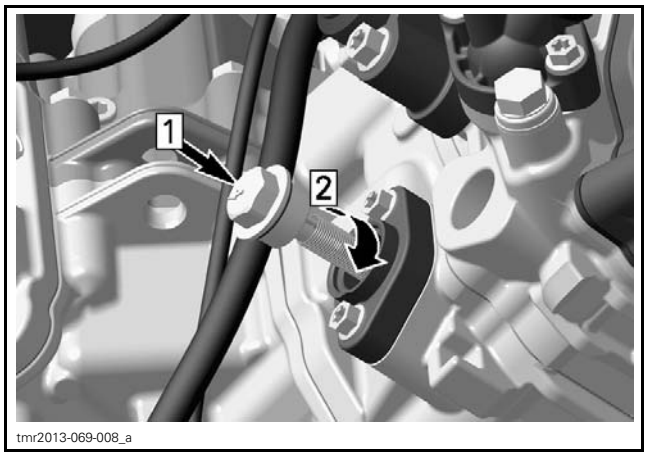
NOTE: Turn spring only clockwise in order to fit the spring end into the notch of the plunger to avoid loosening the plunger during spring installation. Do not preload the spring.



FOR CLARITY PARTS ARE REMOVED FROM CYLINDER
1. Plunger
2. Notch
3. Spring
4. Spring end
5. Plug with O-ring

8. Then compress the spring and screw the plug in.

NOTE: To avoid overstressed timing chain, the plug must engage into threads within the first full turn.



Step 1: Compress spring
Step 2: Screw in plug

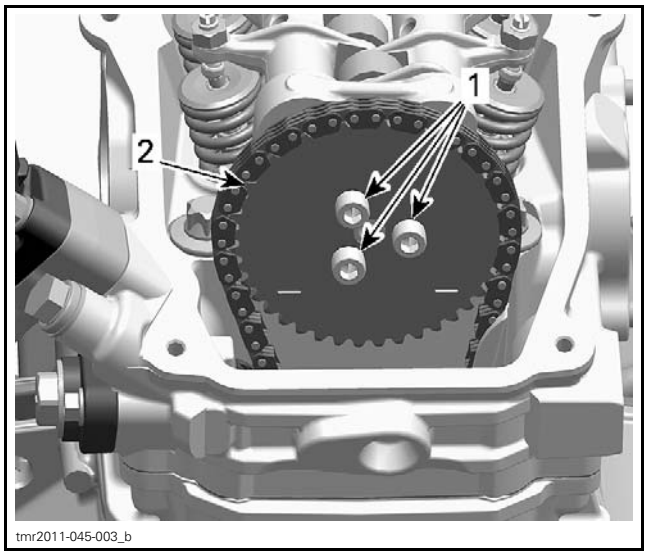
9. Remove locking tool and install all other removed parts.
10. Tighten the chain tensioner screw plug to specification.

TIGHTENING TORQUE	
Chain tensioner plug	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)

CAMSHAFT TIMING GEARS

Removing the Camshaft Timing Gear

1. Remove valve cover, refer to *TOP END* subsection.
2. Set applicable piston to TDC ignition and lock magneto flywheel. Refer to *CAMSHAFT TIMING* in this subsection.
3. Remove timing chain tensioner. Refer to *TIMING CHAIN TENSIONERS* in this subsection.
4. Remove camshaft timing gear retaining screws.



TYPICAL
1. Camshaft timing gear retaining screws
2. Camshaft timing gear

5. Remove the camshaft timing gear.

NOTE: Secure timing chain with a piece of wire.

Inspecting the Camshaft Timing Gear

Check camshaft timing gear for wear or deterioration.

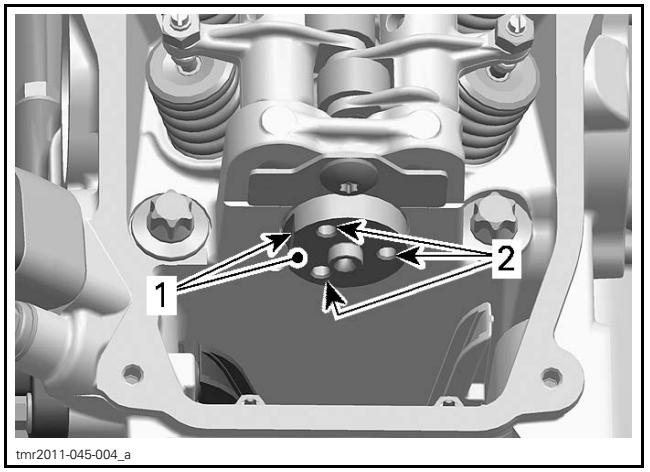
If timing gear is worn or damaged, replace it as a set with the timing chain.

For crankshaft gear inspection, refer to *CRANKSHAFT* in the *BOTTOM END* subsection.

Installing the Camshaft Timing Gear

For installation, reverse the removal procedure. Pay attention to the following details.

1. Clean camshaft mating surface and threads prior to installing camshaft timing gear.



1. Camshaft mating surface
2. Camshaft screw threads

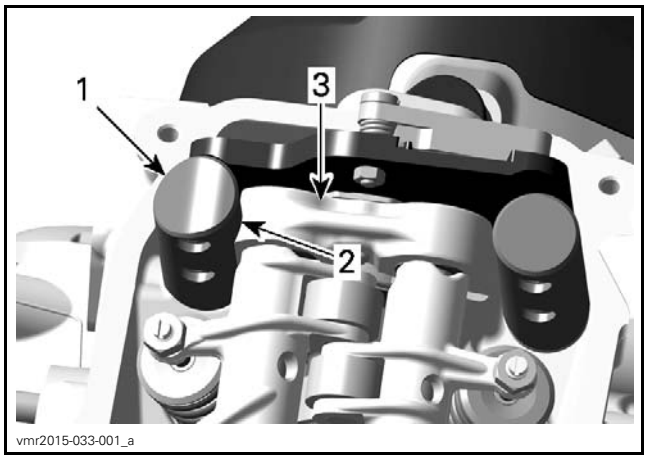
2. Set applicable piston to TDC ignition position and install the crankshaft position tool, refer to *CAMSHAFT TIMING* in this subsection.

REQUIRED TOOL	
CRANKSHAFT TDC POSITION TOOL (P/N 529 036 201)	

3. Install camshaft timing tool on the cylinder head.

REQUIRED TOOL	
CAMSHAFT TIMING TOOL (P/N 529 036 268)	

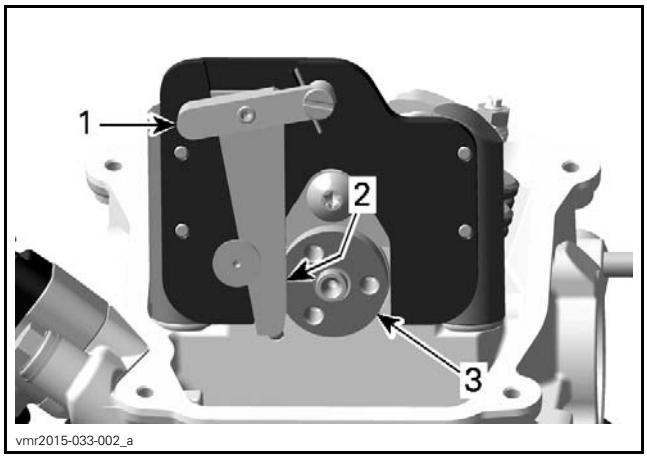
NOTE: Properly align tube of camshaft timing tool with machined radius on cylinder head.



CAMSHAFT TIMING TOOL INSTALLED
1. *Tube (camshaft timing tool)*
2. *Machined radius (camshaft timing tool)*
3. *Cylinder head*

4. Set camshaft to TDC ignition position by aligning the flat portion on the camshaft flange with the tool lever.

NOTE: In addition, to ensure proper camshaft timing, press camshaft timing tool lever downwards.

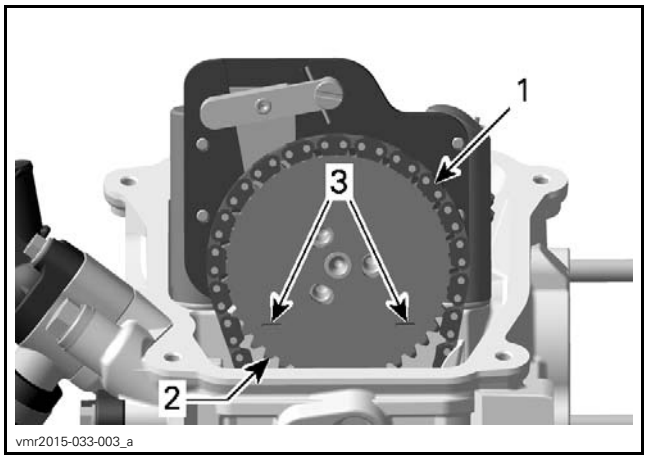


PRESS TOOL LEVER DOWN
1. *Lever*
2. *Flat portion*
3. *Camshaft*

NOTICE **Crankshaft and camshaft must be locked at TDC ignition position to place camshaft timing gear and timing chain in the proper position.**

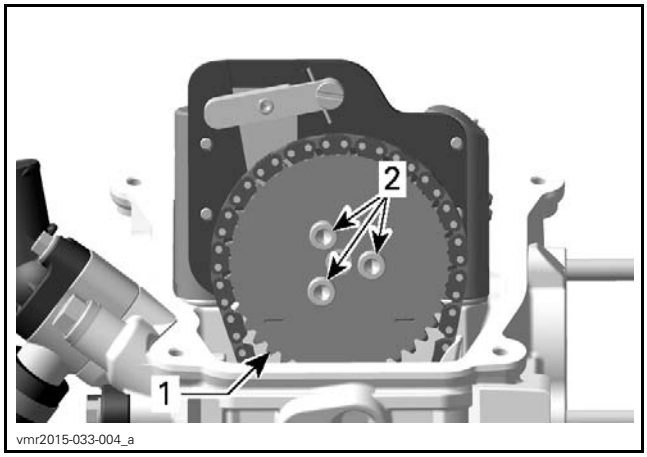
5. Place camshaft timing gear and timing chain on the camshaft.

NOTE: The printed marks on the camshaft timing gear must be parallel to the cylinder head base.



1. *Timing chain*
2. *Camshaft timing gear*
3. *Printed marks on camshaft timing gear*

6. Install and adjust timing chain tensioner, refer to *TIMING CHAIN TENSIONER* in this subsection.
7. Install and tighten camshaft timing gear retaining screws to specified torque.



vmr2015-033-004_a

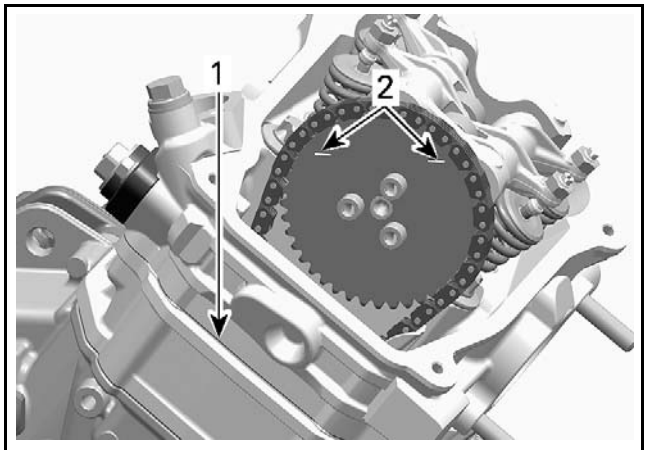
1. Camshaft timing gear
2. Timing gear retaining screws

TIGHTENING TORQUE	
Service product	LOCTITE 243 (BLUE) (P/N 293 800 060)
Camshaft timing gear retaining screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

8. Remove the camshaft timing tool.

Camshaft Timing

NOTE: If a piston (cylinder 1 or 2) is set to TDC ignition, the camshaft timing gear of the opposite cylinder must be in the following position.

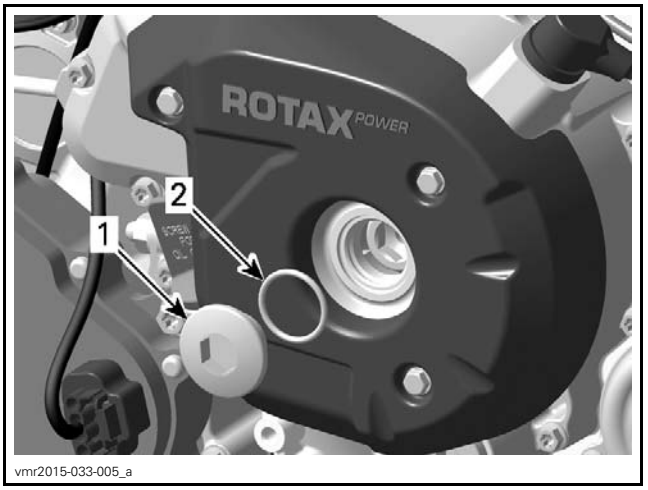


tmr2011-045-011_a

TYPICAL
1. Cylinder head base
2. Marks on timing gear of the opposite cylinder

Camshaft Timing Piston No. 2 (rear)

1. Remove spark plugs of both cylinders.
2. Remove valve covers of both cylinders.
3. Remove the screw plug and O-ring from magneto cover.



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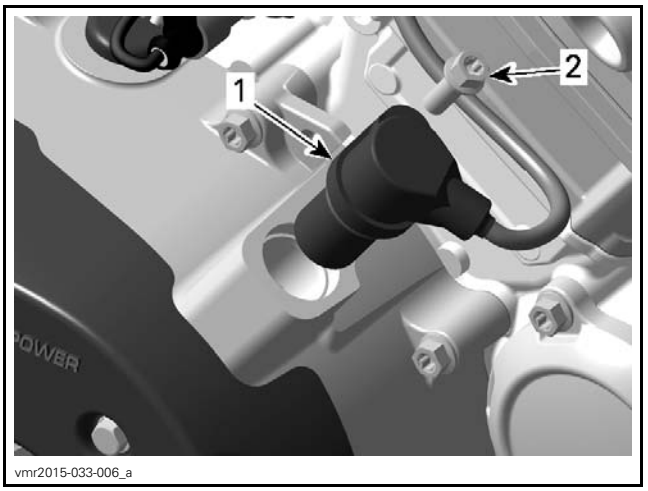
1. Screw plug
2. O-ring

4. Remove the crankshaft position sensor (CPS).



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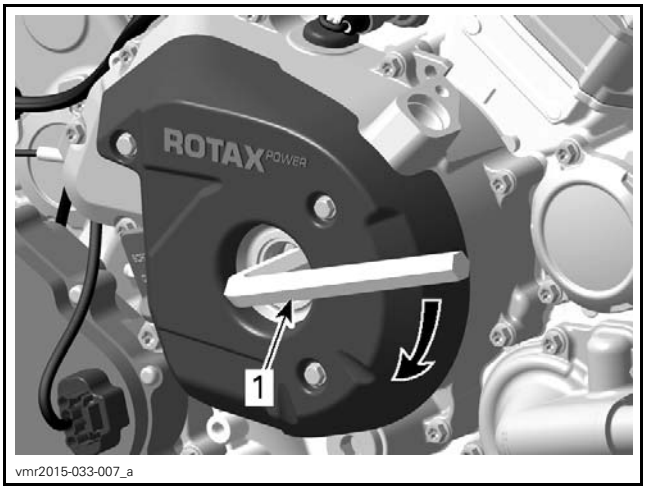
1. CPS
2. Screw

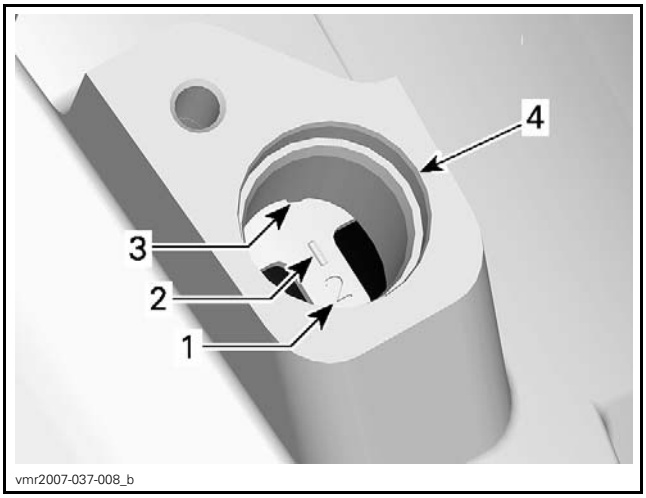
5. Set rear piston no. 2 to **TDC ignition** by turning the crankshaft clockwise.

REQUIRED TOOL
Allen key 14 mm



TURN CRANKSHAFT CLOCKWISE TO PISTON NO. 2 TDC
1. Allen key 14 mm

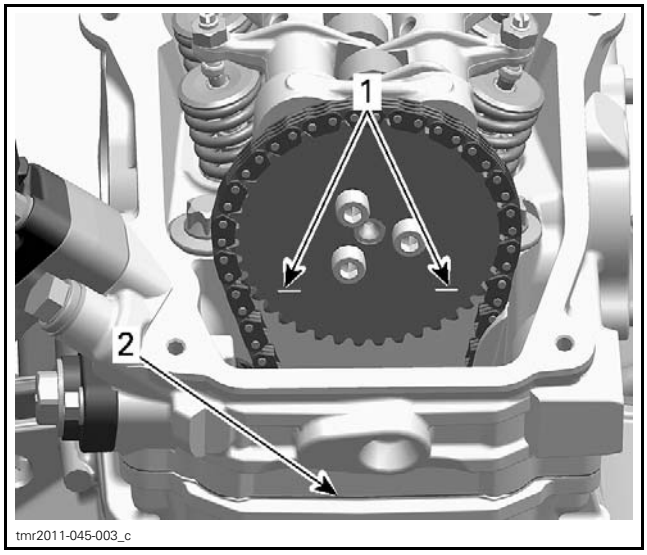
5.1 The rear piston is at TDC when it's index mark on the magneto flywheel is aligned with the notch in the magneto cover.



PISTON NO. 2 AT TDC
1. Piston no. 2 identifier
2. Index mark on magneto flywheel
3. Notch on magneto cover
4. CPS bore in magneto cover

5.2 Confirm printed marks on the camshaft timing gear are parallel with cylinder head base, in the lowest position. In this position the piston is set to **TDC ignition**.

NOTE: If marks on camshaft timing gear are not as specified, turn crankshaft 360°.



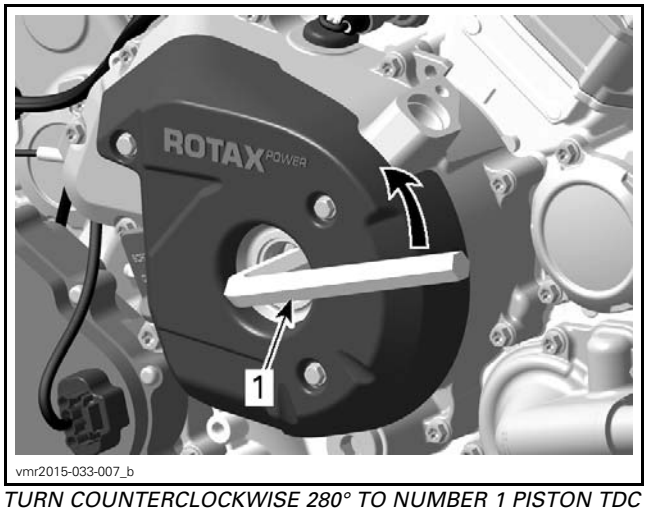
TYPICAL - PISTON AT TDC IGNITION
1. Printed marks on camshaft timing gear
2. Cylinder head base

6. Install the crankshaft TDC position tool to lock crankshaft in position. Refer to *CRANKSHAFT TDC POSITION TOOL* in this subsection.

Camshaft Timing Piston No. 1 (front)

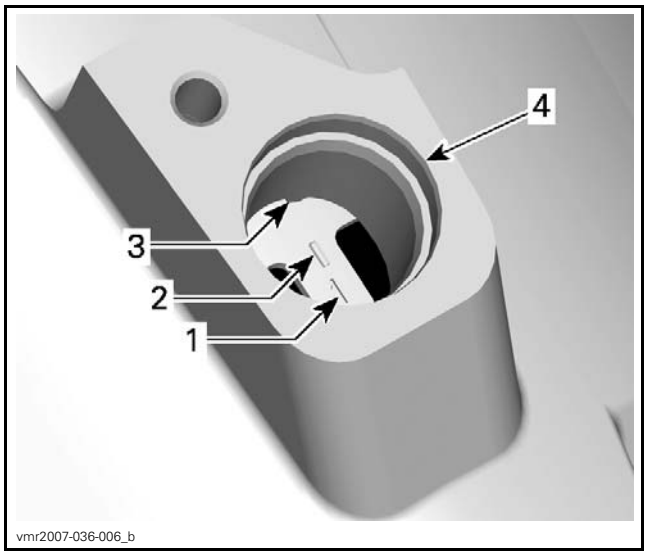
1. Set rear piston no. 2 to **TDC ignition**, see *CAMSHAFT TIMING PISTON NO. 2 (REAR)* in this subsection.
2. Remove crankshaft TDC position tool.
3. To set front piston no. 1 to **TDC ignition** turn crankshaft 280° **counterclockwise**.

REQUIRED TOOL
Allen key 14 mm



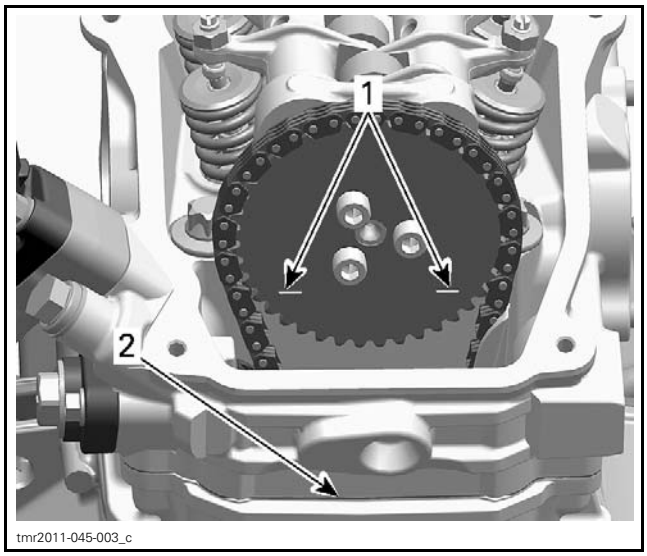
TURN COUNTERCLOCKWISE 280° TO NUMBER 1 PISTON TDC
1. Allen key 14 mm

3.1 The front piston is at TDC when it's index mark on the magneto flywheel is aligned with the notch in the magneto cover.



CYLINDER 1 AT TDC
1. *Number 1 piston identifier*
2. *Index mark "1" on magneto flywheel*
3. *Notch on magneto cover*
4. *Crankshaft position sensor bore*

3.2 Confirm printed marks on the camshaft timing gear are parallel with cylinder head base, in the lowest position. In this position the piston is set to **TDC ignition**.



TYPICAL - PISTON AT TDC IGNITION
1. *Printed marks on camshaft timing gear*
2. *Cylinder head base*

4. Insert the crankshaft TDC position tool to lock crankshaft in position. Refer to *CRANKSHAFT TDC POSITION TOOL INSTALLATION* in this subsection.

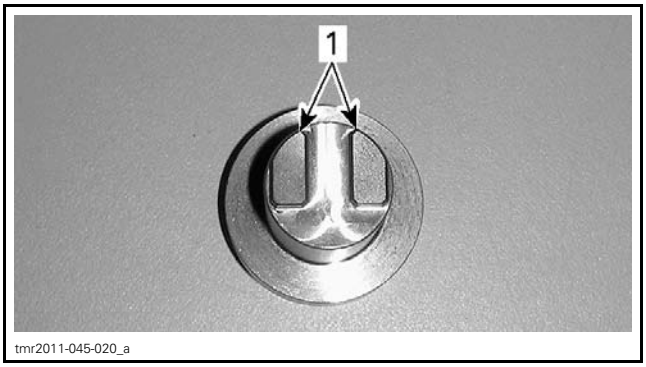
Crankshaft TDC Position Tool Installation

NOTICE Never use crankshaft TDC position tool to remove or tighten drive CVT screw or rotor retaining screw. Damage to the teeth of the trigger wheel on the rotor will occur.

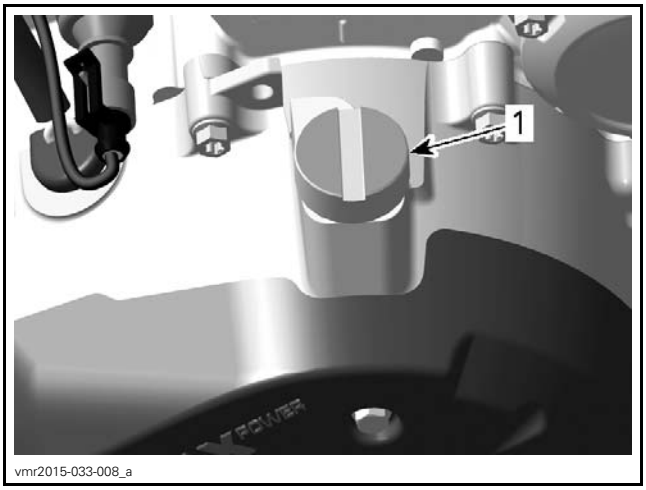
Install tool in magneto cover CPS bore.

REQUIRED TOOL	
CRANKSHAFT TDC POSITION TOOL (P/N 529 036 201)	

NOTE: Make sure to match the teeth on the crankshaft TDC position tool with the magneto rotor.

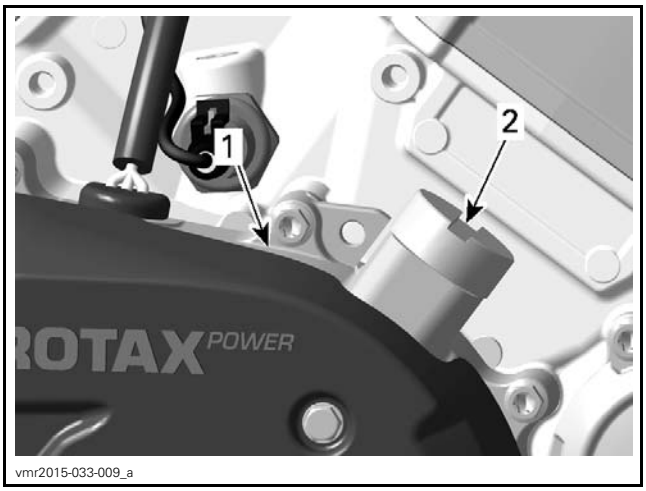


1. *Crankshaft TDC position tool teeth (end view)*



MAGNETO COVER
1. *Crankshaft TDC position tool installed in CPS bore*

NOTICE Tool must be fully inserted.



1. Magneto cover
2. TDC position tool

TIMING CHAIN

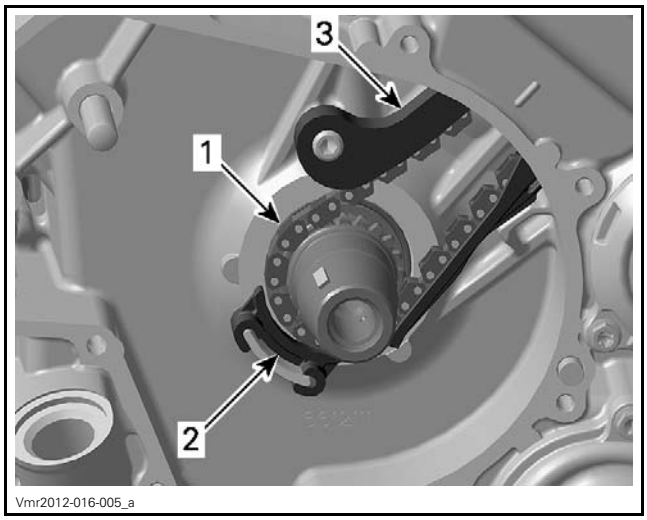
Timing Chain Location

The engine is equipped with two timing chains.

– MAG side timing chain is located behind the magneto cover.
– PTO side timing chain is located behind the PTO cover.

Removing the Timing Chain (MAG Side)

1. Refer to *MAGNETO AND STARTER* subsection and remove following parts:
   – Magneto cover
   – Rotor
   – Sprag clutch gear.
2. Refer to *TOP END* subsection and remove the following part:
   – Valve cover.
3. Refer to following procedures in this subsection and remove following parts:
   – Chain tensioner
   – Camshaft timing gear.
4. Remove timing chain guide (tensioner side) and lower timing chain guide.



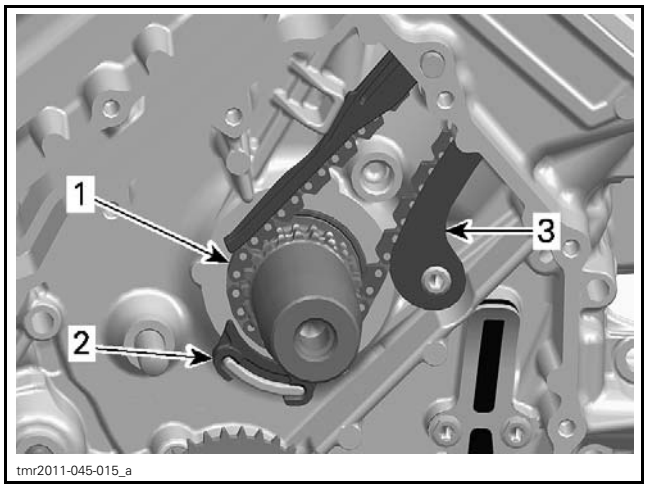
1. Timing chain
2. Lower timing chain guide
3. Timing chain guide (tensioner side)

NOTE: Mark the operating direction of the timing chain and check for excessive radial play before removal. Refer to *TIMING CHAIN INSPECTION*.

5. Carefully pull the timing chain downwards and sideways, then out of the crankcase.

Removing the Timing Chain (PTO Side)

1. Refer to *BOTTOM END* subsection and remove following parts:
   – PTO cover
   – Breather gear
   – Intermediate gear.
2. Refer to *TOP END* subsection and remove following part:
   – Valve cover.
3. Refer to applicable procedures in this subsection and remove following parts:
   – Chain tensioner
   – Camshaft timing gear.
4. Remove timing chain guide (tensioner side) and lower timing chain guide.



1. *Timing chain*
2. *Lower timing chain guide*
3. *Timing chain guide (tensioner side)*

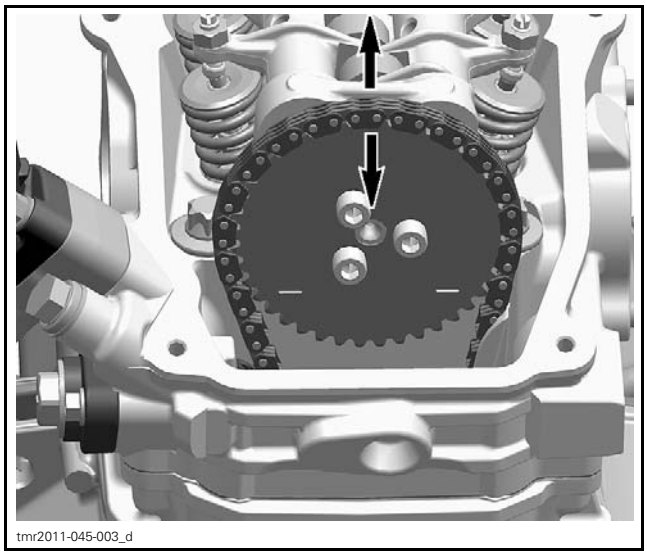
NOTE: Mark the operating direction of the timing chain and check for excessive radial play before removal. Refer to *TIMING CHAIN INSPECTION*.

5. Carefully pull the timing chain sideward and down from the crankcase.

Inspecting the Timing Chain

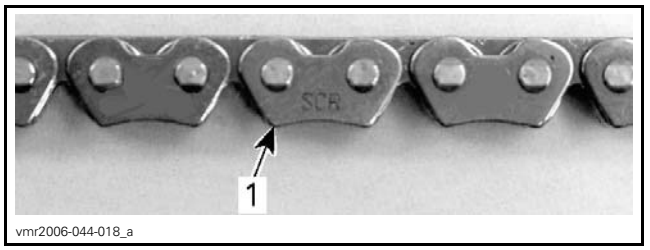
Inspection is the same for both timing chains.

Check timing chain on camshaft timing gear for excessive radial play.



CHECKING TIMING CHAIN RADIAL PLAY

Check chain condition for wear and teeth condition.



1. *Timing chain*

If chain is excessively worn or damaged, replace it as a set (camshaft timing gear and timing chain).

Check timing chain guides for wear, cracks or deformation. Replace as required.

NOTE: Check also the timing chain guide (tensioner side).

Installing the Timing Chain

The installation is essentially the reverse of the removal procedure however, pay attention to the following details.

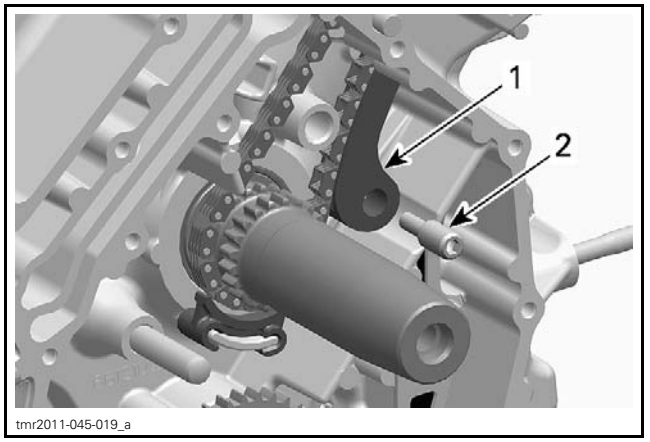
NOTE: Installation is the same for both timing chains.

Install timing chain with camshaft timing gear.

NOTE: Ensure to carry out proper valve timing, refer to *CAMSHAFT TIMING GEARS* in this subsection.

NOTICE **Improper valve timing will damage engine components.**

TIMING CHAIN GUIDE (TENSIONER SIDE)



1. *Timing chain guide (tensioner side)*
2. *Bearing screw*

Removing the Timing Chain Guide (Tensioner Side)

Refer to *TIMING CHAIN* in this subsection.

Inspecting the Timing Chain Guide (Tensioner Side)

Check timing chain guide for wear, cracks or deformation. Replace if necessary.

Installing the Timing Chain Guide (Tensioner Side)

The installation is the reverse of the removal procedure.

TIGHTENING TORQUE	
Service product	LOCTITE 243 (BLUE) (P/N 293 800 060)
Timing chain guide bearing screw	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

BOTTOM END

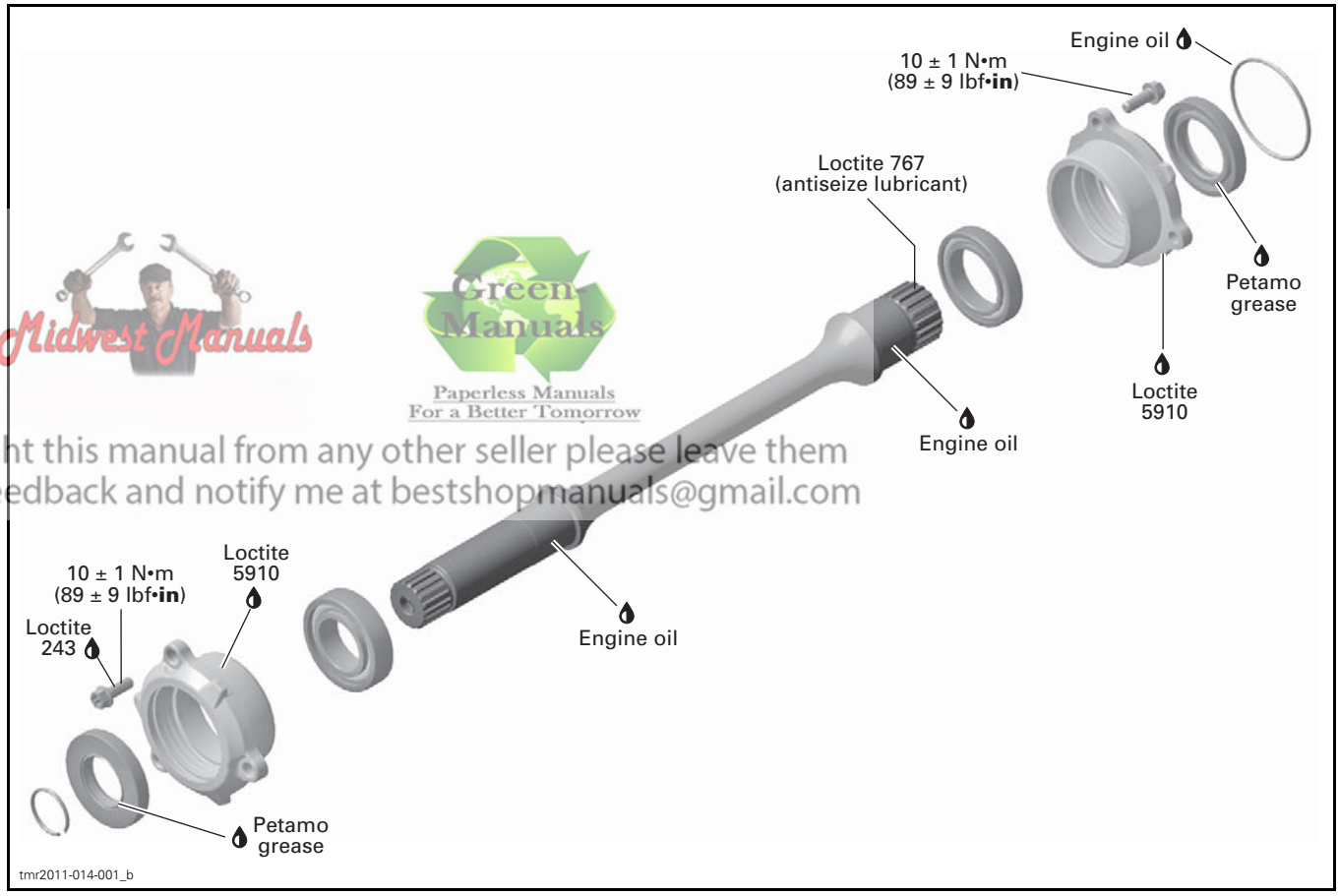
SERVICE TOOLS

Description	Part Number	Page
CRANKCASE SUPPORT MAG/PTO	529 036 031	14
CRANKSHAFT LOCKING BOLT	529 035 617	18
DRIVE SHAFT OIL SEAL INSTALLER	529 036 028	6–7
DRIVE SHAFT OIL SEAL PROTECTOR	529 036 029	5
PLAIN BEARING REMOVER/INSTALLER	529 035 917	14–15
PLAIN BEARING REMOVER/INSTALLER	529 036 032	9
PTO COVER OIL SEAL INSTALLER	529 036 033	8

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	6
LOCTITE 5910	293 800 081	5
LOCTITE CHISEL (GASKET REMOVER)	413 708 500	5

ENGINE DRIVE SHAFT



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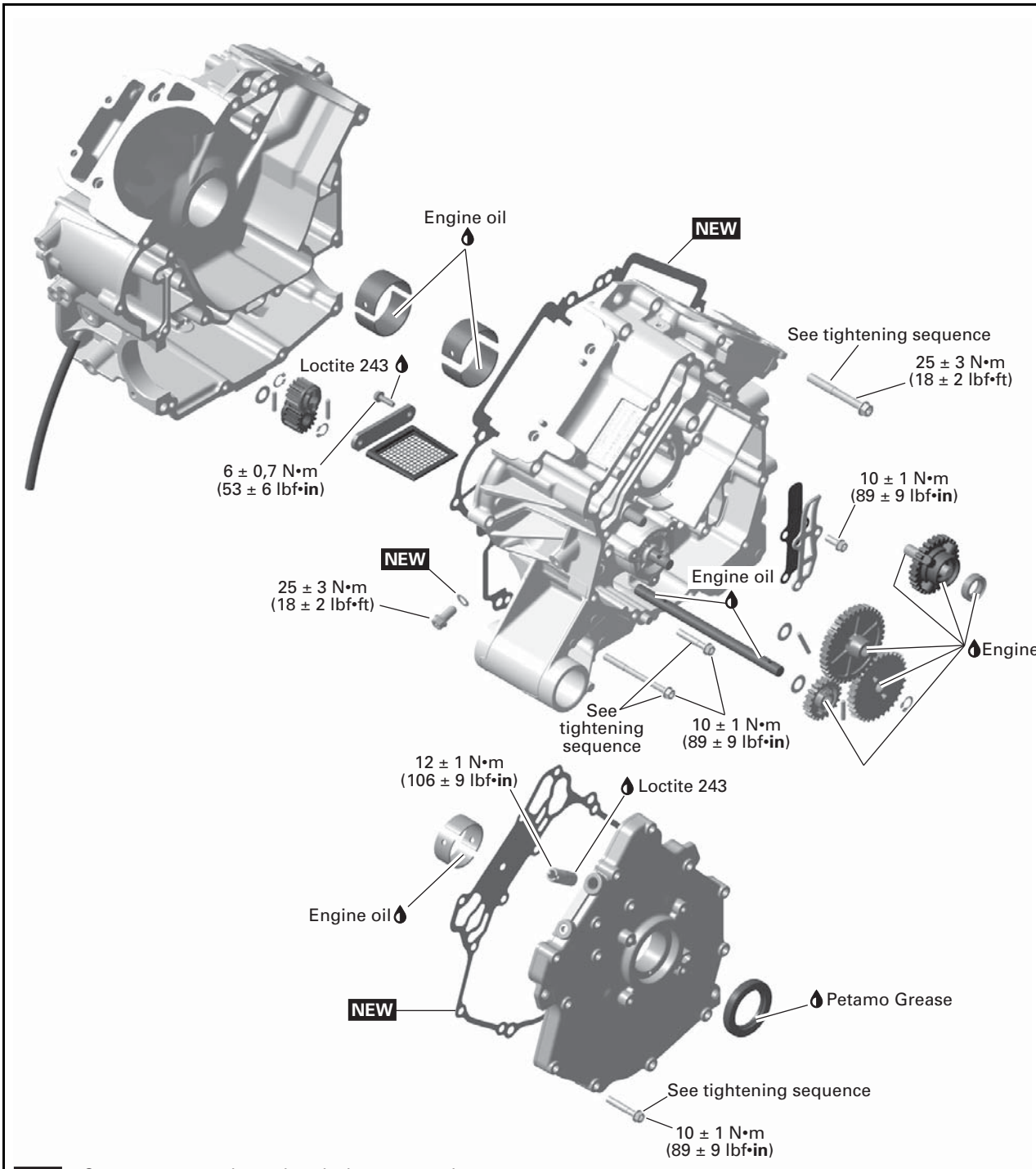
CRANKCASE AND PTO COVER



NEW = Component must be replaced when removed.

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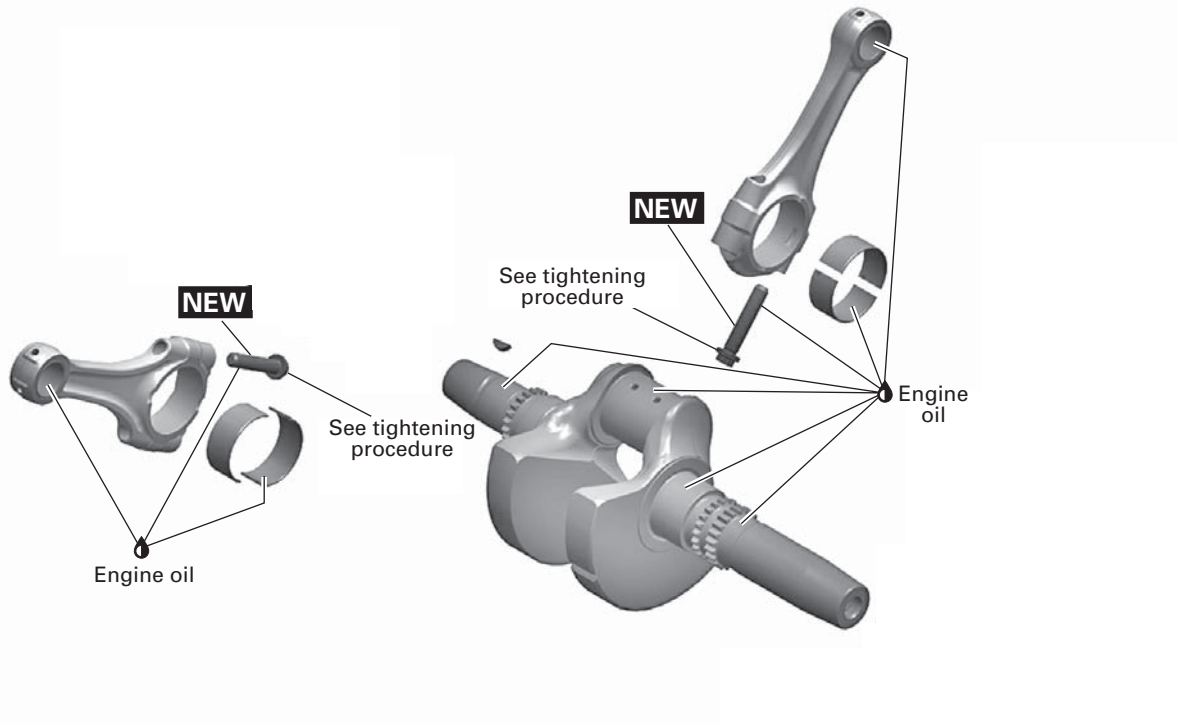
CRANKSHAFT



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PROCEDURES

IMPORTANT: Note position of parts on disassembly. This may help to find the root cause of a problem. A component that is not replaced should be reinstalled in the same position as originally mounted.

ENGINE DRIVE SHAFT

NOTE: The engine drive shaft transmits the power from the gearbox to the front differential and is located inside the crankcase.

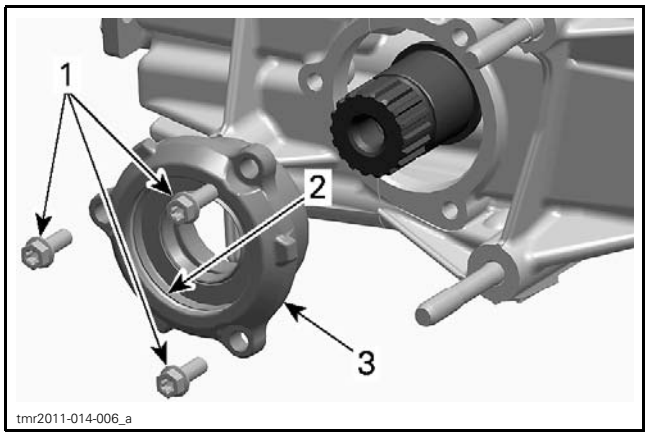
Removing the Engine Drive Shaft

Remove the engine. Refer to *ENGINE REMOVAL AND INSTALLATION* subsection.

Removing the Rear Bearing Cover

Detach gearbox from engine, refer to *GEARBOX AND 4X4 COUPLING UNIT* subsection.

At rear of engine, remove the bearing cover and its O-ring.

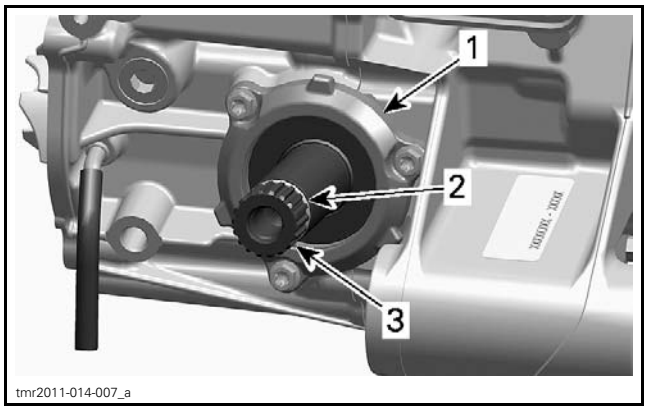


1. Bearing cover screws
2. O-ring
3. Bearing cover gearbox side

Removing the Front Bearing Cover

Remove the bearing cover at the front of the engine.

NOTICE Check ends of the circlip for sharp edges or burrs before removing the drive shaft, to avoid damaging the oil seal.

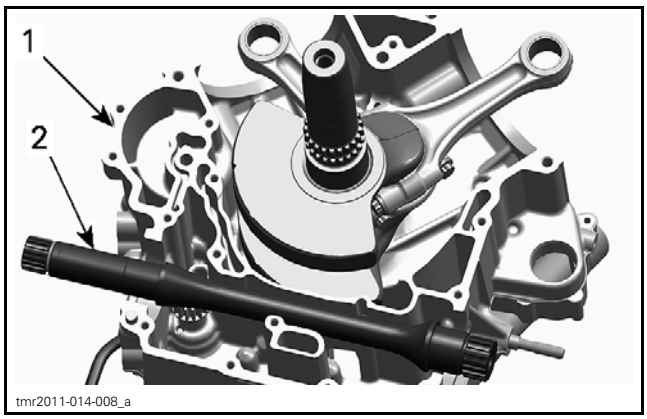


1. Bearing cover front drive side
2. Circlip
3. Drive shaft

Removing the Engine Drive Shaft

Split crankcase, refer to *CRANKCASE* in this subsection.

Remove engine drive shaft from the crankcase.

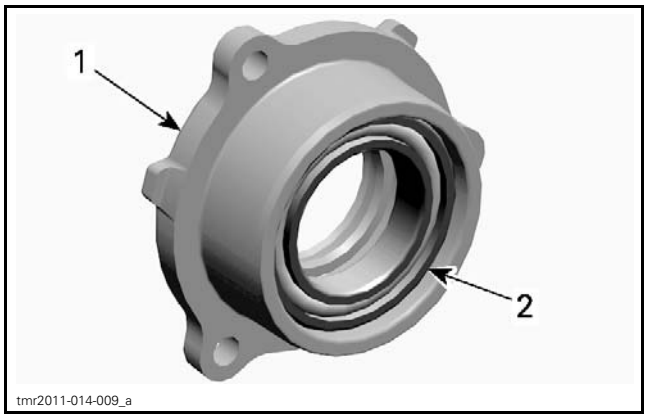


1. Crankcase MAG side
2. Engine drive shaft

Inspecting the Engine Drive Shaft

Replace oil seals and/or O-ring (bearing cover gearbox side) if they are brittle, hard or damaged.

Check drive shaft bearings for contamination and/or metal shavings. Check if bearings turn freely and smoothly. Replace if necessary.



1. Bearing cover
2. Drive shaft bearing

Check drive shaft for cracks, bend, pitting or other visible damages.

Check drive shaft splines for wear or damages.

Check oil seal running surface of the drive shaft for scratches. Replace if necessary.

Installing the Engine Drive Shaft

The installation is the reverse of removal procedure however, pay attention to the following details.

Clean all metal components in solvent.

Clean crankcase surfaces and bearing covers using a combination of LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500) and a brass brush. First brush in one direction then make the final brushing perpendicularly (90°) to the first pass.

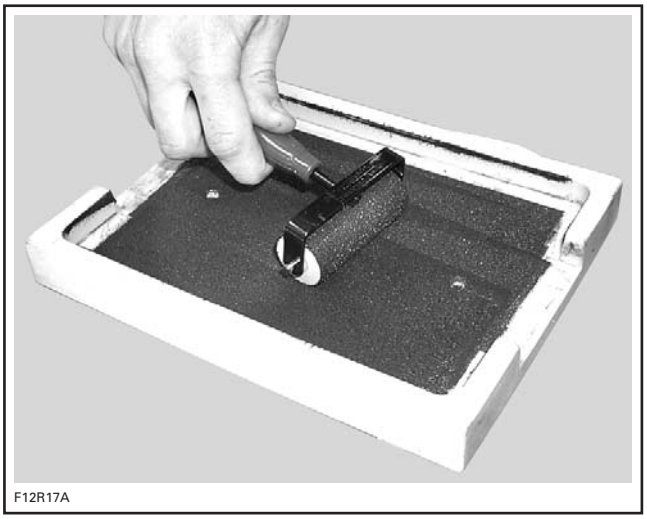
NOTICE **Do not wipe with rags. Use a new clean hand towel only.**

Use a suitable installer for installing bearings.

Use LOCTITE 5910 (P/N 293 800 081) on mating surfaces.

IMPORTANT: When beginning the application of the bearing cover sealant, the assembly and the first torquing should be done within 10 minutes. It is suggested to have all you need on hand to save time.

Use a plexiglass plate and apply some sealant on it. Use a soft rubber roller 50 mm - 75 mm (2 in - 3 in), available in arts products suppliers for printing, and roll the sealant to get a thin uniform coat on the plate (spread as necessary). When ready, apply the sealant on bearing cover surfaces.



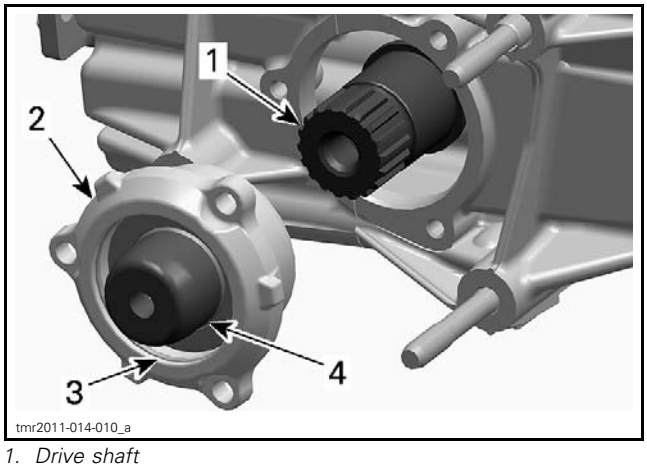
Do not apply in excess as it will spread out inside crankcase.

NOTE: It is recommended to apply this specific sealant as described here to get a uniform application without lumps. If you do not use the roller method, you may use your finger to uniformly distribute the sealant (using a finger will not affect the adhesion).

Installing the Rear Bearing Cover

For bearing cover installation on gearbox side, protect the oil seal to avoid damaging the sealing lip.

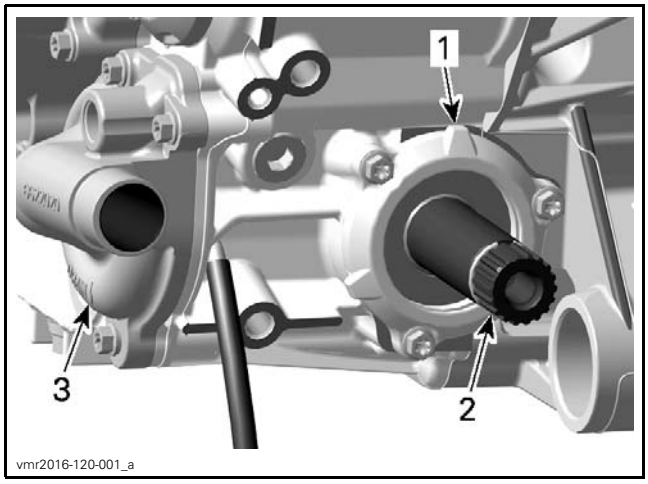
REQUIRED TOOL	
DRIVE SHAFT OIL SEAL PROTECTOR (P/N 529 036 029)	



1. Drive shaft
2. Bearing cover gearbox side
3. O-ring
4. Protection sleeve

TIGHTENING TORQUE	
Rear bearing cover screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

Installing the Front Bearing Cover



FRONT OF ENGINE
1. *Bearing cover front side*
2. *Drive shaft*
3. *Water pump cover*

TIGHTENING TORQUE	
Service product	LOCTITE 243 (BLUE) (P/N 293 800 060)
Front bearing cover screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

Installing the Engine Drive Shaft

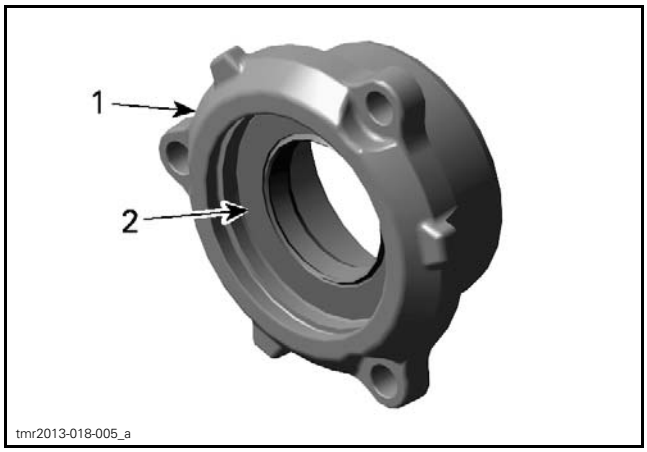
Finally check for axial play of the drive shaft.

FRONT OIL SEAL (ENGINE DRIVE SHAFT)

Replacing the Front Oil Seal (Engine Drive Shaft)

NOTE: The front oil seal can be replaced with the engine installed.

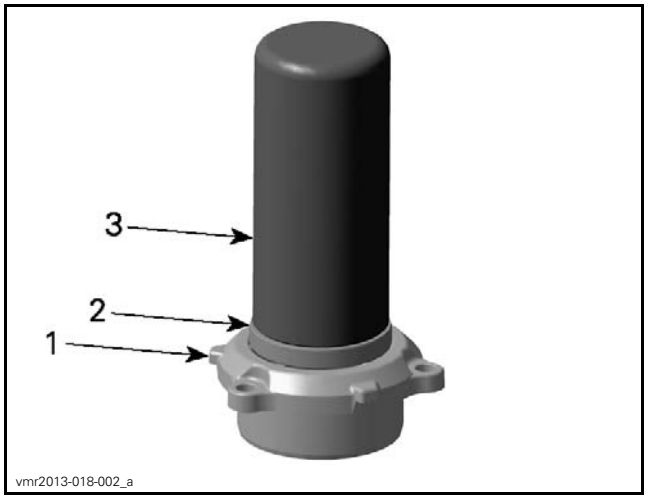
1. Remove front propeller shaft.
2. Remove adapter sleeve between propeller shaft and front engine drive shaft.
3. Remove the front bearing cover, refer to *ENGINE DRIVE SHAFT REMOVAL/INSTALLATION* in this subsection.
4. Remove drive shaft seal from bearing cover.



1. *Bearing cover*
2. *Oil seal*

5. Install drive shaft oil seal using the following tool.

REQUIRED TOOL	
DRIVE SHAFT OIL SEAL INSTALLER (P/N 529 036 028)	



1. *Bearing cover*
2. *Oil seal*
3. *Oil seal installer*

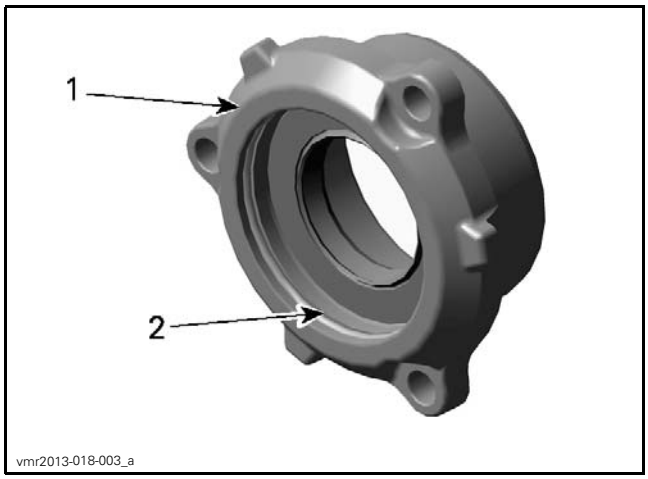
6. Reinstall remaining parts in the reverse order of removal.

REAR OIL SEAL (ENGINE DRIVE SHAFT)

Replacing the Rear Oil Seal (Engine Drive Shaft)

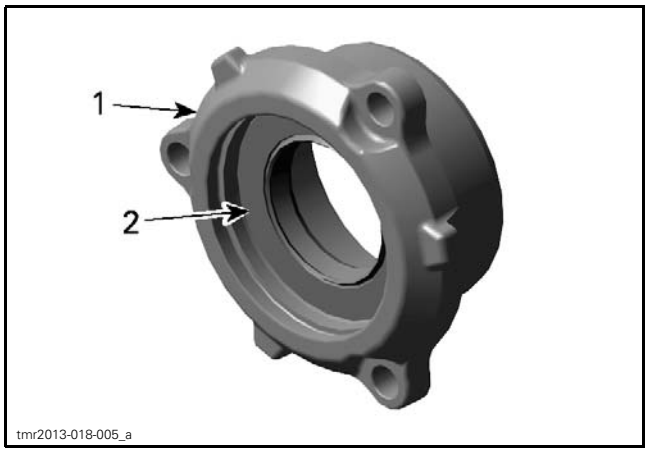
1. Remove gearbox from the engine, refer to *GEARBOX AND 4X4 COUPLING UNIT* subsection.

2. Remove rear bearing cover, refer to *ENGINE DRIVE SHAFT REMOVAL/INSTALLATION* in this subsection.
3. Remove O-ring from bearing cover.



1. Bearing cover
2. O-ring

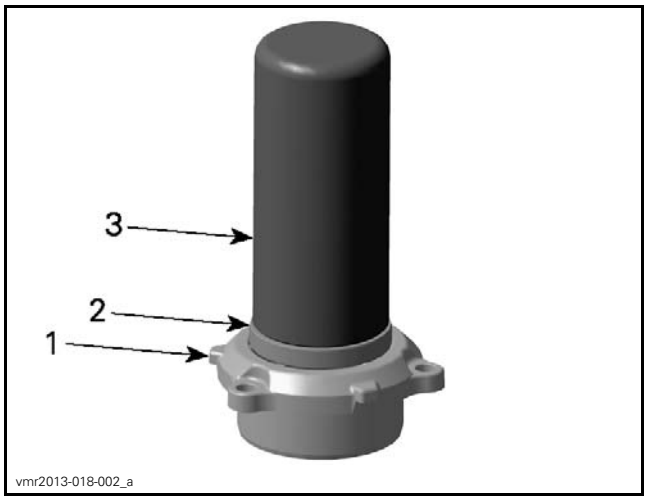
4. Remove drive shaft seal from bearing cover.



1. Bearing cover
2. Oil seal

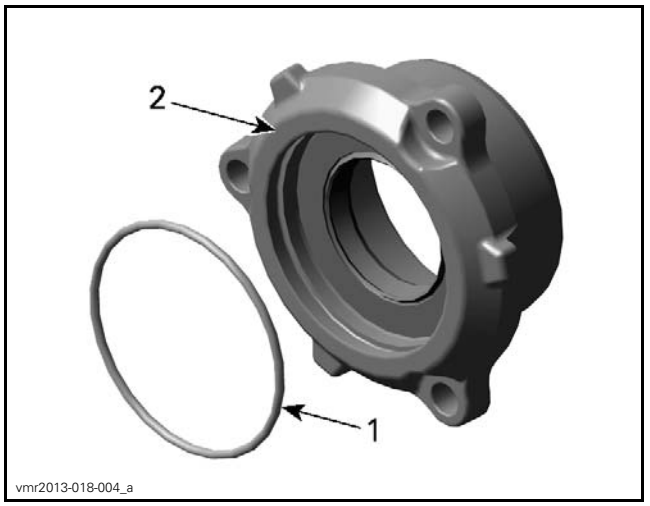
5. Install drive shaft oil seal using the following tool.

REQUIRED TOOL	
DRIVE SHAFT OIL SEAL INSTALLER (P/N 529 036 028)	



1. Bearing cover
2. Oil seal
3. Oil seal installer

6. Install O-ring in rear bearing cover.



1. O-ring
2. Bearing cover

7. Reinstall remaining parts in the reverse order of removal.

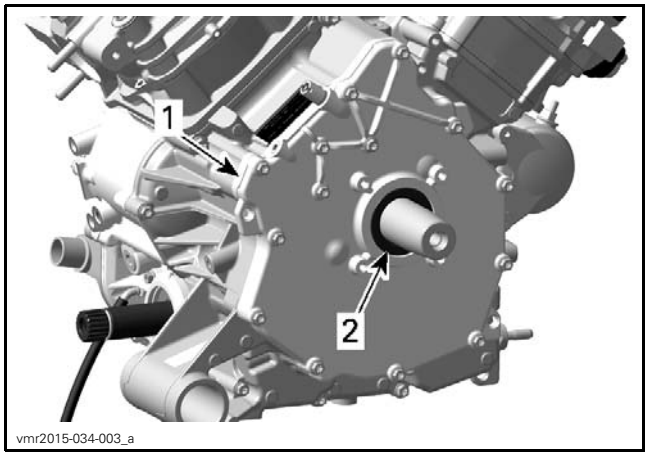
PTO COVER OIL SEAL

NOTE: To replace oil seal it is not necessary to remove engine from vehicle.

Removing the PTO Oil Seal

1. Refer to *CONTINUOUSLY VARIABLE TRANSMISSION (CVT)* subsection and remove the following parts:
   - CVT cover
   - Drive pulley
   - Driven pulley
   - CVT air guide.
2. Remove oil seal using a small flat screwdriver.

NOTICE Avoid scoring surfaces with tool.



1. PTO cover
2. Oil seal

Inspecting the PTO Oil Seal

Check oil seal running surface of crankshaft PTO side for grooves. Replace if necessary.

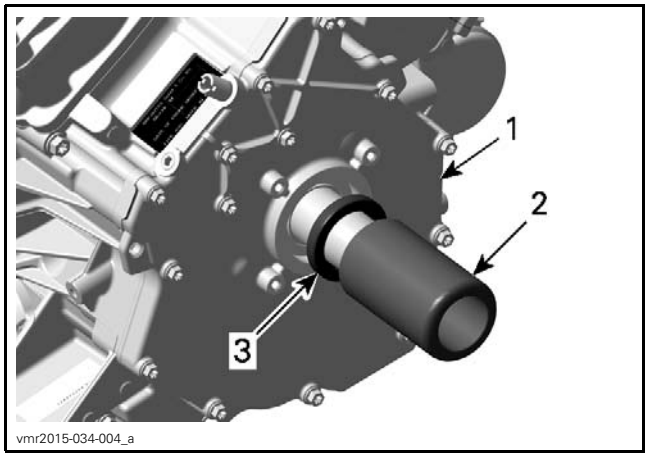
Installing the PTO Oil Seal

The installation is the reverse of the removal procedure however, pay attention to the following details.

NOTICE Oil seal must be installed with sealing lip toward the engine.

Push oil seal in place using the following tool.

REQUIRED TOOL	
PTO COVER OIL SEAL INSTALLER (P/N 529 036 033)	

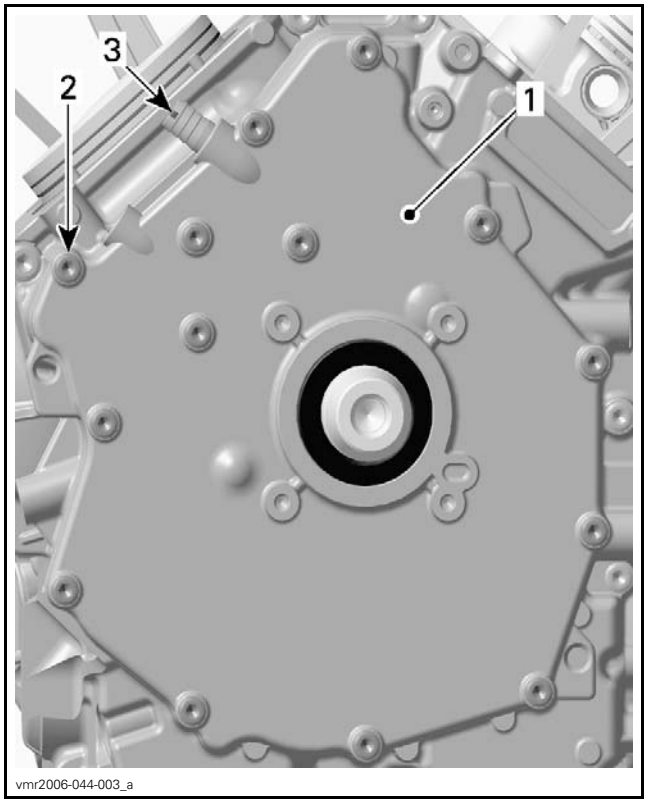


1. PTO cover
2. Oil seal installer
3. Oil seal

PTO COVER

Removing the PTO Cover

1. Refer to *CONTINUOUSLY VARIABLE TRANSMISSION (CVT)* subsection to remove the following parts:
   – CVT cover
   – Drive pulley
   – Driven pulley
   – CVT air guide.
2. Disconnect vent hose.
3. Remove PTO cover screws and pull on PTO cover to remove it.



1. PTO cover
2. PTO cover screws
3. Vent hose nipple

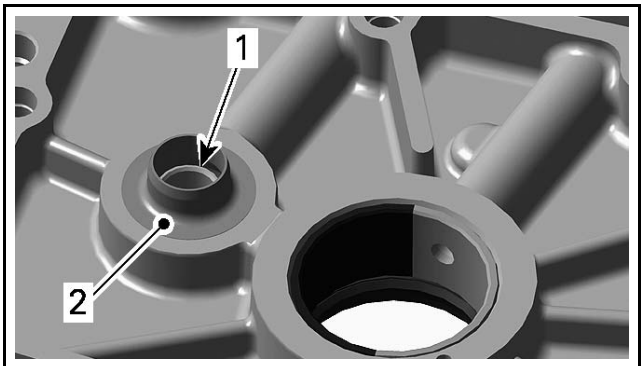
Inspecting the PTO Cover

1. Check the PTO cover for cracks or other damage.
2. Replace PTO cover if damaged.
3. Clean oil breather bore in PTO cover from contaminations with a parts cleaner then use pressurized air to dry it.

⚠ WARNING

Always wear skin and eye protection. Chemicals can cause skin rash, skin burns and severe eye injury.

4. Check surface of sealing sleeve for wear or other damages. Replace PTO cover if damaged.



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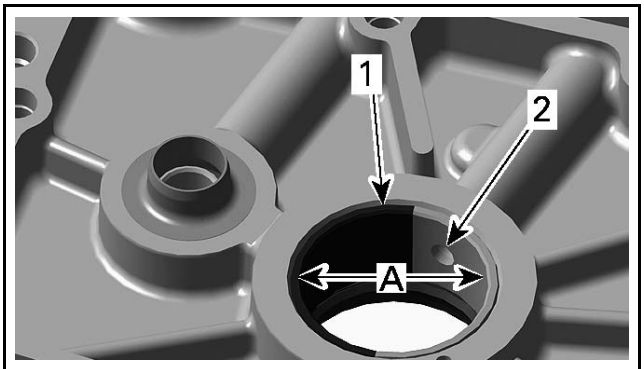
1. Oil breather bore
2. Surface of sealing sleeve

5. Check plain bearings for scoring or other damages.

NOTE: Measure plain bearing inside diameter (PTO cover) and compare to crankshaft bearing journal diameter (PTO cover bearing). Refer to *CRANKSHAFT* in this subsection. Replace if the measurement is out of specification.



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1. Plain bearing
2. Oil bore

A. Measure plain bearing inside diameter

PLAIN BEARING INSIDE DIAMETER (PTO COVER)	
SERVICE LIMIT	34.120 mm (1.3433 in)

Replacing the Plain Bearing (PTO Cover)

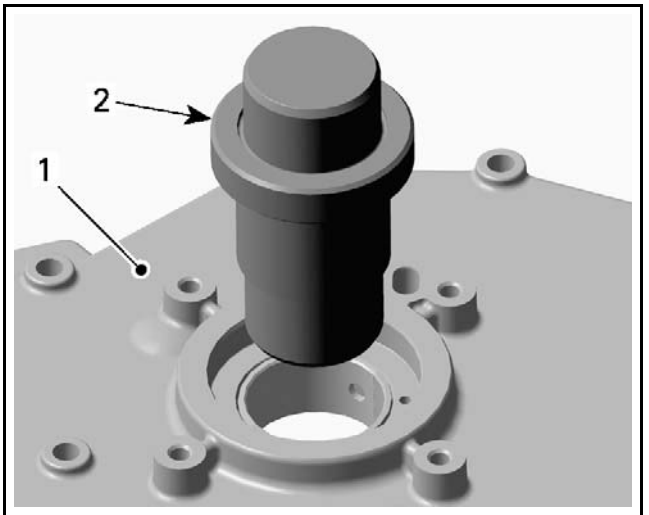
Removing the Plain Bearing

NOTICE Unless otherwise instructed, never use a hammer to install plain bearings. Always use a press.

1. Carefully remove the PTO oil seal with a screwdriver, without damaging the PTO cover.
2. Press out the plain bearings from the outside towards the inside.

REQUIRED TOOL	
PLAIN BEARING REMOVER/INSTALLER (P/N 529 036 032)	

NOTE: The PTO cover has to be supported from below on a suitable support with straight surface in order to prevent damage of the sealing surface.



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1. PTO cover
2. Plain bearing remover/installer

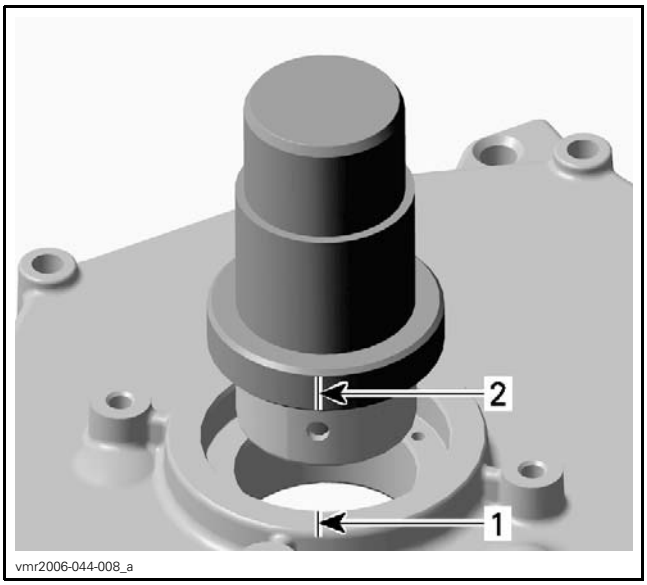
Installing the Plain Bearing

NOTE: Do not lubricate plain bearings or PTO cover for installation.

Install plain bearings in a cold PTO cover.

REQUIRED TOOL	
PLAIN BEARING REMOVER/INSTALLER (P/N 529 036 032)	

1. Mark position of oil bore on PTO cover and on plain bearing remover/installer.
2. Align mark on plain bearing remover/installer with mark on PTO cover.



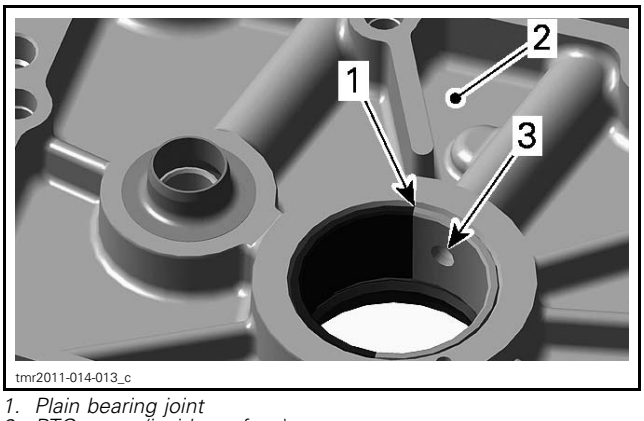
1. Mark position of oil bore on PTO cover
2. Mark position of oil bore on plain bearing remover/installer

NOTICE Misalignment of plain bearing and PTO cover oil bores will prevent proper oil supply to plain bearings.

3. Carefully press in the plain bearings in the same direction as during disassembly, from the outside towards the inside.

NOTE: Support PTO cover using a suitable support with a straight surface to prevent damage of the sealing surface.

NOTICE The joining surfaces of the plain bearings must be positioned near the oil bore in a counterclockwise direction.



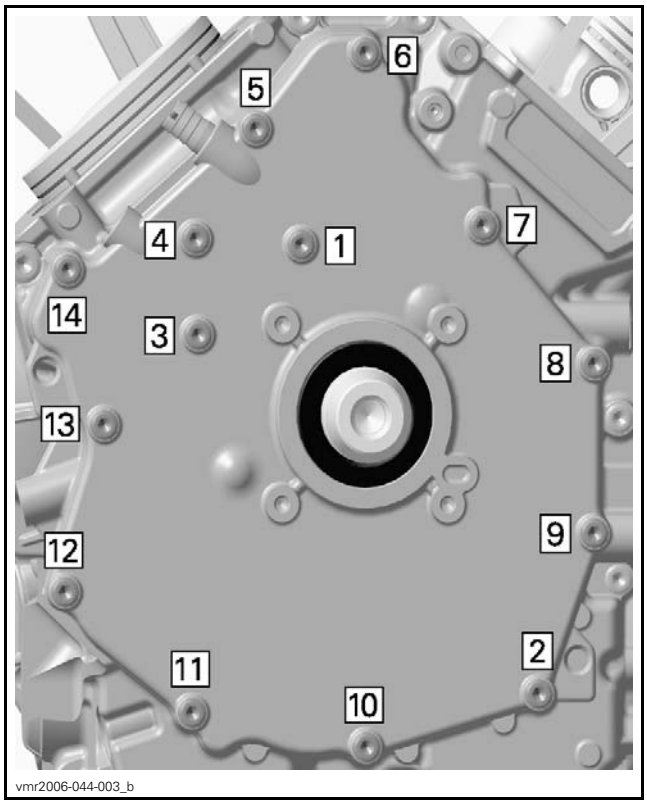
1. Plain bearing joint
2. PTO cover (inside surface)
3. Oil bore

Installing the PTO Cover

For installation, reverse the removal procedure however, pay attention to the following details.

NOTE: At installation, replace PTO cover gasket and oil seal.

Tighten PTO cover screws following the sequence illustrated.



TIGHTENING SEQUENCE

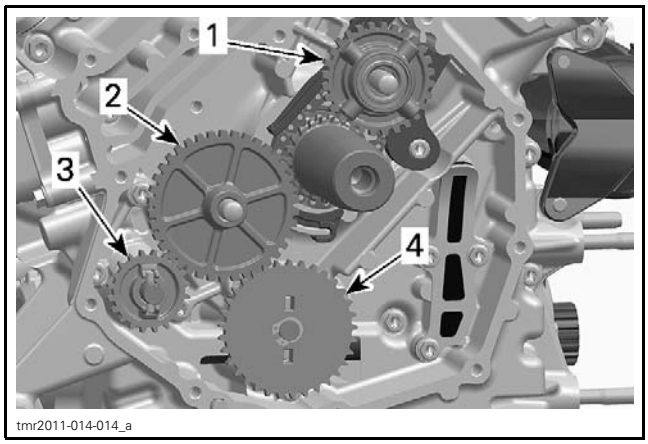
TIGHTENING TORQUE	
PTO cover screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

DRIVE GEARS

Drive Gears Location

The engine is equipped with a breather gear which prevents engine oil from seeping out through the breathing system into the air intake system.

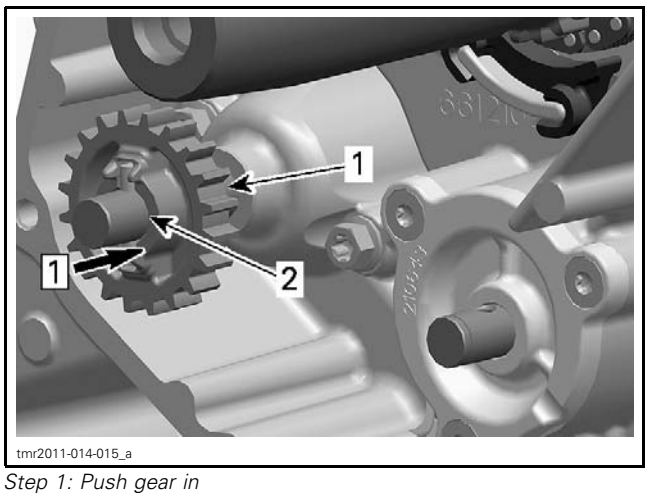
The drive gears are located on the engine PTO side behind the PTO cover.



1. *Breather gear*
2. *Intermediate gear*
3. *Water pump drive gear*
4. *Oil pump drive gear*

Removing the Drive Gears

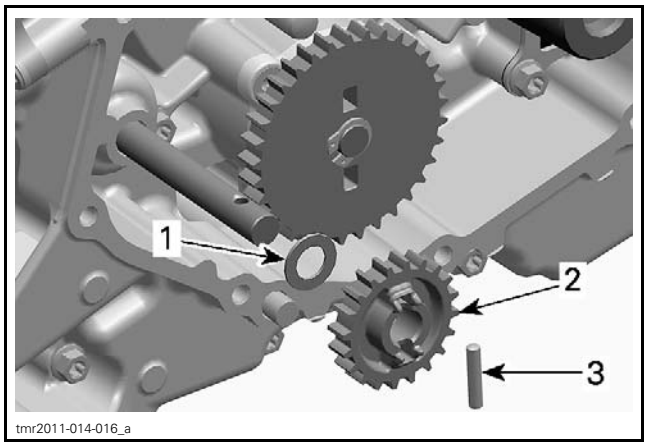
1. Remove PTO cover, refer to *PTO COVER* in this subsection.
2. Withdraw intermediate gear and breather gear.
3. Remove oil pump drive gear, refer to *OIL PUMP* in the *LUBRICATION SYSTEM* subsection.
4. To remove water pump drive gear, pull the shaft assembly slightly out and turn it about one tooth until it stays out.
5. Then push water pump drive gear in.



Step 1: Push gear in

1. *Water pump drive gear*
2. *Intermediate shaft*

6. Remove needle pin and pull water pump drive gear out.
7. Remove thrust washer from intermediate shaft.



1. *Thrust washer*
2. *Water pump drive gear*
3. *Needle pin*

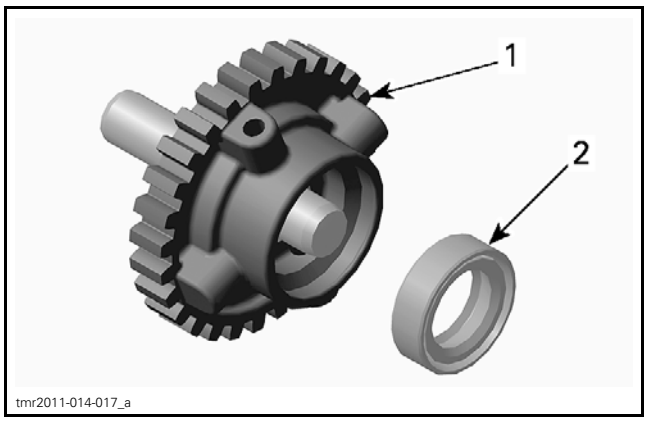
Inspecting the Drive Gears

Intermediate Gear/Oil Pump Drive Gear/Water Pump Drive Gear

Inspect gears for wear or other damage. Replace if damaged.

Breather Gear

Check if oil seal is brittle, hard or damaged. Replace if necessary.



1. *Breather gear*
2. *Oil seal*

Inspect gear for wear or other damage.

Check ball bearing for excessive play and smooth operation. Replace breather gear assembly if necessary.

Installing the Drive Gears

The installation is essentially the reverse of the removal procedure however, pay attention to the following.

Adequately oil the ball bearing of the breather gear.

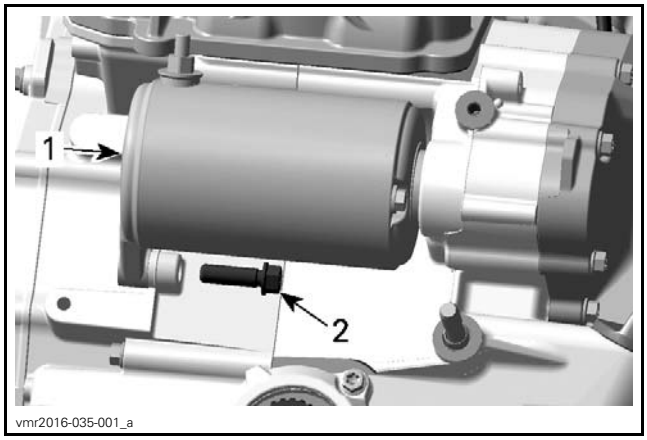
CRANKCASE

Disassembling the Crankcase

1. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection and carry out the following:
   1.1 Drain cooling system.
   1.2 Drain engine oil.
   1.3 Drain gearbox oil.
2. Lock crankshaft. Refer to *CRANKSHAFT LOCKING PROCEDURE* in the this subsection.
3. Refer to *CONTINUOUSLY VARIABLE TRANSMISSION (CVT)* subsection and remove the following parts:
   – CVT cover
   – Drive pulley
   – Driven pulley
   – CVT air guide.
4. Remove engine from vehicle. Refer to *ENGINE REMOVAL AND INSTALLATION* subsection.
5. Remove gearbox from engine.
6. Refer to *MAGNETO AND STARTER* subsection and remove the following parts:
   – Magneto cover
   – Rotor with sprag clutch gear
   – Starter drive gears.
7. Refer to applicable procedures in this subsection and remove the following parts:
   – PTO cover
   – Drive gears
   – Bearing covers of engine drive shaft.
8. Refer to *TIMING CHAIN* subsection and remove the following parts:
   – Chain tensioners
   – Camshaft timing gears
   – Timing chains
   – Timing chain guides.
9. Refer to *TOP END* subsection and remove the following parts:
   – Front cylinder head
   – Rear cylinder head
   – Cylinders.
10. Refer to *COOLING SYSTEM* subsection and remove the following parts:
    – Water pump housing.
11. Refer to *LUBRICATION SYSTEM* subsection and remove the following parts:
    – Oil filter
    – Oil cooler (if applicable)
    – Oil pump drive gear.

NOTE: Oil pump removal from crankcase is not necessary, but recommended to see condition of oil pump. Refer to *LUBRICATION SYSTEM* subsection.

12. Remove electric starter.

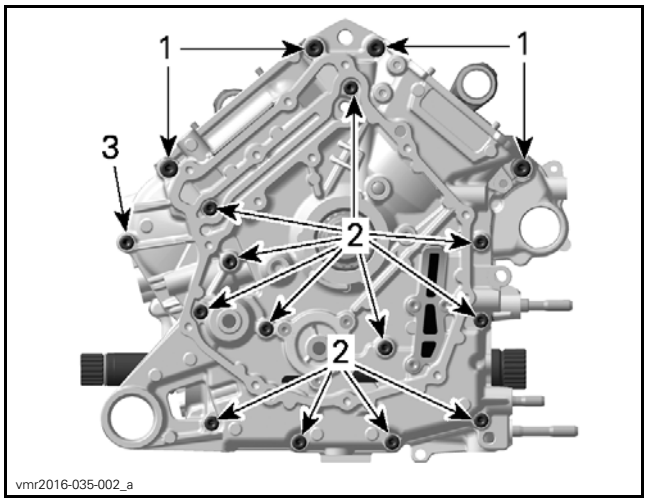


1. Electric starter
2. Screw

NOTE: Before splitting the crankcase, measure crankshaft axial play. Refer to *CRANKSHAFT* in this subsection.

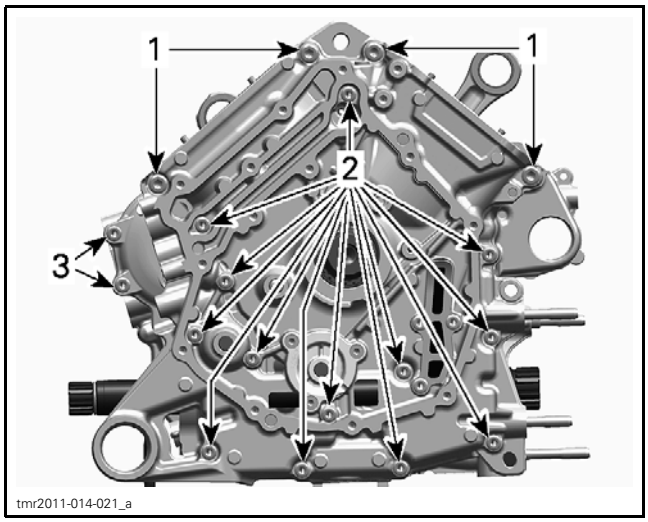
13. Remove crankcase retaining screws.

Models Without Oil Cooler



1. Four screws M8 x 65
2. 12 screws M6 x 75
3. One screw M6 x 25

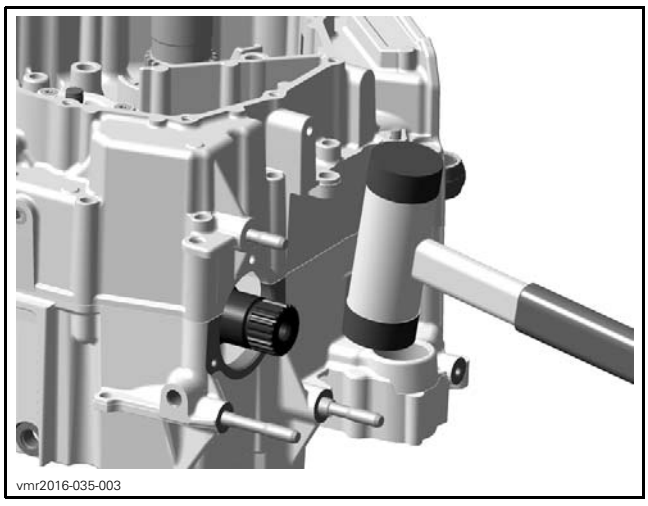
Models With Oil Cooler



1. Four screws M8 x 65
2. 13 screws M6 x 75
3. Two screw M6 x 25

All Models

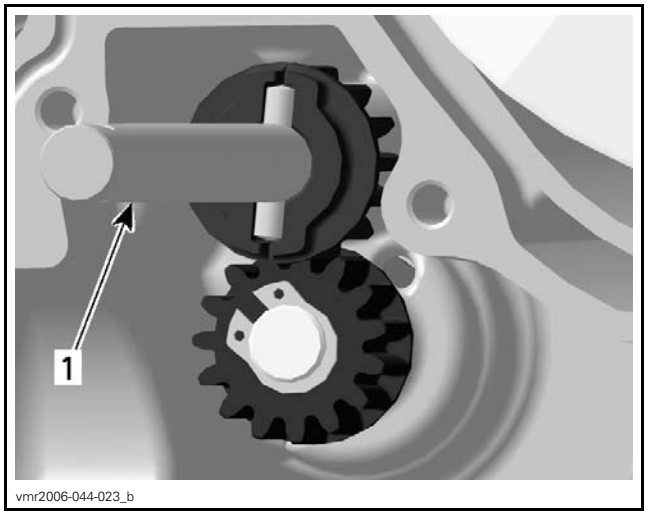
14. Carefully split crankcase halves using a screwdriver and a soft hammer.



NOTE: During disassembly, do not damage the sealing surfaces of the crankcase halves.

15. Pull crankshaft out of crankcase.

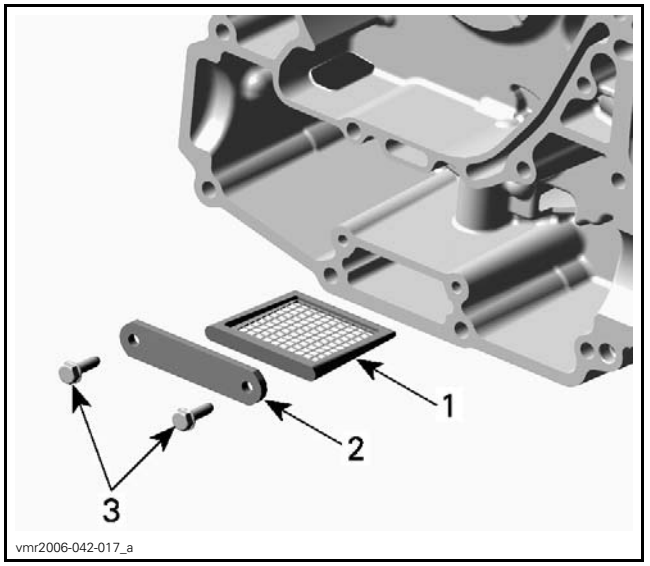
16. Remove the water pump intermediate shaft.



1. Water pump intermediate shaft

17. Remove engine oil strainer.

NOTE: Oil strainer removal for inspection and cleaning is recommended. Refer to *LUBRICATION SYSTEM* subsection.



1. Engine oil strainer
2. Retaining plate
3. Screws

Cleaning the Crankcase

⚠ WARNING

Use safety goggles to avoid eye injuries.

Clean crankcase using a part cleaner.

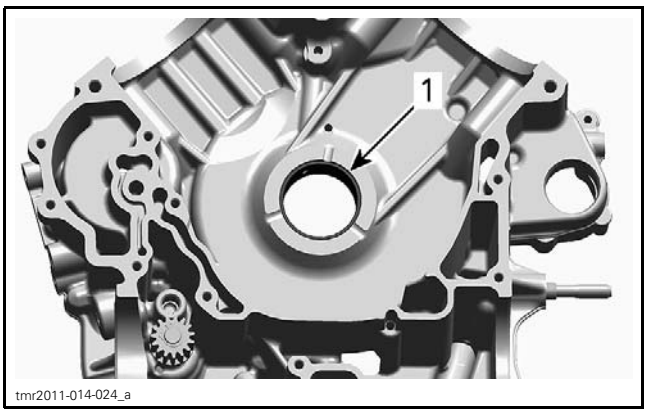
Dry crankcase using compressed air.

Blow low pressure filtered air through the oil supply lines.

Inspecting the Crankcase

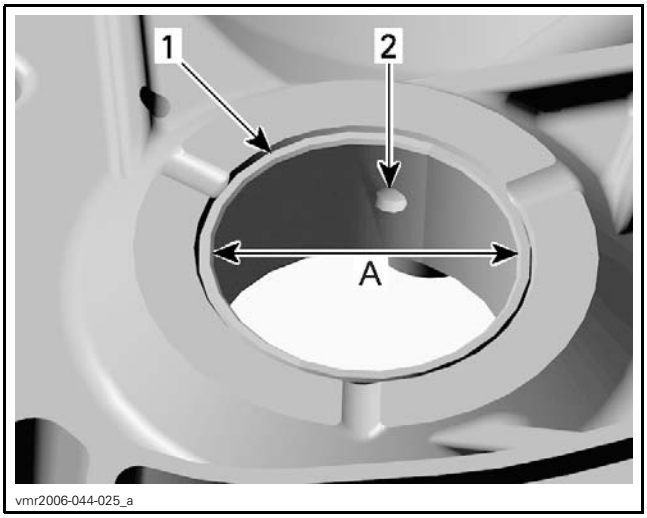
Check crankcase halves for cracks or other damage. Replace if damaged.

Check MAG and PTO plain bearings for scoring or other damages.



1. Plain bearing

Measure plain bearing inside diameter and compare to PTO/MAG main journal diameters of crankshaft, refer to *CRANKSHAFT* in this subsection. Replace if the measurements are out of specification.



1. Plain bearing
2. Oil bore
A. Measure plain bearing inside diameter

MAIN BEARING INSIDE DIAMETER (PTO/MAG)	
SERVICE LIMIT	42.100 mm (1.6575 in)

Replacing the Plain Bearing (Main)

Removing the Plain Bearing

NOTICE **Always properly support crankcase halves when removing plain bearings. Damage to crankcase halves may occur if this procedure is not performed correctly.**

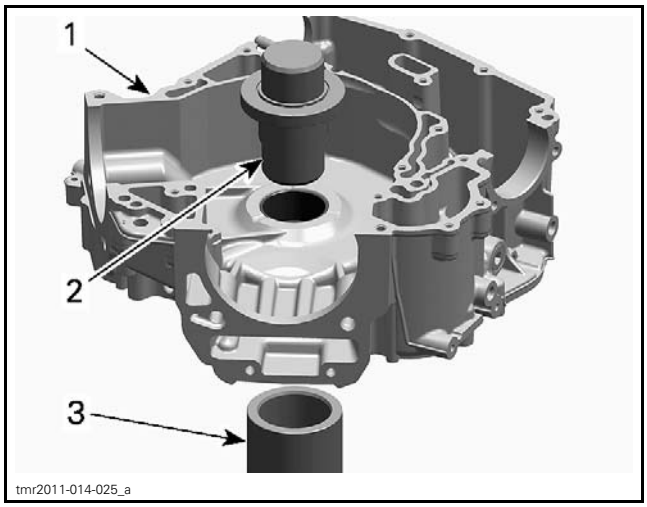
NOTE: Always use a press for removal of plain bearings.

Carefully press the plain bearings out from the crankcase half from the inside towards the outside.

NOTE: Place an appropriate support under crankcase halves before removing plain bearings.

REQUIRED TOOLS	
CRANKCASE SUPPORT MAG/PTO (P/N 529 036 031)	
PLAIN BEARING REMOVER/INSTALLER (P/N 529 035 917)	

NOTE: During disassembly, make sure not to damage the sealing surfaces of the crankcase halves.



PRESS PLAIN BEARINGS OUTSIDE
1. Crankcase half
2. Plain bearing remover/installer
3. Crankcase support sleeve (P/N 529 036 031)

Installing the Plain Bearing

NOTICE **Unless otherwise instructed, never use a hammer to install plain bearings. Aways use a press.**

During reassembly, make sure not to damage the sealing surfaces of the crankcase halves.

NOTE: Place the proper crankcase support sleeve under crankcase halves before installing the plain bearings, refer to *PLAIN BEARING REMOVAL PROCEDURE* in this subsection.

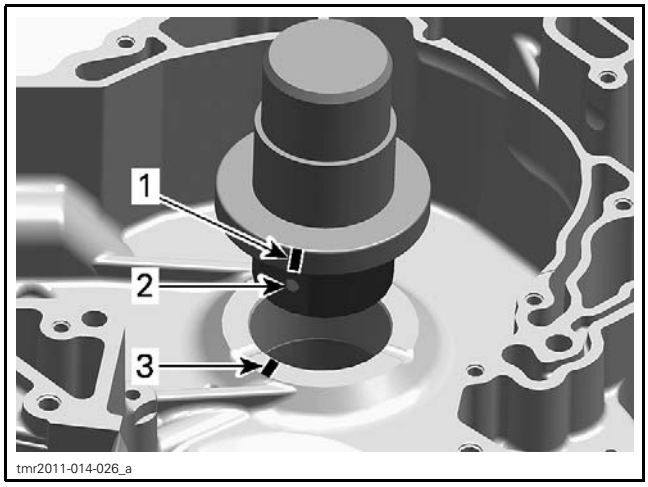
Install plain bearings in a cold crankcase.

NOTE: Do not lubricate plain bearings and/or crankcase for installation.

REQUIRED TOOL	
PLAIN BEARING REMOVER/INSTALLER (P/N 529 035 917)	

NOTE: Use an O-ring (Ø 42 x 1 mm to 1.5 mm (.04 in to .06 in) thickness) to hold plain bearings in place during installation. The O-ring will disappear in the groove of the plain bearing remover/installer.

1. Mark position of plain bearing oil bore on plain bearing remover/installer.
2. Mark position of oil bore on crankcase half.
3. Align mark on plain bearing remover/installer with mark on crankcase half.



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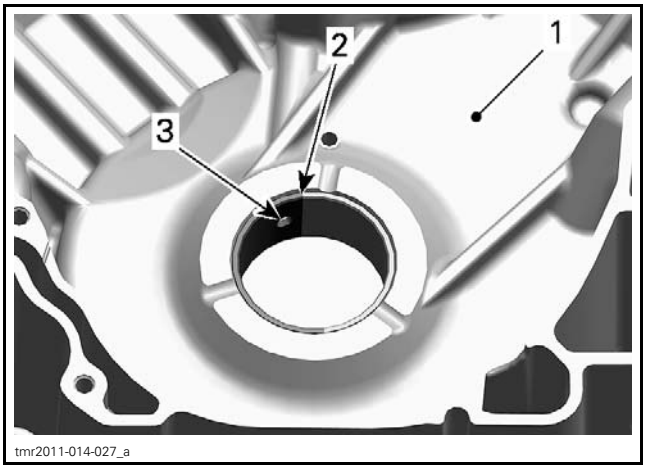
1. Oil bore position marked on plain bearing remover/installer
2. Plain bearing oil bore
3. Oil bore position marked on crankcase

NOTICE Misalignment of the plain bearing and crankcase oil bores will prevent proper oil supply to plain bearings.

4. Carefully press in the plain bearings from inside the crankcase towards the outside.

NOTICE The joint of the plain bearings in crankcase half MAG side must be positioned near the oil bore in a clockwise direction.



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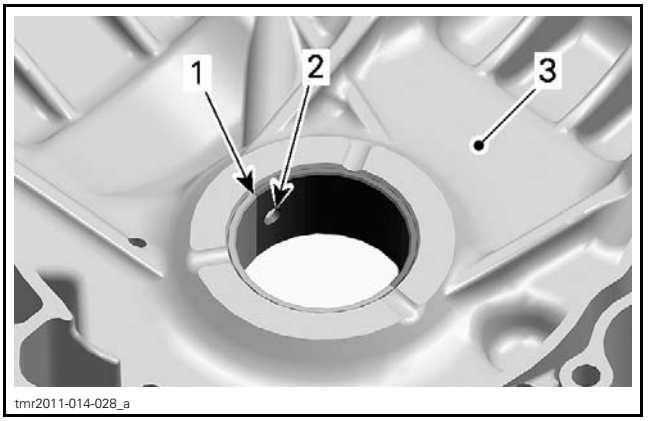
1. Crankcase half MAG (inside surface)
2. Partition
3. Oil bore

NOTICE The joint of the plain bearings in the crankcase half PTO side must be positioned near the oil bore in the counterclockwise direction.



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1. Plain bearing joint
2. Oil bore
3. Crankcase half PTO (inside surface)

Assembling the Crankcase

The assembly of crankcase is essentially the reverse of removal procedure. However, pay attention to the following details.

Clean oil passages and make sure they are not clogged.

Clean all metal components in a solvent.

Install a NEW crankcase gasket.

Oil the plain bearings before mounting the crankshaft.

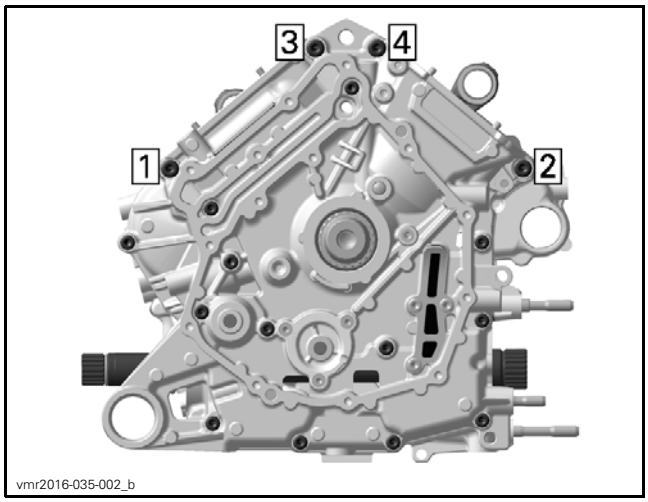
Reinstall crankshaft, see procedure in this subsection

Properly reinstall engine oil strainer and screws. Refer to *LUBRICATION SYSTEM* subsection.

Reinstall water pump intermediate shaft and gears, refer to *WATER PUMP GEARS* in the *COOLING SYSTEM* subsection.

Tighten crankcase retaining screws as per following sequence.

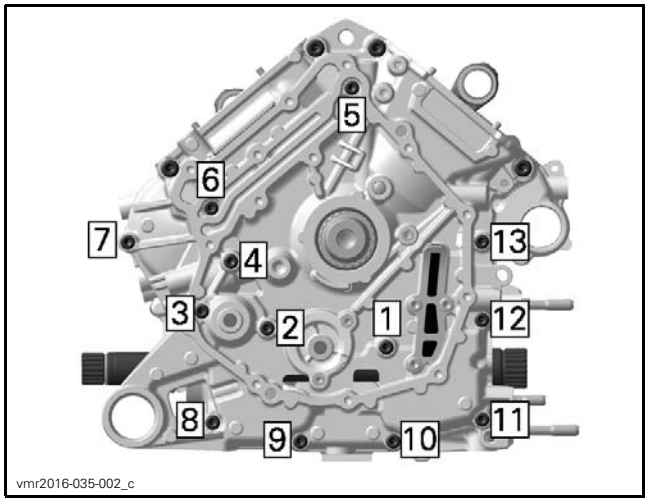
All Models



M8 SCREWS TIGHTENING SEQUENCE

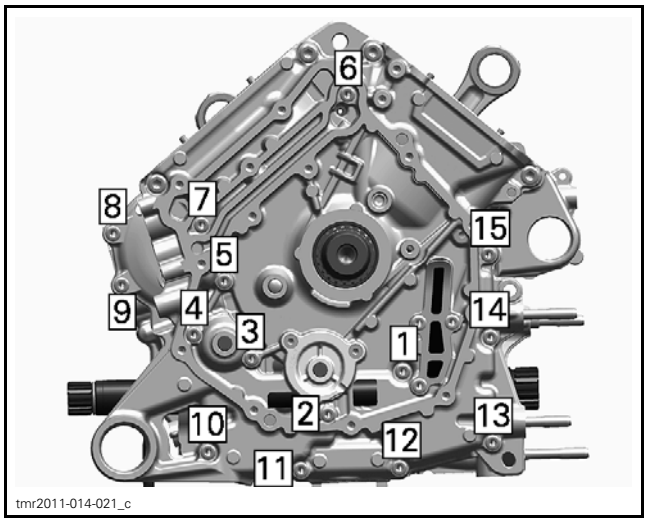
TIGHTENING TORQUE	
M8 crankcase screws	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)

Models Without Oil Cooler



M6 SCREWS TIGHTENING SEQUENCE

Models With Oil Cooler

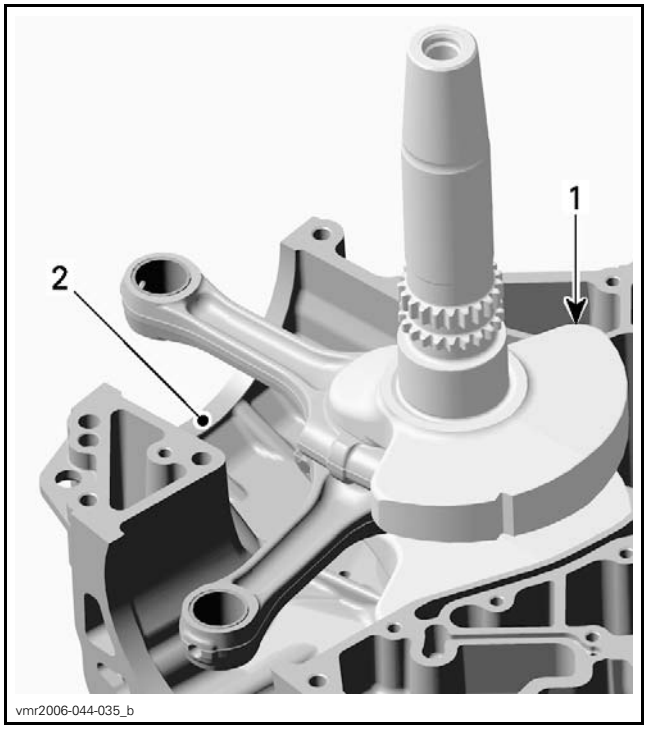


M6 SCREWS TIGHTENING SEQUENCE

All Models

TIGHTENING TORQUE	
M6 crankcase screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

CRANKSHAFT



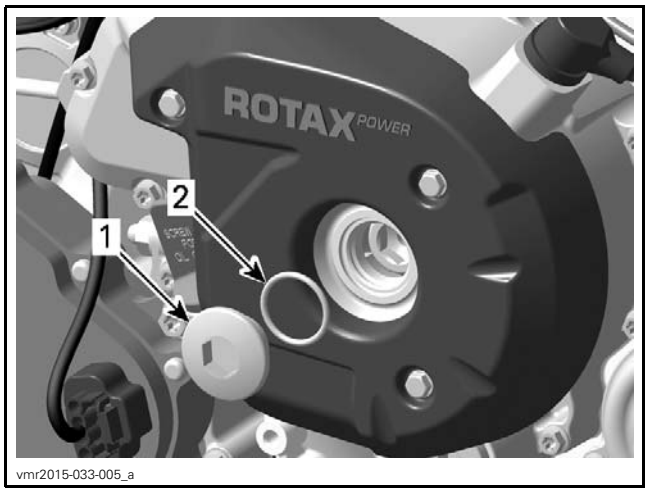
1. *Crankcase MAG*
2. *Crankshaft*

Crankshaft Locking Procedure

NOTE: When the crankshaft is locked, the rear piston no. 2 is at TDC (top dead center). The crankshaft cannot be locked with front piston no. 1 at TDC.

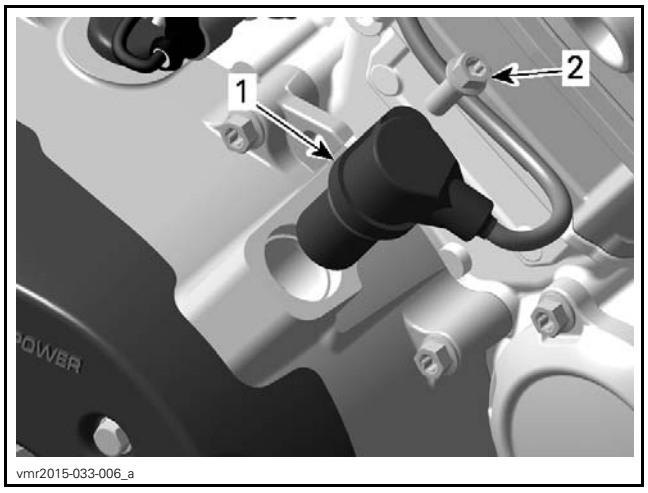
NOTICE To see if the rear piston no. 2 is at TDC ignition, refer to *CAMSHAFT TIMING GEAR* in the *TIMING CHAIN* subsection.

1. Remove spark plug cables and spark plugs from both cylinders.
2. Remove screw plug and O-ring from magneto cover.



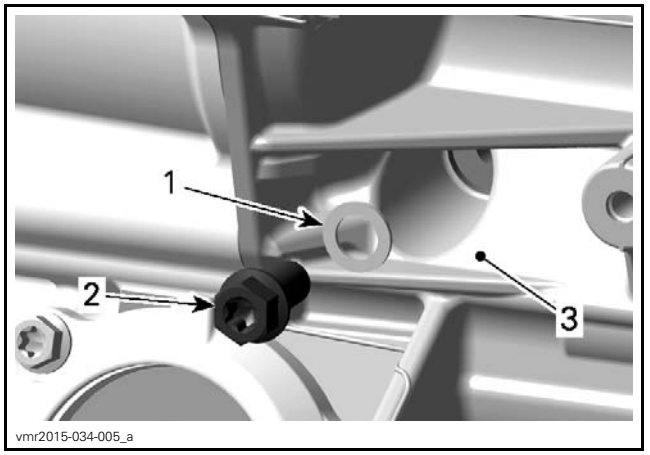
1. Plug screw
2. O-ring

3. Remove crankshaft position sensor.



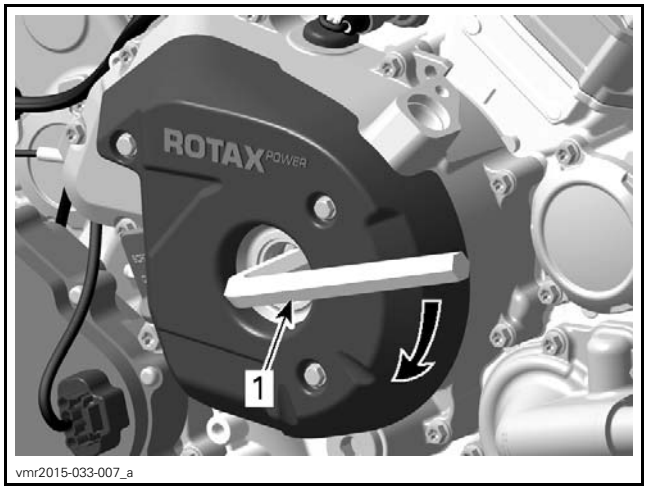
1. Crankshaft position sensor
2. Screw

4. Remove screw plug and discard sealing ring.



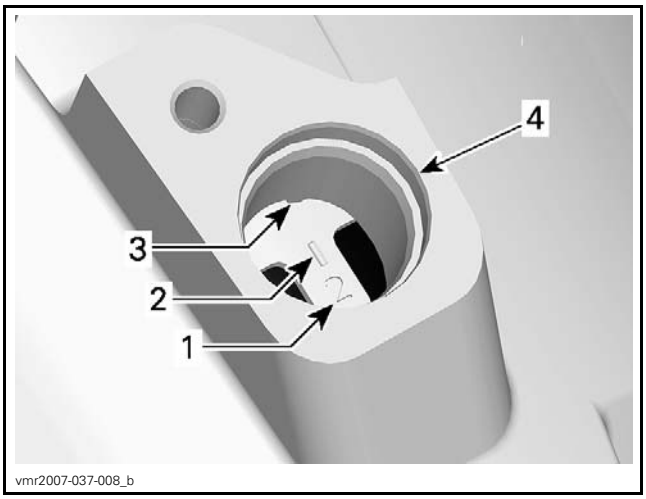
1. Sealing ring
2. Plug screw
3. Crankcase PTO side, front side

5. Use a 14 mm Allen key to turn crankshaft until the rear piston no. 2 is at TDC.



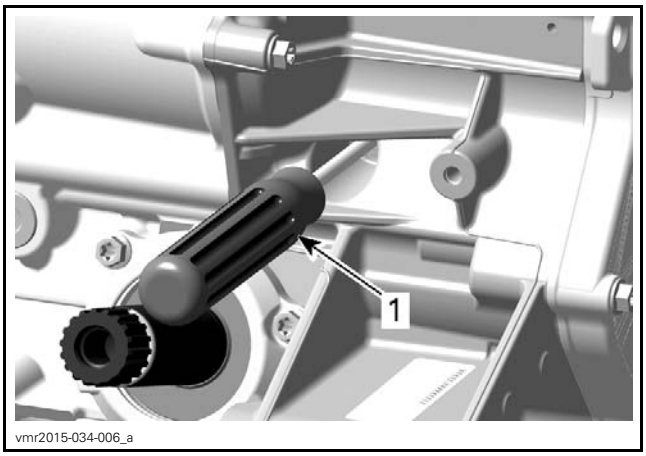
1. Allen key 14 mm

NOTE: When the piston no. 2 is at TDC, the number 2 piston index mark on the magneto flywheel and the notch on the magneto cover are aligned.



CYLINDER 2 AT TDC
1. *Number 2 piston identifier*
2. *Index mark on magneto flywheel*
3. *Notch on magneto cover*
4. *CPS bore in magneto cover*

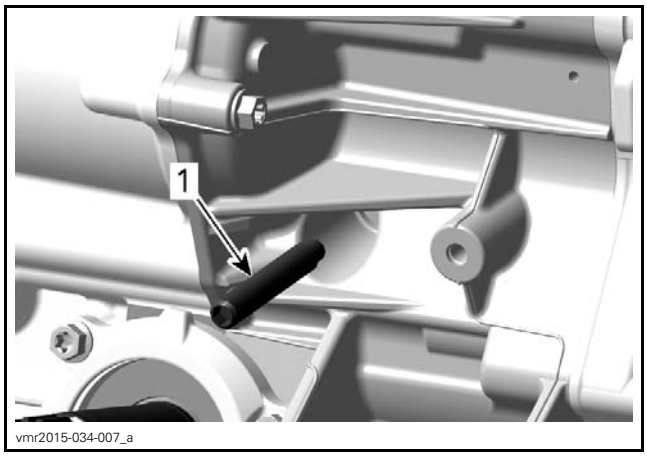
6. Use a screwdriver to check if the groove in the crankshaft is aligned with the crankshaft locking tool orifice.



1. *Screwdriver*

7. Lock crankshaft.

REQUIRED TOOL	
CRANKSHAFT LOCKING BOLT (P/N 529 035 617)	



1. *Crankshaft locking bolt*

8. Gradually insert the tool in the crankshaft groove. Make sure that the tool tip enters the groove and does not jam on the crankshaft balancer surface.

Removing the Crankshaft

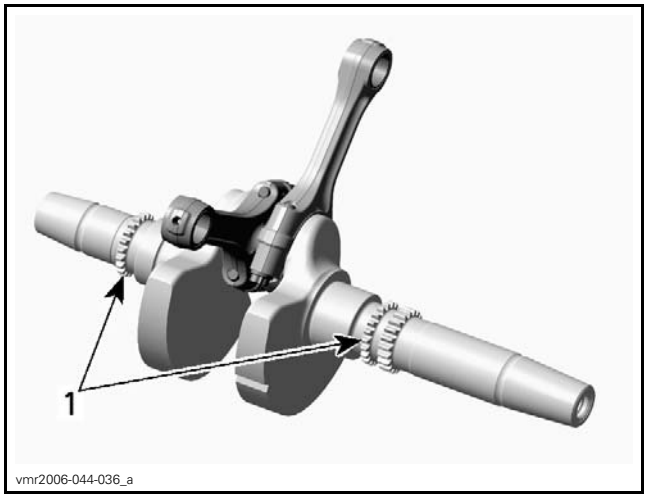
Refer to *CRANKCASE*.

Inspecting the Crankshaft

NOTE: Check each crankshaft bearing journal for scoring, scuffing, cracks or other signs of wear.

NOTE: Replace crankshaft if the crankshaft timing gears are worn or otherwise damaged.

NOTICE **Components out of specifications must always be replaced. If this is not observed, severe damage may be caused to the engine.**



1. *Crankshaft timing gears*

Crankshaft Axial Play

NOTE: Axial play must be measured before splitting the crankcase.

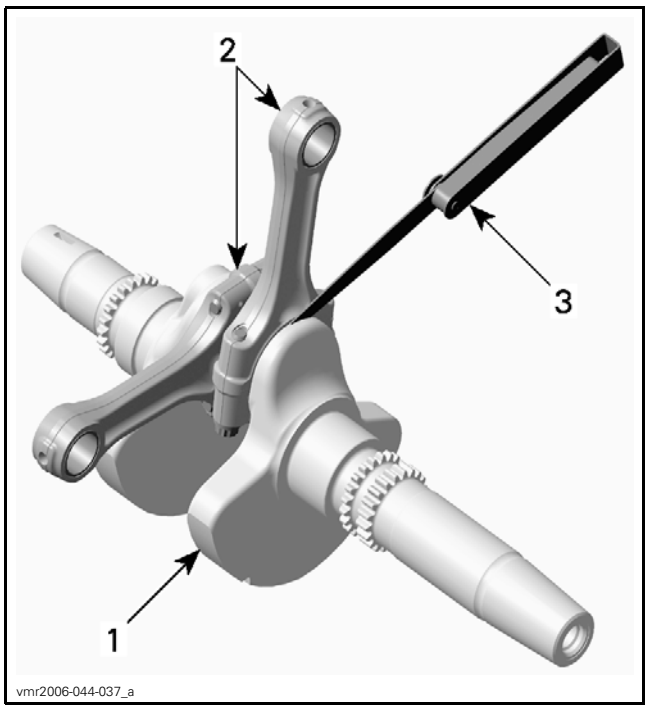
Measure axial play on PTO end of crankshaft using a dial indicator.

CRANKSHAFT AXIAL PLAY	
NEW	0.200 mm to 0.500 mm (.008 in to .02 in)
SERVICE LIMIT	0.600 mm (.024 in)

If axial play is out of specification, replace crankcase and/or crankshaft.

Connecting Rod Big End Axial Play

Using a feeler gauge, measure between face of connecting rods and crankshaft counterweight. If the measurement exceeds specified tolerance, replace the crankshaft.



1. *Crankshaft*
2. *Connecting rods*
3. *Feeler gauge*

CONNECTING ROD BIG END AXIAL PLAY		
570 650 850	NEW	0.200 mm to 0.500 mm (.008 in to .02 in)
1000 1000R	NEW	0.250 mm to 0.550 mm (.0098 in to .0217 in)
All	SERVICE LIMIT	0.600 mm (.024 in)

Connecting Rod/Piston Pin Clearance

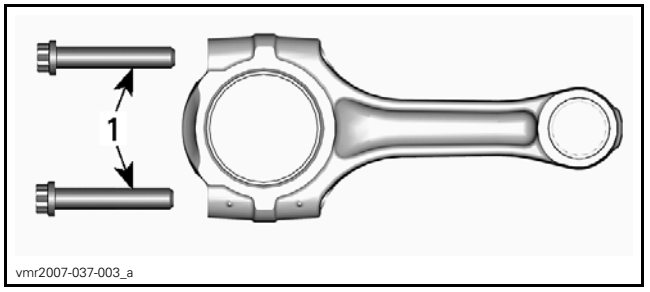
Refer to *TOP END* subsection.

Connecting Rod Big End Radial Play

NOTE: Prior to removing connecting rod from the crankshaft, mark big end halves together to ensure a correct reinstallation (cracked surface fits in only one position).

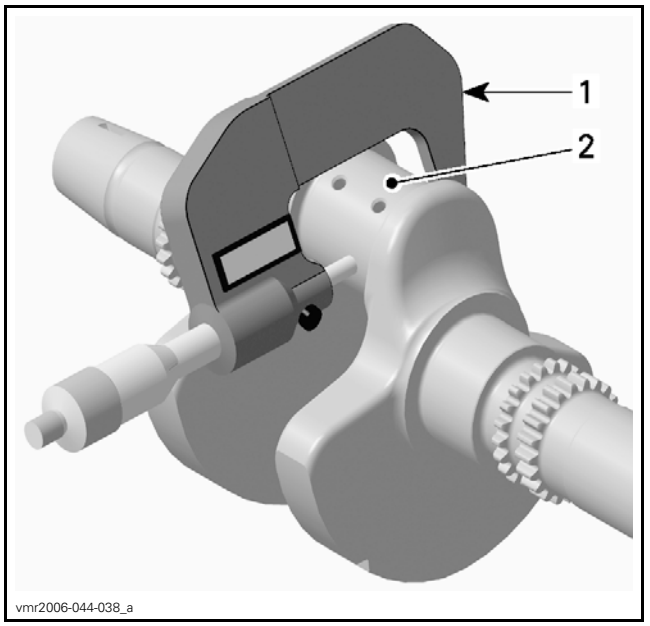
1. Remove connecting rods from crankshaft.

NOTICE **Connecting rod screws are not reusable. Always discard screws and replace with NEW ones. It is recommended to install new plain bearings when reinstalling connecting rods.**



1. *Connecting rod screws*

2. Measure crankpin. Compare to inside diameter of connecting rod big end.



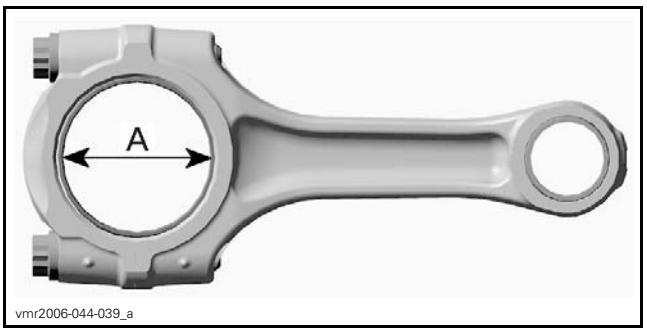
1. *Micrometer*
2. *Crankpin*

CRANK PIN DIAMETER		
570 650 850	NEW	40.001 mm to 40.025 mm (1.5748 in to 1.5758 in)
	SERVICE LIMIT	39.990 mm (1.5744 in)
1000 1000R	NEW	41.986 mm to 42.010 mm (1.653 in to 1.6539 in)
	SERVICE LIMIT	41.967 mm (1.6522 in)

If the crank pin diameter is out of specification, replace crankshaft.

NOTE: To measure the connecting rod big end diameter, use the OLD connecting rod screws.

3. Install the OLD plain bearings as they were mounted initially.
4. Carry out the tightening procedure described in *CRANKSHAFT ASSEMBLY* in this subsection.



A. Connecting rod big end plain bearing

CONNECTING ROD BIG END DIAMETER		
570 650 850	SERVICE LIMIT	40.100 mm (1.5787 in)
1000 1000R	SERVICE LIMIT	42.100 mm (1.6575 in)

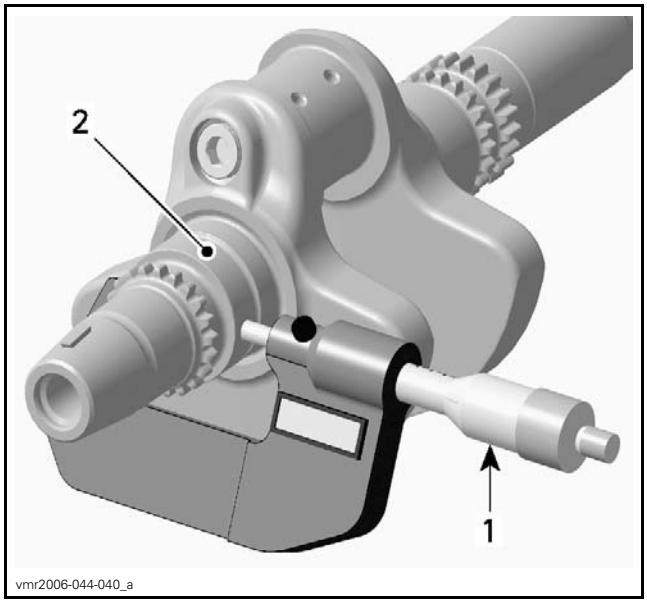
If connecting rod big end diameter is out of specification, replace plain bearings and recheck.

CONNECTING ROD BIG END RADIAL CLEARANCE	
SERVICE LIMIT	0.09 MM (.0035 IN)

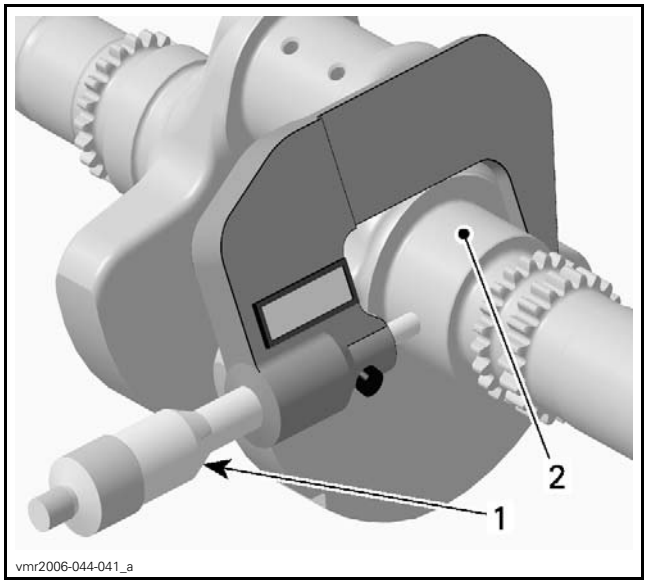
If connecting rod big end radial clearance is out of specification, replace plain bearings and recheck.

Crankshaft Radial Play MAG/PTO Side

Measure crankshaft main bearing journals on MAG and PTO sides. Compare to inside diameter of MAG and PTO plain bearings, refer to *CRANKCASE* in this subsection.



1. Micrometer
2. Crankshaft MAG side main bearing journal



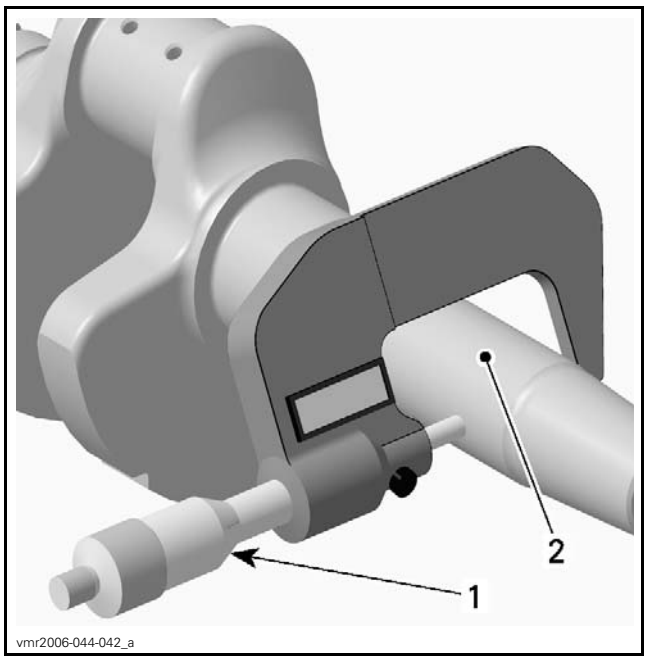
1. Micrometer
2. Crankshaft PTO side main bearing journal

CRANKSHAFT MAIN BEARING JOURNAL DIAMETER (MAG/PTO SIDE)	
NEW	42.016 mm to 42.040 mm (1.6542 in to 1.6551 in)
SERVICE LIMIT	42.000 mm (1.6535 in)

CRANKSHAFT RADIAL PLAY (MAG/PTO SIDE)	
SERVICE LIMIT	0.07 mm (.0028 in)

Crankshaft Radial Play (PTO Cover Bearing)

Measure crankshaft journal diameter (PTO cover bearing). Compare to plain bearing inside diameter (PTO cover). Refer to *PTO COVER* in this subsection.



1. Micrometer
2. Crankshaft journal (PTO support bearing)

CRANKSHAFT JOURNAL DIAMETER (PTO COVER BEARING)	
NEW	34.004 mm to 34.020 mm (1.3387 in to 1.3394 in)
SERVICE LIMIT	33.998 mm (1.3385 in)

CRANKSHAFT RADIAL PLAY (PTO COVER BEARING)	
SERVICE LIMIT	0.10 mm (.0039 in)

If crankshaft journal diameter is out of specification, replace crankshaft.

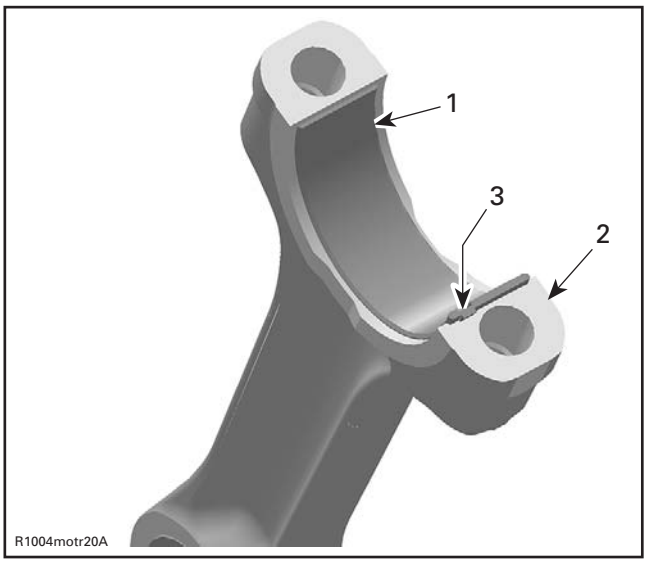
If crankshaft radial play (PTO cover bearing) is out of specification, replace plain bearings and recheck.

Assembling the Crankshaft

For assembly, reverse the disassembly procedure however, pay attention to following details.

Clean the split surface on both sides (cracked area) carefully with compressed air.

Insert plain bearings in the connecting rods as illustrated.



1. Half plain bearing of connecting rod big end
2. Mating surface of the connecting rod
3. Joining surface of plain bearing in line with connecting rod groove

Oil the plain bearing surface of the connecting rod and crankshaft pin before installation.

NOTICE **Lower cap and rod must match together since there is a cracked surface.**

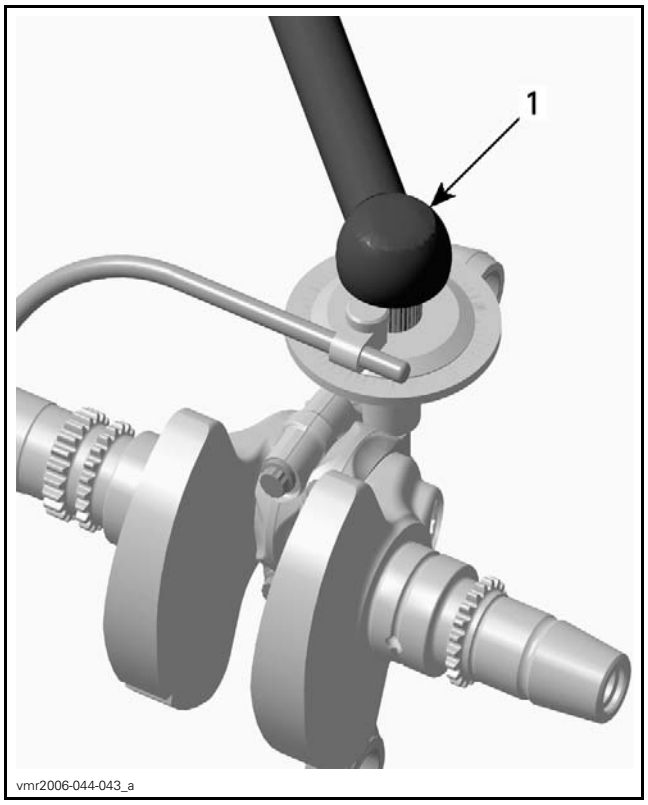
Oil NEW connecting rod screws.

Thread screws in the connecting rods, then tighten as per following procedure.

NOTICE **Strictly adhere following instructions:**

- Always use NEW connecting rod screws at final assembly. They are **not reusable**.
- Do not apply any thread locker.
- The running direction of the big end bearings and of the piston pins must not change.
- Always perform each step on both connecting rod screws before going to the next step.
- Failure to strictly follow procedure may cause connecting rod screws to loosen and lead to severe engine damage.

REQUIRED TOOLS
Torque wrench
Angle torque wrench



1. Angle torque wrench

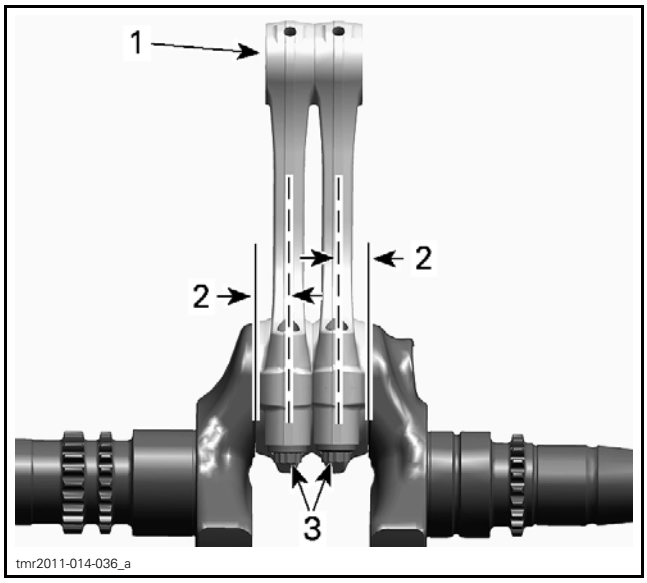
570, 650 and 850 Engines

NEW connecting rods can be installed either way.

TIGHTENING TORQUE		
Connecting rod screws	Step A	Tighten to 1/2 of specified torque
	Step B	Tighten to 20 N•m ± 2 N•m (15 lbf•ft ± 1 lbf•ft)
	Step C	Torque an additional 60 ± 5° turn using an angle torque wrench

1000 and 1000R Engines

NOTICE Connecting rods are asymmetrical. There must be no gap between the small ends when they face each other.



1. Connecting rod small ends
2. Connecting rod offset
3. Connecting rod screws

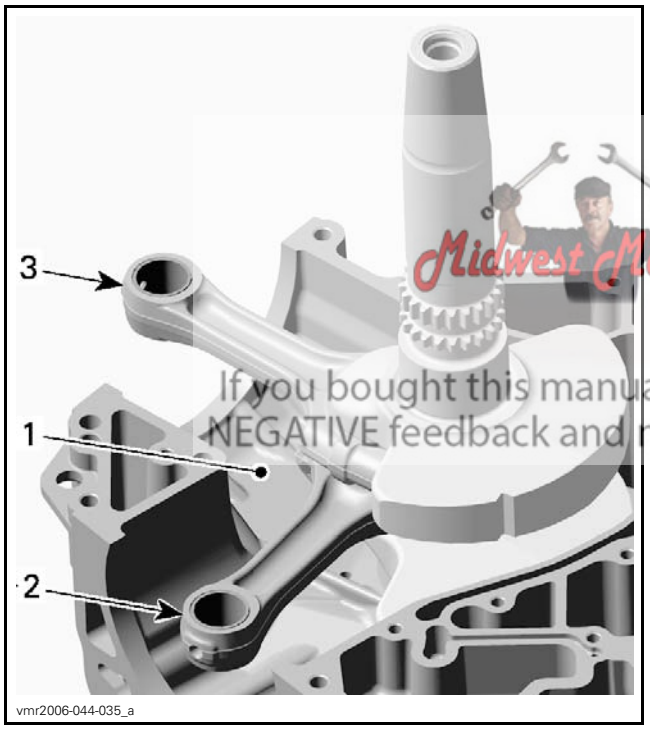
TIGHTENING TORQUE		
Connecting rod screws	Step A	Tighten to 1/2 of specified torque
	Step B	Tighten to 30 N•m ± 2 N•m (22 lbf•ft ± 1 lbf•ft)
	Step C	Torque an additional 90 ± 5° turn using an angle torque wrench

Installing the Crankshaft

For installation of crankshaft in crankcase reverse the removal procedure. However, pay attention to the following details.

Do not interchange the connecting rods of pistons 1 and 2 during installation.

NOTICE Observe the correct installation position when fitting the crankshaft with the connecting rods. The connecting rod MAG side has to face cylinder no. 1.



1. *Crankcase half MAG side*
2. *Connecting rod cylinder 1*
3. *Connecting rod cylinder 2*

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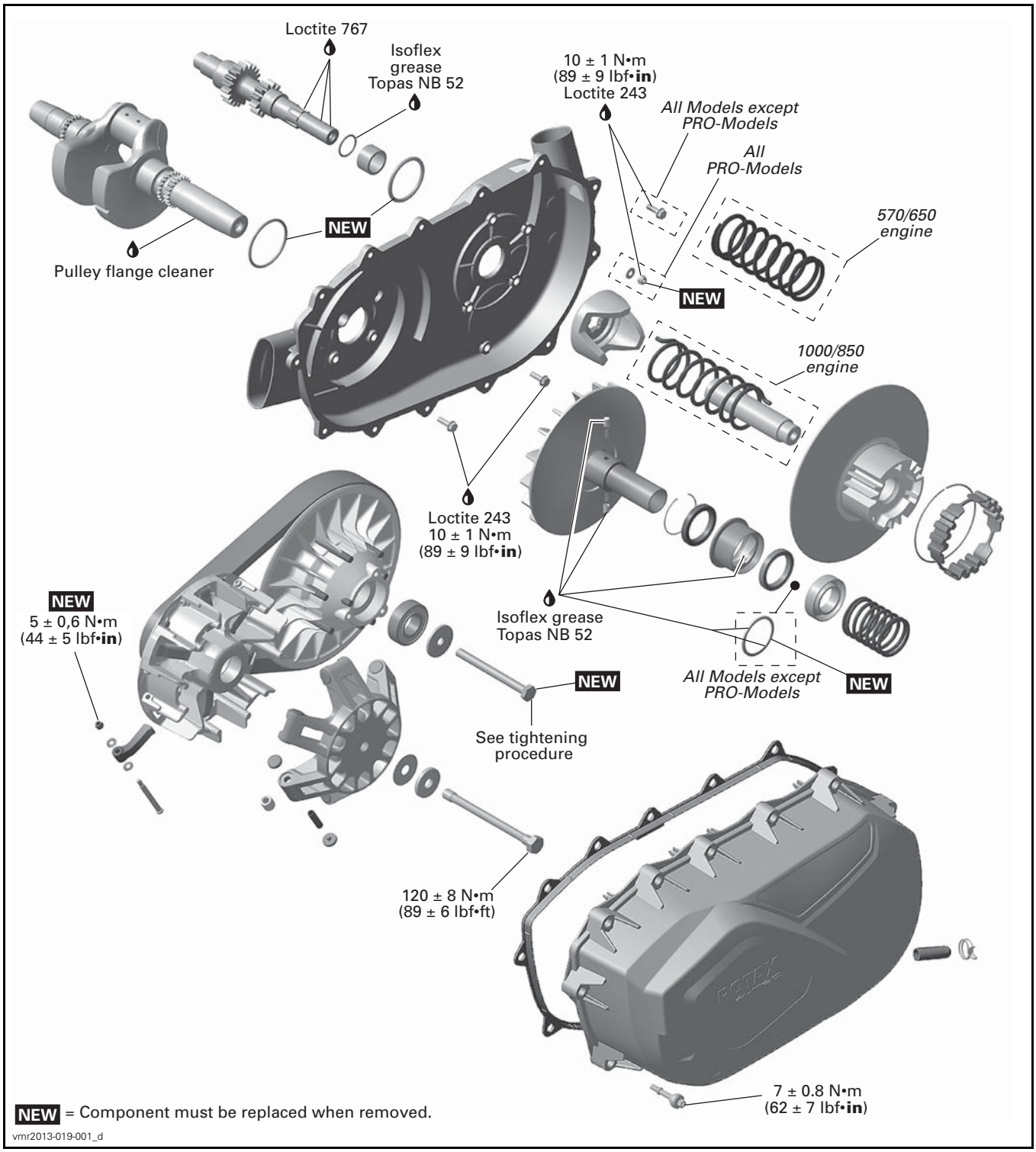
CONTINUOUSLY VARIABLE TRANSMISSION (CVT) (570/650/850)

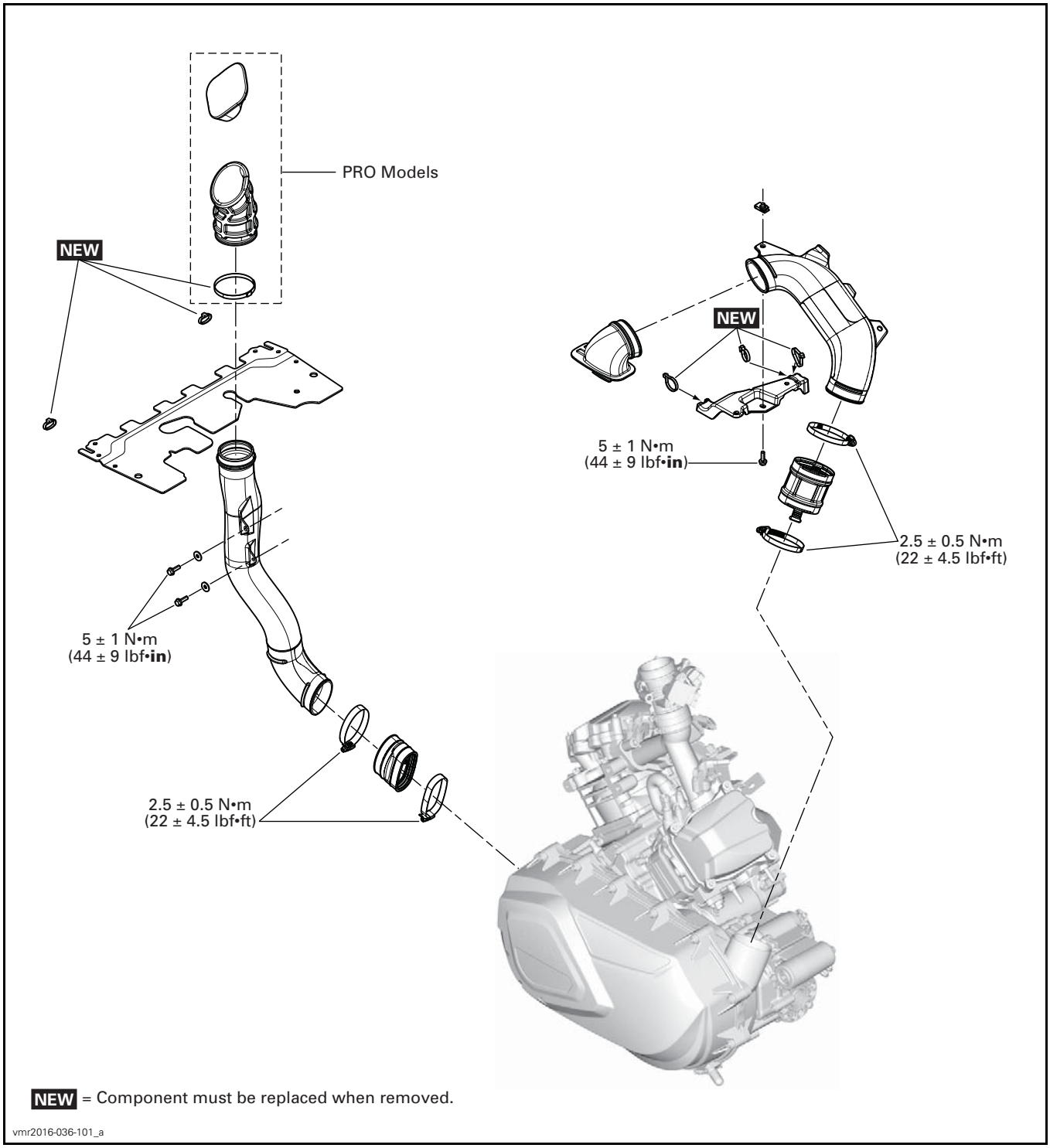
SERVICE TOOLS

Description	Part Number	Page
CLUTCH HOLDER	529 036 238	6, 14, 20, 22–23
CLUTCH PULLER	529 035 746	7
PULLER/LOCKING TOOL	529 036 098	5, 20, 23

SERVICE PRODUCTS

Description	Part Number	Page
ISOFLEX GREASE TOPAS NB 52	293 550 021	12
LOCTITE 767 (ANTISEIZE LUBRICANT)	293 800 070	19
PULLEY FLANGE CLEANER	413 711 809	9, 16, 19


Loctite 767
Isoflex grease Topas NB 52
10 ± 1 N•m (89 ± 9 lbf•in)
Loctite 243
All Models except PRO-Models
All PRO-Models
570/650 engine
1000/850 engine
NEW
Pulley flange cleaner
Loctite 243
10 ± 1 N•m
(89 ± 9 lbf•in)
NEW
5 ± 0,6 N•m
(44 ± 5 lbf•in)
Isoflex grease
Topas NB 52
All Models except PRO-Models
NEW
NEW
See tightening procedure
120 ± 8 N•m
(89 ± 6 lbf•ft)
7 ± 0.8 N•m
(62 ± 7 lbf•in)
NEW = Component must be replaced when removed.
vmr2013-019-001_d


PRO Models
NEW
NEW
5 ± 1 N•m
(44 ± 9 lbf•in)
2.5 ± 0.5 N•m
(22 ± 4.5 lbf•ft)
5 ± 1 N•m
(44 ± 9 lbf•in)
2.5 ± 0.5 N•m
(22 ± 4.5 lbf•ft)
NEW = Component must be replaced when removed.
vmr2016-036-101_a

GENERAL

NOTE: For a better understanding, the following illustrations are taken with engine out of vehicle. To perform the following instructions, it is not necessary to remove engine.

⚠ WARNING

Never touch CVT while engine is running. Never drive vehicle when CVT cover is removed.

⚠ WARNING

Any drive pulley repairs must be performed by an authorized Can-Am dealer. Subcomponent installation and assembly tolerances require strict adherence to procedures detailed.

⚠ WARNING

The clutch assembly is a precisely balanced unit. Never replace parts with used parts from another clutch assembly.

PROCEDURES

CVT COVER

CVT Cover Access

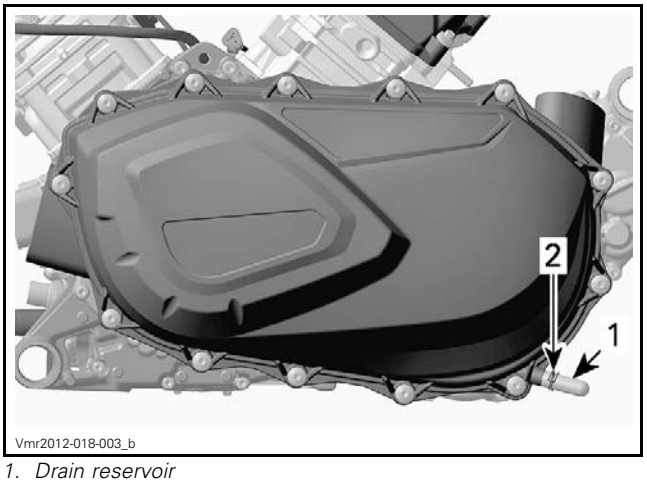
Refer to *BODY* subsection and remove the following:

– LH side and extension panels
– LH footboard panel.

Draining the CVT Cover

If water is present in CVT cover, it can be drained as follows:

1. Remove drain reservoir from CVT cover.



1. Drain reservoir
2. Spring clip

2. Let water drain from CVT cover.
3. Reinstall drain reservoir.

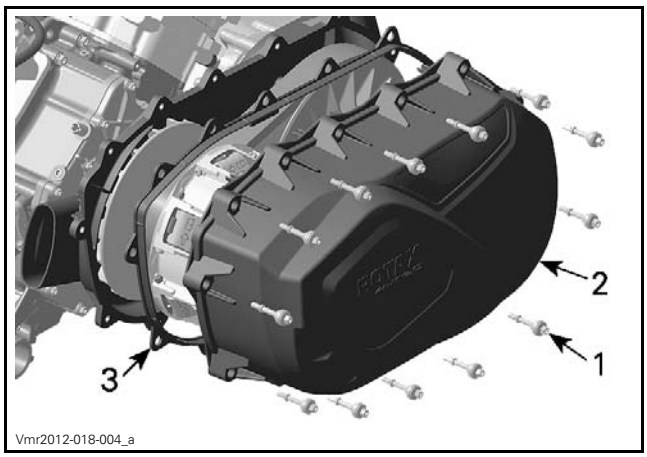
NOTICE **If an appreciable amount of water or any debris entered the CVT cover, CVT must be cleaned and inspected.**

Removing the CVT Cover

Remove CVT cover screws.

NOTE: Do not use and impact tool to remove CVT cover screws. To support the CVT cover remove the top center screw last.

Remove the CVT cover and its gasket.



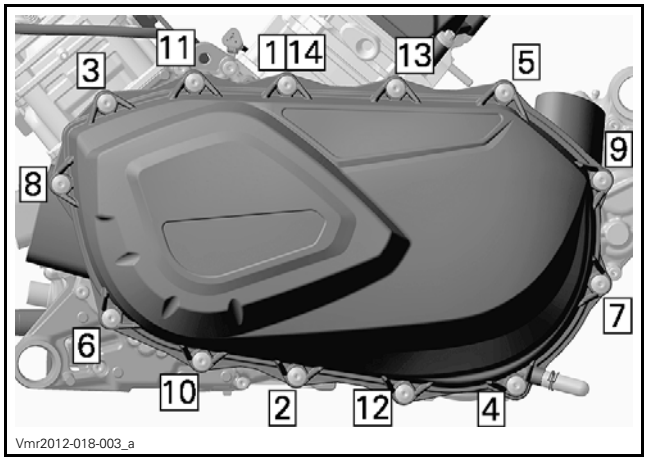
1. CVT cover screw
2. CVT cover
3. Gasket

Installing the CVT Cover

Install the top center screw of first.

NOTE: Do not use and impact tool to install CVT cover screws.

Tighten the CVT cover screws as per following sequence.



CVT COVER TIGHTENING SEQUENCE

TIGHTENING TORQUE	
CVT cover screws	7 N•m ± 0.8 N•m (62 lbf•**in** ± 7 lbf•**in**)

DRIVE BELT

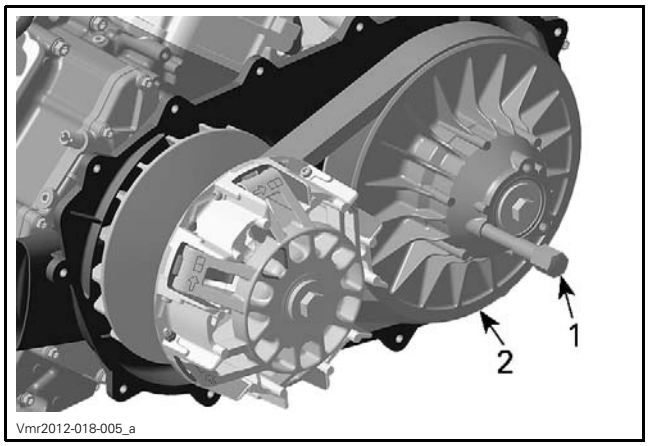
Removing the Drive Belt

NOTICE In case of a drive belt failure, the CVT, cover, drain reservoir and air outlet must be cleaned and inspected for obstruction.

1. Remove *CVT COVER*.
2. Open driven pulley.

REQUIRED TOOL	
PULLER/LOCKING TOOL (P/N 529 036 098)	

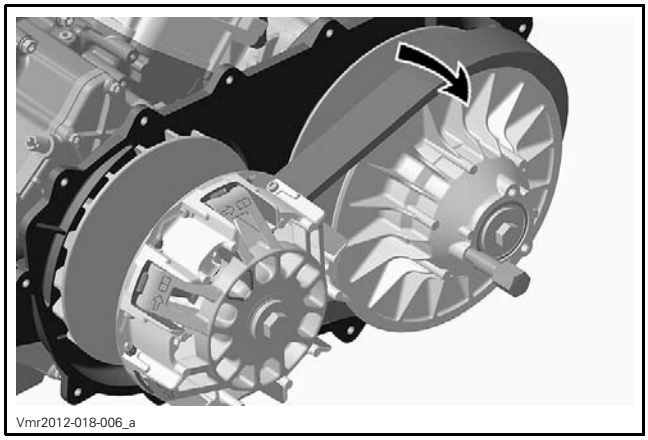
3. Screw tool in the threaded hole of driven pulley and tighten to open the pulley.



Vmr2012-018-005_a

1. Puller/locking tool
2. Fixed sheave of driven pulley

4. Slide the belt over the top edge of fixed sheave to remove it.


Vmr2012-018-006_a

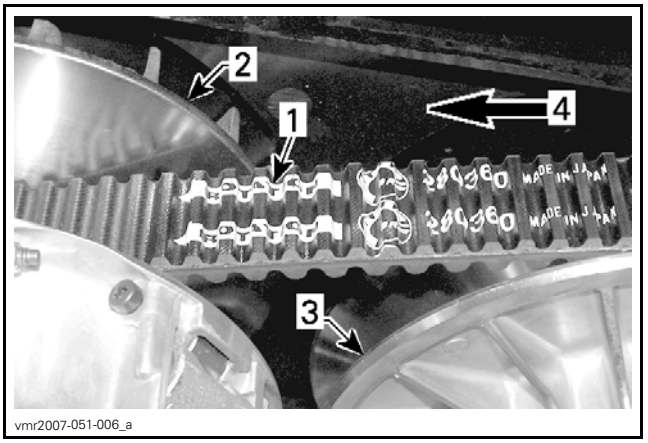
Inspecting the Drive Belt

For drive belt inspection refer to *DRIVE BELT INSPECTION* in the *PERIODIC MAINTENANCE PROCEDURES* subsection.

Installing the Drive Belt

For installation, reverse the removal procedure. Pay attention to following details.

The maximum drive belt life span is obtained when the drive belt has the proper rotation direction. Install it so that the arrow printed on belt is pointing towards front of the vehicle, viewed from top.



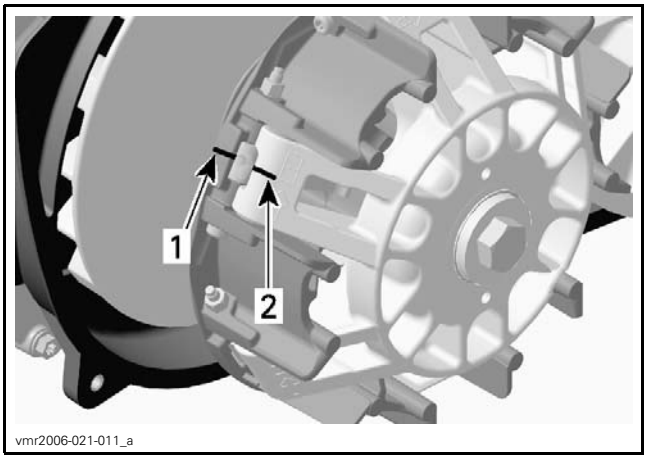
vmr2007-051-006_a

1. Arrow printed on belt
2. Drive pulley (front)
3. Driven pulley (rear)
4. Rotation direction

DRIVE PULLEY

Removing the Drive Pulley

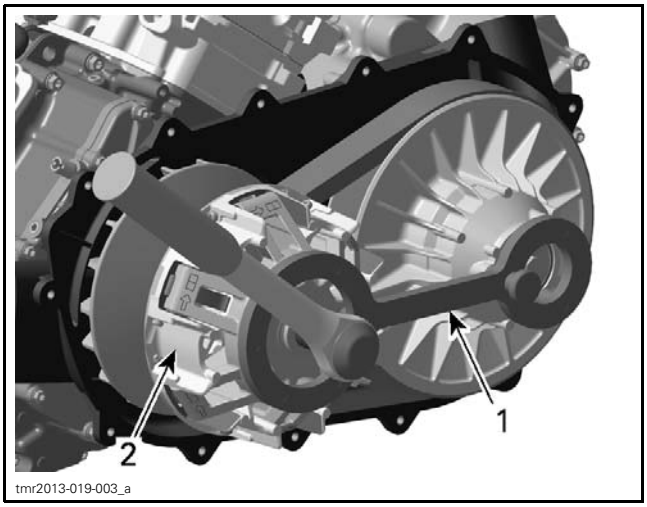
1. Remove *DRIVE BELT*, see procedure in this subsection.
2. Prior to removing the drive pulley, mark sliding sheave and governor cup to ensure correct indexation at reinstallation.



1. Mark on drive pulley sliding sheave
2. Mark on governor cup

3. Lock the drive pulley.

REQUIRED TOOL	
CLUTCH HOLDER (P/N 529 036 238)	



1. Clutch holder
2. Drive pulley sliding sheave

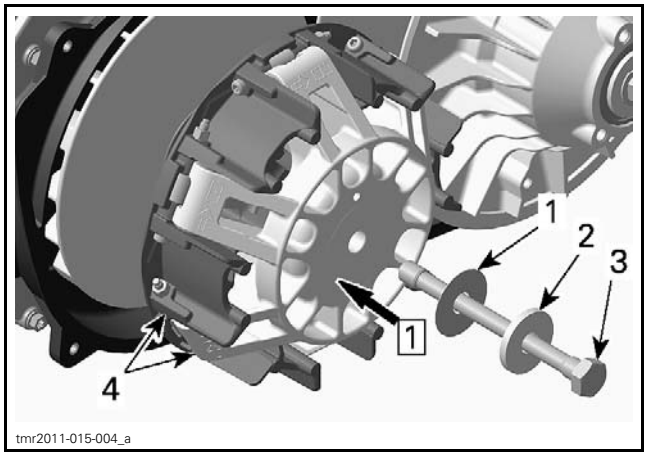
4. Loosen the drive pulley screw.

NOTICE Never use any type of impact wrench for drive pulley removal.

NOTE: Do not unscrew the drive pulley screw completely. If governor cup is stuck, hit it using a soft hammer.

5. Remove service tool.
6. Apply axial pressure with your hand on the sliding sheave and governor cup.
7. Remove drive pulley screw with its conical spring washer and thrust washer.

⚠ CAUTION Sliding sheave of drive pulley is spring loaded.



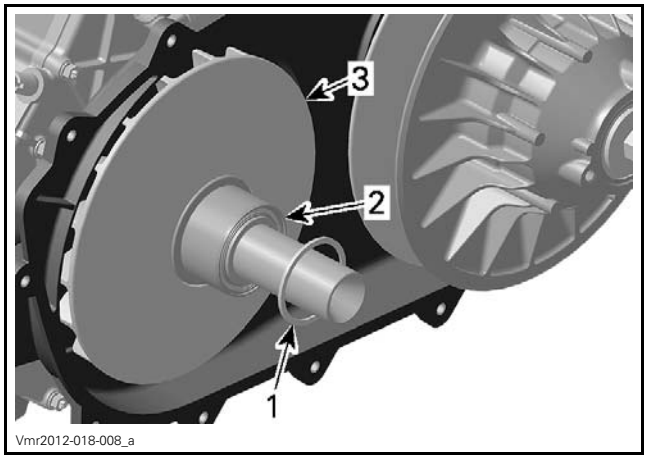
Step 1: Push

1. Thrust washer
2. Conical spring washer
3. Drive pulley screw
4. Sliding sheave with governor cup

8. Slowly release and remove sliding sheave.

Outlander 570/650/850 Models (Except PRO Package)

9. Remove friction washer.



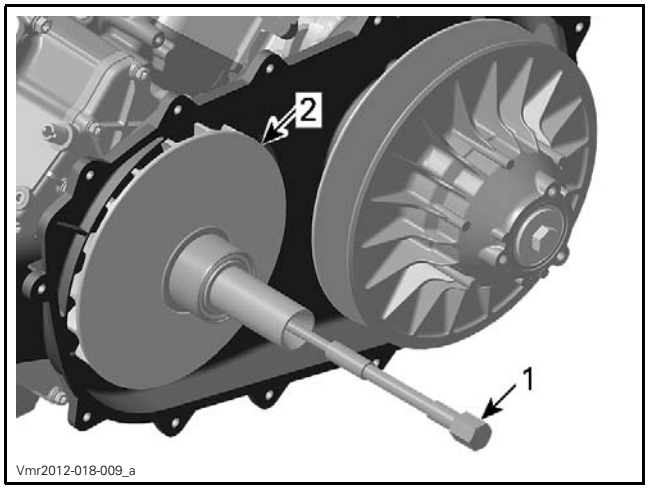
1. Friction washer
2. One way clutch
3. Drive pulley fixed sheave

All Models

10. Screw clutch puller in fixed sheave to remove fixed pulley.

NOTICE Use only recommended tool.

REQUIRED TOOL	
CLUTCH PULLER (P/N 529 035 746)	

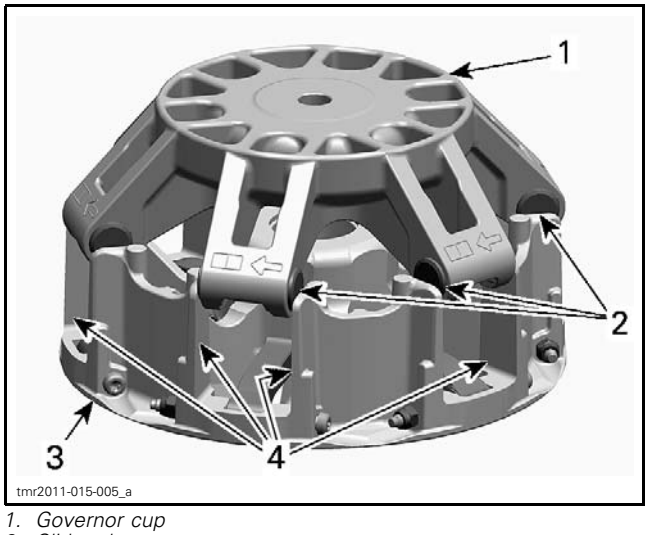


1. Drive pulley puller
2. Fixed sheave

Disassembling the Drive Pulley

Governor Cup

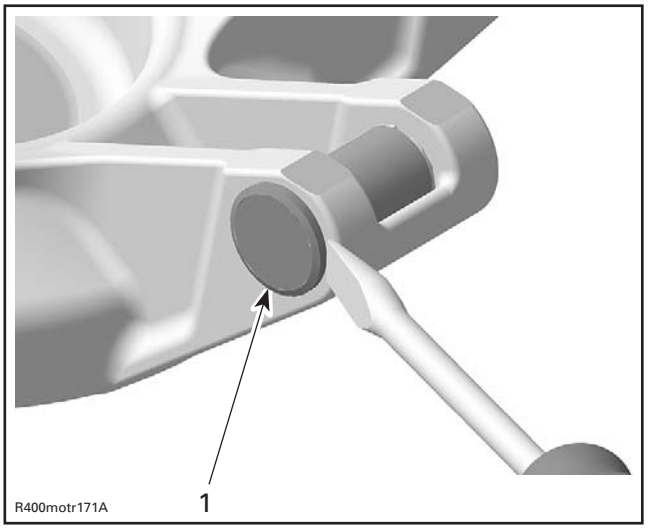
1. Carefully lift governor cup until slider shoes move to their highest position in the guides.



1. Governor cup
2. Slider shoes
3. Sliding sheave
4. Guides

NOTE: The following steps are not necessary except if roller must be removed. Refer to *INSPECTION* before proceeding.

2. Remove slider shoes from governor cup arm. Use a flat screwdriver if necessary.



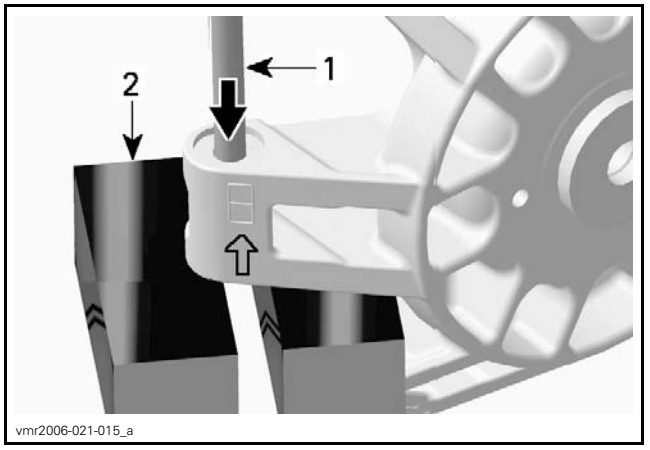
1. Slider shoe

3. Place the governor cup on a vice to push out the roller sleeve in the direction illustrated (against insertion arrow marked on governor cup arm). Use an appropriate punch (diameter of punch must be smaller than the diameter of the sleeve bore in the governor cup arm).

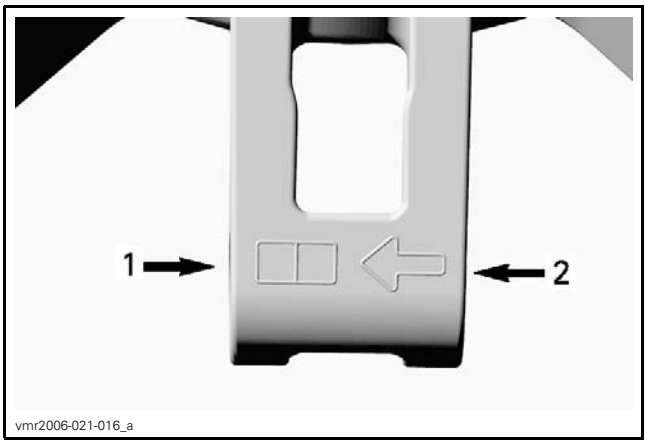
NOTICE **Do not clamp the governor cup in the vice to push out roller sleeve. Governor cup will be damaged.**

NOTE: Use protection plates to avoid marks and/or damages to the governor cup.

NOTICE **Always replace all rollers as a set. Partly worn rollers may cause damage to the CVT system.**

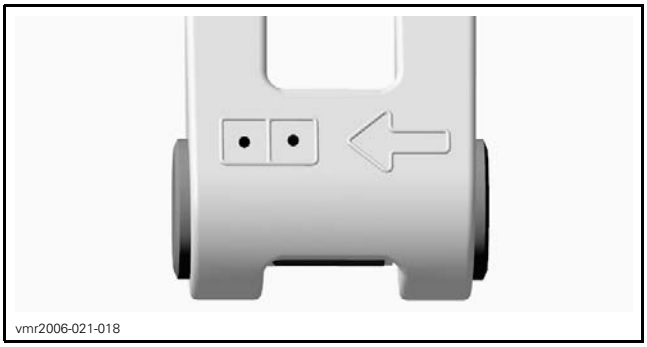


1. Punch
2. Vice



1. Removal direction
2. Assembly direction

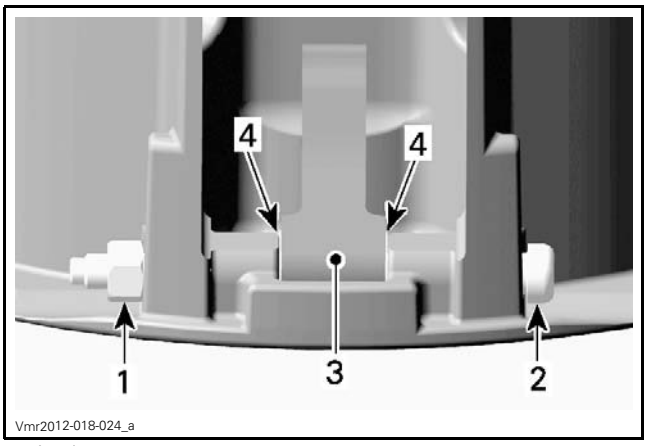
NOTE: Whenever removing a governor cup which already has two marked boxes, replace it by a new one.



Sliding Sheave

Unscrew lock nut and remove centrifugal lever pivot bolt. This drive pulley is equipped with 4 levers.

Remove centrifugal lever and both thrust washers.



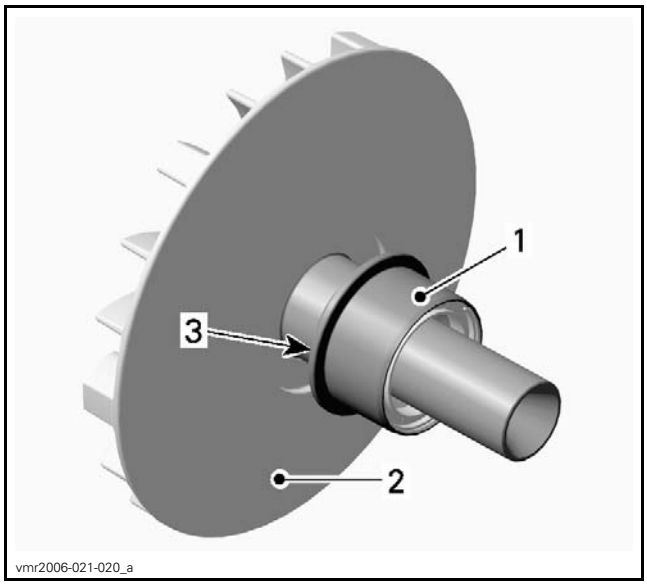
1. Lock nut
2. Centrifugal lever pivot bolt
3. Centrifugal lever
4. Thrust washers

Fixed Sheave

⚠ WARNING

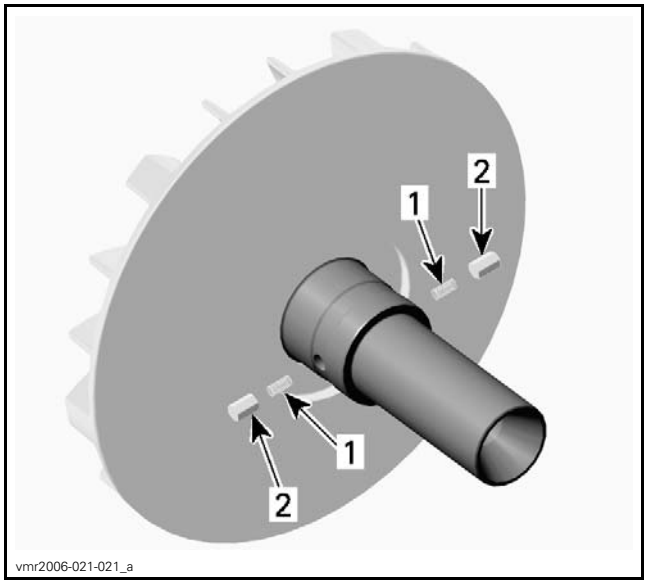
Always wear safety glasses to remove spring sleeves.

Pull and rotate one-way clutch slowly until the spring sleeves are visible.



1. One-way clutch
2. Fixed sheave
3. Spring sleeve area

Hold both spring sleeves with fingers and carefully remove them when the one-way clutch is disengaged.



1. Springs
2. Spring sleeves

Cleaning the Drive Pulley

Clean pulley faces and shaft with fine steel wool and a dry cloth.

Using a paper towel with the recommended cleaning solvent, clean:
- Crankshaft tapered end
- Taper inside the fixed sheave of the drive pulley
- Crankshaft threads
- Drive pulley screw threads.

REQUIRED PRODUCT
PULLEY FLANGE CLEANER (P/N 413 711 809)

NOTICE Avoid contact between cleaner and crankshaft seal as damage may occur.

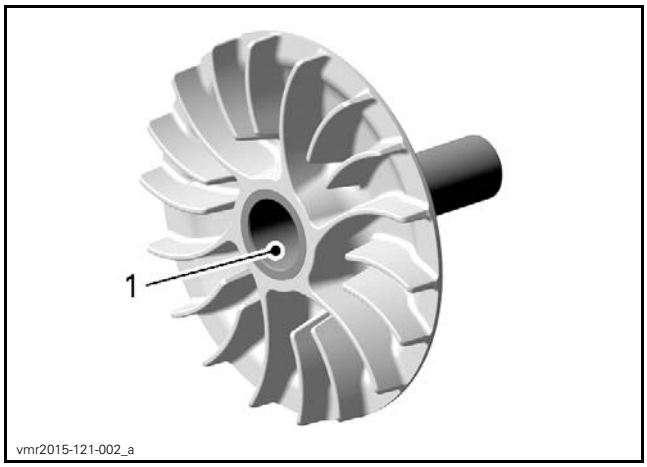
Remove all hardened oil deposits that have baked on the crankshaft and pulley tapered surfaces using coarse or medium steel wool, and/or sand paper no. 600.

NOTICE Do not use any other type of abrasive.

Reclean mounting surfaces with paper towel and PULLEY FLANGE CLEANER (P/N 413 711 809).

Wipe off the mounting surfaces with a clean, dry paper towel.

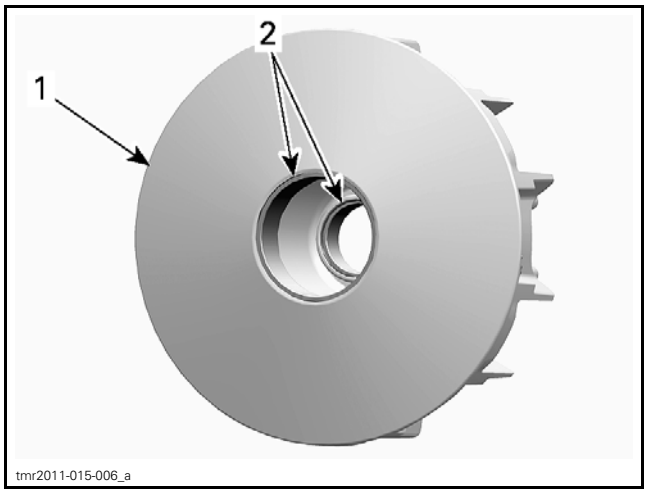
NOTICE Mounting surfaces must be free of any oil, cleaner or towel residue.



1. Taper of fixed sheave

Only use petrol base cleaner when cleaning sliding sheave bushings.

NOTICE Do not use acetone to clean bushing.



1. Sliding sheave
2. Bushings

Inspecting the Drive Pulley

Bushings

For bushing inspection, refer to *SLIDING SHEAVE* in this subsection.

Governor Cup

Check governor cup for cracks or other visible damage. Replace if necessary.

Roller and Slider Shoe

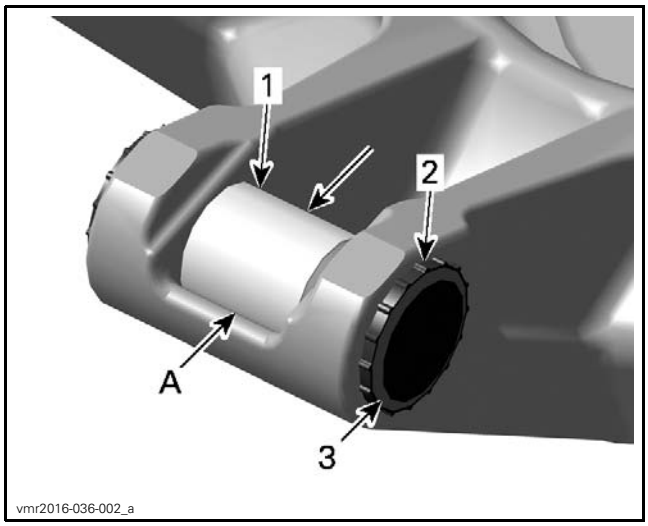
Check each roller for roundness of external diameter.

Check if rollers move freely.

NOTICE Whenever replacing rollers and slider shoes, always replace all rollers and slider shoes as a set.

Check slider shoes for visible wear. If chamfer is not present anymore, replace ALL slider shoes.

NOTE: If necessary, use a screwdriver to remove slider shoes.



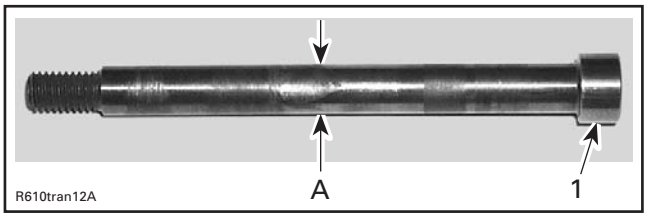
1. *Roller*
2. *Slider shoe*
3. *Chamfer*

A. Roller outer diameter

ROLLER OUTER DIAMETER	
NEW	13.80 mm to 14.00 mm (.543 in to .551 in)
SERVICE LIMIT	13.20 mm (.519 in)
ROLLER INNER DIAMETER	
NEW	8.025 mm to 8.175 mm (.316 in to .322 in)
SERVICE LIMIT	9.000 mm (.354 in)

Centrifugal Lever Pivot Bolt

Measure diameter of centrifugal lever pivot bolt; replace if out of specification.



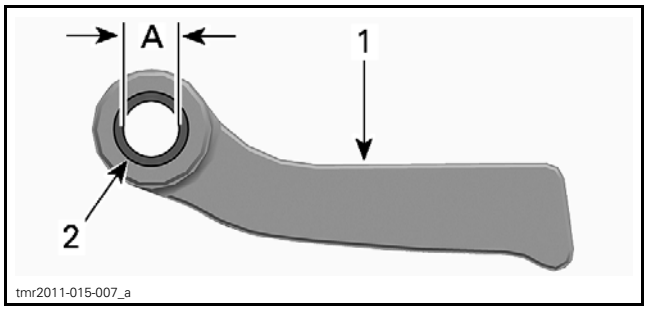
1. *Centrifugal lever pivot bolt*

A. Measure diameter here

CENTRIFUGAL LEVER PIVOT BOLT DIAMETER	
NEW	6.078 mm to 6.100 mm (.239 in to .24 in)
SERVICE LIMIT	6.000 mm (.236 in)

Centrifugal Lever

Check bushing diameter in the centrifugal lever for wear. Replace centrifugal lever if necessary.



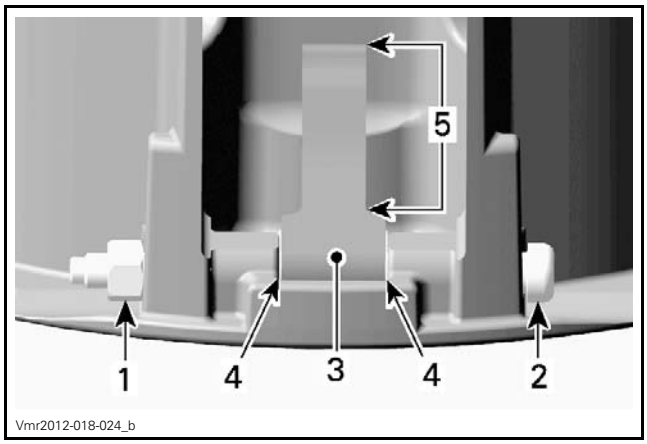
1. *Centrifugal lever*
2. *Bushing*

A. Bushing inner diameter

CENTRIFUGAL LEVER BORE DIAMETER	
NEW	6.035 mm to 6.078 mm (.238 in to .239 in)
SERVICE LIMIT	6.200 mm (.244 in)

Inspect and replace as necessary the following items if their contact surfaces are heavy worn:

– Centrifugal lever
– Thrust washers
– Centrifugal lever pivot bolts
– Lock nuts.



1. *Lock nut*
2. *Centrifugal lever pivot bolt*
3. *Centrifugal lever*
4. *Thrust washers*
5. *Contact surface to the roller*

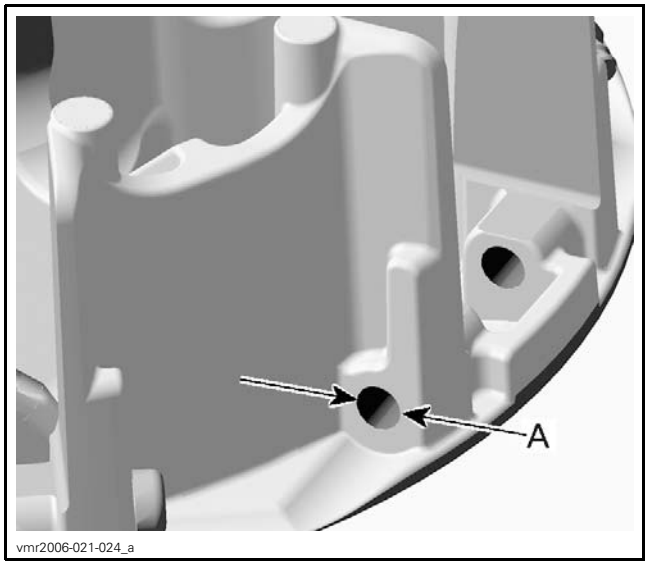
⚠ WARNING

Whenever replacing centrifugal levers, always replace all levers as a set. Otherwise, drive pulley unbalance will occur.

Sliding Sheave

Check sliding sheave for cracks and sliding contact surface for excessive wear. Replace sliding sheave if necessary.

Measure centrifugal lever pivot bolt bores. Replace sliding sheave if bores are out of specification or otherwise damaged.



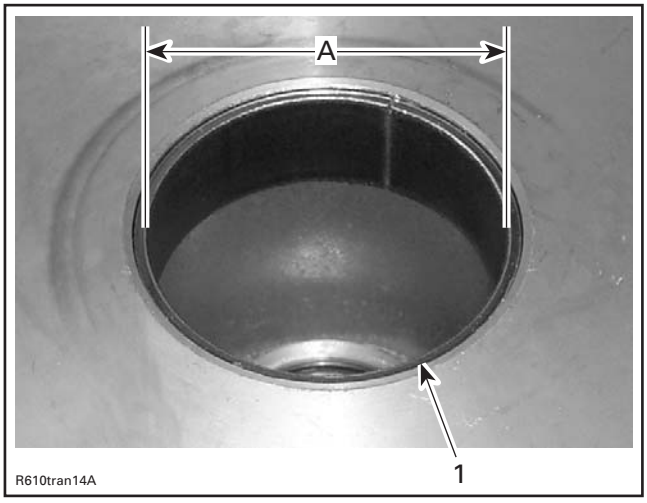
A. Centrifugal lever pivot bolt bore diameter

CENTRIFUGAL LEVER PIVOT BOLT BORE DIAMETER	
NEW	6.113 mm to 6.171 mm (.241 in to .243 in)
SERVICE LIMIT	6.300 mm (.248 in)

Measure bushing diameters of sliding sheave.

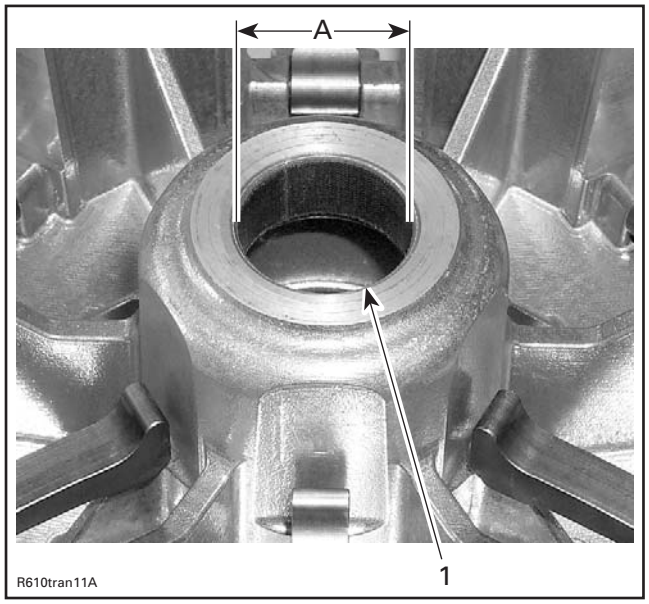
REQUIRED TOOL
Dial bore gauge

MEASURING POINT
At least 5 mm (1/4 in) from bushing edge



1. Bushing on fixed sheave side
A. Bore diameter of bushing

SLIDING SHEAVE LARGE BUSHING	
NEW	55.000 mm to 55.040 mm (2.165 in to 2.167 in)
SERVICE LIMIT	55.200 mm (2.173 in)



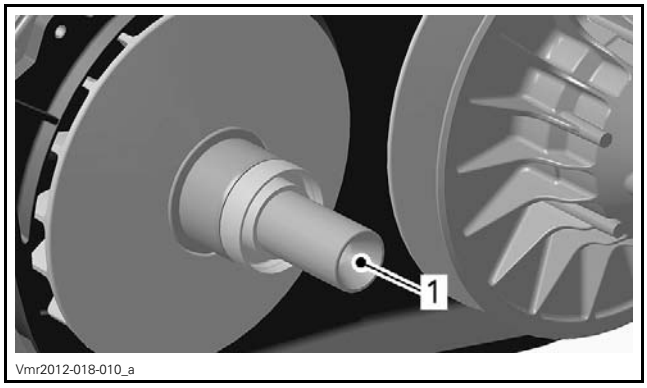
1. Bushing on governor cup side
A. Bore diameter of bushing

SLIDING SHEAVE SMALL BUSHING	
NEW	32.000 mm to 32.040 mm (1.26 in to 1.261 in)
SERVICE LIMIT	32.200 mm (1.268 in)

Replace sliding sheave if one of the bushings is out of specification. Visually inspect coatings for wear.

Fixed Sheave

Check fixed sheave contact surface to the governor cup for scratches or other damages. If damaged, replace fixed sheave.



1. Visually check here

Check for any marks on fixed sheave plate. Replace if necessary.

Spring

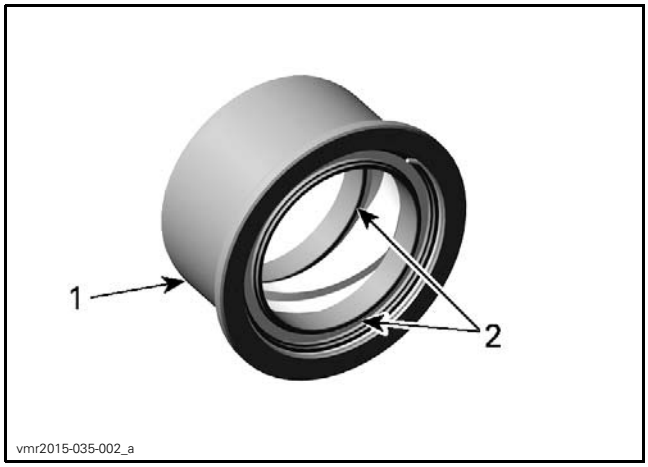
Measure spring free length and squareness. If spring is out of specification, replace by a new one.

CLUTCH SPRING FREE LENGTH		
570 650 1000	Service Limit	85 mm (3.346 in)
850	Service Limit	95 mm (3.74 in)
CLUTCH SPRING SQUARENESS		
AIL	Service Limit	4 mm (.157 in)

One-Way Clutch

Check bearings for excessive play and smooth operation. Replace bearings if necessary.

NOTICE Be careful not to damage the inside of one-way clutch during bearing removal.



1. *One-way clutch*
2. *Bearings*

Measure length of spring sleeves and check if edges on top of the spring sleeve are excessively worn. If out of specification, replace both spring sleeves at the same time.

SPRING SLEEVE LENGTH	
NEW	9.2 mm to 9.4 mm (.362 in to .37 in)
SERVICE LIMIT	9.0 mm (.354 in)

Assembling the Drive Pulley

For assembly, reverse the disassembly procedure. Pay attention to following details.

One-Way Clutch

Clean parts.

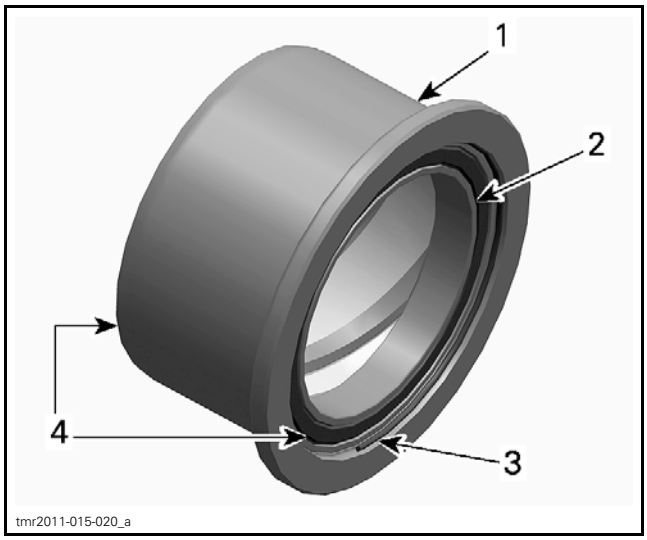
Lubricate springs, spring sleeves and between one way clutch bearings using recommended product.

REQUIRED PRODUCT
ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021)

1000 Engine

NOTE: Ball bearings have a seal on one side only. Install bearings with the seal towards the outside of the one-way clutch.

NOTE: Apply ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021) inside ball bearings to ensure adequate lubrication.



1. *One-way clutch*
2. *Bearing*
3. *Retaining ring*
4. *Seal*

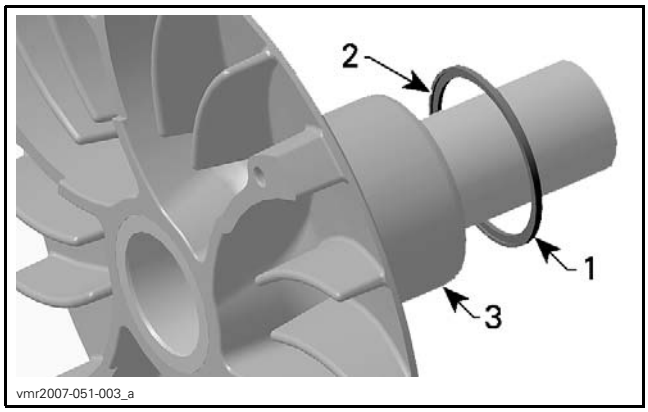
Friction Washer

Outlander 570/650/850 Models (Except PRO Package)

NOTE: Apply recommended grease on both sides of friction washer.

REQUIRED PRODUCT
ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021)

NOTE: Friction washer must be assembled with collar towards one way clutch.



1. *Friction washer*
2. *Collar*
3. *One way clutch*

Sliding Sheave

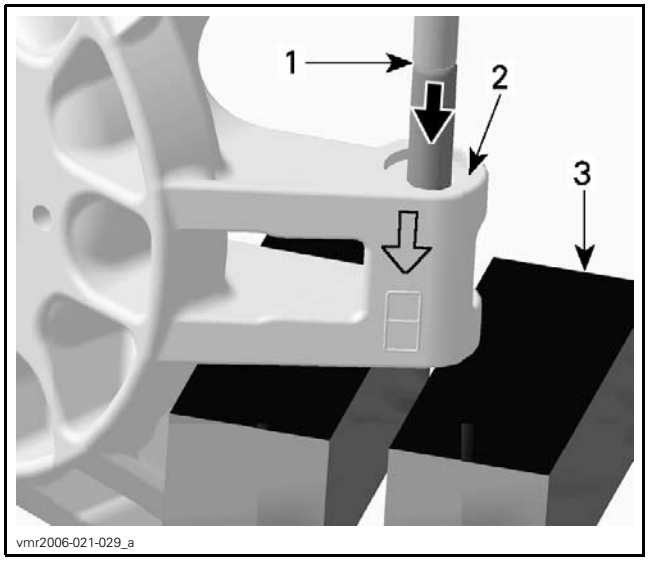
Install centrifugal levers with their thrust washers.

NOTICE Centrifugal levers must move easily after installation.

Governor Cup

Rebuild governor cup with new roller sleeves, rollers and slider shoes.

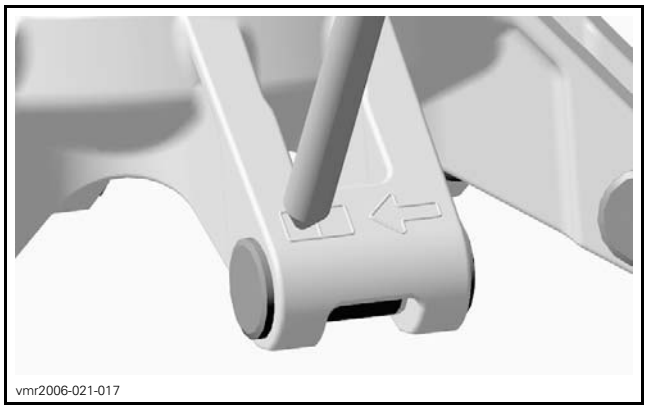
NOTICE Final position of roller sleeves must be flush with the sleeve bore in the governor cup arm (no protrusion).



1. *Top edge of roller sleeve*
2. *Mating surface of slider shoes*
3. *Vice*

Whenever replacing the roller sleeves, make a mark in the box on the governor arm using a punch.

NOTICE Do not tap too hard. Severe damage to the governor cup may appear.



NOTICE Rollers must move easily after installation.

Carefully press slider shoes in the governor cup arm so they **bottom out evenly** in the machined portion of the governor cup arm.

NOTICE Slider shoes must be pressed in evenly to ensure they are centered in the arm and slide properly in the guides.

Installing the Drive Pulley

For installation, reverse the removal procedure. Pay attention to the following details.

⚠ WARNING

Do not apply antiseize or any lubricant on crankshaft and drive pulley tapers.

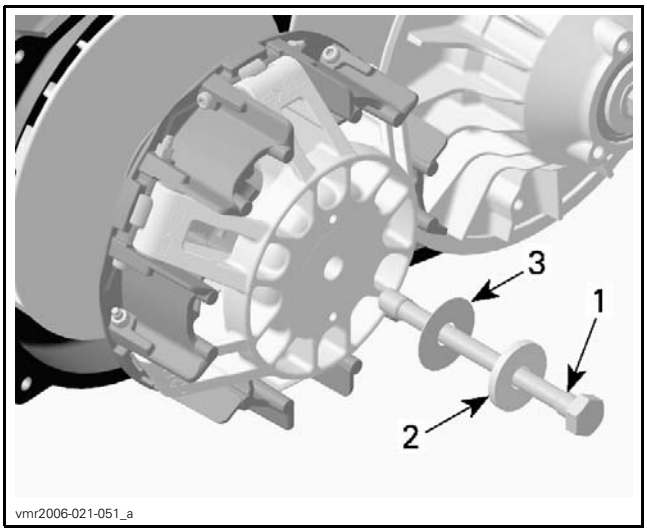
NOTICE Never use any type of impact wrench for drive pulley removal and installation.

Clean mounting surfaces as described in *DRIVE PULLEY CLEANING*.

Install drive pulley on crankshaft extension.

NOTICE Do not forget to install thrust washer and conical spring washer as per illustration that follows.

NOTE: Install conical spring washer with its concave side towards drive pulley.



1. Drive pulley screw
2. Conical spring washer
3. Thrust washer

⚠ WARNING

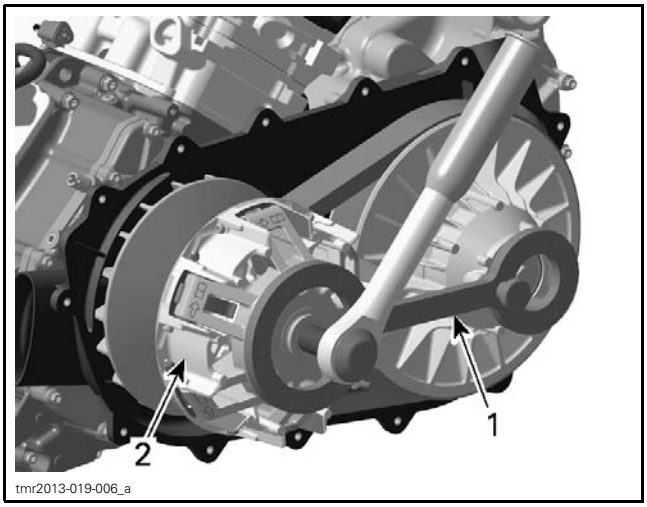
Never substitute conical spring washer and/or screw with aftermarket parts. Always use genuine BRP parts.

Lock the drive pulley as per removal procedure.

Tighten drive pulley screw to specification.

NOTICE **Never use any type of impact wrench for drive pulley installation.**

TIGHTENING TORQUE	
Drive pulley screw	120 N•m ± 8 N•m (89 lbf•ft ± 6 lbf•ft)



1. Clutch holder (P/N 529 036 238)
2. Drive pulley

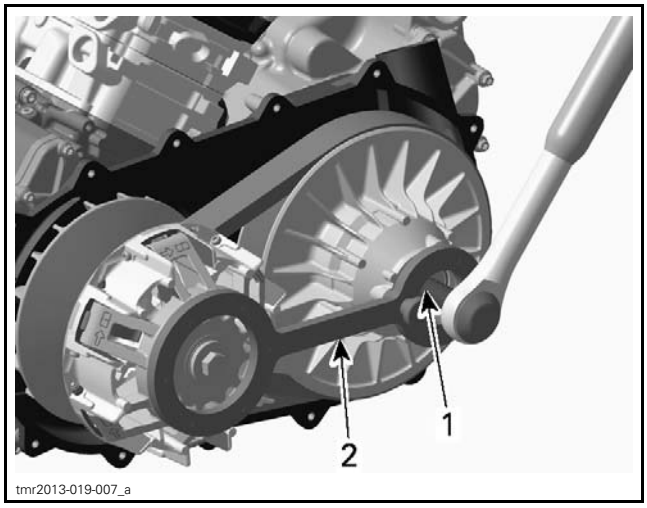
DRIVEN PULLEY

Removing the Driven Pulley

1. Remove drive belt, refer to *DRIVE BELT REMOVAL* in this subsection.
2. Hold the driven pulley and loosen the driven pulley screw.

NOTE: Do not completely remove the driven pulley screw.

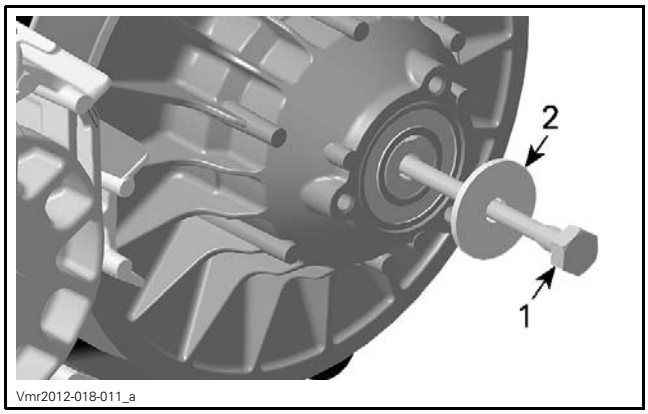
REQUIRED TOOL	
CLUTCH HOLDER (P/N 529 036 238)	



1. Driven pulley screw
2. Clutch holder (P/N 529 036 238)

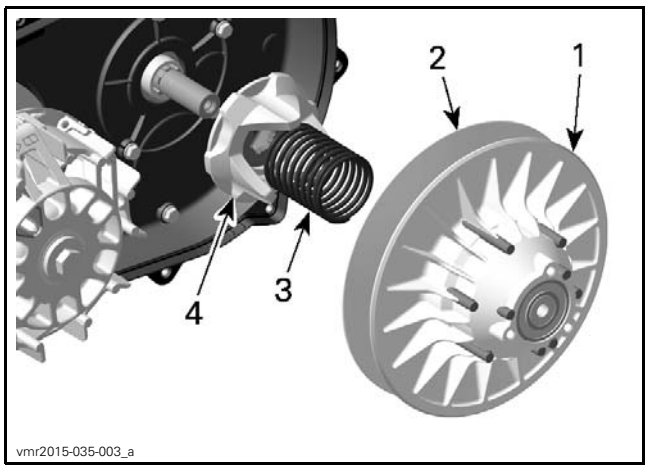
3. Remove service tool.
4. Apply axial pressure with your hand on driven pulley and maintain during screw removal.
5. Remove driven pulley screw and washer. Discard driven pulley screw.

⚠ CAUTION **Driven pulley is spring loaded. Hold driven pulley tight and slowly remove the driven pulley screw to release spring tension.**



1. Driven pulley screw
2. Thrust washer

6. Remove the driven pulley with the spring and the cam.

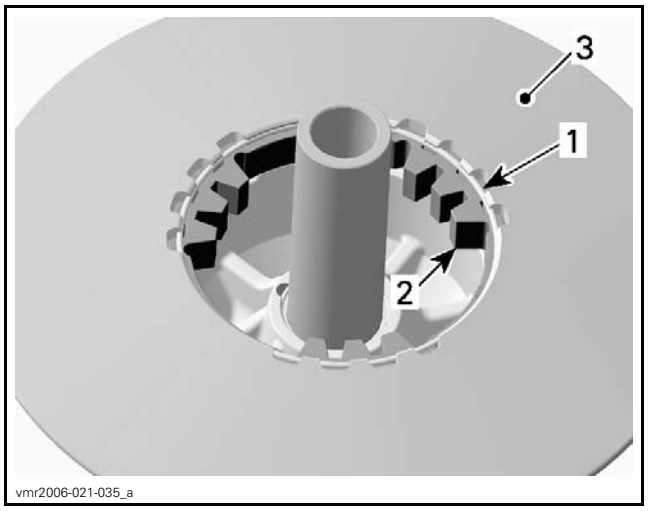


1. Fixed sheave of driven pulley
2. Sliding sheave of driven pulley
3. Spring
4. Cam

Disassembling the Driven Pulley

Fixed Sheave

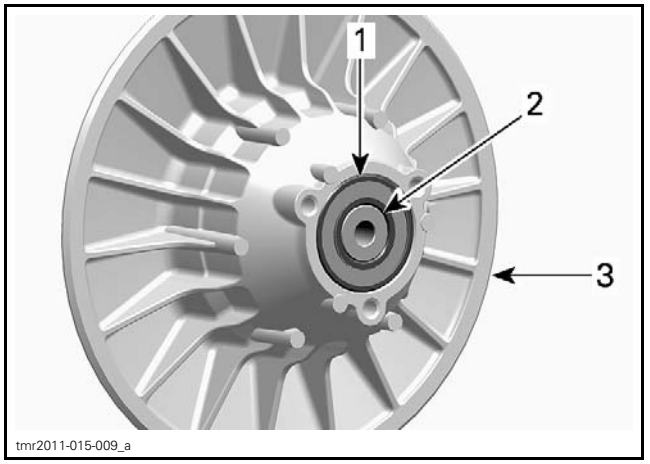
1. Remove retaining ring and lift torque gear.



1. Retaining ring
2. Torque gear
3. Fixed sheave of driven pulley

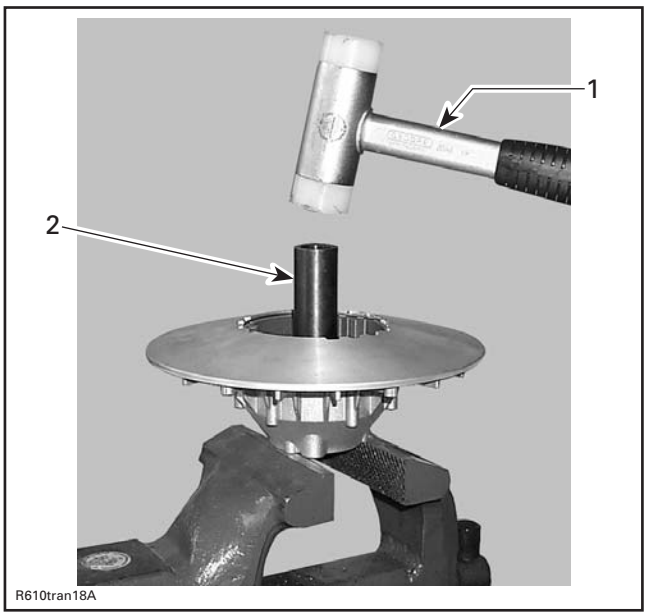
NOTE: The following procedure is not necessary except if ball bearing or shaft must be removed. Refer to *INSPECTION* before proceeding.

2. Heat ball bearing area up to 100°C (212°F) before removing ball bearing.



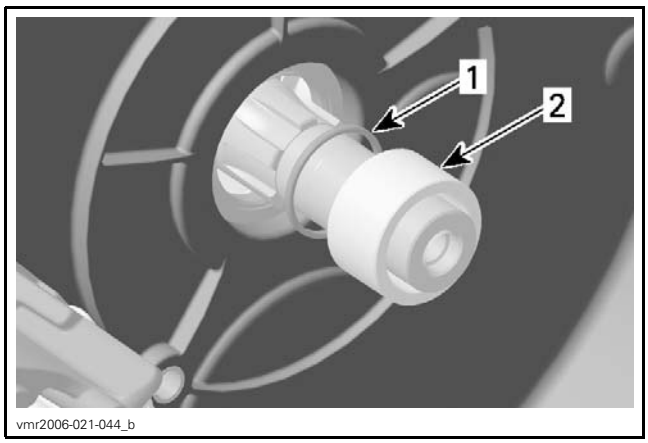
1. Ball bearing
2. Shaft
3. Fixed sheave of driven pulley

3. Use a soft hammer to push shaft and bearing out of fixed sheave.



1. Soft hammer
2. Shaft

4. Remove shaft from ball bearing.
5. Remove distance sleeve and O-ring from countershaft.
6. Replace O-ring if brittle, hard or damaged.



1. O-ring
2. Distance sleeve

Cleaning the Driven Pulley

When a dust deposit has to be removed from the cam or the shaft, use a dry cloth.

Clean pulley faces and shaft using fine steel wool and a dry cloth.

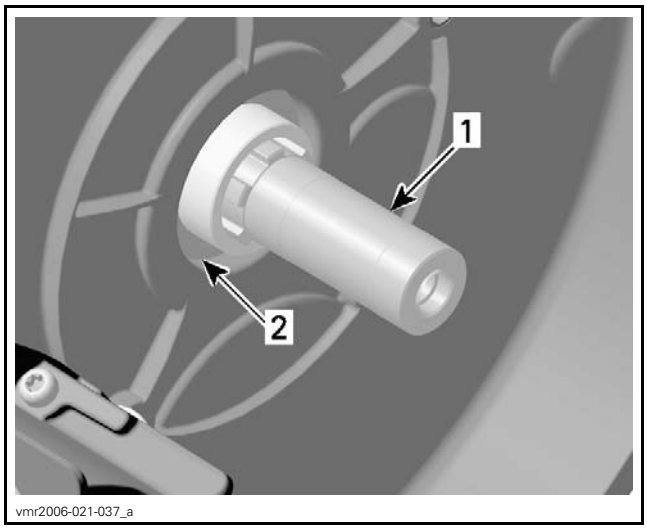
Clean driven pulley using the recommended product.

RECOMMENDED PRODUCT
PULLEY FLANGE CLEANER (P/N 413 711 809)

Clean the CVT air guide area from contamination.

Using a paper towel with PULLEY FLANGE CLEANER (P/N 413 711 809), clean countershaft end and shaft bore.

NOTICE **To avoid damage, make sure cleaner does not contact the countershaft oil seal.**



1. Countershaft support
2. Countershaft oil seal

Inspecting the Driven Pulley

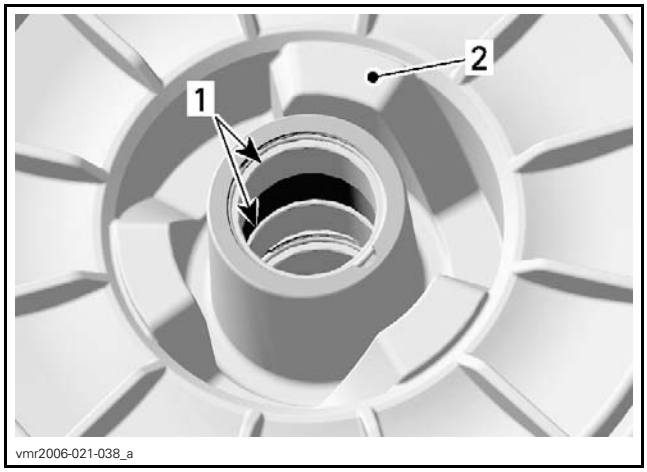
Sliding Sheave

Check sliding sheave for cracks and sliding contact surface for excessive wear. Replace sliding sheave if necessary.

Check bushings for cracks, scratches and for freedom of movement when assembled to sliding sheave.

Measure bushing inner diameter.

NOTE: Bushings cannot be replaced. Replace sliding sheave if bushings are out of specification. Visually inspect coatings.



1. Bushings
2. Backside of sliding sheave of driven pulley

REQUIRED TOOL
Dial bore gauge

MEASURING POINT
At least 5 mm (1/4 in) from bushing edge

BUSHING INNER DIAMETER	
New	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
Service Limit	30.200 mm (1.189 in)

Fixed Sheave

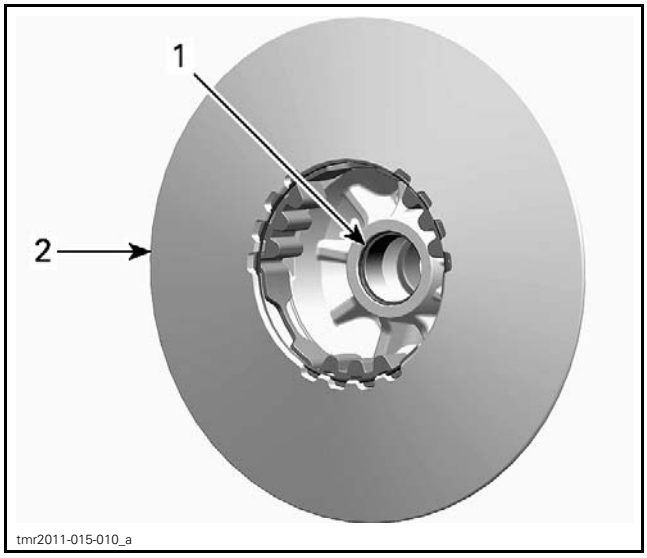
Check fixed sheave for cracks and excessive wear. Replace fixed sheave if necessary.

Check ball bearing for free play and smooth operation. Replace if necessary.

Check shaft for heavy wear or visible damage. Replace if necessary.

If the shaft is removed, measure bushing inner diameter.

NOTE: This bushing cannot be replaced. Replace fixed sheave if bushing is out of specification. Visually inspect coatings.



1. Bushing
2. Fixed sheave of driven pulley

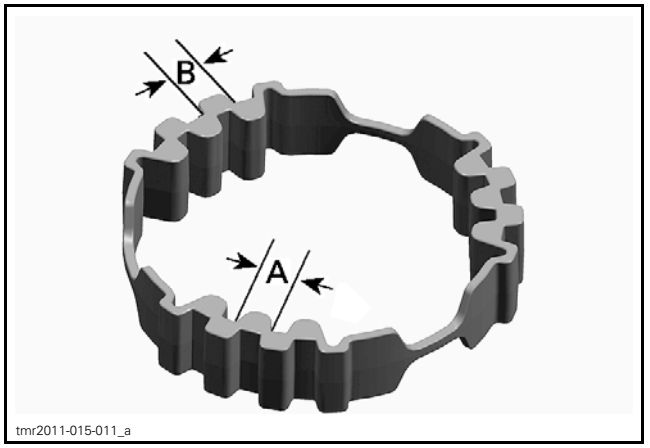
REQUIRED TOOL
Dial bore gauge

MEASURING POINT
At least 5 mm (1/4 in) from bushing edge

BUSHING INNER DIAMETER	
New	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
Service Limit	30.200 mm (1.189 in)

Check torque gear for visible damage and cracks.

Measure for wear limit using a caliper.

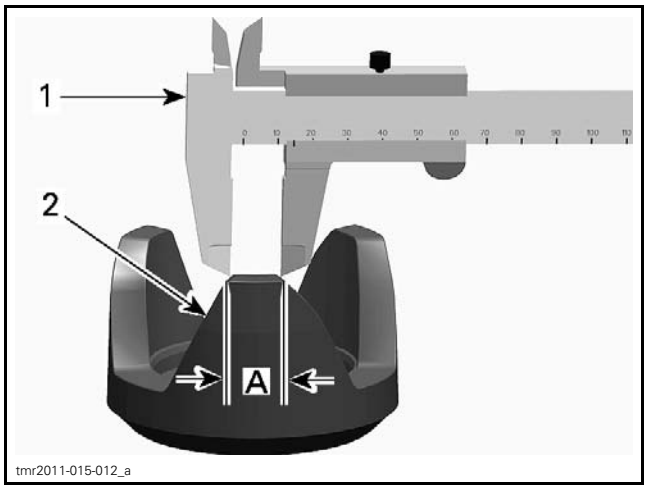


A. Measurement inside
B. Measurement outside

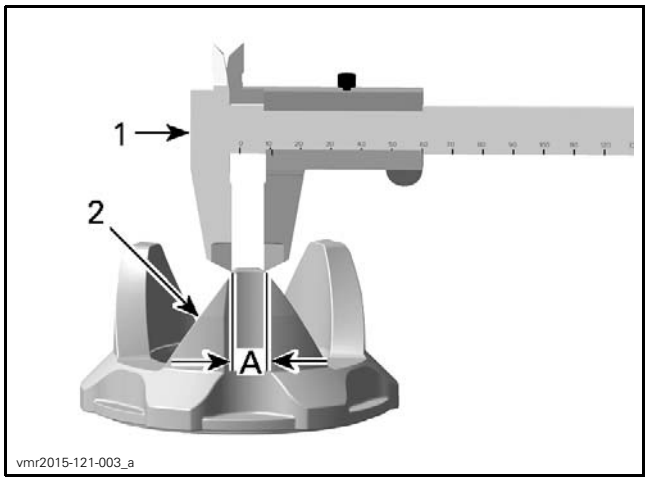
WEAR ON TEETH (BOTH SIDES)	
Service Limit	7.500 mm (.295 in)

Cam

Check cam for visible damage and measure for wear using a caliper.



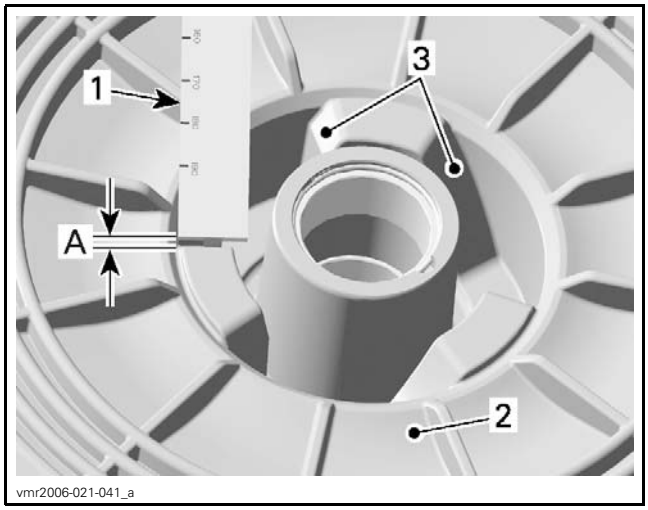
570, 850 AND 1000 ENGINE
1. Caliper
2. Contact surface



650 ENGINE
1. *Caliper*
2. *Contact surface*

A. Width to be measured due to wear on contact surface

WIDTH ON TOP SURFACE		
570 850	Service Limit	16.0 mm (.63 in)
650		4.5 mm (.177 in)
1000		9.0 mm (.354 in)



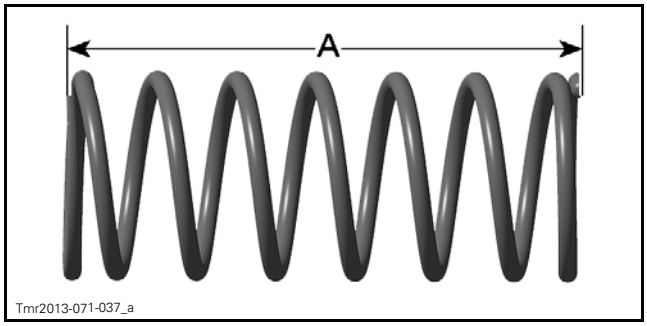
1. *Caliper*
2. *Sliding sheave*
3. *Contact surface*

A. Wear to be measured

WEAR ON CONTACT SURFACE	
SERVICE LIMIT	1.00 mm (.039 in)

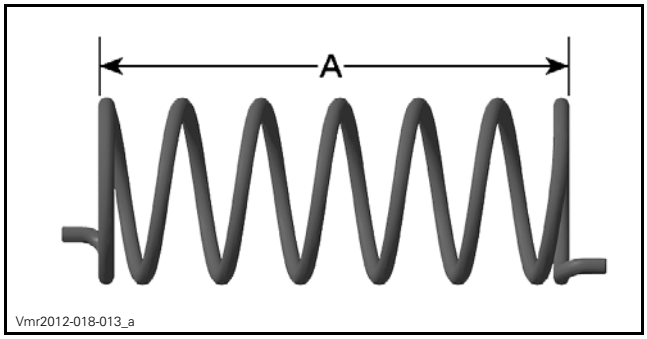
Spring

570 and 650 Engines



CVT DRIVEN SPRING
A. Spring free length

850 and 1000 Engines



CVT DRIVEN SPRING (850 AND 1000 ENGINES)
A. Spring free length

All Engines

Measure spring free length and squareness. If spring is out of specification, replace by a new.

SPRING FREE LENGTH		
ALL	Service limit	125 mm (4.921 in)

CLUTCH SPRING SQUARENESS		
ALL	Service limit	3.8 mm (.15 in)

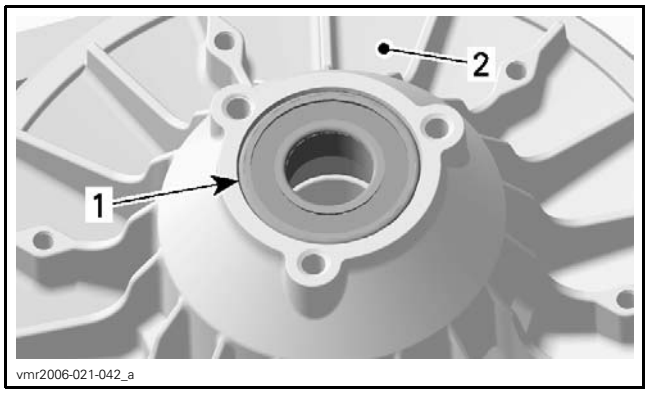
Assembling the Driven Pulley

For installation, reverse the removal procedure. Pay attention to following details.

Heat ball bearing area up to 100°C (212°F) before ball bearing installation.

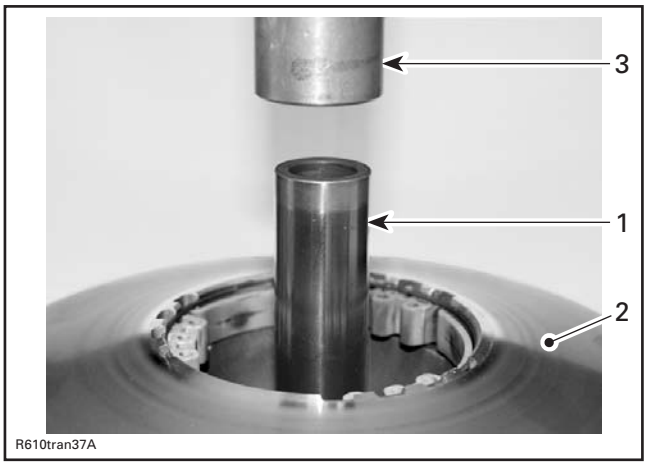
NOTE: Place new ball bearing in a freezer for 10 minutes before installation.

Install ball bearing with the writing on top and press it in using only the outer race.



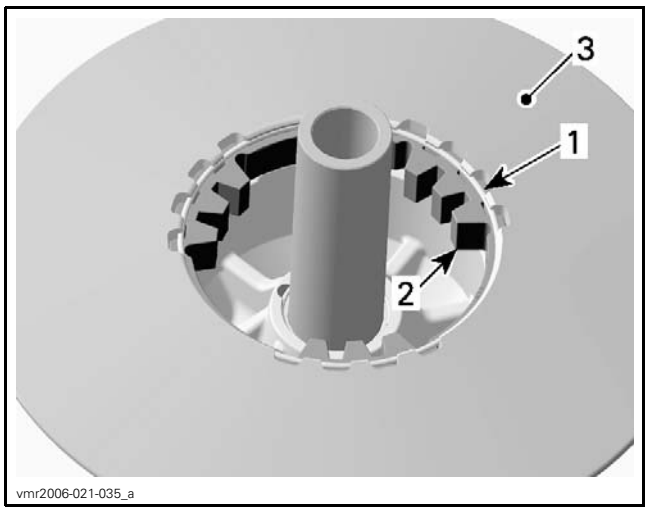
1. *Ball bearing*
2. *Fixed sheave of driven pulley*

NOTICE Do not use a hammer, bearing must be pressed in only.



1. *Shaft*
2. *Fixed sheave*
3. *Press machine*

Install torque gear then secure it with the retaining ring.



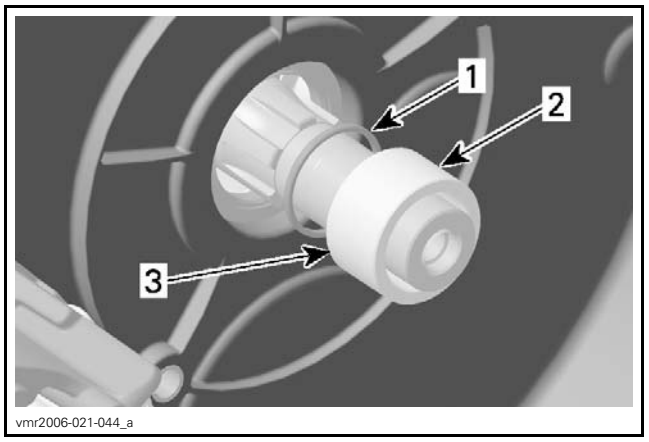
1. *Retaining ring*
2. *Torque gear*
3. *Fixed sheave of driven pulley*

Installing the Driven Pulley

For installation, reverse the removal procedure. Pay attention to the following details.

Place O-ring on countershaft splines and move it and the distance sleeve into position.

NOTICE Chamfer on inside diameter of the distance sleeve must face to gearbox side.



1. *O-ring*
2. *Distance sleeve*
3. *Chamfered area of distance sleeve*

NOTICE Threads of gearbox countershaft and driven pulley screw must be free of oil and grease. Lubricants in threads will create too high preload to tightened driven pulley screw.

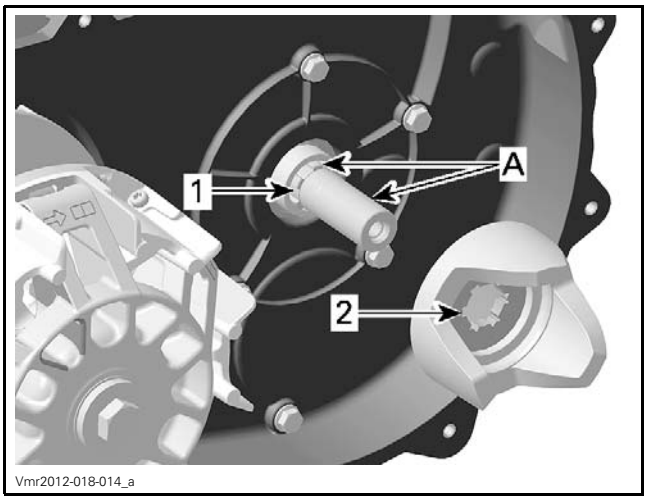
Clean threads using PULLEY FLANGE CLEANER (P/N 413 711 809).

570 and 650 Engines

Install cam on countershaft.

NOTICE Cam splines must engage on countershaft splines.

REQUIRED PRODUCT	
Countershaft splines and countershaft end	LOCTITE 767 (ANTISEIZE LUBRICANT) (P/N 293 800 070)



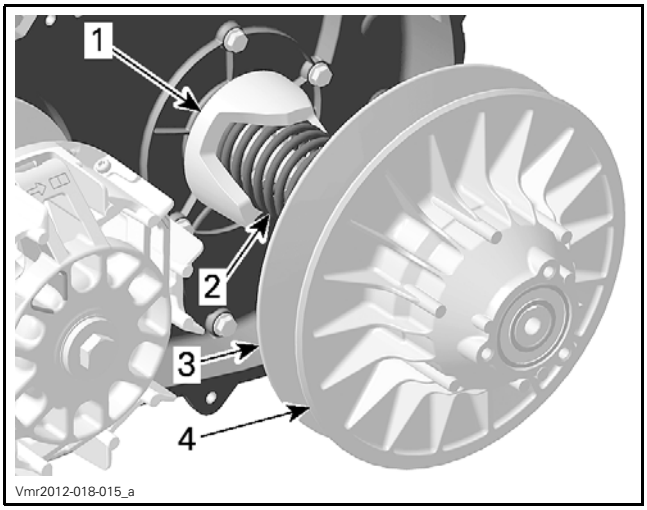
Vmr2012-018-014_a

TYPICAL
1. *Countershaft splines*
2. *Cam splines*

A. Loctite 767 here

Insert sliding sheave in fixed sheave.

Place spring behind sliding sheave then align driven pulley with cam.



Vmr2012-018-015_a

TYPICAL
1. *Cam*
2. *Spring*
3. *Sliding sheave*
4. *Fixed sheave*

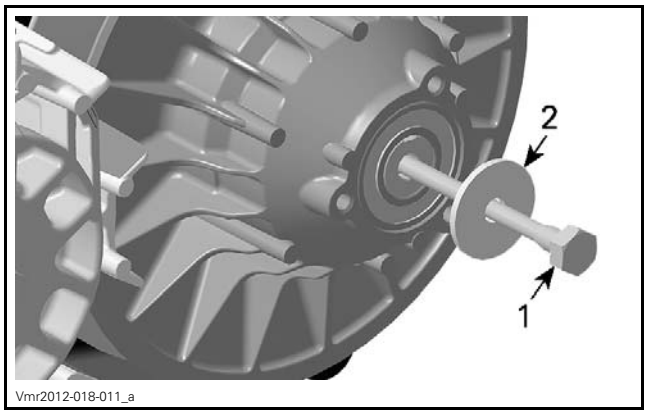
With your hand, push the driven pulley onto the shaft to compress the spring.

NOTICE **A cam not correctly engaged will cause damage to the driven pulley and cam.**

As you hold the pulley compressed, install a NEW driven pulley screw and thrust washer.

NOTICE **This assembly uses a stretch screw. Always install a NEW screw.**

NOTE: Tighten the screw with your hand sufficiently for the cam to remain engaged.

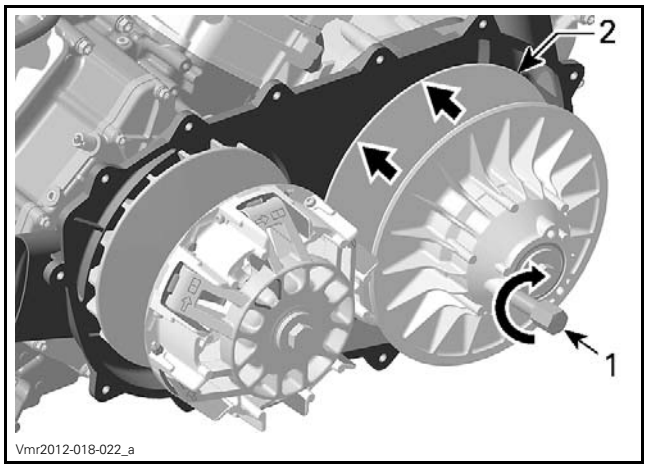


Vmr2012-018-011_a

1. *Driven pulley screw*
2. *Thrust washer*

Install drive belt. Refer to *DRIVE BELT* in this subsection.

REQUIRED TOOL	
PULLER/LOCKING TOOL (P/N 529 036 098)	



Vmr2012-018-022_a

1. *Puller/locking tool*
2. *Sliding sheave*

NOTE: If driven pulley sheaves cannot be opened when the service tool is screwed in, the cam is not correctly engaged in the sliding sheave.

Tighten driven pulley screw to specification.

REQUIRED TOOL	
CLUTCH HOLDER (P/N 529 036 238)	

TIGHTENING TORQUE		
Driven pulley screw	Step A	20 N•m ± 1 N•m (15 lbf•ft ± 1 lbf•ft)
	Step B	180° ± 5°

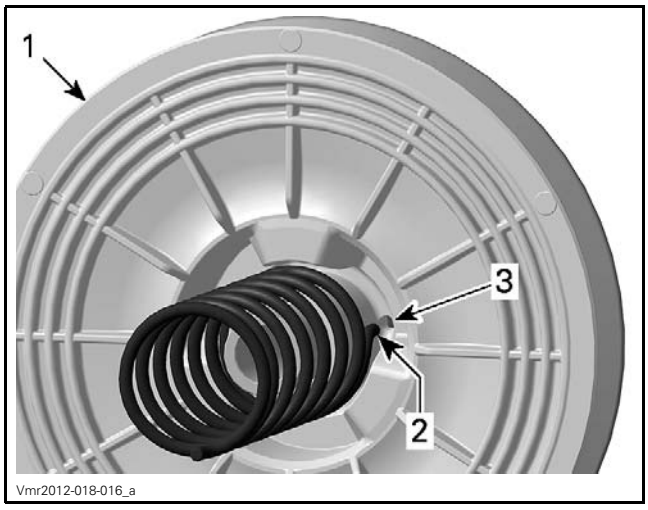
Check driven pulley end play.

SPECIFICATION	
Driven pulley end play	0 mm (0 in)

850 and 1000 Engines

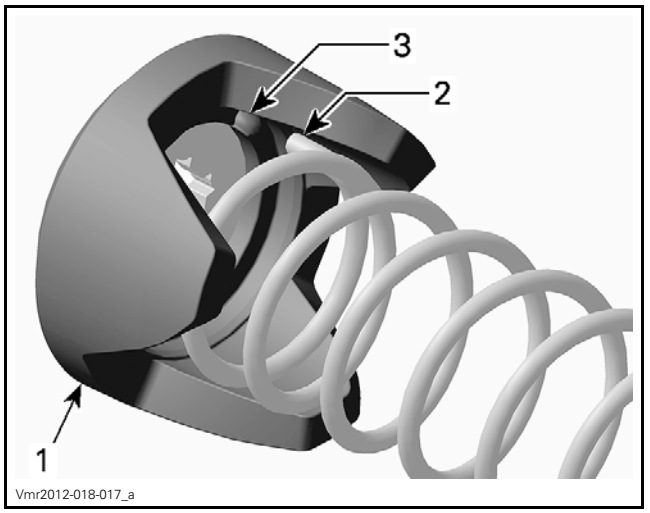
Insert the sliding sheave in the fixed sheave.

Place spring behind sliding sheave and engage spring end in the sliding sheave spring bore.



850 AND 1000 ENGINES
1. *Sliding sheave*
2. *Spring end*
3. *Spring bore*

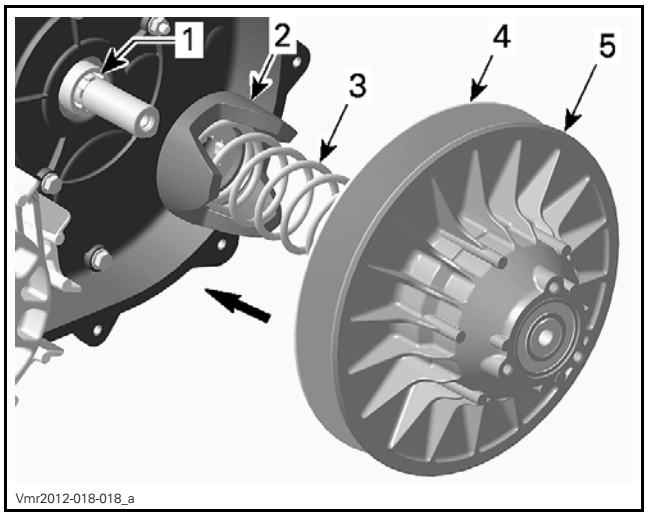
Place cam on the opposite end of the spring and engage the other spring end in the cam spring bore.



850 AND 1000 ENGINES
1. *Cam*
2. *Spring end*
3. *Spring bore*

Install pre-assembled cam with spring and driven pulley on countershaft end.

NOTICE Cam must engage on countershaft splines.



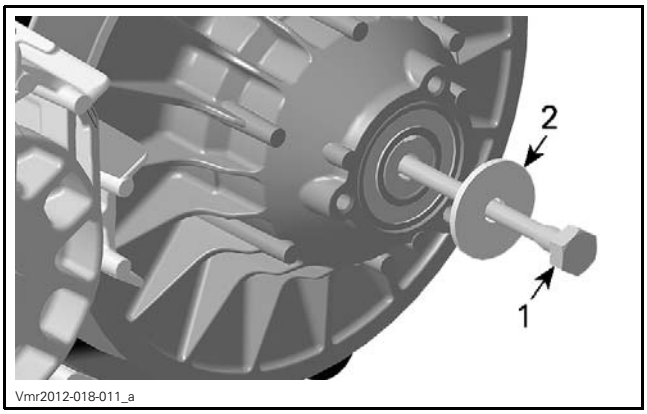
850 AND 1000 ENGINES
1. *Countershaft splines*
2. *Cam*
3. *Spring*
4. *Sliding sheave*
5. *Fixed sheave*

With your hand, push the driven pulley onto the shaft to compress the spring.

As you hold the pulley in, install a NEW driven pulley screw and thrust washer.

NOTICE This assembly uses a stretch screw. Always install a NEW screw.

NOTE: Tighten the screw with your hand approximately 3 to 4 turns.

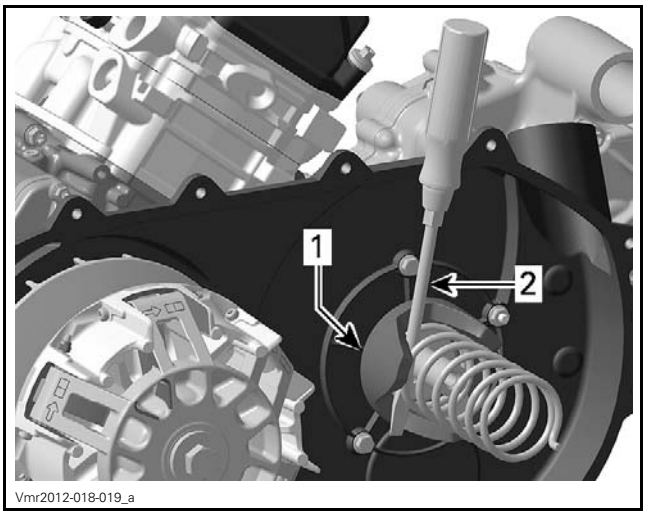


Vmr2012-018-011_a

1. Driven pulley screw
2. Thrust washer

Insert a screwdriver of approximately 5 mm (.197 in) diameter in the cam.

NOTE: For clarity of understanding, some parts not shown in the following illustration.

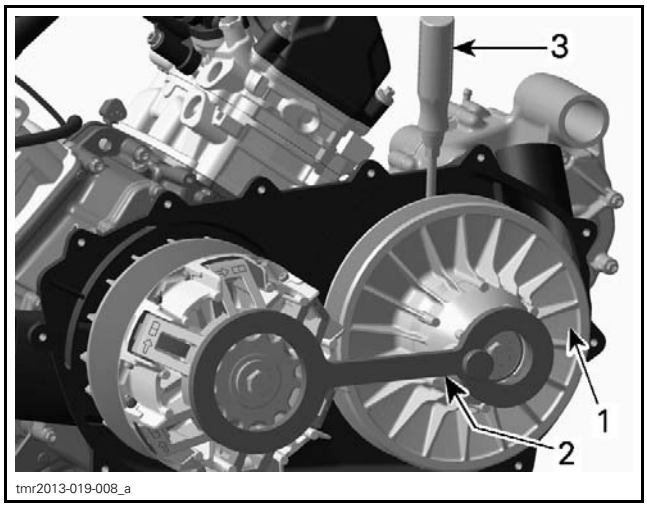


Vmr2012-018-019_a

850 AND 1000 ENGINES
1. Cam
2. Screwdriver, diameter 5 mm (.197 in)

Hold the driven pulley in a fix position.

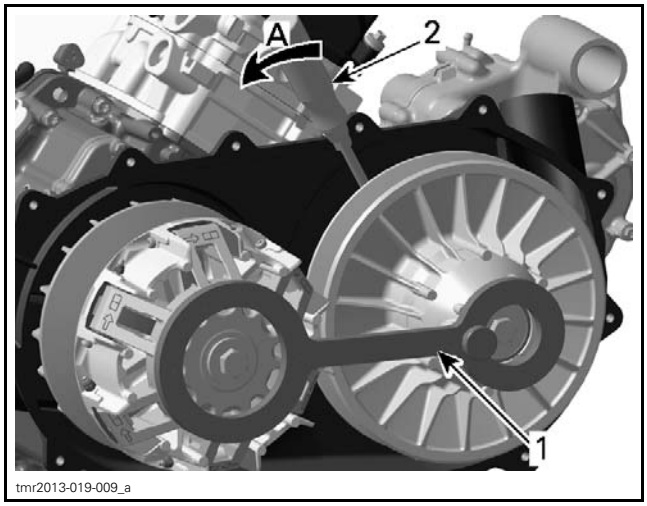
REQUIRED TOOL	
CLUTCH HOLDER (P/N 529 036 238)	



tmr2013-019-008_a

850 AND 1000 ENGINES
1. Fixed sheave
2. Clutch holder
3. Screwdriver

Turn the screwdriver approximately 20° counterclockwise until cam engages in the driven pulley sliding sheave and hold it in this position (spring preload).



tmr2013-019-009_a

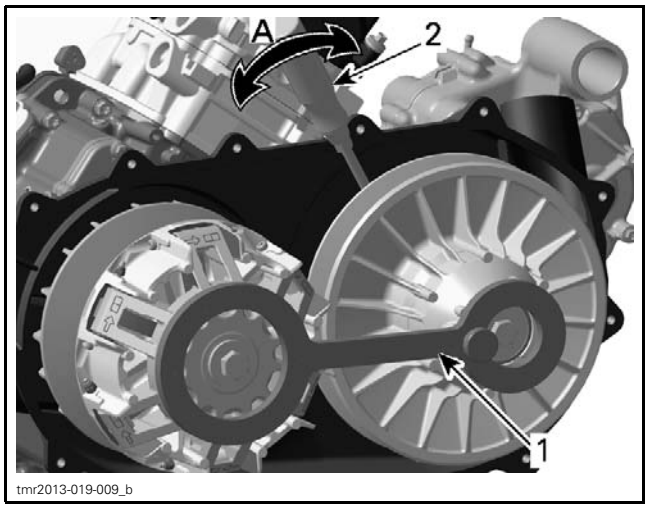
850 AND 1000 ENGINES
1. Clutch holder
2. Screwdriver
A. Turn counterclockwise

Using a socket and extension, hand tighten the driven pulley screw.

NOTE: **Do not** apply specified torque at this time.

Move the screwdriver back and forth to check cam for free movement.

NOTICE **A cam not correctly engaged will cause damage to the driven pulley and cam.**

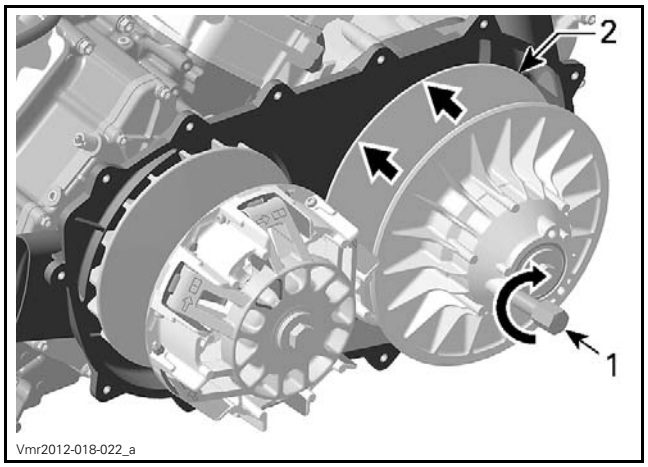


850 AND 1000 ENGINES
1. *Clutch holder*
2. *Screwdriver*

A. Cam freedom of movement

Install drive belt. Refer to *DRIVE BELT* in this subsection.

REQUIRED TOOL	
PULLER/LOCKING TOOL (P/N 529 036 098)	



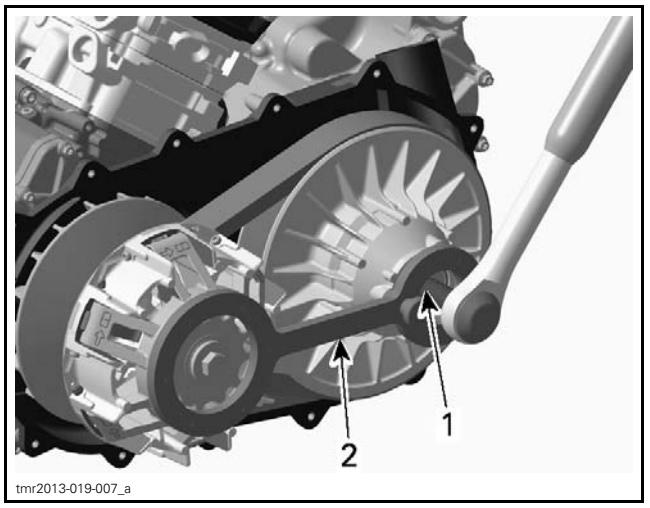
1. *Puller/locking tool*
2. *Sliding sheave*

NOTE: If driven pulley sheaves can to be opened when the service tool is screwed in, the cam is not correctly engaged in the sliding sheave.

Tighten driven pulley screw as specified.

REQUIRED TOOL	
CLUTCH HOLDER (P/N 529 036 238)	

TIGHTENING SEQUENCE (DRIVEN PULLEY SCREW)	
Step 1	20 N•m ± 1 N•m (15 lbf•ft ± 1 lbf•ft)
Step 2	180° ± 5°



1. *Driven pulley screw*
2. *Clutch holder*

Check driven pulley end play.

SPECIFICATION	
Driven pulley end play	0 mm (0 in)

CVT AIR GUIDE

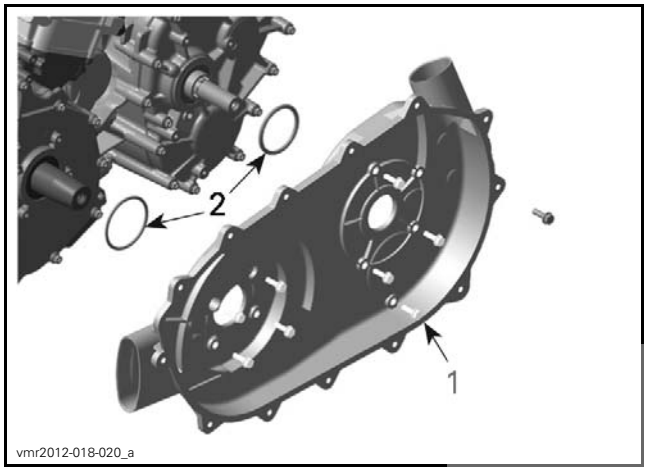
Removing the CVT Air Guide

1. Remove the *DRIVE PULLEY* and the *DRIVEN PULLEY*.
2. Unscrew the clamps retaining the CVT air hoses.
3. Remove CVT air guide.
4. Remove and discard O-rings.

Inspecting the CVT Air Guide

Clean CVT air guide from contamination.

570/650/850 Engines (Except PRO Package)



1. *CVT air guide*
2. *O-rings*

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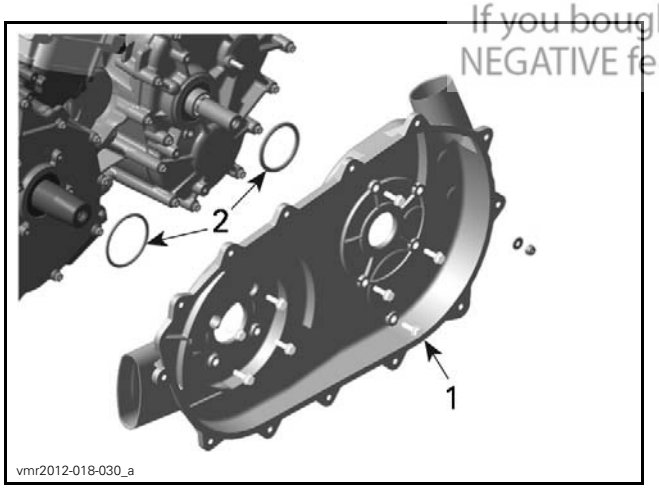
Outlander PRO 570/650/1000 Models



1. *CVT air guide*
2. *O-rings*

Installing the CVT Air Guide

For installation reverse the removal procedure.

Always install **NEW** O-rings before installing the CVT air guide.

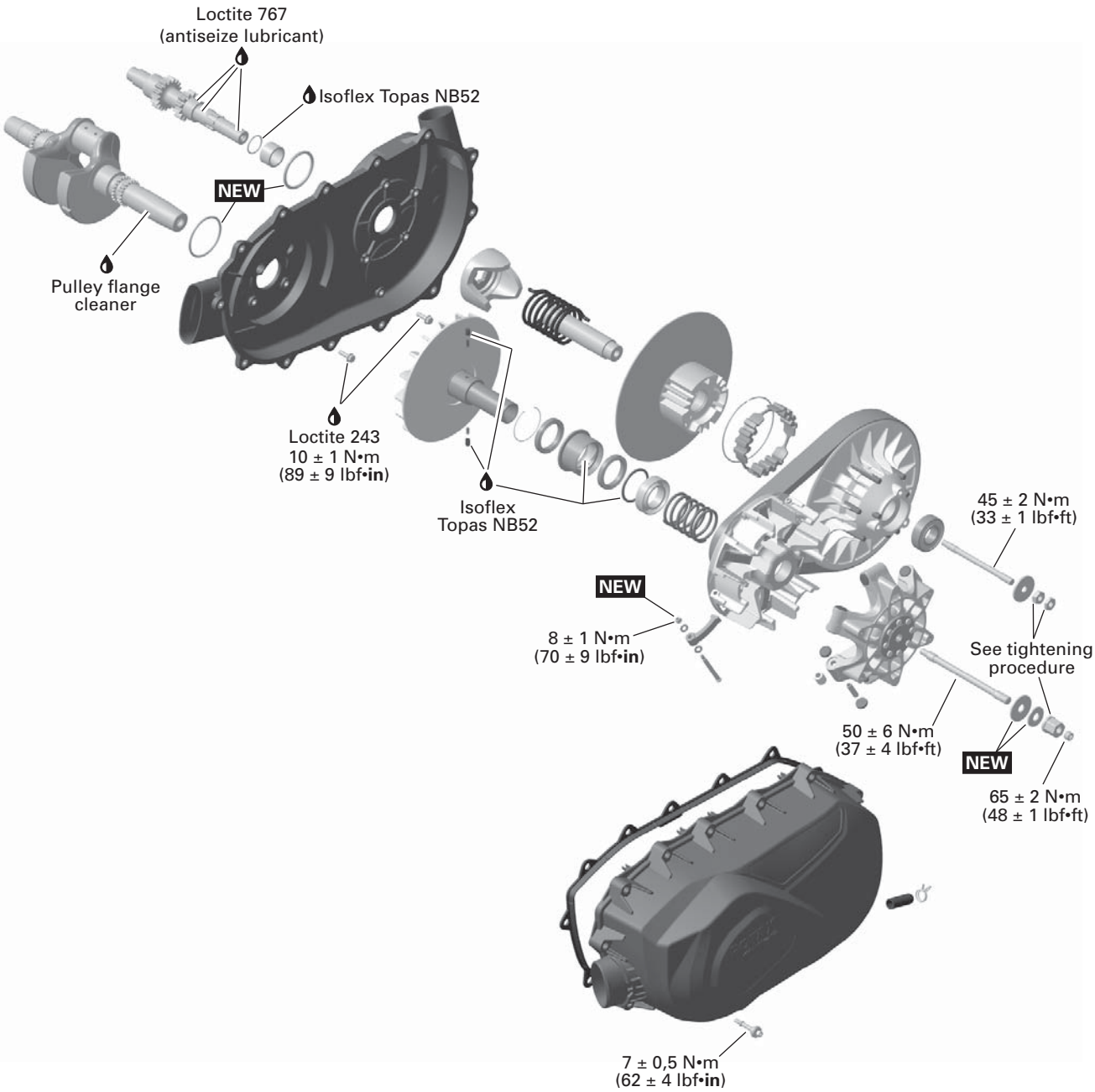
CONTINUOUSLY VARIABLE TRANSMISSION (CVT) (1000R)

SERVICE TOOLS

Description	Part Number	Page
CLUTCH HOLDER	529 036 238	6, 17, 26
CLUTCH PULLER	529 035 746	7
COUNTERSHAFT RETAINER TOOL	529 036 312	18, 24
DRIVEN PULLEY STUD TOOL	529 036 360	18, 24
PULLER/LOCKING TOOL	529 036 098	5, 26

SERVICE PRODUCTS

Description	Part Number	Page
ISOFLEX GREASE TOPAS NB 52	293 550 021	14
LOCTITE 272	420 899 526	17
LOCTITE 767 (ANTISEIZE LUBRICANT)	293 800 070	24
XPS BRAKES AND PARTS CLEANER (USA)	219 701 705	9, 20
XPS BRAKES AND PARTS CLEANER	219 701 776	9, 20



NEW = Component must be replaced when removed.

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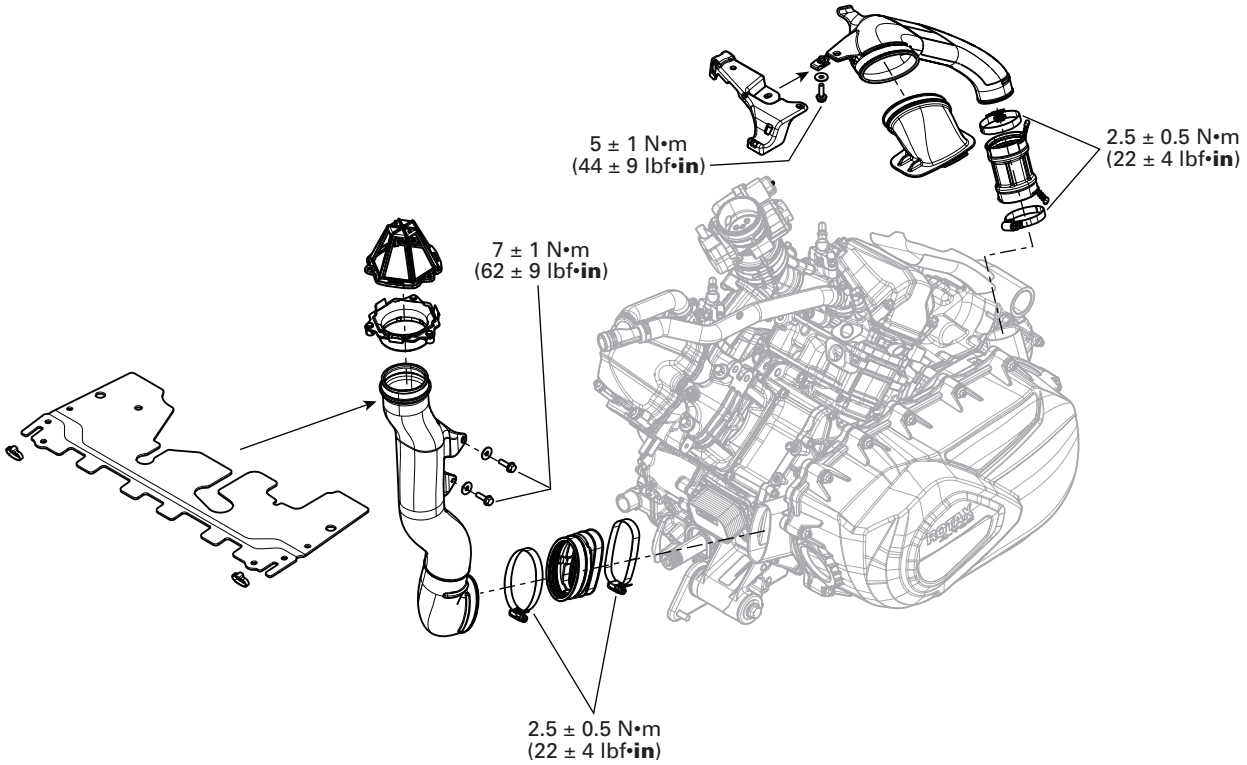

NEW = Component must be replaced when removed.

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GENERAL

NOTE: For a better understanding, the following illustrations are taken with engine out of vehicle. To perform the following instructions, it is not necessary to remove engine.

This CVT is lubrication free. Never lubricate any components except drive pulley one-way clutch.

⚠ WARNING

Never touch CVT while engine is running. Never drive vehicle when CVT cover is removed.

⚠ WARNING

Any drive pulley repairs must be performed by an authorized Can-Am dealer. Subcomponent installation and assembly tolerances require strict adherence to procedures detailed.

⚠ WARNING

The clutch assembly is a precisely balanced unit. Never replace parts with used parts from another clutch assembly.

PROCEDURES

CVT COVER

CVT Cover Access

Refer to *BODY* and remove:

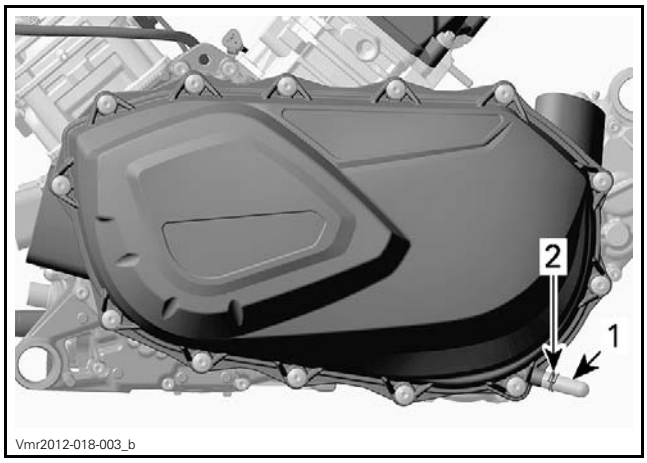
– LH side and extension panels

– LH footboard panel.

Draining the CVT Cover

If water is present in CVT cover, it can be drained as follows:

Remove drain reservoir from CVT cover.



1. Drain reservoir
2. Spring clip

Let water drain from CVT cover.

Reinstall drain reservoir.

NOTICE **If any debris entered the CVT cover, CVT must be cleaned and inspected.**

Removing the CVT Cover

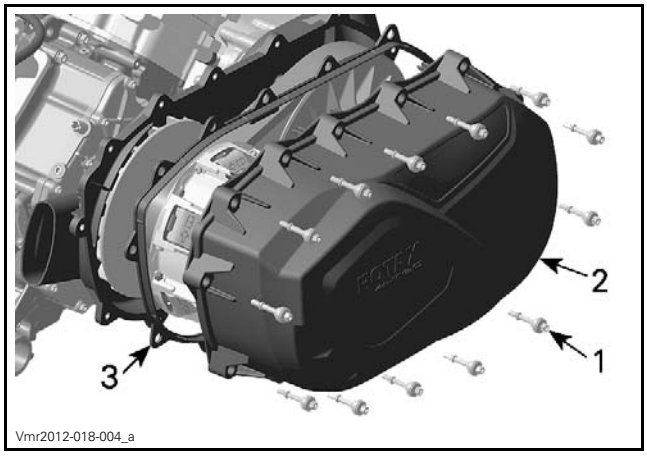
Loosen CVT inlet and outlet hose clamps.

Remove CVT cover screws.

NOTE: Remove the center top screw last to support the cover during removal.

NOTICE **Do not use and impact tool to remove CVT cover screws.**

Remove the CVT cover and its gasket.

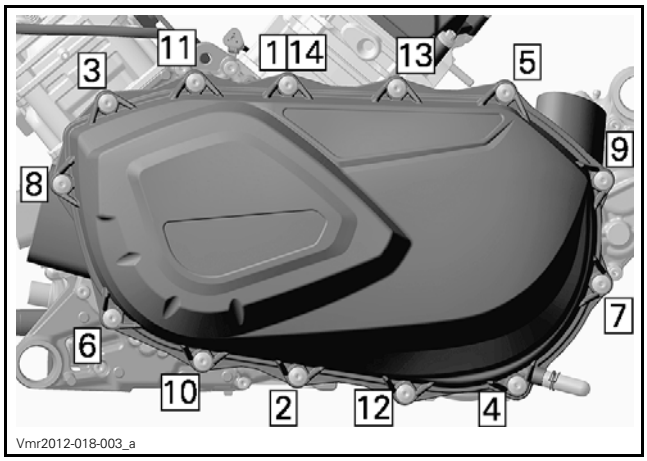


1. CVT cover screws
2. CVT cover
3. Gasket

Installing the CVT Cover

Install the center top screw of first.

Tighten the CVT cover screws as per following sequence.



CVT COVER TIGHTENING SEQUENCE

TIGHTENING TORQUE	
CVT cover screws	7 N•m ± 1 N•m (62 lbf•**in** ± 9 lbf•**in**)

Reinstall CVT inlet and outlet hoses.

TIGHTENING TORQUE	
CVT hose clamps	2.5 N•m ± 0.5 N•m (22 lbf•**in** ± 4 lbf•**in**)

DRIVE BELT

Removing the Drive Belt

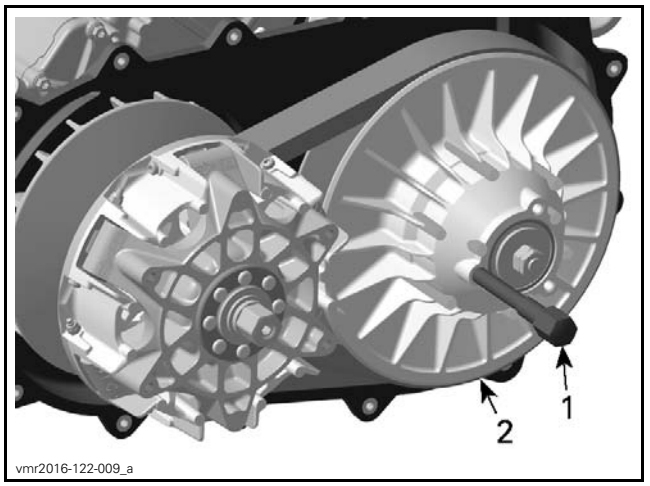
NOTICE In case of a drive belt failure, the CVT, cover and air outlet must be cleaned.

Remove *CVT COVER*.

Open driven pulley.

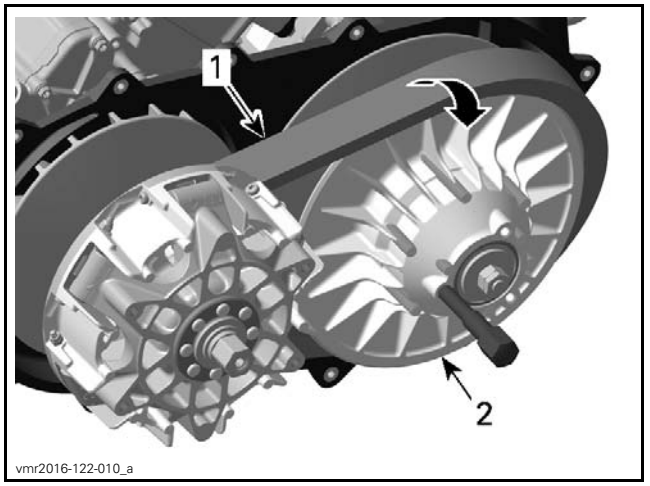
REQUIRED TOOL	
PULLER/LOCKING TOOL (P/N 529 036 098)	

Screw tool in the threaded hole of driven pulley and tighten to open the pulley.



1. *Puller/locking tool*
2. *Fixed sheave of driven pulley*

To remove belt, slip the belt over the top edge of fixed sheave, as shown.



1. *Belt*
2. *Fixed sheave of driven pulley*

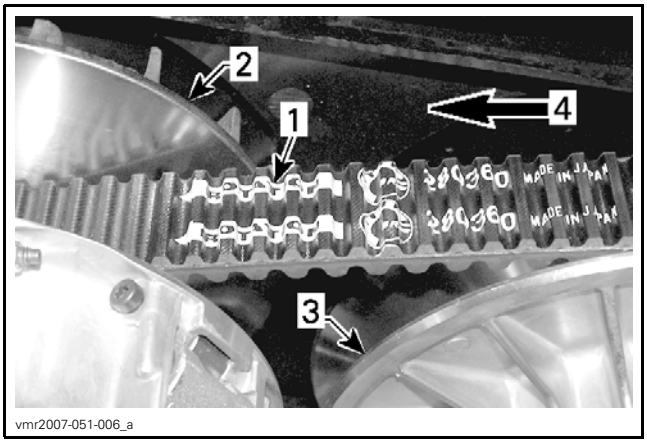
Inspecting the Drive Belt

For drive belt inspection refer to *DRIVE BELT INSPECTION* in the *PERIODIC MAINTENANCE PROCEDURES* subsection.

Installing the Drive Belt

For installation, reverse the removal procedure. Pay attention to following details.

The maximum drive belt life span is obtained when the drive belt has the proper rotation direction. Install it so that the arrow printed on belt is pointing towards front of the vehicle, viewed from top.



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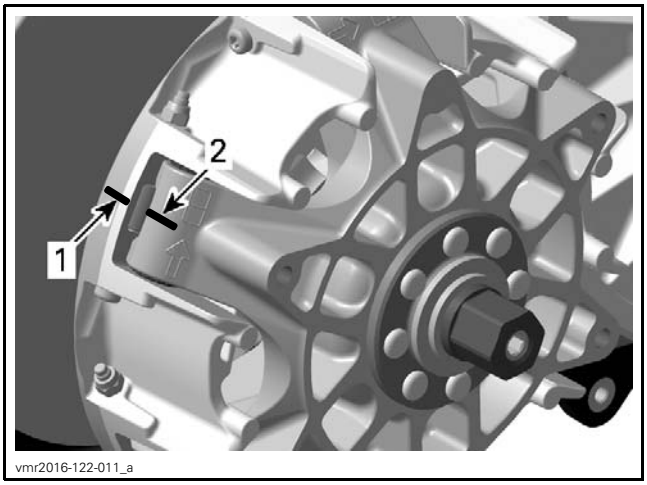
1. *Arrow printed on belt*
2. *Drive pulley (front)*
3. *Driven pulley (rear)*
4. *Rotation direction*

DRIVE PULLEY

Removing the Drive Pulley

Remove *DRIVE BELT*, see procedure in this subsection.

Prior to removing the drive pulley, mark sliding sheave and governor cup to ensure correct indexation at reinstallation.

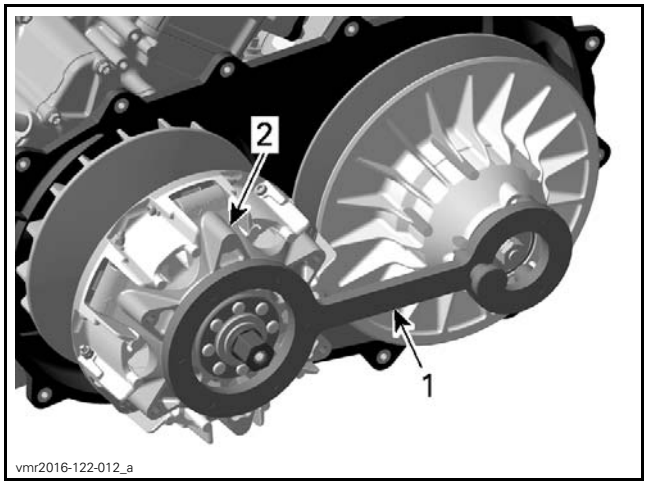


vmr2016-122-011_a

1. *Mark on drive pulley sliding sheave*
2. *Mark on governor cup*

Lock the drive pulley.

REQUIRED TOOL	
CLUTCH HOLDER (P/N 529 036 238)	



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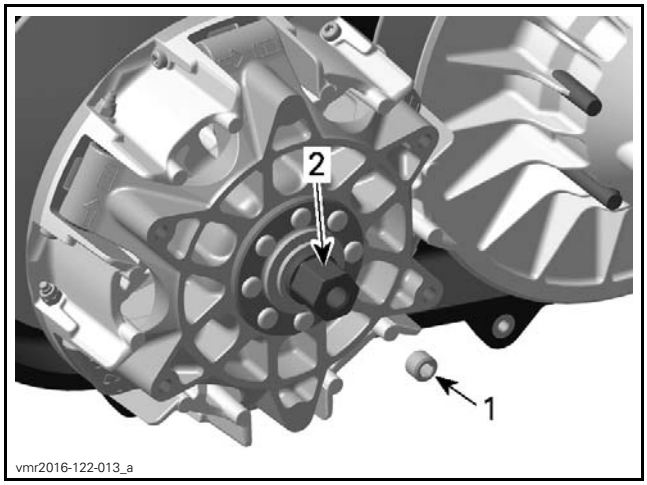
1. *Clutch holder*
2. *Drive pulley sliding sheave*
3. *Governor cup*

Remove set screw.

NOTE: Heat set screw to break the threadlocker bond prior to removal.



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1. *Set screw*
2. *Drive pulley nut*

Loosen the drive pulley nut.

NOTICE **Never use any type of impact wrench for drive pulley removal.**

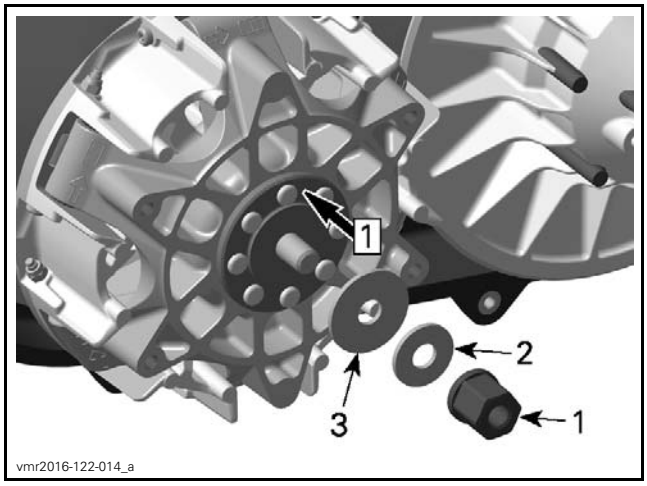
NOTE: Do not unscrew the drive pulley nut completely. If governor cup is stuck, hit it using a soft hammer.

Remove service tool.

Apply axial pressure with your hand on the sliding sheave and governor cup.

Remove:
- Drive pulley nut
- Small thrust washer (discard it)
- Large thrust washer (discard it)

⚠ CAUTION Sliding sheave of drive pulley is spring loaded.

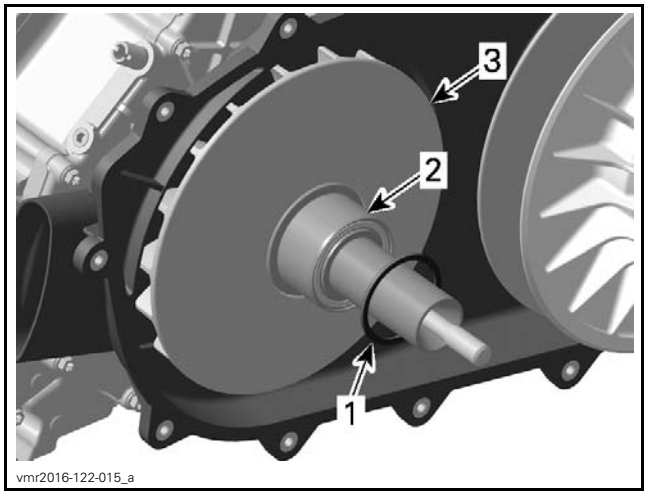


Step 1: Push governor cup

1. *Drive pulley nut*
2. *Small thrust washer (discard it)*
3. *Large thrust washer (discard it)*

Slowly release and remove sliding sheave.

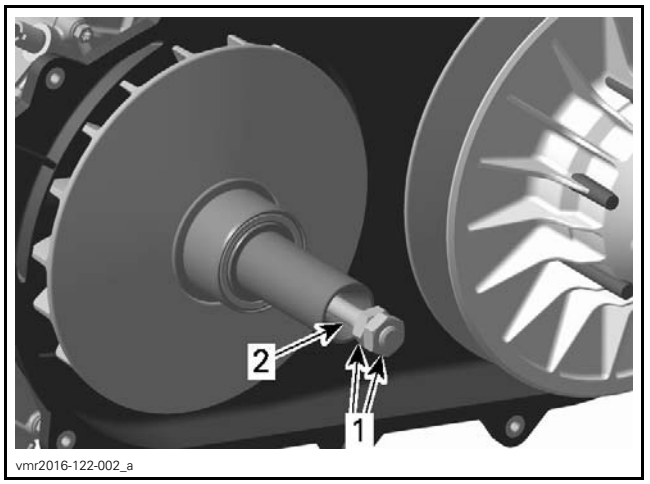
Remove friction washer.



1. *Friction washer*
2. *One way clutch*
3. *Drive pulley fixed sheave*

Counter two M12 x 1.75 nuts for removing the stud.

NOTICE Do not use original installed nuts.



1. *Counter nuts*
2. *Stud*

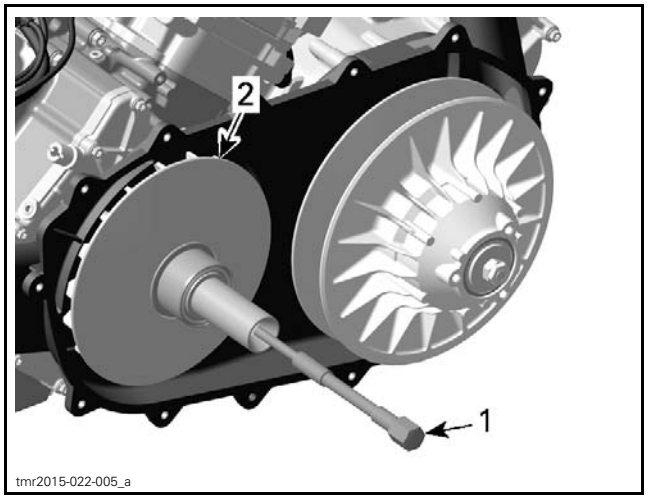
Lock crankshaft, refer to *CRANKSHAFT LOCKING PROCEDURE* in the *BOTTOM END* subsection.

Remove stud from PTO.

Remove fixed pulley.

NOTICE Use only recommended tool.

REQUIRED TOOL	
CLUTCH PULLER (P/N 529 035 746)	

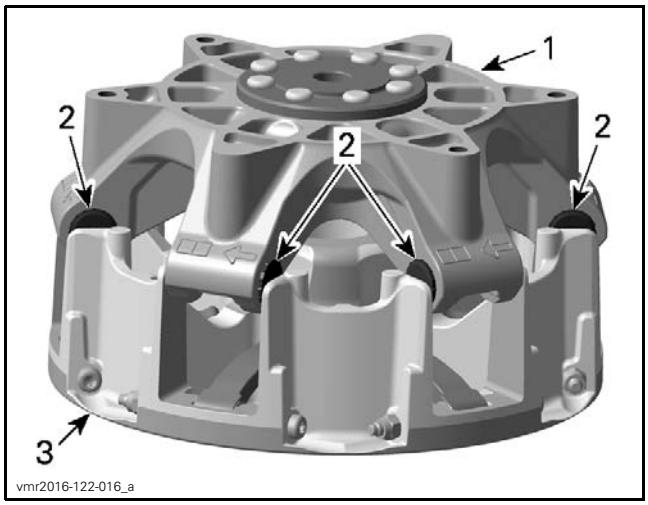


1. *Drive pulley puller*
2. *Fixed sheave*

Disassembling the Drive Pulley

Governor Cup

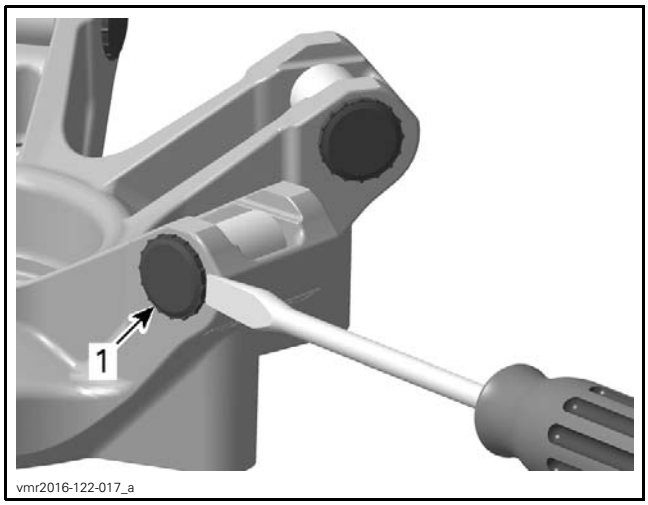
Carefully lift governor cup until slider shoes come at their highest position into guides.



1. *Governor cup*
2. *Slider shoes*
3. *Sliding sheave*

NOTE: The following procedure is not necessary except if slider shoe and/or roller must be removed. Refer to *INSPECTION* before proceeding.

Remove slider shoes.



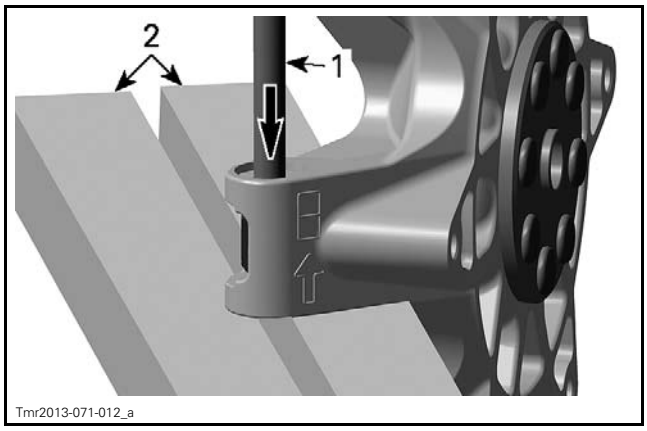
1. *Slider shoe*

Put governor cup on a vice to push out bearing sleeve of roller in the foreseen direction (against arrow).

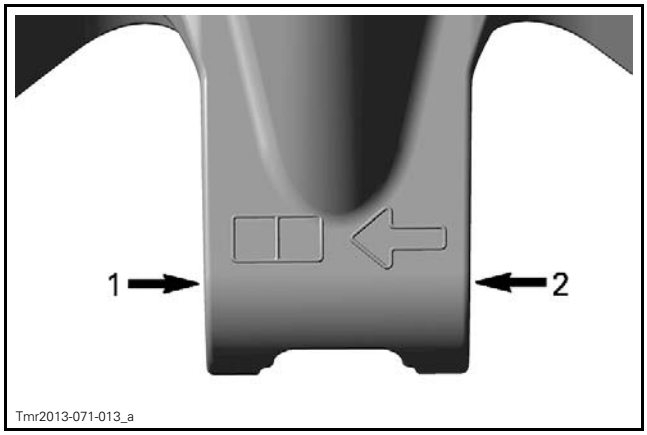
NOTICE Do not clamp the governor cup in the vice to push out bearing sleeve. Governor cup will be damaged.

NOTE: Use protection plates to avoid marks and/or damages to the governor cup.

NOTICE Always replace all rollers at the same time. Partly worn rollers may cause damage to the CVT system.

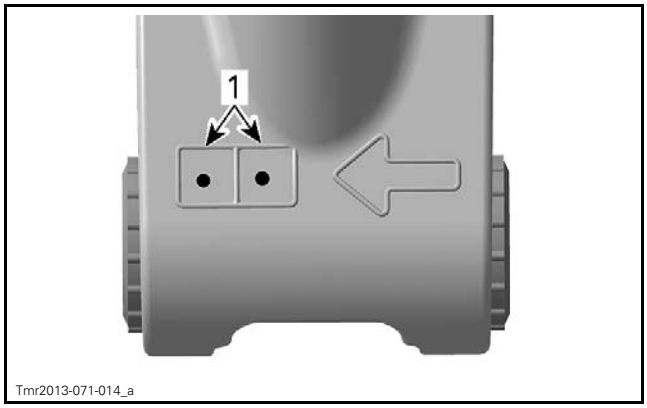


1. *Punch*
2. *Vice*



1. *Removal direction*
2. *Assembly direction*

NOTE: Whenever removing a governor cup with already two marked boxes replace it by a new one.



1. *Marked boxes*

Sliding Sheave

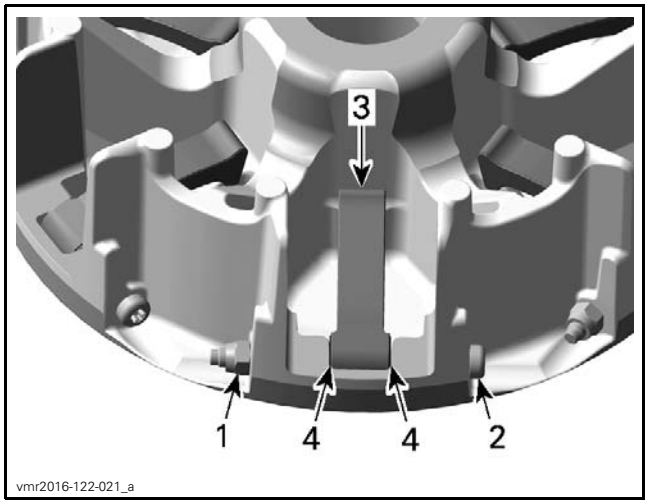
This drive pulley is equipped with 6 levers.

NOTE: The following procedure is not necessary except if centrifugal lever must be removed. Refer to *INSPECTION* before proceeding.

To remove centrifugal levers remove:

– Lock nut

– Centrifugal lever pivot bolt
– Centrifugal lever
– Thrust washers.



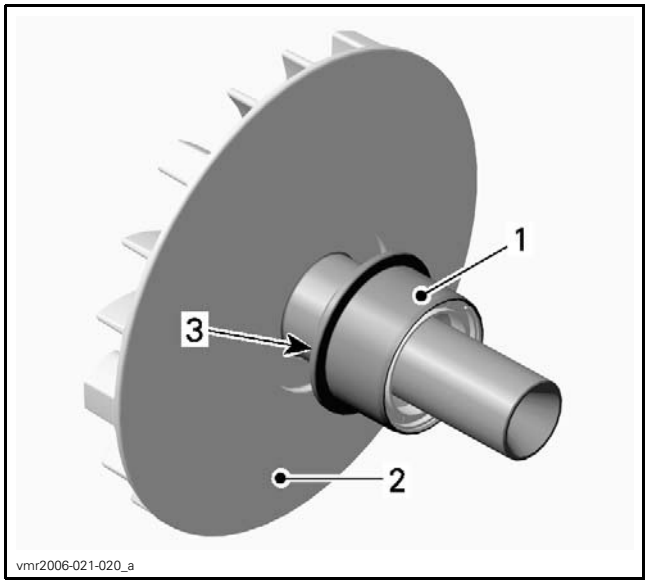
1. *Lock nut*
2. *Centrifugal lever pivot bolt*
3. *Centrifugal lever*
4. *Thrust washers*

Fixed Sheave

⚠ WARNING

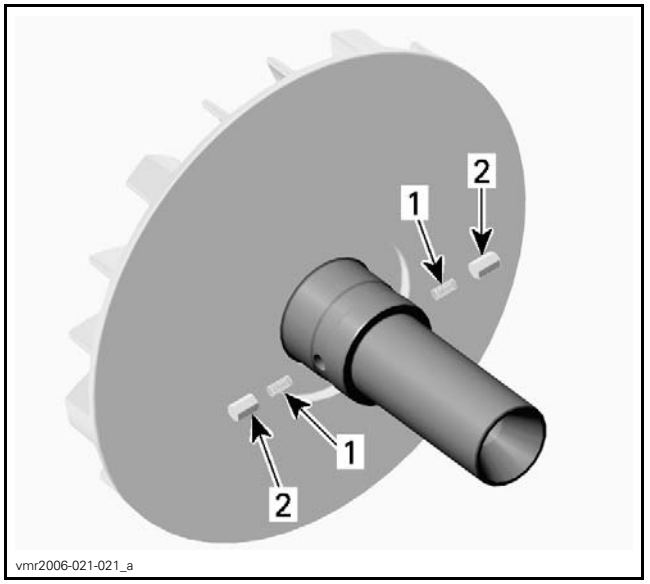
Always wear safety glasses to remove spring sleeves.

Pull and rotate one-way clutch slowly until the sheave of spring sleeves are visible.



1. *One-way clutch*
2. *Fixed sheave*
3. *Spring sleeve area*

Hold both spring sleeves with fingers and release when one-way clutch is disengaged.



1. *Springs*
2. *Spring sleeves*

Cleaning the Drive Pulley

Using a small brush, paper towel and parts cleaner , clean all the mounting surfaces and threads as shown.

REQUIRED PRODUCT
XPS BRAKES AND PARTS CLEANER (P/N 219 701 776) or XPS BRAKES AND PARTS CLEANER (USA) (P/N 219 701 705)

NOTICE **Avoid contact between cleaner and crankshaft seal because damage may occur.**

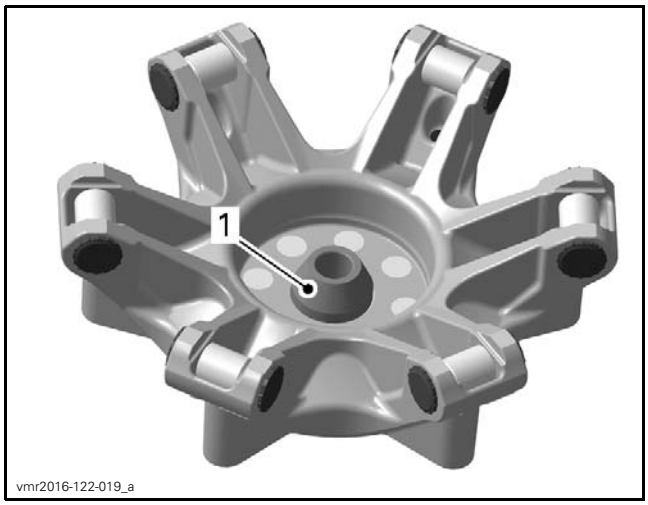
Remove all deposits that have baked on pulley tapered surfaces with medium steel wool and/or sand paper no. 600.

NOTICE **Do not use any other type of abrasive.**

Reclean surfaces after steel wool and/or sand paper use.

Blow compressed air on all cleaned parts and surfaces to remove any residue.

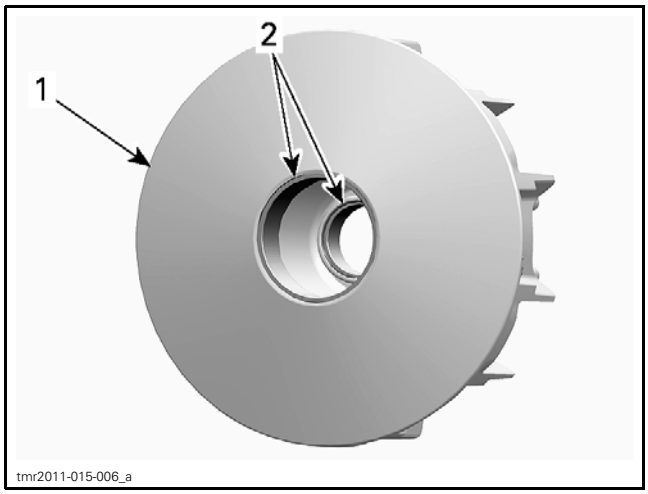
NOTICE **Mounting surfaces and threads must be free of any oil, cleaner or towel residue.**



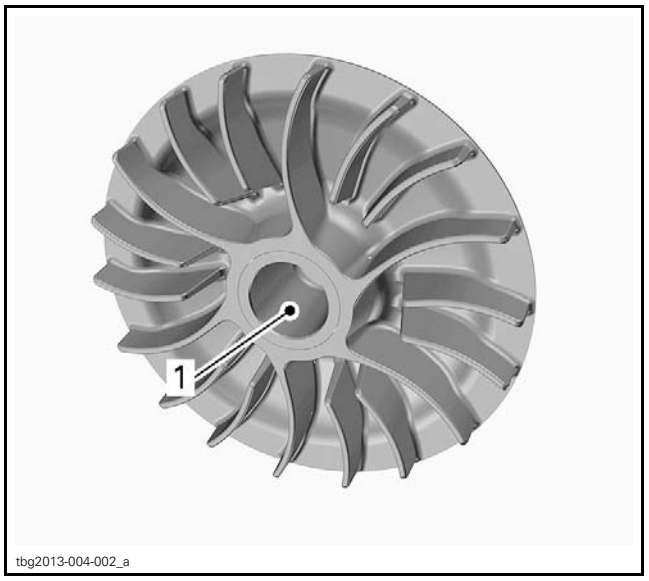
BACK OF GOVERNOR CUP
1. *Tapered contact surface*

Only use petrol base cleaner when cleaning bushings of sliding sheave.

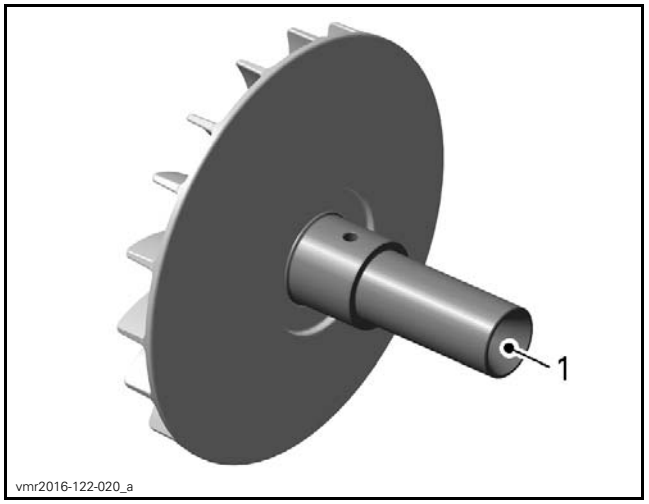
NOTICE Do not use acetone to clean bushing.



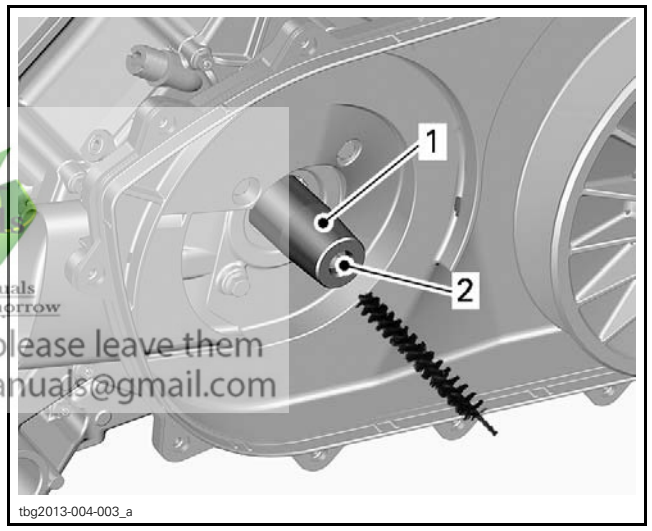
1. *Sliding sheave*
2. *Bushings*



BACK OF FIXED SHEAVE
1. *Tapered end of the Crankshaft side fixed sheave*



1. *Tapered end of fixed sheave shaft*



PTO
1. *Tapered contact surface*
2. *PTO inner threads*

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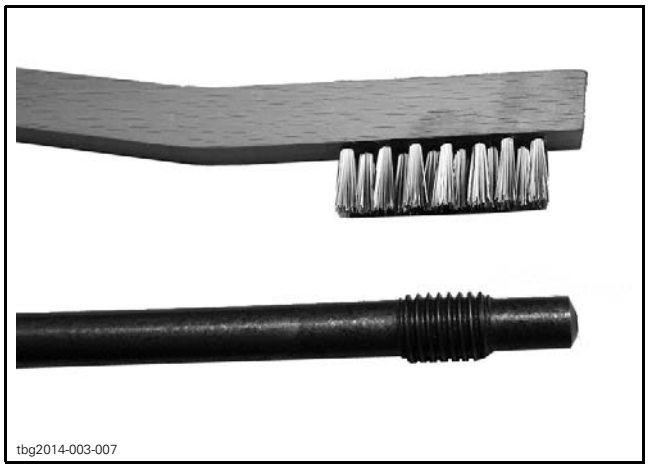
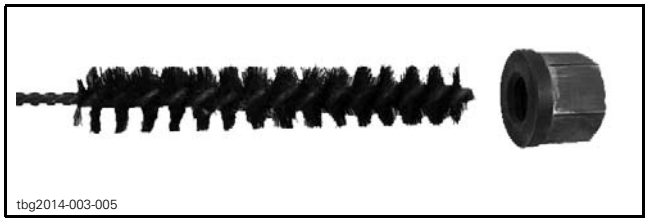


PTO END OF STUD

STUD END RECEIVING NUT



M12 NUT

M12 SET SCREW

Inspecting the Drive Pulley

Bushings

For bushing inspection, refer to *SLIDING SHEAVE* in this subsection.

Governor Cup

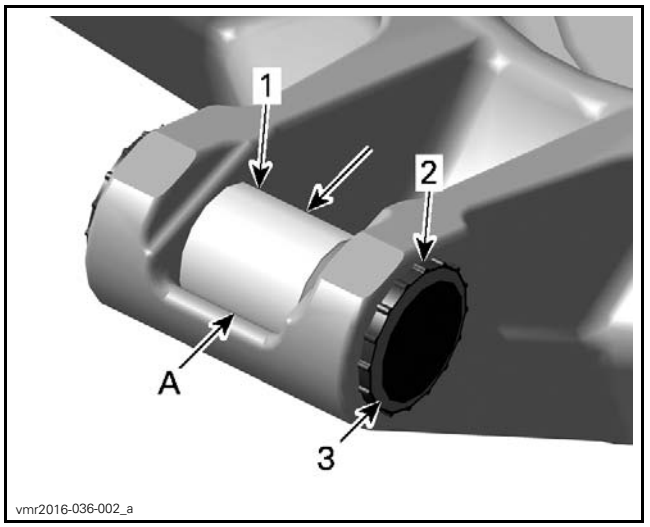
Check governor cup for cracks or other visible damage. Replace if necessary.

Roller and Slider Shoe

NOTICE **Always replace all rollers and slider shoes at the same time.**

Check if rollers move freely.

Check slider shoes for visible wear. If chamfer is not present anymore, replace ALL slider shoes.



1. *Roller*
2. *Slider shoe*
3. *Slider shoe chamfer*

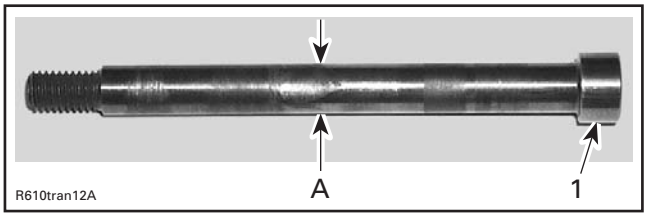
A. Roller outer diameter

Check roller outer and inner diameter, replace if it is out of specification.

ROLLER OUTER DIAMETER	
NEW	13.80 mm to 14.00 mm (.543 in to .551 in)
SERVICE LIMIT	13.20 mm (.519 in)
ROLLER INNER DIAMETER	
NEW	8.025 mm to 8.175 mm (.316 in to .322 in)
SERVICE LIMIT	9.000 mm (.354 in)

Centrifugal Lever Pivot Bolt

Measure diameter of centrifugal lever pivot bolt, replace if it is out of specification.

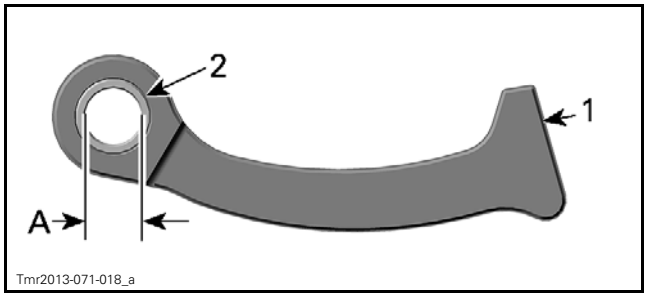


1. Centrifugal lever pivot bolt
A. Measure diameter here

CENTRIFUGAL LEVER PIVOT BOLT DIAMETER	
NEW	6.063 mm to 6.091 mm (.239 in to .24 in)
SERVICE LIMIT	6.00 mm (.236 in)

Centrifugal Lever

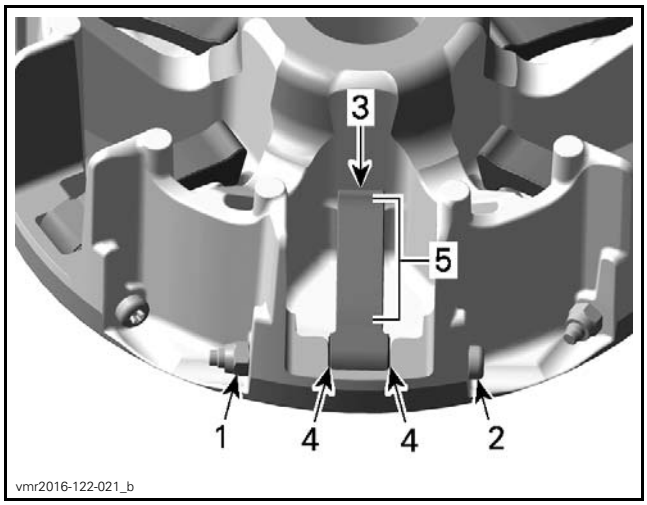
Check bushing diameter in the centrifugal lever for wear. Replace centrifugal lever if necessary.



1. Centrifugal lever
2. Bushing
A. Bushing inner diameter

CENTRIFUGAL LEVER BORE DIAMETER	
NEW	6.107 mm to 6.218 mm (.24 in to .245 in)
SERVICE LIMIT	6.300 mm (.248 in)

Replace centrifugal lever, thrust washers, centrifugal lever pivot bolts and lock nuts if the contact surfaces show heavy visible wear.



1. Lock nut
2. Centrifugal lever pivot bolt
3. Centrifugal lever
4. Thrust washers
5. Contact surface to the roller

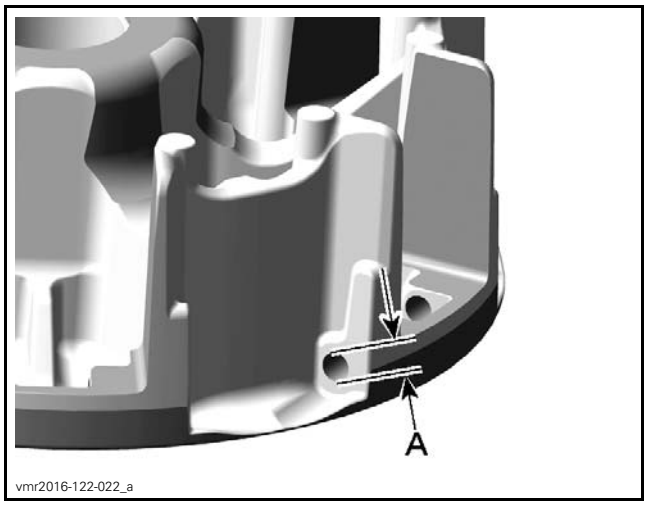
⚠ WARNING

Always replace ALL levers at the same time. Otherwise, unbalanced drive pulley will occur because of levers difference.

Sliding Sheave

Check sliding sheave for cracks and sliding contact surface for excessive wear. Replace sliding sheave if necessary.

Measure centrifugal lever pivot bolt bores. Replace sliding sheave if bores are out of specification or otherwise damaged.



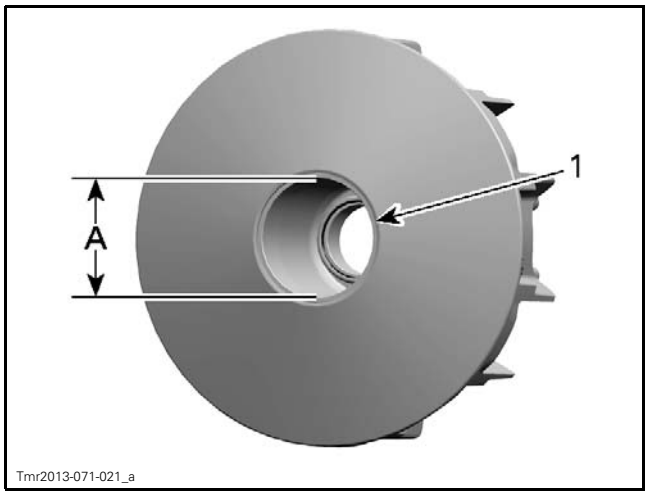
A. Centrifugal lever pivot bolt bore diameter

CENTRIFUGAL LEVER PIVOT BOLT BORE DIAMETER	
NEW	6.113 mm to 6.171 mm (.241 in to .243 in)
SERVICE LIMIT	6.300 mm (.248 in)

Measure bushing diameters of sliding sheave.

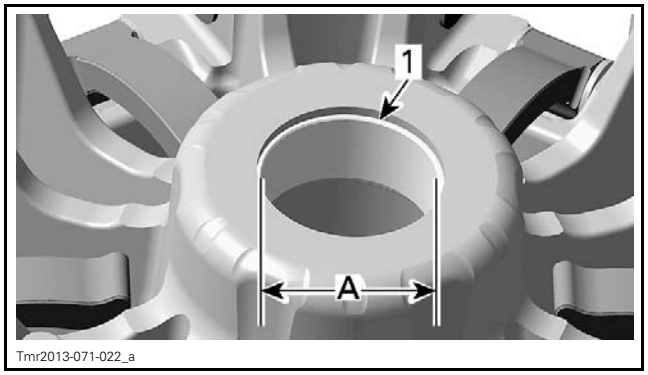
REQUIRED TOOL
Dial bore gauge

MEASURING POINT
At least 5 mm (1/4 in) from bushing edge



1. Bushing on fixed sheave side
A. Bore diameter of bushing

SLIDING SHEAVE LARGE BUSHING	
NEW	55.000 mm to 55.040 mm (2.165 in to 2.167 in)
SERVICE LIMIT	55.200 mm (2.173 in)



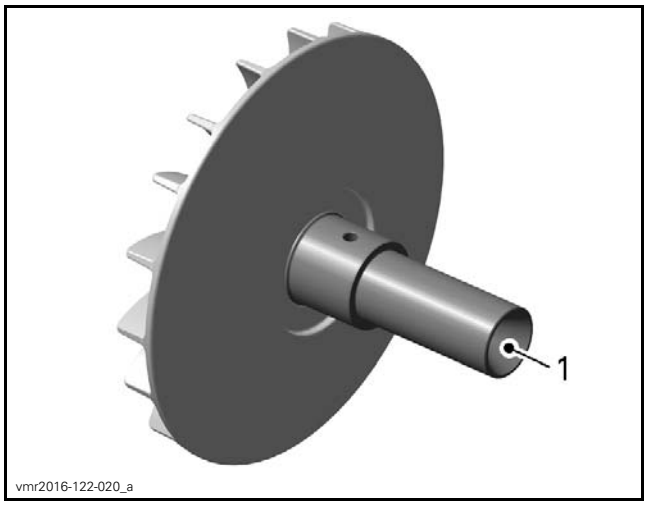
1. Bushing on governor cup side
A. Bore diameter of bushing

SLIDING SHEAVE SMALL BUSHING	
NEW	32.000 mm to 32.040 mm (1.26 in to 1.261 in)
SERVICE LIMIT	32.200 mm (1.268 in)

Replace sliding sheave if one of the bushings is out of specification. Visually inspect coatings.

Fixed Sheave

Check fixed sheave contact surface to the governor cup for scratches or other damages. If so, replace fixed sheave.



1. Visually check here

Check for any marks on fixed sheave plate. Replace if necessary.

Spring

Measure spring free length and squareness. If spring is out of specification, replace by a new one.

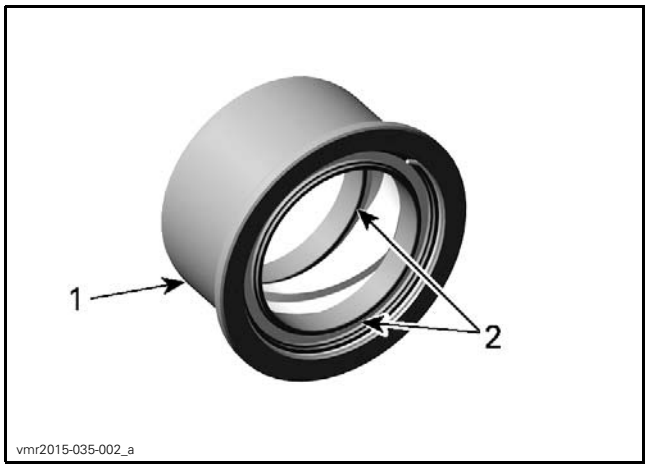
CLUTCH SPRING FREE LENGTH	
SERVICE LIMIT	95 mm (3.74 in)

CLUTCH SPRING SQUARENESS	
SERVICE LIMIT	4 mm (.157 in)

One-Way Clutch

Check bearings for excessive play and smooth operation. Replace one-way clutch bearings if necessary.

NOTICE Be careful not to damage the inside of one-way clutch during bearing removal.



1. One-way clutch
2. Bearings

Measure length of spring sleeves and check if edges on top of the spring sleeve are excessively worn. If they out of specifications, replace both spring sleeves at the same time.

SPRING SLEEVE LENGTH	
NEW	9.2 mm to 9.4 mm (.362 in to .37 in)
SERVICE LIMIT	9.0 mm (.354 in)

Assembling the Drive Pulley

For assembly, reverse the disassembly procedure. Pay attention to following details.

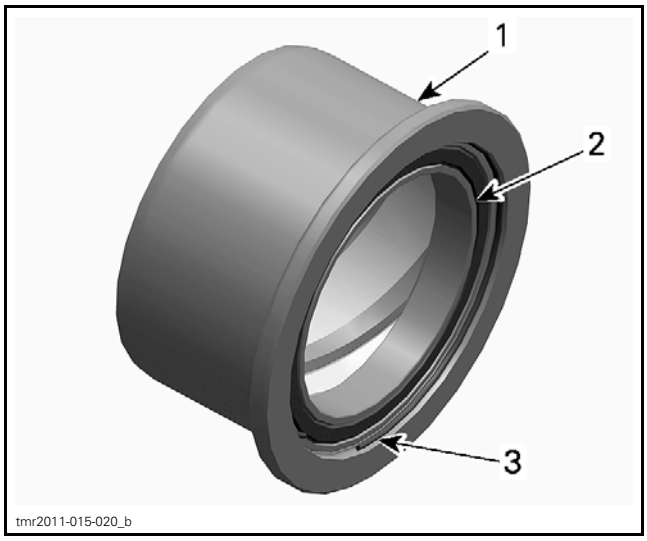
One-Way Clutch

Clean parts.

Lubricate:

– Springs
– Spring sleeves
– Room between one-way clutch bearings.

ONE-WAY CLUTCH LUBRICATION	
Service product	ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021)



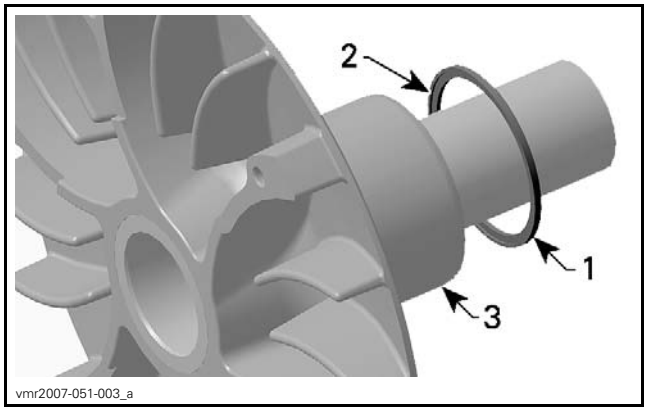
1. One-way clutch
2. Bearing
3. Retaining ring

Friction Washer

NOTE: Apply recommended grease on both sides of friction washer.

REQUIRED PRODUCT
ISOFLEX GREASE TOPAS NB 52 (P/N 293 550 021)

NOTE: Friction washer must be assembled with collar towards one way clutch.



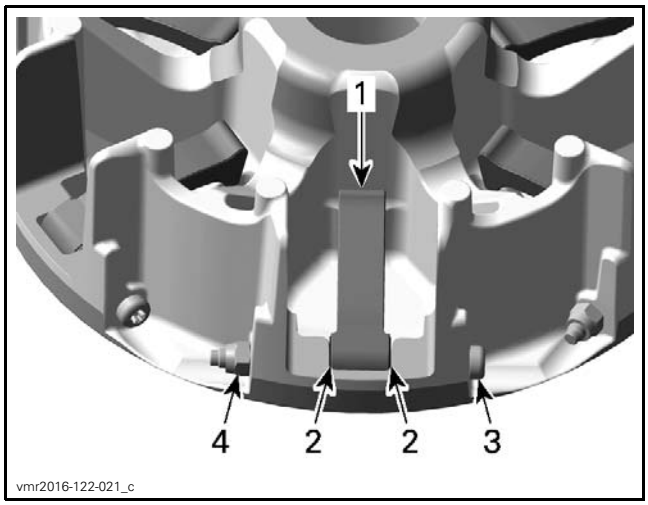
1. Friction washer
2. Collar
3. One way clutch

Sliding Sheave

Install centrifugal levers with their thrust washers.

Install NEW lock nuts and tighten them to specification.

TIGHTENING TORQUE	
Lock nuts	8 N•m ± 1 N•m (71 lbf•**in** ± 9 lbf•**in**)



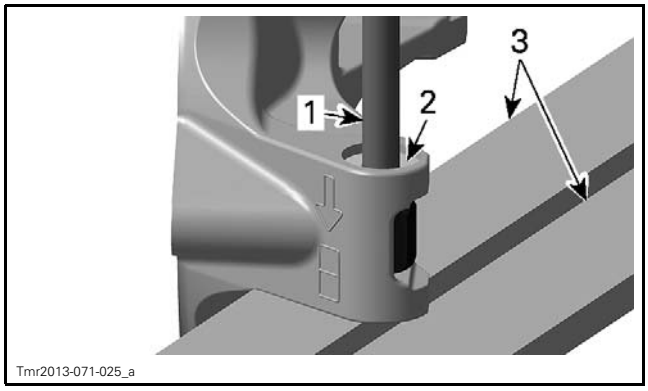
1. *Centrifugal lever*
2. *Thrust washers*
3. *Centrifugal lever pivot bolt*
4. *Lock nut*

NOTICE Centrifugal levers must move easily after installation.

Governor Cup

Rebuild governor cup with new bearing sleeves, thrust washers, rollers and slider shoes.

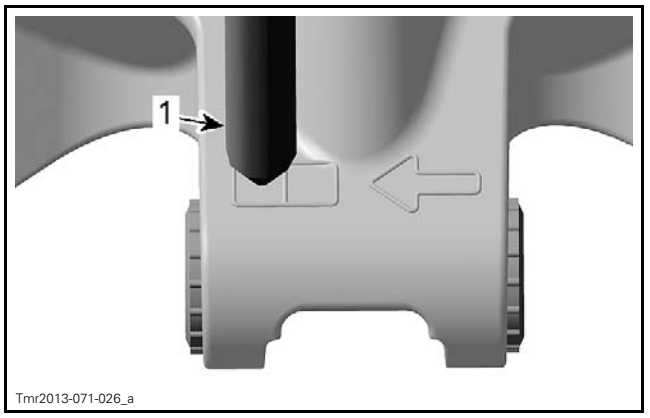
NOTICE Final position has to be aligned with the contact surface of the slider shoes (no protrusion).



1. *Punch*
2. *Mating surface of slider shoes*
3. *Vice*

Each time when replacing the bearing sleeves sign the foreseen box with a punch.

NOTICE Do not tap too hard. Violent damage of the governor cup may appear.



1. *Punch*

NOTICE Rollers must move easily after installation.

Insert slider shoes into governor cup to properly slide in guides.

Installing the Drive Pulley

For installation, reverse the removal procedure. Pay attention to the following details.

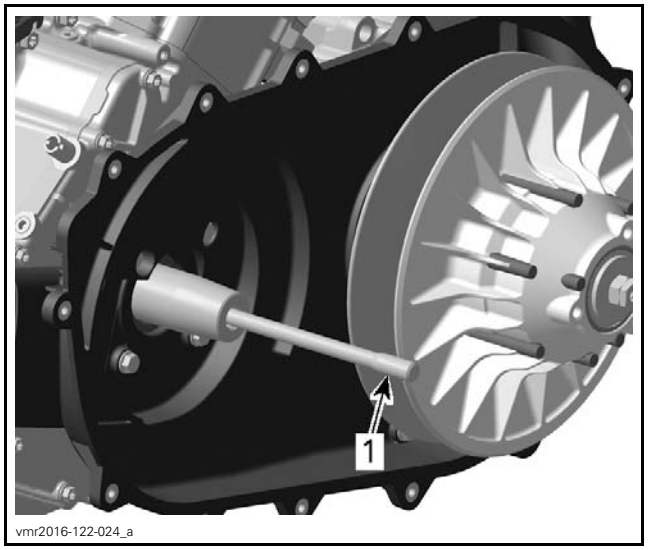
⚠ WARNING

Do not apply antiseize or any lubricant on crankshaft and drive pulley tapers.

NOTICE Never use any type of impact wrench at drive pulley removal and installation.

Clean mounting surfaces and parts as described in *CLEANING THE DRIVE PULLEY* in this subsection.

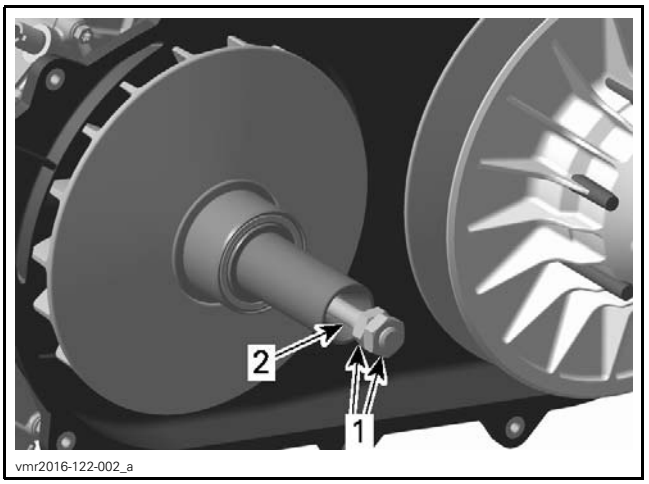
Hand tighten the threaded stud in the PTO.



1. *Stud*

Counter two M12 X 1.75 nuts for tightening the threaded stud.

NOTICE Do not use original installed nuts.



1. *Counter nuts*
2. *Stud*

Lock crankshaft, refer to *CRANKSHAFT LOCKING PROCEDURE* in the *BOTTOM END* subsection.

Tighten the threaded stud to specification.

TIGHTENING TORQUE	
Threaded stud	50 N•m ± 2 N•m (37 lbf•ft ± 1 lbf•ft)

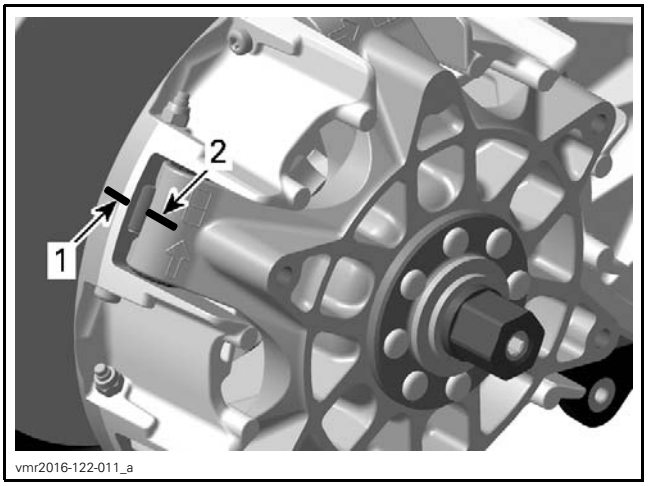
Remove both M12 counter nuts from the stud.

Remove tool from magneto side. Install plug and O-ring on magneto cover.

Install fixed sheave on PTO.

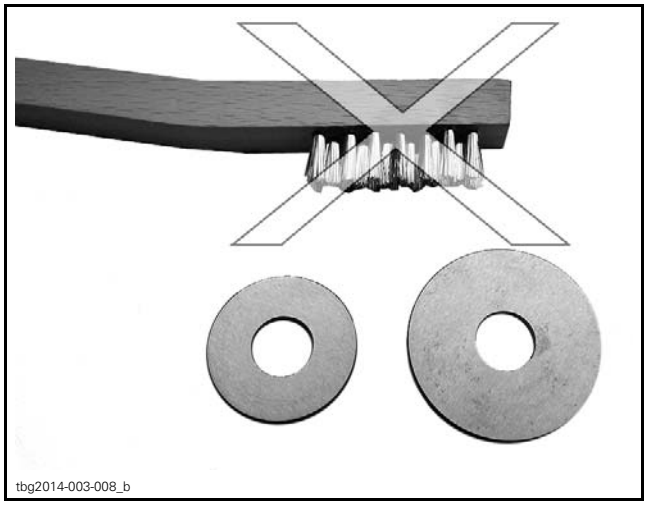
Install sliding sheave and governor cup.

NOTE: Make sure that sliding sheave and governor cup are properly aligned as marked before removal.

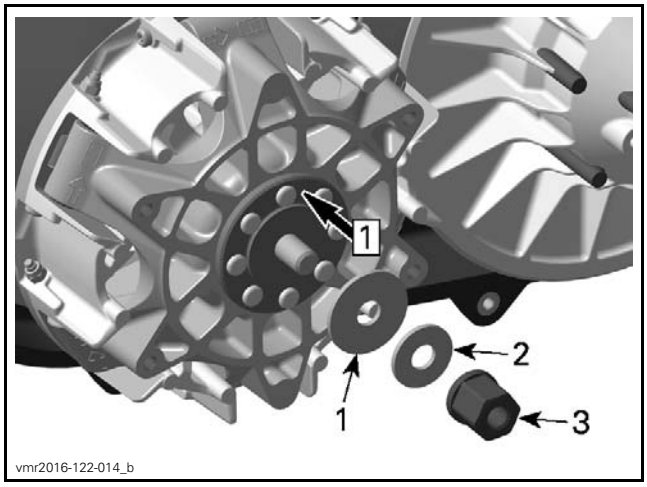


1. *Mark on drive pulley sliding sheave*
2. *Mark on governor cup*

NOTICE The washers are shipped with special coating. Do not clean washers using degreaser, abrasive products, etc; this could damage the special coating washers comes with.



Install NEW larger washer first, then NEW smaller washer and nut.



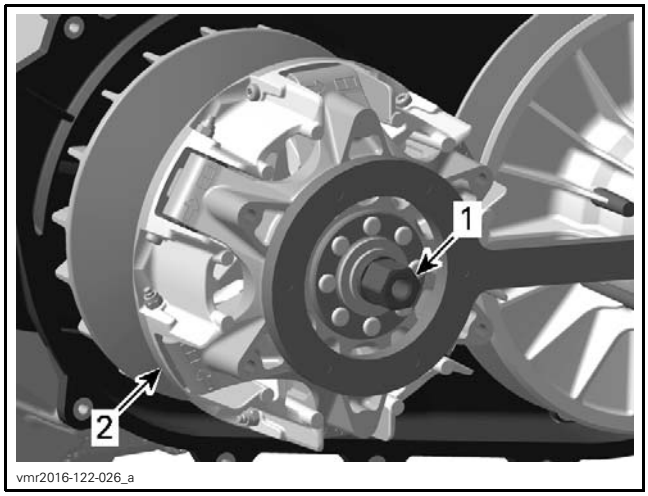
Step 1: Push

1. *Large thrust washer (*NEW*)*
2. *Small thrust washer (*NEW*)*
3. *Drive pulley nut*

Lock the drive pulley with clutch holder tool.

Tighten drive pulley nut to specification.

DRIVE PULLEY M12 FLANGE NUT		
Tightening procedure	STEP 1	80 N•m ± 1 N•m (59 lbf•ft ± 1 lbf•ft)
	STEP 2	90° ± 5°

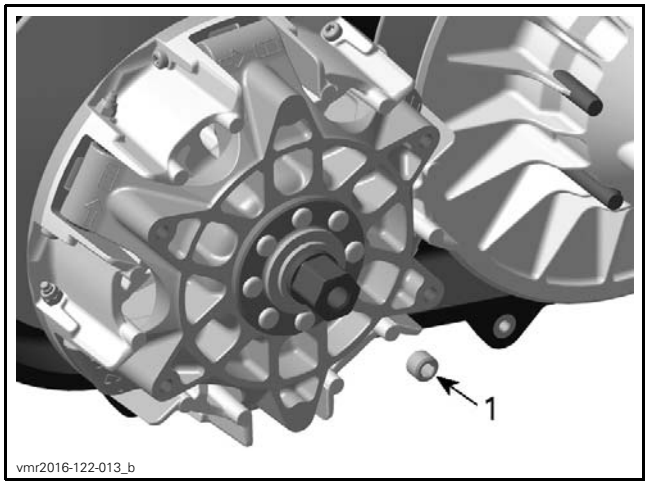


1. Nut
2. Drive pulley

Install M12 X 10 set screw in M12 nut and tighten the set screw to specification.

TIGHTENING TORQUE	
Service product	LOCTITE 272 (P/N 420 899 526)
M12 X 10 set screw	65 N•m ± 2 N•m (48 lbf•ft ± 1 lbf•ft)

NOTE: It is important to use the specified threadlocker: High temperatures are involved and this product is specifically designed for these temperatures. No other product should be used.



1. Set screw

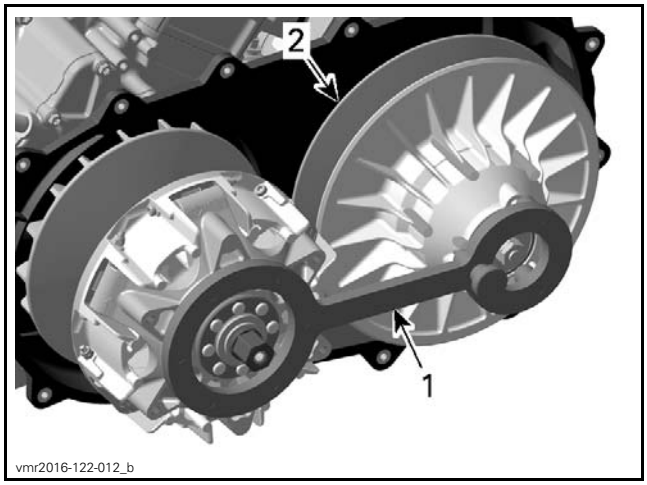
DRIVEN PULLEY

Removing the Driven Pulley

Remove *DRIVE BELT*.

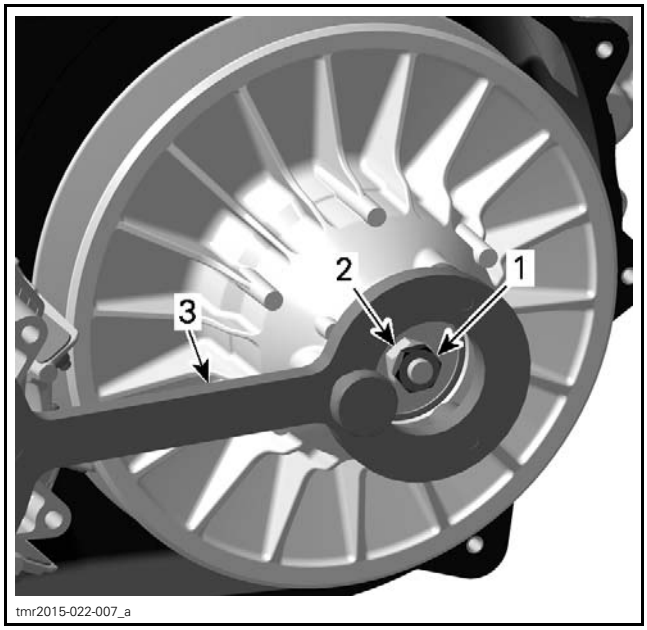
Lock the driven pulley.

REQUIRED TOOL	
CLUTCH HOLDER (P/N 529 036 238)	



1. Clutch holder
2. Driven pulley

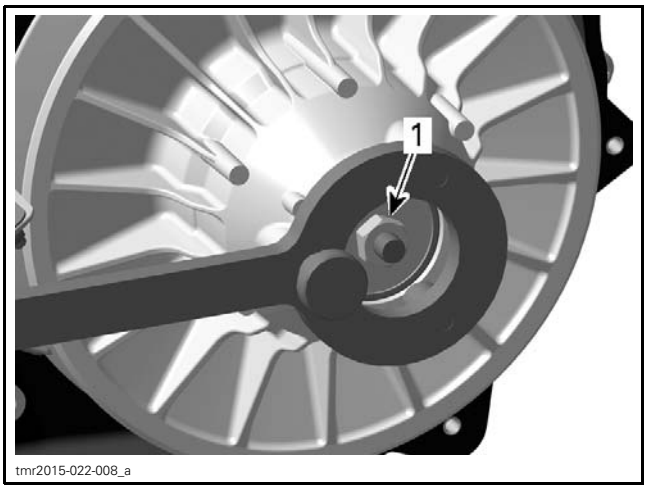
Remove the counter nut and discard it.



1. Counter nut
2. Driven pulley nut
3. Clutch holder

Loosen the driven pulley nut.

NOTE: Do not unscrew the driven pulley nut completely.



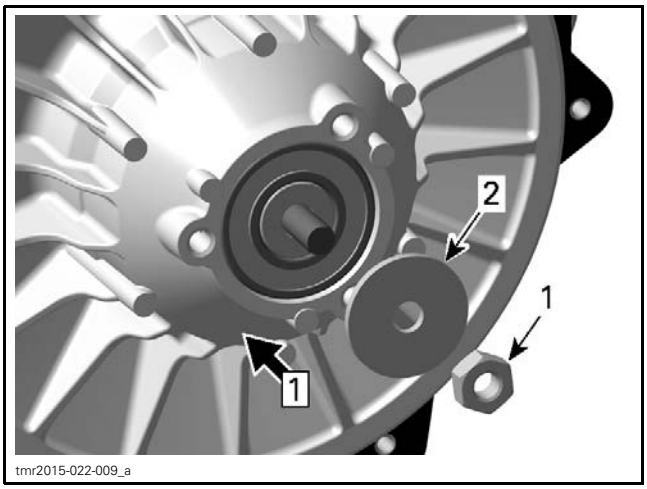
1. Driven pulley nut

Remove service tool.

Apply axial pressure with your hand on driven pulley and maintain during nut removal.

Remove driven pulley nut (discard) and washer.

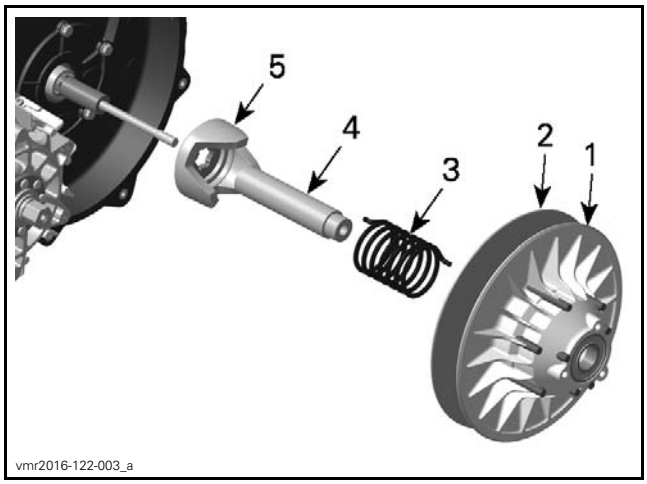
⚠ CAUTION **Driven pulley is spring loaded. Hold driven pulley tight and slowly remove the driven pulley nut to release spring tension.**



Step 1: Push

1. Driven pulley nut (discard)
2. Thrust washer

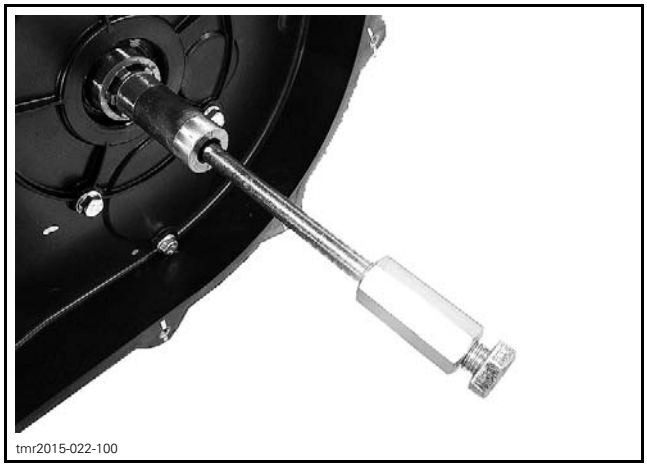
Remove:
- Driven pulley
- Spring
- Shaft
- Cam.



1. Fixed sheave of driven pulley
2. Sliding sheave of driven pulley
3. Spring
4. Shaft
5. Cam

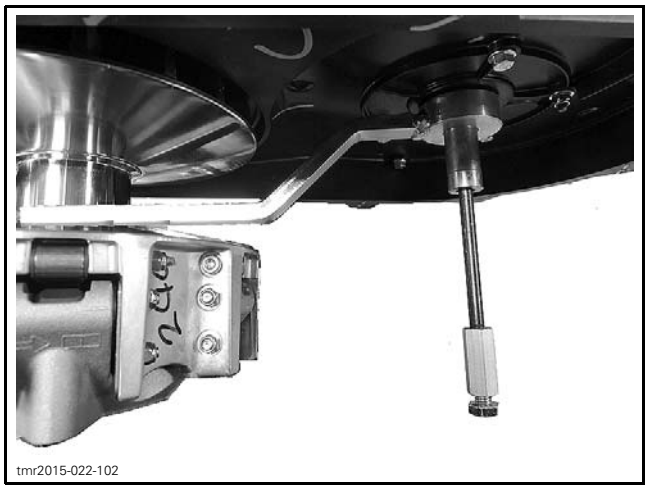
Install the tightening tool on the stud.

REQUIRED TOOL	
DRIVEN PULLEY STUD TOOL (P/N 529 036 360)	



Block countershaft.

REQUIRED TOOL	
COUNTERSHAFT RETAINER TOOL (P/N 529 036 312)	

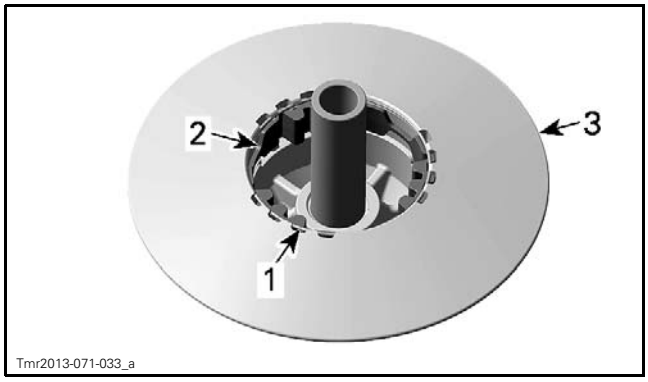

tmr2015-022-102

Remove stud.

Disassembling the Driven Pulley

Fixed Sheave

Remove retaining ring and lift torque gear.



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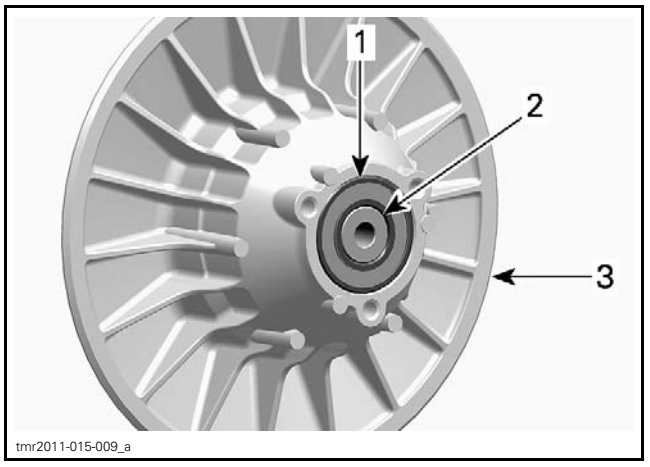
1. *Retaining ring*
2. *Torque gear*
3. *Fixed sheave of driven pulley*

NOTE: The following procedure is not necessary except if ball bearing or shaft must be removed. Refer to *INSPECTION* before proceeding.

Heat ball bearing area up to 100°C (212°F) before removing ball bearing.



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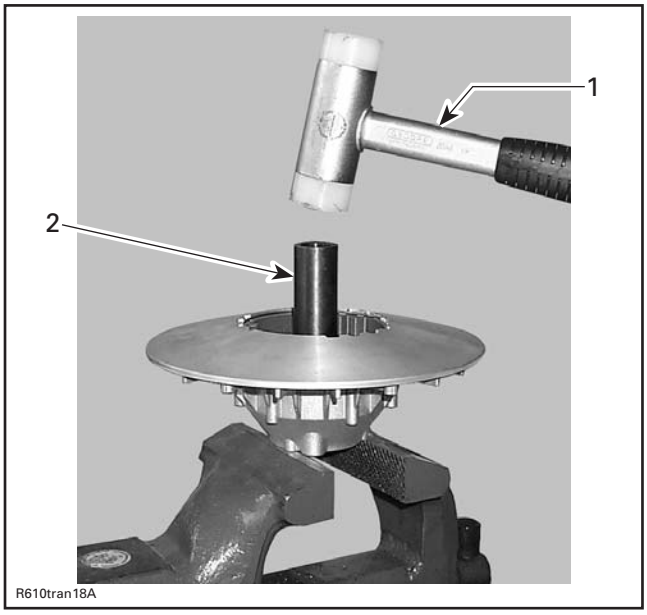
1. *Ball bearing*
2. *Shaft*
3. *Fixed sheave of driven pulley*

Use a soft hammer to push shaft with bearing out of fixed sheave.



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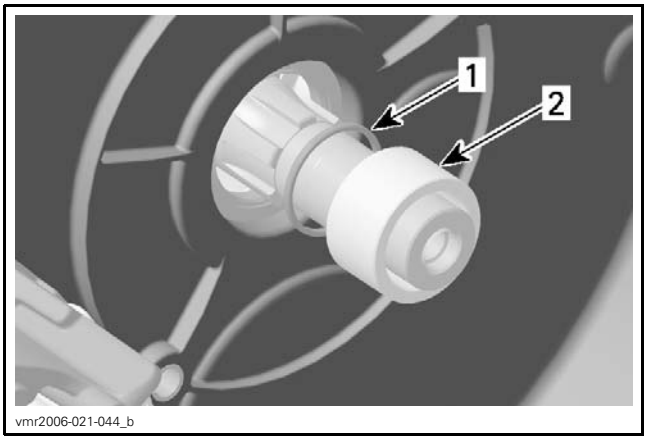
1. *Soft hammer*
2. *Shaft*

Remove shaft from ball bearing.

Remove distance sleeve and O-ring from countershaft.

Replace O-ring if brittle, hard or damaged.



1. O-ring
2. Distance sleeve

Cleaning the Driven Pulley

Clean the CVT air guide area from contamination.

Using a small brush, paper towel and parts cleaner, clean all the mounting surfaces and threads as shown.

REQUIRED PRODUCT
XPS BRAKES AND PARTS CLEANER (P/N 219 701 776) or XPS BRAKES AND PARTS CLEANER (USA) (P/N 219 701 705)

NOTICE Avoid contact between cleaner and countershaft oil seal or damage may occur.

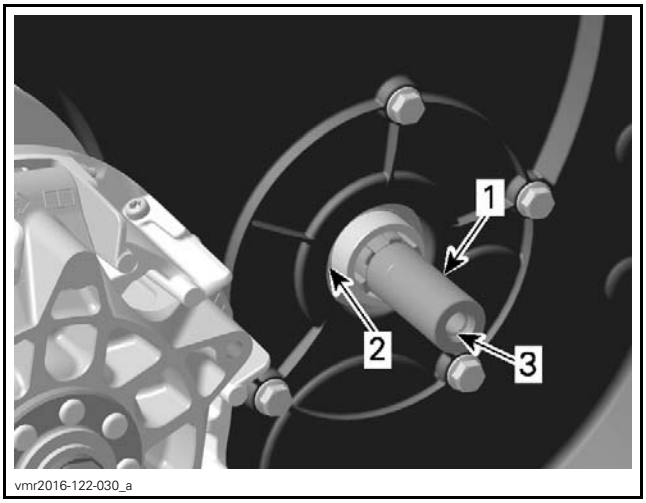
Remove all deposits that have baked on pulley tapered surfaces with medium steel wool and/or sand paper no. 600.

NOTICE Do not use any other type of abrasive.

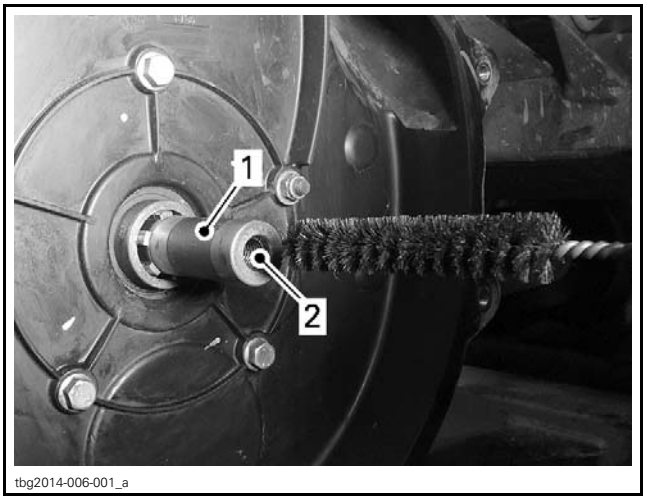
Reclean surfaces after steel wool use.

Blow compressed air on all cleaned parts and surfaces to remove any residue.

NOTICE Mounting surfaces and threads must be free of any oil, cleaner or towel residue.



1. Countershaft end
2. Countershaft oil seal
3. Countershaft inner threads

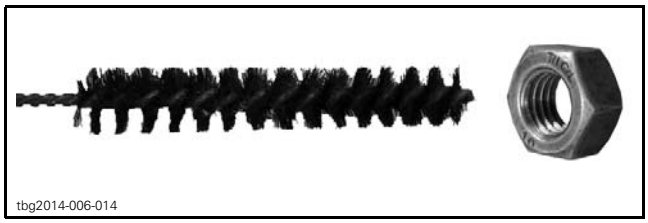


GEARBOX COUNTERSHAFT

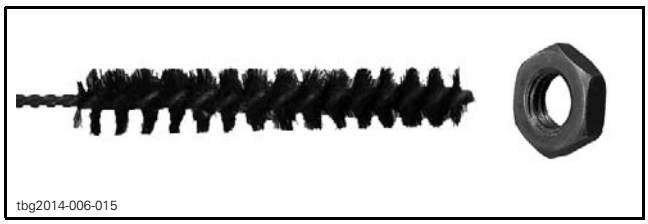
1. Countershaft outer surface
2. Countershaft inner threads

COUNTERSHAFT END OF STUD

STUD END RECEIVING COUNTER NUTS



THREADS OF DRIVEN PULLEY NUT



THREADS OF COUNTER NUT

Inspecting the Driven Pulley

Sliding Sheave

Check sliding sheave for cracks and sliding contact surface for excessive wear. Replace sliding sheave if necessary.

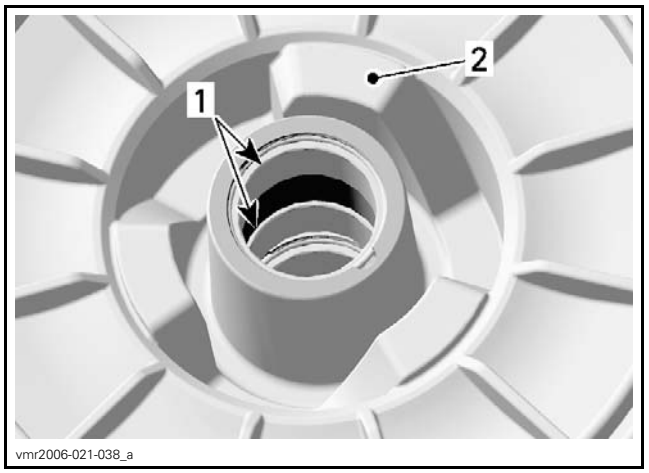
Check bushings for cracks, scratch and for free movement when assembled to sliding sheave.

Measure bushing diameter.

REQUIRED TOOL
Dial bore gauge

MEASURING POINT
At least 5 mm (1/4 in) from bushing edge

This bushing can not be replaced. Replace sliding sheave if bushings are out of specification. Visually inspect coatings.



1. Bushings
2. Backside of sliding sheave of driven pulley

BUSHINGS BORE DIAMETER	
NEW	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
SERVICE LIMIT	30.200 mm (1.189 in)

Fixed Sheave

Check fixed sheave for cracks and excessive wear. Replace fixed sheave if necessary.

Check ball bearing for free play and smooth operation. Replace if necessary.

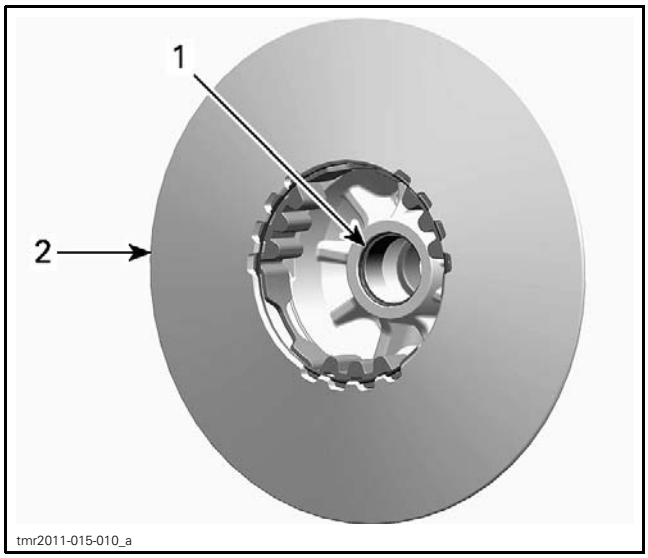
Check shaft for heavy wear or visible damage. Replace if necessary.

If the shaft is removed measure bushing diameter.

REQUIRED TOOL
Dial bore gauge

MEASURING POINT
At least 5 mm (1/4 in) from bushing edge

This bushing can not be replaced. Replace fixed sheave if bushing is out of specification. Visually inspect coatings.

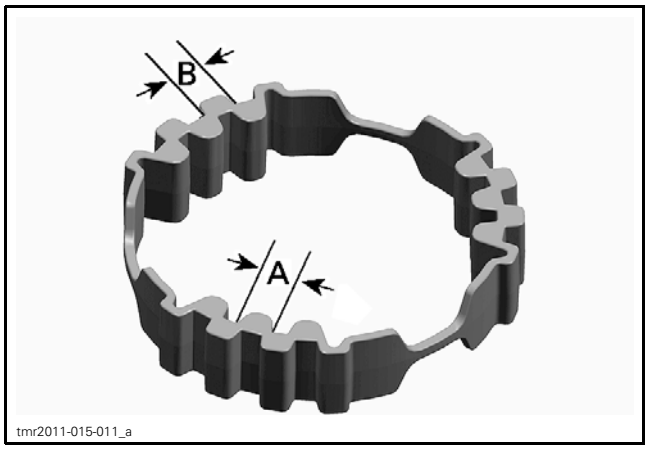


1. Bushing
2. Fixed sheave of driven pulley

BUSHING BORE DIAMETER	
NEW	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
SERVICE LIMIT	30.200 mm (1.189 in)

Check torque gear for visible damage and cracks.

Measure wear limit with a caliper.

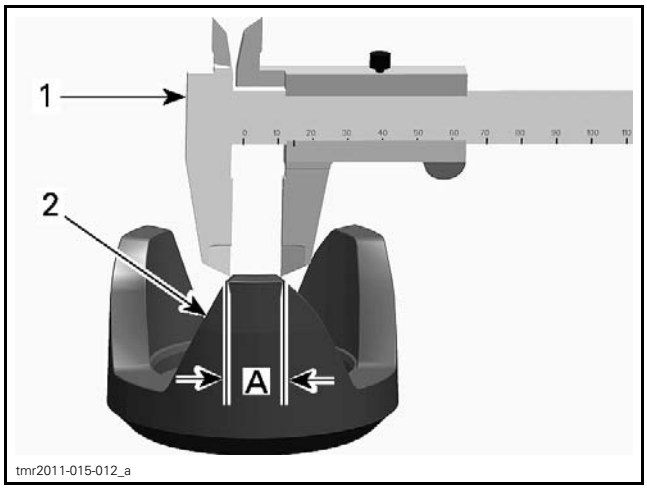


A. Measurement inside
B. Measurement outside

WEAR ON TEETH BOTH SIDES	
SERVICE LIMIT	7.500 mm (.295 in)

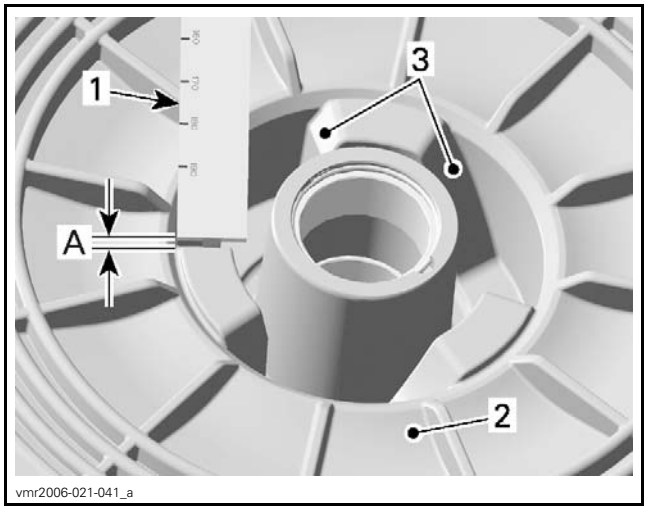
Cam

Check cam for visible damage and wear limit with a caliper.



1. Caliper
2. Contact surface
A. Width to be measured due to wear on contact surface

WIDTH ON TOP SURFACE	
SERVICE LIMIT	16.0 mm (.63 in)

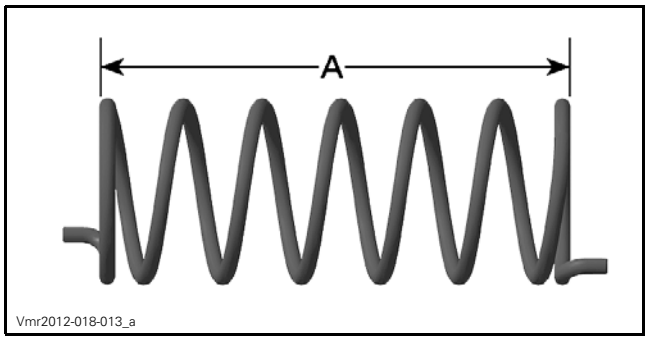


1. Caliper
2. Sliding sheave
3. Contact surface
A. Wear to be measured

WEAR ON CONTACT SURFACE	
SERVICE LIMIT	1.00 mm (.039 in)

Spring

Measure spring free length and squareness. If spring is out of specification, replace by a new.



CVT DRIVEN SPRING
A. Spring free length

SPRING FREE LENGTH	
SERVICE LIMIT	125 mm (4.921 in)
CLUTCH SPRING SQUARENESS	
SERVICE LIMIT	3.8 mm (.15 in)

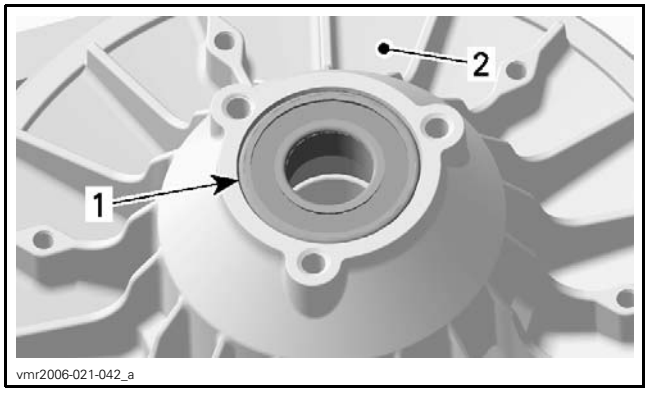
Assembling the Driven Pulley

For installation, reverse the removal procedure. Pay attention to following details.

Heat ball bearing area up to 100°C (212°F) before ball bearing installation.

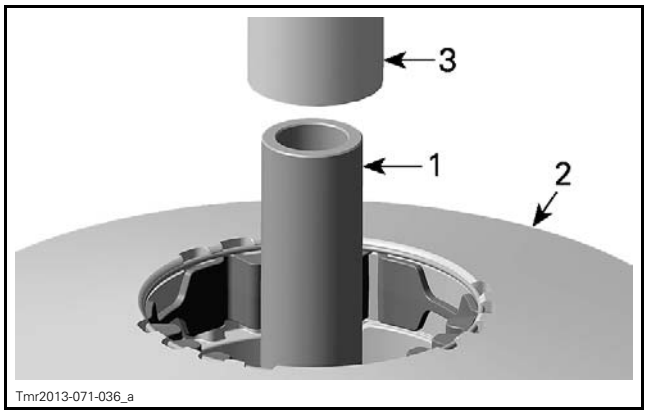
NOTE: Place new ball bearing in a freezer for 10 minutes before installation.

Install ball bearing with the writing on top and press in only on the outer ring.



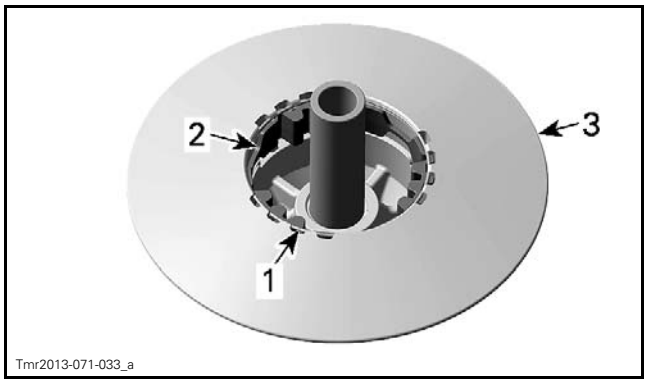
1. Ball bearing
2. Fixed sheave of driven pulley

NOTICE Do not use hammer, use press machine only.



1. Shaft
2. Fixed sheave
3. Press machine

Install torque gear then secure it with retaining ring.



1. Retaining ring
2. Torque gear
3. Fixed sheave of driven pulley

Installing the Driven Pulley

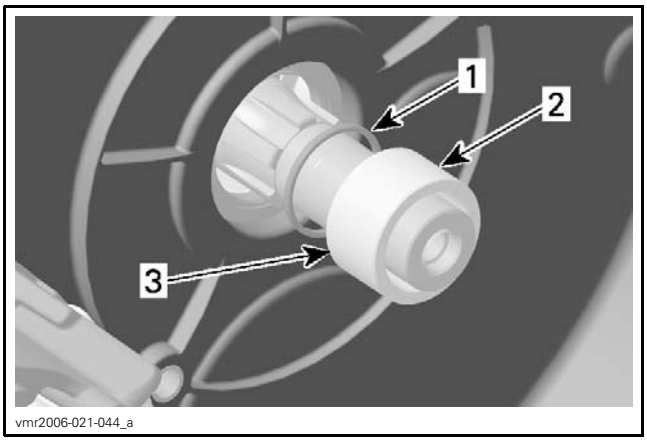
For installation, reverse the removal procedure. Pay attention to the following details.

NOTICE Never use any type of impact wrench at drive pulley removal and installation.

Clean mounting surfaces and parts as described in *CLEANING THE DRIVEN PULLEY* in this subsection.

Place O-ring on countershaft splines and move it with distance sleeve in end position.

NOTICE Chamfer on inside diameter of the distance sleeve must face to gearbox side.



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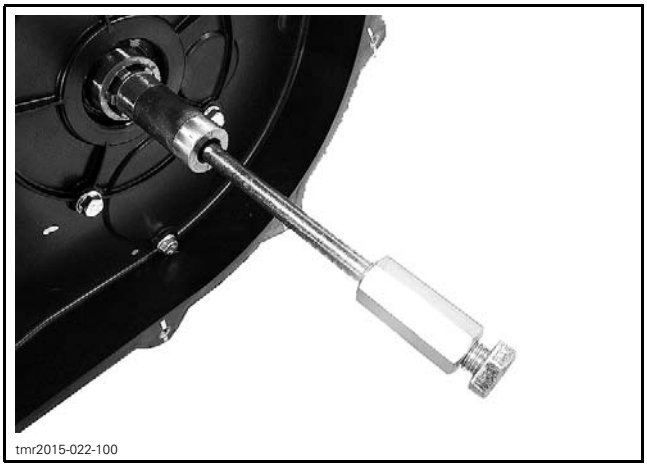
1. O-ring
2. Distance sleeve
3. Chamfered area of distance sleeve

Hand tighten the stud in the countershaft.

Install the tightening tool on the stud.

REQUIRED TOOL	
DRIVEN PULLEY STUD TOOL (P/N 529 036 360)	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Block countershaft.

REQUIRED TOOL	
COUNTERSHAFT RETAINER TOOL (P/N 529 036 312)	

tmr2015-022-101

Tighten the stud to specification.

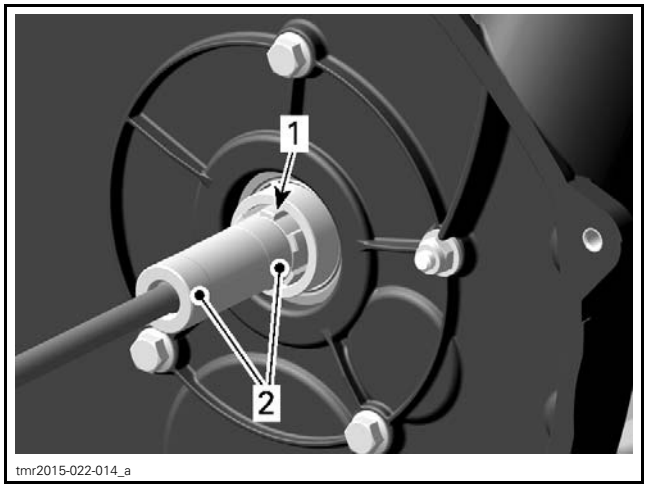
TIGHTENING TORQUE	
Stud	45 N•m ± 2 N•m (33 lbf•ft ± 1 lbf•ft)

Remove the tightening tool from the stud.

Remove countershaft retainer tool.

Lubricate:
– Countershaft splines
– Countershaft outer surface.

SERVICE PRODUCT	
Countershaft splines and countershaft outer surface	LOCTITE 767 (ANTISEIZE LUBRICANT) (P/N 293 800 070)



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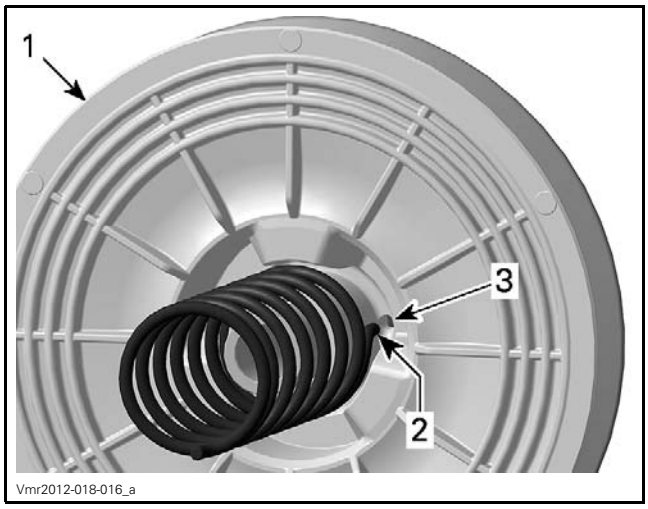
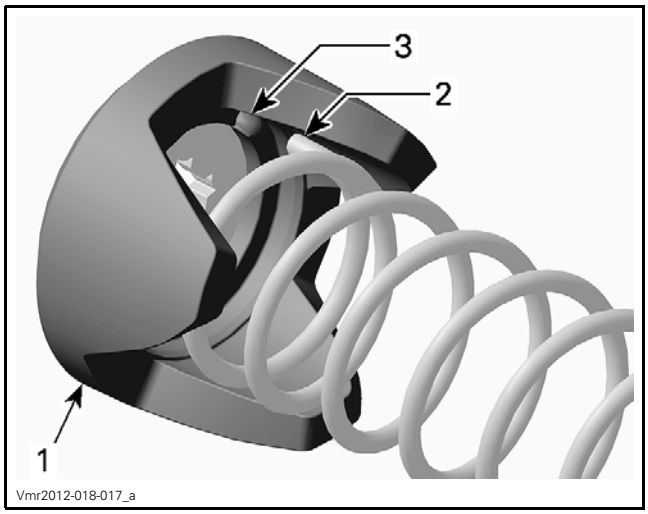
1. Countershaft splines
2. Countershaft outer surface

Place spring behind sliding sheave and engage spring end in the sliding sheave spring bore.



850 AND 1000 ENGINES
1. *Sliding sheave*
2. *Spring end*
3. *Spring bore*

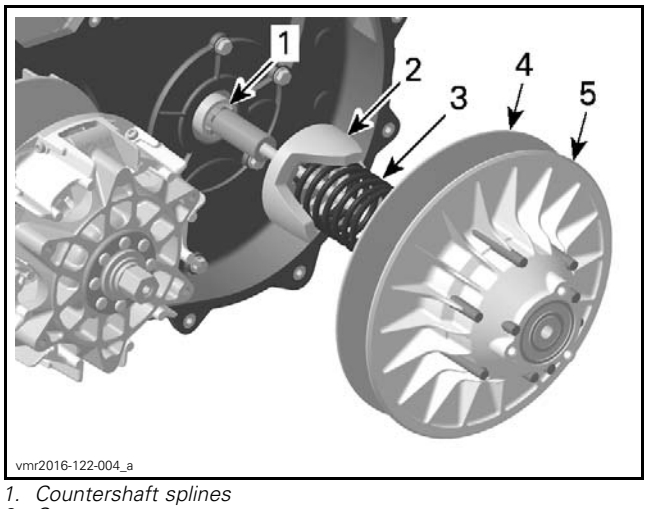
Place cam on the opposite end of the spring and engage the other spring end in the cam spring bore.



1. *Cam*
2. *Spring end*
3. *Spring bore*

Install pre-assembled cam with spring and driven pulley on countershaft end.

NOTICE Cam must engage on countershaft splines.



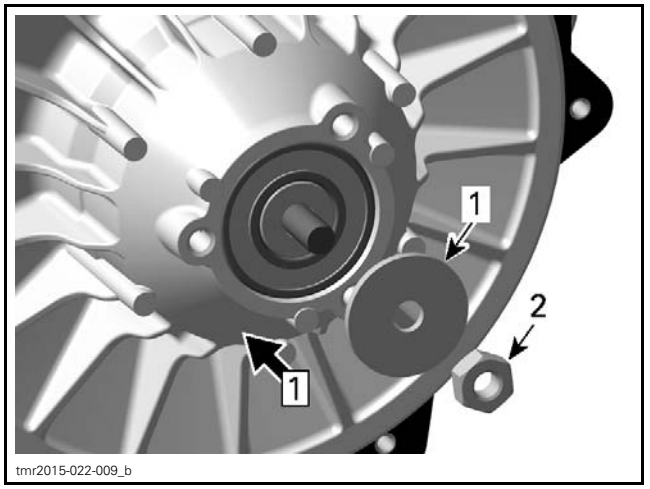
1. *Countershaft splines*
2. *Cam*
3. *Spring*
4. *Sliding sheave*
5. *Fixed sheave*

With your hand, push the driven pulley onto the shaft to compress the spring.

NOTICE A cam not correctly engaged will cause damage to the driven pulley and cam.

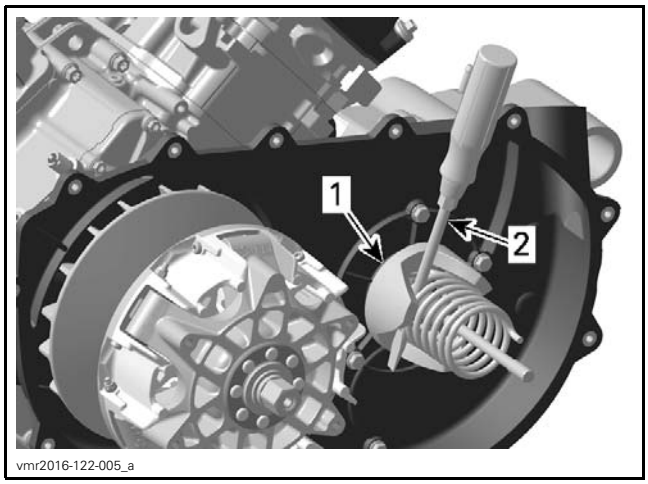
As you hold the pulley in, install thrust washer and a NEW driven pulley nut.

NOTE: Finger tighten the driven pulley nut sufficiently so that the cam remains engaged.



Step 1: Push
1. *Thrust washer*
2. *Driven pulley nut (*NEW*)*

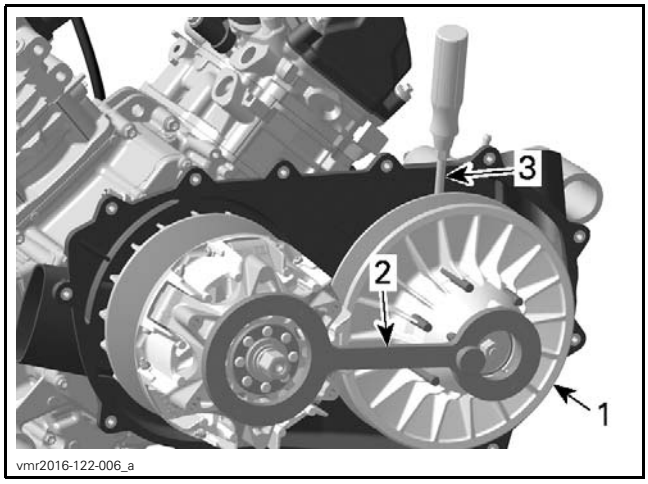
Insert a screwdriver of approximately 5 mm (.197 in) diameter in the cam.



FOR CLARITY OF UNDERSTANDING, SOME PARTS ARE NOT SHOWN
1. *Cam*
2. *Screwdriver, diameter 5 mm (.197 in)*

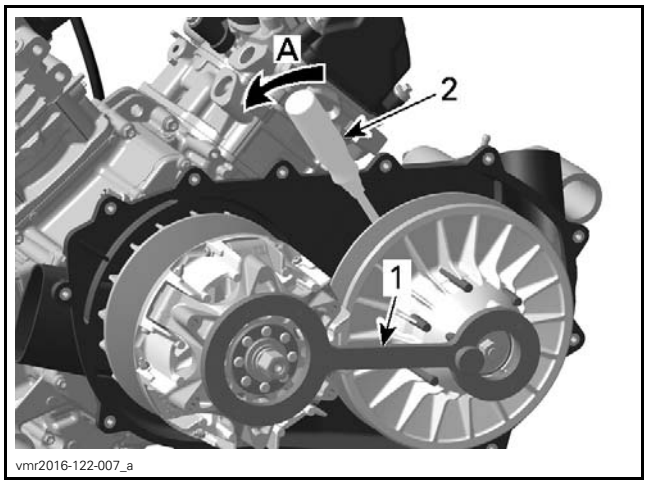
Hold the driven pulley in a fix position.

REQUIRED TOOL	
CLUTCH HOLDER (P/N 529 036 238)	



1. *Fixed sheave*
2. *Clutch holder*
3. *Screwdriver*

Turn the screwdriver approximately 20° counterclockwise until cam engages in the driven pulley sliding sheave and hold it in this position (spring preload).



1. *Clutch holder*
2. *Screwdriver*

A. Turn counterclockwise

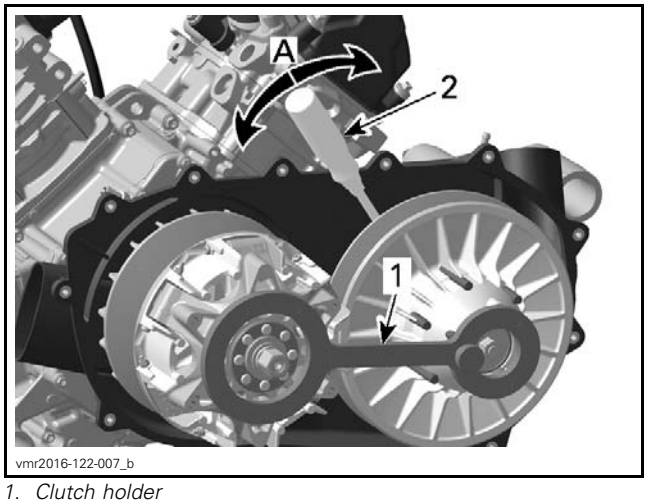
Tighten driven pulley nut as specified.

Using a socket and extension, hand tighten the driven pulley nut.

NOTE: Do not apply specified torque at this time.

Move the screwdriver back and forth to check cam for free movement.

NOTICE **A cam not correctly engaged will cause damage to the driven pulley and cam.**

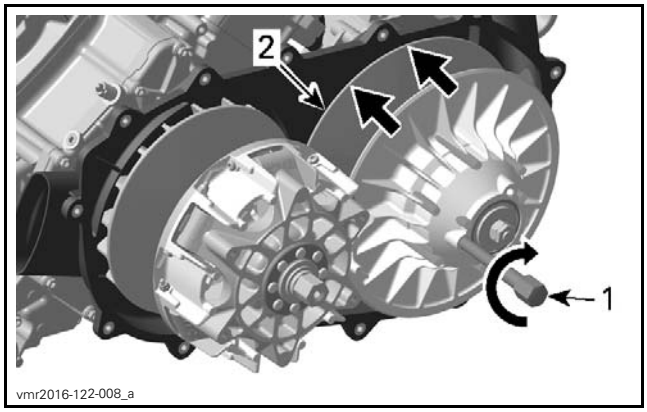


1. *Clutch holder*
2. *Screwdriver*

A. Cam freedom of movement

Install drive belt. Refer to *DRIVE BELT* in this subsection.

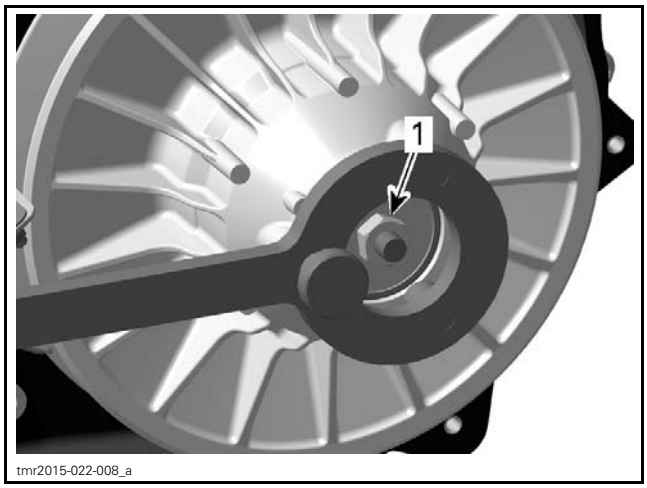
REQUIRED TOOL	
PULLER/LOCKING TOOL (P/N 529 036 098)	



1. Puller/locking tool
2. Sliding sheave

NOTE: If driven pulley sheaves can to be opened when the service tool is screwed in, the cam is not correctly engaged in the sliding sheave.

TIGHTENING TORQUE		
Driven pulley nut	STEP 1	20 N•m ± 1 N•m (15 lbf•ft ± 1 lbf•ft)
	STEP 2	180° ± 5°

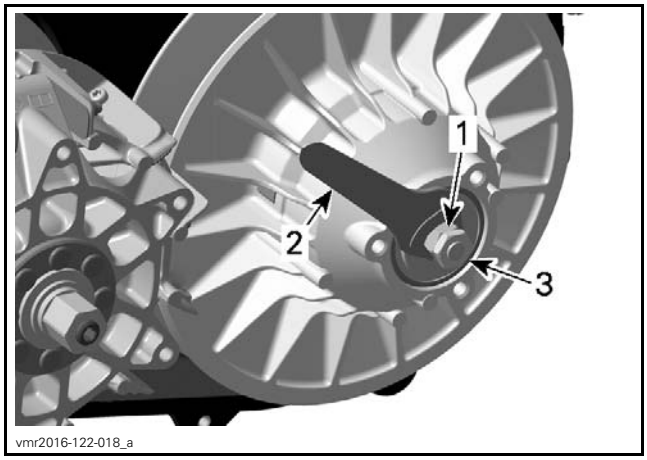


1. Driven pulley nut

Remove service tool.

Hold driven pulley nut using a spanner and tighten the NEW counter nut to specification.

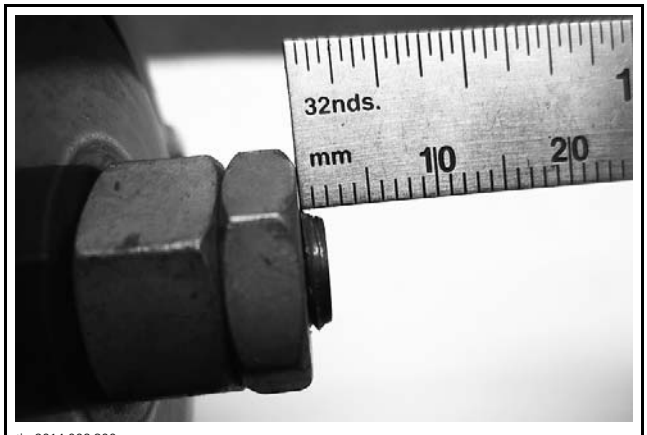
TIGHTENING TORQUE	
Counter nut	35 N•m ± 1 N•m (26 lbf•ft ± 1 lbf•ft)



1. Driven pulley nut
2. Spanner
3. Counter nut

In order to confirm the cam is in the right position, measure the length of the stud out of the counter nut.

– If the distance between counter nut and the end of the stud is within specification, the pulley and cam are properly installed.
– Otherwise the cam might not correctly engaged. Remove the clutch except stud, and reinstall.
– If distance is still out of specification, please consult the *TST # 81274* on Knowledge Center for instructions.



MEASUREMENT	ACTION
Less than flush with the counter nut	Refer to TST # 81274 on Knowledge Center
0 to 3.6 mm	Installation is good. Install the drive belt to complete the procedure
3.7 mm and more	Refer to TST # 81274 on Knowledge Center

Check driven pulley end play.

SPECIFICATION	
Driven pulley end play	0 mm (0 in)

CVT AIR GUIDE

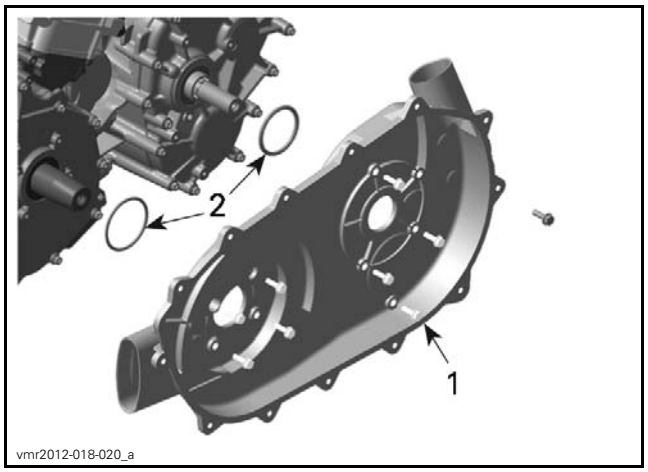
Removing the CVT Air Guide

Remove the *DRIVE PULLEY* and the *DRIVEN PULLEY*.

Unscrew the clamps retaining the CVT air hoses.

Remove CVT air guide.

Remove and discard O-rings.



1. CVT air guide
2. O-rings

Inspecting the CVT Air Guide

Clean CVT air guide from contamination

Installing the CVT Air Guide

For installation reverse the removal procedure.

Always install new O-rings before installing the CVT air guide.

GEARBOX AND 4X4 COUPLING UNIT (WITH EXTERNAL SWITCHES)

SERVICE TOOLS

Description	Part Number	Page
BACKLASH MEASUREMENT TOOL	529 036 030	14
BEARING INSTALLER (GEARBOX)	529 035 763	30
BEARING INSTALLER (GEARBOX)	529 035 762	30
COUNTERSHAFT OIL SEAL PUSHER	529 036 222	12
DRIVE SHAFT OIL SEAL INSTALLER	529 036 028	13
FLUKE 115 MULTIMETER	529 035 868	5, 9
HANDLE	420 877 650	12, 30
OIL SEAL INSTALLER (GEARBOX)	529 035 758	12

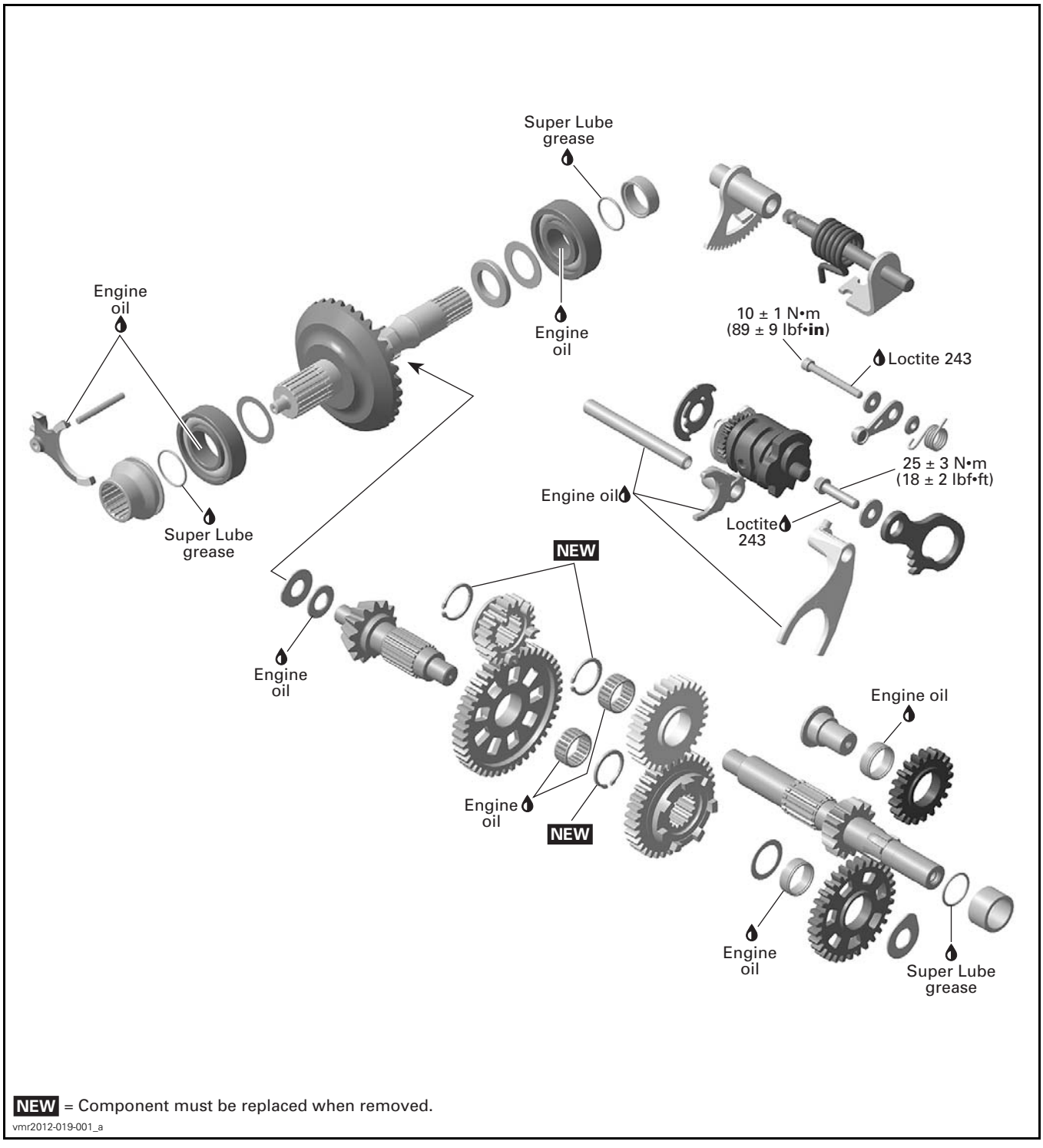
SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
FLUKE RIGID BACK-PROBE	TP88	6

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	35
LOCTITE 5910	293 800 081	8–9, 17–18, 34
LOCTITE CHISEL (GASKET REMOVER)	413 708 500	17, 26, 34
PETAMO GREASE GHY 133N	420 899 271	11
SUPER LUBE GREASE	293 550 030	7, 10, 18

GEARBOX COMPONENTS AND 4X4 COUPLING MECHANISM



NEW = Component must be replaced when removed.

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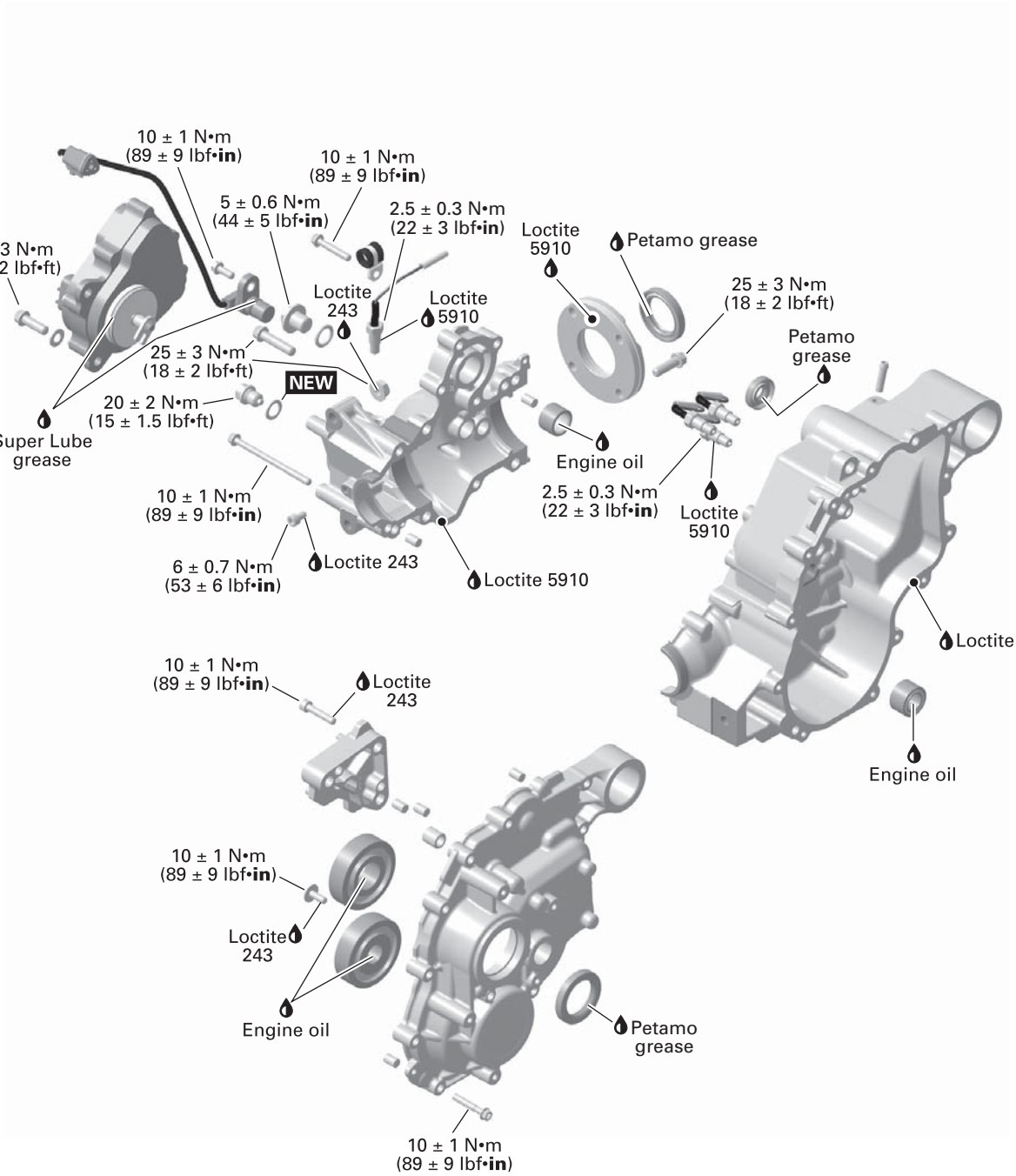
GEARBOX HOUSING AND 4X4 ACTUATOR UNIT



NEW = Component must be replaced when removed.

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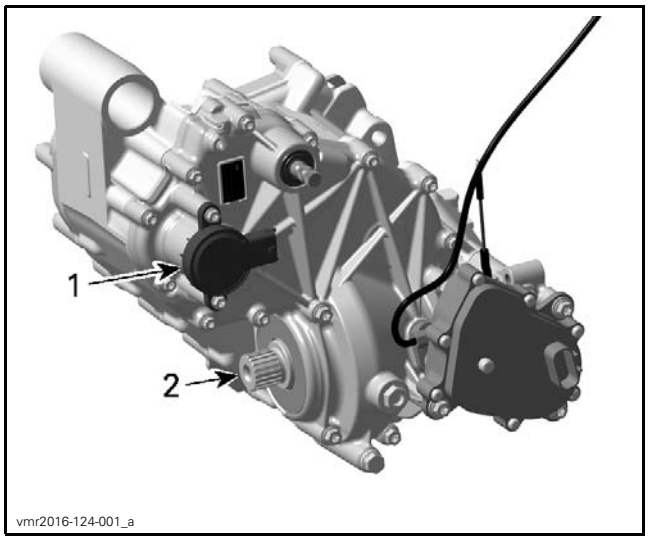
GENERAL

GEARBOX IDENTIFICATION

Gearbox with GBPS

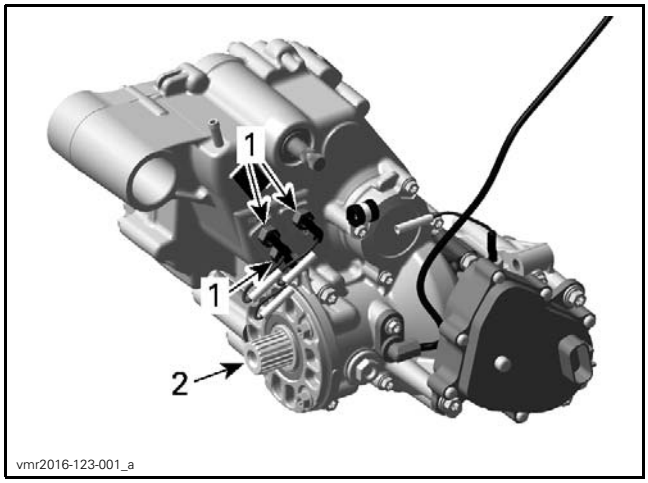
This gearbox is equipped with 1 gearbox position sensor.



GEARBOX, RIGHT HAND SIDE
1. *Gearbox position sensor*
2. *Output shaft*

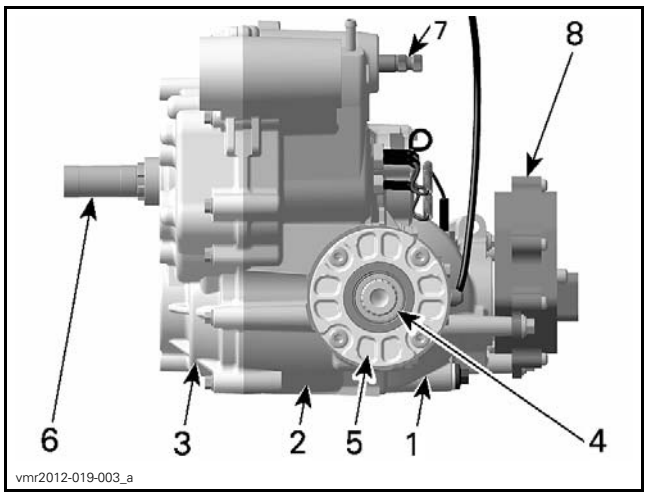
Gearbox with External Switches

This gearbox is equipped with 3 gearbox position indicator switches.



GEARBOX, RIGHT HAND SIDE
1. *Gearbox position indicator switches*
2. *Output shaft*

OVERVIEW



1. *Right housing*
2. *Center housing*
3. *Left housing*
4. *Output shaft*
5. *Bearing cover*
6. *Countershaft*
7. *Shift shaft*
8. *Actuator*

TROUBLESHOOTING

UNUSUAL GEARBOX NOISE AND/OR VIBRATIONS

1. Low oil level in gearbox.
   - *Oil leakage from gearbox. Replace damaged gasket(s) and/or oil seal(s).*
2. Defective bearings.
   - *Bearing(s) do(es) not turn smoothly. Replace bearing(s).*
3. Damaged or worn gears.
   - *Inspect gears for damages or missing teeth. Replace respective gears.*

GEAR INDICATION FAILS

1. Check contact screws on gear housing center.
   - *Contact(s) is (are) corroded and/or connectors to wiring harness got loose.*
   - *Damaged wires. Repair as required.*
   - *Shifting indicator switch(es) pin(s) is (are) worn and/or damaged. Replace shifting indicator switch(es).*

GEAR(S) IS (ARE) HARD TO SHIFT

1. Incorrect shift rod adjustment.
   - *Adjust shift rod (refer to SHIFT ROD in SHIFTER subsection).*

4 WHEEL DRIVE INDICATION FAILS

1. 4WD indicator switch failure.
   - *Test 4WD indicator switch. Replace as required.*
   - *Bad contact. Check for corrosion or loose connector.*
   - *Damaged wires. Repair as required.*

4 WHEEL DRIVE DOES NOT ENGAGE OR DISENGAGE

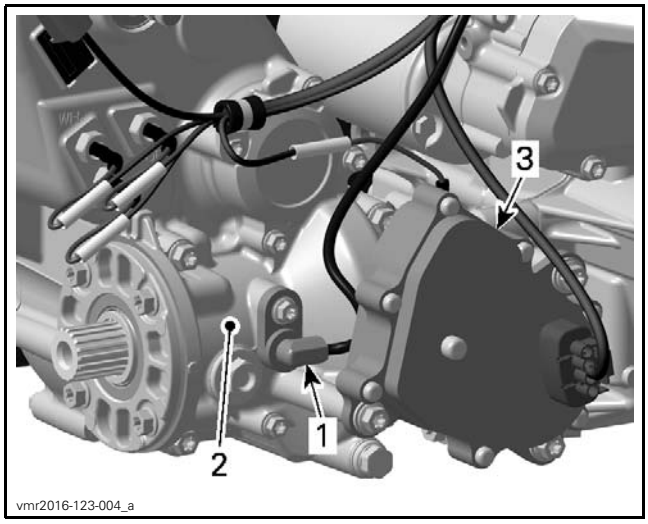
1. Defective 4WD switch.
   - *Check 4WD switch operation.*
2. Defective actuator.
   - *Test actuator.*
3. Damaged or worn shifting fork or sleeve.
   - *Remove actuator and inspect shifting fork and sleeve.*

PROCEDURES

VEHICLE SPEED SENSOR (VSS)

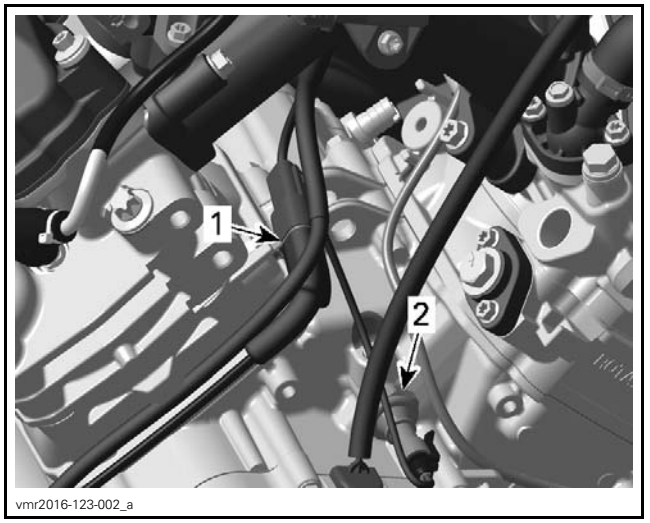
VSS Location

The vehicle speed sensor is located on the right housing of the gearbox behind the actuator.



1. VSS (Vehicle Speed Sensor)
2. Right housing of gearbox
3. Actuator

The VSS connector is located between the cylinders, behind the OPS cover.



1. VSS connector
2. OPS (Oil Pressure Switch)

VSS Access

To reach the VSS, refer to *BODY* subsection and remove the RH footrest panel.

VSS Connector Access

Refer to *BODY* subsection and remove the RH side panel extension.

VSS Wire Identification

FUNCTION	PIN	COLOR - SENSOR CONNECTOR	COLOR - WIRING HARNESS CONNECTOR
12-volt input from fuse F5	A	RED	VIOLET/BLUE
Speed signal (to cluster pin 9)	B	WHITE	PINK
Ground (to ECM C3)	C	BLACK	GREEN/ BROWN

VSS Circuit Protection

CONDITION	CIRCUIT PROTECTION
Supplied with main relay activated	Fuse 5

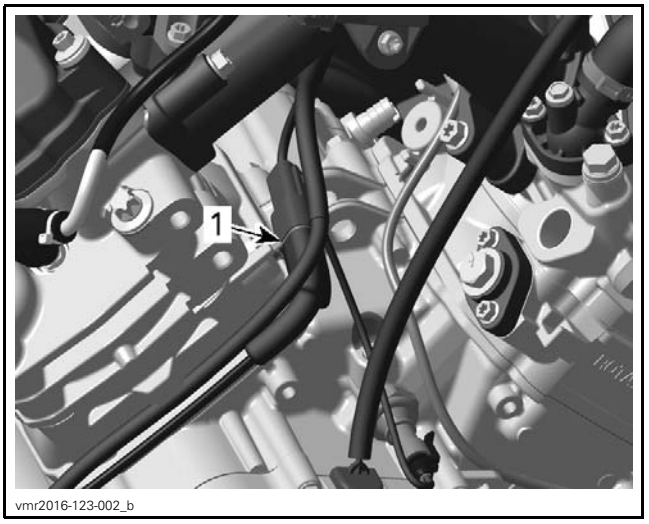
Testing the VSS Input Voltage

1. Remove VSS connector cover.
2. Set multimeter to Vdc.

REQUIRED TOOL
FLUKE 115 MULTIMETER (P/N 529 035 868)

3. Turn ignition switch ON.
4. Set emergency engine stop switch to RUN.
5. Back-probe the VSS connector.

REQUIRED TOOL
FLUKE RIGID BACK-PROBE (P/N TP88)



1. VSS connector

6. Measure voltage as per following table.

VEHICLE SPEED SENSOR INPUT VOLTAGE TEST		
TEST PROBES		RESULT (KEY ON)
PIN A VIOLET/BLUE wire	PIN C GREEN/BROWN wire	Battery voltage

If voltage is not as specified, test positive and ground circuits separately.

Testing the VSS Signal

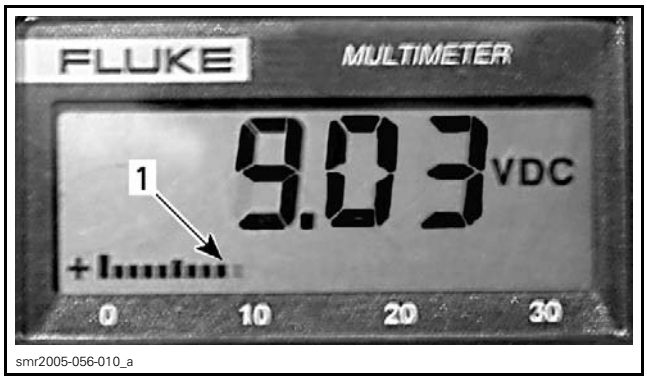
1. Lift rear of vehicle so that rear wheels are off the ground.
2. Set transmission to 2WD and to NEUTRAL.
3. Back-probe the VSS connector.

REQUIRED TOOL
FLUKE RIGID BACK-PROBE (P/N TP88)

4. Turn ignition switch ON.
5. Set emergency engine stop switch to RUN.
6. Set multimeter to Vdc.
7. Measure voltage while slowly rotating rear wheels by hand.

VEHICLE SPEED SENSOR SIGNAL TEST		
TEST PROBES		RESULT (WHILE ROTATING WHEELS)
PIN B WHITE wire	PIN C BLACK wire	Alternate reading between battery voltage and 0 Vdc

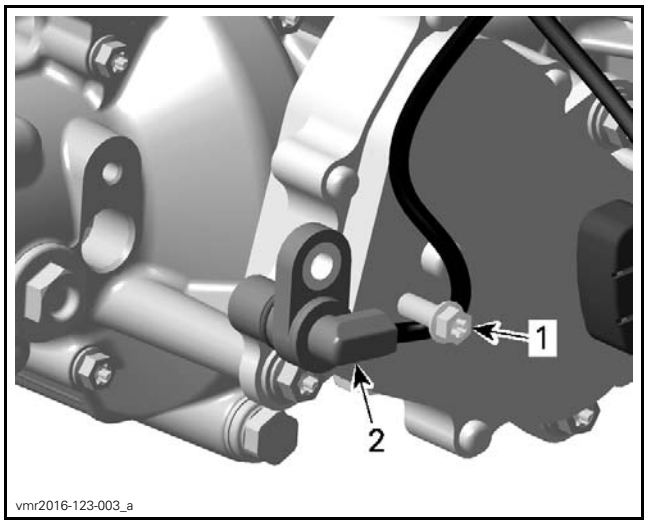
NOTE: Since we measure pulsating voltage, the numeric display will continuously change. The analog display may be easier to follow.



1. Analog display

Removing the VSS

Pull out the VSS after removing the retaining screws.



1. Screw
2. VSS

Installing the VSS

For installation, reverse the removal procedure. Pay attention to the following.

Lubricate VSS O-ring.

VSS O-RING	
Service product	SUPER LUBE GREASE (P/N 293 550 030)

Tighten VSS retaining screw to specification.

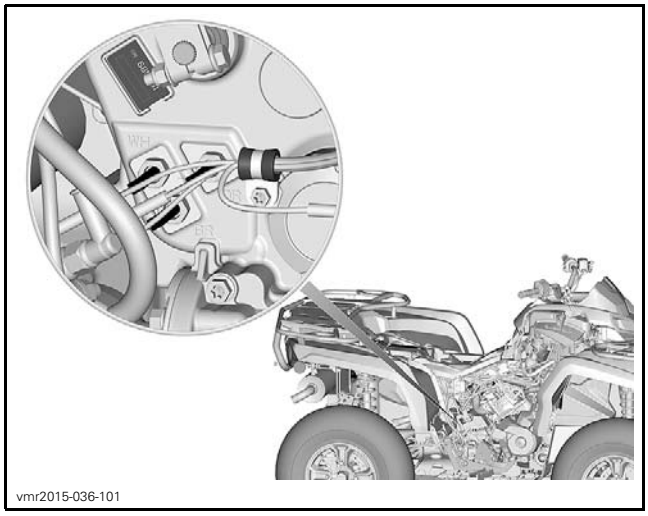
TIGHTENING TORQUE	
VSS retaining screw	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

GEARBOX POSITION INDICATOR SWITCHES

Gearbox Position Indicator Switch Access

Refer to *BODY* subsection and remove the following:

– Seat
– Console
– RH side panel and extension(s)
– RH footrest panel.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Testing the Gearbox Position Indicator Switch Continuity

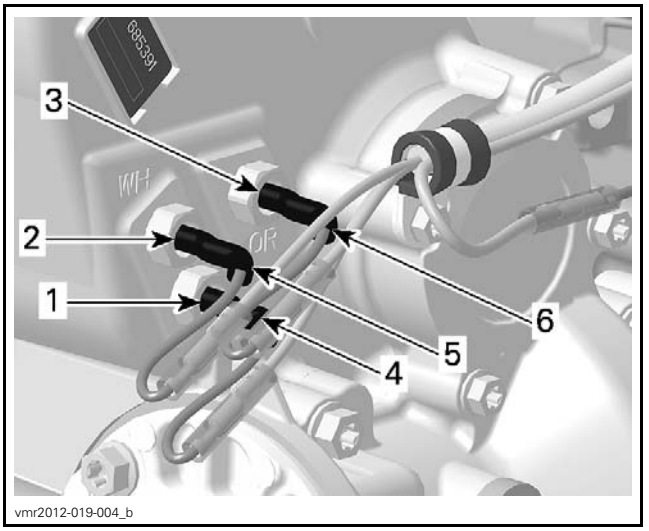
1. Remove parts required for access, refer to *GEARBOX POSITION INDICATOR SWITCH ACCESS* in this subsection.

NOTE: Take note of corresponding switch position and wire color.

2. Disconnect wires from switches.

NOTE: Remove insulating paint to obtain correct readings.

3. Using a multimeter, measure the resistance from the indicator switch to engine ground while selecting the gearbox to each position. Compare results with the logic table below.



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1. Gearbox position indicator switch - position 1
2. Gearbox position indicator switch - position 2
3. Gearbox position indicator switch - position 3
4. BROWN/GREY wire
5. WHITE/RED wire
6. ORANGE/GREY wire

SHIFTER POSITION	**CORRESPONDING SWITCH**		
	BROWN/ GREY	**WHITE/ RED**	**ORANGE/ GREY**
	Position 1	Position 2	Position 3
L	X		X
H			X
N		X	X
R		X	
P	X	X	

An "X" indicates switch is making ground contact, thus there should be continuity (R is close to 0 Ohms).

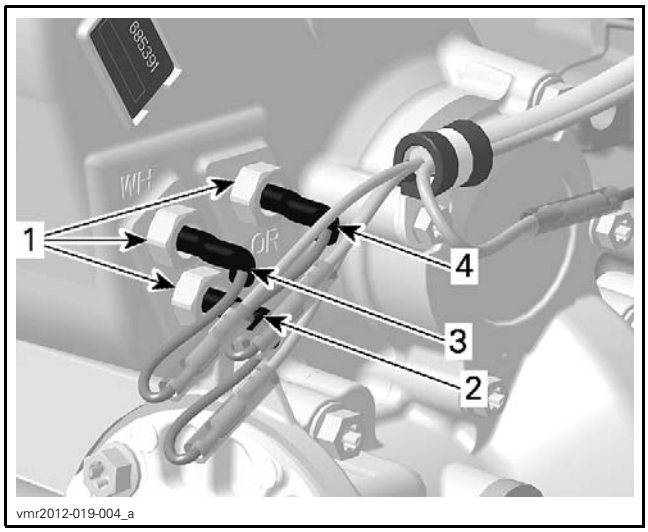
A blank space indicates switch is not making contact, there should be no continuity (R = infinite).

If the indicator switch is good, check the vehicle harness and/or indicator lights.

Removing the Gearbox Position Indicator Switch

NOTE: Clean area of dirt before removing gearbox indicator position switch(es). Take note of corresponding switch position and wire color.

Disconnect indicator switch from engine wiring harness.



1. *Gearbox position indicator switches*
2. *BROWN/GREY wire*
3. *WHITE/RED wire*
4. *ORANGE/GREY wire*

Unscrew switch.

Installing the Gearbox Position Indicator Switch

Reverse the removal procedure. However, pay attention to the following.

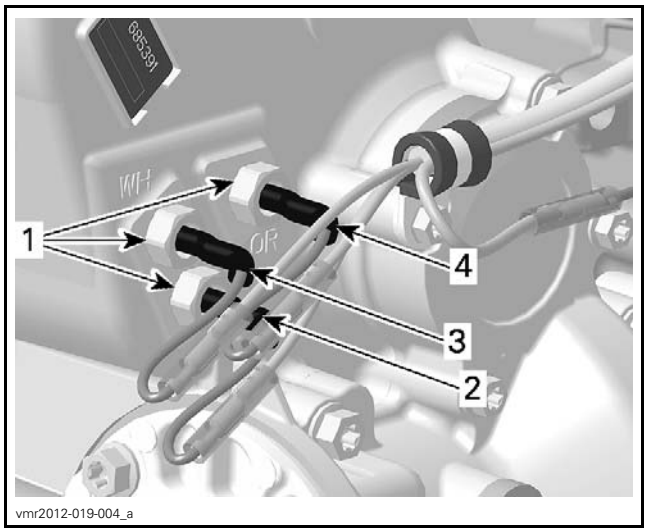
Take care to avoid damaging threads in switch bores during installation.

Carefully apply some sealant on threads of shift indicator switches.

NOTICE **Do not apply sealant on switch plunger as it will lead to switch malfunction.**

TIGHTENING TORQUE	
Service product	LOCTITE 5910 (P/N 293 800 081)
Indicator switches	2.5 N•m ± 0.3 N•m (22 lbf•**in** ± 3 lbf•**in**)

If all switches are removed, make sure to put the wires back in the correct location as noted prior to removal.



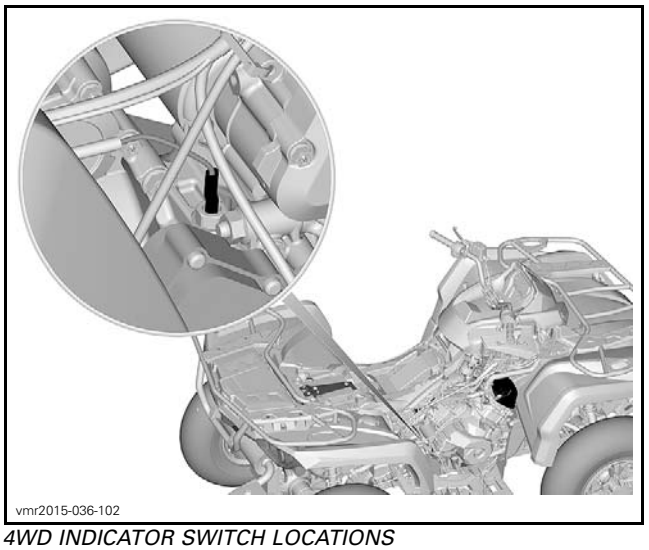
1. *Indicator switches*
2. *BROWN/GREY wire*
3. *WHITE/RED wire*
4. *ORANGE/GREY wire*

4WD INDICATOR SWITCH

4WD Indicator Switch Access

Refer to *BODY* subsection and remove the following:

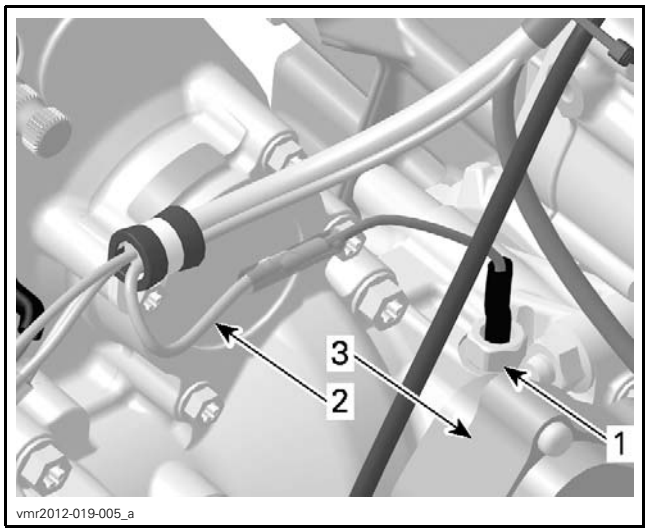
– Seat
– Console
– RH side panel and extension(s)
– RH footrest panel.



4WD INDICATOR SWITCH LOCATIONS

Removing the 4WD Indicator Switch

Disconnect 4WD indicator switch connector from engine wiring harness.



1. 4WD indicator switch
2. BLACK/BEIGE wire for contact to 4WD
3. Actuator

Testing the 4WD Indicator Switch

Measure switch resistance as follows.

SWITCH POSITION	SWITCH WIRE		RESISTANCE
2WD	BLACK/ BEIGE	Engine ground	Close to 0 Ω
4WD			Infinite (OL)

If the resistance is out of specification, replace the 4WD indicator switch.

Installing the 4WD Indicator Switch

Reverse the removal procedure. However, pay attention to the following.

Take care to avoid damaging threads in switch bore during installation.

Carefully apply some sealant on threads of indicator switch.

NOTICE **Do not apply sealant on switch plunger, as it will lead to switch malfunction.**

TIGHTENING TORQUE	
Service product	LOCTITE 5910 (P/N 293 800 081)
4WD indicator switch	2.5 N•m ± 0.3 N•m (22 lbf•**in** ± 3 lbf•**in**)

4WD ACTUATOR

4WD Actuator Access

To access the actuator, refer to *BODY* subsection and remove the following parts:

– Seat
– Console
– RH side panel and extension(s)
– RH footrest panel.

Testing the 4WD Actuator

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

1. Unplug 4WD actuator connector.
2. Turn ignition key ON.
3. Set emergency engine stop switch to RUN.
4. Measure voltage as follows.

SWITCH POSITION	SWITCH WIRE		VOLTAGE
2WD	WHITE/BLUE	WHITE	Battery voltage
4WD	WHITE/BLACK		

If the selector is out of specifications, check wires, connectors and replace the selector if necessary.

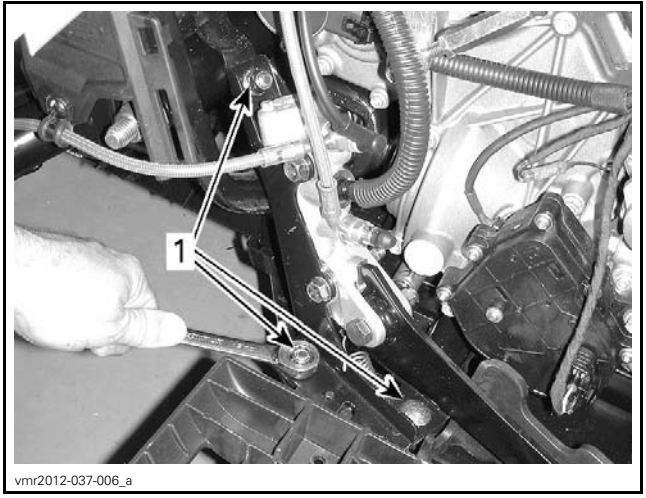
If the selector is good, check the vehicle harness.

If the vehicle harness is good, replace the actuator.

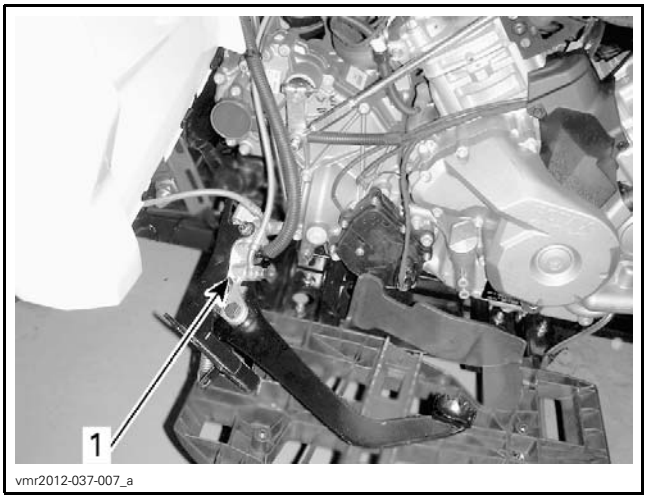
Removing the 4WD Actuator

NOTE: Before beginning any servicing on the actuator, make sure the vehicle is in 4WD position. No need to remove engine from vehicle.

1. Detach brake master cylinder from frame.

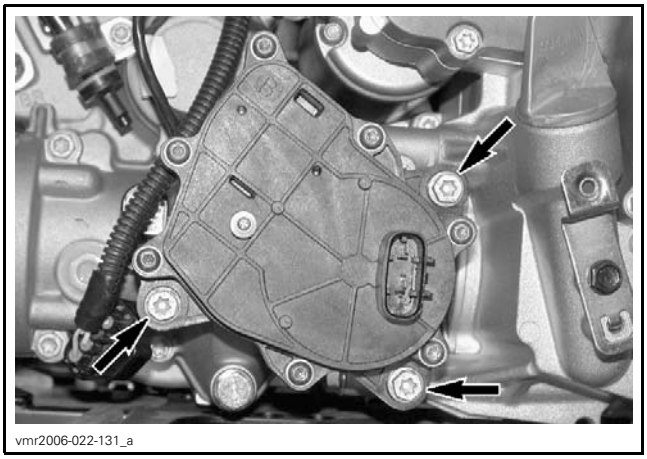


1. Remove retaining screws from master cylinder support



1. Master cylinder moved apart

2. Unplug actuator connector.
3. Place a drain pan under actuator.
4. Unscrew actuator bolts.

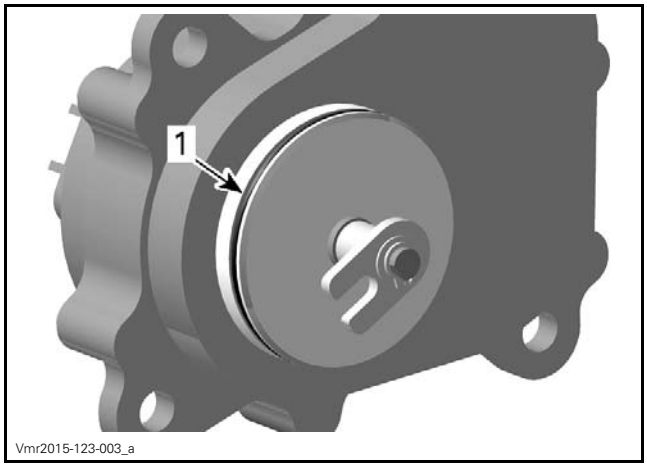


5. When all actuator bolts are removed, pull the actuator out of housing.

Installing the 4WD Actuator

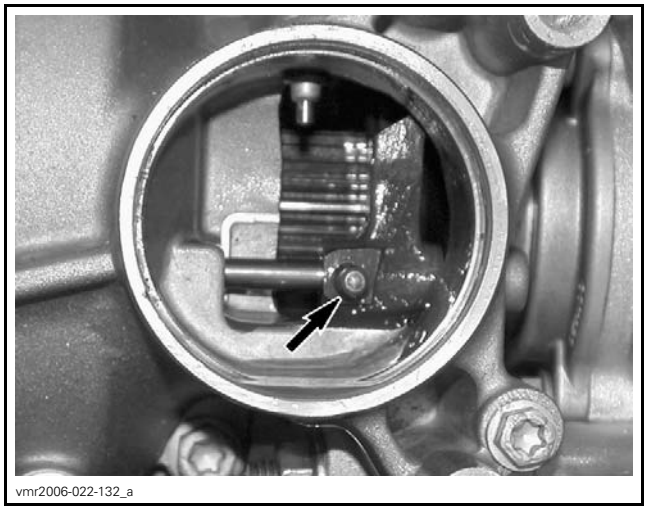
1. Lubricate actuator O-ring.

ACTUATOR O-RING	
Service product	SUPER LUBE GREASE (P/N 293 550 030)

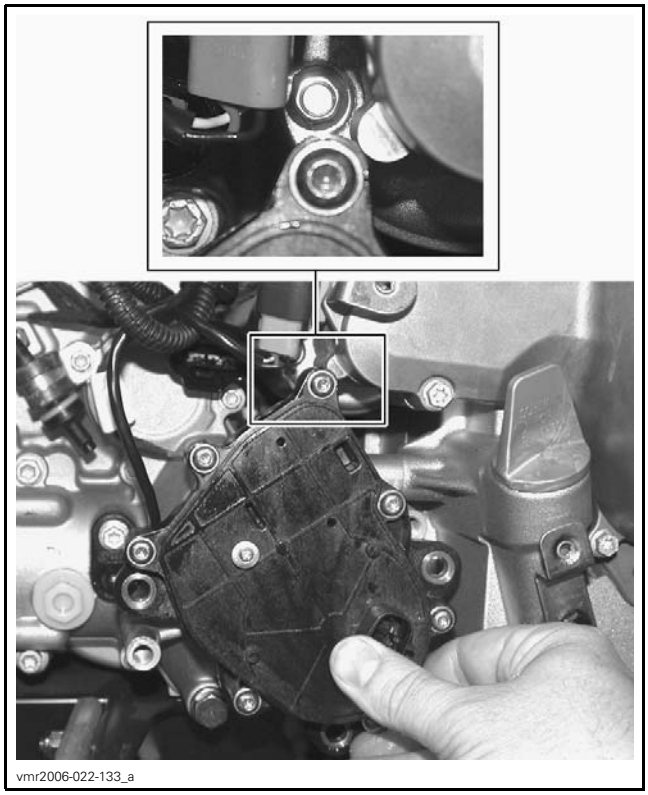


1. Actuator O-ring

2. Verify if coupling fork is in 4WD position. The coupling fork should be positioned toward the front of vehicle.



3. Align the actuator fork with the pin on coupling fork then push the actuator in the housing. See the following illustration to position the actuator correctly.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4. Rotate the actuator counterclockwise until it orients itself to mounting position.

NOTICE Do not cut or break the actuator O-ring.

5. Install all actuator bolts then torque them to specification.

TIGHTENING TORQUE	
Actuator screws	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)

6. Connect actuator.
7. Lift the front of vehicle.
8. Turn front wheels. The front propeller shaft should not turn (the PARK position must be selected).

If the front propeller shaft turns, the actuator is not installed correctly. Remove actuator and reinstall it.

9. Set ignition switch to ON.
10. Set emergency engine stop switch to RUN.
11. Select the 2WD position.
12. Turn front wheel again. The front propeller shaft. The shaft should turn easily.

If the front propeller shaft does not turn, the actuator is not installed correctly. Remove actuator and reinstall it.

NOTICE Refill missing gearbox oil, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

13. Install all other removed parts.

GEARBOX OIL SEALS

Replacing the Gearbox Oil Seals

Replace oil seals if they are brittle, hard or damaged.

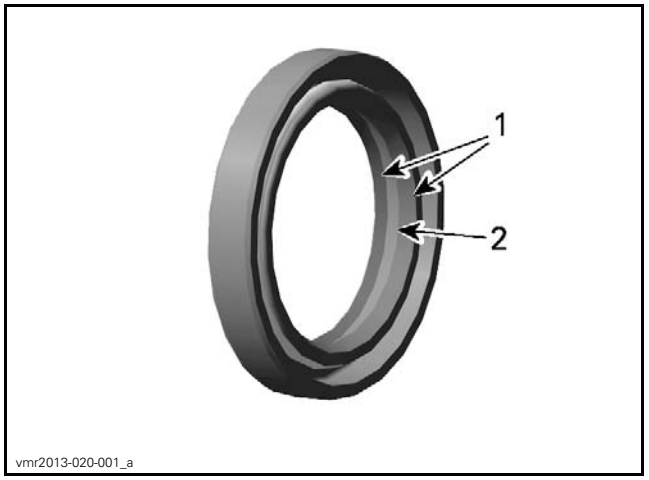
A small flat screwdriver can be used to remove most of these oil seals.

NOTICE Avoid scoring parts during oil seal removal.

When replacing an oil seal, take this opportunity to inspect the following:
- Check bearings behind each oil seal for contamination and/or metal shavings.
- Check oil seal running surfaces for scratches.

Lubricating the Oil Seal

When installing or reinstalling oil seals, use PETAMO GREASE GHY 133N (P/N 420 899 271) to:
- Lubricate sealing lips all around.
- Fill up the room between sealing lips halfway around the perimeter.



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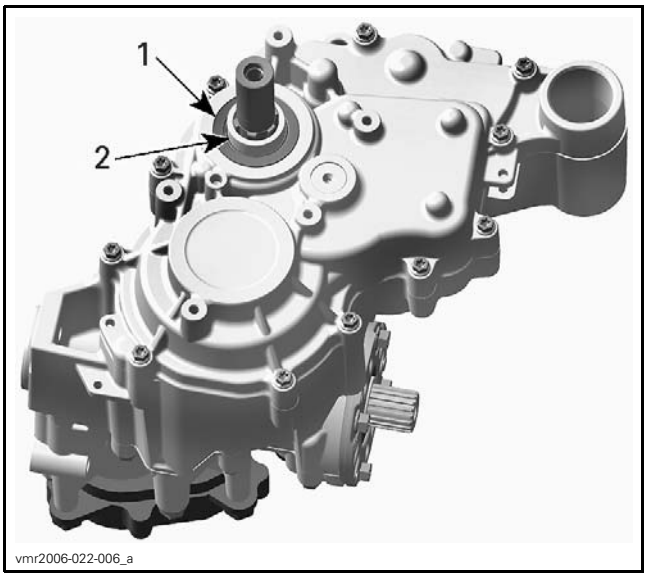
1. Sealing lips
2. Room between sealing lips

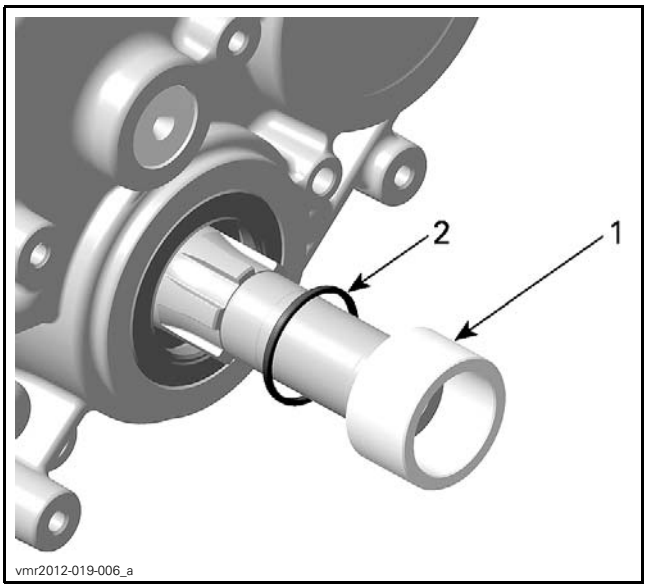
Countershaft Oil Seal

The countershaft oil seal can be removed without removing gearbox from vehicle. Remove drive and driven pulley and CVT air guide.



1. Countershaft oil seal
2. Distance sleeve

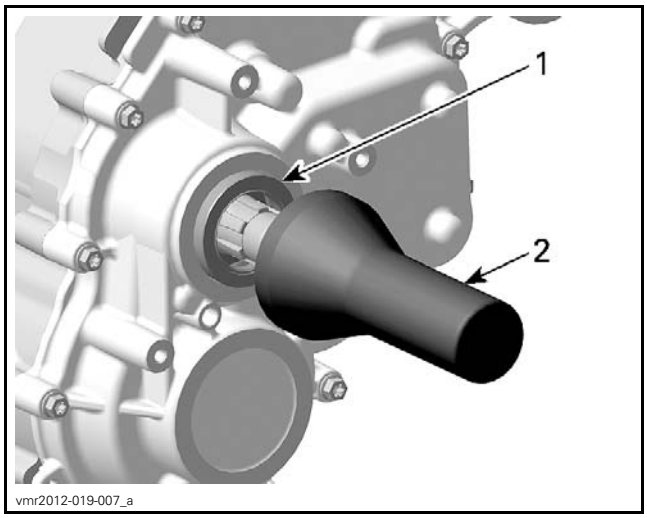
NOTE: When oil seal is removed also inspect O-ring.



1. Distance sleeve
2. O-ring

For countershaft oil seal installation use the following service tool.

REQUIRED TOOL	
COUNTERSHAFT OIL SEAL PUSHER (P/N 529 036 222)	



1. Countershaft oil seal
2. Oil seal pusher

Shift Shaft Oil Seal

The shift shaft oil seal can be removed without removing the gearbox from the vehicle.

To replace the shift shaft oil seal, refer to *BODY* subsection and remove:

– Seat
– Console
– RH side panel
– RH footrest panel
– Shift plate from shift shaft (refer to *SHIFTER* subsection.

Using a suitable tube with the proper diameter to install the shift shaft oil seal.

If gearbox housing is apart, the following tools can be used for shift shaft oil seal installation.

REQUIRED TOOL	
OIL SEAL INSTALLER (GEARBOX) (P/N 529 035 758)	
HANDLE (P/N 420 877 650)	

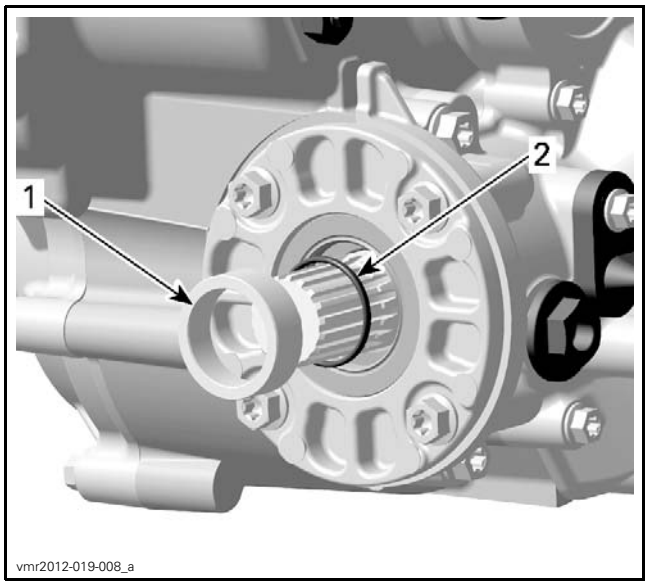
NOTICE **Oil seal must be installed with sealing lip toward gearbox.**

Output Shaft Oil Seal

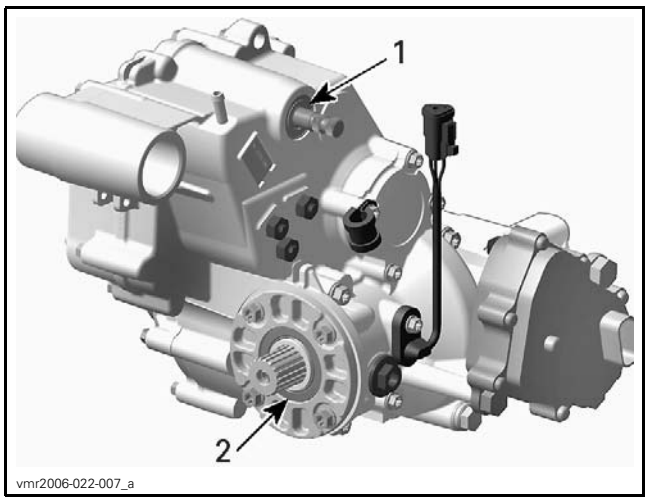
Remove propeller shaft. Refer to *REAR DRIVE* subsection.

Punch a sharp screwdriver through oil seal for removal.

NOTE: When oil seal is removed also inspect O-ring.



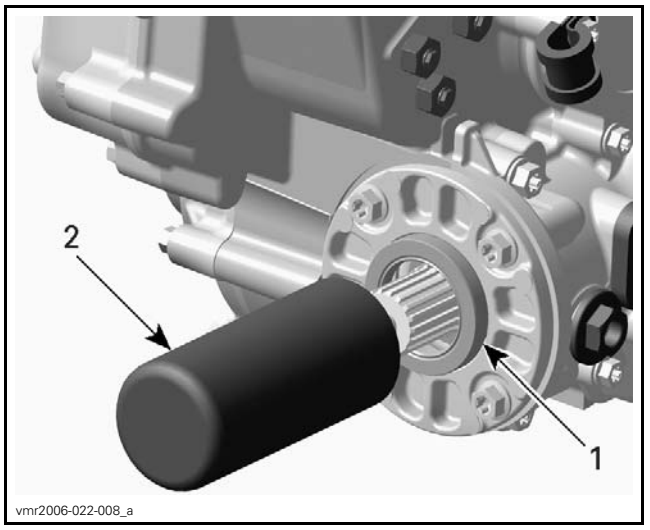
1. Distance sleeve
2. O-ring



1. Shift shaft oil seal
2. Output shaft oil seal

For output shaft oil seal installation use the following service tool.

REQUIRED TOOL	
DRIVE SHAFT OIL SEAL INSTALLER (P/N 529 036 028)	



1. Output shaft oil seal
2. Oil seal installer

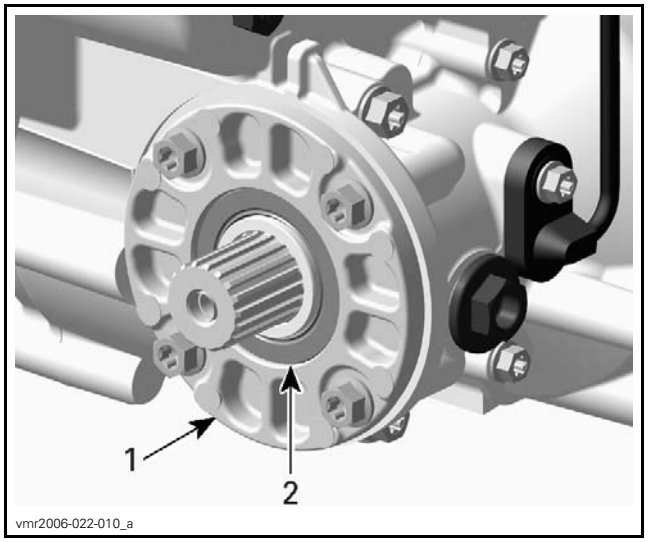
OUTPUT SHAFT AND COUPLING MECHANISM

Remove gearbox. Refer to *GEARBOX* in this subsection.

Before removing the right housing and output shaft measure the backlash on output shaft. This measure will indicate if output shaft adjustment is necessary.

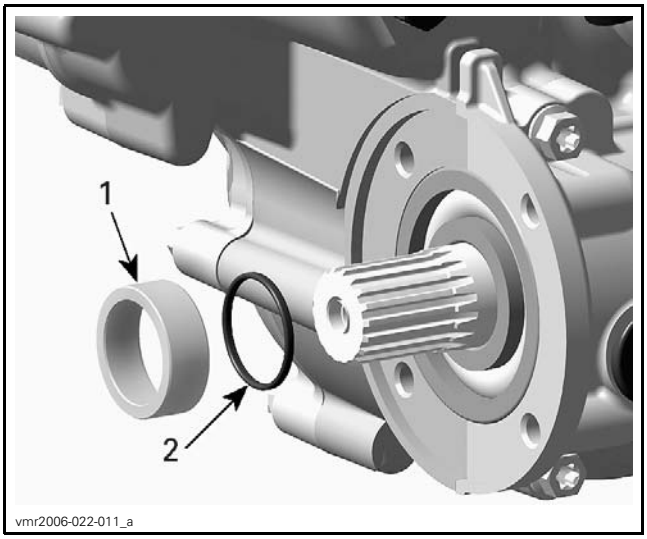
Output Shaft Backlash Procedure

1. Engage PARK position on the gear shaft to block gearbox.
2. Remove bearing cover with oil seal



1. Bearing cover
2. Oil seal

3. Remove:
   – Distance sleeve
   – O-ring.

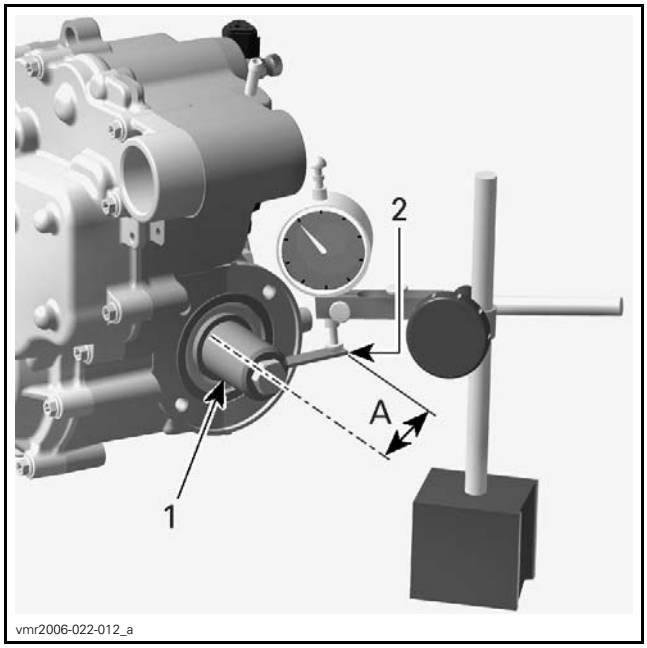


1. Distance sleeve
2. O-ring

4. Install the measurement tool at the end of output shaft.

REQUIRED TOOL	
BACKLASH MEASUREMENT TOOL (P/N 529 036 030)	

5. From center of tool bolt, measure 47 mm (1.85 in)and place a mark on the tab.



1. Backlash measurement tool
2. Mark on tab
A. 47 mm (1.85 in)

6. Position the head of the dial indicator, against the tab at a 90° angle and on the line. Then, gently rotate the output shaft.

This reading gives the backlash measurement. Refer to the following table for backlash specifications.

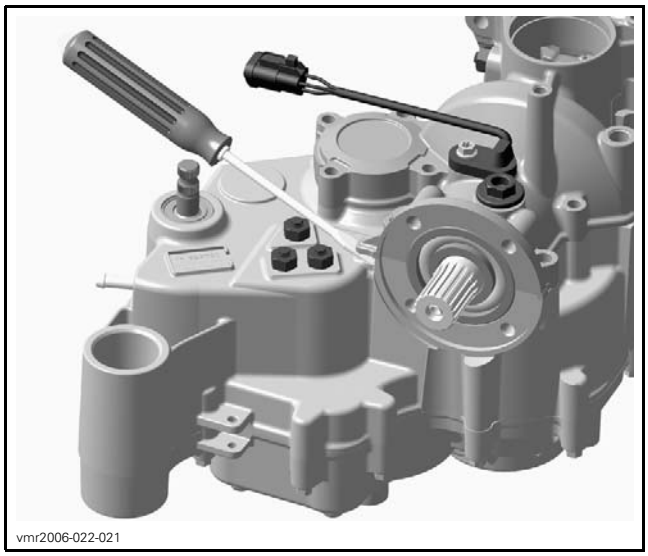
OUTPUT SHAFT BACKLASH	
NEW	0.10 mm to 0.20 mm (.0039 in to .0079 in)
SERVICE LIMIT	0.25 mm (.0098 in)

If backlash is not within the specification, remove the output shaft and select the next thicker or thinner shim to meet the specifications.

NOTE: Use next thicker shim to increase backlash and next thinner shim to reduce backlash.

Removing the Output Shaft and Coupling Mechanism

1. Remove actuator.
2. Remove the bearing cover with oil seal.
3. Unscrew all bolts retaining the right housing to the center housing.
4. To remove right housing, use 2 big screwdrivers.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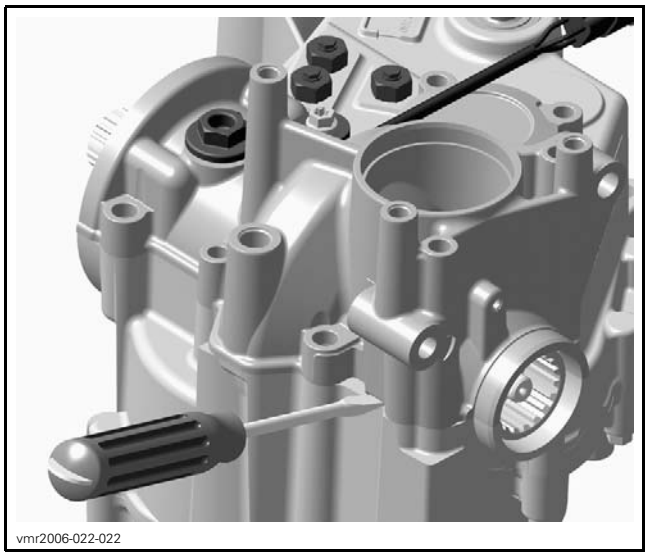
POSITION FOR BIG FLAT SCREWDRIVER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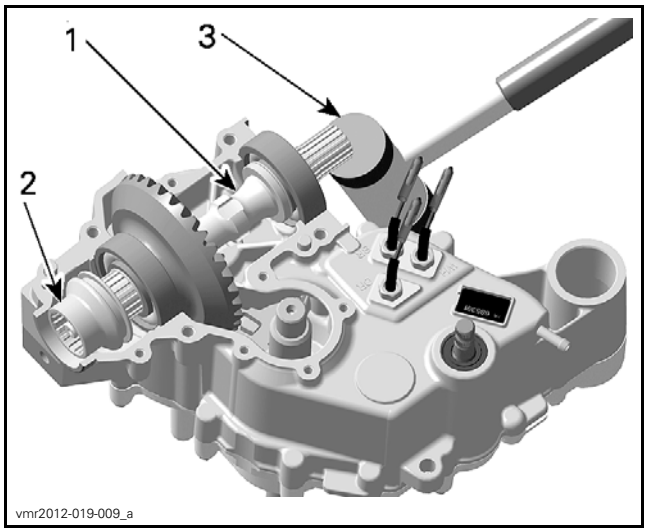
POSITION FOR BIG FLAT SCREWDRIVER

5. Remove output shaft.

REQUIRED TOOL
Soft hammer



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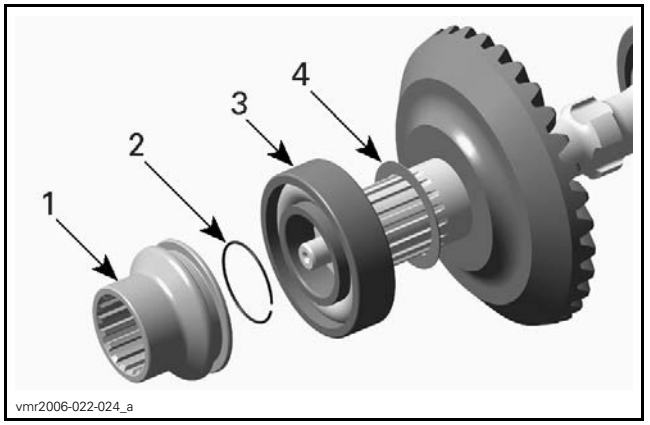
1. *Output shaft*
2. *Coupling sleeve*
3. *Soft hammer*

6. Remove:
   - Coupling sleeve
   - O-ring
   - Ball bearing
   - Thrust washer.



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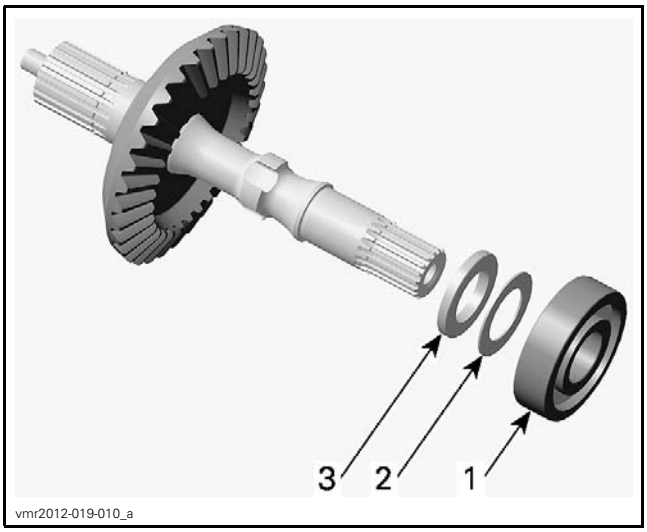
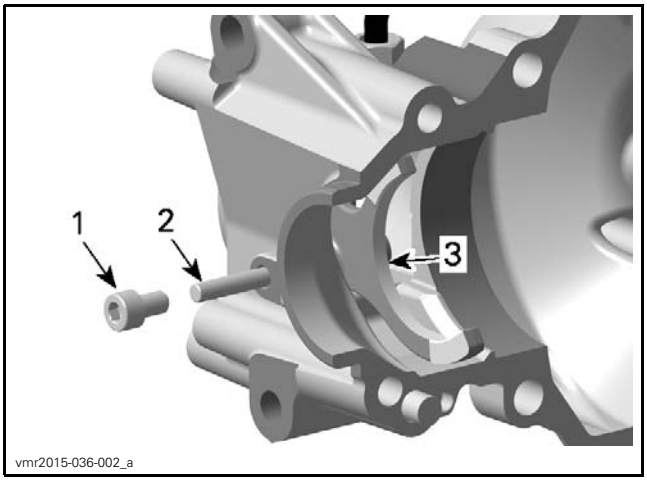
1. *Coupling sleeve*
2. *O-ring*
3. *Ball bearing*
4. *Thrust washer*

7. Remove:
   - Ball bearing
   - Thrust washer.



1. *Ball bearing*
2. *Thrust washer*
3. *Distance ring*

8. Remove:
   - Screw
   - Pin
   - Coupling fork.



1. *Screw*
2. *Pin*
3. *Coupling fork*

Inspecting the Output Shaft and Coupling Mechanism

Check output shaft and its gear for cracks, bend, pitting or other visible damages.

Check output shaft splines for wear or other damages.

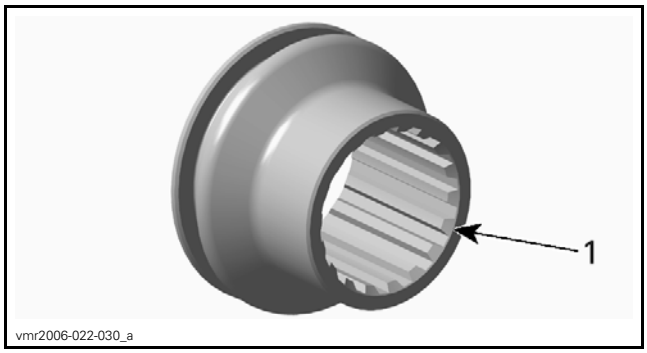
NOTICE **Always replace output shaft and bevel gear shaft at the same time. Adjust these components upon replacement.**

Check if the output shaft ball bearings turn freely and smoothly. Replace if necessary, refer to *GEARBOX ADJUSTMENT* in this subsection.

Replace oil seal if brittle, hard or damaged.

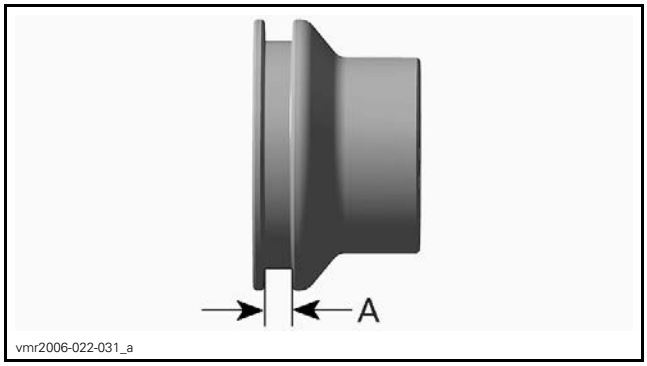
Replace O-rings if brittle, hard or damaged.

Check splines of coupling sleeve for wear or other damages.



1. *Inspect splines*

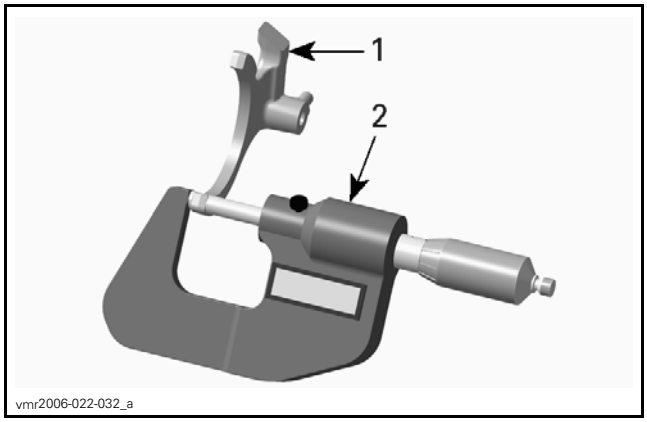
Measure the coupling sleeve groove width.



A. *Groove width*

COUPLING SLEEVE GROOVE WIDTH	
NEW	5.25 mm to 5.35 mm (.207 in to .211 in)
SERVICE LIMIT	5.50 mm (.217 in)

Check coupling fork claw thickness.



1. *Coupling fork*
2. *Micrometer*

COUPLING FORK CLAW THICKNESS	
NEW	4.95 mm to 5.05 mm (.195 in to .199 in)
SERVICE LIMIT	4.80 mm (.189 in)

Clean housing split surface and especially the bearing areas from metal particles or other contamination.

Installing the Output Shaft and Coupling Mechanism

Reverse the removal procedure. However, pay attention to the following.

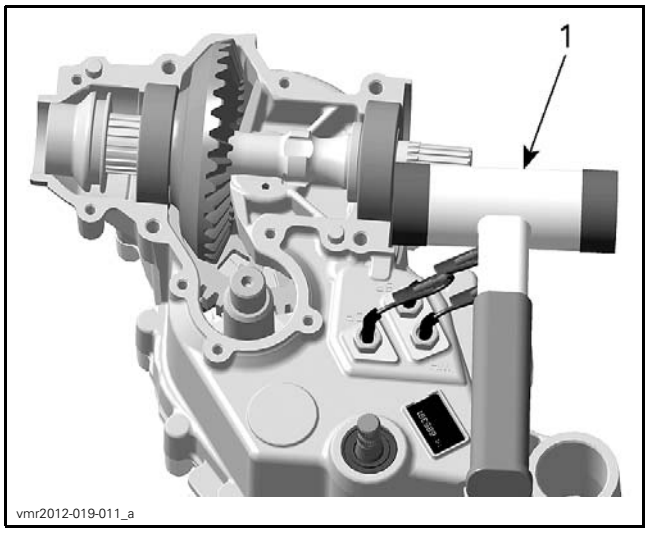
Install thrust washer, bearing, O-ring and coupling sleeve onto the output shaft.

Install distance ring, thrust washer and ball bearing.

NOTE: O-ring and distance sleeve are not installed at this time.

Place the output shaft into the center housing.

Use soft hammer to put bearing exactly in place against center housing.



1. Soft hammer

Clean the bearing cover location then attach bearing cover with oil seal to the housing.

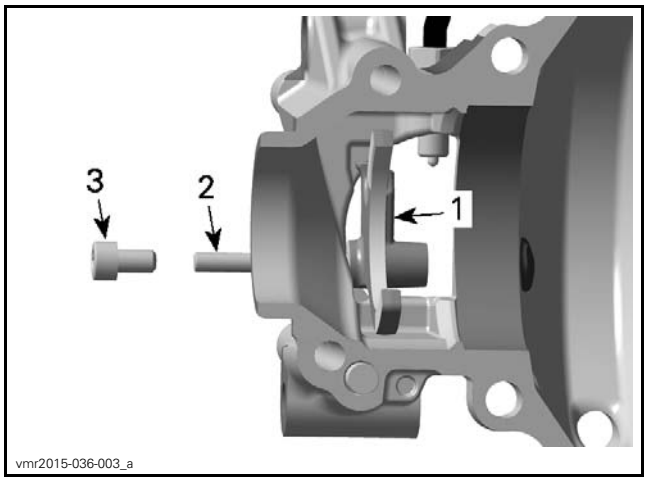
Temporarily install the right housing with the four (4) M8 TORX screws beside bearing seats.

NOTE: Prior to tightening the TORX screws, tap on the gear end of output shaft with a soft hammer to take up all gear free play.

Verify output shaft backlash. Refer to *OUTPUT SHAFT BACKLASH PROCEDURE* in this subsection. Adjust as required.

If backlash is within specifications, remove dial indicator, backlash measuring tool, bearing cover and right housing.

NOTE: Install coupling fork, pin and screw in right housing before applying sealant to the mating surface.



1. Coupling fork
2. Pin
3. Screw

Clean all metal components in a solvent.

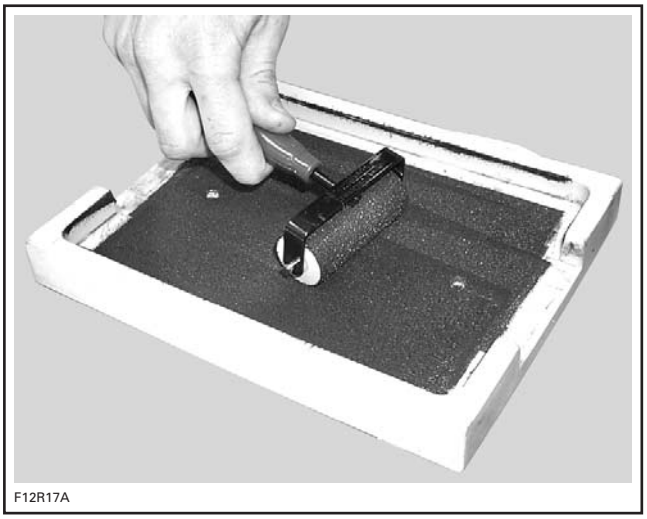
Housing mating surfaces are best cleaned using a combination of LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500) and a brass brush. Brush a first pass in one direction then make the final brushing perpendicularly (90°) to the first pass cross (hatch).

NOTICE **Do not wipe with rags. Use a new clean hand towel only.**

IMPORTANT: When beginning the application of sealant, the assembly and the first torquing should be done within 10 minutes. It is suggested to have all you need on hand to save time.

Use LOCTITE 5910 (P/N 293 800 081) on mating surfaces.

Use a plexiglass plate and apply some sealant on it. Use a soft rubber roller (50 - 75 mm (2 - 3 in)), available in arts products suppliers for printing, and roll the sealant to get a thin uniform coat on the plate (spread as necessary). When ready, apply the sealant on housing mating surfaces.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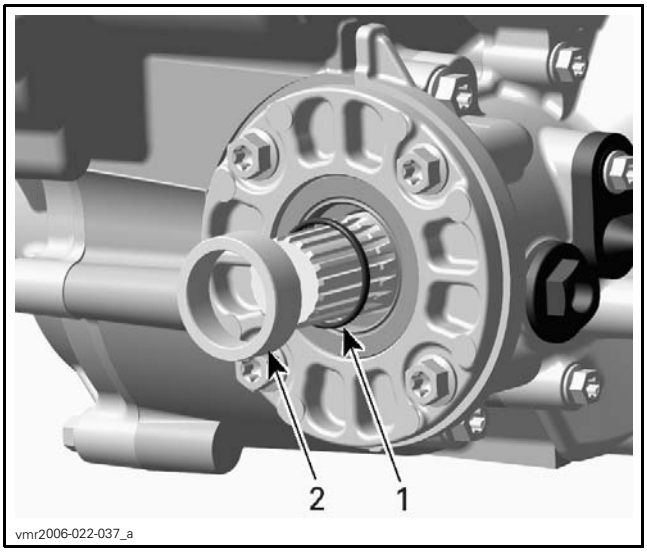
Do not apply in excess as it will spread out inside housings.

NOTE: It is recommended to apply this specific sealant as described here to get a uniform application without lumps. If you do not use the roller method, you may use your finger to uniformly distribute the sealant (using a finger will not affect the adhesion).

Install all other screws on right housing then the O-ring and the distance sleeve on end of output shaft. Chamfered bore of distance sleeve has to face the engine.



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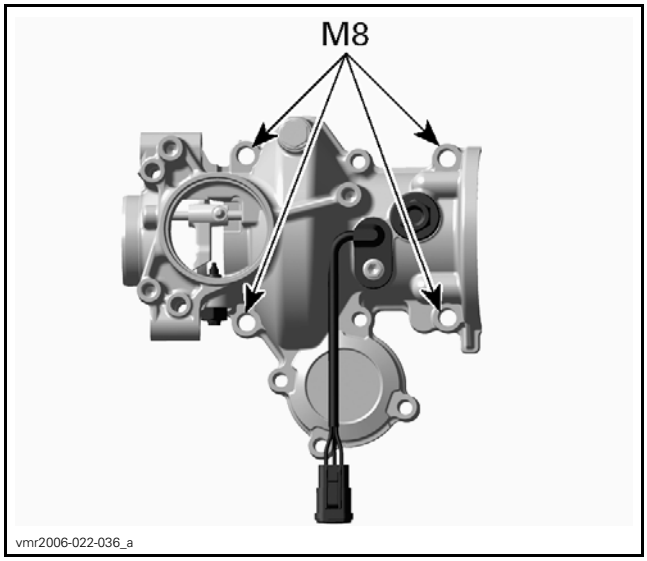
1. O-ring
2. Distance sleeve

NOTE: To install the right housing align the coupling fork with the groove in the coupling sleeve.

Torque the four (4) M8 Torx screws in a crisscross sequence to following specification.

TIGHTENING TORQUE		
Right housing M8 screws	Step A	Hand tightened
	Step B	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)



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Tighten all M6 Torx screws to specification

TIGHTENING TORQUE	
Right housing M6 screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

Before installing bearing cover, apply LOCTITE 5910 (P/N 293 800 081) on the housing and SUPER LUBE GREASE (P/N 293 550 030) on oil seal.

Install the actuator, refer to *ACTUATOR* in this subsection.

Once this is done, complete final assembly.

GEARBOX

Removing the Gearbox

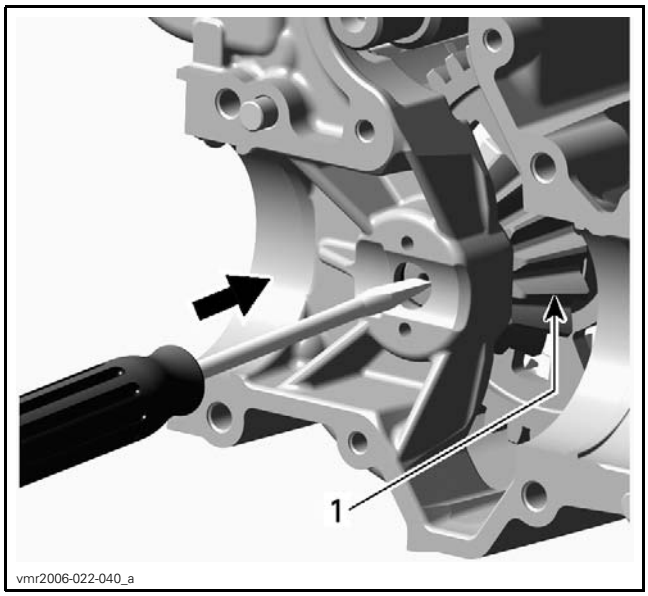
1. Remove engine from vehicle and place it on footrest support. Refer to *ENGINE REMOVAL AND INSTALLATION* subsection for the procedure.
2. Drain gearbox. Refer to *GEARBOX OIL DRAINING PROCEDURE* in *PERIODIC MAINTENANCE PROCEDURES* subsection.
3. Remove drive and driven pulley and CVT air guide, refer to *CONTINUOUSLY VARIABLE TRANSMISSION (CVT)* subsection.
4. Unscrew the three (3) nuts that attach the gearbox to the engine.
5. Pull gearbox to separate it from engine.

Disassembling the Gearbox

NOTE: During gearbox disassembly, inspect the condition of each part closely.

1. Remove the output shaft. Refer to *OUTPUT SHAFT AND COUPLING MECHANISM* in this subsection.
2. Push bevel gear with a pin slightly down and measure the axial clearance of bevel gear with a feeler gauge.

NOTE: Bevel gear axial clearance must be measured before center and left housings separation.

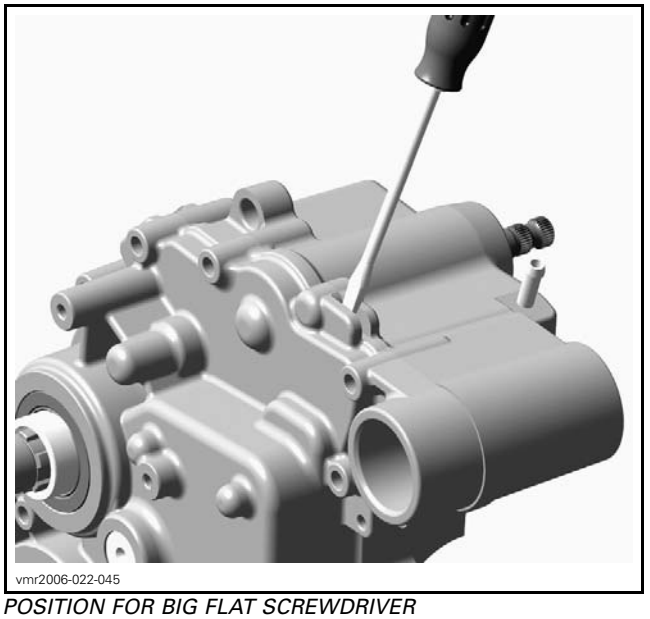


1. Bevel gear

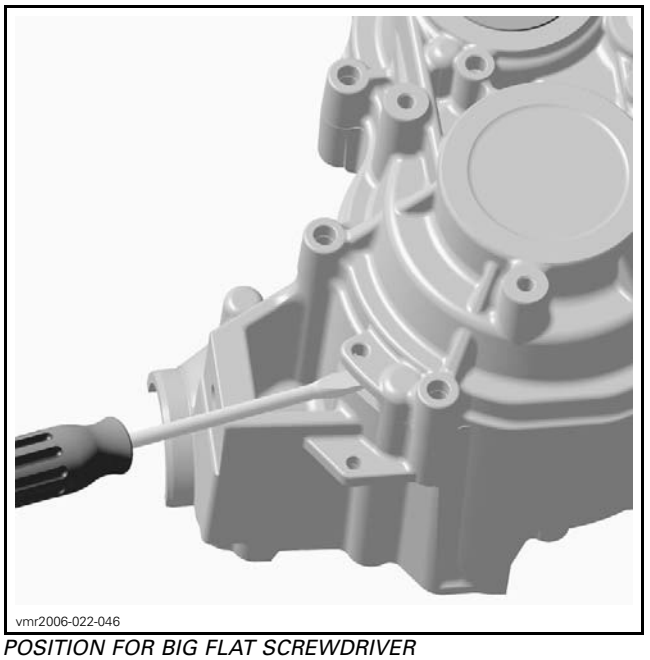
MEASURE AXIAL CLEARANCE OF BEVEL GEAR

BEVEL GEAR AXIAL CLEARANCE	
NEW	0.02 mm to 0.15 mm (.0008 in to .0059 in)
SERVICE LIMIT	0.19 mm (.0075 in)

3. Unscrew the left housing screws.
4. Place the left housing on a wood stand, center housing pointing upwards.
5. Using 2 big flat screwdrivers, lift the center housing.

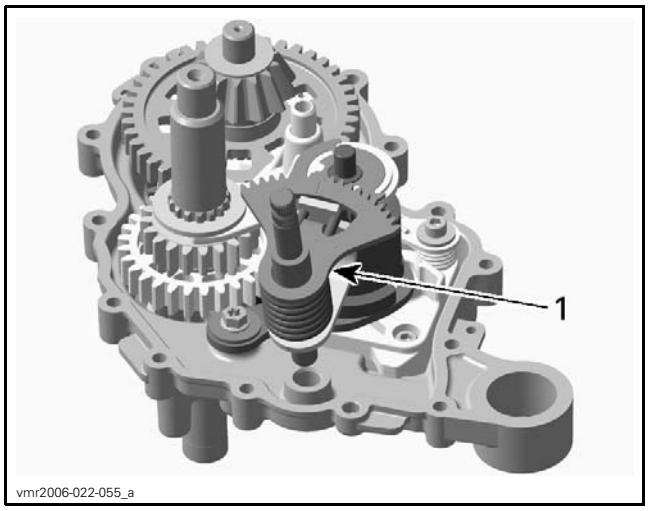


POSITION FOR BIG FLAT SCREWDRIVER



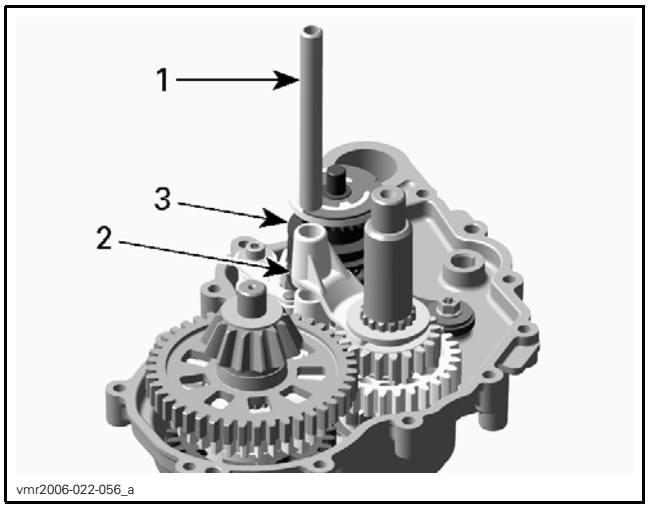
POSITION FOR BIG FLAT SCREWDRIVER

6. Remove center housing completely.
7. Remove shift shaft assembly.



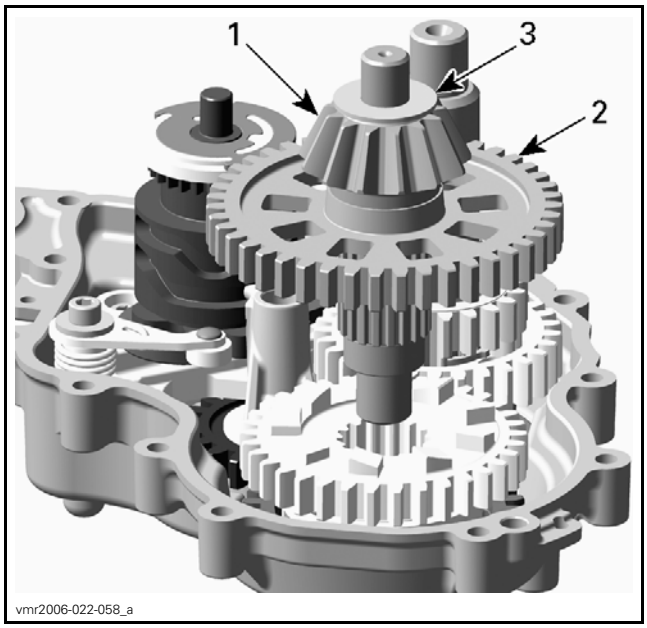
1. Shift shaft assembly

8. Remove shift fork shaft.
9. Disengage shift forks from shift drum and remove shift fork.



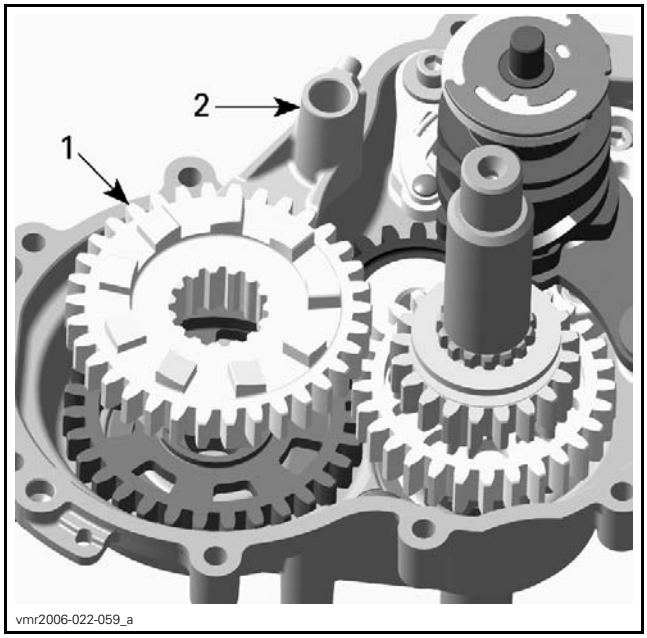
1. Shift fork shaft
2. Shift fork
3. Shift drum

10. Remove bevel gear shaft with low range gear assembly and shim.



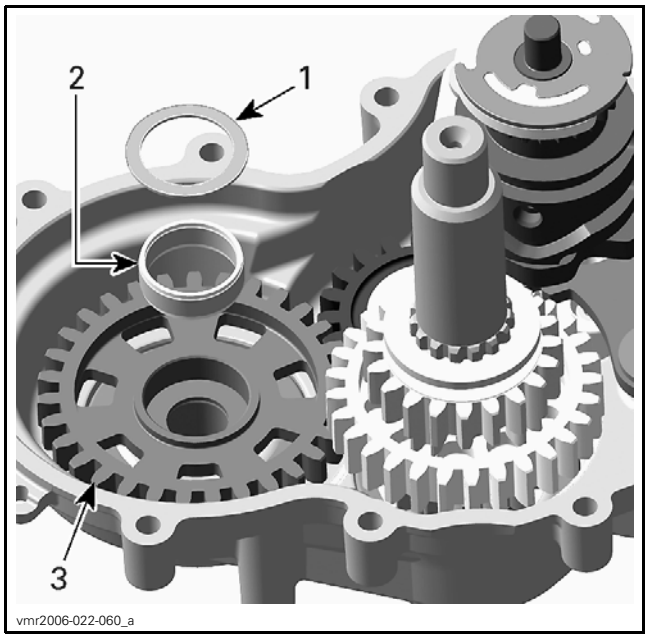
1. Bevel gear
2. Low range gear
3. Shim

11. Remove sliding gear with shift fork.



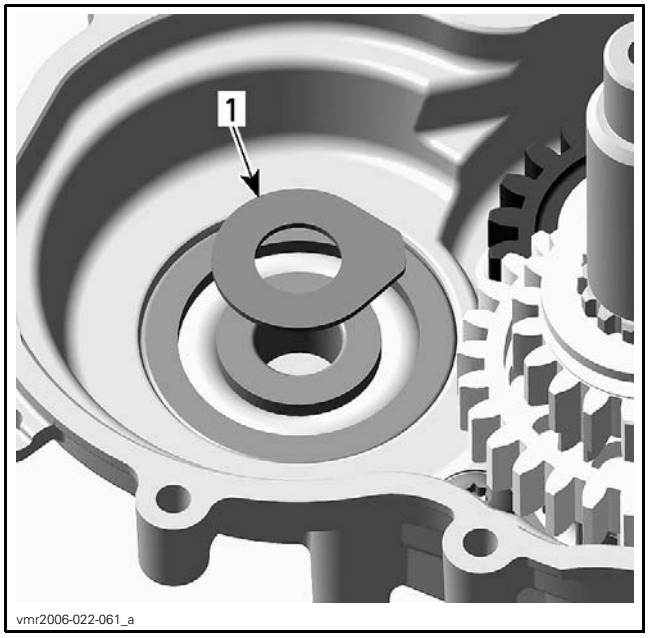
1. Sliding gear
2. Shift fork

12. Remove thrust washer, needle bearing and reverse gear.



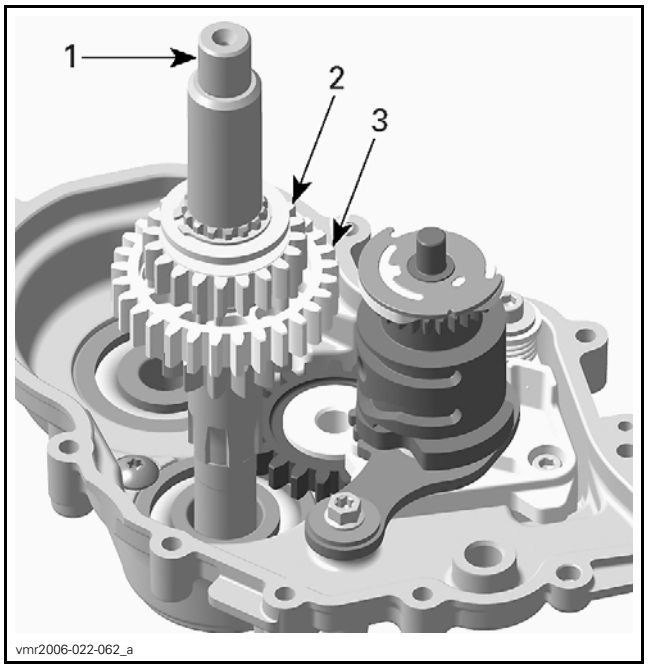
1. *Thrust washer*
2. *Needle bearing*
3. *Reverse gear*

13. Remove shim on CVT side.



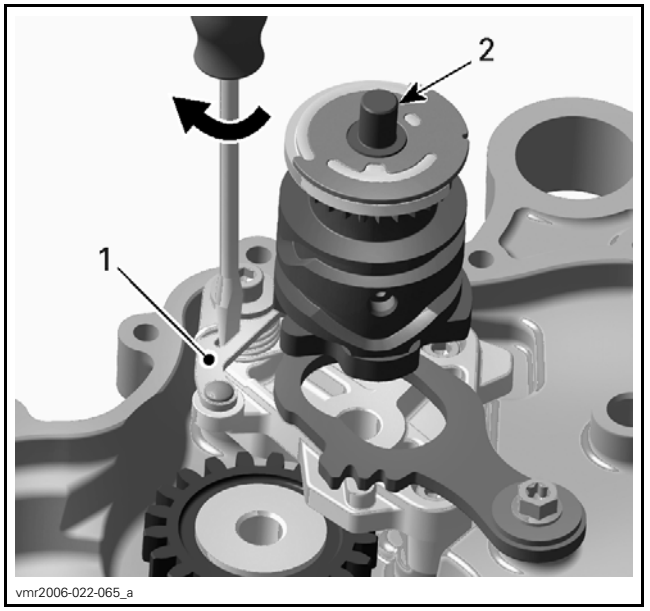
1. *Shim on CVT side*

14. Remove countershaft with low range gear and high range gear assembly.



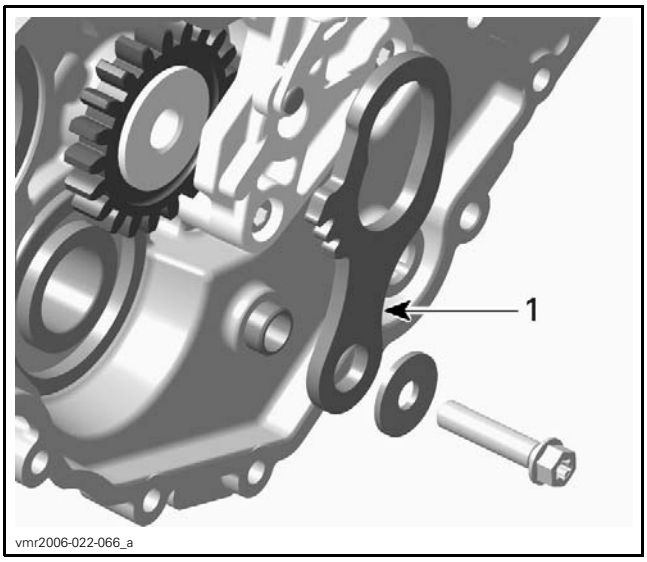
1. *Countershaft*
2. *Low range gear*
3. *High range gear*

15. Insert a flat screwdriver in the slot of index lever. Turn screwdriver clockwise and remove shift drum.



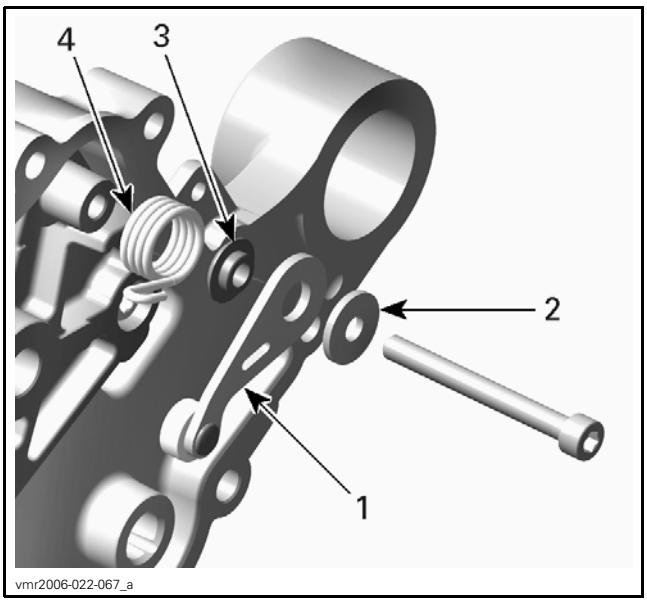
1. *Index lever*
2. *Shift drum*

16. Remove parking lock lever.



1. Parking lock lever

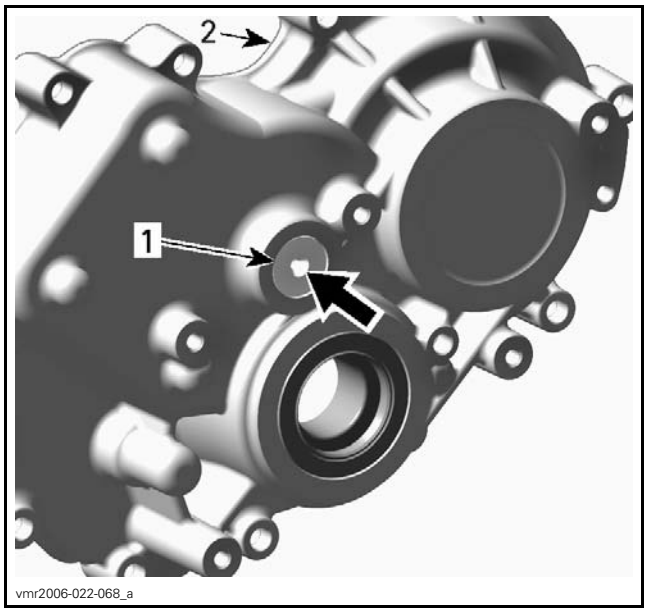
17. Remove index lever with washer, step ring and spring.



1. Index lever
2. Washer
3. Step ring
4. Index spring

18. Remove support flange.

NOTE: To remove intermediate gear and needle bearing, use a press bench to push out the intermediate gear shaft.



PRESS SHAFT IN THE DIRECTION AS SHOWN BY THE ARROW
1. Intermediate gear shaft
2. Left housing

Removing the Bearings

If necessary heat housing up to 100°C (212°F) before removing ball bearings or needle bearings.

⚠ WARNING

Clean oil, outside and inside, from housing before heating.

NOTICE **Always support gearbox housings properly when ball bearings or needle bearings are removed. Housing damages may occur if this procedure is not performed correctly.**

To remove bevel gear needle bearing use a punch.

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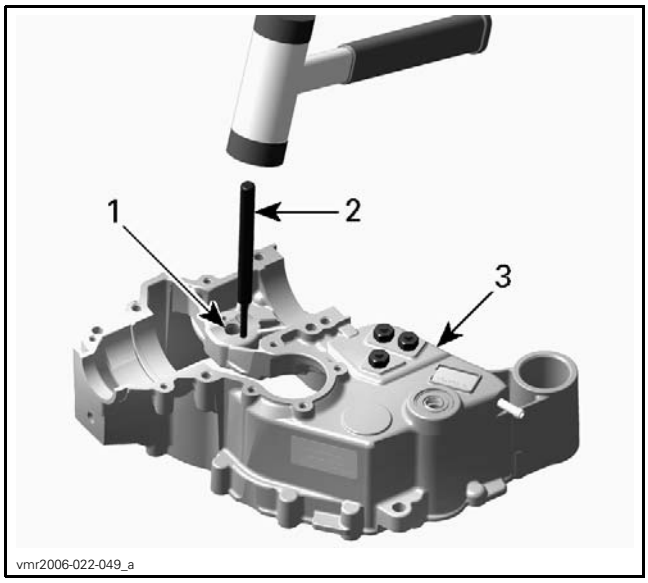
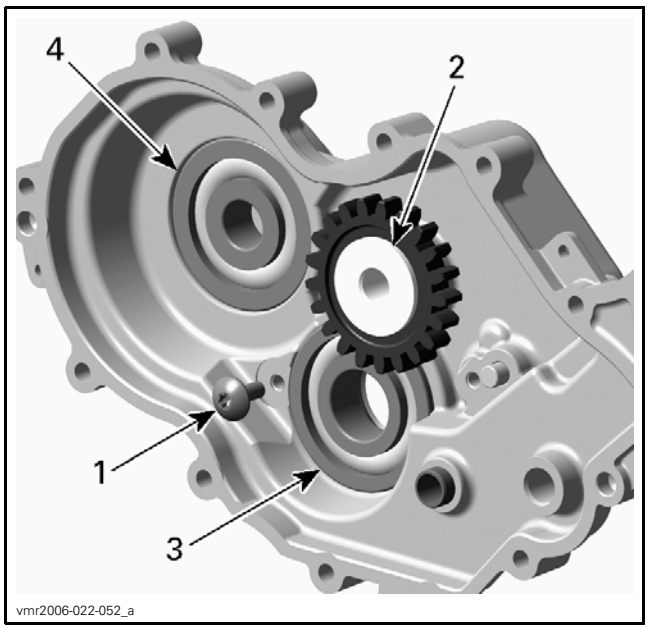


1. Bevel gear needle bearing
2. Punch
3. Center housing

To remove ball bearings of bevel gear and needle bearing of countershaft, use a blind hole bearing puller.

For countershaft ball bearing, remove screw and intermediate gear shaft, then push with a suitable puller from outside in.



1. Screw
2. Intermediate gear shaft
3. Ball bearing countershaft
4. Bevel gear ball bearing

Inspecting the Gearbox

Always verify for the following when inspecting gearbox components:

– Gear teeth damage
– Worn or scoured bearing surfaces
– Worn or scoured shift fork
– Worn or scoured shift fork shaft
– Rounded engagement dogs and slots
– Bent shift forks
– Bent shift fork shaft
– Worn shift fork engagement pins
– Worn tracks on shift drum
– Worn shift fork engagement groove
– Worn splines on shafts and gears.

Bearings

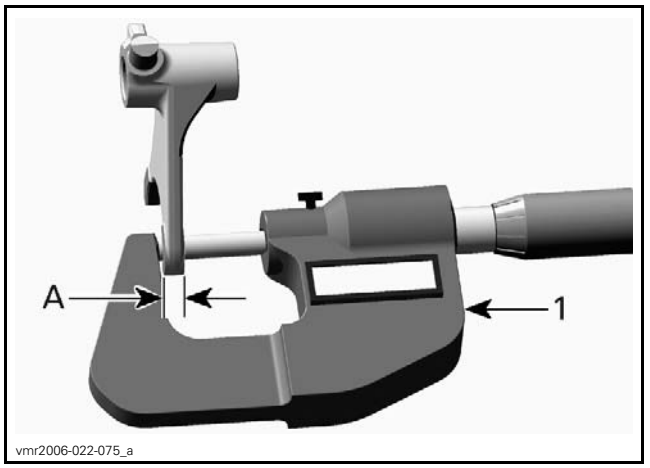
Check if ball bearings and needle bearings turn freely and smoothly.

Check all bearings, bearing points, tooth flanks, taper grooves and annular grooves. Annular grooves must have sharp edges.

Shift Forks

Check both shift forks for visible damage, wear or bent shift fork claws.

Measure the shift fork claw thickness.

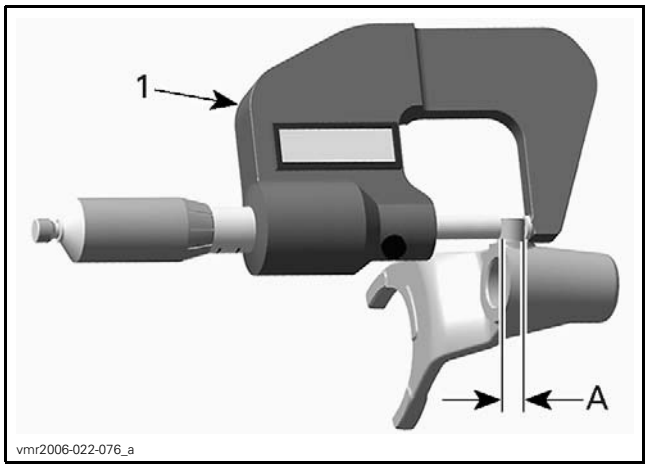


1. Micrometer
A. Shift fork claw thickness

SHIFT FORK CLAW THICKNESS (HIGH GEAR SHIFTING)	
NEW	4.80 mm to 4.90 mm (.189 in to .193 in)
SERVICE LIMIT	4.70 mm (.185 in)4.70 mm (.185 in)

SHIFT FORK CLAW THICKNESS (LOW/REVERSE GEAR SHIFTING)	
NEW	5.10 mm to 5.20 mm (.201 in to .205 in)
SERVICE LIMIT	5.00 mm (.197 in)

Measure shift fork pins.



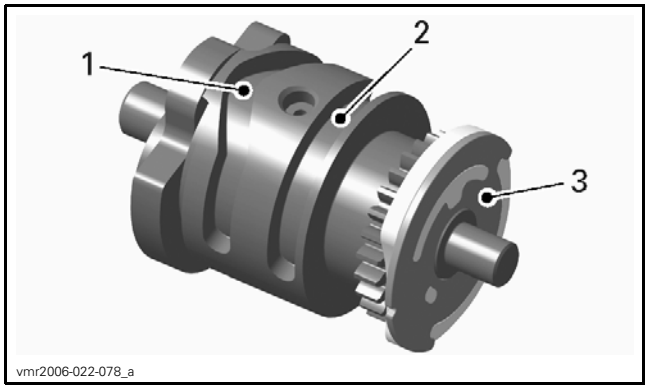
1. Micrometer
A. Shift fork pin diameter

SHIFT FORK PIN DIAMETER	
NEW	6.920 mm to 6.970 mm (.272 in to .274 in)
SERVICE LIMIT	6.850 mm (.27 in)

Shift Drum

Check shift drum tracks for scouring or heavy wear, like rounded engagement slots.

Replace isolating washer if there are signs of wear or visible damages.



1. Track for the low/reverse gear shift fork
2. Track for the high gear shift fork
3. Isolating washer on the shift drum

Levers

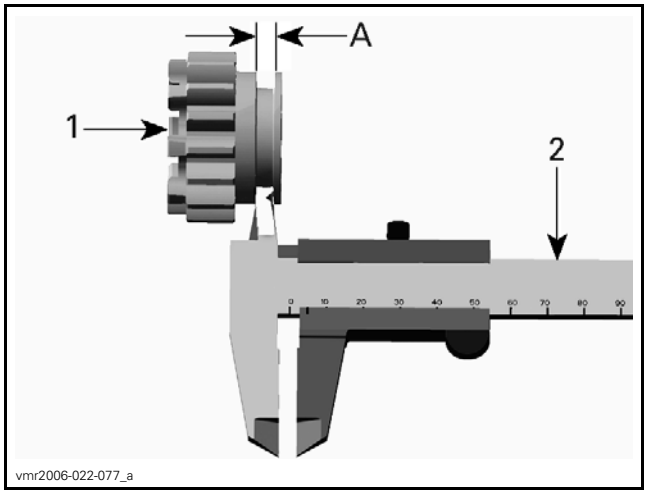
Check parking lever for cracks or other damages.

Index lever with roller must move freely.

Gears

NOTE: Replace gears only together with the corresponding meshing gears. Always replace circlips and use special pliers to install them.

Measure the width of shift fork engagement groove.

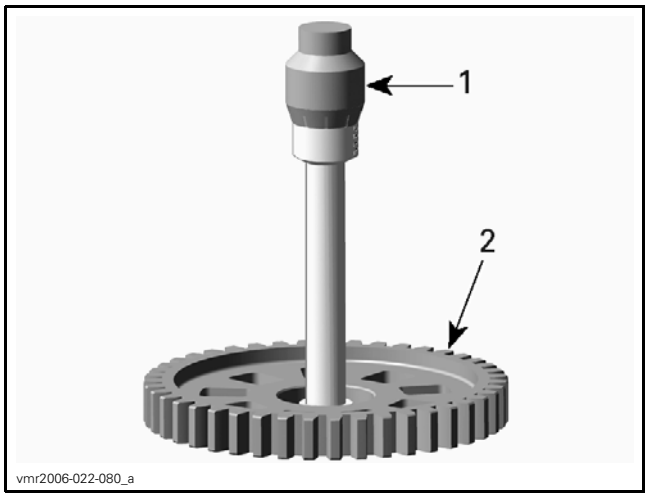


1. Main gear
2. Caliper
A. Width for engagement of shift fork

WIDTH OF SHIFT FORK ENGAGEMENT GROOVE (HIGH GEAR SHIFTING)	
NEW	5.00 mm to 5.10 mm (.197 in to .201 in)
SERVICE LIMIT	5.20 mm (.205 in)

WIDTH OF SHIFT FORK ENGAGEMENT GROOVE (LOW/REVERSE GEAR SHIFTING)	
NEW	5.30 mm to 5.40 mm (.209 in to .213 in)
SERVICE LIMIT	5.50 mm (.217 in)

Check free pinions for wear.



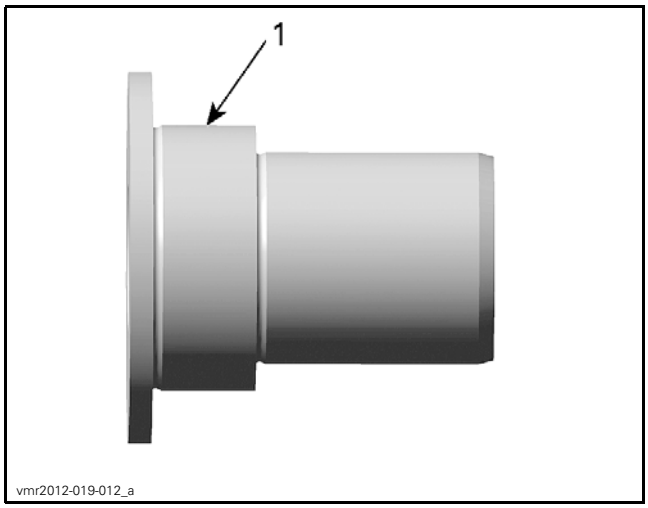
TYPICAL
1. *Micrometer*
2. *Free pinion*

DIAMETER FREE PINION	
NEW	29.000 mm to 29.013 mm (1.1417 in to 1.1422 in)
SERVICE LIMIT	29.015 mm (1.1423 in)

Shafts

Check shift shaft for worn splines and gears.

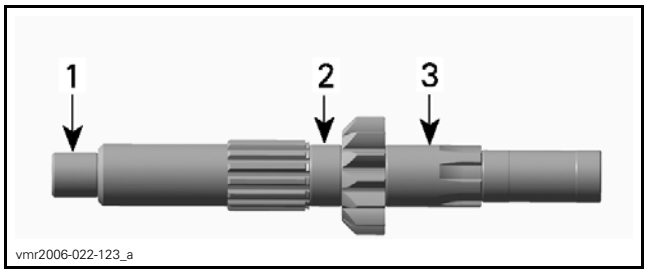
Check intermediate shaft for wear.



1. *Intermediate gear bearing*

INTERMEDIATE GEAR SHAFT	
NEW	24.979 mm to 25.000 mm (.9834 in to .9843 in)
SERVICE LIMIT	24.977 mm (.9833 in)

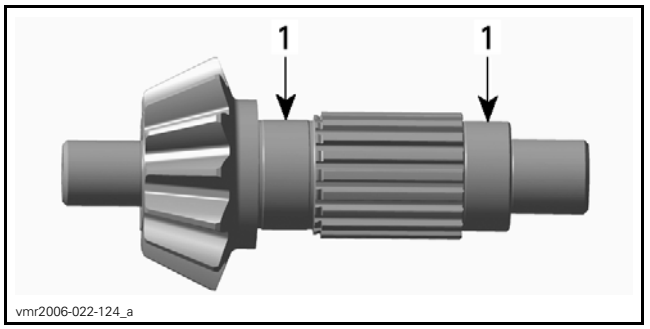
Check countershaft for wear.



1. *MAG side*
2. *Free pinion bearing*
3. *CVT side*

COUNTERSHAFT	
SERVICE LIMIT	
MAG SIDE	17.990 mm (.7083 in)
FREE PINION BEARING	24.970 mm (.9831 in)
CVT SIDE	24.970 mm (.9831 in)

Check bevel gear shaft.

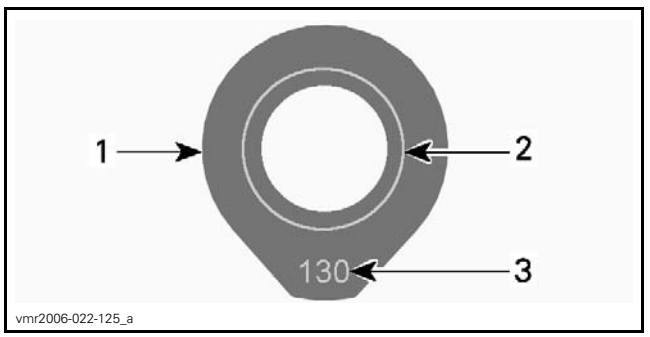


1. *Free pinion bearings*

BEVEL GEAR SHAFT	
SERVICE LIMIT	
FREE PINION BEARING	24.984 mm (.9836 in)

Shims

Always replace shim by a new one with the same thickness, when reassembling the gearbox with existing output shaft and bevel gear shaft.



1. *Shim for adjusting the bevel gear on center housing side*
2. *Area where wear signs appear*
3. *Thickness of the shim*

Adjusting the Gearbox

Bevel Gear

NOTE: Only necessary if the backlash and axial clearance of the bevel gear is out of specification or if parts are changed (output shaft, bevel gear shaft or housing).

There are 2 adjustments to perform on the bevel gear.

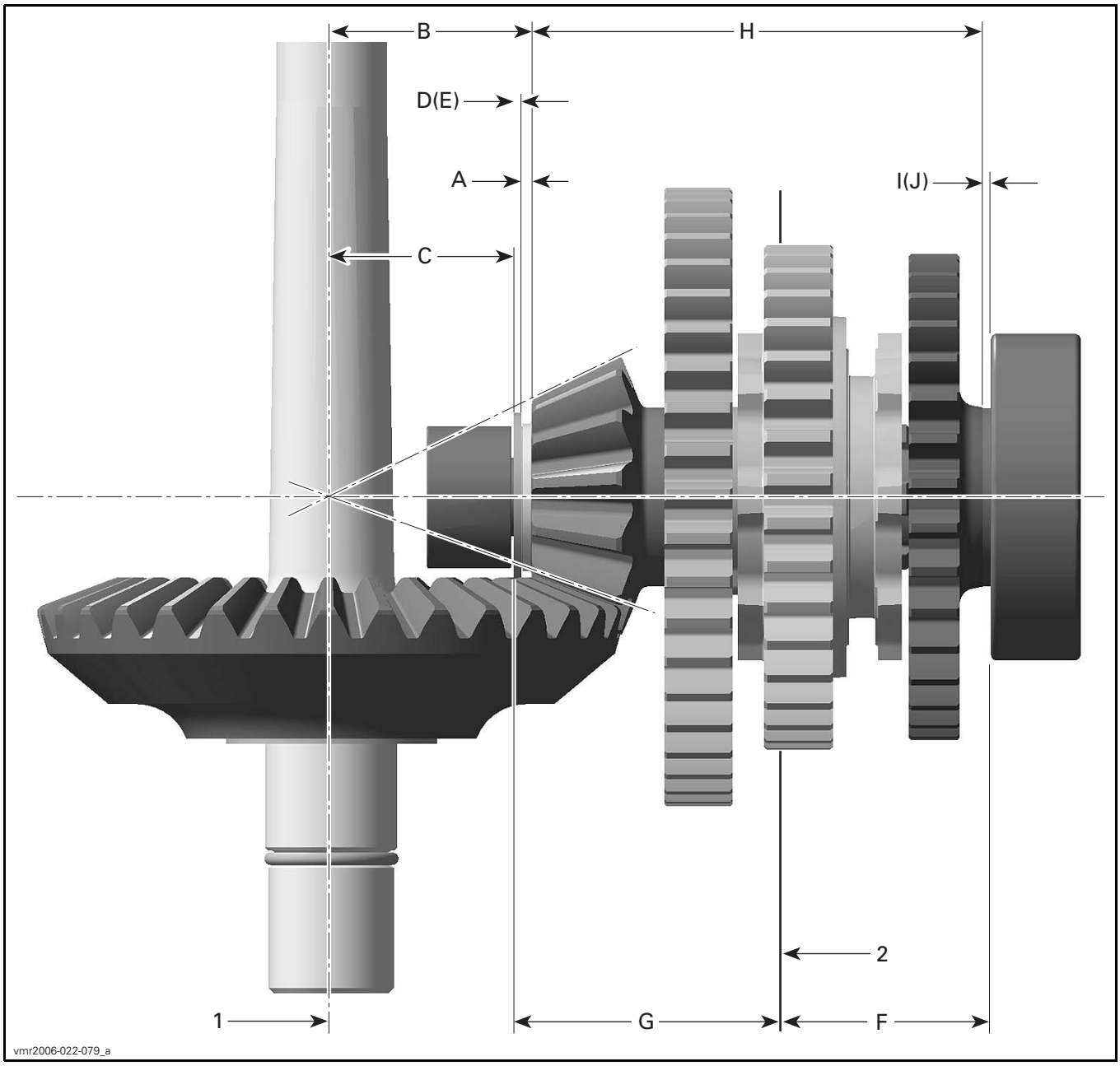
– Bevel gear backlash on center housing
– Bevel gear axial clearance on left housing.

The bevel gear backlash is adjusted by finding the proper shim thickness E as per following illustration.

The bevel gear axial clearance is adjusted by finding the proper shim thickness J as per following illustration.

Clean mating surface of housing before taking measurements using a combination of LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500) and a brass brush. Brush a first pass in one direction then make the final brushing perpendicularly (90°) to the first pass cross (hatch).

NOTICE Do not wipe with rags. Use a new clean hand towel only.



1. Mating surface — output shaft
2. Mating surface — left housing

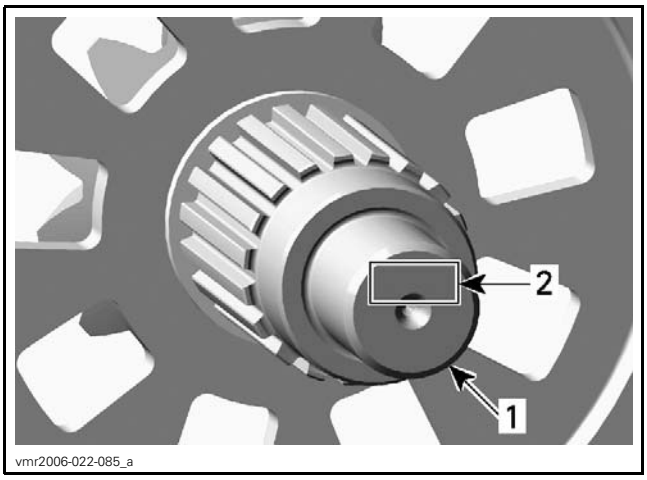
Bevel Gear Backlash Procedure

Use the following course of calculation to determine the theoretical shim thickness D:

D = B - C - A

B = The distance between the thrust surface of the bevel gear and the theoretical center of its taper. This is defined by manufacturer and is written on the bevel gear shaft.

This bevel gear reference number could be between - 10 and + 10.



1. Bevel gear
2. Bevel gear reference number

Use following formula to find out value B.

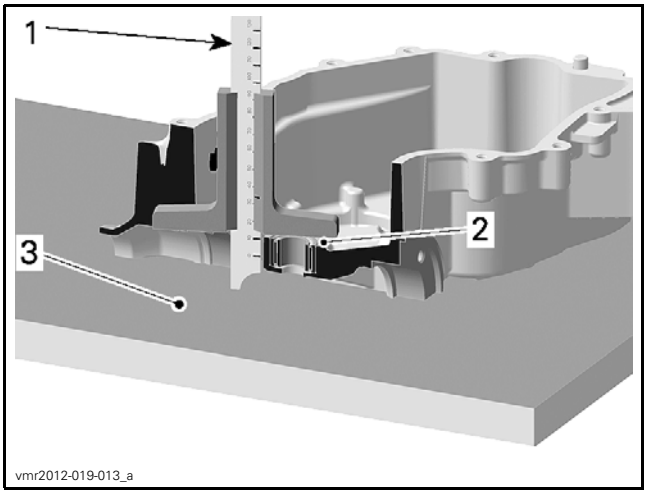
$$B = \left(\frac{\text{Bevel gear reference number}}{100}\right) + 37.8$$

For example: bevel gear reference number = - 3.

B = (- 3/100) + 37.8 = 37.77

C = Distance between the shim thrust surface in the center housing and the mating surface to right housing.

NOTE: For a better understanding following illustration is made as a cutaway.



1. Deep gauge — measurement **C**
2. Shim surface in center housing
3. Mating surface to right housing

A = 2 mm (.0787 in) nominal thickness of axial needle bearing.

When the measurements are taken, calculate the theoretical shim thickness (D) using the formula: (D = B - C - A).

Take the obtained theoretical shim thickness (D) and choose the corresponding shim number (E) according to the following table.

THEORETICAL SHIM THICKNESS -D-	SHIM NUMBER -E-
1.20 mm to 1.29 mm (.0472 in to .0508 in)	120
1.30 mm to 1.39 mm (.0512 in to .0547 in)	130
1.40 mm to 1.49 mm (.0551 in to .0587 in)	140
1.50 mm to 1.59 mm (.0591 in to .0626 in)	150
1.60 mm to 1.69 mm (.063 in to .0665 in)	160
1.70 mm to 1.79 mm (.0669 in to .0705 in)	170
1.80 mm to 1.89 mm (.0709 in to .0744 in)	180

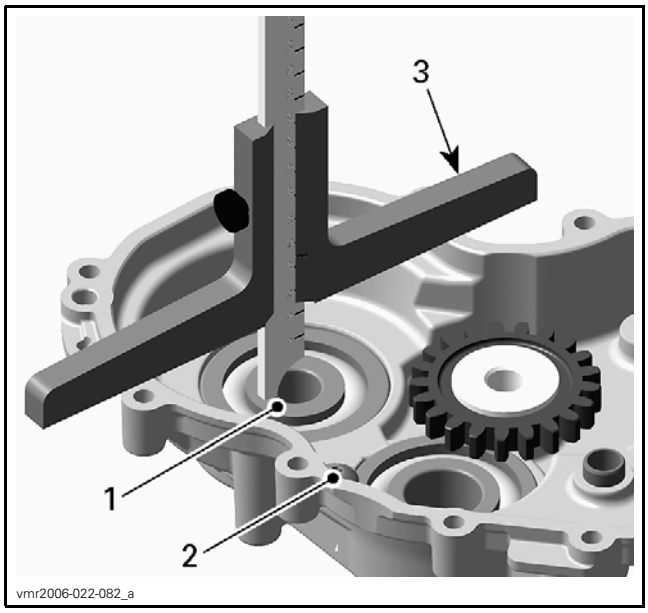
NOTE: For example, if the theoretical shim thickness (D) is 1.53 mm (.0602 in), choose the corresponding shim number 150 (E). The shim number 150 represents a nominal value equal to 1.50 mm (.0591 in).

Bevel Gear Axial Clearance Procedure

Use the following course of calculation to determine the theoretical shim thickness (I):

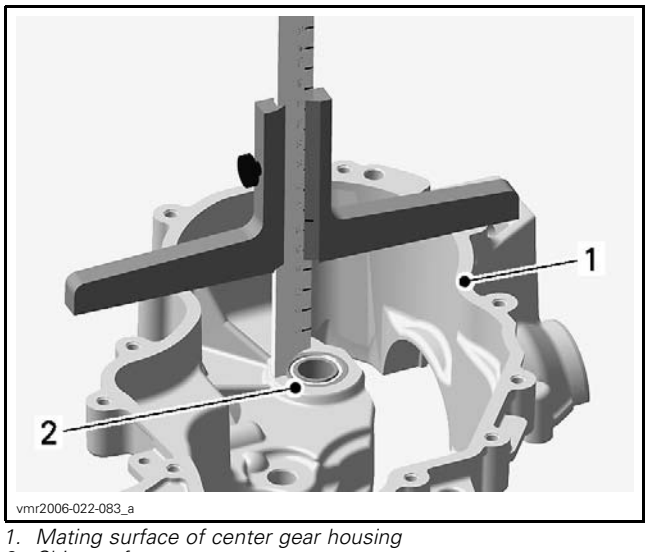
I = F + G - H - A - E

F = Distance between mating surface of left housing to ball bearing inner race.



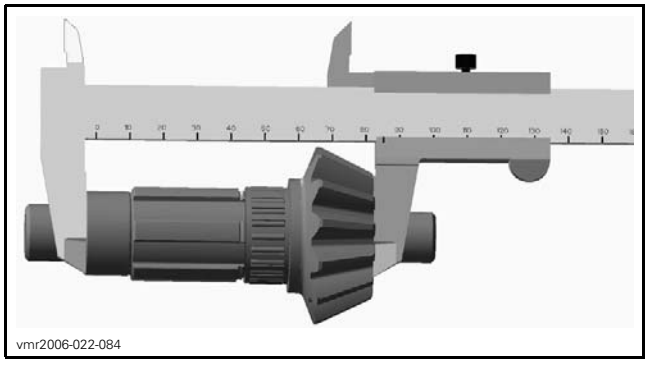
1. *Ball bearing inner race*
2. *Mating surface of left housing*
3. *Depth gauge*

G = Distance between mating surface of center housing and shim surface.



1. *Mating surface of center gear housing*
2. *Shim surface*

H = Distance between thrust surfaces of bevel gear shaft.



A = 2 mm (.0787 in) nominal thickness of axial needle bearing.

E = The shim number nominal value as found in the *BEVEL GEAR BACKLASH PROCEDURE*. For example, shim number 150 represents a value of 1.50 mm (.0591 in).

When the measurements are taken, calculate the theoretical shim thickness (I) using the formula: (I = F + G - H - A - E).

Take the obtained theoretical shim thickness (I) and choose the corresponding shim number (J) according to the following table.

THEORETICAL SHIM THICKNESS -I-	SHIM NUMBER -J-
1.22 mm to 1.31 mm (.048 in to .0516 in)	120
1.32 mm to 1.41 mm (.052 in to .0555 in)	130
1.42 mm to 1.51 mm (.0559 in to .0594 in)	140
1.52 mm to 1.61 mm (.0598 in to .0634 in)	150
1.62 mm to 1.71 mm (.0638 in to .0673 in)	160
1.72 mm to 1.81 mm (.0677 in to .0713 in)	170
1.82 mm to 1.91 mm (.0717 in to .0752 in)	180

For example, if the theoretical shim thickness (I) is 1.53 mm (.0602 in), choose the corresponding shim number 150 (J).

Bevel gear axial clearance of 0.02 mm to 0.11 mm (.0008 in to .0043 in) is included in the above table.

Assembling the Gearbox

Reverse the disassembly procedure. However, pay attention to the following details.

Installing the Bearings

Unless otherwise instructed, never use hammer to install ball bearings or needle bearings. Use press machine only.

If necessary heat housings up to 100°C (212°F) before installing ball bearings or needle bearings.

⚠ WARNING

Clean oil, outside and inside, from housing before heating.

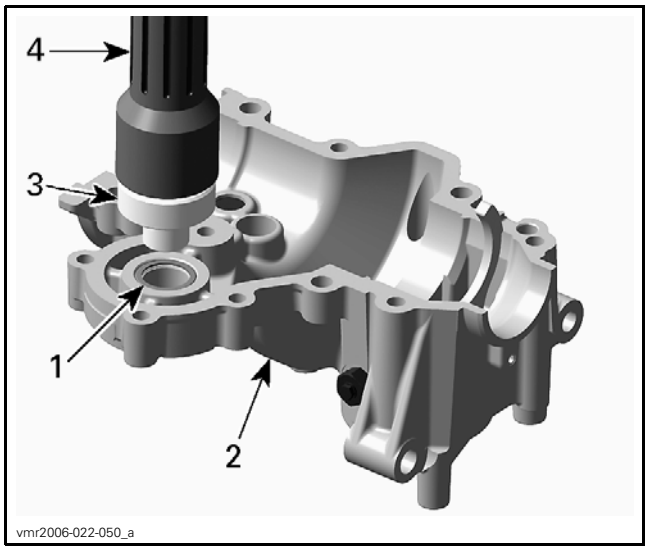
Place new bearing in freezer for 10 minutes before installation.

Use a suitable installer for installing ball bearings of countershaft and bevel gear.

NOTE: Place gearbox housings on a wood stand before installing ball bearings.

Install countershaft needle bearing in right housing.

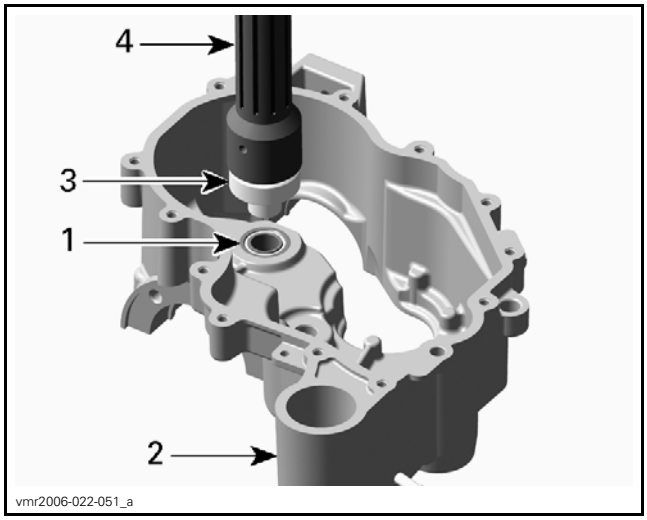
REQUIRED TOOL	
BEARING INSTALLER (GEARBOX) (P/N 529 035 762)	
HANDLE (P/N 420 877 650)	



1. Countershaft needle bearing
2. Right housing
3. Needle bearing installer
4. Installer handle

Install bevel gear needle bearing.

REQUIRED TOOL	
BEARING INSTALLER (GEARBOX) (P/N 529 035 763)	
HANDLE (P/N 420 877 650)	



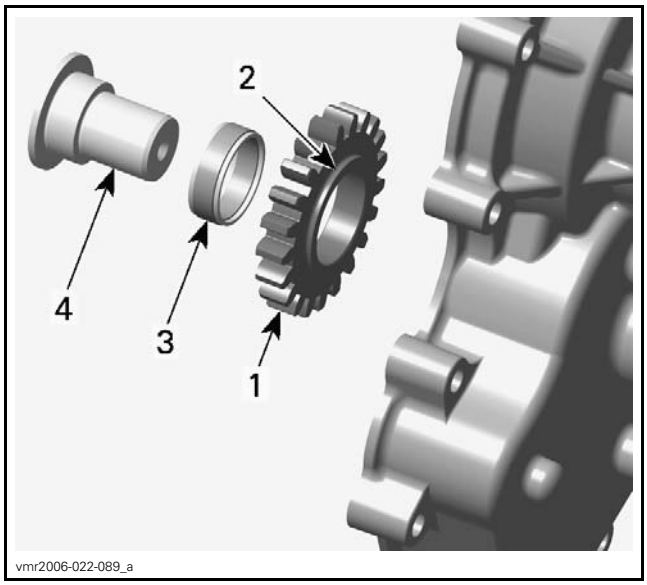
1. Bevel gear needle bearing
2. Center housing
3. Needle bearing installer
4. Installer handle

Install new oil seals with the proper installer (refer to *GEARBOX OIL SEALS* in this subsection).

Other Gearbox Components

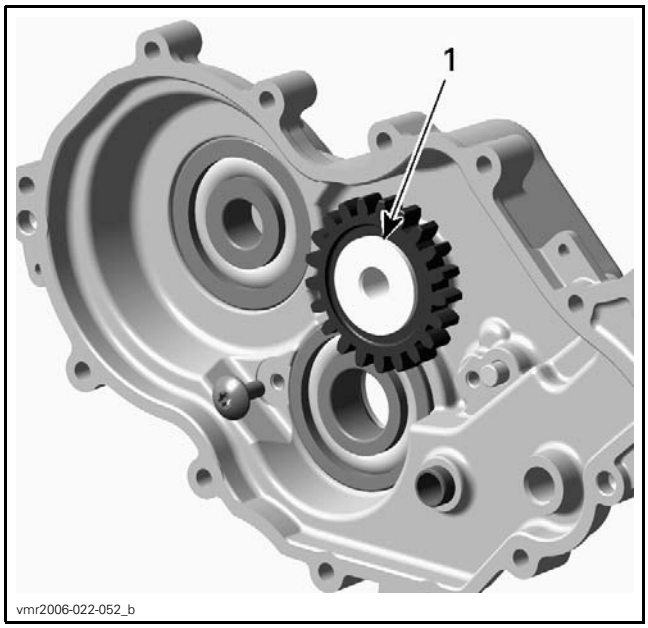
Fit intermediate gear with needle bearing on intermediate gear shaft.

NOTE: Fit gear with collar facing to housing side on the intermediate shaft.



1. Intermediate gear
2. Collar facing housing
3. Needle bearing
4. Intermediate gear shaft

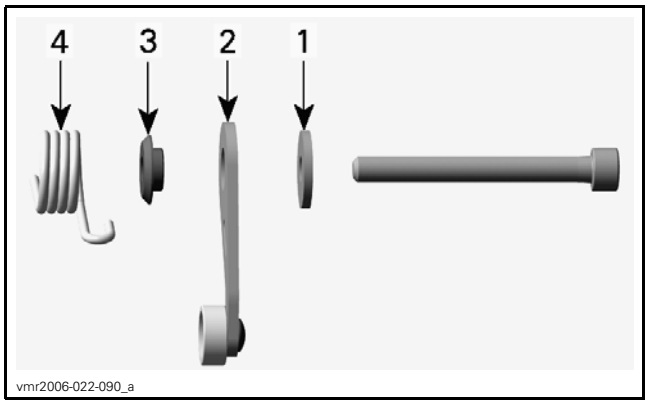
Press intermediate gear shaft in the left housing.



1. Intermediate gear shaft

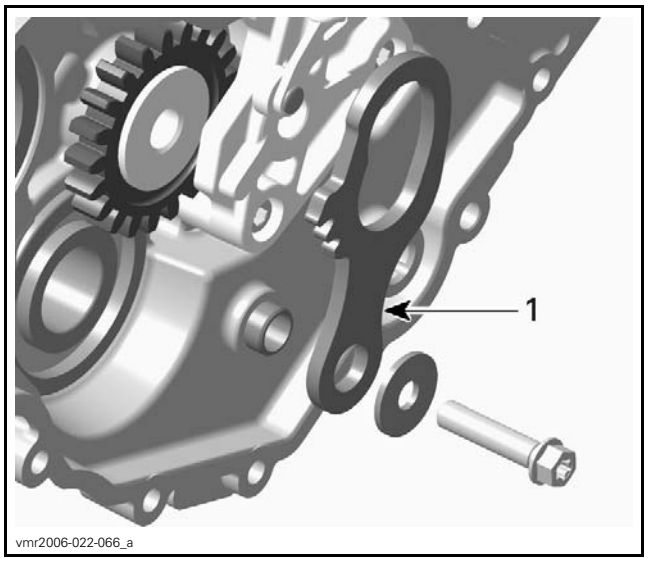
Fit support flange in the left housing and install index lever.

NOTE: Fit step ring into index lever.



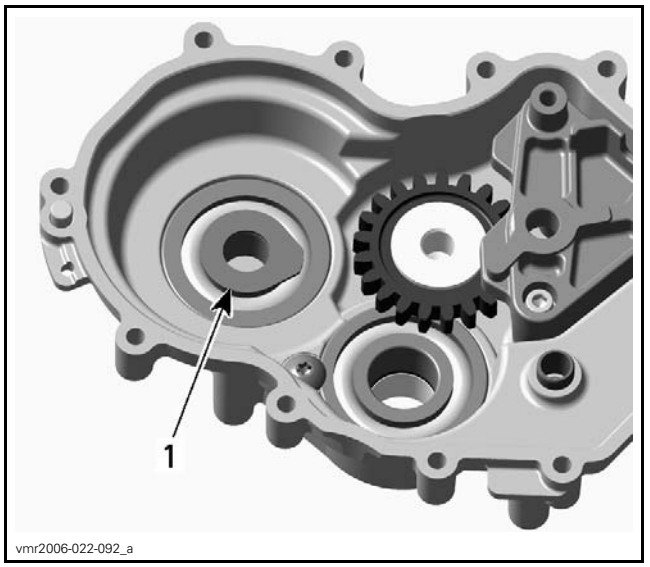
1. Washer
2. Index lever
3. Step ring
4. Index spring

Install parking lock lever, teeth showing to countershaft.



1. Parking lock lever

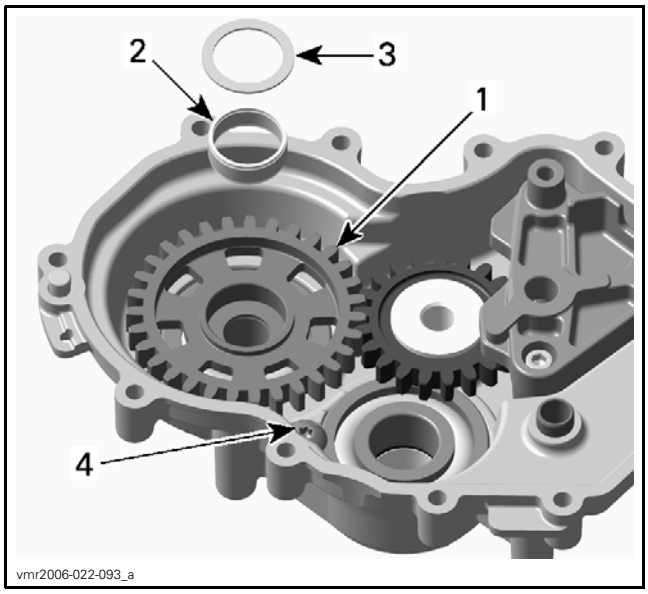
Place shim of CVT side on bearing.



1. Shim CVT side

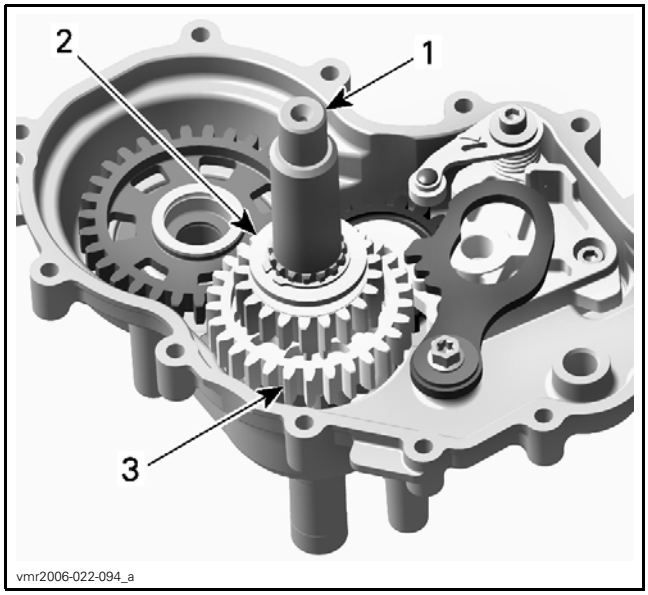
Place reverse gear with needle bearing and thrust washer.

NOTE: Check if the screw to secure countershaft bearing is installed.



1. *Reverse gear*
2. *Needle bearing*
3. *Thrust washer*
4. *Countershaft bearing screw*

Install countershaft with low gear and high gear assembly.

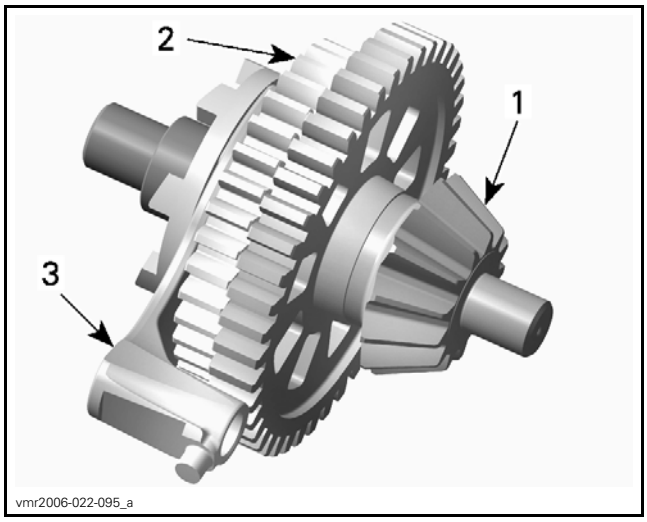


1. *Countershaft*
2. *Low gear*
3. *High gear*

Install a new shim onto bevel gear shaft, fork side.

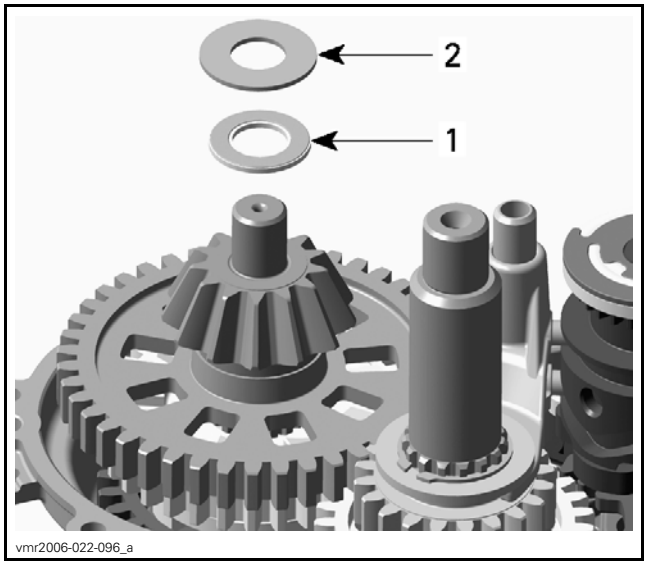
Install bevel gear with sliding gear assembly together with shift fork.

NOTE: If a new bevel gear and output shaft are used, it is necessary to verify the shim adjustment prior to finalize assembly. Refer to *ADJUSTMENT* in this subsection. If the existing bevel gear is used, it is mandatory to use a new shim with the same thickness, a new needle bearing and shim.



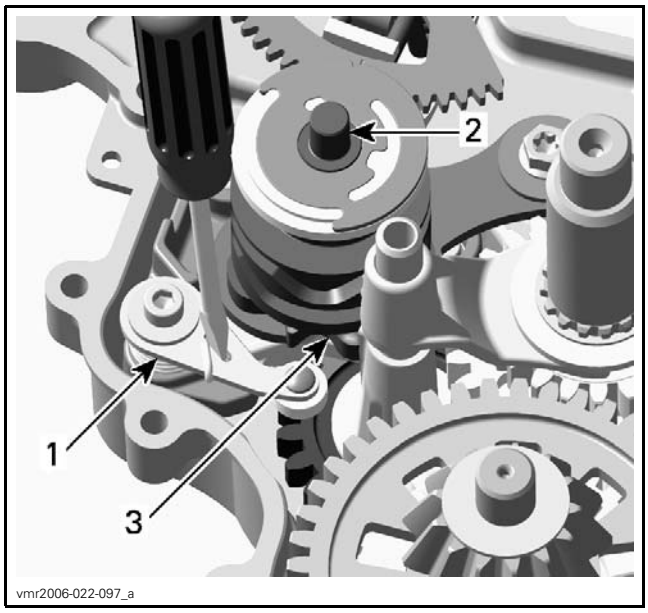
1. *Bevel gear*
2. *Sliding gear*
3. *Shift fork*

Install a new needle bearing and shim.

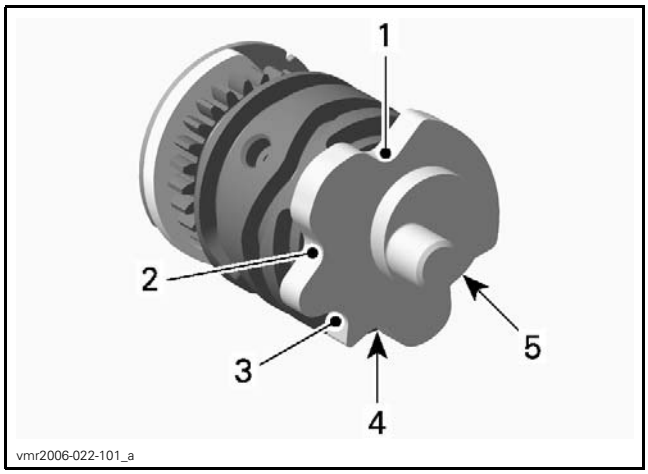


1. *Needle bearing*
2. *Shim*

Insert a flat screwdriver in the slot of the index lever, turn screwdriver clockwise and install shift drum on neutral position as per following illustration.



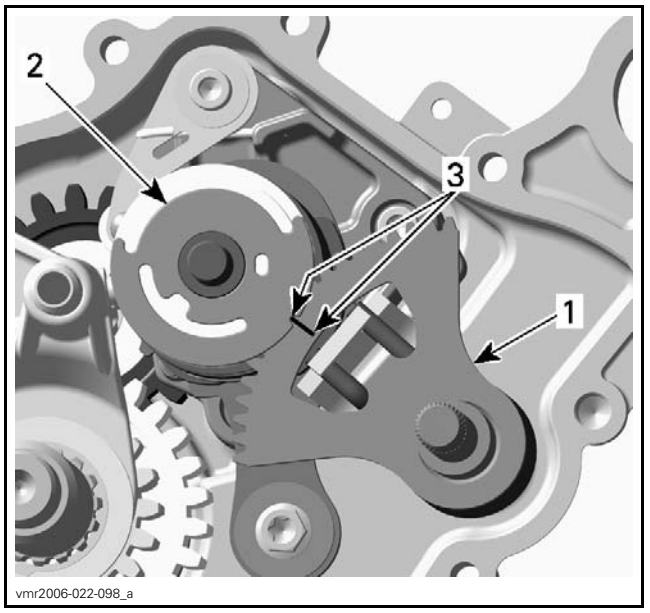
1. *Index lever*
2. *Shift drum*
3. *Neutral position*



1. *Parking stop location*
2. *Reverse stop location*
3. *Neutral stop location*
4. *High gear stop location*
5. *Low gear stop location*

Install shift shaft assembly.

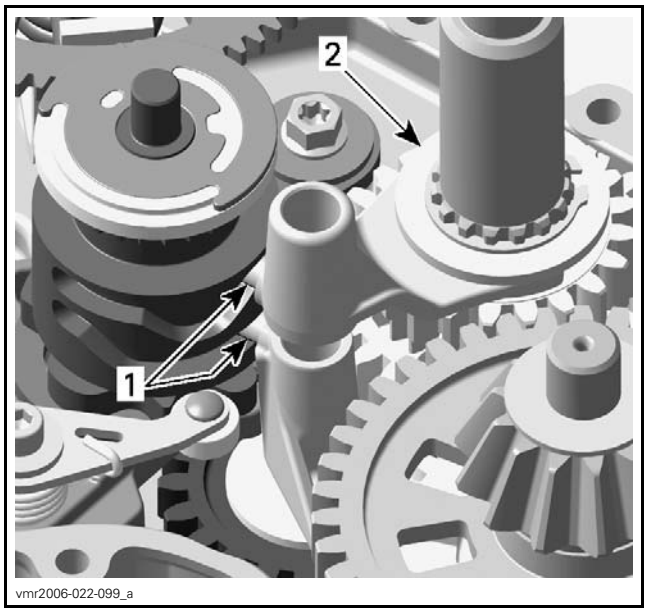
NOTE: Marks on shift drum/isolating washer and shift shaft must align.



1. *Shift shaft assembly*
2. *Isolating washer*
3. *Marks*

Install shift fork then engage both shift fork pins in their corresponding groove on the shift drum.

NOTE: Move sliding gears to facilitate engagement of pins inside grooves.



1. *Shift fork pins*
2. *Sliding gear*

Install shift fork shaft.

NOTE: Run all gears as a final function check before installing center housing.

Now, close the housings by doing the following:

Clean all metal components in a solvent.

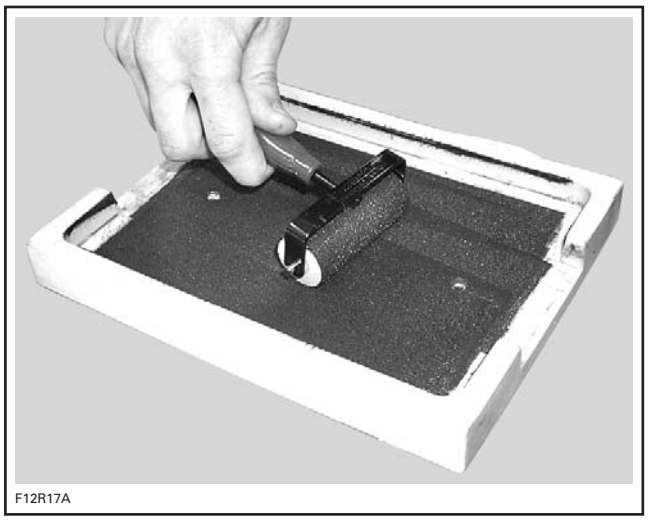
Gearbox housing mating surfaces are best cleaned using a combination of LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500) and a brass brush. Brush a first pass in one direction then make the final brushing perpendicularly (90°) to the first pass cross (hatch).

NOTICE **Do not wipe with rags. Use a new clean hand towel only.**

IMPORTANT: When beginning the application of the gear housing sealant, the assembly and the first torquing should be done within 10 minutes. It is suggested to have all you need on hand to save time.

Use LOCTITE 5910 (P/N 293 800 081) on mating surfaces.

Use a plexiglass plate and apply some sealant on it. Use a soft rubber roller (50 - 75 mm (2 - 3 in)), available in arts products suppliers for printing, and roll the sealant to get a thin uniform coat on the plate (spread as necessary). When ready, apply the sealant on gear housing mating surfaces.


F12R17A

Do not apply in excess as it will spread out inside gear housing.

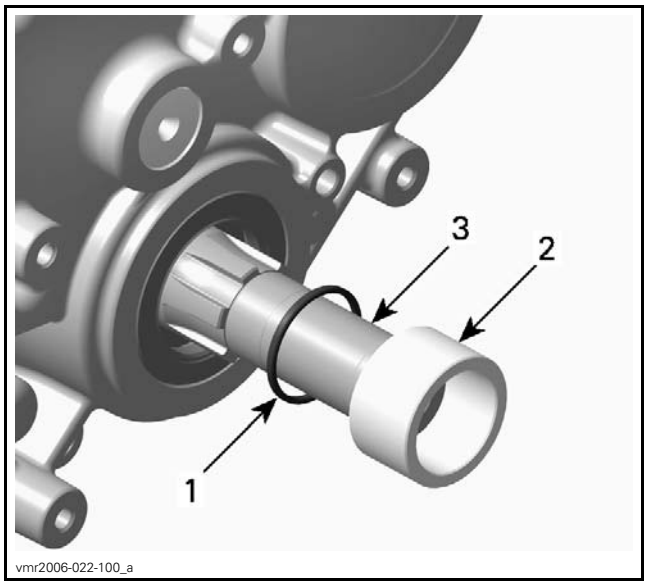
NOTE: It is recommended to apply this specific sealant as described here to get a uniform application without lumps. If you do not use the roller method, you may use your finger to uniformly distribute the sealant (using a finger will not affect the adhesion).

Tighten gear housing screws in a crisscross sequence.

TIGHTENING TORQUE		
Gear housing screws	Step A	Hand tightened
	Step B	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

Install O-ring including distance sleeve on countershaft CVT side.

NOTICE **Place O-ring including distance sleeve right away. Chamfered bore of distance sleeve has to face the gearbox.**



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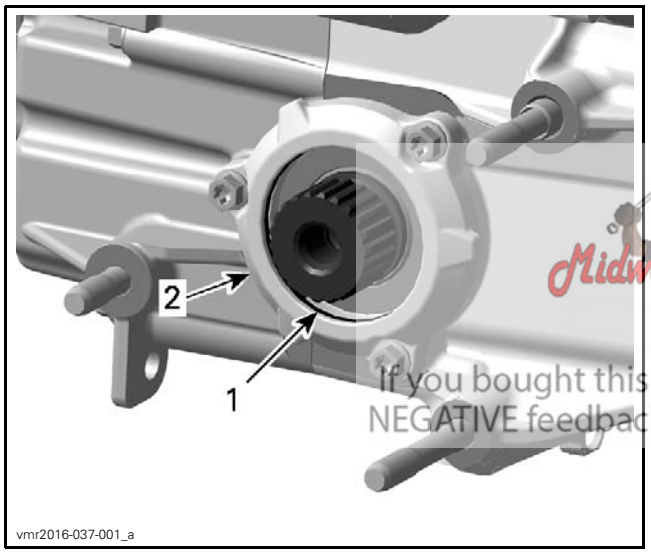
COUNTERSHAFT END CVT SIDE
1. *O-ring*
2. *Distance sleeve*
3. *Countershaft end CVT side*

Refer to *OUTPUT SHAFT AND COUPLING MECHANISM* to install these components. Measure the output shaft backlash.

Installing the Gearbox

The installation is the reverse of the removal procedure.

Before gearbox installation check O-ring in bearing cover if brittle, hard or damaged. Replace if necessary.



1. *O-ring*
2. *Bearing cover*

Tighten the three (3) nuts that attaching the gearbox to the engine.

TIGHTENING TORQUE	
Service product	LOCTITE 243 (BLUE) (P/N 293 800 060)
Gearbox retaining nuts	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)

After installation refill gearbox oil, refer to *PERIODIC MAINTENANCE PROCEDURES*.

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GEARBOX AND 4X4 COUPLING UNIT (WITH GBPS)

SERVICE TOOLS

Description	Part Number	Page
COUNTERSHAFT OIL SEAL PUSHER	529 036 222	12
ECM ADAPTER TOOL	529 036 166	8
FLUKE 115 MULTIMETER	529 035 868	5, 9
HANDLE	420 877 650	12
OIL SEAL INSTALLER (GEARBOX)	529 035 758	12
OIL SEAL INSTALLER	529 036 204	13

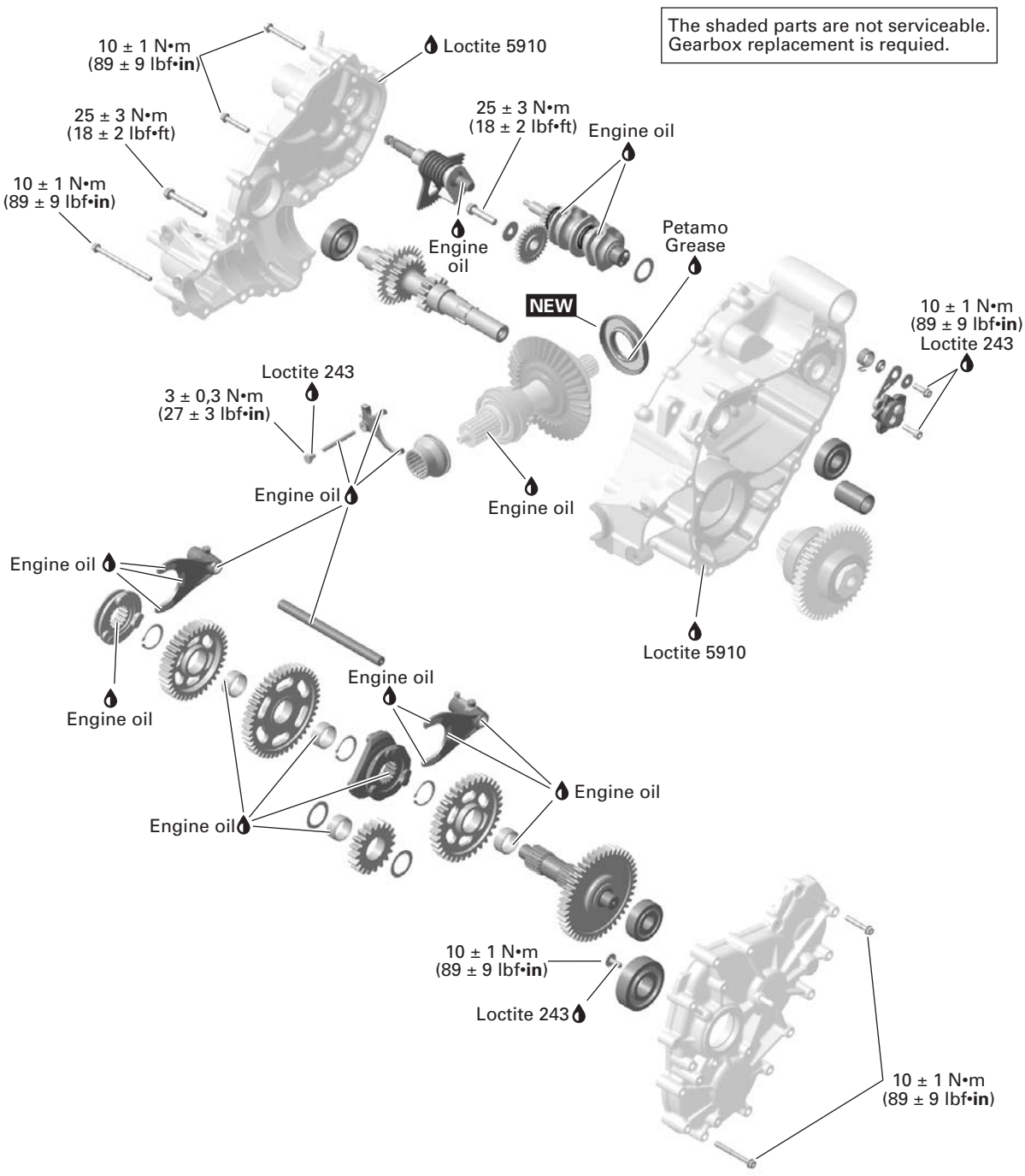
SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
FLUKE RIGID BACK-PROBE	TP88	5–7

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	27
LOCTITE 5910	293 800 081	9, 25
LOCTITE CHISEL (GASKET REMOVER)	413 708 500	25
PETAMO GREASE GHY 133N	420 899 271	11
SUPER LUBE GREASE	293 550 030	7, 10

GEARBOX COMPONENTS AND 4X4 COUPLING MECHANISM



NEW = Component must be replaced when removed.

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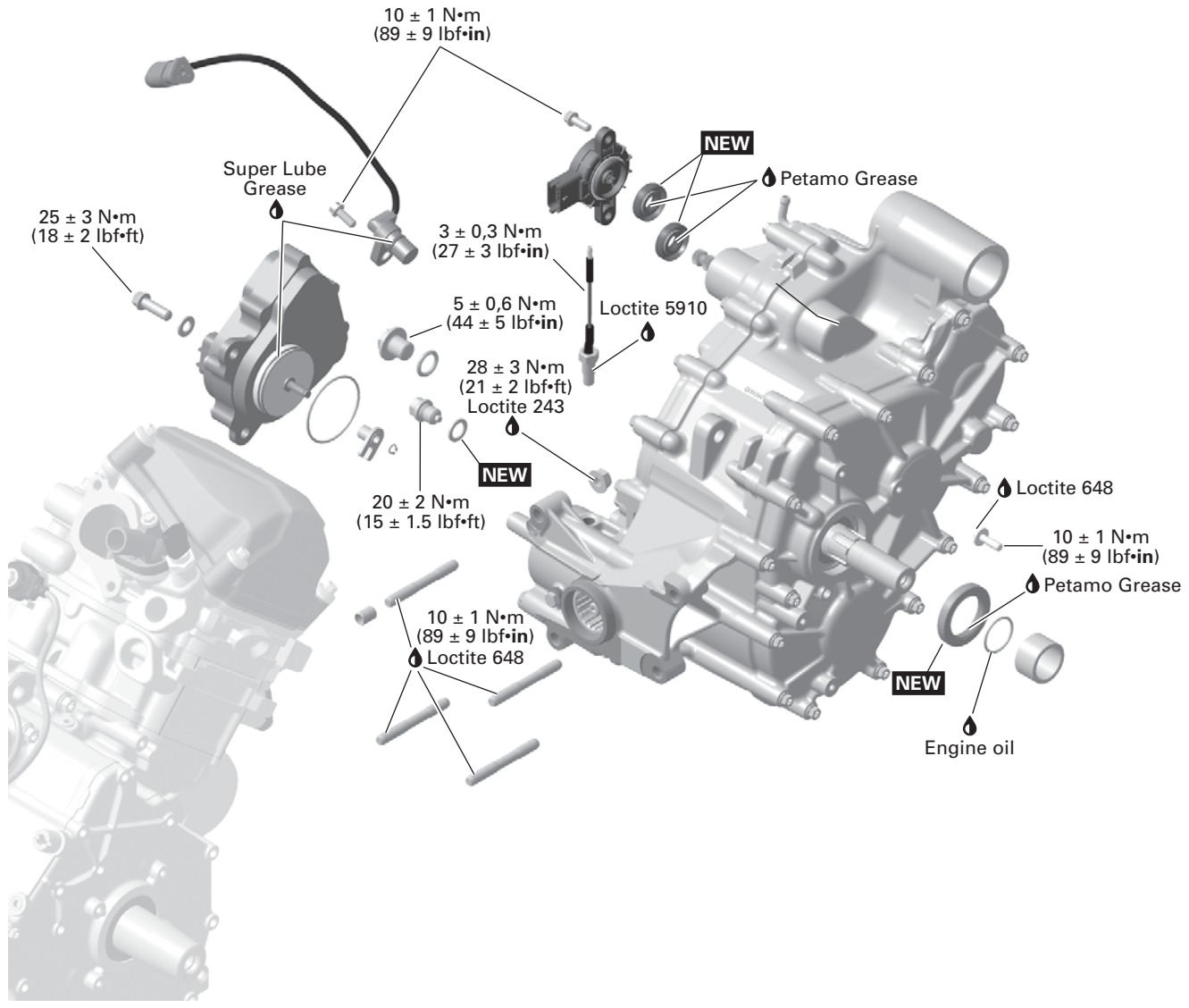
GEARBOX COMPONENTS AND 4X4 COUPLING MECHANISM



NEW = Component must be replaced when removed.

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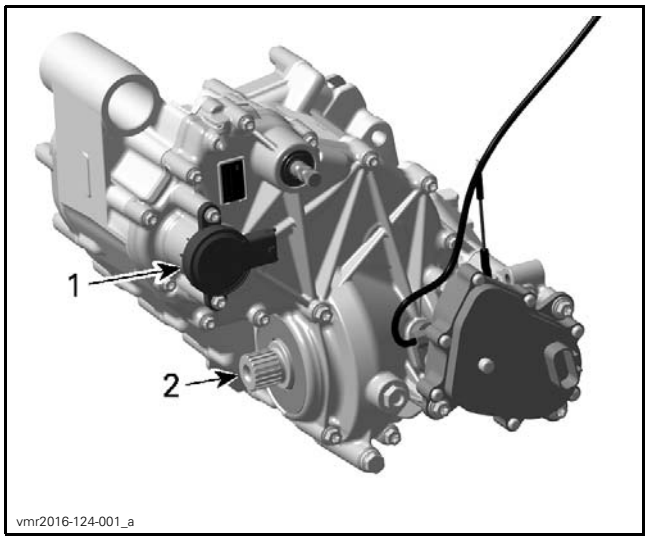
GENERAL

GEARBOX IDENTIFICATION

Gearbox with GBPS

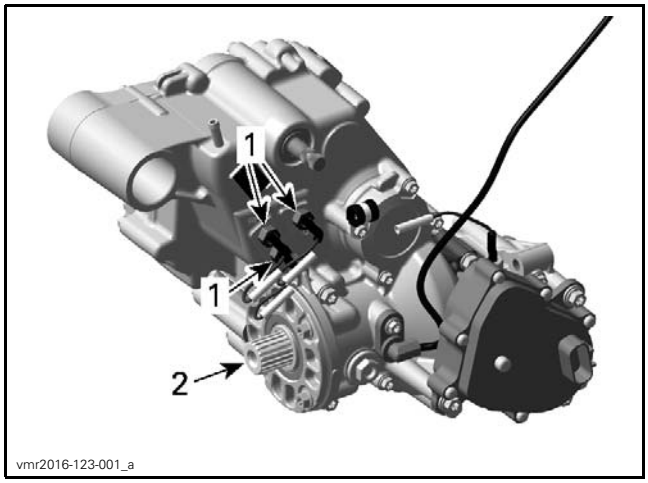
This gearbox is equipped with 1 gearbox position sensor.



GEARBOX, RIGHT HAND SIDE
1. *Gearbox position sensor*
2. *Output shaft*

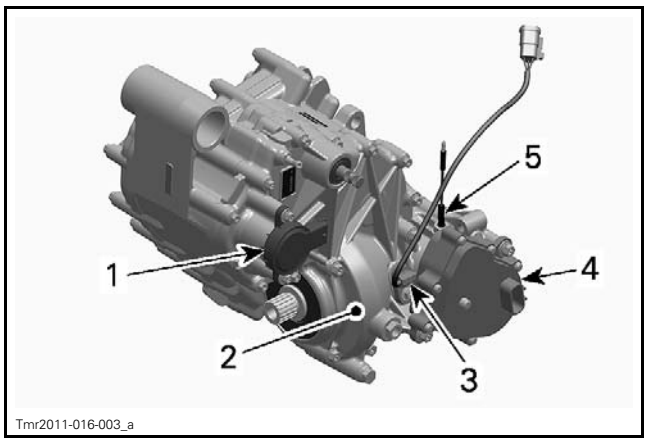
Gearbox with External Switches

This gearbox is equipped with 3 gearbox position indicator switches.

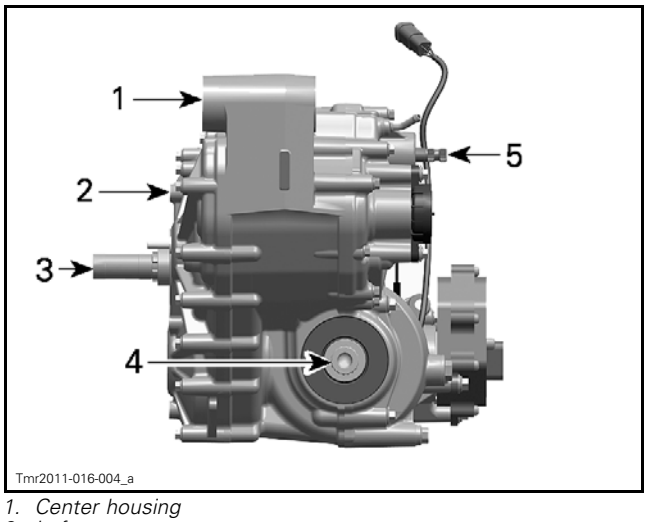


GEARBOX, RIGHT HAND SIDE
1. *Gearbox position indicator switches*
2. *Output shaft*

GEARBOX OVERVIEW



1. *Gearbox position sensor (GBPS)*
2. *Right cover*
3. *Vehicle speed sensor (VSS)*
4. *Actuator*
5. *4WD indicator switch*



1. *Center housing*
2. *Left cover*
3. *Countershaft*
4. *Output shaft*
5. *Shift shaft*

TROUBLESHOOTING

UNUSUAL GEARBOX NOISE AND/OR VIBRATIONS

1. Low oil level in gearbox.
   - *Oil leakage from gearbox. Replace damaged gasket(s) and/or oil seal(s).*
2. Defective bearings.
   - *Bearing(s) do(es) not turn smoothly. Replace bearing(s).*
3. Damaged or worn gears.
   - *Inspect gears for damages or missing teeth. Replace respective gears.*

GEAR INDICATION FAILS

1. Defective gearbox position sensor (GBPS).
   - *Perform a gearbox position sensor test.*
   - *Damaged wires. Repair as required.*

GEAR(S) IS (ARE) HARD TO SHIFT

1. Incorrect shift rod adjustment.
   - *Adjust shift rod (refer to SHIFT ROD in SHIFTER subsection.*

4 WHEEL DRIVE INDICATION FAILS

1. 4WD indicator switch failure.
   - *Test 4WD indicator switch. Replace as required.*
   - *Bad contact. Check for corrosion or loose connector.*
   - *Damaged wires. Repair as required.*

4 WHEEL DRIVE DOES NOT ENGAGE OR DISENGAGE

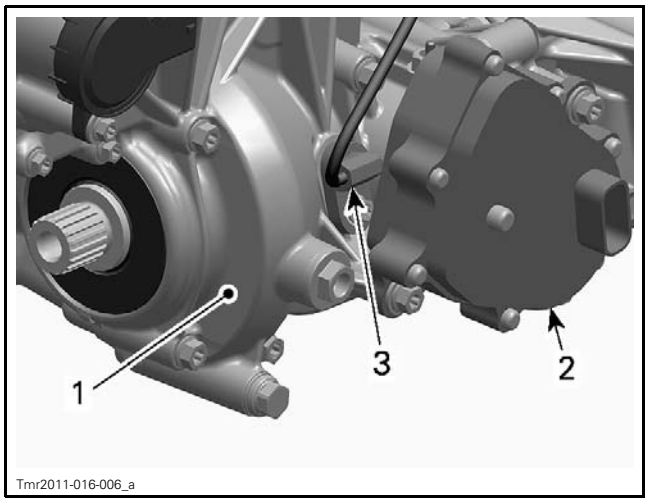
1. Defective 4WD switch.
   - *Check 4WD switch operation.*
2. Defective actuator.
   - *Test actuator.*
3. Damaged or worn shifting fork or sleeve.
   - *Remove actuator and inspect shifting fork and sleeve.*

PROCEDURES

VEHICLE SPEED SENSOR (VSS)

VSS Location

The vehicle speed sensor is located on the right housing of the gearbox behind the actuator.



1. Right housing of gearbox
2. Actuator
3. VSS (Vehicle Speed Sensor)

VSS Access

To reach the VSS, refer to *BODY* subsection and remove the following parts:

– Seat
– Console
– RH side panel.

VSS Wire Identification

FUNCTION	PIN	COLOR - SENSOR CONNECTOR	COLOR - WIRING HARNESS CONNECTOR
12-volt input from fuse F5	A	RED	VIOLET/BLUE
Speed signal (to cluster pin 9)	B	WHITE	PINK
Ground (to ECM C3)	C	BLACK	GREEN/ BROWN

VSS Circuit Protection

CONDITION	CIRCUIT PROTECTION
Supplied with main relay activated	Fuse 5 of fuse block 1 (from main relay R2)

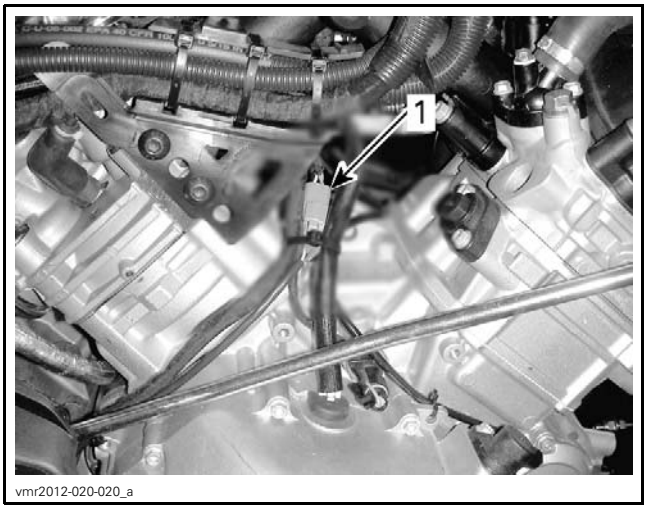
Testing the VSS Input Voltage

1. Remove VSS connector cover.
2. Set multimeter to Vdc.

REQUIRED TOOL
FLUKE 115 MULTIMETER (P/N 529 035 868)

3. Turn ignition switch ON.
4. Set emergency engine stop switch to RUN.
5. Back-probe the VSS connector.

REQUIRED TOOL
FLUKE RIGID BACK-PROBE (P/N TP88)



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1. VSS connector

6. Measure voltage as per following table.

VEHICLE SPEED SENSOR INPUT VOLTAGE TEST		
TEST PROBES		RESULT (KEY ON)
PIN A VIOLET/BLUE wire	PIN C GREEN/BROWN wire	Battery voltage

If voltage is not as specified, test positive and ground circuits separately.

Testing the VSS Signal

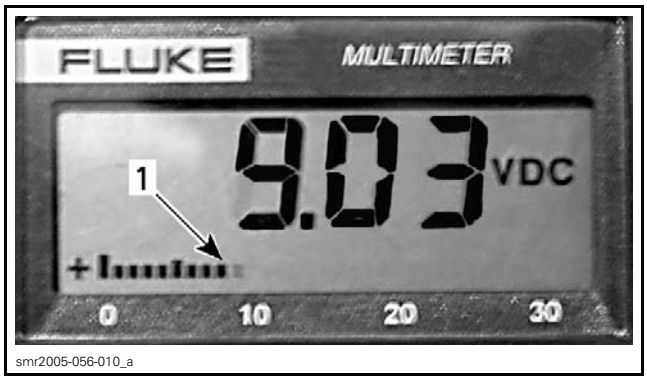
1. Lift rear of vehicle so that rear wheels are off the ground.
2. Set transmission to 2WD and to NEUTRAL.
3. Back-probe the VSS connector.

REQUIRED TOOL
FLUKE RIGID BACK-PROBE (P/N TP88)

4. Turn ignition switch ON.
5. Set emergency engine stop switch to RUN.
6. Set multimeter to Vdc.
7. Measure voltage while slowly rotating rear wheels by hand.

VEHICLE SPEED SENSOR SIGNAL TEST		
TEST PROBES		RESULT (WHILE ROTATING WHEELS)
PIN B WHITE wire	PIN C BLACK wire	Alternate reading between battery voltage and 0 Vdc

NOTE: Since we measure pulsating voltage, the numeric display will continuously change. The analog display may be easier to follow.



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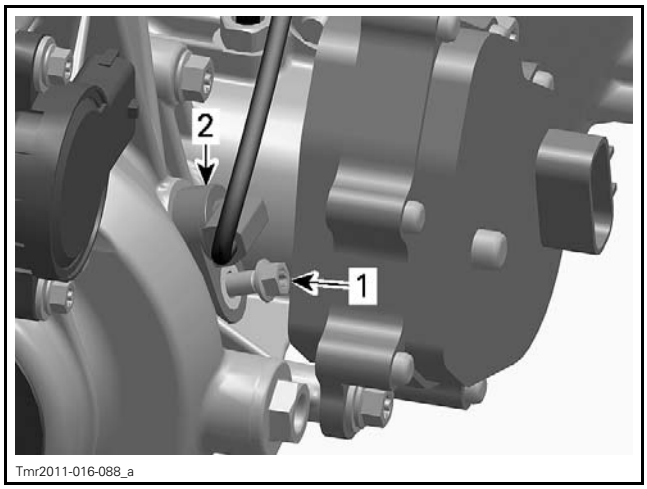
1. Analog display

Removing the VSS

Remove screw retaining the VSS.



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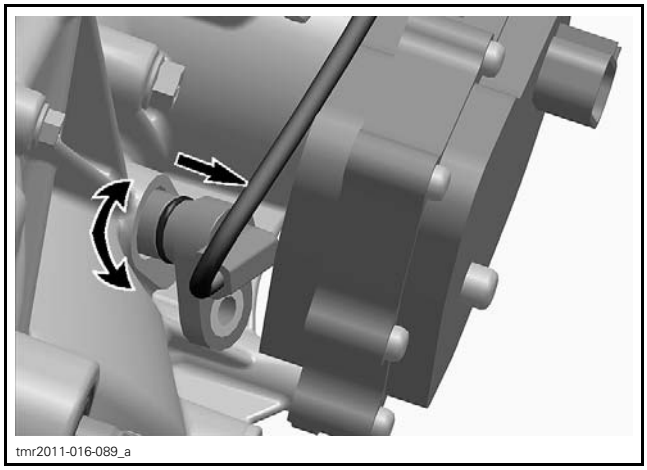
1. Screw
2. VSS

Turn sensor and weave it out of the gearbox right cover.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Installing the VSS

For installation, reverse the removal procedure. Pay attention to the following.

Lubricate VSS O-ring.

VSS O-RING	
Service product	SUPER LUBE GREASE (P/N 293 550 030)

Tighten VSS retaining screw to specification.

TIGHTENING TORQUE	
VSS retaining screw	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

GEARBOX POSITION SENSOR (GBPS)

GBPS Reset

When replacing the gearbox position sensor (GBPS), it is required to reset (re-zero) its values for proper operation.

A reset must be carried out each time any of the following parts has been replaced:

– Gearbox assembly
– Shift drum
– GBPS
– ECM.

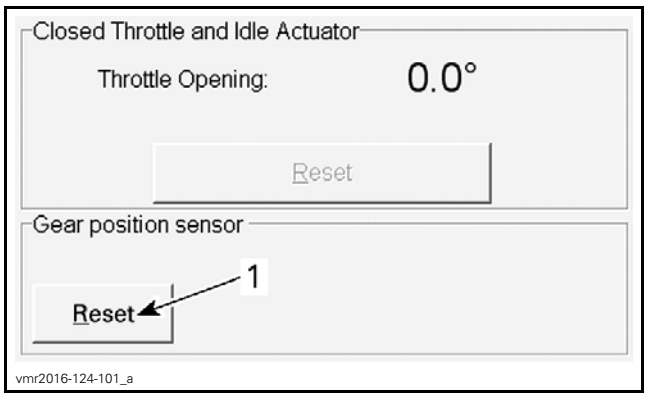
1. Connect vehicle to the latest applicable version of B.U.D.S. software, refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

NOTE: Ignition key must stay ON and emergency engine stop switch must remain to RUN during the reset procedure. Otherwise, the procedure must be carried out again.

2. In B.U.D.S., select the following:
   – **Read Data** button
   – **Setting** tab
   – **ECM** tab.

TYPICAL
1. Read data button
2. Setting tab
3. ECM tab

3. Make sure that gearbox is set to NEUTRAL position.
4. In the **Gear Position Sensor** area, click on the **Reset** button.



GEAR POSITION SENSOR
1. Reset button

A message will be displayed if the operation is successful.

5. Close and disconnect B.U.D.S.

GBPS Access

To reach the GBPS sensor, refer to *BODY* and remove the following parts:

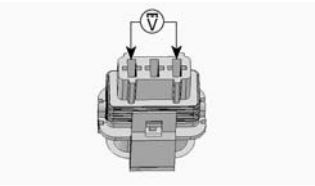
– Seat
– Console
– RH side panel.

Testing the GBPS Input Voltage

NOTE: Prior to conduct testing, check fault codes in B.U.D.S.

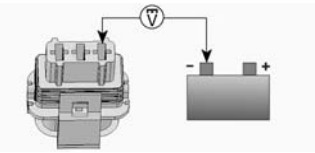
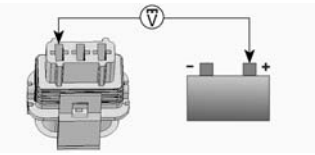
Back-probe the GBPS connector using FLUKE RIGID BACK-PROBE (P/N TP88) or equivalent.

Test as follow:

MULTIMETER PROBE POSITIONS	VOLTAGE
PIN 1 and PIN 3 of the GBPS connector 	5 volts

If voltage is adequate, check GBPS signal wire.

If there is no voltage, check each GBPS input as follows.

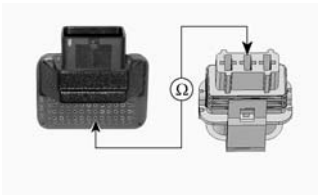
MULTIMETER PROBE POSITIONS	VOLTAGE
GBPS connector (pin 1) and battery ground 	5 volts
GBPS connector (pin 3) and battery + terminal 	Battery voltage

If there is no voltage, check wires and connector pins. Replace or repair defective parts and reset fault codes.

Testing the GBPS Signal Wire Continuity

Unplug ECM connector and connect it to the adapter tool.

REQUIRED TOOL
ECM ADAPTER TOOL (P/N 529 036 166)

MULTIMETER PROBE POSITIONS	RESISTANCE @ 20°C (68°F)
GBPS connector (pin 2) and ECM adapter tool (pin D2) 	Below 1 Ω

If resistance is out of specification, check wires and connectors. Repair and reset fault codes.

If resistance is good and the other tests succeeded, replace the GBPS and reset fault codes.

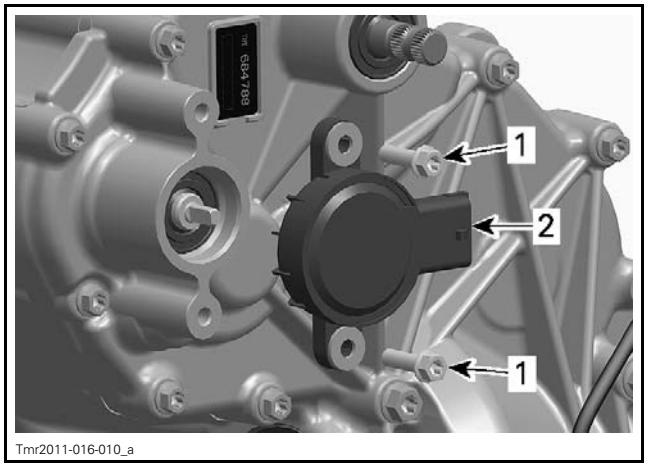
NOTE: The GBPS must be reset.

Removing the GBPS

Set shift lever in NEUTRAL position.

Unplug GBPS connector.

Remove screws and withdraw GBPS.



1. Screws
2. Gearbox Position Sensor (GBPS)

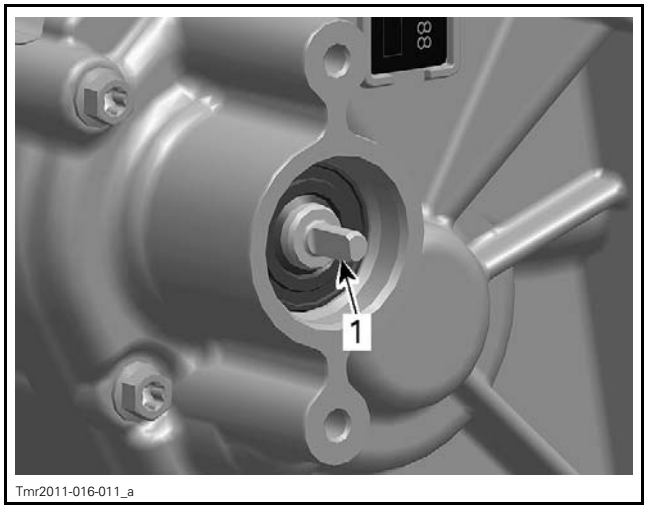
Installing the GBPS

For installation, reverse the removal procedure. Pay attention to the following details.

Shift lever must be in the NEUTRAL position.

Align GBPS with the flat on the shift drum shaft.

IMPORTANT: Do not force to install GBPS if shaft flat is not properly aligned. If alignment is incorrect, check shift rod adjustment.



1. Flat on shift drum shaft

TIGHTENING TORQUE	
GBPS retaining screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

Reset the GBPS. Refer to *GBPS RESET* in this subsection.

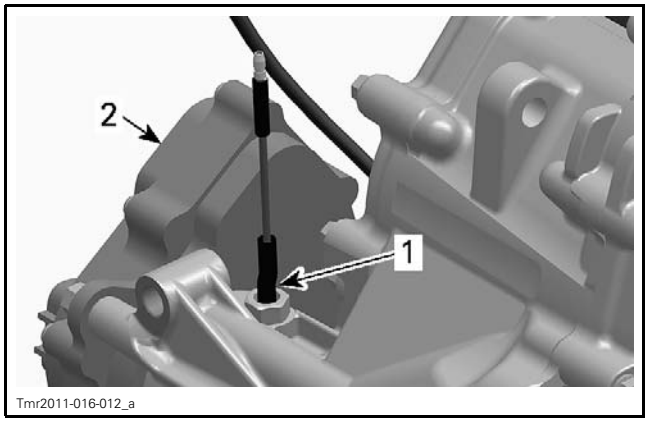
4WD INDICATOR SWITCH

4WD Indicator Switch Access

To reach the 4WD indicator switch, refer to *BODY* and remove the following parts:
- Seat
- Console
- RH side panel.

Removing the 4WD Indicator Switch

Disconnect 4WD indicator switch connector.



1. 4 WD indicator switch
2. Actuator

Testing the 4WD Indicator Switch

Measure switch resistance as follows.

SWITCH POSITION	SWITCH WIRE		RESISTANCE
2WD	BLACK/ BEIGE	Engine ground	Close to 0 Ω
4WD			Infinite (OL)

If the resistance is out of specification, replace the 4WD indicator switch.

Installing the 4WD Indicator Switch

For installation, reverse the removal procedure. Pay attention to the following details.

Take care do not damage indicator switch threads during installation.

Apply carefully some sealant on threads of indicator switch.

NOTICE Do not apply sealant on switch plunger, as it will lead to switch malfunction.

TIGHTENING TORQUE	
Service product	LOCTITE 5910 (P/N 293 800 081)
Indicator switch	3 N•m ± 0.3 N•m (27 lbf•**in** ± 3 lbf•**in**)

ACTUATOR

Actuator Access

To access the actuator, refer to *BODY* and remove the following parts:
- Seat
- Console
- RH side panel
- RH footrest panel

Testing the Actuator

Check if the 2WD/4WD selector works properly.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

Unplug actuator connector.

Turn ignition key ON.

Set emergency engine stop switch to RUN.

Measure voltage as follows.

SWITCH POSITION	SWITCH WIRE		VOLTAGE
2WD	WHITE/BLUE	WHITE	Battery voltage
4WD	WHITE/BLACK		

If the selector is out of specifications, check wires, connectors and replace the selector if necessary.

If the selector is good, check the vehicle harness.

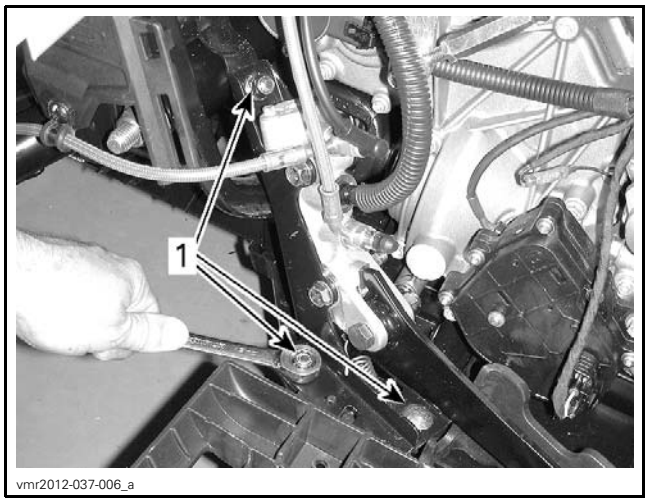
If the vehicle harness is good, replace the actuator.

Removing the Actuator

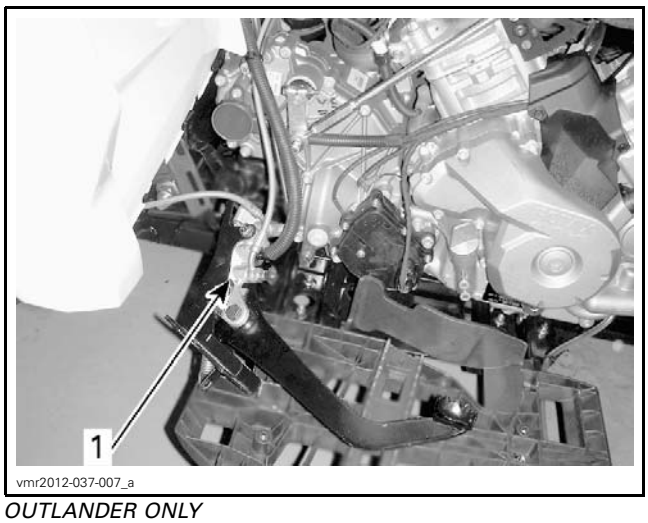
NOTE: Before beginning any servicing on the actuator, make sure the vehicle is in 4WD position. No need to remove engine from vehicle.

Place a drain pan under actuator.

Detach brake master cylinder from frame (Outlander only).

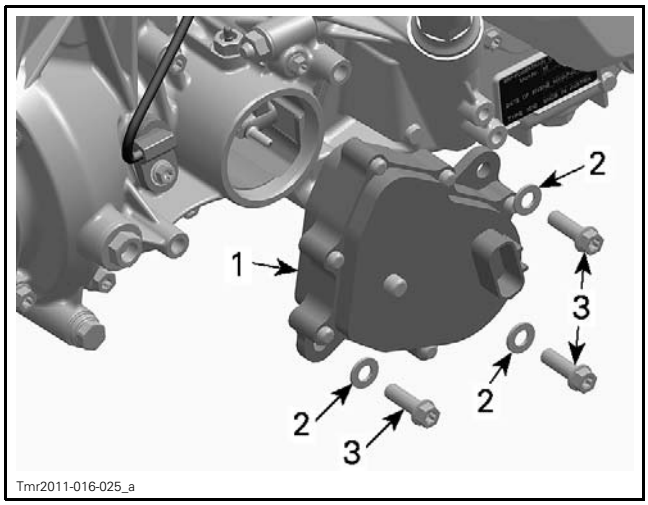


OUTLANDER ONLY
1. *Remove retaining screws from master cylinder support*



OUTLANDER ONLY
1. *Master cylinder moved apart*

Remove actuator screws.



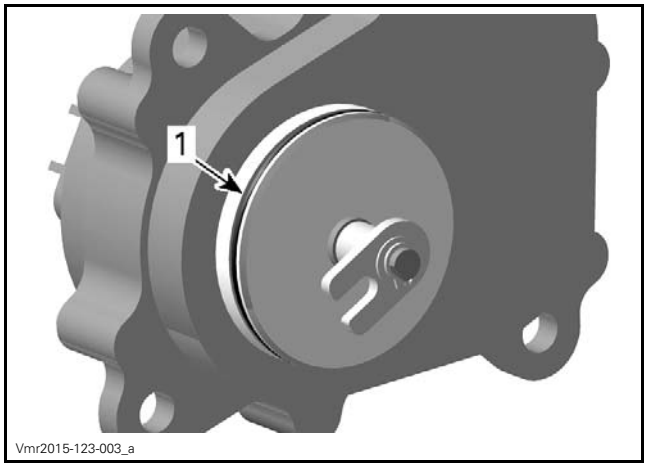
1. *Actuator*
2. *Washer*
3. *Screw*

Pull the actuator out of housing.

Installing the Actuator

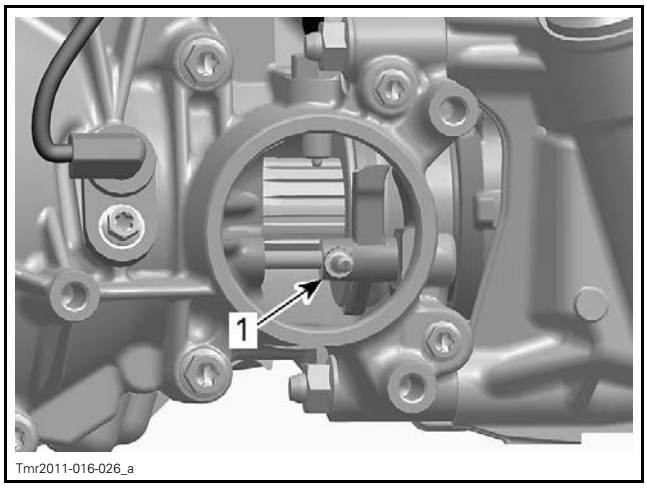
Lubricate actuator O-ring.

ACTUATOR O-RING	
Service product	SUPER LUBE GREASE (P/N 293 550 030)



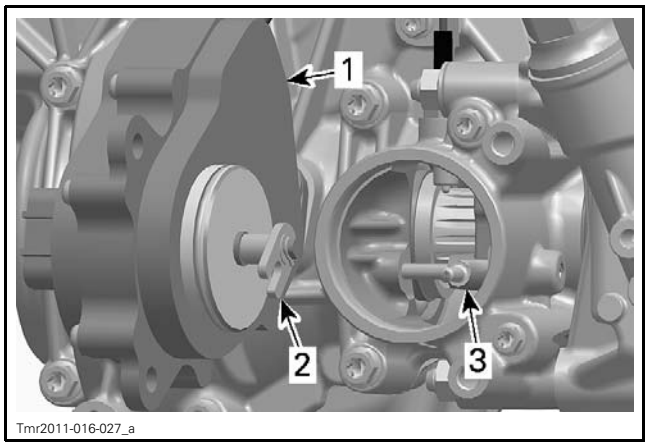
1. *Actuator O-ring*

Ensure coupling fork is in 4WD position (positioned toward the front of vehicle).



1. *Coupling fork in 4WD position*

Align the actuator fork with the pin on coupling fork then push the actuator in the housing. See the following illustration to position the actuator correctly.



1. Actuator
2. Actuator fork
3. Coupling fork

Rotate the actuator counterclockwise until it orients itself to mounting position.

NOTICE Do not cut or break the actuator O-ring.

Install all actuator screws and tighten them.

TIGHTENING TORQUE	
Actuator screws	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)

Connect actuator.

Lift the front of vehicle.

Turn front wheels. The front propeller shaft should not turn (the PARK position must be selected).

If the front propeller shaft turns, the actuator is not installed correctly. Remove actuator and reinstall it.

Set ignition switch to ON.

Set emergency engine stop switch to RUN.

Select the 2WD position.

Turn front wheel again. The front propeller shaft should turn easily.

If the front propeller shaft does not turn, the actuator is not installed correctly. Remove actuator and reinstall it.

NOTICE Refill gearbox, refer to *GEARBOX OIL FILLING PROCEDURE* in *PERIODIC MAINTENANCE PROCEDURES* subsection.

Install all other removed parts.

GEARBOX OIL SEALS

Gearbox Oil Seal Replacement

Replace oil seals if they are brittle, hard or damaged.

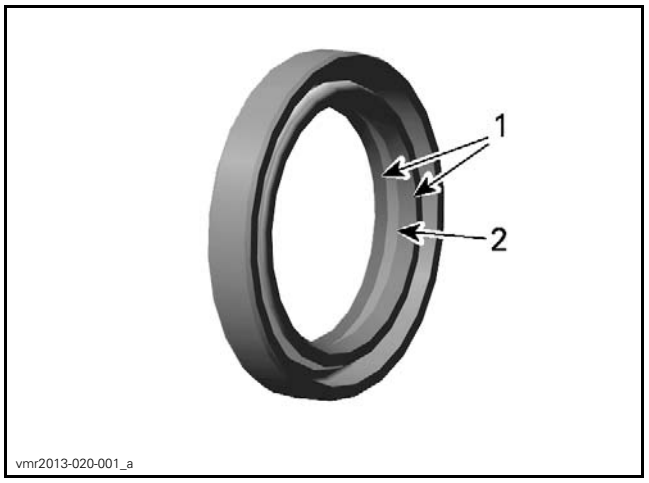
A small flat screwdriver can be used to remove most of these oil seals.

NOTICE Avoid scoring parts during oil seal removal.

When replacing an oil seal, take this opportunity to inspect the following:
– Check bearings behind each oil seal for contamination and/or metal shavings.
– Check oil seal running surfaces for scratches.

Oil Seal Lubrication

When installing or reinstalling oil seals, use PETAMO GREASE GHY 133N (P/N 420 899 271) to:
– Lubricate sealing lips all around.
– Fill up the room between sealing lips halfway around the perimeter.

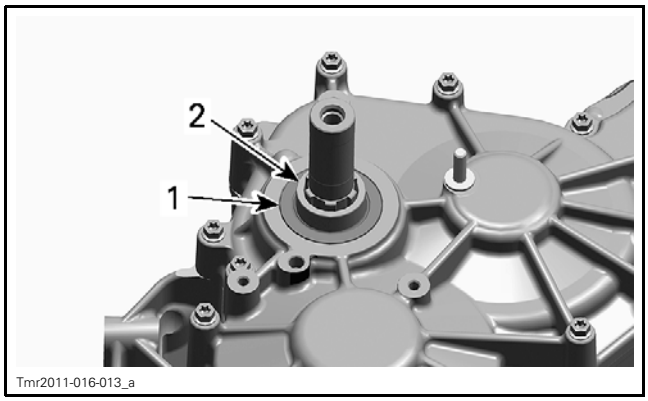


1. Sealing lips
2. Room between sealing lips

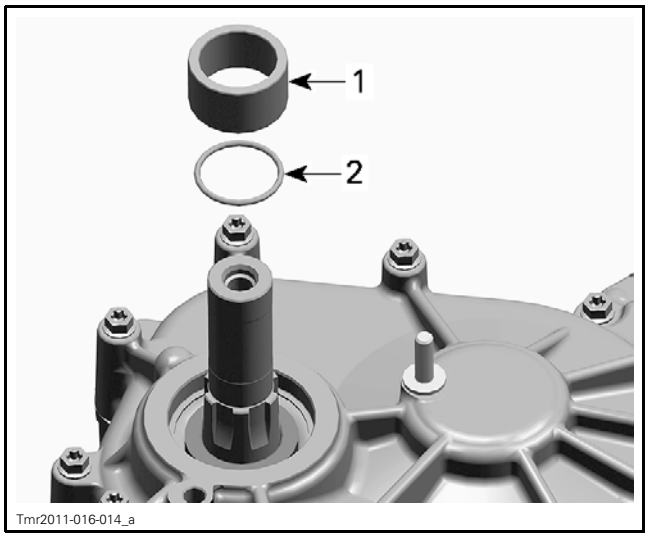
Countershaft Oil Seal

To replace the countershaft oil seal, remove:
– Drive and driven pulleys
– CVT air guide.

NOTE: When oil seal is removed also inspect O-ring behind distance sleeve.



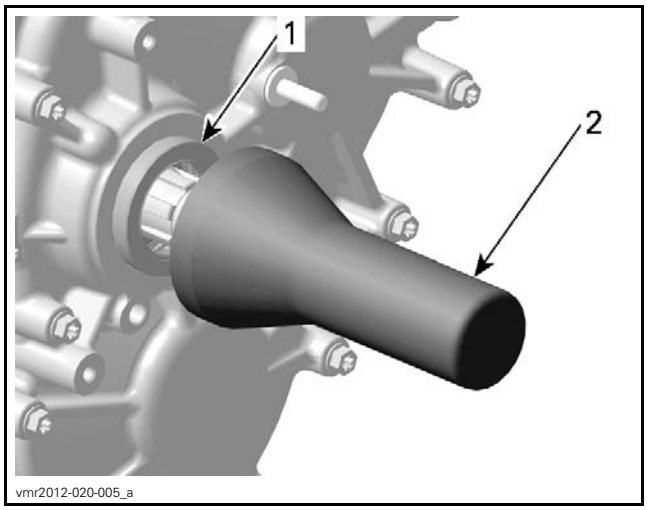
1. Countershaft oil seal
2. Distance sleeve



1. Distance sleeve
2. O-ring

Install countershaft oil seal tool.

REQUIRED TOOL	
COUNTERSHAFT OIL SEAL PUSHER (P/N 529 036 222)	



1. Countershaft oil seal
2. Oil seal pusher

Shift Shaft Oil Seal

The shift shaft oil seal can be removed without removing the gearbox from the vehicle.

To replace the shift shaft oil seal, refer to *BODY* and remove:

– Seat
– Console
– RH side panel
– RH footrest panel
– Shift plate from shift shaft (refer to *SHIFTER*).

Use a suitable tube with the proper diameter to install the oil seal.

If gearbox housing is apart, use following tools for shift shaft oil seal installation.

REQUIRED TOOL	
OIL SEAL INSTALLER (GEARBOX) (P/N 529 035 758)	
HANDLE (P/N 420 877 650)	

NOTICE **Oil seal must be installed with sealing lip toward gearbox.**

Shift Drum Shaft Oil Seal

To replace the shift drum shaft oil seal, remove the *GBPS (GEARBOX POSITION SENSOR)*. See procedure in this subsection.

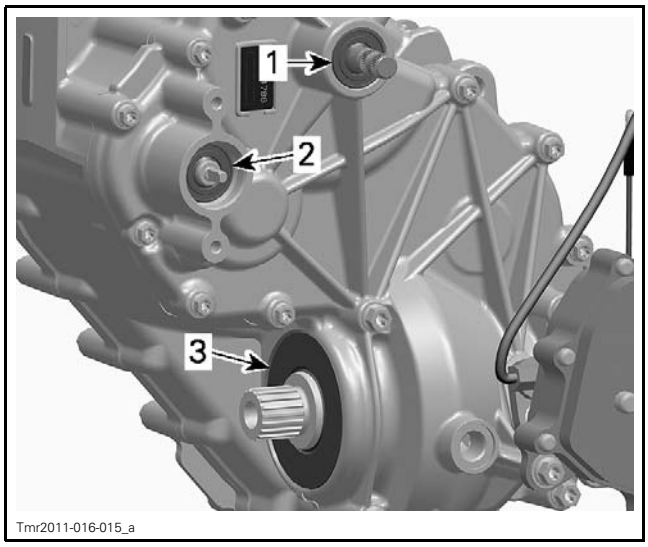
Use a suitable tube with the proper diameter to install the oil seal.

NOTICE **Oil seal must be installed with sealing lip toward gearbox.**

Output Shaft Oil Seal

To replace the output shaft oil seal, proceed as follows:

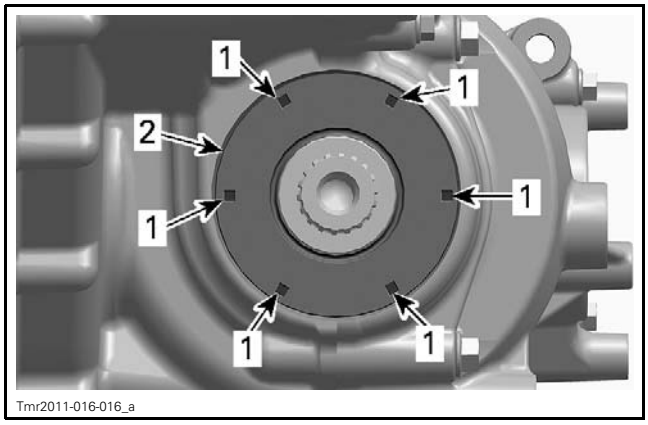
Remove propeller shaft. Refer to *REAR DRIVE* subsection.



1. *Shift shaft oil seal*
2. *Shift drum shaft oil seal*
3. *Output shaft oil seal*

Punch a sharp screwdriver through oil seal for removal.

NOTE: Position screwdriver only in marked areas to avoid damaging the ball bearing behind oil seal during removal.



1. *Marked areas for removal*
2. *Output shaft oil seal*

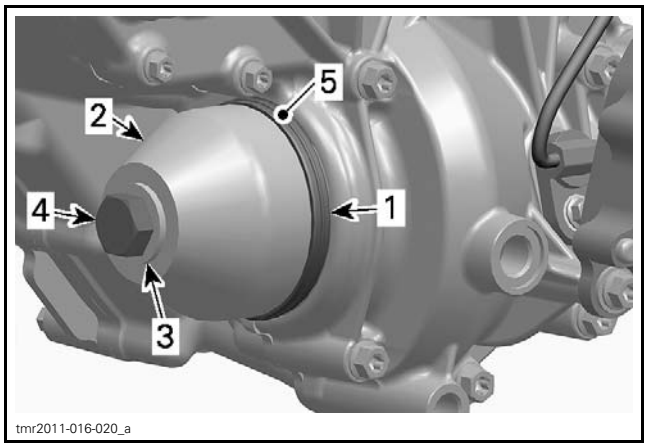
Before beginning the installation ensure gearbox is set to PARK position.

Lubricate sealing lips, refer to *OIL SEAL LUBRICATION* in this subsection.

Apply engine oil on outer diameter of oil seal to avoid damaging it during installation.

Place oil seal on output shaft and install it using the following tools.

REQUIRED TOOL	
OIL SEAL INSTALLER (P/N 529 036 204)	
Flat washer (P/N 250 200 102)	
M12 x 1.25 x 35 hexagonal screw	



1. *Output shaft oil seal*
2. *Oil seal installer*
3. *Flat washer (P/N 250 200 102)*
4. *M12 x 1.25 x 35 hexagonal screw*
5. *Apply engine oil on outer diameter of oil seal*

GEARBOX

Removing the Gearbox

Remove engine from vehicle. Refer to *ENGINE REMOVAL AND INSTALLATION* for the procedure.

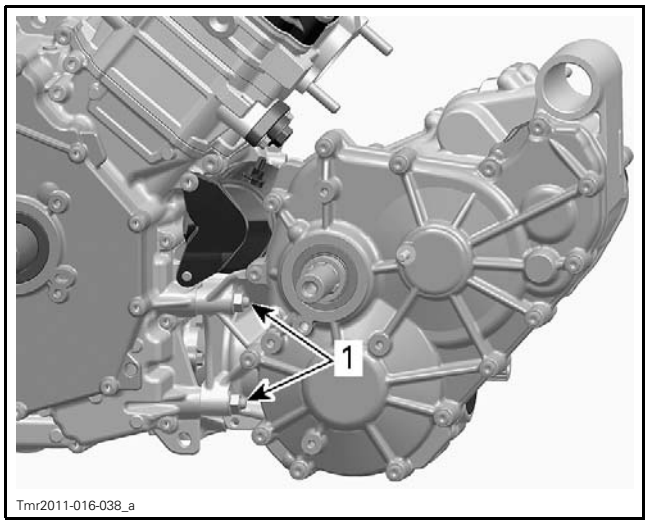
Refer to *CONTINUOUSLY VARIABLE TRANSMISSION (CVT)* subsection to remove following parts:

- CVT cover
- Drive and driven pulleys
- CVT air guide.

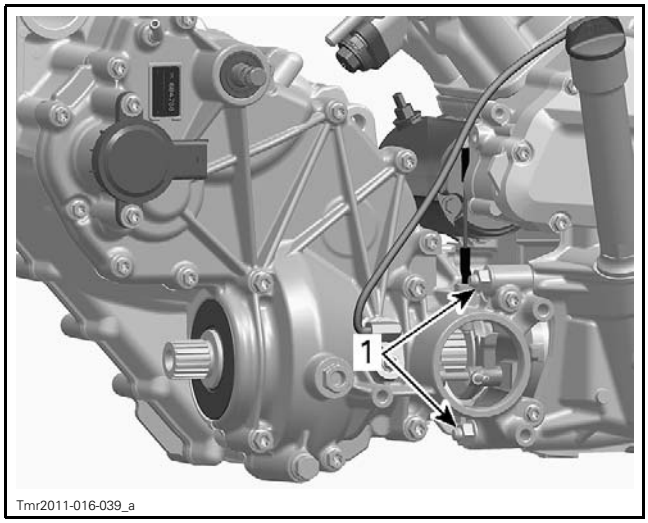
Drain gearbox. Refer to *GEARBOX OIL DRAINING PROCEDURE* in *PERIODIC MAINTENANCE PROCEDURES* subsection.

Remove *ACTUATOR*, see procedure in this subsection.

Unscrew the four (4) nuts that attach the gearbox to the engine.



LH SIDE OF ENGINE
1. Nut M8



RH SIDE OF ENGINE
1. Nut M8

Pull gearbox to separate it from engine.

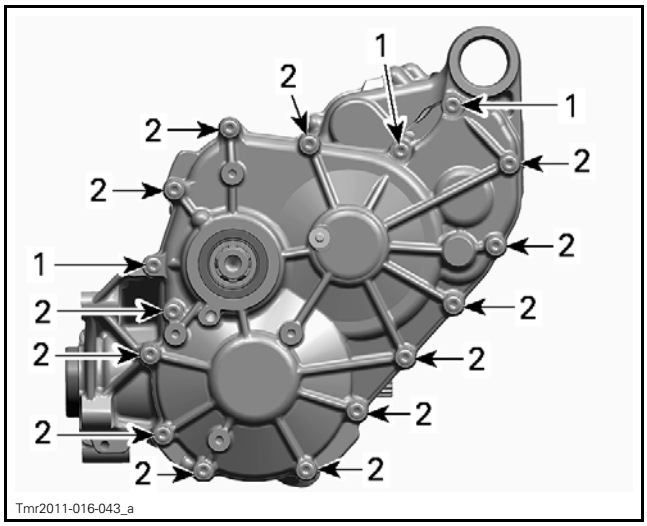
Disassembling the Gearbox

NOTE: During gearbox disassembly, inspect the condition of each part closely.

Gearbox Left Cover

Set gearbox to NEUTRAL position.

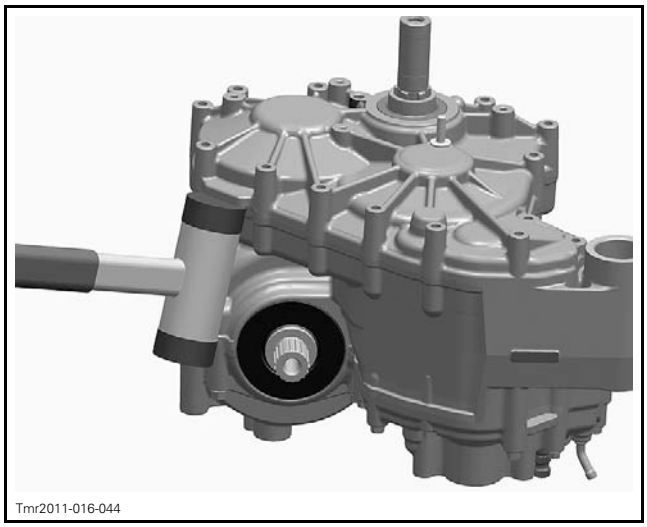
Unscrew all bolts retaining the gearbox left cover.



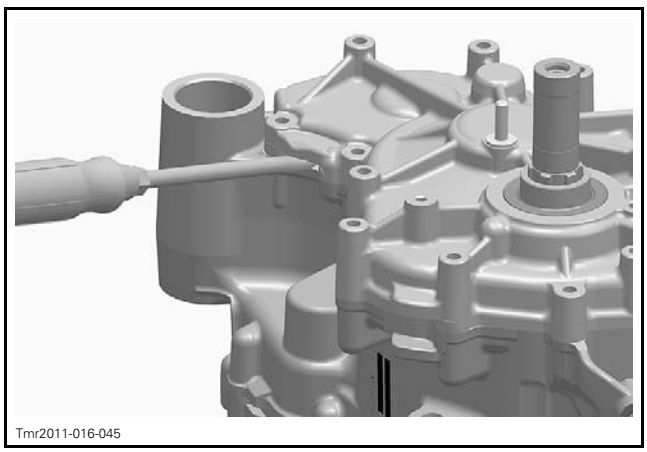
1. 3 screws M6 x 35
2. 13 screws M6 x 55

Place the center housing on a wood stand, left cover pointing upwards.

Using a big flat screwdriver and a soft hammer to lift the left cover.



POSITION FOR SOFT HAMMER

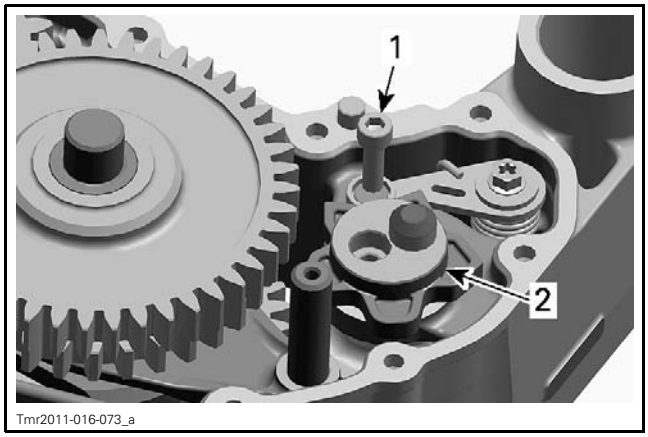


POSITION FOR BIG FLAT SCREWDRIVER

Index Lever and Index Washer

Set gearbox to NEUTRAL position.

Remove screw retaining the index washer to the shift drum.



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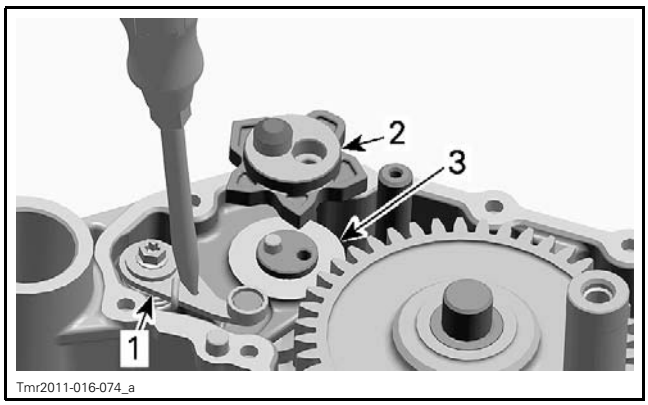
1. *Screw*
2. *Index washer*

Insert a flat screwdriver in the slot of index lever. Turn screwdriver clockwise and remove index washer.



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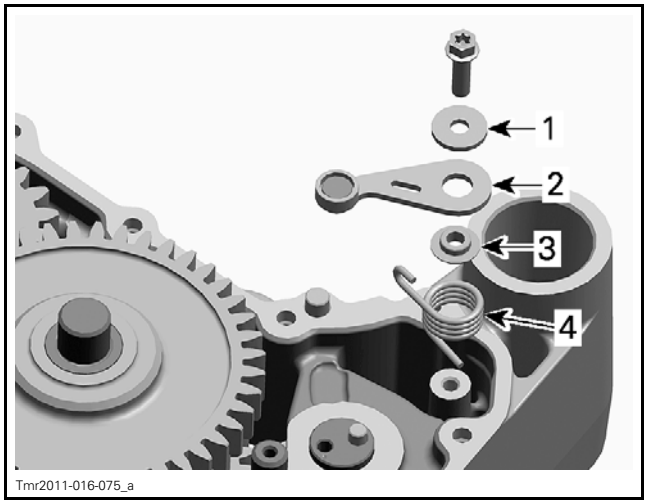
1. *Index lever*
2. *Index washer*
3. *Shift drum*

Remove the index lever with washer, step ring and spring.



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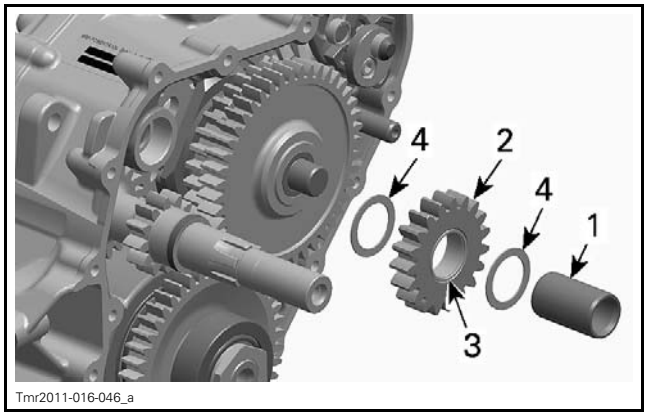
1. *Washer*
2. *Index lever*
3. *Step ring*
4. *Index spring*

Main Shaft and Shift Forks

Remove bearing pin, reverse intermediate gear and thrust washers.

NOTE: Take care not to lose lower thrust washer during removal.



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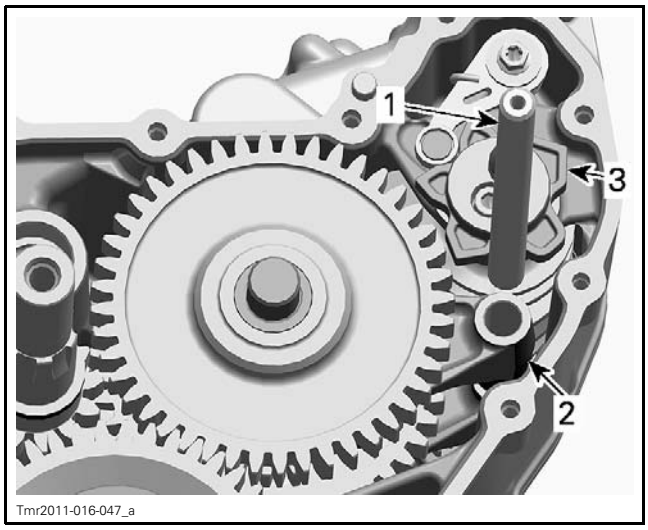
1. *Bearing pin*
2. *Reverse intermediate gear*
3. *Needle bearing*
4. *Thrust washers*

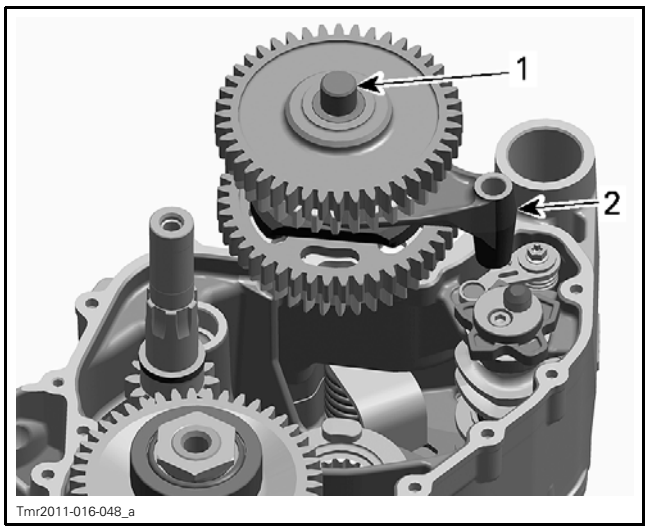
Remove shift fork shaft.

Disengage shift forks from shift drum.



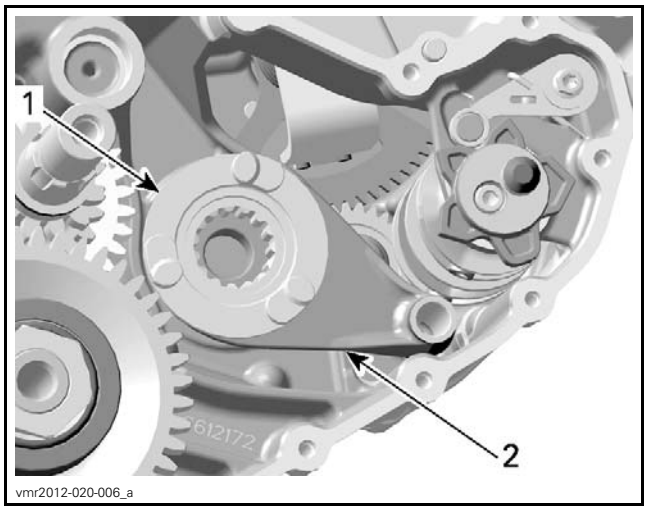
1. Shift fork shaft
2. Shift fork
3. Shift drum

Remove main shaft assembly with shift fork.



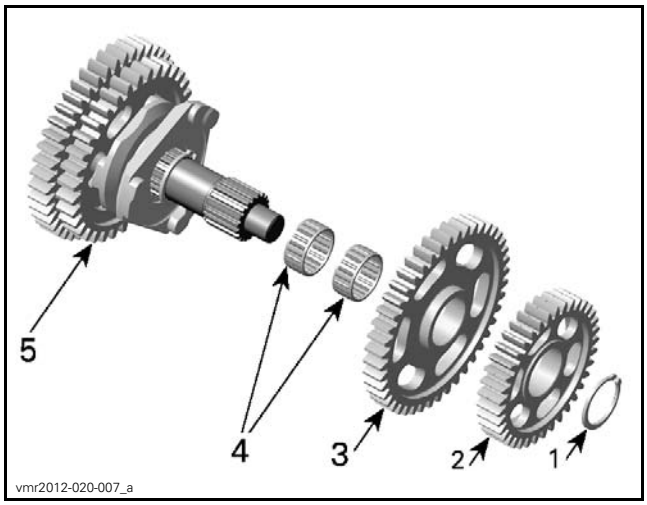
1. Main shaft assembly
2. Shift fork

Remove shifting sleeve (HIGH range gear) and shift fork.



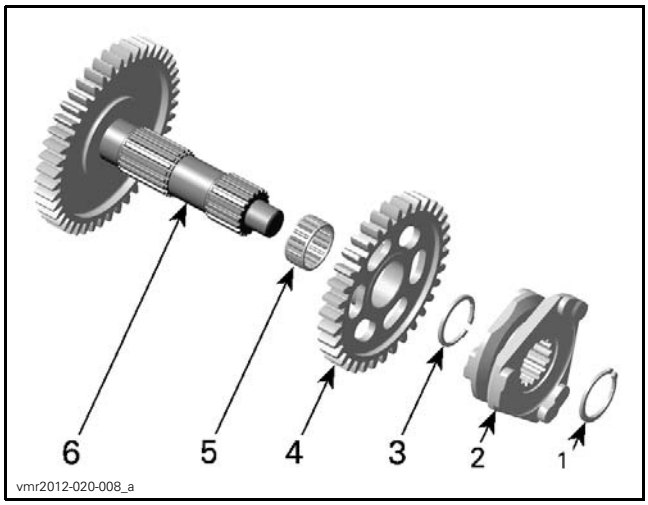
1. Shifting sleeve (HIGH range gear)
2. Shift fork

When required, remove from main shaft assembly:
– Snap ring (discard)
– HIGH range gear
– LOW range gear
– Needle bearings.



1. Snap ring
2. Free pinion (HIGH range gear)
3. Free pinion (LOW range gear)
4. Needle bearing
5. Main shaft assembly

Remove from main shaft assembly:
– Snap ring (discard)
– Shifting sleeve (LOW/REVERSE range gear)
– Snap ring (discard)
– REVERSE range gear
– Needle bearing.

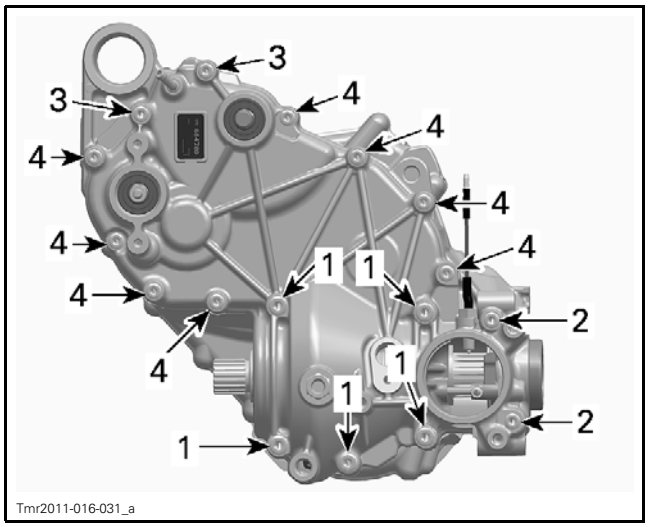


1. *Snap ring*
2. *Shifting sleeve (LOW/REVERSE range gear)*
3. *Snap ring*
4. *Free pinion (REVERSE range gear)*
5. *Needle bearing*
6. *Main shaft assembly*

Gearbox Right Cover

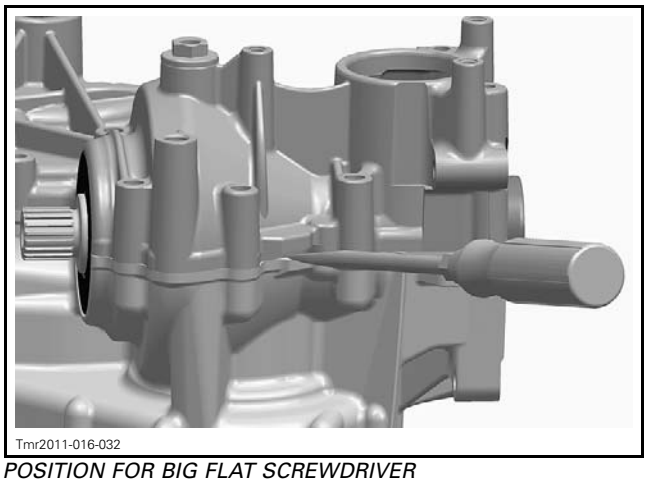
Remove *ACTUATOR* and *GBPS (GEARBOX POSITION SENSOR)*, see procedures in this subsection.

Unscrew all bolts retaining the gearbox right cover.

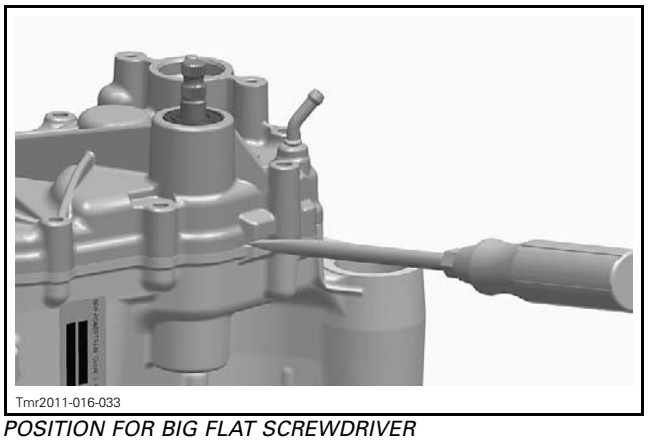


1. *5 screws M8 x 55*
2. *2 screws M6 x 85*
3. *2 screws M6 x 55*
4. *8 screws M6 x 35*

To remove cover, use 2 big screwdrivers.



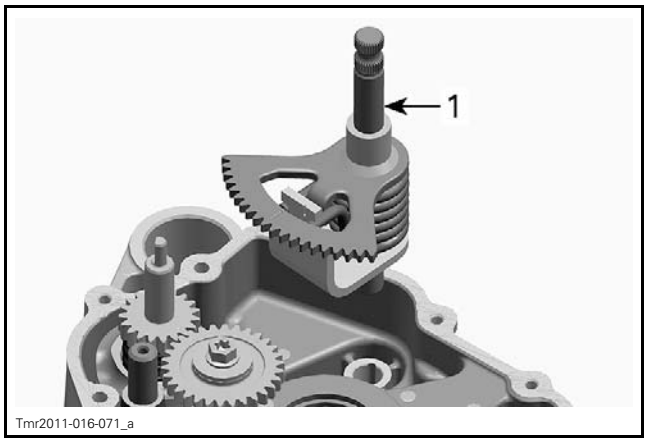
POSITION FOR BIG FLAT SCREWDRIVER



POSITION FOR BIG FLAT SCREWDRIVER

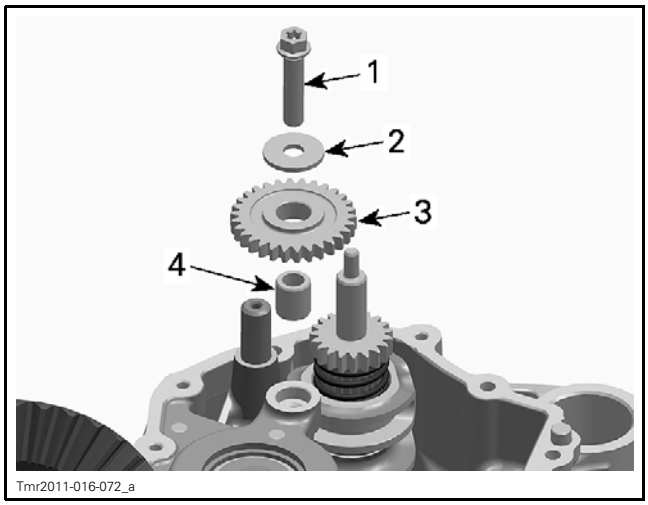
Shift Shaft and Shift Drum

Withdraw shift shaft assembly.



1. *Shift shaft assembly*

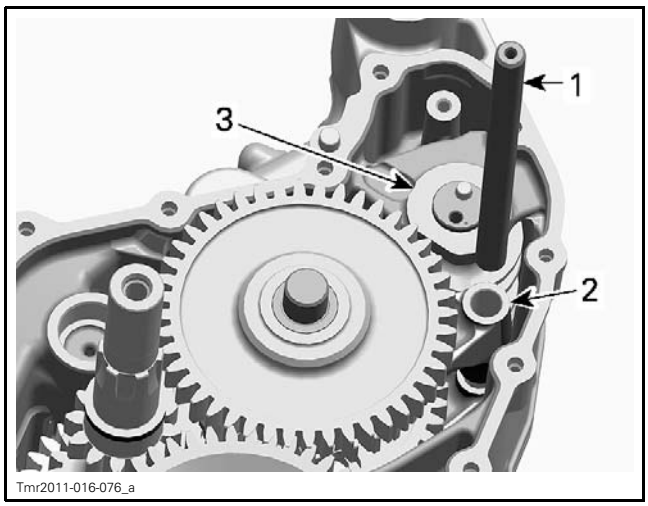
Remove screw retaining the shifting intermediate gear.



1. *Screw*
2. *Washer*
3. *Intermediate gear*
4. *Dowel pin*

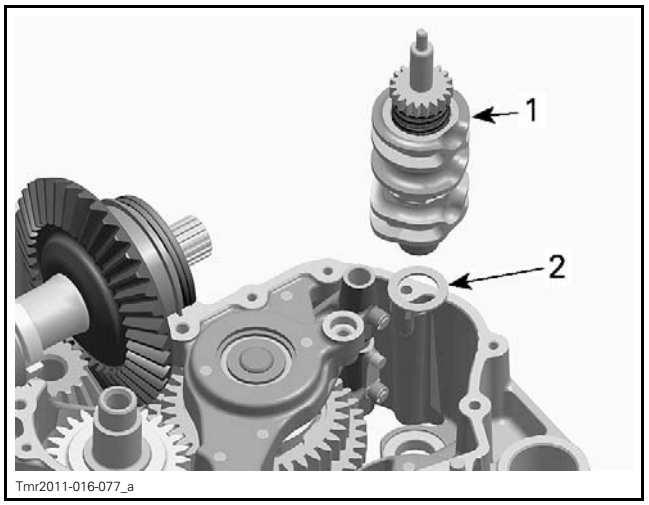
Remove shift fork shaft.

Disengage shift forks from shift drum.



1. *Shift fork shaft*
2. *Shift fork*
3. *Shift drum*

Remove shift drum and thrust washer.

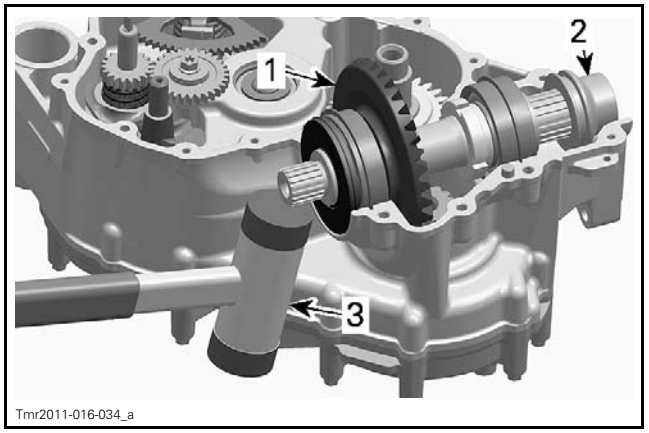


1. *Shift drum*
2. *Thrust washer*

Output Shaft and 4x4 Coupling Mechanism

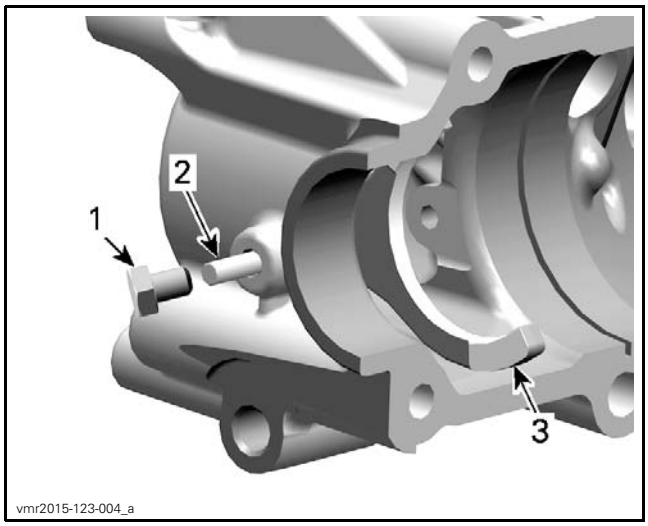
Remove output shaft from center housing and withdraw 4x4 coupling sleeve.

NOTICE Use a soft hammer to remove output shaft.



1. *Output shaft*
2. *4x4 coupling sleeve*
3. *Soft hammer*

Remove hexagonal screw, coupling fork shaft and coupling fork from right cover.

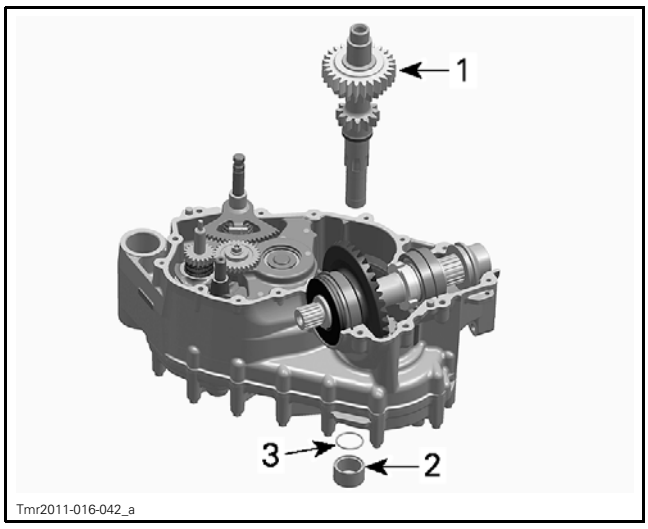


1. *Hexagonal screw*
2. *Coupling fork shaft*
3. *Coupling fork*

Countershaft

Use a soft hammer to push out countershaft from gearbox CVT side.

Remove distance sleeve and O-ring.



1. *Countershaft*
2. *Distance sleeve*
3. *O-ring*

Gearbox Bearings

If necessary heat housing up to 100°C (212°F) before removing ball bearings.

⚠ WARNING

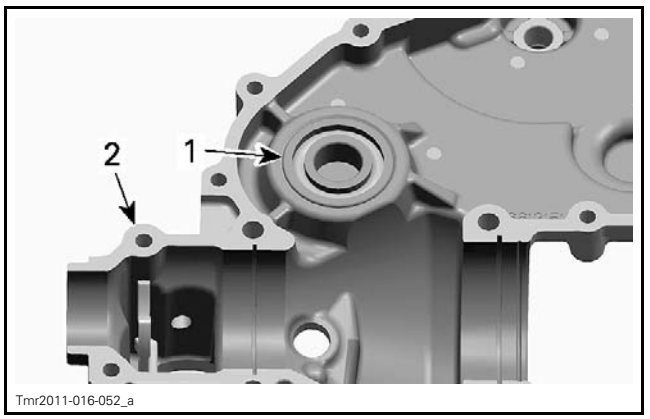
Clean oil, outside and inside, from housing before heating.

NOTICE **Always support gearbox housings properly when ball bearings are removed. Housing damages may occur if this procedure is not performed correctly.**

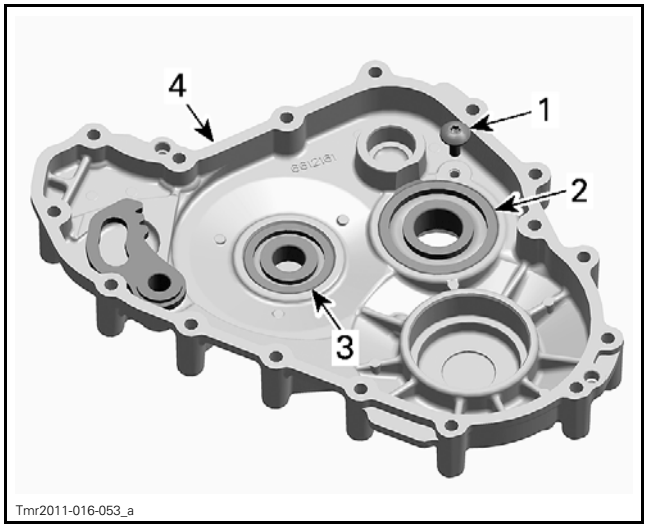
To remove ball bearings of countershaft (right cover) and main shaft (left cover) use a blind hole bearing puller.

Remove screw securing the countershaft bearing in the left cover.

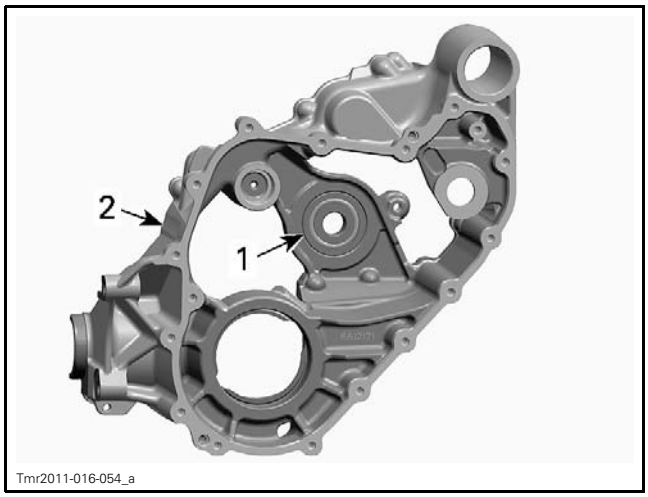
For ball bearings of countershaft (left cover) and main shaft (center housing) push with a suitable puller from outside in.



1. *Ball bearing countershaft*
2. *Right cover*



1. *Screw*
2. *Ball bearing countershaft*
3. *Ball bearing main shaft*
4. *Left cover*



1. Ball bearing main shaft
2. Center housing

Inspecting the Gearbox

Always verify for the following when inspecting gearbox components:

– Gear teeth damage
– Worn or scoured bearing surfaces
– Rounded engagement dogs and slots
– Worn shift fork engagement groove
– Worn splines on shafts and shifting sleeves.

Bearings

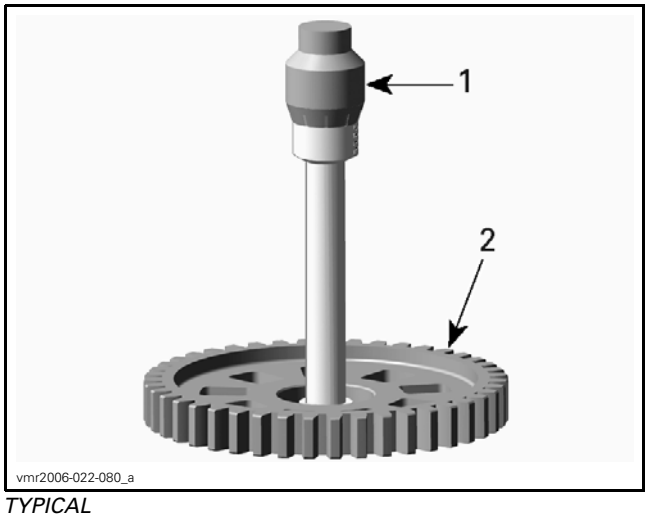
Check if ball bearings turn freely and smoothly.

Check all bearings, bearing points, tooth flanks and taper grooves.

Free Pinions

NOTE: Always replace snap rings and use special pliers to install them.

Check free pinions for wear.

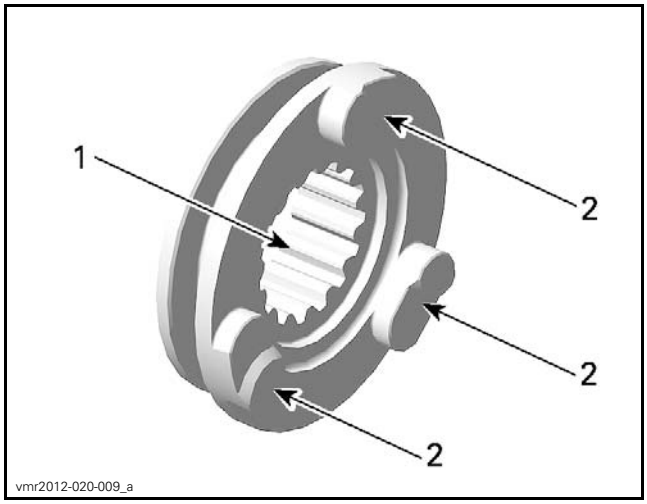


TYPICAL
1. Micrometer
2. Free pinion

DIAMETER FREE PINION	
NEW	29.000 mm to 29.013 mm (1.1417 in to 1.1422 in)
SERVICE LIMIT	29.015 mm (1.1423 in)

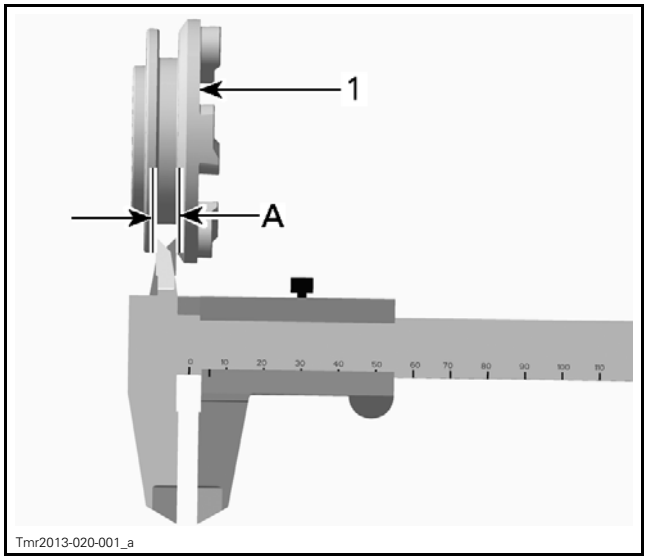
Shifting Sleeves

Check shifting sleeves for worn inner splines and rounded or damaged engagement dogs.



TYPICAL
1. Inner splines
2. Engagement dogs

Measure the width of shift fork engagement groove.

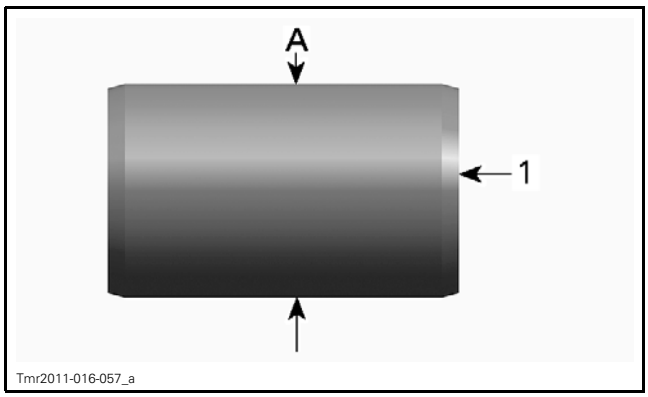


TYPICAL
1. Shifting sleeve
A. Width of shift fork engagement groove

WIDTH OF SHIFT FORK ENGAGEMENT GROOVE	
NEW	5.30 mm to 5.40 mm (.209 in to .213 in)
SERVICE LIMIT	5.50 mm (.217 in)

Shafts

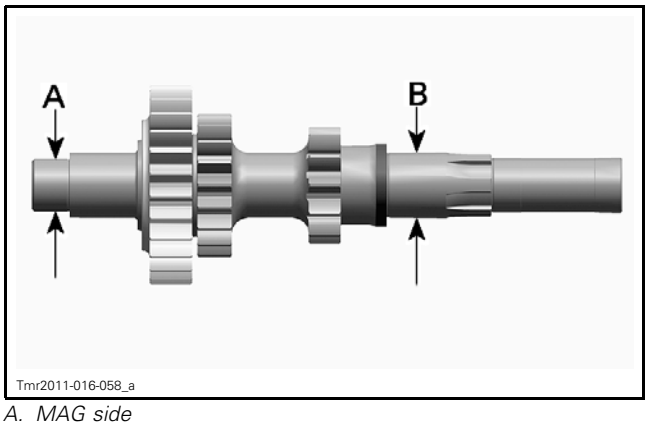
Check bearing pin of reverse intermediate gear for wear.



1. Bearing pin
A. Outer diameter

BEARING PIN OUTER DIAMETER	
NEW	24.987 mm to 25.000 mm (.984 in to .984 in)
SERVICE LIMIT	24.977 mm (.9833 in)

Check countershaft bearing journals for wear.

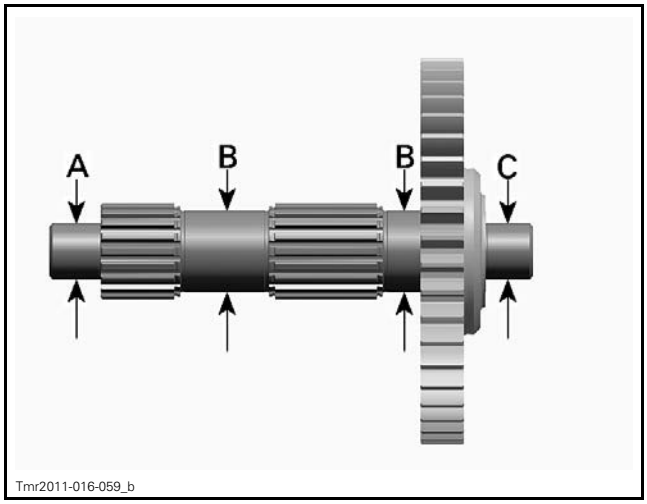


A. MAG side
B. Bearing journal CVT side

COUNTERSHAFT BEARING JOURNALS	
MAG SIDE	
NEW	19.977 mm to 19.990 mm (.786 in to .787 in)
SERVICE LIMIT	19.973 mm (.786 in)

COUNTERSHAFT BEARING JOURNALS	
MAG SIDE	
CVT SIDE	
NEW	24.977 mm to 24.990 mm (.983 in to .984 in)
SERVICE LIMIT	24.970 mm (.983 in)

Check main shaft for wear.



A. Bearing journal MAG side
B. Free pinion bearing
C. Bearing journal CVT side

MAIN SHAFT	
FREE PINION BEARING	
NEW	24.987 mm to 25.000 mm (.984 in to .984 in)
SERVICE LIMIT	24.984 mm (.984 in)
BEARING JOURNAL CVT/MAG SIDE	
NEW	16.980 mm to 16.991 mm (.669 in to .669 in)
SERVICE LIMIT	16.976 mm (.668 in)

Shift Shaft

Check shift shaft for worn splines and gears.

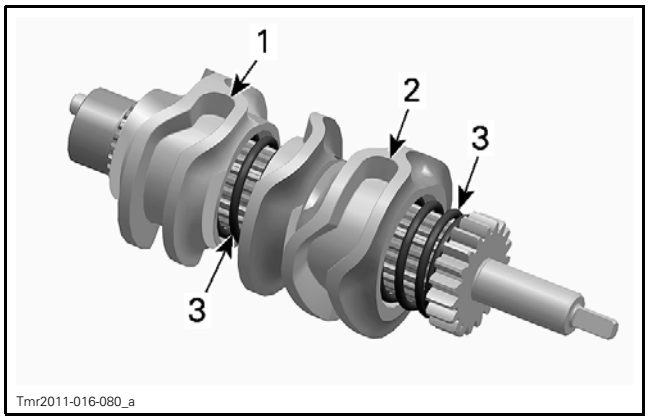
Check shift shaft spring for damages.

Shift Drum

NOTICE Do not disassemble shift drum.

Check if shifting gates move easily on shift drum splines and check condition of springs.

Check shift drum tracks for scouring or heavy wear, like rounded engagement slots.



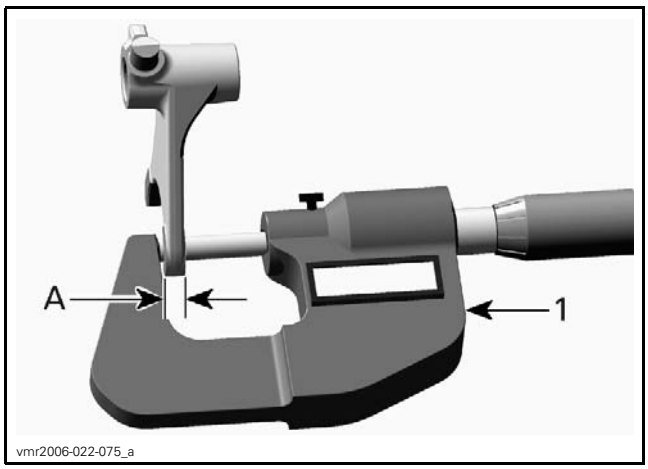
1. Track for the low/reverse range gear shift fork
2. Track for the high range gear shift fork
3. Springs

Shift Forks

Check both shift forks for visible damage, wear or bent shift fork claws.

Check engagement rollers for wear and smooth movement.

Measure the shift fork claw thickness.



1. Micrometer
A. Shift fork claw thickness

SHIFT FORK CLAW THICKNESS	
NEW	5.10 mm to 5.20 mm (.201 in to .205 in)
SERVICE LIMIT	5.00 mm (.197 in)

Shift Fork Shaft

Check shift fork shaft for visible damage or wear.

Check if shift fork shaft is straight.

Index Lever and Parking Lever

Index lever with roller must move freely.

Check parking lever for cracks or other damages.

Output Shaft

Check output shaft and its gear for cracks, bend, pitting or other visible damages.

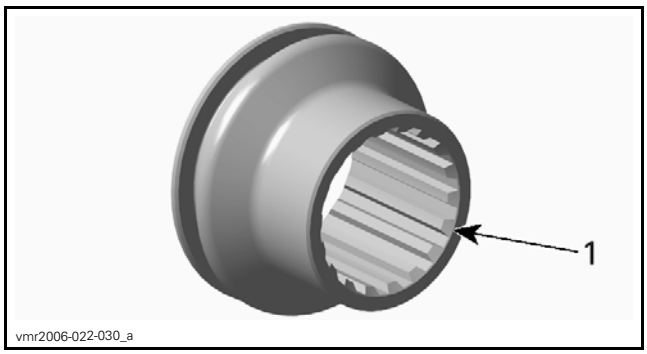
Check output shaft splines for wear or other damages.

Check if the output shaft bearings turn freely and smoothly.

Replace oil seal if brittle, hard or damaged.

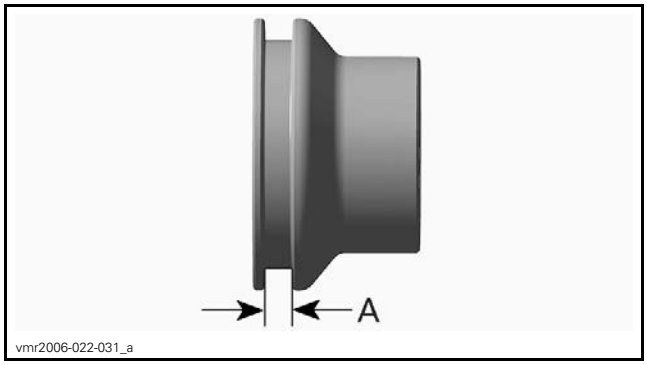
4x4 Coupling Sleeve

Check splines of coupling sleeve for wear or other damages.



1. Inspect splines

Measure the coupling sleeve groove width.



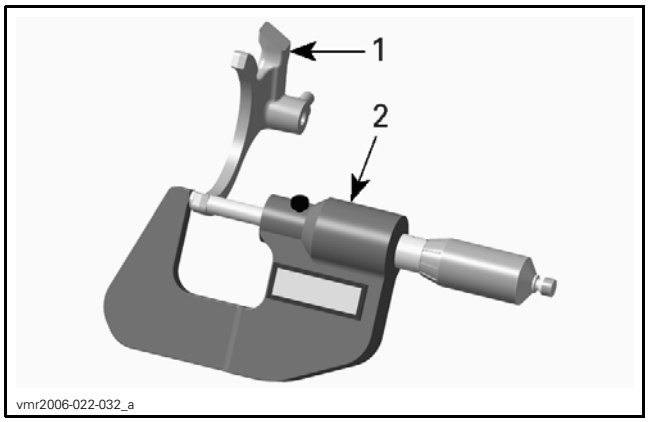
A. Groove width

COUPLING SLEEVE GROOVE WIDTH	
NEW	5.25 mm to 5.35 mm (.207 in to .211 in)
SERVICE LIMIT	5.50 mm (.217 in)

Coupling Fork

Check coupling fork for visible damage, wear or bent coupling fork claws.

Check coupling fork claw thickness.



1. Coupling fork
2. Micrometer

COUPLING FORK CLAW THICKNESS	
NEW	4.95 mm to 5.05 mm (.195 in to .199 in)
SERVICE LIMIT	4.80 mm (.189 in)

Assembling the Gearbox

The assembly of gearbox is essentially the reverse of disassembly procedure. However, pay attention to the following details.

Gearbox Bearings

Unless otherwise instructed, never use hammer to install ball bearings. Use press machine only.

If necessary heat housings up to 100°C (212°F) before installing ball bearings.

⚠ WARNING

Clean oil, outside and inside, from housing before heating.

Place new bearing in freezer for 10 minutes before installation.

Use a suitable installer for installing ball bearings of countershaft and main shaft.

NOTE: Place gearbox housings on a wood stand before installing ball bearings.

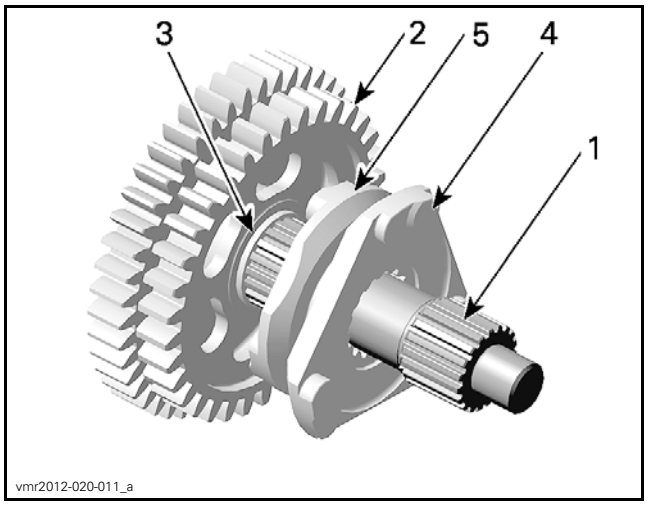
Install new oil seals with the proper installer (refer to *OIL SEALS* in this subsection).

Main Shaft and Shift Forks

Install NEW snap rings.

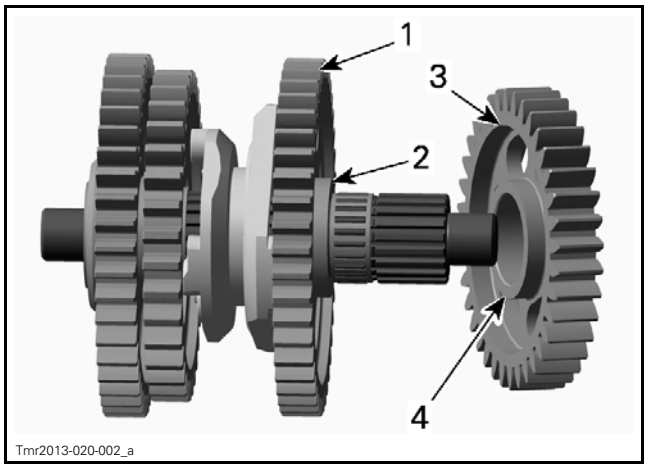
NOTE: Ensure snap rings are installed in the grooves properly.

Install free pinion (REVERSE range gear) and shifting sleeve (LOW/REVERSE range gear) properly.



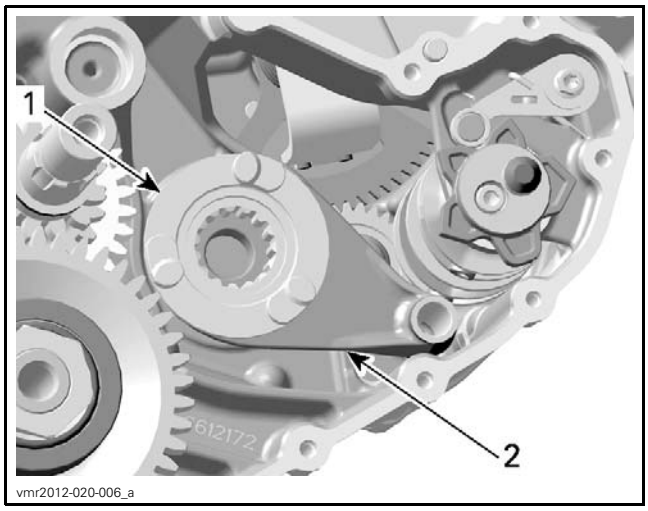
1. Main shaft
2. Free pinion (REVERSE range gear)
3. Snap ring
4. Shifting sleeve (LOW/REVERSE range gear)
5. Shifting dogs (REVERSE range gear)

Collars of free pinion (LOW range gear) and free pinion (HIGH range gear) must point together.



1. Free pinion (LOW range gear), 44 T
2. Collar
3. Free pinion (HIGH range gear), 36 T
4. Collar

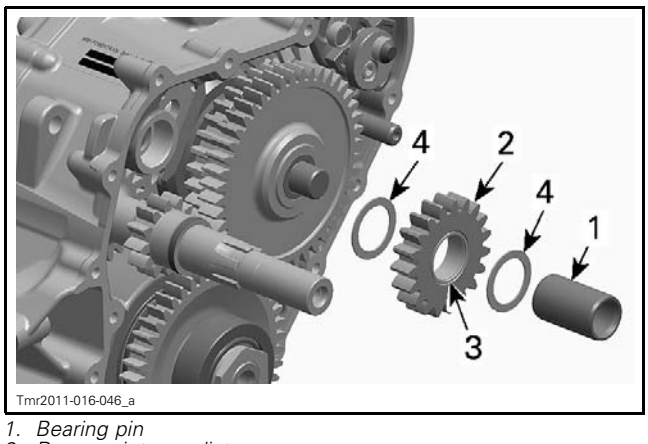
Place shifting sleeve (HIGH range gear) with shift fork in the center of on main shaft bearing in center housing.



1. Shifting sleeve (HIGH range gear)
2. Shift fork

Carefully fit main shaft assembly with shift fork (LOW/REVERSE range gear) into inner splines of shifting sleeve (HIGH range gear).

Install reverse intermediate gear.



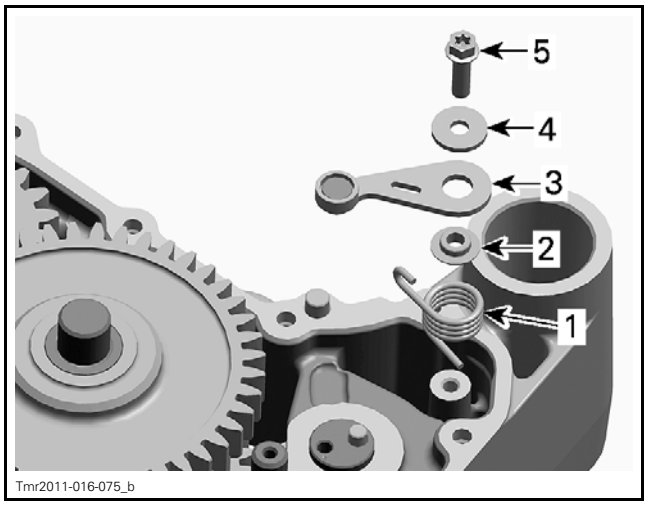
1. Bearing pin
2. Reverse intermediate gear
3. Needle bearing
4. Thrust washers

Finally engage shift forks in shift drum and install shift fork shaft.

NOTE: Run all gears as a final function check before installing left housing.

Index Lever and Index Washer

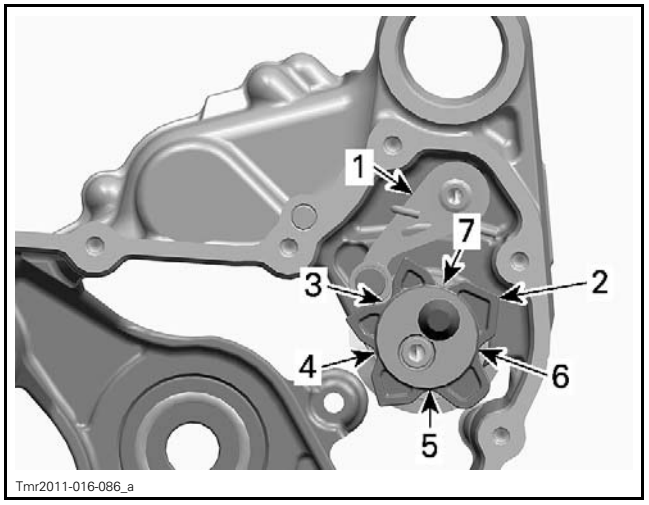
Fit step ring into index lever.



1. Index spring
2. Step ring
3. Index lever
4. Washer
5. Screw

Install index washer on shift drum.

Insert a flat screwdriver in the slot of the index lever, turn screwdriver clockwise and engage lever in index washer in NEUTRAL position as per following illustration.



1. Index lever
2. Index washer
3. Neutral position
4. High range gear position
5. Low range gear position
6. Parking position
7. Reverse range gear position

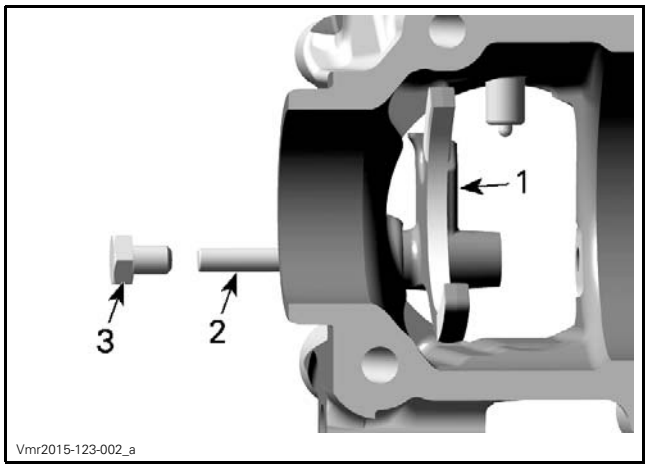
Output Shaft and 4x4 Coupling Mechanism

Install coupling sleeve onto the output shaft.

Place the output shaft with oil seal and coupling sleeve into the center housing.

NOTE: If same oil seal is installed, turn oil seal 90° offset to its original position to avoid leakage at housing mating surface.

Install coupling fork, coupling fork shaft and hexagonal screw in right cover before applying sealant to the mating surface.

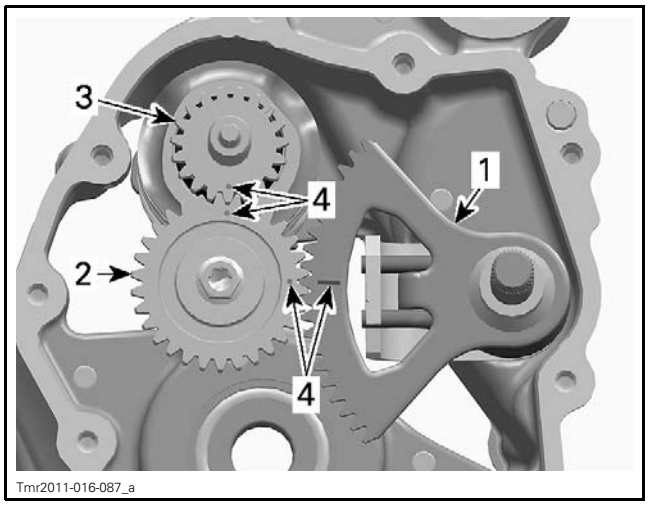


1. *Coupling fork*
2. *Coupling fork shaft*
3. *Hexagonal screw*

Shift Shaft and Shift Drum

Install shift drum and shift shaft.

Install shifting intermediate gear. Align its marks with the marks on shift drum gear and shift shaft.



1. *Shift shaft assembly*
2. *Shifting intermediate gear*
3. *Shift drum gear*
4. *Marks*

Engage both shift fork pins in their corresponding groove on the shift drum.

Install shift fork shaft.

NOTE: Turn gears to validate proper operation.

Sealing Compound Application

NOTE: Unless otherwise specify, the procedure to apply the sealant is the same for right or left cover.

Clean all metal components in a solvent.

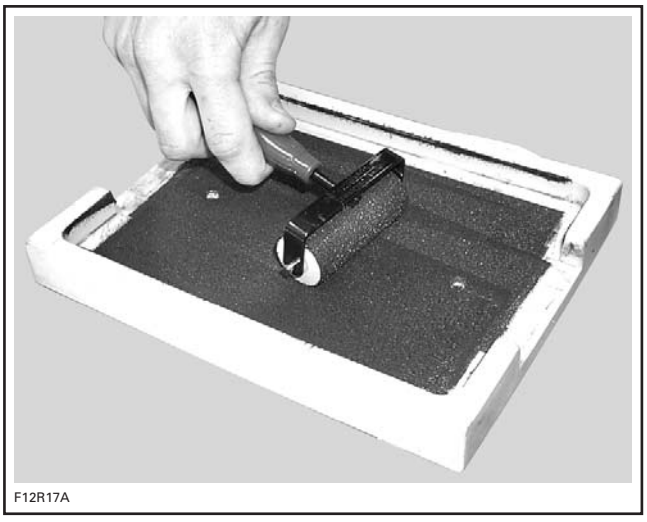
Gearbox housing mating surfaces are best cleaned using a combination of LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500) and a brass brush. Brush a first pass in one direction then make the final brushing perpendicularly (90°) to the first pass cross (hatch).

NOTICE **Do not wipe with rags. Use a new clean hand towel only.**

IMPORTANT: When beginning the application of the gear housing sealant, the assembly and the first torquing should be done within 10 minutes. It is suggested to have all you need on hand to save time.

Use LOCTITE 5910 (P/N 293 800 081) on mating surfaces.

Use a plexiglass plate and apply some sealant on it. Use a soft rubber roller (50 mm - 75 mm (2 in - 3 in)), available in arts products suppliers for printing, and roll the sealant to get a thin uniform coat on the plate (spread as necessary). When ready, apply the sealant on gear housing mating surfaces.



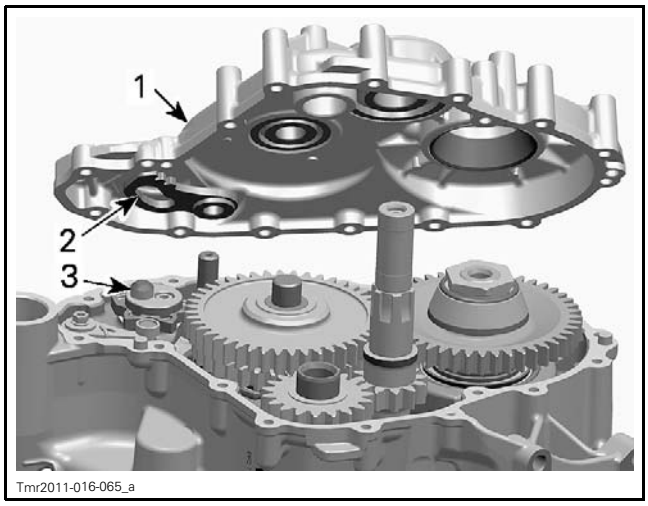
Do not apply in excess as it will spread out inside gear housing.

NOTE: It is recommended to apply this specific sealant as described here to get a uniform application without lumps. If you do not use the roller method, you may use your finger to uniformly distribute the sealant (using a finger will not affect the adhesion).

Left Cover

Apply sealing compound on mating surfaces of central housing. Refer to *SEALING COMPOUND APPLICATION*.

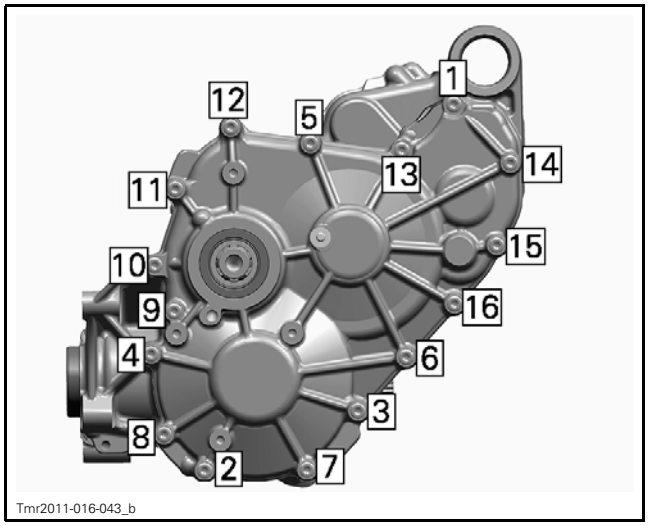
At installation of left cover, engage parking lock lever slot onto index washer pin.



Tmr2011-016-065_a

1. Left cover
2. Parking lock lever slot
3. Index washer pin

Install all screws on left cover and tighten them as per following sequence.

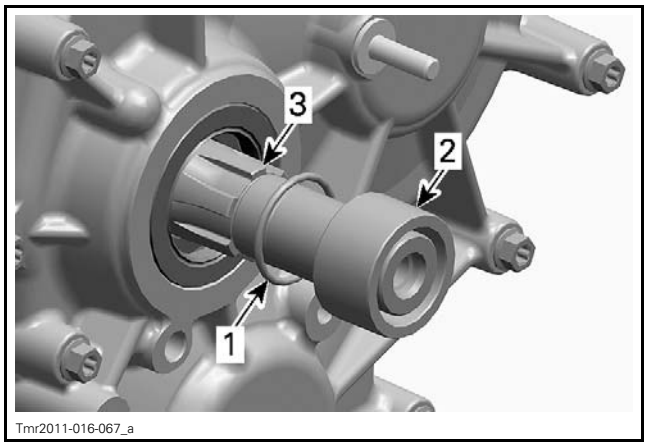


Tmr2011-016-043_b

TIGHTENING TORQUE	
Left cover - M6 screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

Install O-ring including distance sleeve on countershaft CVT side.

NOTICE Place O-ring including distance sleeve right away. Chamfered bore of distance sleeve has to face the gearbox.



Tmr2011-016-067_a

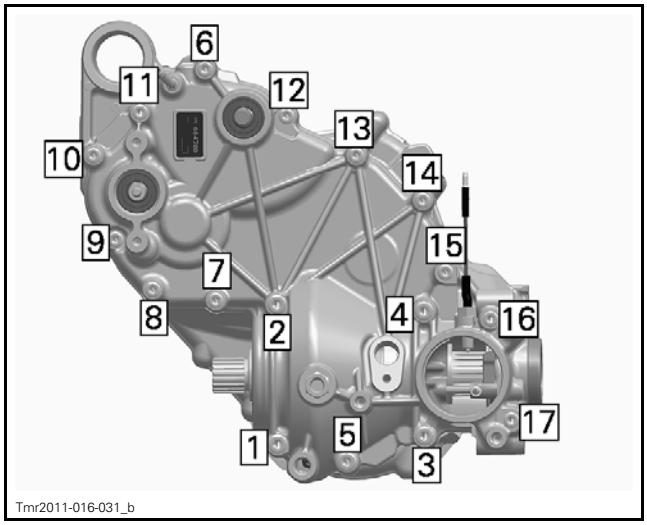
COUNTERSHAFT END CVT SIDE
1. O-ring
2. Distance sleeve
3. Countershaft end CVT side

Right Cover

Apply sealing compound on mating surfaces of central housing. Refer to *SEALING COMPOUND APPLICATION*.

To install the right cover align the coupling fork with the groove in the coupling sleeve.

Install all screws on right cover and tighten them as per following sequence.



Tmr2011-016-031_b

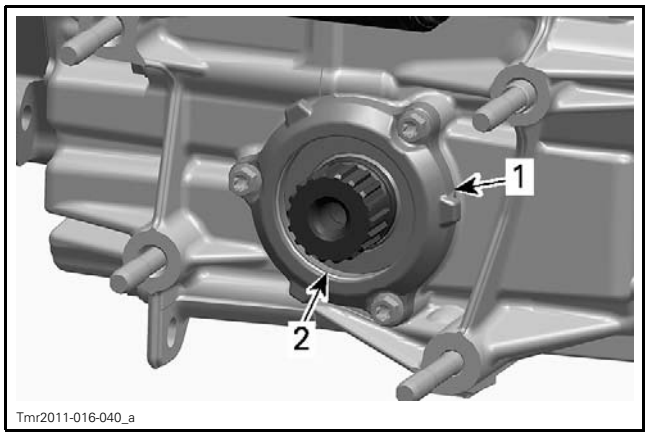
TIGHTENING TORQUE	
Right cover - M6 screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)
Right cover - M8 screws	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)

Install the actuator, refer to *ACTUATOR*.

Installing the Gearbox

For installation reverse the removal procedure. Pay attention to following.

Before gearbox installation check O-ring in bearing cover if brittle, hard or damaged. Replace if necessary.



1. Bearing cover
2. O-ring

Tighten the four (4) nuts that attach the gearbox to the engine.

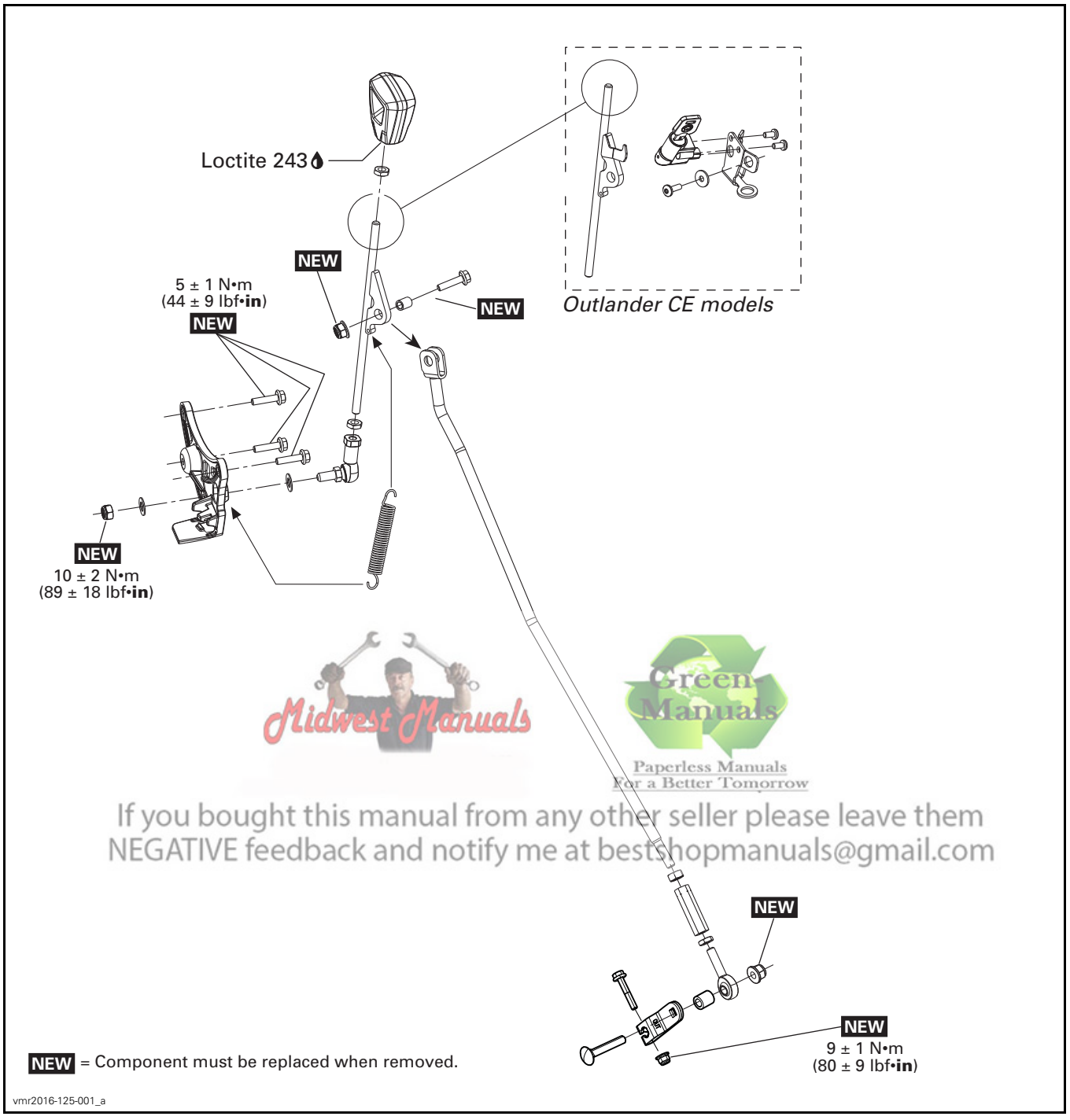
TIGHTENING TORQUE	
Service product	LOCTITE 243 (BLUE) (P/N 293 800 060)
Gearbox retaining nuts	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)

After installation, refill gearbox oil. Refer to *PERIODIC MAINTENANCE PROCEDURES*.

SHIFTER (GEARBOX WITH EXTERNAL SWITCHES)

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	2



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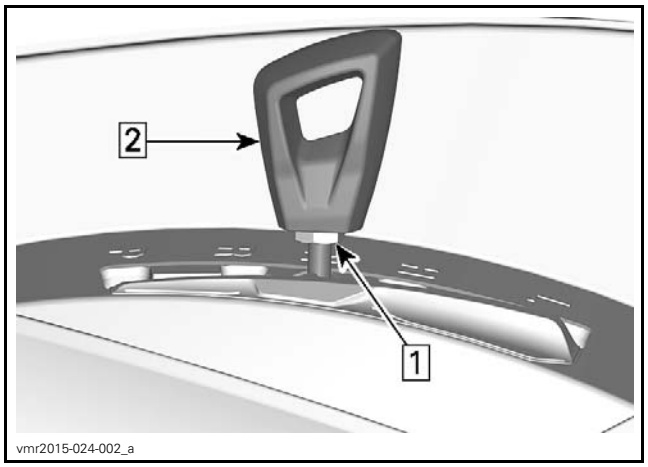
PROCEDURES

HANDLE

Handle Removal



Step 1: Loosen lock nut
Step 2: Unscrew shift lever handle

Handle Installation

Reverse the removal procedure.

SERVICE PRODUCT	WHERE USED
LOCTITE 243 (BLUE) (P/N 293 800 060)	Shift lever threads

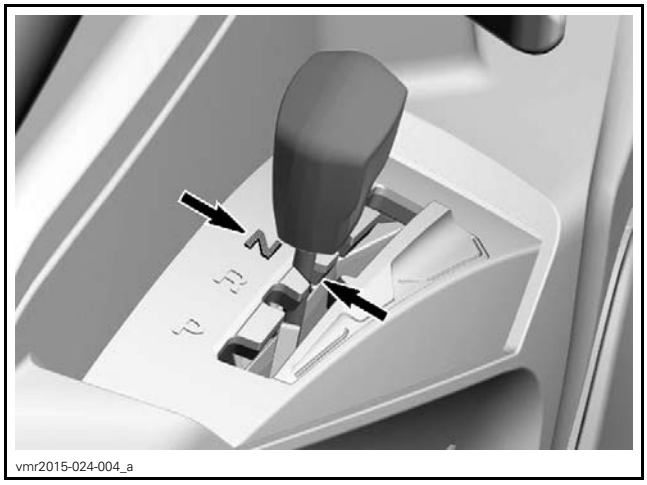
SHIFT LEVER

Shift Lever Access

1. Refer to *BODY* subsection and remove the following components:
   – Seat
   – Console
   – RH side panel.

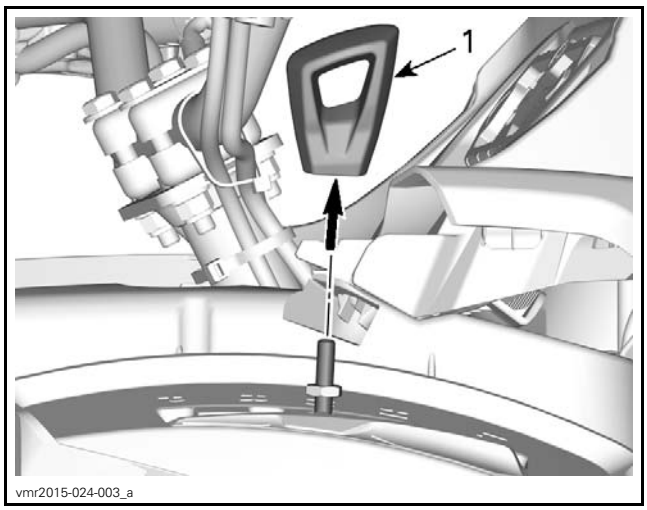
Shift Lever Removal

1. Remove body parts as required. Refer to *SHIFT LEVER ACCESS* in this subsection.
2. Place shift lever in NEUTRAL position.

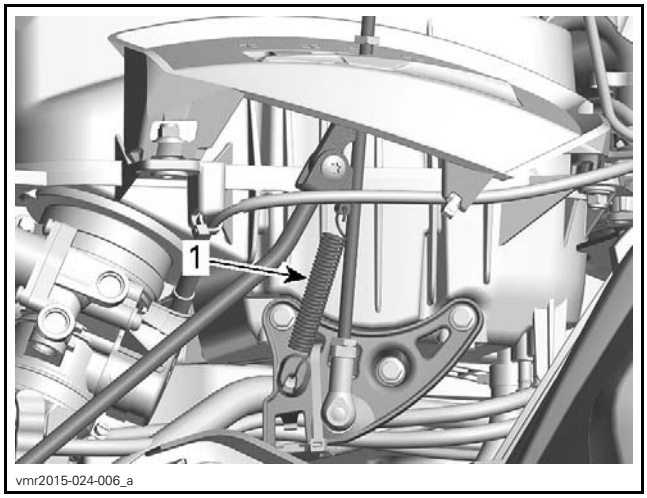


SHIFT LEVER POSITION

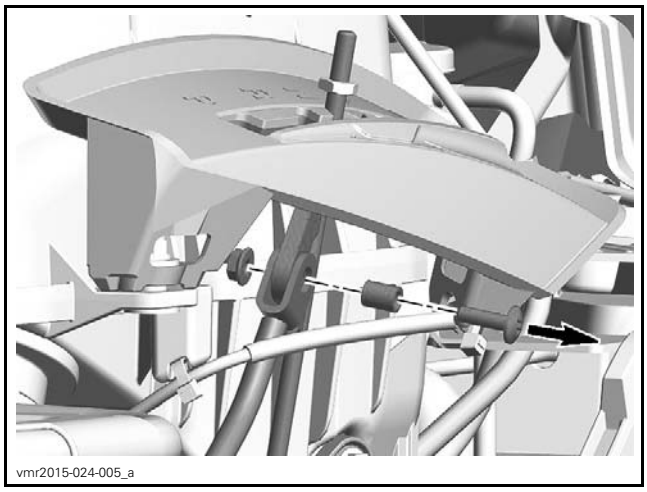
3. Secure vehicle using wheel chocks.
4. Remove parts as indicated in following illustrations.



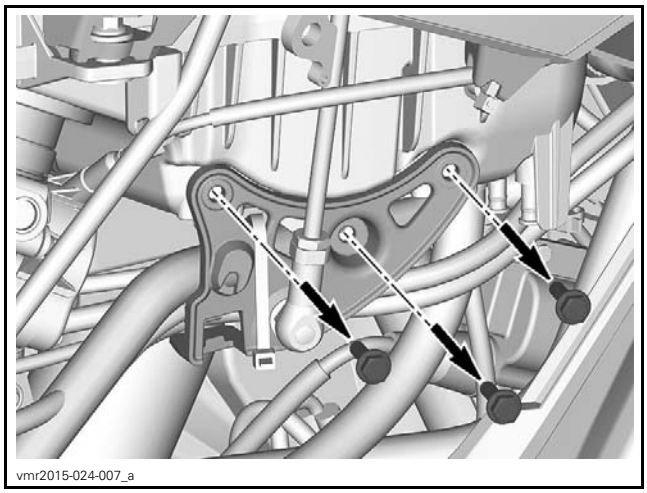
1. Shift lever handle



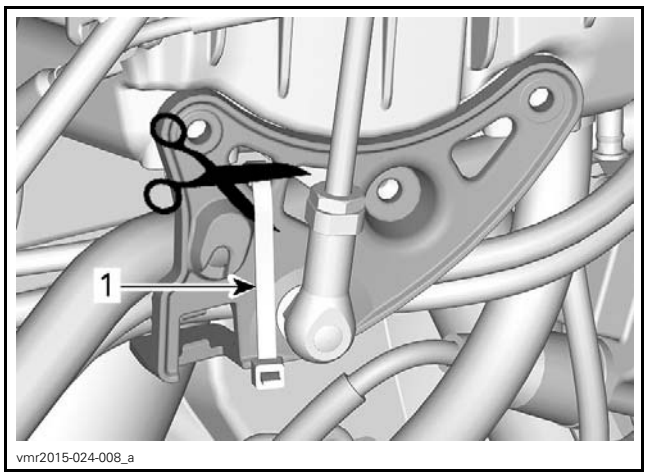
TYPICAL
1. Remove spring


vmr2015-024-005_a

TYPICAL


vmr2015-024-007_a

TYPICAL



vmr2015-024-008_a

TYPICAL
1. Locking tie to cut

5. Remove shift lever with shift lever support.

Shift Lever Inspection

Check shift lever for bending or cracks.

Check spring and bushing condition.

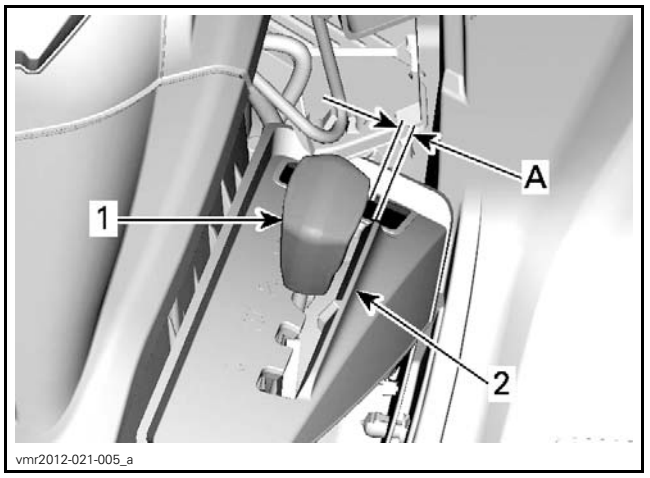
Check ball joint condition.

Replace all damaged parts.

Shift Lever Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Adjust shift lever handle as per following illustration.

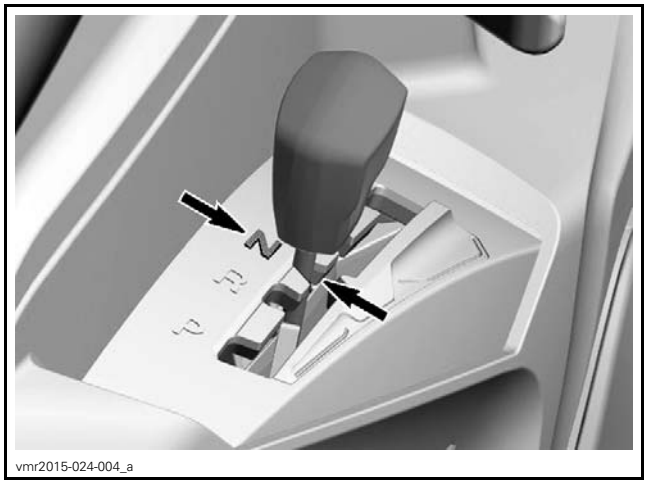


vmr2012-021-005_a

SHIFT LEVER HANDLE ALIGNMENT
1. Handle
2. Ridge
A. Handle parallel with ridge

Check if shift lever works properly in all positions. Ensure throttle cable does not interfere with shift lever in all positions.

NOTE: Shift lever must be perfectly centered with the neutral position indicator when transmission is engaged in neutral.



vmr2015-024-004_a

SHIFT LEVER ALIGNMENT WITH NEUTRAL POSITION INDICATOR

If adjustment is required, refer to *SHIFT ROD ADJUSTMENT* in this subsection.

SHIFT ROD

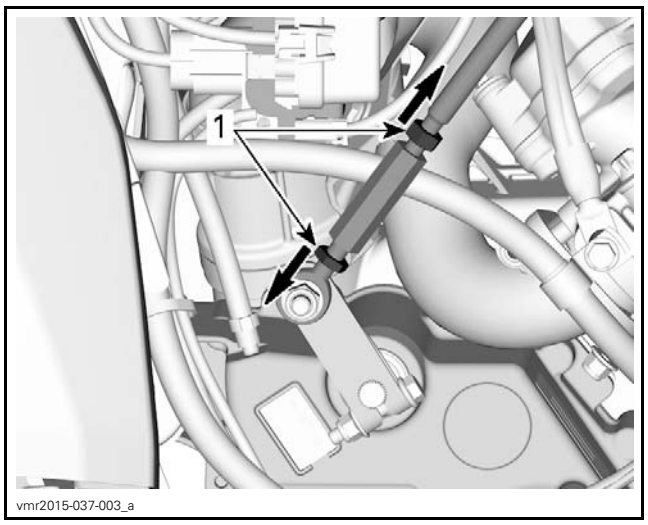
Shift Rod Adjustment

1. Place shift lever in NEUTRAL position.

NOTICE Move vehicle back and forth to ensure gearbox is set in neutral position.

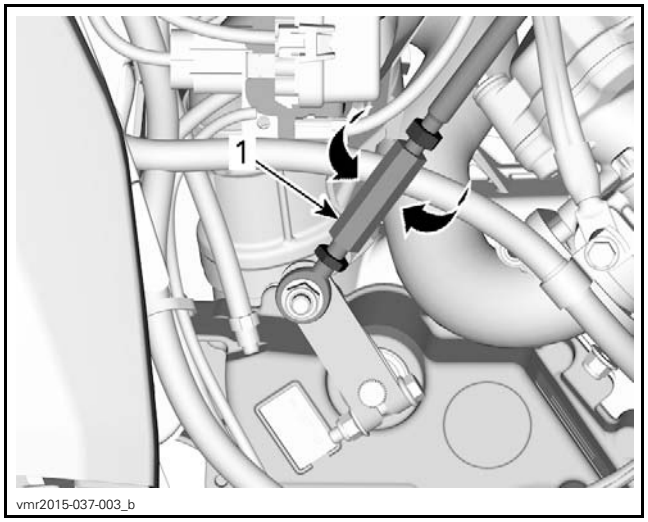
2. Secure vehicle using wheel chocks.
3. Remove body parts as required. Refer to *SHIFT LEVER ACCESS* in this subsection.
4. Loosen shift rod adjustment nuts.

NOTE: Be aware that a nut has LH threads.

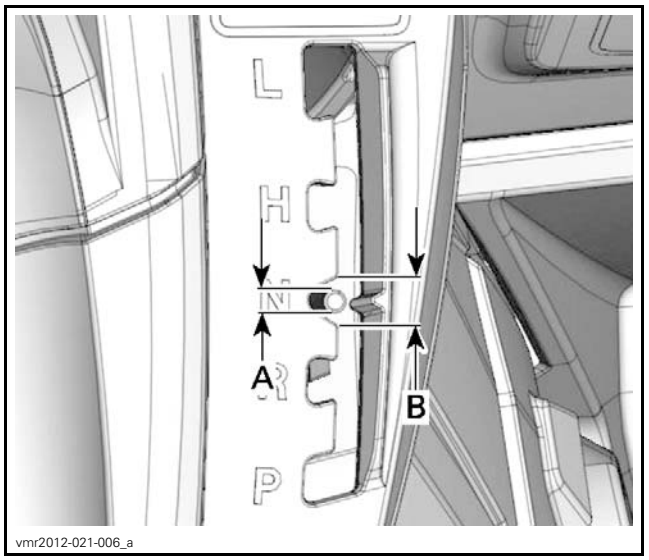


1. Adjustment nuts

5. Turn rod adjuster to center shift lever in neutral notch.

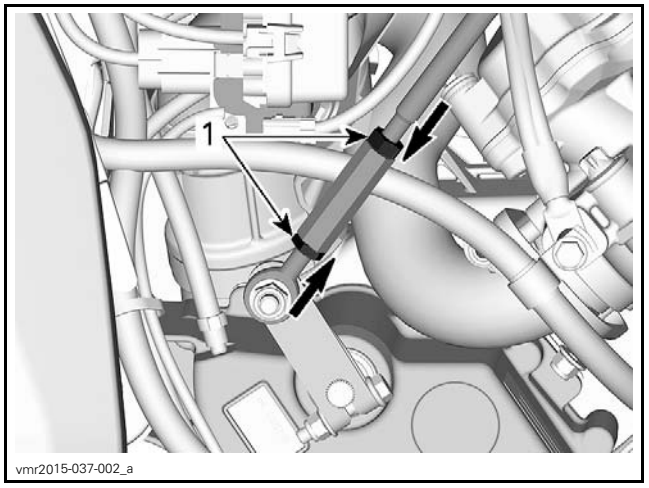


1. Shift rod adjuster



SHIFT LEVER CENTERED WITHIN NEUTRAL NOTCH
A. Shift lever
B. Neutral notch

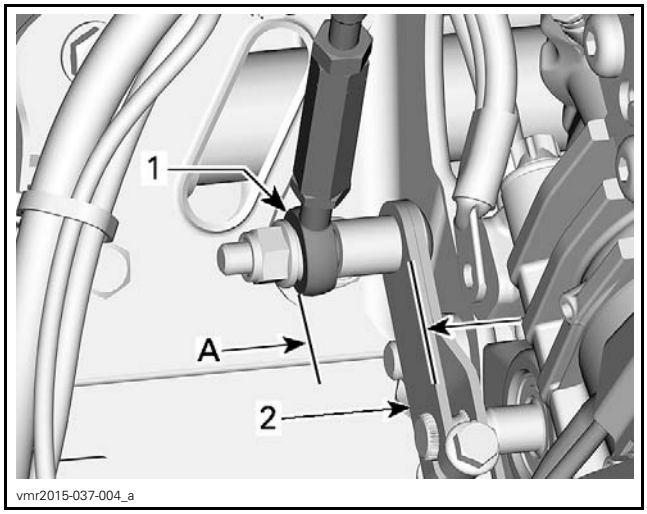
6. Move shift lever in R position then in H position.
7. Place shift lever in NEUTRAL position.
8. Check if shift lever is properly centered in neutral notch. Readjust as required.
9. Hold adjuster steady and tighten lock nuts.



1. Adjuster lock nuts tightened

10. Test the shifter to confirm that the system works properly in all positions.

NOTE: Ensure shift rod ball joint is parallel with shift plate. It may be necessary to realign shift rod ball joint to ensure freedom of movement.



vmr2015-037-004_a

1. Shift rod ball joint
2. Shift plate
A. Parallel within +/- 5°

⚠ WARNING

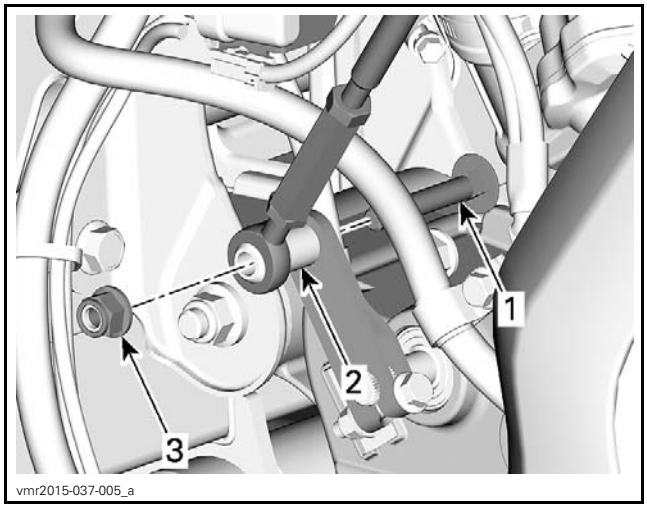
After adjustment, make sure the PARK position is also properly set.

SHIFT PLATE

Shift Plate Removal

NOTE: Do not remove shift plate needlessly.

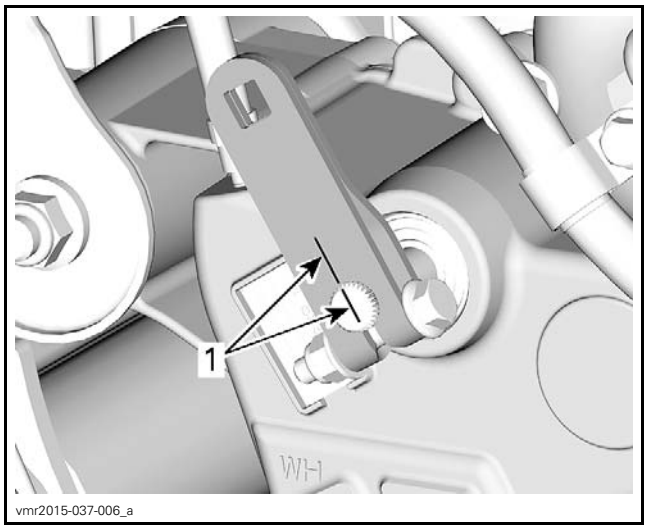
1. Refer to *BODY* subsection and remove the following components:
   – Seat
   – Console
   – RH side panel
   – RH footrest panel.
2. Remove shift rod from shift plate.



vmr2015-037-005_a

1. Bolt
2. Spacer
3. Nut

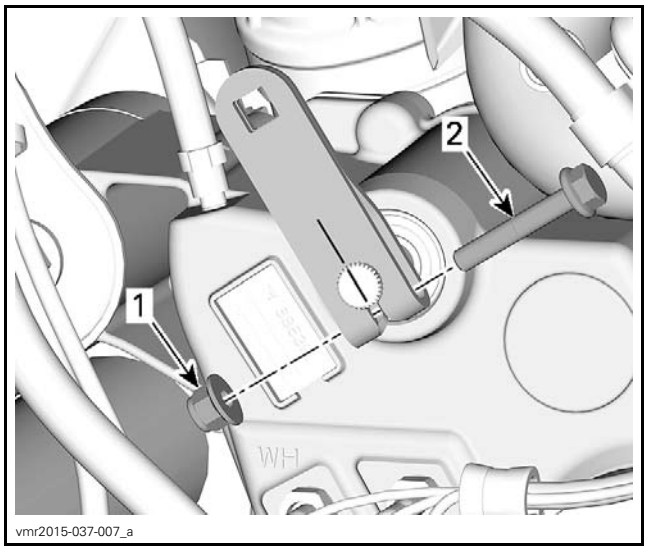
3. Trace an index mark on shift plate and shift shaft.



vmr2015-037-006_a

1. Trace a mark on both parts

4. Remove shift plate nut and bolt.



vmr2015-037-007_a

1. Shift plate nut

5. Remove shift plate.

Shift Plate Inspection

Check shift plate for:
– Cracks
– Bending
– Spline condition.

Shift Plate Installation

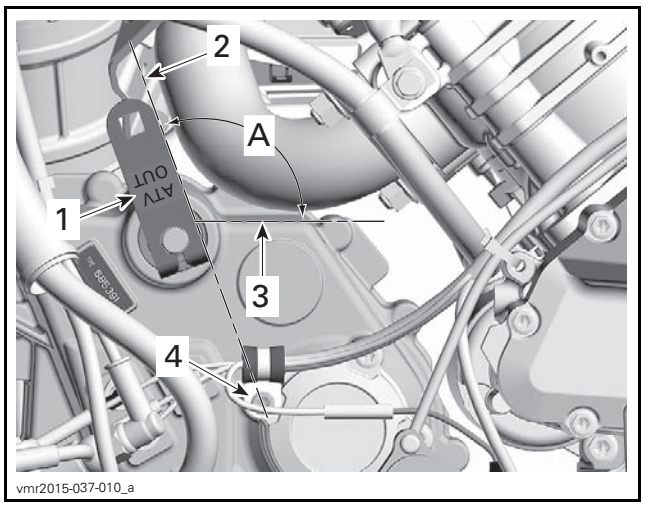
The installation is the reverse of the removal procedure. However, pay attention to the following.

Place gearbox in **NEUTRAL** position before shift plate installation.

Position shift plate with the marking "ATV OUT" visible outward.

Align shift plate using marks previously traced.

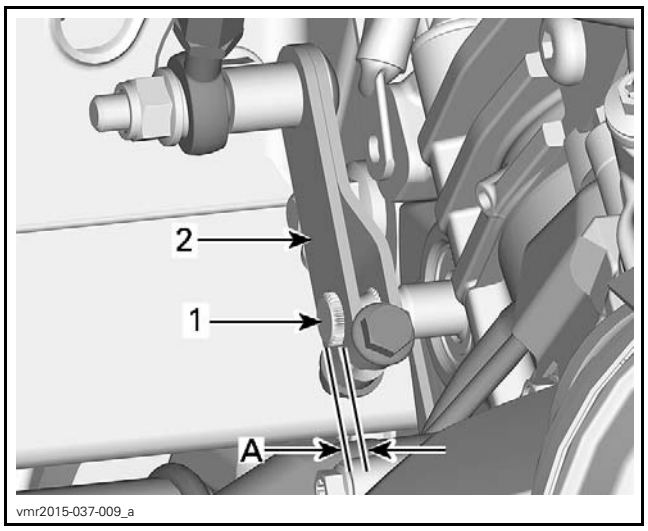
If there are no index marks, adjust shift plate as per following illustrations.



SHIFT PLATE ALIGNMENT
1. *"ATV OUT" marking this side*
2. *Forward edge of shift plate*
3. *Horizontal plane (top forward surface crankcase)*
4. *Center of bolt (secondary alignment reference)*

A. 110° +/- 2.5°

Ensure that shift shaft protrudes shift plate as per illustration.



1. *Shift shaft end*
2. *Shift plate*

A. 2.5 mm ± 1 mm (.1 in ± .040 in)

Adjust shift rod, refer to *SHIFT ROD ADJUSTMENT* in this subsection.

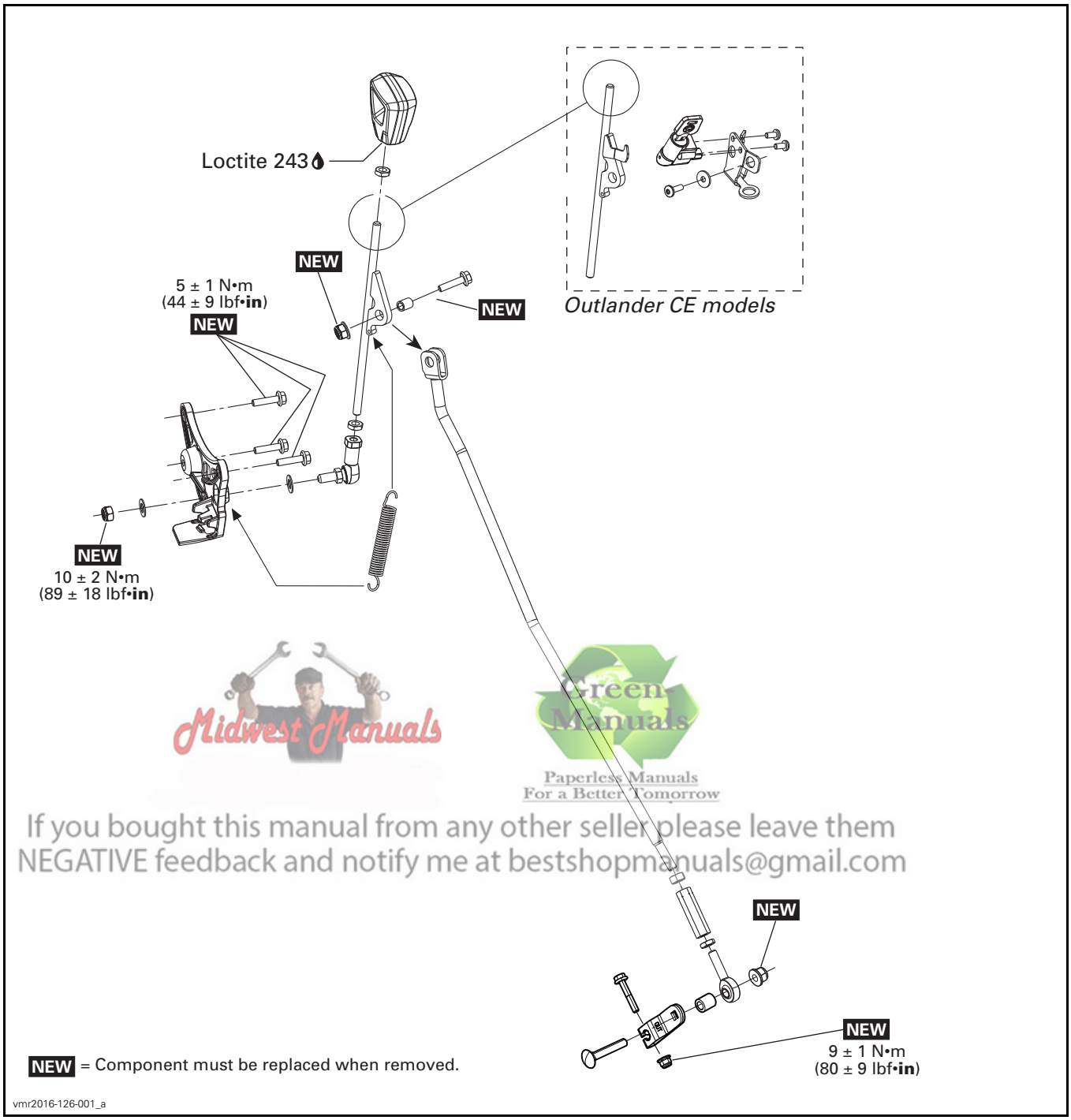
Tighten shift plate nut to specification.

TIGHTENING TORQUE	
Shift plate nut	9 N•m ± 1 N•m (80 lbf•**in** ± 9 lbf•**in**)

SHIFTER (GEARBOX WITH GBPS)

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	2



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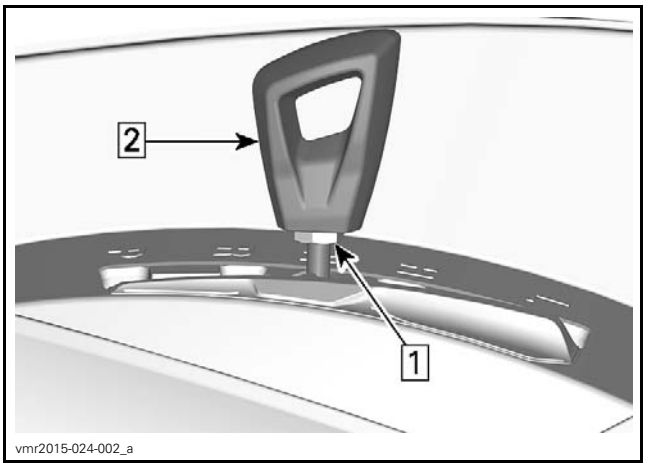
PROCEDURES

HANDLE

Handle Removal



Step 1: Loosen lock nut
Step 2: Unscrew shift lever handle

Handle Installation

Reverse the removal procedure.

SERVICE PRODUCT	WHERE USED
LOCTITE 243 (BLUE) (P/N 293 800 060)	Shift lever threads

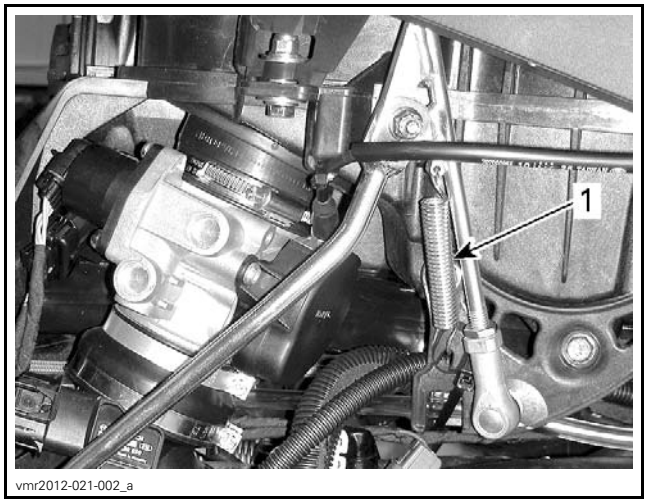
SHIFT LEVER

Shift Lever Access

1. Refer to *BODY* subsection and remove the following components:
   – Seat
   – Console
   – RH side panel.

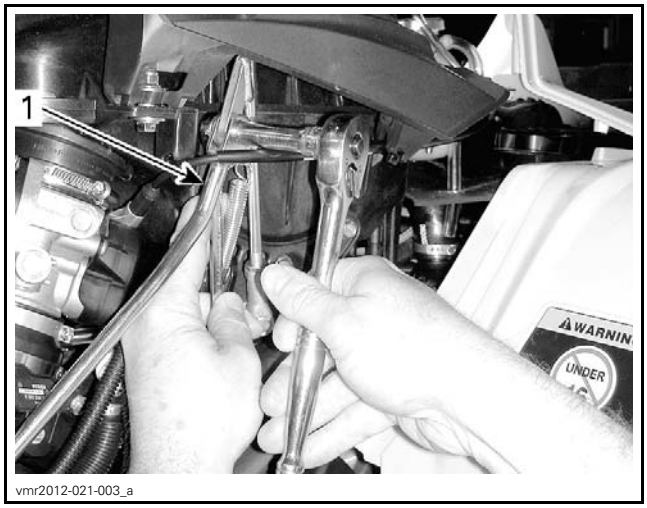
Shift Lever Removal

1. Remove body parts as required. Refer to *SHIFT LEVER ACCESS* in this subsection.
2. Place shift lever in **NEUTRAL** position.
3. Secure vehicle using wheel chocks.
4. Unscrew shift lever handle.
5. Unhook spring.



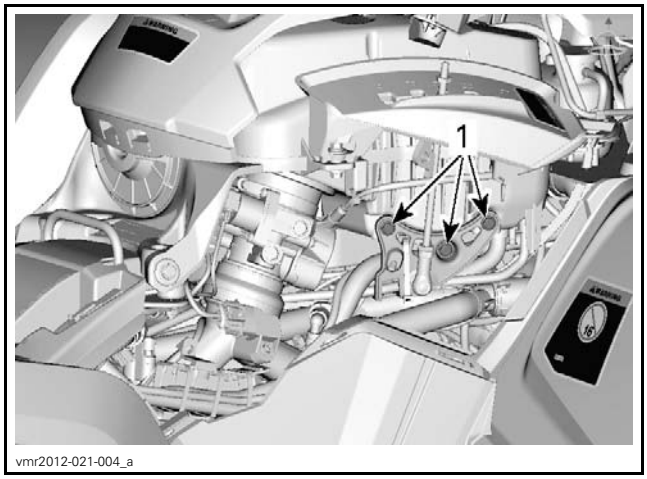
1. Unhook

6. Detach shift rod from shift lever.



1. Detach

7. Detach shift lever support.



1. Remove bolts

8. Remove shift lever.

Shift Lever Inspection

Check shift lever for bending or cracks.

Check spring and bushing condition.

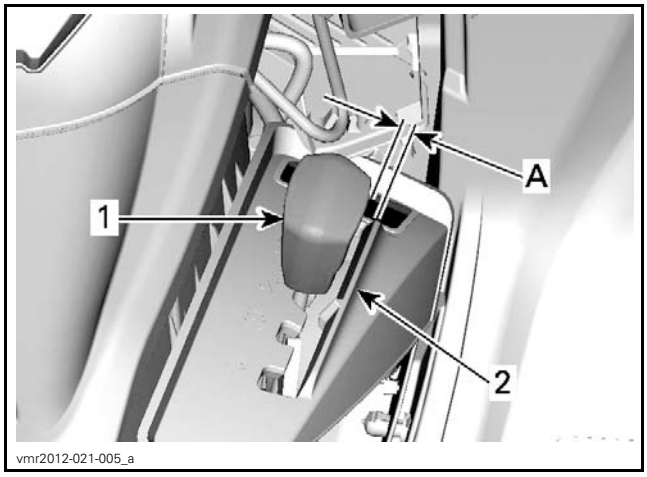
Check ball joint condition.

Replace all damaged parts.

Shift Lever Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Adjust shift lever handle as per the following illustration.



SHIFT LEVER HANDLE ALIGNMENT
1. *Handle*
2. *Ridge*

A. Handle parallel with ridge

Check if shift lever works properly in all positions. Ensure throttle cable does not interfere with shift lever in all positions.

NOTE: Shift lever must be perfectly centered with the neutral mark when transmission is engaged in neutral.

If adjustment is required, refer to *SHIFT ROD ADJUSTMENT* in this subsection.

SHIFT ROD

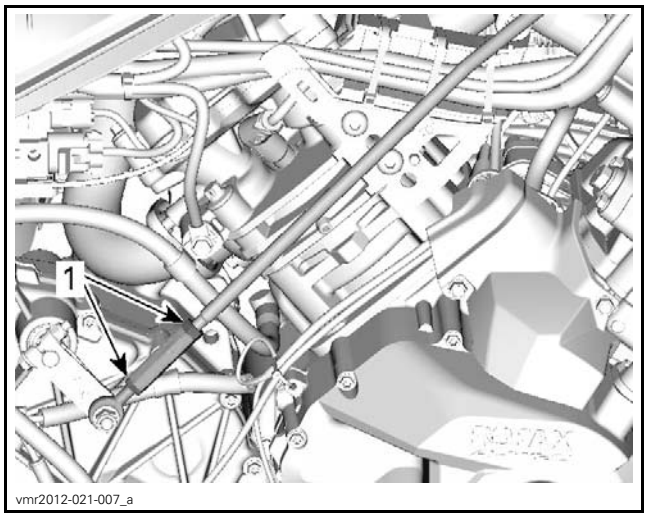
Shift Rod Adjustment

1. Place shift lever in NEUTRAL position.

NOTICE **Move vehicle back and forth to ensure gearbox is set in neutral position.**

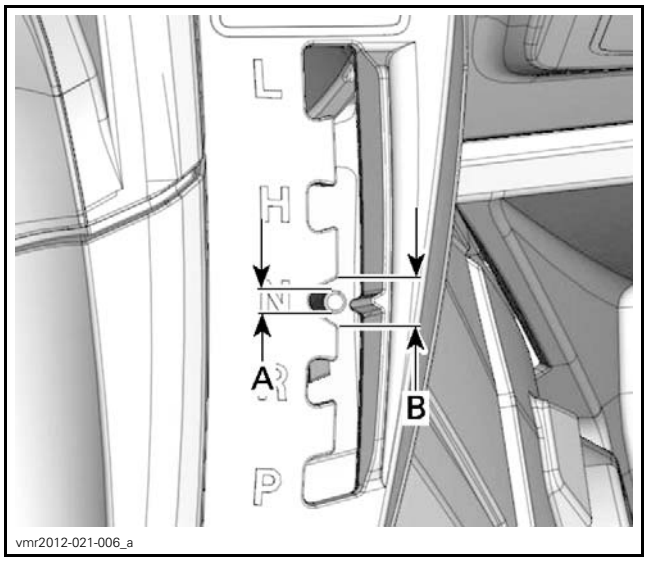
2. Secure vehicle using wheel chocks.
3. Remove body parts as required. Refer to *SHIFT LEVER ACCESS* in this subsection.
4. Loosen shift rod adjustment nuts.

NOTE: Be aware that a nut has LH threads.



TYPICAL — SOME PARTS REMOVED FOR CLARITY
1. *Adjustment nuts*

5. Turn rod adjuster to center shift lever in neutral notch.



SHIFT LEVER CENTERED WITHIN NEUTRAL NOTCH
A. Shift lever
B. Neutral notch

6. Move shift lever in R position then in H.
7. Place shift lever in NEUTRAL position.
8. Check if shift lever is properly centered in neutral notch. Readjust as required.
9. Hold adjuster steady and tighten lock nuts.
10. Test the shifter to confirm that the system works properly in all positions.

NOTE: Make sure the ball joint is properly aligned with the shift plate. It may be necessary to realign shift rod ball joints to allow easy movement.

⚠ WARNING

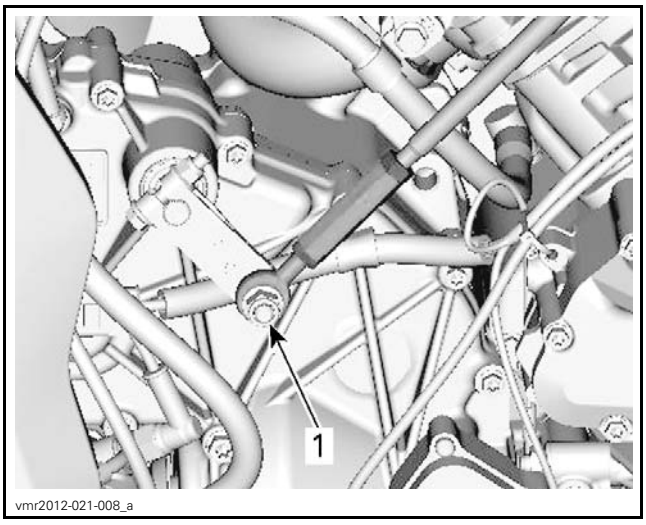
After adjustment, make sure that PARK position works properly.

SHIFT PLATE

Shift Plate Removal

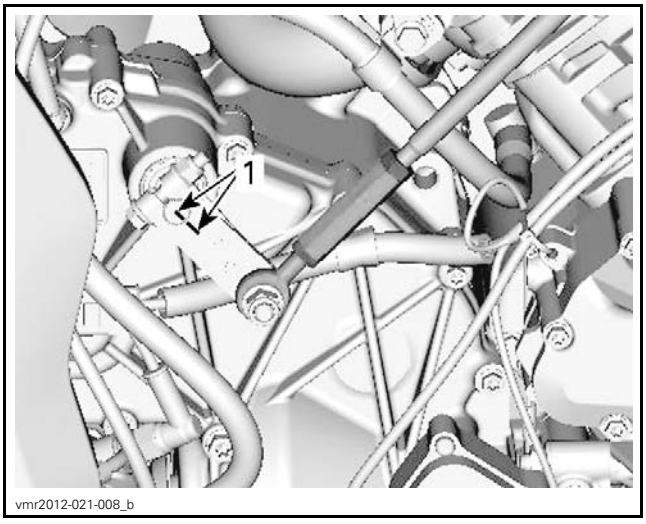
NOTE: Do not remove shift plate needlessly.

1. Refer to *BODY* subsection and remove the following components:
   – Seat
   – Console
   – RH side panel
   – RH footrest panel.
2. Remove shift rod from shift plate.



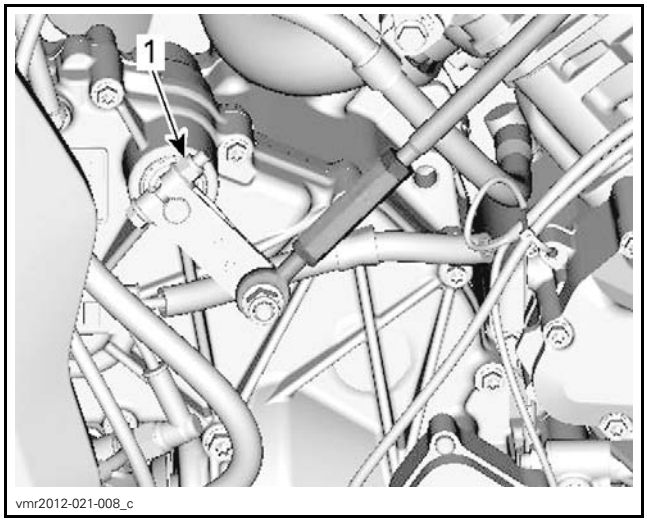
1. Remove nut

3. Trace an index mark on shift plate and shift shaft.



1. Trace a mark on both parts

4. Remove shift plate nut and bolt.



1. Shift plate nut

5. Remove shift plate.

Shift Plate Inspection

Check shift plate for:
– Cracks
– Bending
– Spline condition.

Shift Plate Installation

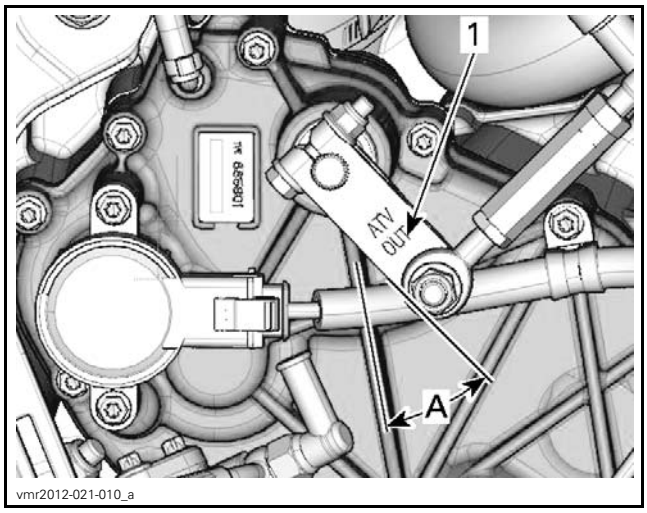
The installation is the reverse of the removal procedure. However, pay attention to the following.

Place gearbox in NEUTRAL position before shift plate installation.

Position shift plate with the marking "ATV OUT" visible outward.

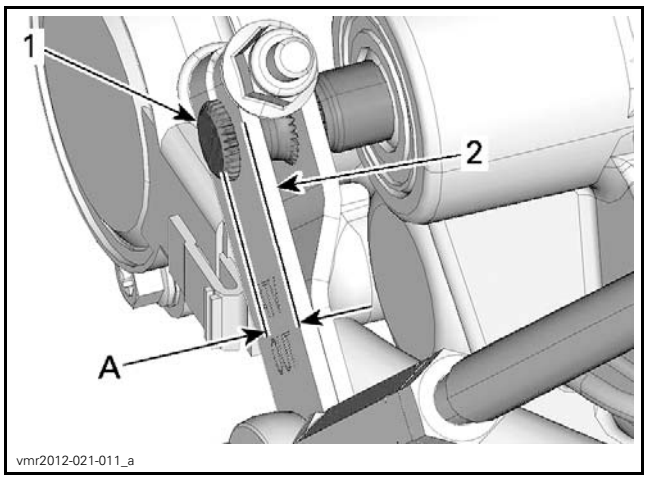
Align shift plate using marks previously traced.

If there is no mark, adjust shift plate as per following illustrations.



1. "ATV OUT" marking this side
A. 34°

Ensure that shift shaft protrudes shift plate as per illustration.



1. Shift shaft end
2. Shift plate
A. 2.5 mm ± 1 mm (.1 in ± .040 in)

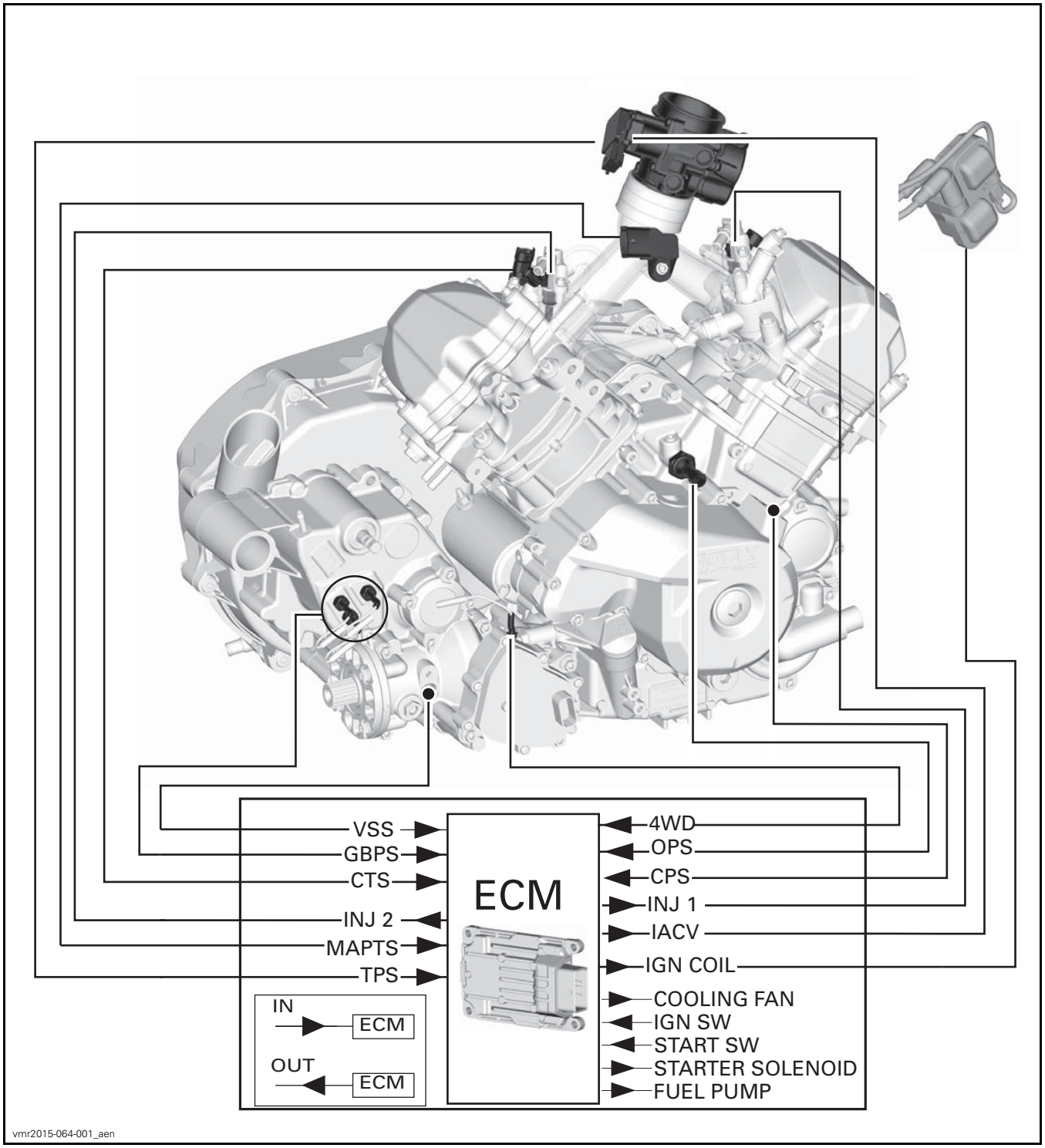
Adjust shift rod, refer to *SHIFT ROD ADJUSTMENT* in this subsection.

Tighten shift plate nut to specification.

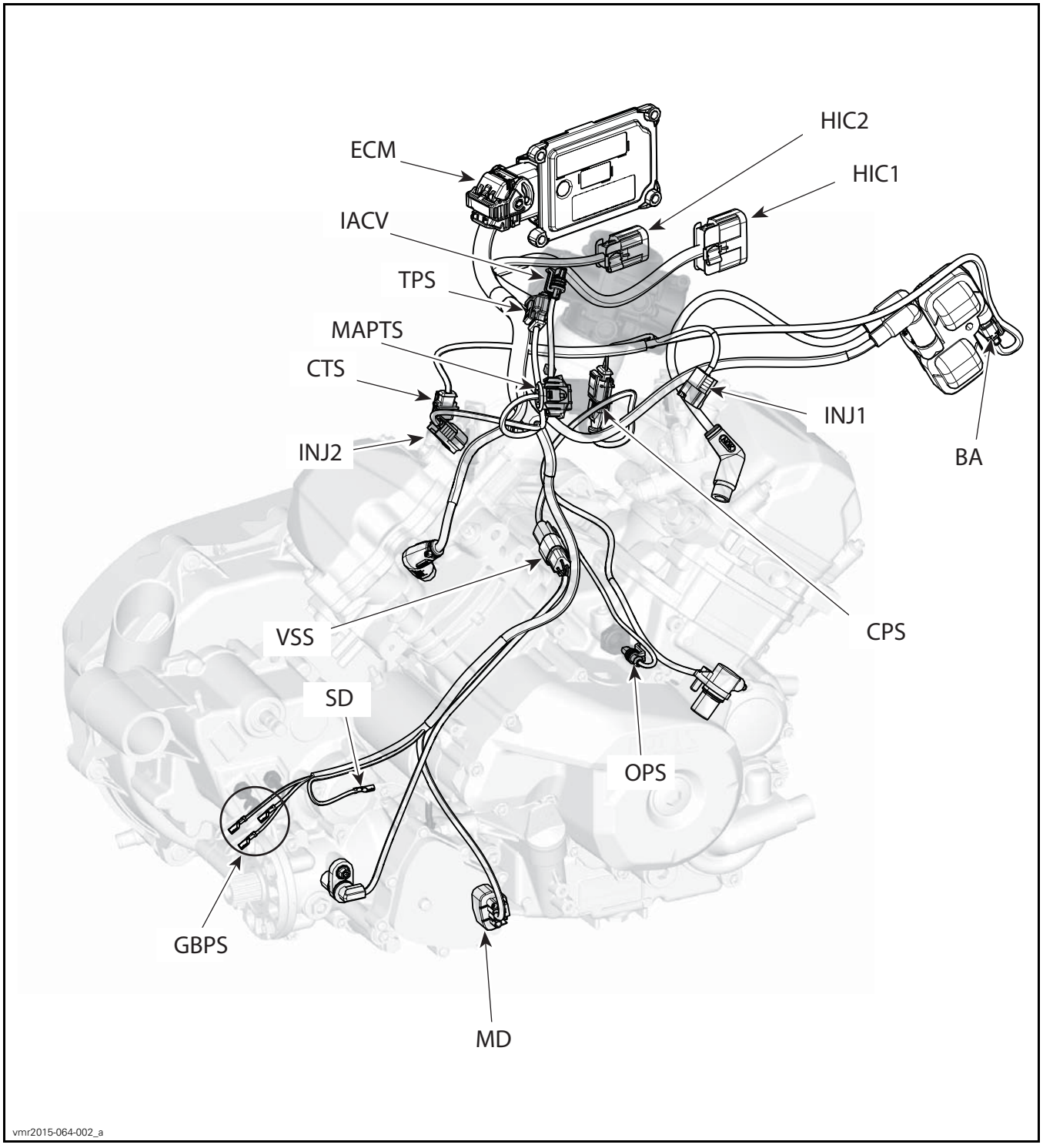
TIGHTENING TORQUE	
Shift plate nut	9 N•m ± 1 N•m (80 lbf•**in** ± 9 lbf•**in**)

ENGINE MANAGEMENT SYSTEM (EMS)

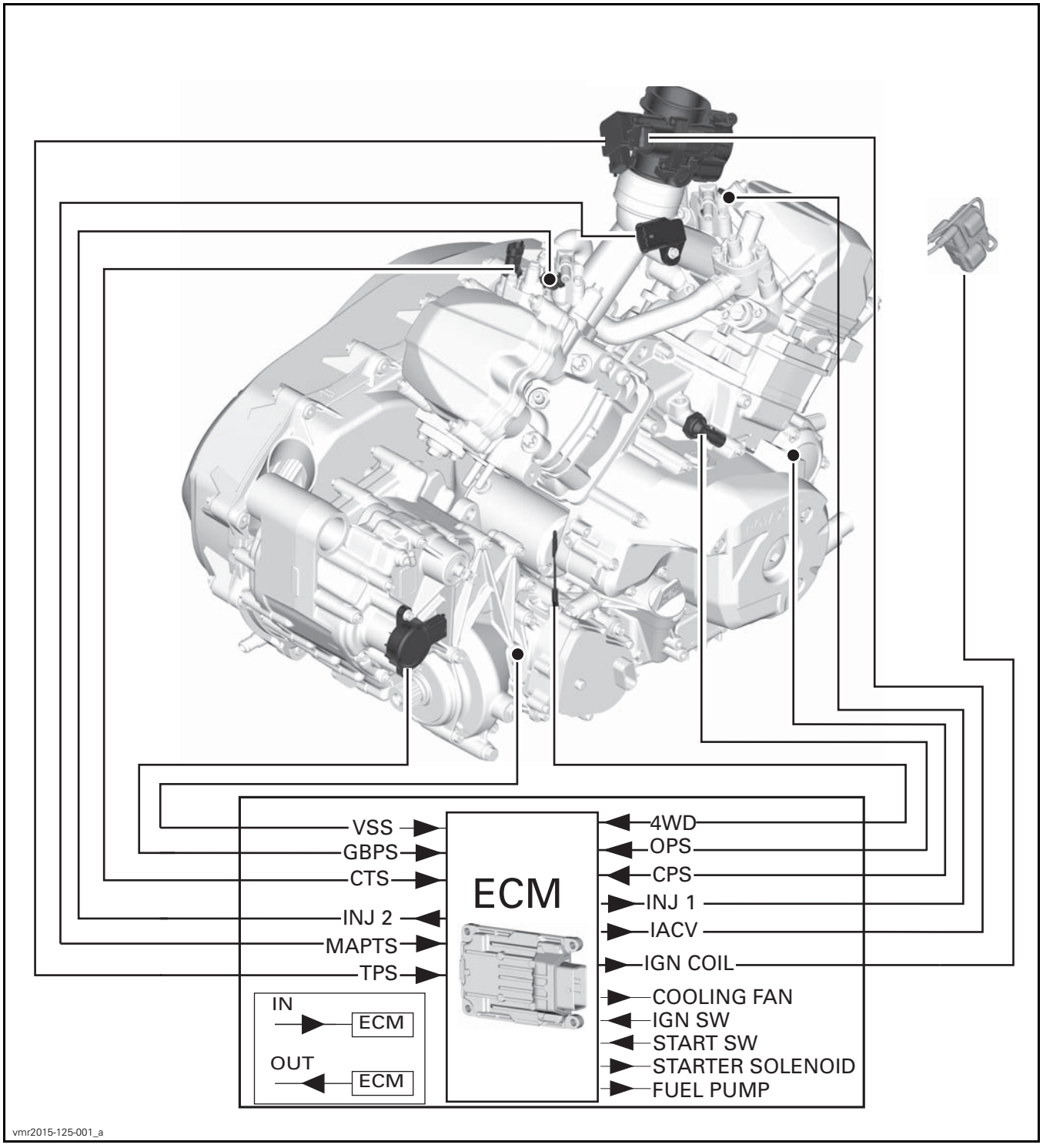
Engine with Gearbox using External Switches



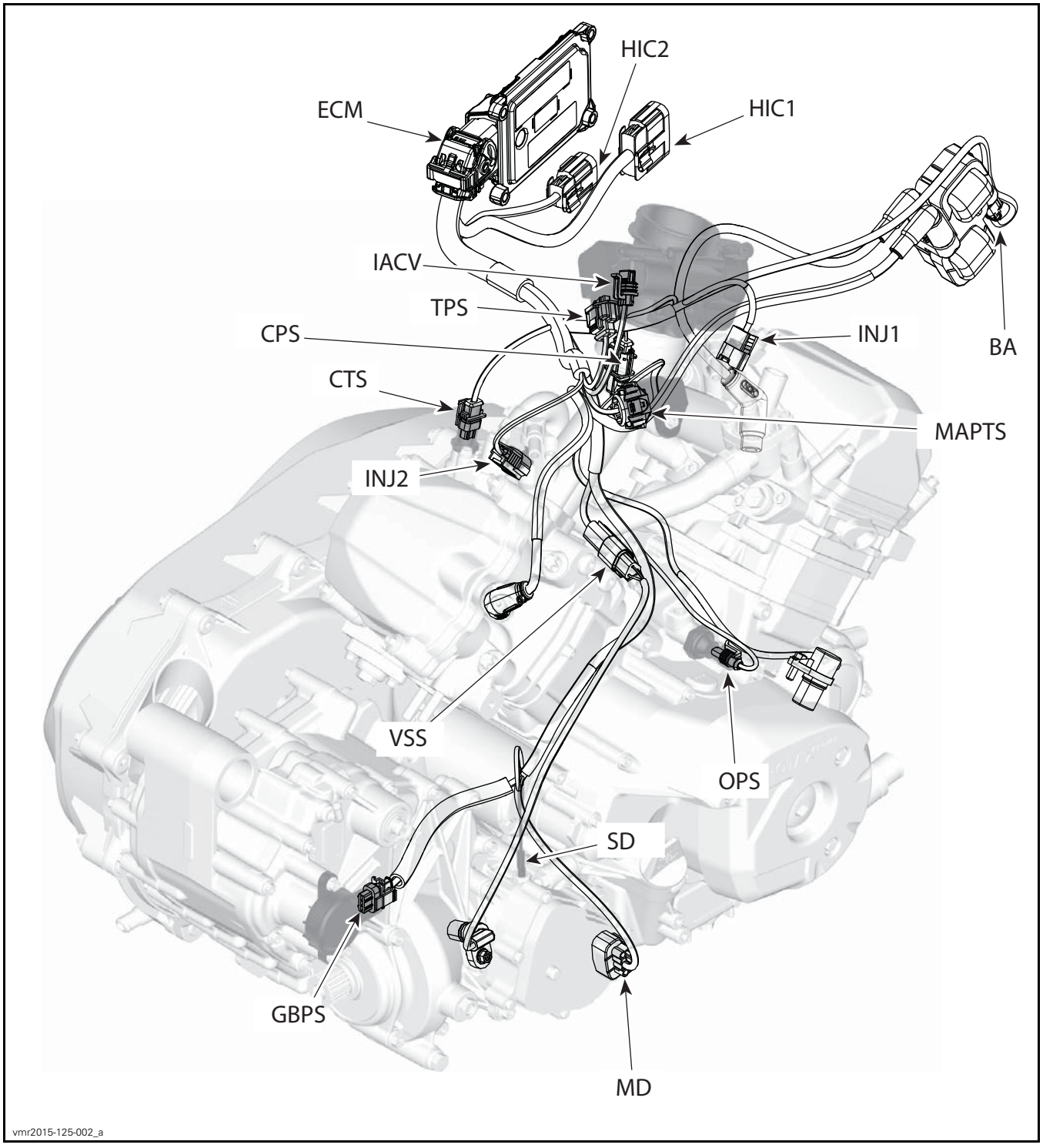
Engine with Gearbox using External Switches



Engine with Gearbox using GBPS



Engine with Gearbox using GBPS



ABBREVIATION	DEFINITION
BA	Ignition coil
CPS	Crankshaft position sensor
CTS	Coolant temperature sensor
ECM	Electronic control module
GBPS	Gear box position sensor
HIC1‡	Harness interconnect 1
HIC2‡	Harness interconnect 2
IACV	Idle air control valve
INJ1	Injector 1 (front)
INJ2	Injector 2 (rear)
MAPTS	Manifold absolute pressure and temperature sensor
MD	4WD Actuator
OPS	Oil pressure switch
SD	4WD Signal
TPS	Throttle position sensor
VSS	Vehicle speed sensor
‡Refer to applicable *WIRING HARNESS AND CONNECTORS* subsection for the vehicle harness.	

GENERAL

SYSTEM DESCRIPTION

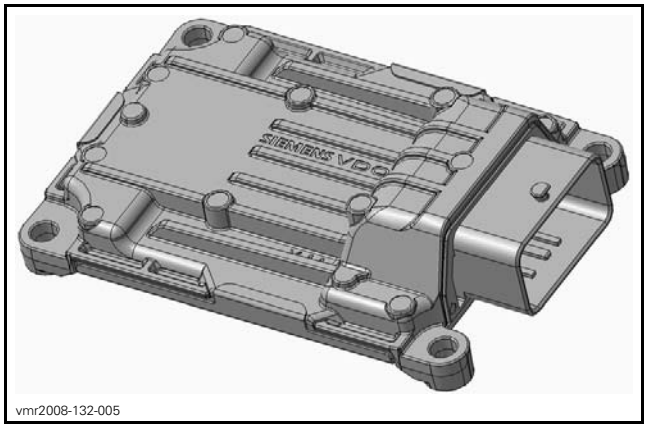
The HIC# connectors connect the vehicle harness to the powertrain harness.

There are 6 main systems that are controlled by the engine management system (EMS):

1. Electronic Fuel Injection (EFI)
2. Cooling system (cooling fan)
3. Ignition system
4. Starting system
5. Fuel pump system
6. D.E.S.S. system.

NOTE: For further information related to these systems, refer to the applicable subsection.

The ECM (Engine Control Module) is the central point of the engine management system.



vmr2008-132-005

TYPICAL - ECM

The ECM is located behind the LH panel.

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LH PANEL REMOVED
1. ECM location

The ECM reads input signals from various switches, controls, and sensors, that it compares to pre-determined parameters, makes computations, and provides control signal outputs required for proper engine management.

The ECM also interacts through CAN bus with the gauge module for various functions, information exchange and display of messages. Refer to *CONTROLLER AREA NETWORK (CAN)* and *LIGHTS, GAUGE AND ACCESSORIES* subsections.

The ECM also features a permanent memory that will store the information on the various ignition keys programmed to the vehicle, fault codes, customer information, and other engine information, even when the battery is removed from the vehicle.

Engine RPM Limiter

The ECM limits the maximum engine speed with the shifter selected to any position. It uses the CPS and the GBPS for this function.

An override switch, on the handlebar, allows the engine to be run at a higher speed than the RPM limiter when more power is needed in reverse operation. Refer to *LIGHTS, GAUGE AND ACCESSORIES*.

Vehicle Speed Limiter

The ECM will limit the maximum vehicle speed. For this purpose, the ECM uses the VSS and the GBPS.

Drowned Mode (Flooded Engine)

If the engine is fuel-flooded and does not start, this special mode can be activated to prevent fuel injection and ignition while cranking. Proceed as follows to activate it.

With the ignition key set to ON and the engine stopped, press and HOLD the throttle lever to WOT position (wide open throttle).

Press the start button. Drowned mode is now on.

Releasing the throttle lever will bring back the normal mode.

Monitoring System

The ECM monitors the electronic components of the fuel injection system and also parts of the electrical system.

For more information, refer to *DIAGNOSTIC AND FAULT CODES*.

Limp Home Mode

The ECM may automatically set default parameters to the engine management to ensure the adequate operation of the engine if a component of the fuel injection system is not operating properly. The engine will operate with reduced performance to protect the engine. In more severe cases, the engine RPM will be limited, also to protect the engine.

These performance-reduced modes allow the rider to go back home which would not be otherwise possible. Refer to the *DIAGNOSTIC AND FAULT CODES* subsection.

Diagnostic Mode

The ECM features a self-diagnostic mode when the ignition key is turned on. However, some components need the engine to be running so that they can be monitored. Some problems will turn on a warning lamp or will set the engine in limp home mode. Refer to *DIAGNOSTIC AND FAULT CODES* section for more information.

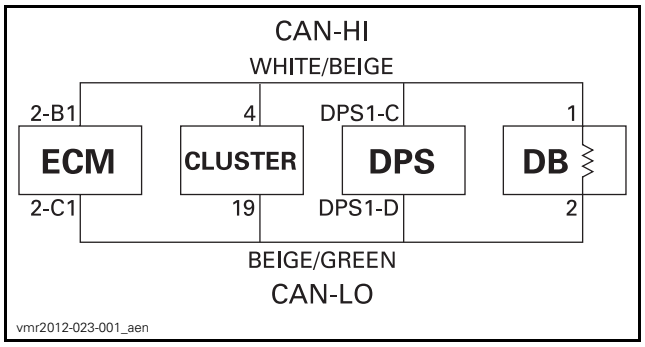
CONTROLLER AREA NETWORK (CAN)

GENERAL

SYSTEM DESCRIPTION

The CAN (Controller Area Network) protocol is an ISO standard for serial data communication. The CAN bus links the ECM, multifunction gauge and DPS module together so that they can communicate to each other and interact as required. The components (modules) are connected together by 2 wires and are in constant communication at a rate of about every 20 milliseconds. CAN lines consist of a pair of wires (WHITE/BEIGE and BEIGE/GREEN).

If a component or system malfunction is detected, a module (ECM, multifunction gauge or DPS) may generate a fault code, which it transmits through the CAN bus as a signal. The fault signal may be used for various functions such as triggering the display of an error message in the multifunction gauge cluster, turning on a fault indicator light, limiting or inhibiting vehicle or engine operation, or viewed using the B.U.D.S. software for troubleshooting.



CLUSTER: Multifunction Gauge
DB: Diagnostic Connector
ECM: Engine Control Module
DPS: Dynamic Power Steering
WHITE/BEIGE: (wire color code)
BEIGE/GREEN: (wire color code)

COMMUNICATION TOOLS AND B.U.D.S.

SERVICE TOOLS

Description	Part Number	Page
DIAGNOSTIC CABLE	710 000 851	1, 3
MPI-2 INTERFACE CARD	529 036 018	1
MPI-3 INTERFACE CARD	529 036 353	1

GENERAL

Refer to *PROCEDURES* for instructions on the communication tools.

If communication problems occur, refer to *TROUBLESHOOTING* in this subsection.

REQUIRED TOOLS

MANDATORY TOOLS	
A personal computer (laptop or desktop)	
MPI-2 INTERFACE CARD (P/N 529 036 018) **OR** MPI-3 INTERFACE CARD (P/N 529 036 353)	
DIAGNOSTIC CABLE (P/N 710 000 851)	
OPTIONAL TOOL	
Extension cable available at electronic retail outlets. Do not exceed 7.5 m (25 ft)	

TROUBLESHOOTING

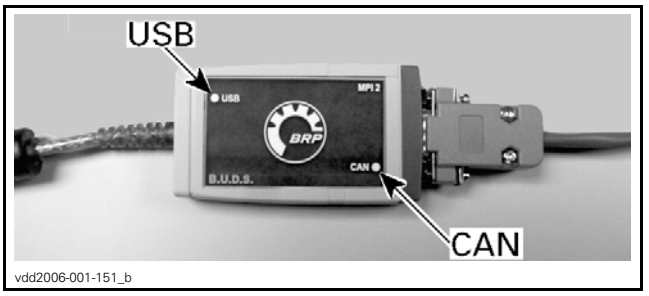
DIAGNOSTIC TIPS

IMPORTANT: Make sure all connections are made and vehicle is powered up **before starting B.U.D.S.** to allow proper communication between the vehicle and the BRP Utility and Diagnostic Software (B.U.D.S.)

Multi-Purpose Interface Card Connection Troubleshooting

MPI Status Lights

The MPI card includes 2 status lights that indicate the connection condition: USB and CAN. **Both lights must be GREEN** to function properly. Otherwise, refer to the following charts.



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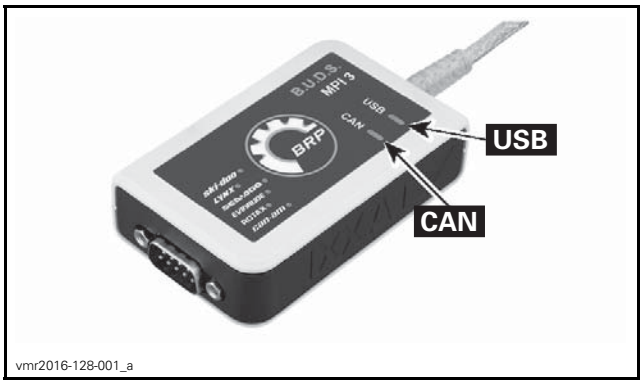
MPI-2 CARD



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MPI-3 CARD

Prerequisite for USB Communication:

– PC Computer turned on.
– MPI card connected to PC computer.

USB LIGHT	
STATUS	WHAT TO DO
Light is OFF	Check USB connection between MPI card and PC computer. Check USB operation on PC computer (hardware or USB drivers)
Light is GREEN	Connections are GOOD. Communication can take place on USB side

Prerequisite for CAN Communication:

– MPI card connected to diagnostic connector on vehicle.
– Ignition key installed and turned to ON (electrical system powered up without engine started).
– B.U.D.S. started and logged on.

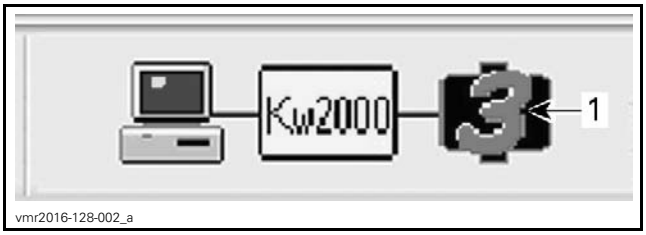
CAN LIGHT	
STATUS	WHAT TO DO
Light is OFF	Check connection between MPI card and diagnostic connector on vehicle
Light is RED	Check CAN wires/connectors on vehicle
Light is GREEN	Connections are GOOD. Communication can take place on CAN side

Communication Problems when Using B.U.D.S.

Missing Module

Ensure the appropriate number of modules is shown at the bottom of B.U.D.S. screen.

MODEL	NUMBER OF MODULES
Models without DPS	2 (ECM and multifunction gauge)
Models with DPS	3 (ECM, DPS and multifunction gauge)



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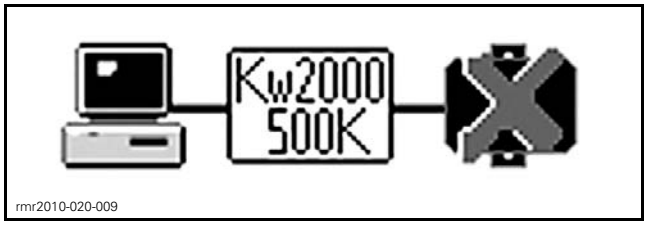
TYPICAL
1. Number of modules

If one or more "ECU" is not communicating with the MPI card, refer to *DIAGNOSTIC AND FAULT CODES*.

No Vehicle is Detected

If an "X" is shown in the status bar and the protocol indication is blinking between Kw2000 500K and KW2000, it means that no "ECU" is communicating with the MPI card.



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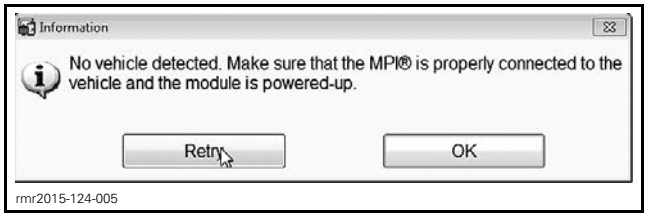
Check the following:

– Connections between the PC computer and the vehicle.
– The multifunction gauge is powered up.

If B.U.D.S. does not automatically exit the following message box, click the **Retry** button. This will manually establish the communication with the vehicle.



rmr2015-124-005

PROCEDURES

MULTI-PURPOSE INTERFACE CARD (MPI-2 OR MPI-3)

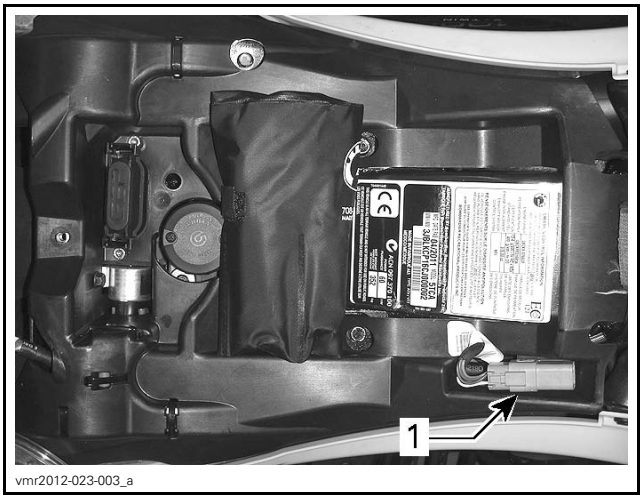
The MPI (Multi-Purpose Interface) in conjunction with the diagnostic cable is used with B.U.D.S. to communicate with the ECM (engine control module) and other modules.

MPI Card Power

The MPI card uses the power from the PC computer's USB port.

Diagnostic Connector Location

The 6-pin diagnostic connector is located under the seat, stored in it's protective cap.



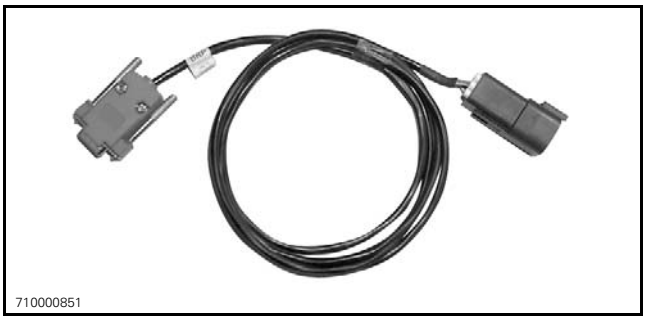
1. Diagnostic connector

Connecting the PC to the Vehicle

⚠ WARNING

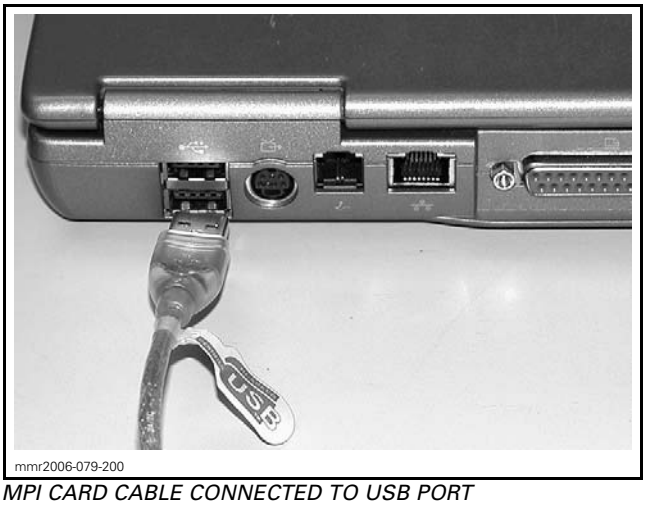
If the computer you are using is connected to the 110 Vac power outlet, there is a potential risk of electrocution when working in contact with water. Be careful not to touch water while working with the VCK.

1. Locate the 6-pin diagnostic connector, refer to *DIAGNOSTIC CONNECTOR LOCATION* in this subsection.
2. Disconnect the 6-pin diagnostic connector from it's holder (protective cap).
3. Connect one end of the DIAGNOSTIC CABLE (P/N 710 000 851) to the vehicle connector.



DIAGNOSTIC CABLE CONNECTED TO VEHICLE

4. Connect the other end of diagnostic cable to the MPI card.
5. Connect the MPI card to the USB port of a PC (personal computer).



MPI CARD CABLE CONNECTED TO USB PORT

6. Use B.U.D.S. as described further in *B.U.D.S. SOFTWARE* topic

B.U.D.S. SOFTWARE

B.U.D.S. is designed for:

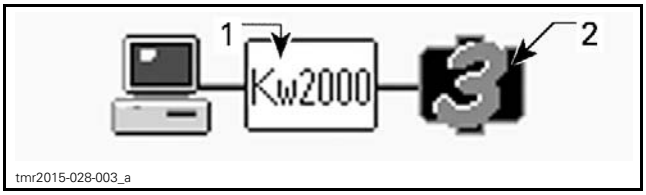
– Programming ignition key(s) to the vehicle
– Monitoring some electrical and electronic components
– Activating certain components for diagnostic purposes
– Updating electronic module software
– And, to carry out setting changes.

Always use the latest applicable B.U.D.S. version available on Knowledge Center.

Reading the Electronic Control Units Using B.U.D.S. Software

IMPORTANT: Ensure all connections have been made **before starting B.U.D.S.** to allow proper operation. Refer to *CONNECTING THE PC TO THE VEHICLE* in this subsection.

1. Turn ignition switch to ON. Do not start the engine.
2. Set the emergency engine stop switch to RUN.
3. Start B.U.D.S. and logon.
4. Ensure the status bar shows the appropriate protocol and the appropriate number of modules to its right according to the vehicle model.



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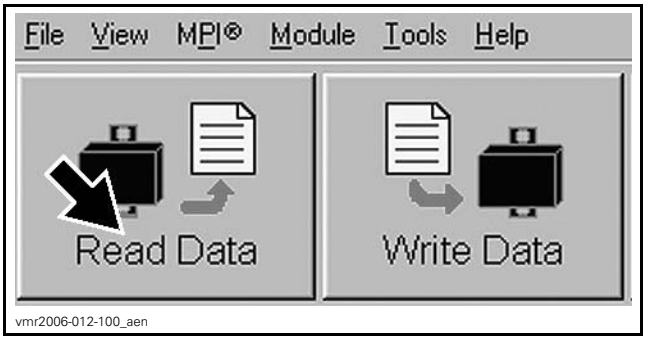
TYPICAL - SUCCESSFUL CONNECTION
1. *Connection protocol*
2. *Number of modules read*

MODEL	NUMBER OF MODULES
Models without DPS	2 (ECM and multifunction gauge)
Models with DPS	3 (ECM, DPS and multifunction gauge)

If the number is less than indicated in *NUMBER OF MODULES* table, refer to *TROUBLESHOOTING* in this subsection.

5. Read the ECUs by clicking the **Read Data** button.



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B.U.D.S. is now ready to use.

Updating Electronic Module (ECU) Software

NOTICE Failure to strictly follow a procedure to update a module may permanently damage the module.

Whenever B.U.D.S. is first connected to a vehicle, check for an update icon in the status bar at the bottom of the **Vehicle** page.

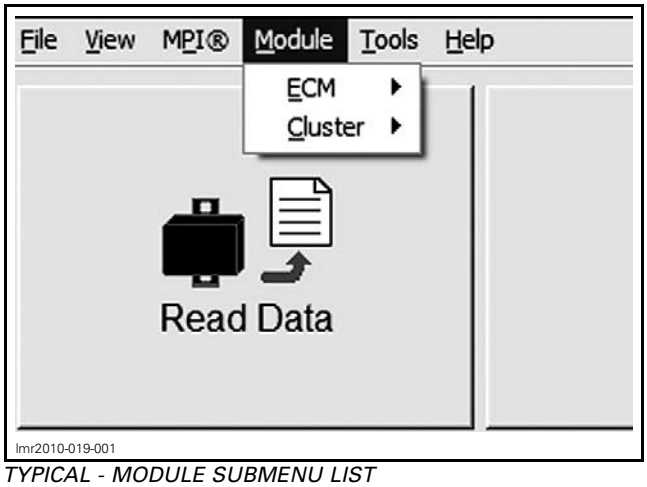
smr2010-030-002_a

TYPICAL

If the update icon is visible, B.U.D.S. indicates that a file is available to update at least one of the electronic modules:

NOTE: If an update file is available on *KNOWLEDGE CENTER* but the B.U.D.S. software being used is not up to date, the update icon will not appear. Refer to the *SERVICE BULLETINS* to see if there is an update available.

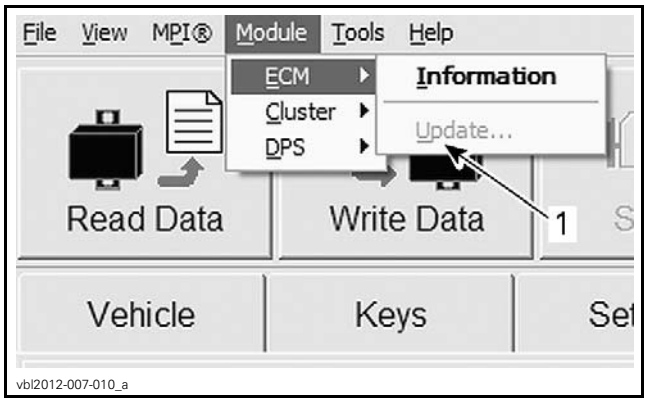
Use the **Module** submenu and check all modules one at a time to see which module(s) can be updated.



lmr2010-019-001

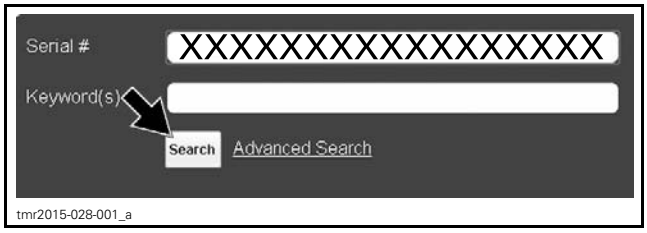
TYPICAL - MODULE SUBMENU LIST

1. If the **Update** option is **greyed out**, no update file is available for this module.
2. If the **Update** option is **black**, an update file is available for this module.



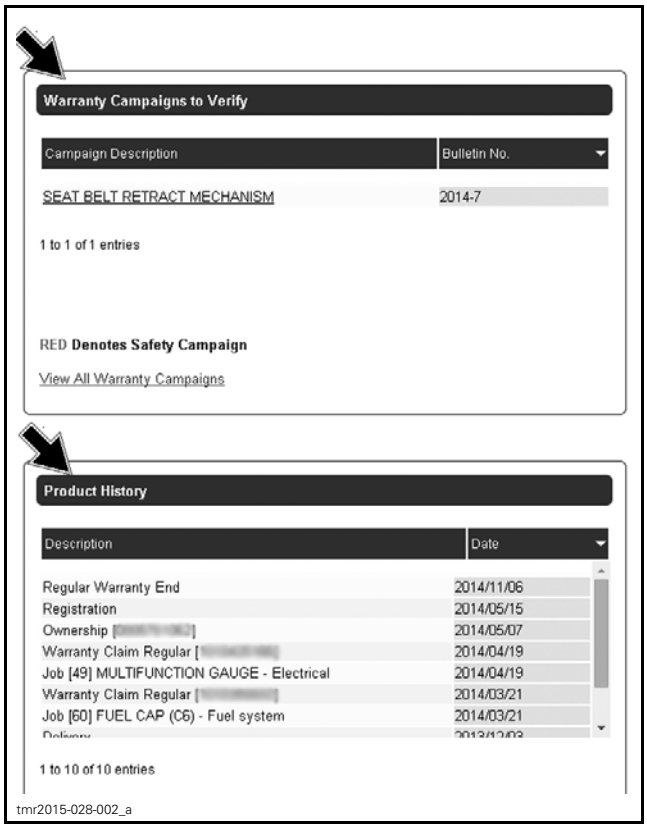
1. *Greyed out: No update to perform*
   Black: Update file available

Before applying an update, log onto *KNOWLEDGE CENTER* and search the vehicle's VIN to find the unit's history.

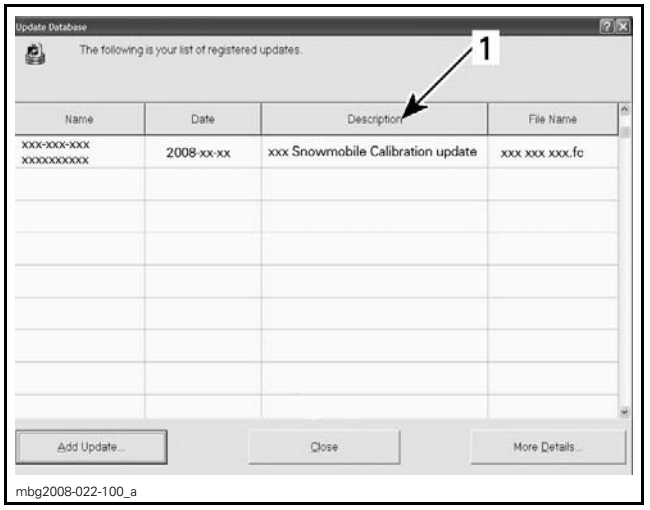


Complete all *WARRANTY CAMPAIGNS TO VERIFY*.

NOTE: *PRODUCT HISTORY* will show all repairs performed and claimed under warranty.



NOTE: When selecting the update menu in B.U.D.S., a dialog box will appear and the update file description may give some clue to finding the vehicle-related information on *KNOWLEDGE CENTER* .



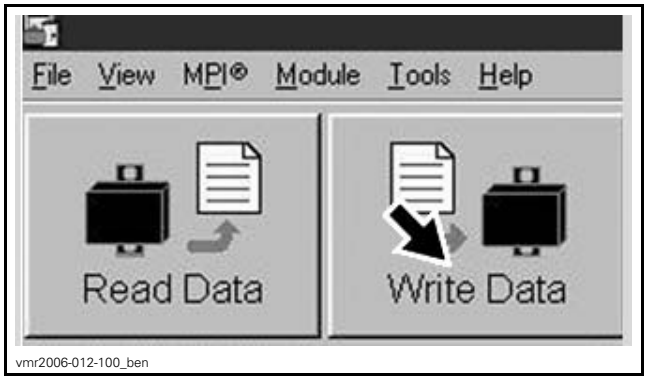
TYPICAL
1. *File description*

Saving Changes to an ECU

If the word **Modified** appearsat the end of the vehicle file name at the top of the B.U.D.S. page, then a change has been made that requires it to be saved to the proper electronic module.

TYPICAL
1. *Indicate setting or data modified; Write Data to save*

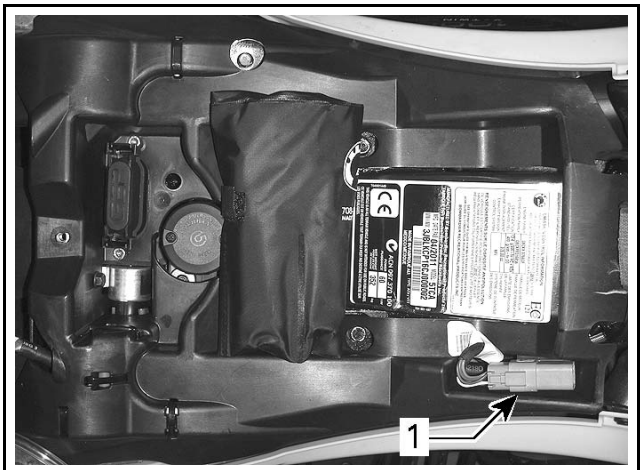
Click the **Write Data** button.



NOTE: A message box will confirm a successful operation.

In such a case, turn ignition switch OFF, then wait for the message to disappear before disconnecting the MPI.

Disconnect MPI card and store the vehicle diagnostic connector in its protective cap.



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1. Diagnostic connector in its storage cap

NOTICE Failure to secure the diagnostic connector in its protective cap may result in corrosion or other damage to the terminals.

DIAGNOSTIC AND FAULT CODES

GENERAL

MONITORING SYSTEM

The Engine Management System (EMS) features a monitoring system that self-diagnoses various electrical and electronic components. This mode becomes active when the ignition key is turned ON.

NOTE: Some components require the engine to be running to be monitored (fuel injectors for example).

The monitoring system continuously validates that the components (control modules, sensors and actuators) are not faulty or defective. When a malfunction is detected, the related electronic module(s):

– Sets an active fault code.
– Adapts the proper protection strategy according to the failure.
– Sends out signals to the multifunction gauge to inform the rider of a particular condition.

A fault code is an indication that a glitch or malfunction is detected by the monitoring system of the vehicle.

If a minor fault occurs, the engine and vehicle will continue to operate without noticeable loss of performance.

If a more important fault occurs, engine RPM may be limited. The engine/vehicle will continue to operate with reduced performance.

If a major component of the EMS fails, engine RPM will be limited as well as vehicle speed.

These strategies are used to protect engine/electrical system from damage and to maintain safe operation of the vehicle. In extreme cases, the engine may also be completely shut down.

Pilot Lamps for Problematic Conditions

When a problem is detected, a pilot lamp will turn on or blink in the multifunction gauge. If the fault that caused the pilot lamp to come on is momentary, the pilot lamp may turn off automatically, or may need to be reset by powering down the vehicle and then restarting it.

A message may also be displayed to provide additional information related to the fault that turned on the pilot lamp. Refer to the following chart.

NOTE: In some cases, the CHECK ENGINE message can be displayed along with other messages.

PILOT LAMP	MULTI-FUNCTION GAUGE MESSAGE	CAUSE
	DESS KEY NOT RECOGNIZED	Module unable to read the key
	BAD KEY	Key not programmed for the vehicle
	LO BATT VOLT	Low system voltage
	HIGH BATT VOLT	High system voltage
	LOW OIL PRESSURE STOP ENGINE	Low engine oil pressure
	LIMP HOME MODE	An important engine management component is not working properly. Vehicle performance is purposely limited
	CHECK ENGINE	An engine management component is not functioning properly
	MAINTENANCE REQUIRED	Periodic maintenance required
	ECM NOT RECOGNIZED	Communication error between gauge and ECM
	CHECK DPS	DPS malfunction
	TRANSMISSION SIGNAL FAULT	Gauge receives an invalid gear position data
	BRAKE	Displayed when brake is applied for more than 15 seconds (while riding)
	HI TEMP	High engine temperature

Limp Home Mode

When a major component of the EMS is not operating properly, limp home mode will be set.

Engine RPM will be limited and/or engine behavior and control may be modified depending on the cause of the failure.

This mode allows the rider to return home, which would otherwise not be possible without this advanced system.

LIMP HOME will be displayed in the multifunction gauge and the CHECK ENGINE light symbol will be on in the gauge.

FAULT CODES

Fault Code Categories

A fault code consists of an alphanumeric designator followed by a hexadecimal number of 3 digits. The alphanumeric designator defines the category of the fault code while the hexadecimal number refers to a unique fault.

FAULT CODE CATEGORIES		
ALPHANUMERIC DESIGNATOR	MODULE/ SYSTEM	EXAMPLE OF FAULT CODE
From P0 to P3	Power train, TCM and DPS	P0116
From U0 to U3	Communication between module and sensors	U0073

RELATED MODULE AND FAULTS	
MODULE	FAULT CODE CATEGORY
ECM	P and U
DPS	P and U
Cluster	P and U

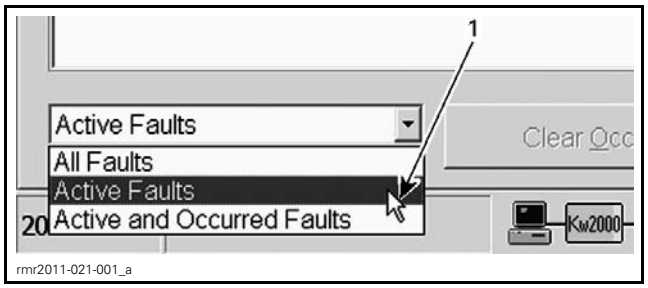
Fault Code States

Fault codes have 3 possible states:

– Active
– Occurred
– Inactive.

Click the **Fault** tab then click on the drop-down list on the LH lower corner.

Choose the fault code state you want to display.



TYPICAL
1. Drop down list

Active Fault Codes

An active fault code is an indication of a fault that is **currently triggered**.

The active fault may or may not compromise normal operation of the system(s). Service action should be taken to correct the problem that caused the fault code.

Once the fault condition(s) of the active fault is no longer present, its state will change to "occurred".

Occurred Fault Codes

An occurred fault code indicates a fault that was active, but **no longer** is.

The occurred fault does not presently affect system or component operation but is retained as a history of the faults that were detected.

The fault may have been generated due to a system or component that was momentarily operating outside normal parameters. Repeated occurred faults of this type should be considered when troubleshooting a problem, and may require that maintenance action be taken.

An occurred fault may also be generated when disconnecting and reconnecting a component, replacing a burnt fuse, when the software update of an electronic module has been carried out, or may be due to a momentary high or low voltage.

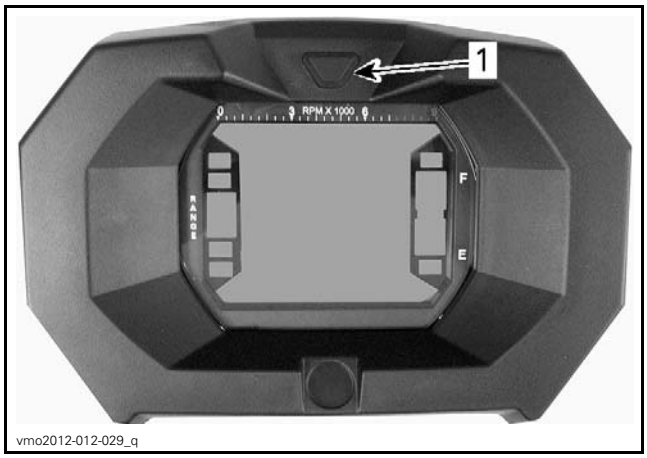
Inactive Fault Codes

An inactive fault code represents a fault code that is neither active, nor occurred. It is simply part of a list of all possible faults that can be monitored by the ECM and multifunction gauge, which may become active or occurred if the monitoring system detects an applicable fault. These codes can be viewed in B.U.D.S.

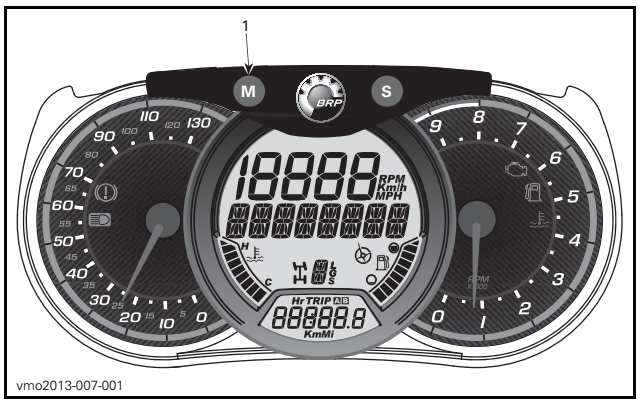
How to Display Fault Codes in the Multifunction Gauge

NOTE: A fault code must be in an "Active" state to be displayed in the multifunction gauge. B.U.D.S. must be used to read all fault codes states.

1. Use the selector button or mode button and scroll to Engine Hour (EH) on the gauge.



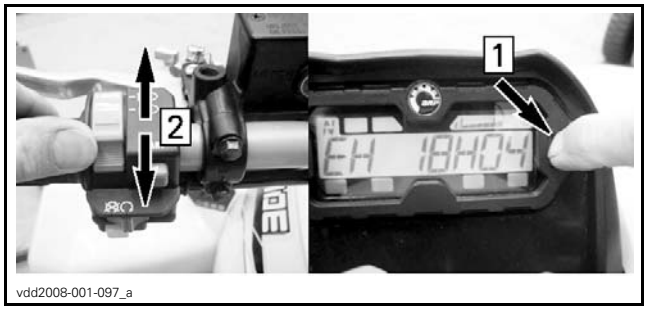
MULTIFUNCTION GAUGE LCD - OUTLANDER EXCEPT XT-P AND LTD
1. Selector button



MULTIFUNCTION GAUGE (ANALOG/DIGITAL) - OUTLANDER XT-P AND LTD
1. Mode button

2. Press and HOLD mode button while QUICKLY toggling HI - LO beam.

NOTE: A minimum of 3 HI - LO toggles must be completed within 2 seconds.

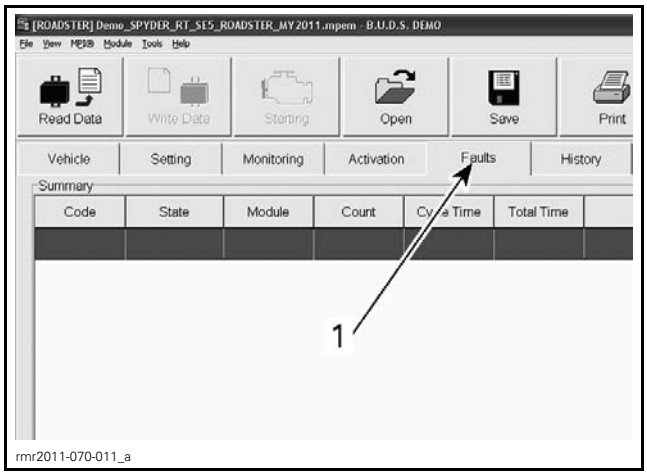


TYPICAL
Step 1: Press and hold
Step 2: Quickly toggle HI - LO beam

How to Read Fault Codes Using B.U.D.S.

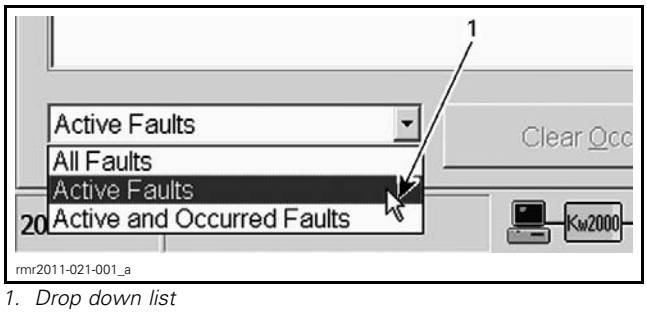
NOTE: All fault code (regardless of their state) can be read with B.U.D.S.

1. Connect vehicle to the latest applicable B.U.D.S. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Click on the **Read Data** button.
3. Click on the **Faults** tab.



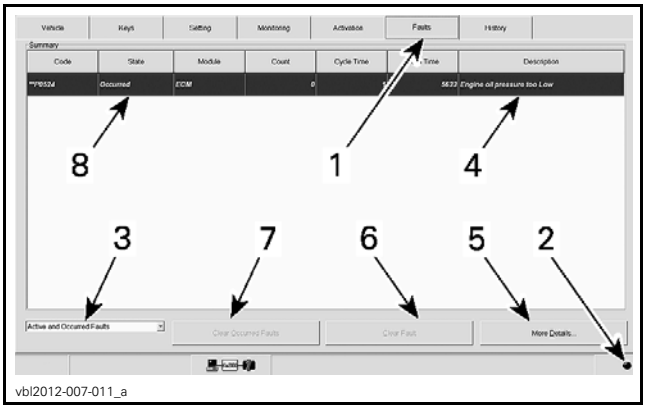
1. Fault tab

4. Click on the drop-down list on the LH lower corner.
5. Choose the fault state to display.



1. Drop down list

FAULT STATE	INFORMATION
All faults	Display all possible faults regardless of state
Active faults	Display only faults matching this state Empty area if there is no active fault
Active and occurred faults	Display only faults that have either state Empty area if there is neither active nor occurred fault



vbl2012-007-011_a

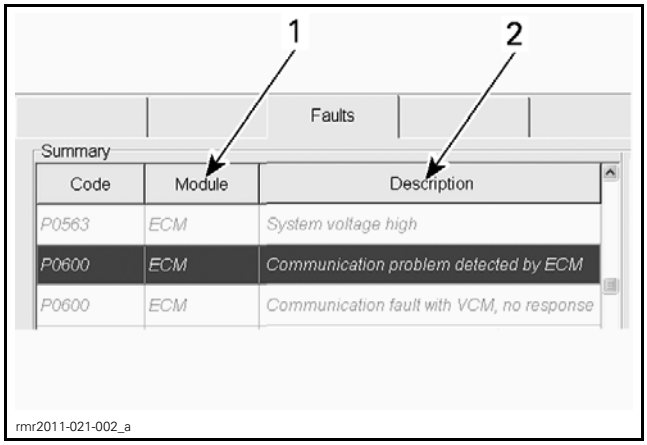
FAULT PAGE
1. **Fault** *tab*
2. *Fault indicator light*
3. *Fault code state drop box*
4. *Fault description*
5. *More Details button*
6. *Clear Fault button*
7. *Clear Occurred Faults button*
8. *Selected fault*

FAULT PAGE DESCRIPTION	
ITEM	INFORMATION
Fault tab	Click tab to display the fault page
Fault indicator light	When flashing, it indicates there is active fault(s)
Fault code state drop box	Click drop box to select the type of faults to display
Fault nomenclature	Display specific information and statistics related to the fault (see fault nomenclature table)
More Details button	To display possible causes and service actions related to the selected fault
Clear Fault button	To clear occurred faults one at a time
Clear Occurred Faults button	To clear all occurred faults in related ECU(s)
Selected fault	When a fault is selected, additional information pertaining to that fault will be displayed when clicking the "More details" button. To select a fault, click on the fault with the mouse or use the cursor up or down to scroll to the desired fault

FAULT NOMENCLATURE	
COLUMN	INFORMATION
Code	Fault code number. When 2 stars (**) precedes the code, detailed conditions when the fault occurred, can be displayed by clicking the "More details" button
State	Display the fault state (active, occurred, inactive)
Module	Displays the module that reports the fault code. This is the module that detects or has received a message of an anomaly and reports it. List of modules: - Cluster (multifunction gauge) - DPS (dynamic power steering) - ECM (engine control module)
Count	Number of times this fault occurred within the driving cycle. Value: From 0 to 255
Cycle time	Not to be used. Value: From 0 to 255 minutes
Total time	Not to be used. Value: From 0 to 64 255 minutes
Description	Provides a short description of the fault

When reading a fault code in B.U.D.S., pay particular attention to which module reports a fault. It is indicated in the **Module** column.

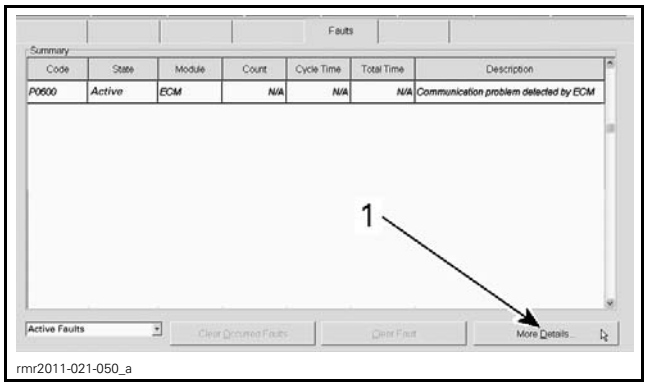
The **Description** column gives a short description of the fault.



rmr2011-021-002_a

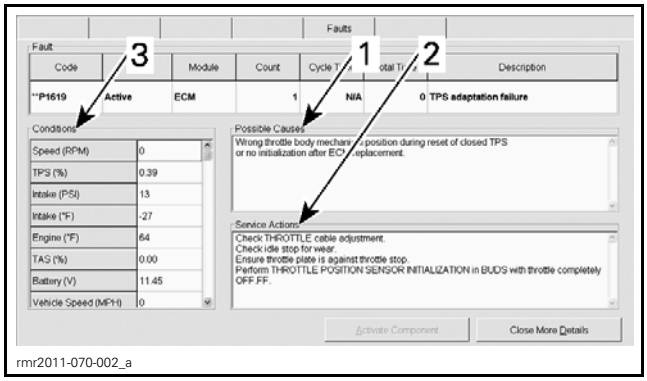
SOME COLUMNS REMOVED FOR CLARITY PURPOSE
1. *Module that reports a fault*
2. *Fault description*

Click on the **More Details** button, on the RH lower corner, to display the "Possible Causes" and the "Service Actions" to step further in the diagnosis.



rmr2011-021-050_a

1. Click here



rmr2011-070-002_a

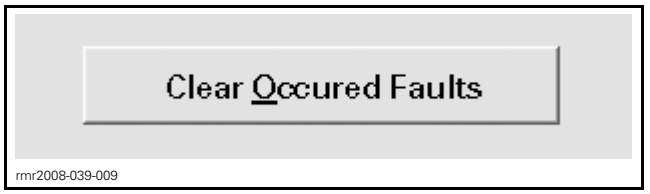
MORE DETAILS PAGE
1. Possible causes related to the selected fault
2. Service actions
3. Operating conditions when fault occurred

MORE DETAILS PAGE DESCRIPTION	
ITEM	INFORMATION
Possible causes	List the possible causes that triggered the fault
Service actions	List the possible actions to perform to solve the fault
Conditions when fault occurred	List the operating conditions of the engine and/or vehicle when the fault was triggered

How to Clear Fault Codes Using B.U.D.S.

1. Connect vehicle to the latest applicable B.U.D.S. software. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Click on the **Read Data** button.
3. Click on the **Faults** tab.

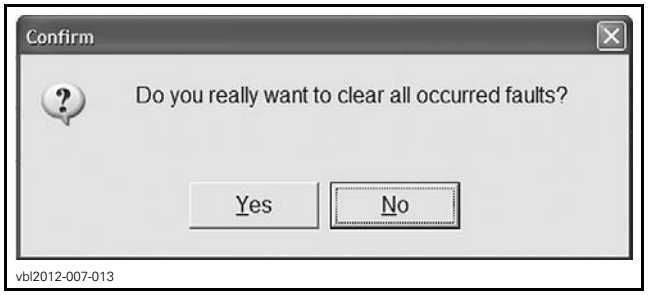
The fault(s) (occurred state only) can be cleared by pressing the **Clear Occurred Faults**or **Clear Fault** buttons in B.U.D.S.



rmr2008-039-009

FAULTS PAGE TAB, CLEAR OCCURRED FAULTS

4. Click YES on the following message box.



vbl2012-007-013

The following message will appear.

vbl2012-007-012

5. Turn ignition OFF and wait until the message disappears.

This will reset the appropriate counter(s) and will also record that the problem has been fixed in the related ECU memory.

NOTE: An active fault code cannot be cleared. In other words, the problem relevant to the fault code must be repaired before the fault can be cleared.

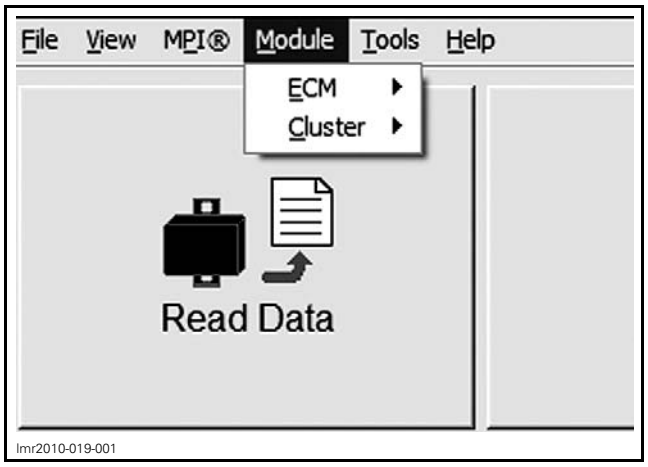
FAULT CODE DIAGNOSTIC

Missing Module

If a module is missing, several fault codes will appear.

To quickly find which module is missing, perform the following:

1. Connect vehicle to the latest applicable B.U.D.S. software. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Click on the **Read Data** button.
3. Click **Module** in the menu bar.
4. Look at the list of modules.
5. If a module is not visible, then it is not communicating through the CAN bus (controller area network).



TYPICAL - MODULE SUBMENU LIST

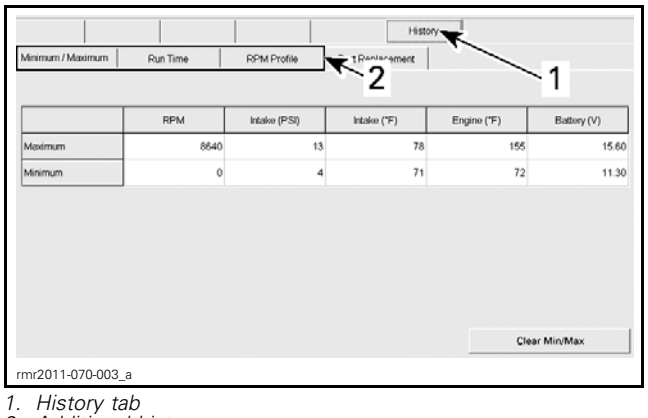
6. Refer to the following table to find the appropriate subsection in this manual to diagnose the missing module.

MISSING MODULE	SECTION TO REFER TO
ECM	*ELECTRONIC FUEL INJECTION (EFI)*
Cluster	*LIGHTS, GAUGE AND ACCESSORIES*
DPS	*DYNAMIC POWER STEERING (DPS)*

Diagnostic Tips

To see the last minute of operating conditions, click on the **History** tab in B.U.D.S.

NOTE: The page displays data whatever there is fault code(s) or not.



1. *History tab*
2. *Additional history pages*

HISTORY PAGE DESCRIPTION	
ITEM	INFORMATION
Minimum/ Maximum	Display the minimum and maximum values encountered. Click "Clear Min/Max" to reset the values
Run time	Display the time proportion in what mode the engine was running in
RPM profile	Display the RPM range proportion in which the engine was running in

When a minor fault occurs:

– Turn ignition key OFF.
– Wait 30 seconds.
– Turn ignition key ON.

This should change the fault state from "Active" to "Occurred".

The vehicle should then operate normally.

If a sensor-related fault persists, you may try disconnecting/reconnecting the sensor.

Read the following for a general approach to troubleshoot fault codes (active or occurred).

GENERAL GUIDELINES TO SOLVE FAULT CODES	
CONDITION	ACTION
Troubleshooting vehicle	Use B.U.D.S. to: Read fault codes. Display "Active" faults to see components currently not operating normally. Display "Occurred" faults to troubleshoot intermittent problems. Monitor system(s), sensor(s), switches and actual conditions. Activate component(s) for troubleshooting. Set components (resets etc). Know the last minute of operating conditions by using the "History" page. Know the operating conditions, if available, when a fault code occurred by using the "More details" button in the fault page.
New fault(s) appear after a vehicle maintenance or repair	Check sensor connections or mixed up connections. **Before** vehicle maintenance: Read the electronic modules with B.U.D.S. **After** vehicle maintenance: Read the electronic modules with B.U.D.S. Compare the fault code(s) before and after the maintenance using the printed copy and the current B.U.D.S. reading. Investigate only the newly fault codes. Clear all occurred faults in B.U.D.S.
Communication faults displayed as "Occurred" after module flashing	Normal behavior when flashing a module. Clear all occurred faults and check again.
Sensor "Active" fault	Read the fault description in B.U.D.S. Click on the "More Details" button. Look at the "Conditions" when available. Read the "Possible Causes". Apply the "Service Actions".
Low system voltage on one module. Power problem on sensor(s)	Check related fuse(s) and relay. Check related power and ground wires. Check for common power supply to several sensors/modules (refer to *POWER DISTRIBUTION AND GROUNDS)*. **NOTE:** Some sensors are supplied by the battery while others are supplied by a module.
Low system voltage on several modules (several communication faults will also appear)	Check battery condition and connections. Check related fuse(s) and relay. Check voltage regulator/rectifier.
High system voltage on several modules	A battery charger has likely been used to substitute the vehicle battery. Clear all occurred faults and check again. Check voltage regulator/rectifier.
When all modules report that a module is missing	Check the module that is reported as missing. Check related fuse(s) and relay. Check related power and ground wires.
When several modules are in fault	Search for a common problem such as a faulty sensor.
CAN bus OFF	When several modules and sensors report that a module is missing. The missing module may report CAN bus off. Check related CAN wires (continuity, short to ground, short between CAN low and high). Check module pins and wiring terminals. Then, the other modules should stop reporting that module is missing.

GENERAL GUIDELINES TO SOLVE FAULT CODES	
CONDITION	ACTION
Occurred fault(s)	May have been generated due to a system or component that was momentarily operating outside normal parameters.
	May be generated when disconnecting and reconnecting a component, replacing a burnt fuse, or may be due to a momentary high or low voltage.
	Before being "Occurred", a fault has always been "Active" for a certain time, indicating that an unexpected condition or problem has been present during the driving cycle. A frequent momentarily fault or an intermittent fault may never be seen as "Active" in B.U.D.S. while there is still a pending problem. This type of malfunctions can be discovered by looking at the "Occurred" faults and then by evaluating the fault count. As long as a fault is present, it is displayed as "Active".
Fault count (0 - 255)	**Low value:** Suggests handling problems (connections, terminal contact/shape etc.). **High value:** Suggests a frequent and unsolved problem. The problem should be investigated.
Fault conditions (more details button)	Look for abnormal, excessive values.
Hard to find problems	When the basic troubleshooting has been done and the fault code(s) persists, often the problem is related to the wiring harness, connections or electromechanical components. Short to ground, to battery or between wires. Wire splices, chafing, terminal problems (pulled out, bent, out of shape, corroded etc.). Bad contacts in switch or relay.

ECUs share information and their systems may interact with each other. Certain faults may cause more than one ECU to set a fault code or indication (pilot lamp or message) as the failure of some components may affect the operation of several systems.

FAULT CODE TABLE

ACRONYMS USED IN THE FAULT CODE TABLE	
USED IN FAULT CODE TABLE	MEANING
ECM	Engine Control Module
DPS	Dynamic Power Steering
CAN	Controller Area Network
TPS	Throttle Position Sensor
GBPS	Gearbox Position Sensor
SCM	Suspension Control Module

HOW TO FIND FAULT CODE DESCRIPTIONS

For the latest fault code table, use the **Info Center** submenu in BOSSWeb and enter the following search criteria:

– Enclose the search within quotes " "
– Enter: "ATV DTC (All engines) 2016".

DIAGNOSTIC AND FAULT CODES

GENERAL

FAULT CODE TABLE

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
C2109	SCM-XMR	Release valve activation delay exceeded	Pressure did not drop to desired set point after predefined delay Release valve tube momentary blocked Blown valve fuse Damaged circuit wires or connectors Faulty valve block Faulty SCM	1- Go to Activations - SCM and start Rear Test routine. If the test passed, the system is working properly. Check the harness and connection to see a potential source of intermittent dysfunction, if nothing is found clear the occurred fault and no more actions have to be done. Mud, dust or water in the release tube may explain the fault code. If the Test status shows a Fail_release, proceed to next action step. 2-Verify the release tube (orange) for obstruction. If nothing is found go to next action step. 3- Unplug the valves block connector and measure that 12V is present between pin D of the connector on the SCM side and the battery negative post. If not, verify the valve fuse and relay (refer to schematics for more information). Verify the harness and the connection between the valve and the SCM. If everything is fine, go to next action step. 4- Verify the release valve activation by disconnecting the valve block electrical connector and applying 12V across pin D and H on valve connector. If the release valve is operating, change the SCM, otherwise change the valve block.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
C2111	SCM-XMR	Auxiliary line pressure sensor value out of range	Too many values of the external sensor out of range (negative pressure) Sensor disconnect Damaged circuit wires or connectors Faulty auxiliary line sensor Faulty SCM	1- Go to Activations - SCM and start Rear Test routine. Verify that the Shock Absorber Pressure and the Auxiliary Line Pressure correlates in BUDS. If the test is done with no fault, the system is working properly. Check the harness and connection to see a potential source of intermittent dysfunction, if nothing is found clear the occurred fault and no more actions have to be done. If the Test Status shows a Fail_Comparison_Sensor_Test, verify for leak. If no leak found, verify the wiring and connector of the external sensor and the SCM. In the next action step, verify which of Shock absorber or Auxiliary Line Pressure sensors is defective. 2-Make sure to have no pressure in the system by activating the relief valve in Activation -SCM. Connect the supplied air hose into the compressor fitting and plug it to a known pressure supply in the range of 30 to 120 psi (as car tire) and compare it to the Shock absorber pressure and Auxiliary line pressure, it should be similar. If the Shock absorber pressure is off, change the SCM module. Go to next action step to perform Auxiliary Line Pressure sensor test. 3-Back probe the signal coming from the sensor between the pin 3 of the SCM electrical connector and the negative battery post (this action must be done with special probe to not damage the connector seal). The value must be between 0.9 and 8.3 Volts for a pressure range of 0 - 100 psi. If not go to next action step. If the value is in the range, the Auxiliary Line Pressure sensor is fine, change the SCM. 5- Unplug the Auxiliary Line Pressure sensor and make sure to have 12V between pin 3 and 1 on the connector coming from SCM. If 12V is present change the sensor, if not change the SCM.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
C21E0	SCM-XMR	System rear suspension pumping delay exceeded	Pressure did not reach to desired set point after predefined delay Leak in the system Jammed compressor intake tube Damaged circuit wires or connectors Blown compressor fuse Corroded or disconnected compressor GND Faulty relay Faulty compressor Jammed check valve Faulty SCM	1- Check for leaks. If no leak found go to next action step. 2- Go to Activations - SCM and start Rear Test routine. If the test is done with no fault, the system is working properly. Check the harness and connector to see a potential source of intermittent dysfunction, if nothing is found clear the occurred fault and no more actions have to be done. If the compressor is not starting check the compressor GND, harness and connection then continue to the next action step. If the compressor is running and the Test Status show a Fail_Pumping_Rear go to action step 6. 3-Test the compressor with an external power supply (as a 12V battery). If the compressor is functional go to next action step. 4-Unplug the relay and make sure to have 12V between battery negative post and relay pin 30. If not, check the compressor fuse and harness. If 12V is present, test the relay. If the relay is functional plug it back and go to next action step. 5- Disconnect the SCM, take a jumper wire and connect pin 8 to the battery negative post. If then the compressor starts, change the SCM. 6- Verify that the compressor intake tube (transparent) is not blocked or kinked. Unplug the SCM air tube (yellow) and start the compressor. If air blow out of the tube change the SCM. If not go to next action step. 7- During the Rear Test routine verify the pressure sensors value. If the Shock Absorber Pressure and Auxiliary Line Pressure is not going up verify the first check valve at the exit of the compressor. If only the Shock Absorber Pressure is not going up verify the second check valve after green tube.
C21E1	SCM-XMR	System rear suspension high leakage detected	Leak in the system	1- Verify suspension system for air leaks.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
C21E2	SCM-XMR	System rear suspension valve failure	Too many occurrence of pressure pumping and release in short delay Rear valve tube blocked Blown valve fuse Faulty valve block Damaged circuit wires or connectors Faulty SCM	1- Disconnect the air line to the rear shocks. Go to Activations - SCM and start Rear Test routine. If the air blows out the system is working properly. Check the harness and connection to see a potential source of intermittent dysfunction, if nothing is found clear the occurred fault and no more actions have to be done. If the air do not blow out continue to next action step. 2- Verify the air tube (black) from the valve to the rear suspension. If nothing found go to next action step. 3- Unplug the valve block electrical connector and verify that 12V is present between pin A and battery negative post. If not verify valve fuse, relay and harness (refer to schematics for more information). If 12V is read go to next action step. 4- Verify the rear valve activation by disconnecting the valve block electrical connector and applying 12V across pin A and E while compressor running (Go to Activations - SCM and start Rear Test routine). If the rear valve is opening and filling the shocks change the SCM. If the rear valve is not opening, change the block valve.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
C21F0	SCM-XMR	System front suspension pumping delay exceeded	Pressure did not reach to desired set point after predefined delay Leak in the system Jammed compressor intake tube Damaged circuit wires or connectors Blown compressor fuse Corroded or disconnected compressor GND Faulty relay Faulty compressor Jammed check valve Faulty SCM	1- Check for leaks. If no leak found go to next action step. 2- Go to Activations - SCM and start Rear Front routine. If the test is done with no fault, the system is working properly. Check the harness and connector to see a potential source of intermittent dysfunction, if nothing is found clear the occurred fault and no more actions have to be done. If the compressor is not starting check the compressor GND, harness and connection then continue to the next action step. If the compressor is running and the Test Status show a Fail_Pumping_Rear go to action step 6. 3-Test the compressor with an external power supply (as a 12V battery). If the compressor is functional go to next action step. 4-Unplug the relay and make sure to have 12V between battery negative post and relay pin 30. If not, check the compressor fuse and harness. If 12V is present, test the relay. If the relay is functional plug it back and go to next action step. 5- Disconnect the SCM, take a jumper wire and connect pin 8 to the battery negative post. If then the compressor starts, change the SCM. 6- Verify that the compressor intake tube (transparent) is not blocked or kinked. Unplug the SCM air tube (yellow) and start the compressor. If air blow out of the tube change the SCM. If not go to next action step. 7- During the Front Test routine verify the pressure sensors value. If the Shock Absorber Pressure and Auxiliary Line Pressure is not going up verify the first check valve at the exit of the compressor. If only the Shock Absorber Pressure is not going up verify the second check valve after green tube.
C21F1	SCM-XMR	System front suspension high leakage detected	Leak in the system	1- Verify suspension system for air leaks.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
C21F2	SCM-XMR	System front suspension valve failure	Too many occurrence of pressure pumping and release in short delay Front valve tube blocked Blown valve fuse Faulty valve block Damaged circuit wires or connectors Faulty SCM	1- Disconnect the air line from the front shocks. Go to Activations - SCM and start Front Test routine. If the air blows out of both shocks the system is working properly. Check the harness and connection to see a potential source of intermittent dysfunction, if nothing is found clear the occurred fault and no more actions have to be done. If the air does not blow out even from one shock continue to next action step. 2- Verify the air tubes (blue) from the valves to both front shocks. If clear go to next action step. 3- Unplug the valve block electrical connector and verify that 12V is present between pin B and battery negative post (right) / between pin C and battery negative post (left). If not verify valve fuse, relay and harness (refer to schematics for more information). If both 12V are read go to next action step. 4- Verify the front valves activation by disconnecting the valve block electrical connector and applying 12V across pin B and F (right) or C and G (wrong in wire diagram) (left) while compressor running (Go to Activations - SCM and start Front Test routine.). If the front valves are opening and filling the shocks change the SCM. If either of the front valves are not opening, change the block valve.
P0008	ECM	Lost of Synchronisation	Engine Synchronisation Check Failed	Check for Crankshaft Position Sensor fault Check for dirty Crankshaft Position Sensor. Check compression on engine

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0107	ECM	Manifold Air Pressure Sensor voltage too Low	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins, ECM voltage supply Low	Make sure sensor connector is fully inserted. Measure voltage between harness connector pins 1 and 3 . (Expected value: 4.8 to 5.1 volts) Measure resistance from connector: ECM-F3 to MAPTS-2 (Expected value: < 2 ohms) Measure resistance from connector: ECM-A1 to MAPTS-3 (Expected value: < 2 ohms) Measure resistance from connector: ECM-G2 to MAPTS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-F2 to MAPTS-4 (Expected value: < 2 ohms)
P0108	ECM	Manifold Air Pressure Sensor voltage too High	Damaged sensor, wires shorted to battery +, ECM voltage supply too High.	Make sure sensor connector is fully inserted. Measure voltage between harness connector pins 1 and 3 . (Expected value: 4.8 to 5.1 volts) Measure resistance from connector: ECM-F3 to MAPTS-2 (Expected value: < 2 ohms) Measure resistance from connector: ECM-A1 to MAPTS-3 (Expected value: < 2 ohms) Measure resistance from connector: ECM-G2 to MAPTS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-F2 to MAPTS-4 (Expected value: < 2 ohms)
P0112	ECM	Intake Air Temperature Sensor 1 circuit Low	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins, ECM voltage supply Low	Make sure sensor connector is fully inserted. Measure voltage between harness connector pins 1 and 3 . (Expected value: 4.8 to 5.1 volts) Measure resistance from connector: ECM-F3 to MAPTS-2 (Expected value: < 2 ohms) Measure resistance from connector: ECM-A1 to MAPTS-3 (Expected value: < 2 ohms) Measure resistance from connector: ECM-G2 to MAPTS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-F2 to MAPTS-4 (Expected value: < 2 ohms)

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0113	ECM	Intake Air Temperature Sensor 1 circuit High	Damaged sensor, wires shorted to battery +, ECM voltage supply too High.	Make sure sensor connector is fully inserted. Measure voltage between harness connector pins 1 and 3 . (Expected value: 4.8 to 5.1 volts) Measure resistance from connector: ECM-F3 to MAPTS-2 (Expected value: < 2 ohms) Measure resistance from connector: ECM-A1 to MAPTS-3 (Expected value: < 2 ohms) Measure resistance from connector: ECM-G2 to MAPTS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-F2 to MAPTS-4 (Expected value: < 2 ohms)
P0114	ECM	Intake Air Temperature Sensor Intermittent	Damaged sensor, damaged circuit wires, damaged connector or damaged ECM pins, ECM voltage supply	Make sure sensor connector is fully inserted. Measure voltage between harness connector pins 1 and 3 . (Expected value: 4.8 to 5.1 volts) Measure resistance from connector: ECM-F3 to MAPTS-2 (Expected value: < 2 ohms) Measure resistance from connector: ECM-A1 to MAPTS-3 (Expected value: < 2 ohms) Measure resistance from connector: ECM-G2 to MAPTS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-F2 to MAPTS-4 (Expected value: < 2 ohms)
P0116	ECM	Engine Coolant Temperature Sensor 1 circuit range/performance	Damaged sensor, wires shorted to battery +, ECM voltage supply.	Disconnect the sensor. Measure resistance from connector: ECM-F4 to CTS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-C3 to CTS-2 (Expected value: < 2 ohms) Measure CTS resistance value (Expected value: 2280 to 2736 ohms at 19 to 21°C (66 to 70°F))
P0117	ECM	Engine Coolant Temperature Sensor 1 circuit Low	Engine temperature sensor or circuit wires shorted to ground.	Disconnect the sensor. Measure resistance from connector: ECM-F4 to CTS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-C3 to CTS-2 (Expected value: < 2 ohms) Measure CTS resistance value (Expected value: 2280 to 2736 ohms at 19 to 21°C (66 to 70°F))

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0118	ECM	Engine Coolant Temperature Sensor 1 circuit High	Disconnected sensor, or sensor resistance too High.	Disconnect the sensor. Measure resistance from connector: ECM-F4 to CTS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-C3 to CTS-2 (Expected value: < 2 ohms) Measure CTS resistance value (Expected value: 2280 to 2736 ohms at 19 to 21°C (66 to 70°F))
P011A	ECM	Engine Coolant Temperature Correlation Check failed	Correlation Check failed	Check for coolant fluid leak and coolant fluid level Check radiator condition Check for other fault, Check thermostat
P0122	ECM	Throttle Position Sensor (TPS) Short circuit to GND	Damaged circuit wires, damaged sensor or damaged ECM pins.	Make sure sensor connector is fully inserted. Measure resistance from connector: ECM-A1 to TPS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-G3 to TPS-3 (Expected value: < 2 ohms) Measure resistance from connector: ECM-G2 to TPS-2 (Expected value: < 2 ohms)
P0123	ECM	Throttle Position Sensor (TPS) shorted to battery +	Damaged circuit wires, damaged sensor or damaged ECM pins.	Make sure sensor connector is fully inserted. Measure resistance from connector: ECM-A1 to TPS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-G3 to TPS-3 (Expected value: < 2 ohms) Measure resistance from connector: ECM-G2 to TPS-2 (Expected value: < 2 ohms)
P0217	ECM	Engine Coolant over temperature condition	Coolant fluid temperature too high	Check for coolant fluid leak and coolant fluid level Check radiator condition Check for other fault, Check thermostat
P0219	ECM	Engine Overspeed Condition detected	Engine speed too high	

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0231	ECM	Fuel Pump circuit shorted to ground, or open circuit	Blown fuse, damaged or disconnected fuel pump relay, damaged circuit wires, damaged connectors or damaged ECM output pins.	Check fuse Measure voltage between harness connector PF1-12B and ground (Expected value: 11 to 13 volts) Measure voltage between harness connector PF1-11B and ground (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-J1 to PF1-12A (Expected value: < 2 ohms) Measure resistance from harness connector: PF1-11A to FP-3 (Expected value: < 2 ohms) Measure resistance from harness connector: FP-4 to ground (Expected value: < 2 ohms)
P0232	ECM	Fuel Pump circuit shorted to battery +	Blown fuse, damaged or disconnected fuel pump relay, damaged circuit wires, damaged connectors or damaged ECM output pins.	Check fuse Measure voltage between harness connector PF1-12B and ground (Expected value: 11 to 13 volts) Measure voltage between harness connector PF1-11B and ground (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-J1 to PF1-12A (Expected value: < 2 ohms) Measure resistance from harness connector: PF1-11A to FP-3 (Expected value: < 2 ohms) Measure resistance from harness connector: FP-4 to ground (Expected value: < 2 ohms)
P0261	ECM	Cylinder 1 injector open circuit or shorted to ground	Blown fuse, damaged or disconnected injector, damaged or disconnected circuit wires, damaged ECM output pins.	Disconnect injector 1 Measure resistance between injector pin 1 and 2 (Expected value = 14 to15 ohms). Measure resistance from harness connector: INJ1-1 to INJ1-2 (Expected value: > OPEN) Measure voltage between harness connector INJ1-2 and ground. (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-K4 to INJ1-1 (Expected value: < 2 ohms)

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0262	ECM	Cylinder 1 injector shorted to battery +	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Disconnect injector 1 Measure resistance between injector pin 1 and 2 (Expected value = 14 to15 ohms). Measure resistance from harness connector: INJ1-1 to INJ1-2 (Expected value: > OPEN) Measure voltage between harness connector INJ1-2 and ground. (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-K4 to INJ1-1 (Expected value: < 2 ohms)
P0264	ECM	Cylinder 2 injector open circuit or shorted to ground	Blown fuse, damaged or disconnected injector, damaged or disconnected circuit wires, damaged ECM output pins.	Disconnect injector 2 Measure resistance between injector pin 1 and 2 (Expected value = 14 to15 ohms). Measure resistance from harness connector: INJ2-1 to INJ2-2 (Expected value: > OPEN) Measure voltage between harness connector INJ2-2 and ground. (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-L4 to INJ2-1 (Expected value: < 2 ohms)
P0265	ECM	Cylinder 2 injector shorted to battery +	Damaged injector, damaged circuit wires, damaged connector or damaged ECM output pins.	Disconnect injector 2 Measure resistance between injector pin 1 and 2 (Expected value = 14 to15 ohms). Measure resistance from harness connector: INJ2-1 to INJ2-2 (Expected value: > OPEN) Measure voltage between harness connector INJ2-2 and ground. (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-L4 to INJ2-1 (Expected value: < 2 ohms)
P0338	ECM	Crankshaft Position Sensor Spike detected	Damaged CPS, damaged circuit wires, damaged connector or damaged ECM output pins. Wrong mounting position of sensor	Make sure sensor connector is fully inserted. Measure resistance from connector: ECM-E1 to CPS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-D1 to CPS-2 (Expected value: < 2 ohms)
P0339	ECM	Crankshaft Position Sensor Intermittent	incorect nomber of tooth detecded Damaged CPS, damaged circuit wires, damaged connector or damaged ECM output pins. Wrong mounting position of sensor	Make sure sensor connector is fully inserted. Measure resistance from connector: ECM-E1 to CPS-1 (Expected value: < 2 ohms) Measure resistance from connector: ECM-D1 to CPS-2 (Expected value: < 2 ohms)

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0480	ECM	Radiator cooling fan relay	Blown fuse, damaged or disconnected relay, damaged circuit wires or connectors, damaged ECM output pins, damaged Relay.	Check fuse Disconnect relay. Measure resistance between terminals 85 and 86 on relay. (Expected value: 70 to 90 Ohms) Measure resistance between harness connector PF-1E and ground. (Expected value > OPEN). Measure resistance from harness connector: ECM-B3 to PF1-1E (Expected value: < 2 ohms)
P0500	DPS	Invalid or missing vehicle speed	No vehicle speed available & Vehicle is in (H or L Gear) with Engine RPM over 4000RPM. Damaged Vehicle Speed sensor circuit, Damaged sensor, Wrong mounting position of speed sensor.	Check if vehicle speed is available in Monitoring page in BUDS. Measure voltage between harness connector CV-A (red) and CV-C (ground black). (Expected value: 11 to 13 volts) Measure resistance from connector: CI-9 to CV-B (pink) (Expected value: < 5 ohms) on ATV
P0508	ECM	Idle Air Control System Circuit Low	Damaged IDLE, damaged circuit wires, damaged connector or damaged ECM output pins.	Make sure IDLE connector is fully inserted. Measure resistance from connector: ECM-D4 to IDLE-D (Expected value: < 2 ohms) Measure resistance from connector: ECM-D3 to IDLE-A (Expected value: < 2 ohms) Measure resistance from connector: ECM-E4 to IDLE-B (Expected value: < 2 ohms) Measure resistance from connector: ECM-C4 to IDLE-C (Expected value: < 2 ohms)
P0509	ECM	Idle Air Control System Circuit High	Damaged IDLE, damaged circuit wires, damaged connector or damaged ECM output pins.	Make sure IDLE connector is fully inserted. Measure resistance from connector: ECM-D4 to IDLE-D (Expected value: < 2 ohms) Measure resistance from connector: ECM-D3 to IDLE-A (Expected value: < 2 ohms) Measure resistance from connector: ECM-E4 to IDLE-B (Expected value: < 2 ohms) Measure resistance from connector: ECM-C4 to IDLE-C (Expected value: < 2 ohms)
P0513	ECM	Invalid Access Key Detected	A non stored access key was detected when key switch was turned to ON.	Use a stored access key to turn key switch. If no stored access keys are available program one and try again

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0523	ECM	Engine oil pressure sensor sticking	Damaged switch, damaged circuit wires, damaged connector, damaged ECM pins.	Measure resistance between harness connector OPS and ground When engine stopped. (Expected value < 2 ohms) Measure resistance between harness connector OPS and ground When engine running. (Expected value = open) Measure resistance from harness connector: OPS to ECM-E2 (Expected value: < 2 ohms)
P0524	ECM	Engine oil pressure too Low	Damaged switch, damaged circuit wires, damaged connector, damaged ECM pins.	Measure resistance between harness connector OPS and ground When engine stopped. (Expected value < 2 ohms) Measure resistance between harness connector OPS and ground When engine running. (Expected value = open) Measure resistance from harness connector: OPS to ECM-E2 (Expected value: < 2 ohms)
P0551	DPS	TORQUE_ SENSOR_ OPEN	Damaged DPS	External troubleshooting is not possible Replace the DPS.
P0552	DPS	TORQUE_ SENSOR_ SHORT_GND	Damaged DPS	External troubleshooting is not possible Replace the DPS.
P0553	DPS	TORQUE_ SENSOR_ SHORT_5V	Damaged DPS	External troubleshooting is not possible Replace the DPS.
P0562	DPS	System voltage low	Blown fuse, battery low (damaged magneto/regulator), damaged circuit wires or connection, intense winch usage	Check the two DPS fuses Validate that all the DPS connectors are secured Measure voltage between harness connector DPS2-A&B and ground. (Expected value = 11 to 13 volts) Measure battery voltage with engine stopped. (Expected value: 11 to 13 volts) Check ground and positive connections on battery.
P0562	ECM	System voltage low	Blown fuse FC, battery failure, voltage regulator failure, damaged circuit wires or connection, damaged magneto generator. An external battery charger may have been used. Intense winch usage	Measure battery voltage with engine stopped. (Expected value: 11 to 13 volts) Measure battery voltage with engine running. (Expected value: 13 to 14.7 volts) Check connections on voltage regulator. Check ground and positive connections on battery. Check ground on vehicle frame

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0563	DPS	system voltage high	Rectifier failure, damaged circuit wires or connection.	Measure battery voltage with engine stopped. (Expected value: 11 to 13 volts) Measure battery voltage with engine Running at 3500RPM. (Expected value: 13 to 14.7 volts) Check connections on voltage regulator. Check ground and positive connections on battery.
P0563	ECM	System voltage high	Damaged regulator. An external battery charger may have been used.	Measure battery voltage with engine stopped. (Expected value: 11 to 13 volts) Measure battery voltage with engine running. (Expected value: 13 to 14.7 volts) Check connections on voltage regulator. Check ground and positive connections on battery. Check ground on vehicle frame
P0601	DPS	CALIBRATION FAULT	DPS not calibrated or damage DPS	Try updating the DPS
P0601	SCM-XMR	Bad checksum of Calibration memory section	Lost of power on reflash	If an update file is available reflash the SCM, if not clear the fault, if it returns, replace the SCM.
P0615	ECM	Starter Relay circuit open	Damaged relay, Danaged start switch, damaged circuit wires, damaged connector, damaged ECM pins.	Check start button, Check Run/Stop button, check if free weeling diode is in the good way. Disconnect starter solenoid relay Measure resistance from harness connector: ECM-L3 to SS2 (Expected value: < 2 ohms) Measure resistance from harness connector: MG2-6 to SS1 (Expected value: < 2 ohms) Measure resistance between terminals SS1 and SS2. (Expected value: 3 to 6 ohms)
P0616	ECM	Starter Relay circuit shorted to ground	Damaged relay, Danaged start switch, damaged circuit wires, damaged connector, damaged ECM pins.	Check start button, Check Run/Stop button, check if free weeling diode is in the good way. Disconnect starter solenoid relay Measure resistance from harness connector: ECM-L3 to SS2 (Expected value: < 2 ohms) Measure resistance from harness connector: MG2-6 to SS1 (Expected value: < 2 ohms) Measure resistance between terminals SS1 and SS2. (Expected value: 3 to 6 ohms)

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0617	ECM	Starter Relay circuit shorted to battery +	Damaged relay, Danaged start switch, damaged circuit wires, damaged connector, damaged ECM pins.	Check start button, Check Run/Stop button, check if free weeling diode is in the good way. Disconnect starter solenoid relay Measure resistance from harness connector: ECM-L3 to SS2 (Expected value: < 2 ohms) Measure resistance from harness connector: MG2-6 to SS1 (Expected value: < 2 ohms) Measure resistance between terminals SS1 and SS2. (Expected value: 3 to 6 ohms)
P0636	DPS	MOTOR LOW CURRENT FAULT	Internal error or damaged DPS	External troubleshooting is not possible Replace the DPS.
P0637	DPS	MOTOR HIGH CURRENT FAULT	Internal error or damaged DPS	External troubleshooting is not possible Replace the DPS.
P0642	ECM	Sensor Reference Voltage Low	Damaged sensor connected to ECM voltage supply, Damaged ECM voltage supply output.	Measure voltage between harness connector ECM-A1 and ground. (Expected value: 4.8 to 5.1 volts) Check sensor connected to ECM voltage supply output
P0643	ECM	Sensor Reference Voltage High	Damaged sensor connected to ECM voltage supply, Damaged ECM voltage supply output.	Measure voltage between harness connector ECM-A1 and ground. (Expected value: 4.8 to 5.1 volts) Check sensor connected to ECM voltage supply output
P0658	DPS	PHASE A_LOW	DPS motor supply Damaged DPS	External troubleshooting is not possible Replace the DPS.
P0659	DPS	PHASE A_HIGH	DPS motor supply Damaged DPS	External troubleshooting is not possible Replace the DPS.
P0666	DPS	HIGH TEMPERATURE	High temperature of the DPS. Extreme usage of the unit.	Let the unit cool down.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0685	ECM	Accessory relay circuit	diagnosis related to Accessories or Light relay, Blown fuse, damaged or disconnected relay, damaged circuit wires, damaged connectors or damaged ECM output pins	Check fuse Disconnect Accessory relay and Lights relay & turn key switch (on w/lights) Measure voltage between harness connector PF1-10E and ground. (Expected value: 11 to 13 volts) Measure voltage between harness connector PF1-6D and ground. (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-K2 to PF1-12D (Expected value: < 2 ohms) Measure resistance from harness connector: ECM-K2 to PF1-7C (Expected value: < 2 ohms) Measure resistance between terminals 85 and 86 on the 2 relays. (Expected value: 70 to 90 ohms)
P0686	ECM	Accessory relay circuit shorted to ground or open circuit	diagnosis related to Accessories or Light relay, Blown fuse, damaged or disconnected relay, damaged circuit wires, damaged connectors or damaged ECM output pins	Check fuse Disconnect Accessory relay and Lights relay & turn key switch (on w/lights) Measure voltage between harness connector PF1-10E and ground. (Expected value: 11 to 13 volts) Measure voltage between harness connector PF1-6D and ground. (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-K2 to PF1-12D (Expected value: < 2 ohms) Measure resistance from harness connector: ECM-K2 to PF1-7C (Expected value: < 2 ohms) Measure resistance between terminals 85 and 86 on the 2 relays. (Expected value: 70 to 90 ohms)
P0687	ECM	Accessory relay circuit shorted to battery +	diagnosis related to Accessories or Light relay, Damaged relay, damaged circuit wires, damaged connector or damaged ECM output pins.	Check fuse Disconnect Accessory relay and Lights relay & turn key switch (on w/lights) Measure voltage between harness connector PF1-10E and ground. (Expected value: 11 to 13 volts) Measure voltage between harness connector PF1-6D and ground. (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-K2 to PF1-12D (Expected value: < 2 ohms) Measure resistance from harness connector: ECM-K2 to PF1-7C (Expected value: < 2 ohms) Measure resistance between terminals 85 and 86 on the 2 relays. (Expected value: 70 to 90 ohms)

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0691	ECM	Radiator fan circuit shorted to ground or open circuit	Blown fuse, damaged or disconnected fan relay, damaged circuit wires, damaged connectors or damaged ECM output pins.	Check fuse Disconnect radiator fan relay Measure voltage between harness connector PF1-3D and ground. (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-B3 to PF1-1E (Expected value: < 2 ohms) Measure resistance between terminals 85 and 86 on relay. (Expected value: 70 to 90 ohms)
P0692	ECM	Radiator fan circuit shorted to battery +	Damaged fan relay, damaged circuit wires, damaged connector or damaged ECM output pins.	Check fuse Disconnect radiator fan relay Measure voltage between harness connector PF1-3D and ground. (Expected value: 11 to 13 volts) Measure resistance from harness connector: ECM-B3 to PF1-1E (Expected value: < 2 ohms) Measure resistance between terminals 85 and 86 on relay. (Expected value: 70 to 90 ohms)
P0705	ECM	Subtransmission Internal switch Combinations error	Wrong Switch Combinations Damaged Switch, damaged circuit wires, damaged connectors or damaged ECM pins.	Check for disconnected transmission connector. Check for misplaced terminal on gearbox Measure resistance form each switch to ground in all position (PR & N) (Expected value if switch activated: < 2 ohms) Measure resistance from harness connector: ECM-J3 to PRN-1 (Expected value: < 2 ohms) Measure resistance from harness connector: ECM-H2 to PRN-2 (Expected value: < 2 ohms) Measure resistance from harness connector: ECM-H4 to PRN-3 (Expected value: < 2 ohms)
P0706	ECM	GBPS invalide gear position	GBPS position not plausible	Verify that gear position information change when you change the position of gear on vehicle. Disconnect GBPS Measure voltage between harness connector GBPS-1 and GBPS-3. (Expected value: 4.8 to 5.1 volts) Measure resistance from connector: ECM-D2 to GBPS-2 (Expected value: < 2 ohms) Measure resistance from connector: ECM-C3 to GBPS-3 (Expected value: < 2 ohms) Replace GBPS sensor

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PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P0707	ECM	Gear position sensor shorted to ground, or open circuit		Verify that gear position information change when you change the position of gear on vehicle. Disconnect GBPS Measure voltage between harness connector GBPS-1 and GBPS-3. (Expected value: 4.8 to 5.1 volts) Measure resistance from connector: ECM-D2 to GBPS-2 (Expected value: < 2 ohms) Measure resistance from connector: ECM-C3 to GBPS-3 (Expected value: < 2 ohms) Replace GBPS sensor
P0708	ECM	Gear position sensor circuit shorted to battery +		Verify that gear position information change when you change the position of gear on vehicle. Disconnect GBPS Measure voltage between harness connector GBPS-1 and GBPS-3. (Expected value: 4.8 to 5.1 volts) Measure resistance from connector: ECM-D2 to GBPS-2 (Expected value: < 2 ohms) Measure resistance from connector: ECM-C3 to GBPS-3 (Expected value: < 2 ohms) Replace GBPS sensor
P1562	ECM	System voltage low (from Key switch)	Blown fuse FC, battery failure, voltage regulator failure, damaged circuit wires or connection, damaged magneto generator. An external battery charger may have been used.	Measure battery voltage with engine stopped. (Expected value: 11 to 13 volts) Measure battery voltage with engine running. (Expected value: 13 to 14.7 volts) Check connections on voltage regulator. Check ground and positive connections on battery. Check ground on vehicle frame
P1563	ECM	System voltage high (from Key switch)	Damaged regulator. An external battery charger may have been used.	Measure battery voltage with engine stopped. (Expected value: 11 to 13 volts) Measure battery voltage with engine running. (Expected value: 13 to 14.7 volts) Check connections on voltage regulator. Check ground and positive connections on battery. Check ground on vehicle frame
P1619	ECM	TPS adaptation failure	Wrong throttle body mechanical position during reset of closed TPS or no initialization after ECM replacement.	Replace gauge if necessary.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P1F01	DPS	Power output overload	Motor short circuit or power output failed	Reset fault, If fault re-occur, replace DPS unit
P1F02	DPS	Power output overload (18V).	High voltage at the unit input.	Measure battery voltage with engine stopped. (Expected value: 11 to 13 volts) Measure battery voltage with engine running. (Expected value: 13 to 14.7 volts) test charging system as per shop manual
P1F03	DPS	Electronic Circuit Overheat	Hi temperature detected by on board temperature sensor.	Fault may become Active in extreme use situations. Reset fault and let DPS cool down. If fault re-occur in normal riding conditions, replace DPS unit
P1F05	DPS	Motor current sensor range/performance	Motor input vs output Current correlation check failed	External troubleshooting is not possible Replace the DPS.
P2300	ECM	Cyllinder 1 Ignition output shorted to ground	Damaged ignition coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Open the ECM Activation page in BUDS Perform an ignition coil activation and check if ignition coil is reacting as expected Measure resistance from harness connector: ECM-M2 to BA-3 (Expected value: < 2 ohms) Measure voltage between harness connector BA-2 and ground. (Expected value: 11 to 13 volts) Refer to the service manual for detailed ignition coil testing procedure.
P2301	ECM	Cyllinder 1 Ignition output short to V +	Damaged ignition coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Open the ECM Activation page in BUDS Perform an ignition coil activation and check if ignition coil is reacting as expected Measure resistance from harness connector: ECM-M2 to BA-3 (Expected value: < 2 ohms) Measure voltage between harness connector BA-2 and ground. (Expected value: 11 to 13 volts) Refer to the service manual for detailed ignition coil testing procedure.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P2303	ECM	Cyllinder 2 Ignition output shorted to ground	Damaged ignition coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Open the ECM Activation page in BUDS Perform an ignition coil activation and check if ignition coil is reacting as expected Measure resistance from harness connector: ECM-M1 to BA-1 (Expected value: < 2 ohms) Measure voltage between harness connector BA-2 and ground. (Expected value: 11 to 13 volts) Refer to the service manual for detailed ignition coil testing procedure.
P2304	ECM	Cyllinder 2 Ignition output short to V +	Damaged ignition coil, damaged circuit wires, damaged connector or damaged ECM output pins.	Open the ECM Activation page in BUDS Perform an ignition coil activation and check if ignition coil is reacting as expected Measure resistance from harness connector: ECM-M1 to BA-1 (Expected value: < 2 ohms) Measure voltage between harness connector BA-2 and ground. (Expected value: 11 to 13 volts) Refer to the service manual for detailed ignition coil testing procedure.
P2670	DPS	PHASE B_LOW	DPS motor supply Damaged DPS	External troubleshooting is not possible Replace the DPS.
P2671	DPS	PHASE B_HIGH	DPS motor supply Damaged DPS	External troubleshooting is not possible Replace the DPS.
P280A	ECM	Gear position sensor adaptation not plausible	GBPS learning position failure Wrong transmission mechanical position during GBPS reset, No initialization after ECM replacement.	Using BUDS performe a GBPS initialization.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P3000	SCM-LTD	Auxiliary line pressure sensor value out of range	Too many values of the external sensor out of range (negative pressure) Sensor disconnect Damaged circuit wires or connectors Faulty auxiliary line sensor Faulty SCM	1- Go to Activations - SCM and start Test routine. Verify that the Shock Absorber Pressure and the Auxiliary Line Pressure correlates in BUDS. If the test is done with no fault, the system is working properly. Check the harness and connection to see a potential source of intermittent dysfunction, if nothing is found clear the occurred fault and no more actions have to be done. If the Test Status shows a Fail_Comparison_Sensor_Test, verify for leak. If no leak found, verify the wiring and connector of the external sensor and the SCM. In the next action step, verify which of Shock absorber or Auxiliary Line Pressure sensors is defective. 2-Make sure to have no pressure in the system by activating the relief valve in Activation -SCM. Connect the supplied air hose into the compressor fitting and plug it to a known pressure supply in the range of 30 to 120 psi (as car tire) and compare it to the Shock absorber pressure and Auxiliary line pressure, it should be similar. If the Shock absorber pressure is off, change the SCM module. Go to next action step to perform Auxiliary Line Pressure sensor test. 4-Back probe the signal coming from the sensor between the pin 3 of the SCM electrical connector and the negative battery post (this action must be done with special probe to not damage the connector seal). The value must be between 0.9 and 8.3 Volts for a pressure range of 0 - 100 psi. If not go to next action step. If the value is in the range, change the SCM. 5- Unplug the Auxiliary Line Pressure sensor and make sure to have 12V between pin 3 and 1 on the connector coming from SCM. If 12V is present change the sensor, if not change the SCM.

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PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P3001	SCM-LTD	System suspension pumping delay exceeded	Pressure did not reach to desired set point after predefined delay Leak in the system Jammed compressor intake tube Damaged circuit wires or connectors Blown compressor fuse Corroded or disconnected compressor GND Faulty relay Faulty compressor Jammed check valve Faulty SCM	1- Check for leaks. If no leak found go to next action step. 2- Go to Activations - SCM and start Test routine. If the test is done with no fault, the system is working properly. Check the harness and connector to see a potential source of intermittent dysfunction, if nothing is found clear the occurred fault and no more actions have to be done. If the compressor is not starting check the compressor GND, harness and connection then continue to the next action step. If the compressor is running and the Test Status show a Fail_Pumping go to action step 6. 3-Test the compressor with an external power supply (as a 12V battery). If the compressor is functional go to next action step. 4-Unplug the relay and make sure to have 12V between battery negative post and relay pin 30. If not, check the compressor fuse and harness. If 12V is present, test the relay. If the relay is functional plug it back and go to next action step. 5- Disconnect the SCM, take a jumper wire and connect pin 8 to the battery negative post. If then the compressor starts, change the SCM. 6- Verify that the compressor intake tube (transparent) is not blocked or kinked. Unplug the SCM air tube (yellow) and start the compressor. If air blow out of the tube change the SCM. If not go to next action step. 7- During the Test routine verify the pressure sensors value. If the Shock Absorber Pressure and Auxiliary Line Pressure is not going up verify the first check valve at the exit of the compressor. If only the Shock Absorber Pressure is not going up verify the second check valve after green tube.

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
P3002	SCM-LTD	Release valve activation delay exceeded	Pressure did not drop to desired set point after predefined delay Release valve momentary blocked Blown valve fuse Damaged circuit wires or connectors Faulty valve block Faulty SCM	1- Go to Activations - SCM and start Test routine. If the test passed, the system is working properly. Check the harness and connection to see a potential source of intermittent dysfunction, if nothing is found clear the occurred fault and no more actions have to be done. Mud, dust or water in the release valve may explain the fault code. If the Test status shows a Fail_release, proceed to next action step. 2-Verify the release valve for obstruction. If nothing is found go to next action step. 3- Unplug the valve connector and verify that 12V is present between pin 1 of the connector on the SCM side and the battery negative post. If not, verify the valve fuse and relay (refer to schematics for more information). Verify the harness and the connection between the valve and the SCM. If everything is fine, go to next action step. 4- Verify the release valve activation by disconnecting the valve block electrical connector and applying 12V across pin 1 and 2 on valve connector. If the release valve is operating, change the SCM, otherwise change the valve block.
P3003	SCM-LTD	System high leakage detected	Leak in the system	1- Verify suspension system for air leaks
P3004	SCM-LTD	Bad checksum of Calibration memory section	Lost of power on reflash	If an update file is available reflash the SCM, if not clear the fault, if it returns, replace the SCM.
P3005	SCM-LTD	Communication network disconnected	Lost of CAN communication	1- Verify if all the module are present in BUDS (under Module Menu), if they are the vehicle is working properly. 2- Check continuity between the cluster, ECM and SCM CAN network.
U0073	DPS	CAN bus off, no messages	Damaged circuit wires or damaged DPS pins.	Disconnect MPI2 from DB connector. Measure resistance between DB-1 and DB-2 (Expected value = 50 to 70 ohms). Measure resistance between DB-1 and DPS1-C (Expected value < 5 ohms). Measure resistance between DB-2 and DPS1-D (Expected value < 5 ohms).

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
U0073	ECM	CAN bus off, no messages	Damaged circuit wires or damaged CLUSTER pins.	Disconnect MPI2 from DB connector. Measure resistance between DB-1 and DB-2 (Expected value = 50 to 70 ohms). Measure resistance between DB-1 and ECM-B1 (Expected value < 2 ohms). Measure resistance between DB-2 and ECM-C1 (Expected value < 2 ohms).
U0100	DPS	Lost communication with ECM (lost of CAN ID's)	Damaged CAN Bus wires to ECM, damaged DPS/ECM pins.	Disconnect MPI2 from DB connector. Measure resistance between DB-1 and DB-2 (Expected value = 50 to 70 ohms). Measure resistance between DB-1 and ECM B1 (Expected value < 5 ohms). Measure resistance between DB-2 and ECM C1 (Expected value < 5 ohms).
U0155	DPS	Lost communication with CLUSTER	Damage CAN Bus wires to cluster Damaged circuit wires or damaged Cluster module pins.	Measure voltage between harness connector CL-17 and ground. (Expected value = 11 to 13 volts) Disconnect MPI2 from DB connector. Measure resistance between DB-1 and DB-2 (Expected value = 50 to 70 ohms). Measure resistance between DB-1 and CL-4 (Expected value < 5 ohms). Measure resistance between DB-2 and CL-19 (Expected value < 5 ohms).
U0155	ECM	Lost communication with CLUSTER	Missing CLUSTER CAN ID Module internal error Damaged circuit wires or damaged module pins.	Measure voltage between harness connector CL-17 and ground. (Expected value = 11 to 13 volts) Disconnect MPI2 from DB connector. Measure resistance between DB-1 and DB-2 (Expected value = 50 to 70 ohms). Measure resistance between DB-1 and ECM-B1 (Expected value < 2 ohms). Measure resistance between DB-2 and ECM-C1 (Expected value < 2 ohms). Measure resistance between DB-1 and CL-19 (Expected value < 2 ohms). Measure resistance between DB-2 and CL-18 (Expected value < 2 ohms).

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
U0155	ECM	Lost communication with CLUSTER (lost of CAN ID's)	Missing CAN ID Module internal error Damaged circuit wires or damaged module pins.	Check for Cluster fault or ECM fault Measure voltage between harness connector CL-17 and ground. (Expected value = 11 to 13 volts) Disconnect MPI2 from DB connector. Measure resistance between DB-1 and DB-2 (Expected value = 50 to 70 ohms). Measure resistance between DB-1 and ECMB-C1 (Expected value < 2 ohms). Measure resistance between DB-2 and ECMB-C2 (Expected value < 2 ohms). Measure resistance between DB-1 and CL-19 (Expected value < 2 ohms). Measure resistance between DB-2 and CL-18 (Expected value < 2 ohms).
U0155	SCM-XMR	Communication network disconnected	Lost of CAN communication	1- Verify if all the module are present in BUDS (under Module Menu), if they are the vehicle is working properly. 2- Check continuity between the cluster, ECM and SCM CAN network.
U0167	ECM	Lost communication with Vehicle Immobilizer Control Module	The Vehicle Immobilizer is reporting an electrical fault on the communication line.	Check for dirty or oxidized Key contact. Clean key contact if needed. Check for broke key contact Ensure sensor connector is fully inserted. Measure resistance between ECMB-A1 and CC-C (Expected value < 2 ohms). Measure resistance between ECMB-C2 and CC-E (Expected value < 2 ohms).
U0167	ECM	Lost communication with Vehicle Immobilizer Control Module	The Vehicle Immobilizer is reporting an electrical fault on the communication line.	Check for dirty or oxidized Key contact. Clean key contact if needed. Check for broke key contact Ensure sensor connector is fully inserted. Measure resistance between ECMB-A1 and CC-C (Expected value < 2 ohms). Measure resistance between ECMB-C2 and CC-E (Expected value < 2 ohms).
U0300	ECM	Invalid Security Exchange received	Incorrect ECM or CLUSTER, Incorrect software version.	Install the proper ECM or CLUSTER on vehicle. Update security coding using BUDS
U0400	DPS	Variant Coding failure Software incompatibility	Faulty variant coding Faulty programming	Check in the BUDS Tab "vehicle configuration" if the DPS option is checked. Reflash the DPS with the latest software

PCODE	MODULE	DESCRIPTION	CAUSE	ACTION
U0400	SCM-XMR	Variant coding failure	Faulty variant coding Faulty programming	1- Verify in Setting - Vehicle Configuration page is correctly set up. 2- If Update File is available reflash the SCM. If not, clear the fault, if it returns replace the SCM.
U0400	SCM-LTD	Variant coding failure	Faulty variant coding Faulty programming	1- Verify in Setting - Vehicle Configuration page is correctly set up. 2- If Update File is available reflash the SCM. If not, clear the fault, if it returns replace the SCM.
U0426	ECM	Invalid Data Received From Vehicle Immobilizer Control Module	The Vehicle Immobilizer could not read the number of the access key.	Check for dirty or oxidized Key contact. Clean key contact if needed. Check for broke key contact Ensure sensor connector is fully inserted. Measure resistance between ECMB-A1 and CC-C (Expected value < 2 ohms). Measure resistance between ECMB-C2 and CC-E (Expected value < 2 ohms).
U3001	DPS	Module improper shutdown	Lost of power on DPS that can be caused by damaged circuit wires or damaged DPS pins.	Check the two DPS fuses Ensure DPS connector is fully inserted. Check for Damaged tail light, DPS, Cluster circuit wires Check for damaged DPS pins.

ELECTRONIC FUEL INJECTION (EFI)

SERVICE TOOLS

Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	5, 9, 15, 18, 20–22
FLUKE 115 MULTIMETER	529 035 868	5, 9, 15, 20–22
OETIKER PLIERS	295 000 070	11

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	11, 16, 22
XPS SYNTHETIC GREASE	293 550 010	19

GENERAL

⚠ WARNING

Fuel is flammable and explosive under certain conditions. Ensure work area is well ventilated. Do not smoke or allow open flames or sparks in the vicinity.

⚠ WARNING

Fuel lines remain under pressure at all times. Always proceed with care and use appropriate safety equipment when working on pressurized fuel system. Wear safety glasses. Wipe off any fuel spillage. Do not allow fuel to spill on hot engine parts and/or on electrical connectors.

⚠ WARNING

Replace any damaged, leaking or deteriorated fuel lines or connections. Always, pressurize the fuel system if any fuel related component was disconnected or removed. Proceed with care when removing/installing high pressure test equipment.

SYSTEM DESCRIPTION

Refer to the appropriate *ENGINE MANAGEMENT SYSTEM* subsection for a general layout of the various EFI system components.

The electronic fuel injection system (EFI) is comprised of various sensors used for detecting ongoing operating conditions of the engine and vehicle, and includes all the components that perform the required adjustments to the engine.

Electrical System

ECM (Electronic Control Module)

The ECM controls the electrical system and the engine management functions, by processing the information given by various sensors.

EFI Sensors

The ECM reads the inputs from the sensors which it compares to predetermined parameters stored in the ECM, makes computations, and activates the outputs accordingly (injectors, ignition coils etc.).

Signals from sensors are used by the ECM to determine the injection and ignition parameters (referenced to fuel maps) as required to maintain the optimum air-fuel ratio.

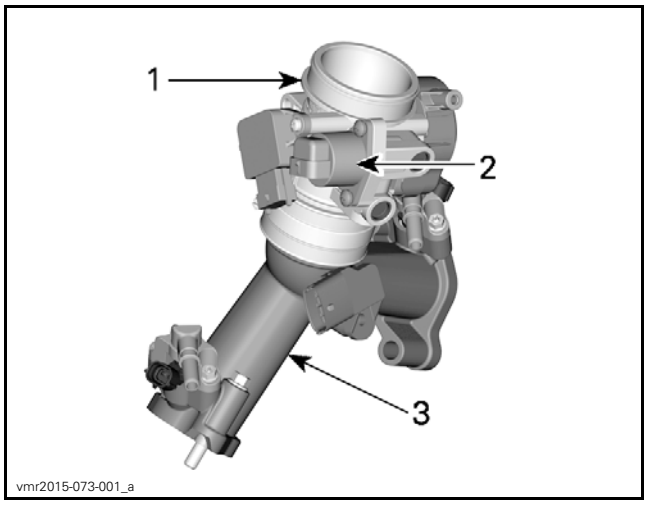
Air Intake System

Refer to the applicable *AIR INTAKE SYSTEM* subsection for additional information.

Throttle Body

The throttle body is mounted on the intake manifold.

Air for combustion, drawn in by the engine, flows through the air intake system, then through the throttle body where it is regulated by a throttle plate.



TYPICAL
1. *Throttle body*
2. *Idle air control valve (IACV)*
3. *Intake manifold*

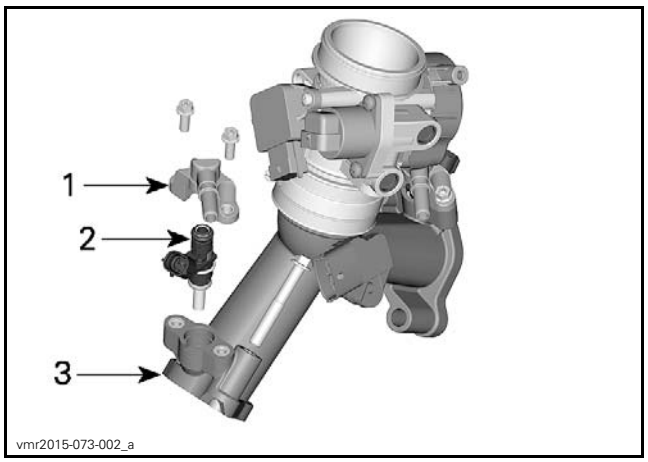
Fitted on the throttle body, a throttle plate regulates the amount of air that enters the engine.

A TPS is incorporated on the throttle body. It provides a signal to the ECM of the actual throttle plate position.

An idle air control valve (IACV) is also incorporated on the throttle body, It allows the ECM to control the idle speed while the throttle plate is closed.

Fuel System

Refer to the applicable *FUEL TANK AND FUEL PUMP* subsection for additional information.



1. *Fuel rail*
2. *Fuel Injector*
3. *Intake manifold*

Fuel Rail

Two fuel rails, one for each injector, are mounted on the intake manifold. The fuel rails, which are used to secure the injectors to the manifold, also provide to the injectors the fuel pressure that they receive from the fuel pump.

The fuel pressure applied to the fuel rails is regulated by the fuel pressure regulator located in the fuel pump module.

Fuel Injectors

The fuel injectors are used to inject fuel into the intake ports of the cylinder head. One injector is used per cylinder.

Fuel Pump

An electric fuel pump with an integrated pressure regulator and fuel system filters is used. For more details on the fuel pump unit, refer to *FUEL TANK AND FUEL PUMP* subsection.

ADJUSTMENT

IDLE SPEED

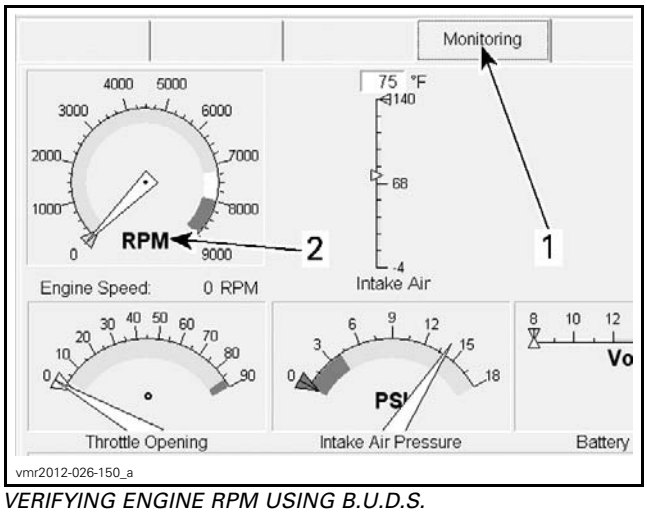
Idle speed is not adjustable. The ECM controls the IACV.

NOTICE Never attempt to adjust the sealed idle stop screw. It is calibrated at the factory. If the screw adjustment is changed, the throttle body must be replaced.

The vehicle multifunction gauge can provide an accurate digital readout of the engine's idle speed.

The engine RPM may also be verified using the applicable B.U.D.S. software version, refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

In B.U.D.S., click the following:
– **Read Data** button
– **Monitoring** tab
– **ECM** tab.



VERIFYING ENGINE RPM USING B.U.D.S.
1. **Monitoring** *tab*
2. *Engine RPM indication*

NOTE: The multifunction gauge and B.U.D.S. use the same signal to provide the engine RPM indication.

CLOSED THROTTLE AND IDLE ACTUATOR RESET

This operation performs a reset of the values in the ECM.

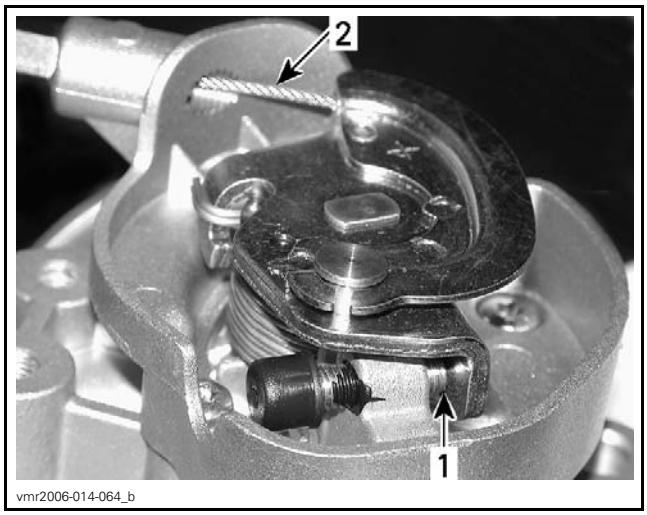
This reset is very important. The setting of the TPS will determine the basic parameters for all fuel mapping and several ECM calculations and the setting of the idle air control valve will determine the basic parameters for the idle speed control of the engine.

Closed throttle and idle actuator reset must be done if:

– TPS is loosened, removed or replaced
– Throttle body is replaced
– Idle air control valve is replaced
– ECM is replaced.

NOTICE **An improperly set TPS or IACV may lead to poor engine performance and emission compliance could possibly be affected. In addition, improper IACV reset may lead to poor engine starting, improper idle (too low or too high) and engine stop on deceleration.**

Remove throttle body cap and ensure the throttle cam of throttle body rests against set screw without any tension in the cable.

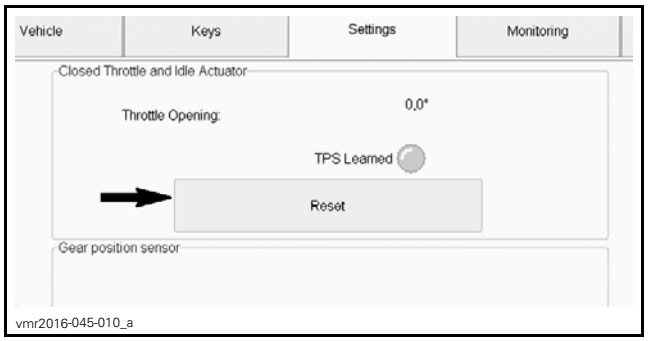


1. Contact here
2. Free-play here

Open throttle approximately one quarter then quickly release. Repeat 2 - 3 times to settle throttle plate. If stopper does not rest against its stop lever, perform throttle cable adjustment. Refer to *THROTTLE CABLE* in this subsection.

To reset IACV and TPS, perform the following:

1. Connect the vehicle to the latest applicable B.U.D.S. version, refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. In B.U.D.S., click the following:
   – **Read Data** button
   – **Setting** tab
   – **ECM** tab
3. Click on the Reset button in the **Closed Throttle and Idle Actuator** area.



If operation is wrong, an error message will be displayed.

If TPS is not within the allowed range while resetting the Closed Throttle and Idle Actuator, the ECM will generate a fault code and will not accept the setting. Repeat the reset procedure.

4. Start engine and make sure it operates normally through its full engine RPM range. If fault codes appear, refer to *DIAGNOSTIC AND FAULT CODES* subsection for more information.

TROUBLESHOOTING

DIAGNOSTIC TIPS

Engine problems are not necessarily related to the fuel injection system.

It is important to ensure that the engine and propulsion system, fuel delivery and electrical systems are functioning normally.

For diagnostics purposes, use B.U.D.S. software. See *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

After a problem has been solved, be sure to clear the fault(s) in the ECM using the B.U.D.S. software.

⚠ WARNING

Electrical actuators and electronic modules may be powered up as soon as the ignition switch is set to ON and emergency engine stop switch is set to RUN. Always disconnect the battery prior to disconnecting any electrical or electronic parts.

Never use a battery charger to temporarily substitute the battery as it may cause the ECM to function erratically, or not at all.

Check related-circuit fuse solidity and condition with an ohmmeter. A visual inspection could lead to a false diagnosis.

Electrical Related Problems

It is important to check the following in the electrical system:
- Battery voltage
- Fuses
- Ground connections
- Wiring and connectors.

Ensure that all electronic components are genuine OEM. Any modification to the wiring harness may lead to poor system operation or generate fault codes.

Electrical Connections

Pay particular attention to ensure that terminals and pins are not out of their connectors, corroded, or out of shape.

When probing terminals, pay attention not to deform the terminals as this could cause a loose or intermittent connection that would be difficult to troubleshoot.

PROCEDURES

ENGINE CONTROL MODULE (ECM)

As a first troubleshooting step, always check for applicable fault codes using B.U.D.S. software.

Quick Test to Validate ECM Operation

Turn ignition key to ON.

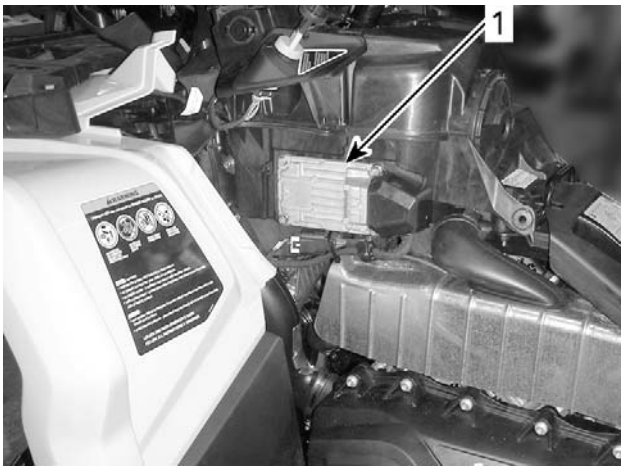
Set emergency engine stop switch to RUN.

NOTE: This wakes up the ECM, which then turns on the following. If the following do not turn on, check ECM fuse (PF1 (F5 and F8)).

QUICK INDICATION THAT ECM IS FUNCTIONING (assuming the observed component is in good working order)
Multifunction gauge turns ON.
Fuel pump turns on for approx. 5 seconds.
Rear lights turn on.
Headlamps turn on (ignition key on with lights position).

ECM Access

Refer to *BODY* and remove the LH panel.



LH PANEL REMOVED
1. ECM location

ECM Connector

There is one connector connected to the ECM. It links:
- Engine harness
- Vehicle system control harness.

For connector information, cleaning and probing, refer to *WIRING HARNESS AND CONNECTORS* subsection.

Testing the ECM Power Supply

REQUIRED TOOL	
ECM ADAPTER TOOL (P/N 529 036 166)	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

1. Disconnect ECM connector.
2. Install ECM connector on the ECM ADAPTER TOOL (P/N 529 036 166).
3. Install a jumper wire between K1 and M4 on the ECM adapter tool.
4. Turn the ignition switch to ON.
5. Set emergency engine stop switch to RUN.
6. Set multimeter to Vdc and check for voltage as follows.

ECM ADAPTER	BATTERY	VOLTAGE
L1	Negative post	Battery voltage

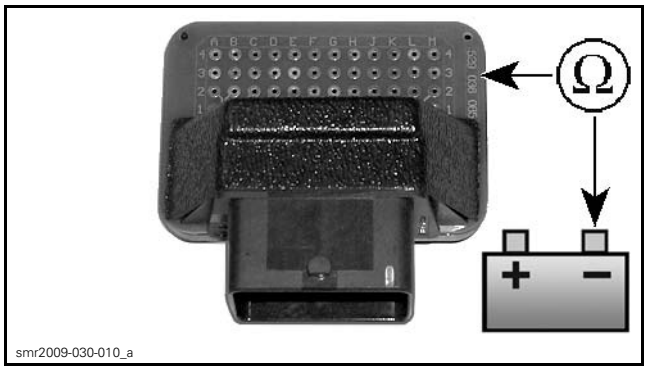
If voltage is not measured, check the following:
– ECM fuse
– Main relay
– Wiring and connections, refer to the *WIRING DIAGRAM*.

Testing the Continuity of ECM Ground Circuits

REQUIRED TOOL	
ECM ADAPTER TOOL (P/N 529 036 166)	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

1. Disconnect ECM connector.
2. Install the ECM ADAPTER TOOL (P/N 529 036 166) on ECM connector.
3. Set multimeter to Ω and probe adapter terminals as per following table.

ECM ADAPTER	BATTERY POST	RESISTANCE
Pins M3 and M4	Ground	Close to 0 Ω (continuity)



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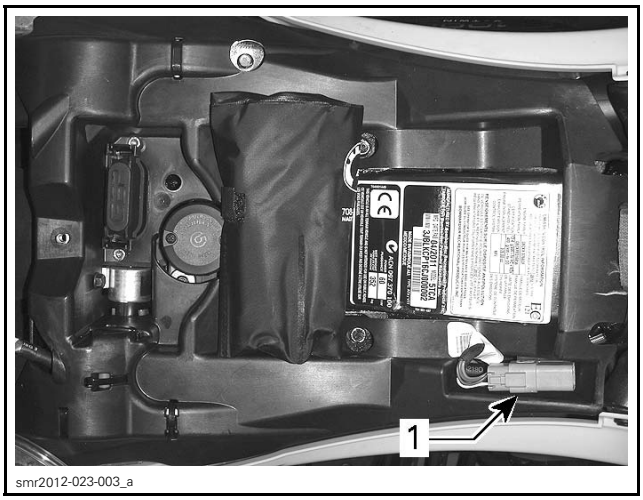
If any measurement is out of specification, refer to *POWER DISTRIBUTION* and check all grounds.

Testing the CAN Resistor

Remove the DPS1 connector (4-pin connector) from DPS module (if so equipped). Refer to *STEERING SYSTEM* subsection.

1. Remove seat to access the diagnostic link connector (DB).
2. Remove diagnostic link connector from its holder.



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TYPICAL
1. Diagnostic link connector (DB)

3. Set a multimeter to Ω setting.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

4. Measure the resistance of the CAN resistors as per following table.

CAN RESISTOR TEST	
DIAGNOSTIC LINK CONNECTOR	RESISTANCE
Pins 1 and 2	Approximately 60 Ω

TEST RESULT	
READING	RESULT
Approximately 60 Ω	ECM and CLUSTER CAN wires and resistors good
Approximately 120 Ω	ECM CAN resistor open, or CLUSTER CAN resistor open, or CAN wire to CLUSTER or ECM open
Infinite (open circuit)	CAN wire to DB connector open circuit

If 120 ohms is read, isolate the CLUSTER from CAN by disconnecting it and measuring again at the diagnostic link connector.

If 120 ohms is still read, the ECM CAN resistor and wires are good. Check for continuity of the CLUSTER CAN wires, refer to *WIRING DIAGRAM*.

If an open circuit is read, the ECM CAN resistor (or wire) is open. Check for continuity of the ECM CAN wires, refer to *WIRING DIAGRAM* to determine if the wires or the resistor is at fault.

If the CAN resistor of a module is at fault, replace that module.

If a module cannot communicate and the CAN resistor and wires test good, try a new module.

5. Reconnect DPS1 to DPS module,

Removing the ECM

NOTE: If a new ECM is to be installed, first read the procedures in *ECM REPLACEMENT* in this subsection.

1. Disconnect battery cables.

NOTICE **Always disconnect the BLACK (–) battery cable first, then disconnect RED (+) cable.**

2. Disconnect ECM connector.
3. Unscrew all retaining screws and pull out ECM.

Installing the ECM

Reverse removal procedure however, pay attention to the following.

1. Reconnect ECM connector.
2. Reconnect battery cables.

⚠ WARNING

Always reconnect the RED (+) battery cable first, then reconnect BLACK (–) cable.

3. If a new ECM is installed, refer to *ECM REPLACEMENT* in this subsection.

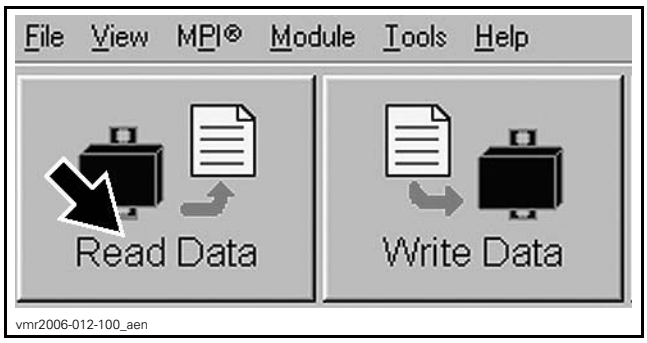
Replacing the ECM

1. Transfer ECM data. Refer to *ECM DATA TRANSFER* for complete procedure.
2. Perform the *CLOSED THROTTLE AND IDLE ACTUATOR RESET*.
3. Program the vehicle ignition key(s) in the new ECM.
4. Calibrate the IACV. Refer to *IACV CALIBRATION* in this subsection.

ECM Data Transfer

To transfer the original ECM recorded information to the new ECM, use the B.U.D.S. software and proceed as follows.

1. Connect the original ECM to vehicle.
2. In B.U.D.S., click the Read Data button to load the information from the original ECM.



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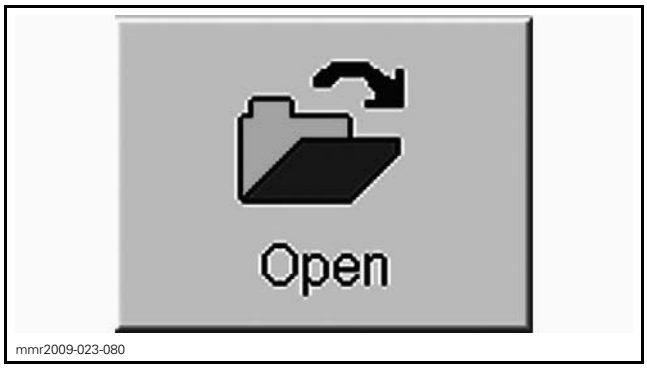
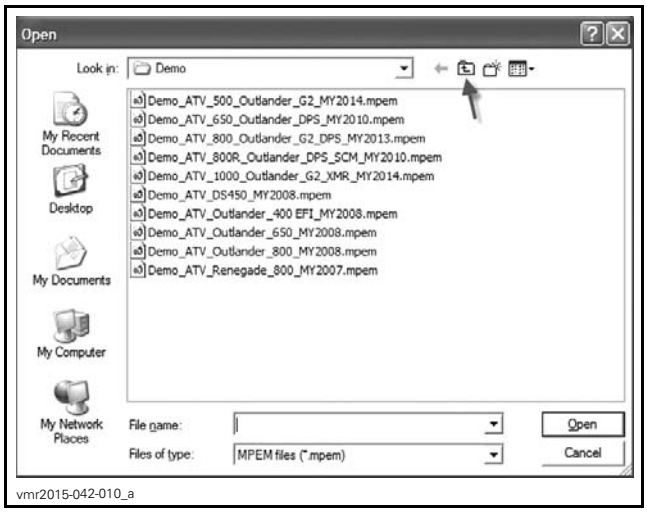
NOTE: Keep B.U.D.S. running while replacing ECMs. The data will remain stored in the PC computer as long as B.U.D.S. is running.

3. Get the Data from the saved .mpem file.
   3.1 Click on the Open button.



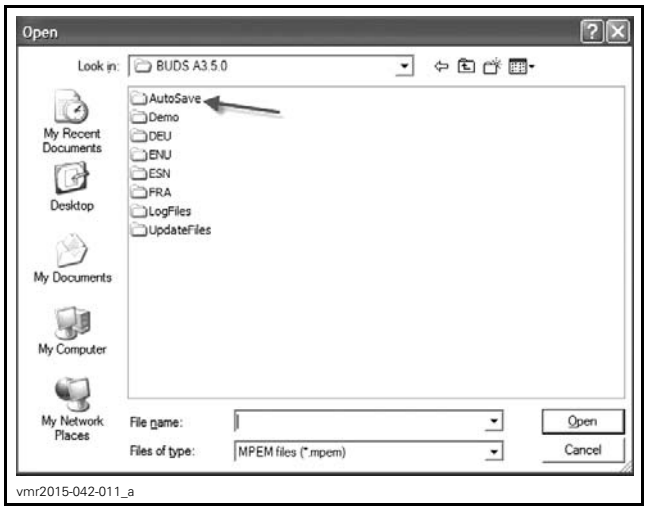
mmr2009-023-080

3.2 Click once on the Folder Up button in the open box.



vmr2015-042-010_a

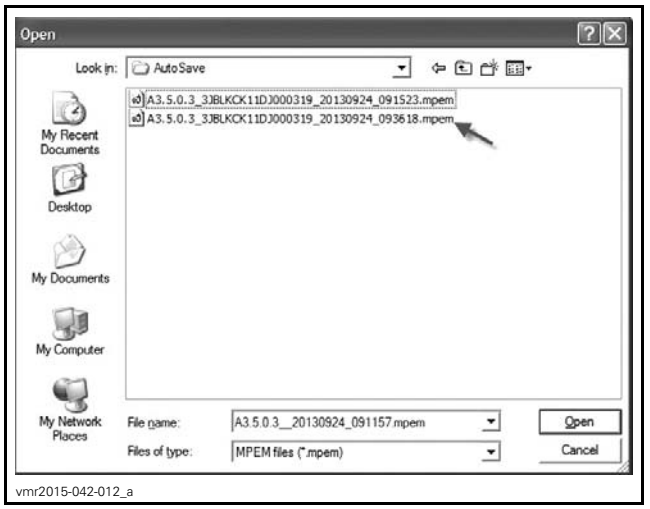
3.3 Double click on the AutoSave folder.



vmr2015-042-011_a

NOTE: You may have to go to another AutoSave folder from a previous version of B.U.D.S.

3.4 Choose the latest file saved for this specific vehicle.



vmr2015-042-012_a

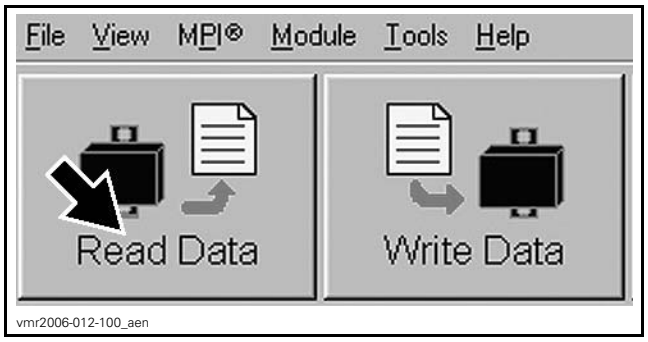
IMPORTANT: Ensure to use the file that specifically matches the vehicle you are servicing.

NOTE: The file name structure is as follows:
BUDS version_VIN_date read (yyyymmdd)_hour read (hhmmss).mpem
Example: **A3.5.0.3_3JBLKCK11DJ000319_20130924_093618.mpem** B.U.D.S. version = A3.5.0.3 VIN = 3JBLKCK11DJ000319 Date file was read = 2013-09-24 Hour file was read = 09h 36m 18s

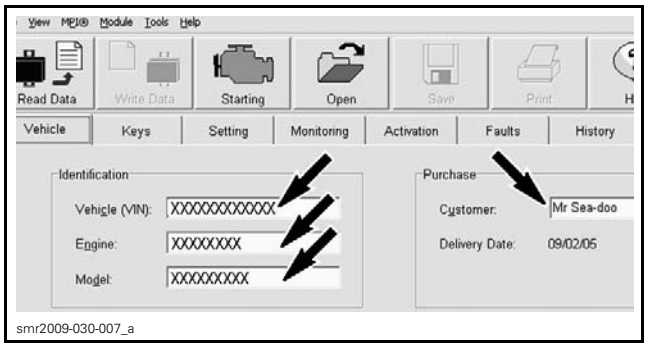
4. Go to the Vehicle tab and record the following information.
   - Vehicle (V.I.N.) number
   - Engine number (without the leading "M")
   - Model number
   - Customer.

vmr2008-022-008

5. Remove the original ECM.
6. Install the new ECM.
7. In B.U.D.S., click the **Read Data** button to read the new ECM.

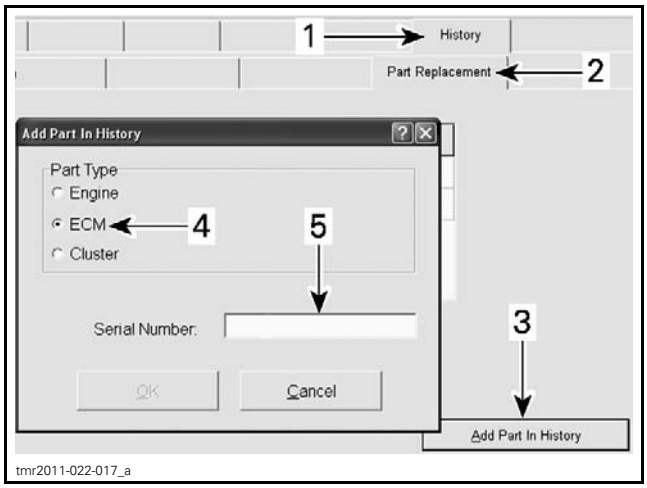


8. Select the **Vehicle** tab and enter the information you recorded previously.
   - Vehicle serial number
   - Engine number (do not enter the "M" at the beginning of the engine number)
   - Enter model number.
   - Customer name.



VEHICLE TAB

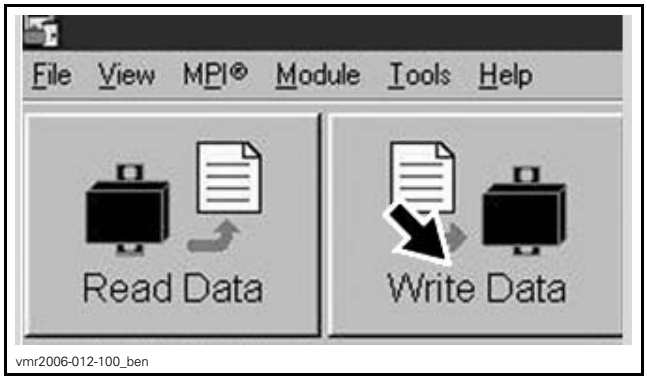
9. Click on the following tabs:
   - **History**
   - **Part Replacement**
   - **Add Part in History**.
10. Enter the **old** ECM serial number in the Add Part In History window.



ADDING PART IN HISTORY
1. **History** *tab*
2. **Part Replacement** *tab*
3. **Add part in history** *button*
4. **ECM** *selection*
5. *Add ECM serial number here*

NOTE: The ECM serial number can be found on the ECM sticker that also identifies the part number.

11. Click on the **OK** button.
12. Click on the **Write Data** button.



FUEL INJECTOR

Refer to the applicable *ENGINE MANAGEMENT SYSTEM* subsection for component and connector locations.

Fuel Injector Leak Test

Carry out the *FUEL PUMP PRESSURE TEST* as detailed in the *FUEL TANK AND FUEL PUMP* subsection.

Testing the Fuel Injector Input Voltage

Disconnect the fuel injector electrical connector.

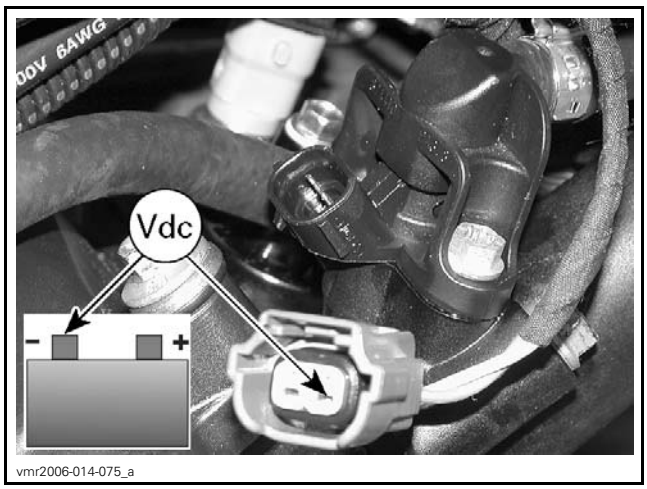
Turn on ignition switch.

Set emergency engine stop switch to RUN.

NOTE: Ensure to read voltage before ECM automatically turns off.

Use a multimeter and set it to Vdc. Read voltage.

CYLINDER	INJECTOR CONNECTOR		MEASUREMENT
	WIRE		
FRONT	INJ1-2	BAT2 (-)	Battery voltage
REAR	INJ2-2		



TYPICAL

If supply voltage is not good, check fuse and if good, perform an *INJECTOR POWER CIRCUIT RESISTANCE TEST*.

If supply voltage is good, perform a *FUEL INJECTOR RESISTANCE TEST*.

Testing the Injector Power Circuit Resistance

Check continuity between main relay and injector as follows:

– Remove main relay.
– Disconnect the fuel injector connector.
– Use a multimeter and set it to Ω.
– Read resistance.

CYLINDER	INJECTOR CIRCUIT		MEASUREMENT
	WIRE		
FRONT	INJ1-2	PF1-B2	Close to 0 Ω
REAR	INJ2-2		

If continuity is not good, repair or replace wiring going to injector.

If continuity is good, perform the *FUEL INJECTOR RESISTANCE TEST*.

Testing the Fuel Injector Resistance

Disconnect ECM connector.

Install the ECM connector on the ECM ADAPTER TOOL (P/N 529 036 166).

Connect the fuel injector connector.

Using a FLUKE 115 MULTIMETER (P/N 529 035 868), check resistance value between terminals as follows.

FUEL INJECTOR RESISTANCE TEST AT ECM ADAPTER			
INJECTOR	FUSE BOX TERMINAL	ECM ADAPTER	RESISTANCE @ 20°C (68°F)
FRONT	PF1-B2	K4	11.4 - 12.6 Ω
REAR		L4	

If resistance value obtained is incorrect, perform an *INJECTOR GROUND CIRCUIT RESISTANCE TEST*.

Testing the Injector Ground Circuit Resistance

Disconnect the fuel injector connector.

Disconnect ECM connector.

Install ECM connector on the ECM ADAPTER TOOL (P/N 529 036 166).

Using a FLUKE 115 MULTIMETER (P/N 529 035 868), check resistance value between terminals as follows.

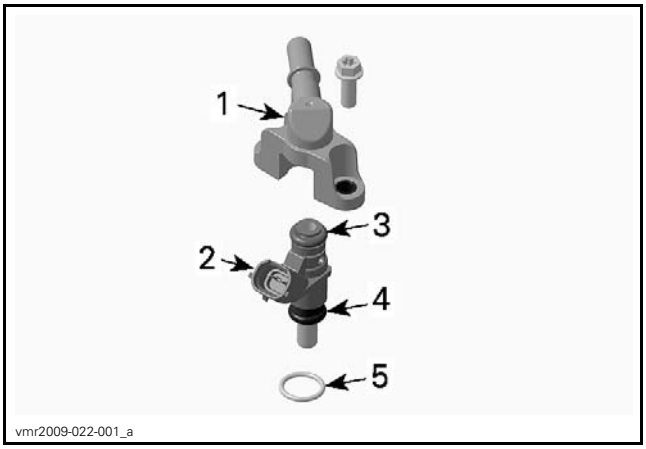
CYLINDER	INJECTOR GROUND CIRCUIT		MEASUREMENT
	WIRE	ECM ADAPTER	
FRONT	INJ1-1	K4	Close to 0 Ω
REAR	INJ2-1	L4	

If continuity is not good, repair or replace wiring going to injector.

If continuity is good, replace the injector.

Removing the Fuel Injector

Remove the fuel rail. Refer to *FUEL RAIL* in this subsection.



vmr2009-022-001_a

TYPICAL - FUEL RAIL ASS'Y
1. *Fuel rail*
2. *Fuel injector*
3. *Injector top O-ring*
4. *Injector bottom O-ring*
5. *Manifold O-ring*

Pull fuel injector out of the fuel rail.

Installing the Fuel Injector

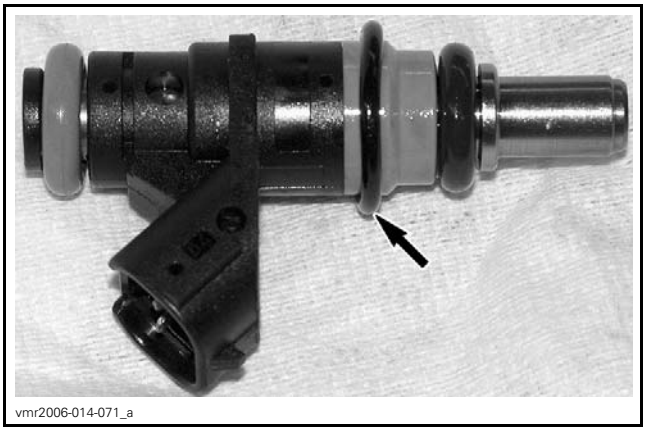
For the installation, reverse the removal procedure. Pay attention to the following details.

Apply a thin film of engine oil to O-rings to ease insertion in rail.

Install fuel injector with your hand. Do not use any tool.

FUEL INJECTOR INSTALLATION		
O-RINGS	New	Lubricate with engine oil

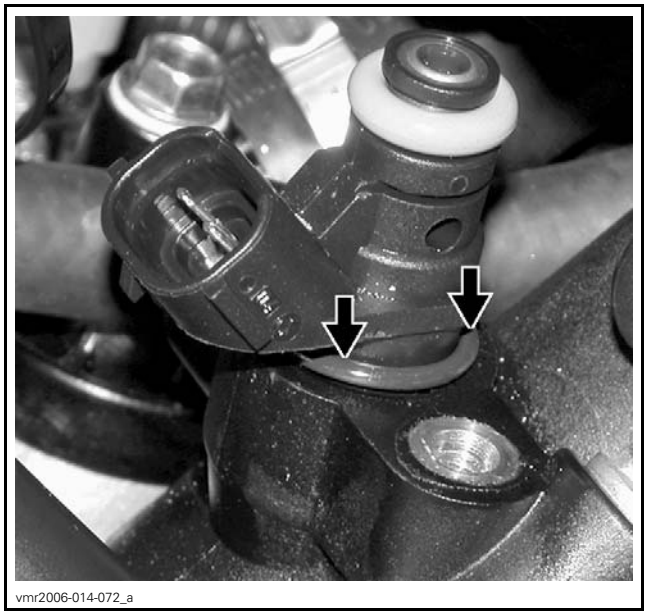
Position the manifold O-ring on injector as in following illustration.


vmr2006-014-071_a

TYPICAL - MANIFOLD O-RING POSITION

Carefully insert injector in manifold paying attention to the manifold O-ring.

NOTICE Gently push O-ring in evenly all around while inserting injector. O-ring must be completely inserted and not visible, before completing the insertion of the injector.


vmr2006-014-072_a

Firmly push injector until it bottoms out.

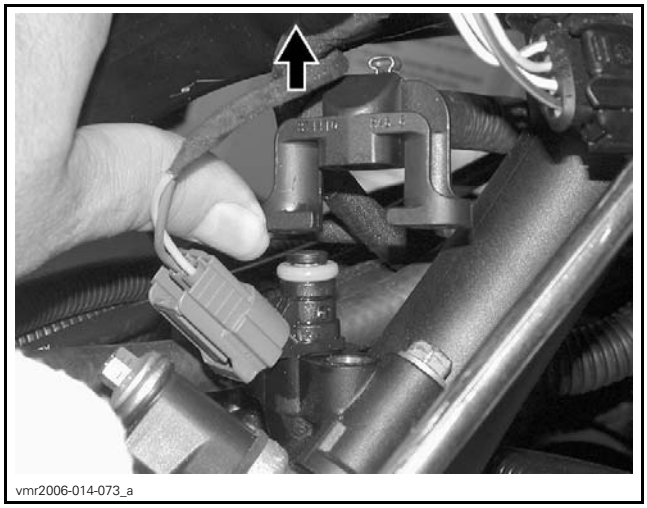
Reinstall fuel rail.

FUEL RAIL

Replacing the Fuel Rail

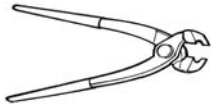
Removing the Fuel Rail

1. Disconnect fuel line to reach the rear injector. Refer to *FUEL TANK AND FUEL PUMP* subsection.
2. Unscrew rail retaining screws.
3. Gently pull rail off by hand.


vmr2006-014-073_a

TYPICAL

To disconnect fuel rail from hose, cut clamp on fuel hose. Refer to *FUEL TANK AND FUEL PUMP* for clamp removal/installation procedures.

REQUIRED TOOL	
OETIKER PLIERS (P/N 295 000 070)	

NOTE: If fuel rail is removed for access to fuel injector, it is not necessary to cut hose clamp. Only to replace fuel rail.

Installing the Fuel Rail

For installation, reverse the removal process however, pay attention to the following.

Install new clamps using pliers as per removal (if fuel rail was replaced).

Apply a thin film of engine oil to injector O-rings to ease insertion in rail.

INJECTOR O-RINGS	
SERVICE PRODUCT	Lubricate with engine oil

Install fuel rail and evenly tighten screws a little at a time each side.

TIGHTENING TORQUE	
Service product	LOCTITE 243 (BLUE) (P/N 293 800 060)
Fuel rail retaining screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

NOTE: Activate fuel pump a few times to built fuel pressure.

⚠ WARNING

Perform a fuel pressure test and ensure that there is no leak. Refer to *FUEL TANK AND FUEL PUMP*.

THROTTLE CABLE

Removing the Throttle Cable

Remove steering cover.

Remove LH side panel.

Disconnect throttle cable from throttle body. Refer to procedure in this subsection.

Disconnect throttle cable from throttle lever.

Remove throttle cable.

Installing the Throttle Cable

Reverse removal procedure.

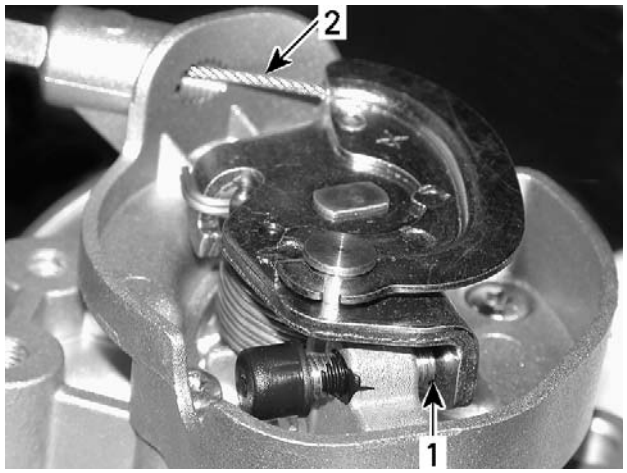
Proceed with *THROTTLE CABLE ADJUSTMENT* in this subsection.

Adjusting the Throttle Cable

Mechanically adjust the throttle cable as follows.

Handlebar and throttle cable must be at their normal position. Throttle cable routing must have been performed before adjusting cable.

Activate throttle lever a few times. Make sure throttle cam of throttle body rests against set screw without any tension in the cable.



vmr2006-014-064_b

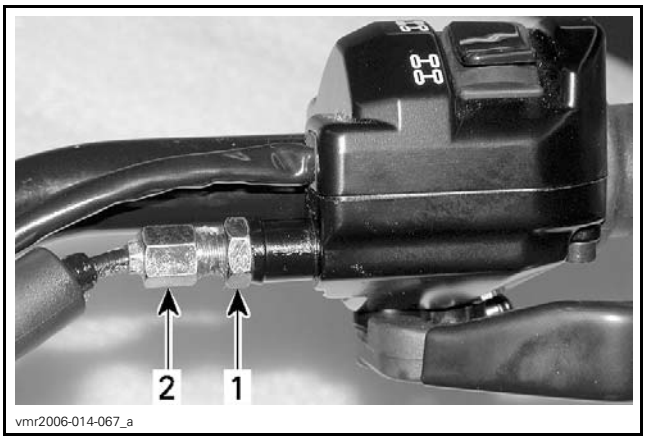
1. Contact here
2. Free-play here

⚠ CAUTION If there is no free-play at idle position, it may cause poor idling and startability problems. Improper cable adjustment will cause strain on cable and/or damage cable bracket or throttle lever at handlebar.

⚠ WARNING

Make sure idle speed stopper contacts throttle cam when throttle lever is fully released at handlebar.

If adjustment is needed, proceed with adjuster at handlebar. Adjust to have 2 mm (.079 in) free-play at the end of throttle lever. When done, slide back cable protector over adjuster.

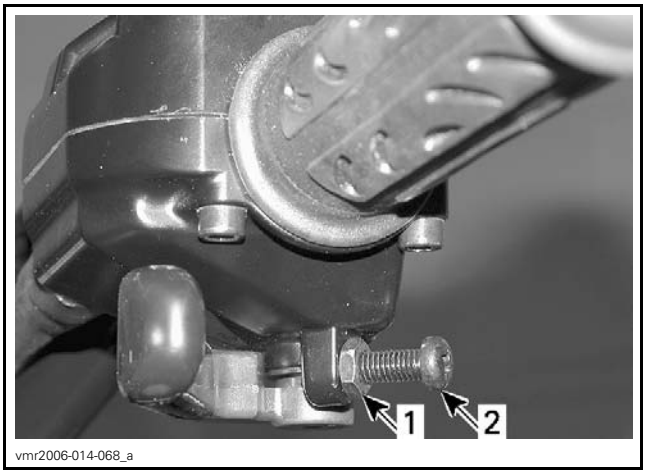


vmr2006-014-067_a

TYPICAL
1. *Adjuster lock nut*
2. *Adjuster*

Turn handlebar side to side and ensure there is still free-play in each position.

To ensure there is no strain in the cable at wide open position:
- Fully depress throttle lever and hold.
- Loosen adjuster lock nut/adjuster until it just releases lever.
- Turn adjuster clockwise until it touches lever again.
- From there, tighten adjuster 1/2 turn (to remove strain in cable).
- Tighten lock nut.
- Release throttle lever.



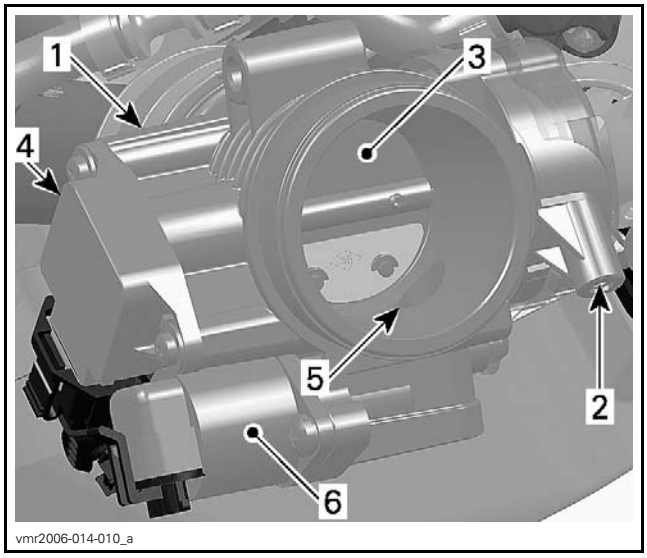
vmr2006-014-068_a

1. *Adjuster lock nut*
2. *Adjuster*

Reinstall throttle cable cover.

THROTTLE BODY

Throttle Body Description



vmr2006-014-010_a

1. *Throttle body*
2. *Throttle cable attachment*
3. *Throttle plate*
4. *TPS*
5. *Idle air bypass channel*
6. *Idle air control valve*

Throttle Body Access

Remove the RH side panel. Refer to *BODY* subsection.

Inspecting the Throttle Body

Check that the throttle plate moves freely and smoothly when depressing throttle lever.
- Check if throttle body idle set screw is loose or worn.
- Check if TPS is loose.
- Check if idle air control valve is loose.
- Check for corroded or damaged connectors.

NOTICE The throttle body must be replaced if idle set screw is loose or worn.

Cleaning the Throttle Body

1. Check throttle body cleanliness using a flashlight. Fully open throttle plate and verify:
   - Throttle body bore
   - Throttle plate edge.

Look for:
- Dirt
- Oily surfaces
- Carbon and salt deposits on throttle plate and the surrounding bore.

2. Clean as necessary.

3. Use a throttle body cleaner such as GUNK INTAKE MEDIC or an equivalent. Refer to manufacturer's instructions.

NOTICE Only use an appropriate throttle body cleaner that will not damage O-rings and EFI sensors.

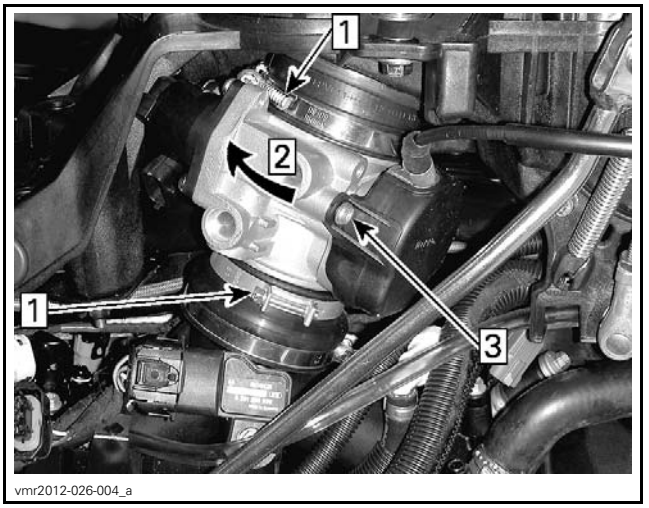
4. To avoid getting dirt into engine, spray cleaner on a clean rag then rub rag against throttle plate and bore. A toothbrush may also be used.
5. Gently open throttle plate and hold fully open to reach all surfaces.
6. To remove residual dirt, spray cleaner on throttle plate and on bore.
7. Reinstall removed parts.

Removing the Throttle Body

1. Remove the air intake silencer retaining screws.

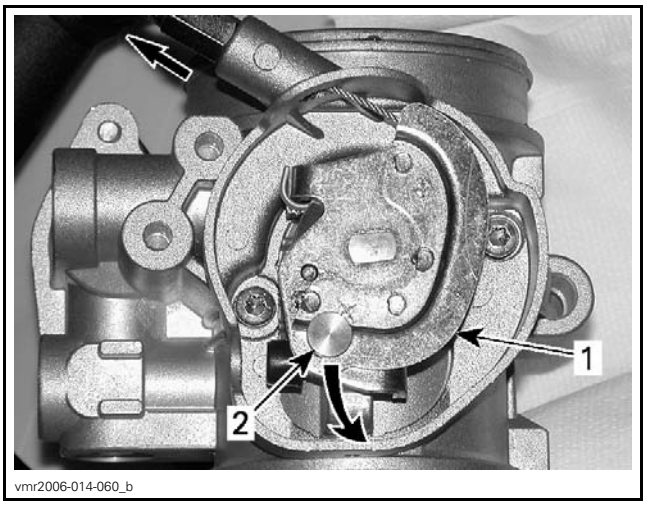
TYPICAL
1. Remove these screws

2. Lift rear of air intake silencer as much as possible and block in this position.
3. Unplug connectors from TPS and IACV.
4. Loosen both throttle body clamps.
5. Rotate throttle body to gain access to throttle cable.
6. Remove throttle cable cover.



TYPICAL
Step 1: Loosen
Step 2: Rotate
Step 3: Remove

7. Rotate throttle lever and pull out cable barrel.



TYPICAL
1. Throttle lever
2. Cable barrel

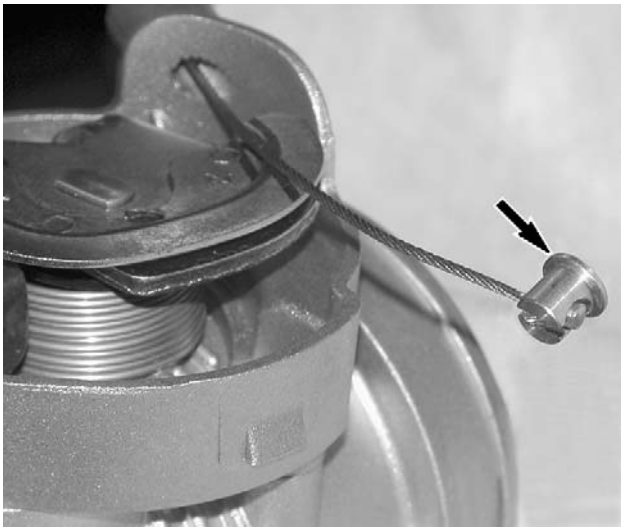
8. Remove barrel from cable.
9. Pull out throttle cable.
10. Pull out throttle body.

Installing the Throttle Body

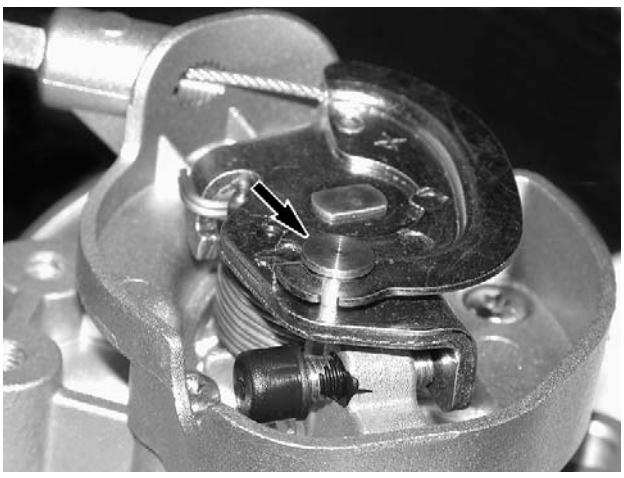
Installation of the throttle body is the reverse of the removal procedure. However, pay attention to the following.

Temporarily install throttle body into position.

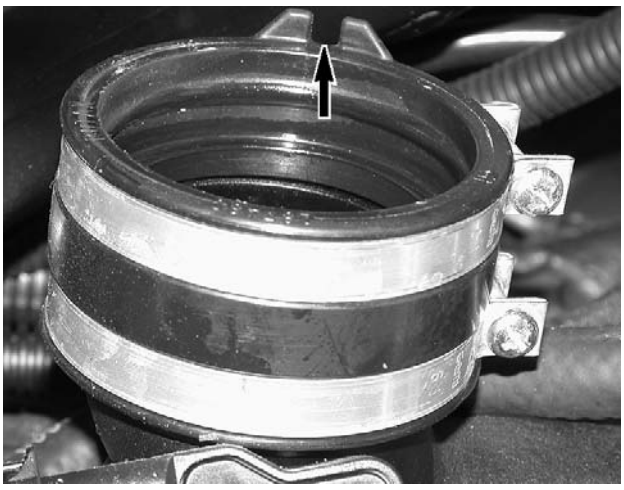
Properly install cable barrel to throttle cable end.

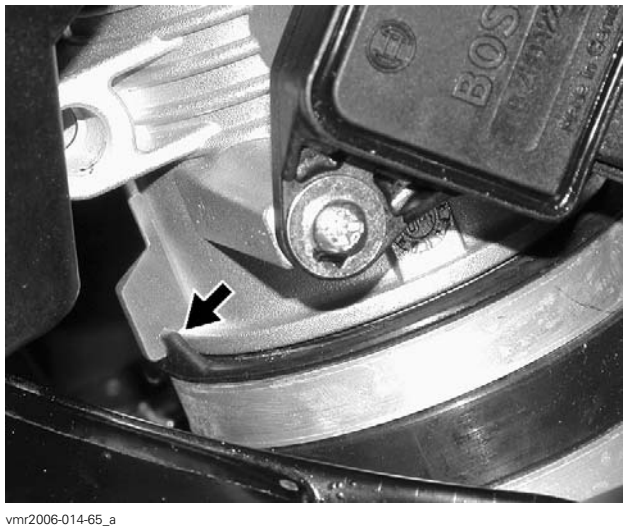

vmr2006-014-063_a

Hook cable to throttle lever.


vmr2006-014-064_a

Rotate throttle body into position and ensure to index throttle body tab with boot notch.


vmr2006-014-065_a


vmr2006-014-65_a

Tighten clamps.

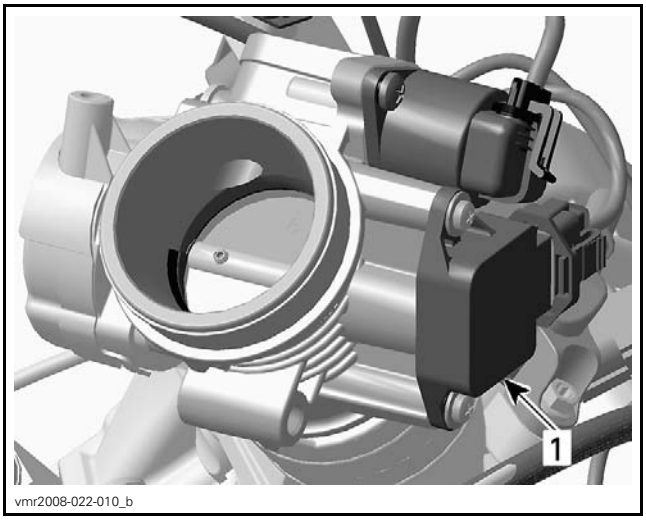
– Check throttle cable adjustment. Refer to *THROTTLE CABLE* in this subsection.
– If throttle body was replaced, perform the *CLOSED THROTTLE AND IDLE ACTUATOR RESET* and the *IACV CALIBRATION*. See procedures in this subsection.

THROTTLE POSITION SENSOR (TPS)

Refer to the applicable *ENGINE MANAGEMENT SYSTEM* subsection for component and connector locations.

General

The throttle position sensor (TPS) is a potentiometer that sends a signal to the ECM which is proportional to the throttle plate angle.



vmr2008-022-010_b

1. Throttle position sensor (TPS)

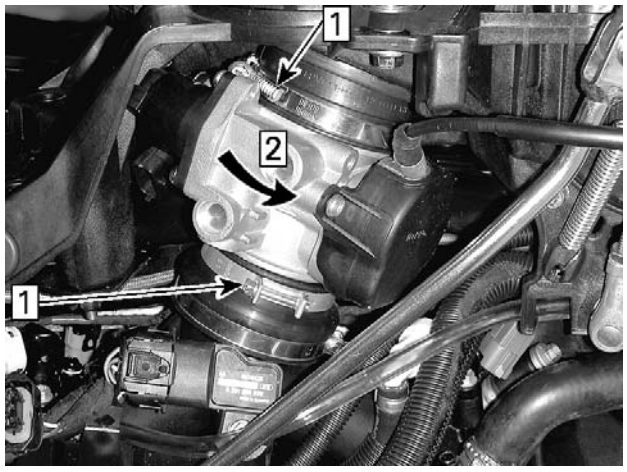
The ECM may generate several fault codes pertaining to the TPS. Refer to *DIAGNOSTIC AND FAULT CODES* subsection for more information.

TPS Access

Remove the RH side panel. Refer to *BODY* subsection.

Loosen both throttle body clamps.

Rotate throttle body to gain access to TPS.



vmr2012-026-004_b

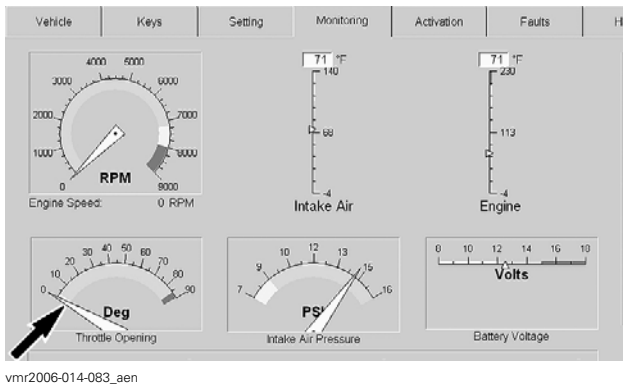
TYPICAL
Step 1: Loosen
Step 2: Rotate

Testing the TPS Wear

IMPORTANT: Prior to testing the TPS, ensure that mechanical components of throttle body are checked.

While engine is not running, activate throttle and pay attention for smooth operation without physical stops of the cable.

Using the B.U.D.S. software, use the Throttle Opening display under Monitoring.



vmr2006-014-083_aen

TYPICAL

Slowly and regularly depress the throttle. Observe the needle movement. It must change gradually and regularly as you move the throttle. If the needle "sticks", bounces, suddenly drops or if any discrepancy between the throttle movement and the needle movement is noticed, it indicates that the TPS needs to be replaced or the computer used may be too slow to transfer data fast enough for real time display.

Testing the TPS Resistance

Ensure correct throttle cable adjustment. Refer to *THROTTLE CABLE ADJUSTMENT* in this subsection.

Ensure TPS is connected to wiring harness.

Disconnect the ECM connector.

Using the following tools, check resistance values.

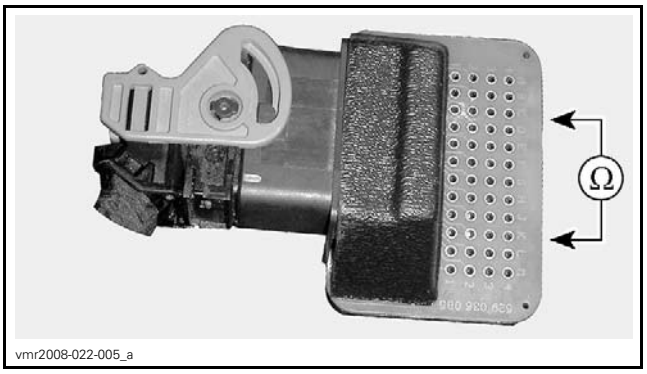
REQUIRED TOOL
ECM ADAPTER TOOL (P/N 529 036 166)
FLUKE 115 MULTIMETER (P/N 529 035 868)

570, 650 and 1000 Engines

ECM ADAPTER		THROTTLE IDLE POSITION	WIDE OPEN THROTTLE POSITION
PIN		RESISTANCE (Ω) @ 20°C (68°F)	
G3	G2	900-1600	2600-3100
G2	A1	1800-2200	1800-2200
G3	A1	2200-3100	800-1200

850 and 1000R Engines

ECM ADAPTER		THROTTLE IDLE POSITION	WIDE OPEN THROTTLE POSITION
PIN		RESISTANCE (Ω) @ 20°C (68°F)	
A1	G2	900-1600	2600-3100
G2	G3	1800-2200	1800-2200
G3	A1	2200-3100	800-1200



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NOTE: The resistance value should change smoothly and proportionally to throttle movement. Otherwise, replace TPS.

If resistance values are correct, perform the *TPS INPUT VOLTAGE TEST* below.

If resistance values are incorrect, check wiring harness. If wiring is faulty, repair/replace. If wiring is good, replace TPS.

Reconnect ECM connector.

Testing the TPS Input Voltage

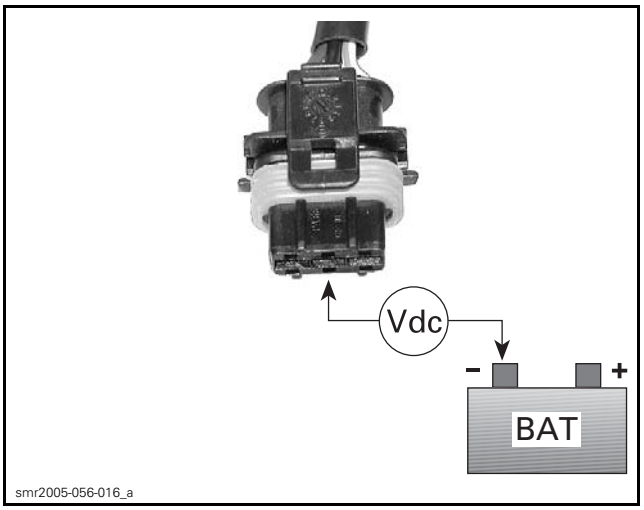
Disconnect connector from TPS.

Turn ignition key ON.

Set emergency engine stop switch to RUN.

Check the voltage readings from harness connector as follows.

ENGINES	CONNECTION	VOLTAGE
570 650 1000	Pin 1 with battery ground	0 V
850 1000R	Pin 3 with battery ground	
All	Pin 2 with battery ground	5.0 V



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If voltage test is not good, check/repair wiring harness. If wiring tests good, refer to *ECM REPLACEMENT*.

If voltage test is good, everything is in order (assuming resistance test was performed).

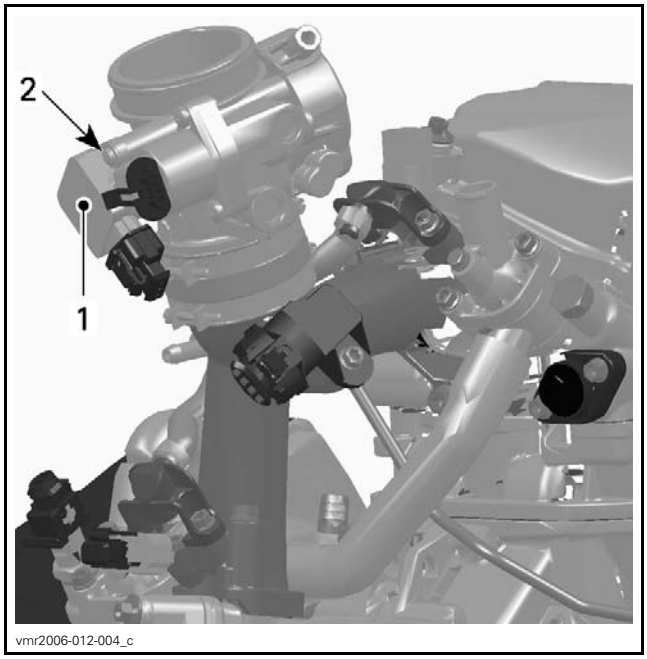
TPS Replacement

Refer to *TPS ACCESS* in this subsection to gain access to TPS.

Unplug connector from TPS.

Loosen TPS retaining screws.

Remove TPS.



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TYPICAL – THROTTLE BODY
1. TPS
2. Screws

Install the new TPS and tighten retaining screws to specification.

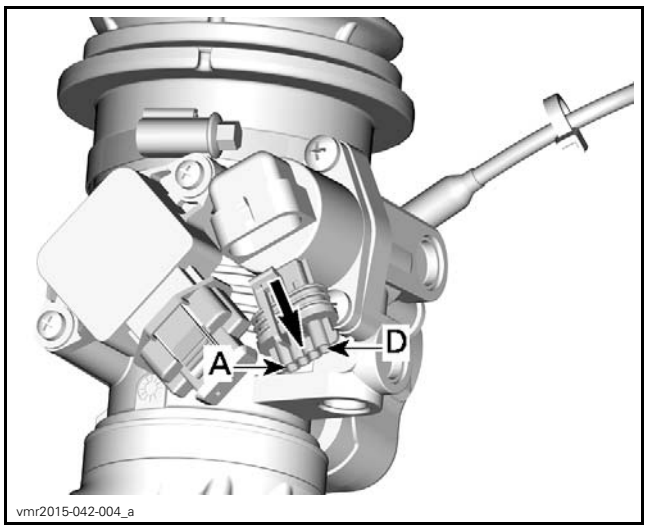
TIGHTENING TORQUE	
Service product	LOCTITE 243 (BLUE) (P/N 293 800 060)
TPS retaining screws	3 N•m (27 lbf•**in**)

Perform the **Closed Throttle And Idle Actuator Reset** procedure. Refer to *CLOSED THROTTLE AND IDLE ACTUATOR RESET* in this subsection.

IDLE AIR CONTROL VALVE (IACV)

Refer to the applicable *ENGINE MANAGEMENT SYSTEM* subsection for component and connector locations.

An idle air control valve with good resistance measurement can still be faulty. It is also possible that a mechanical failure occurs which is not detectable without measuring the air flow. Replacing the IACV may be necessary as a test.



IACV Access

Refer to *TPS ACCESS* in this subsection to gain access to IACV.

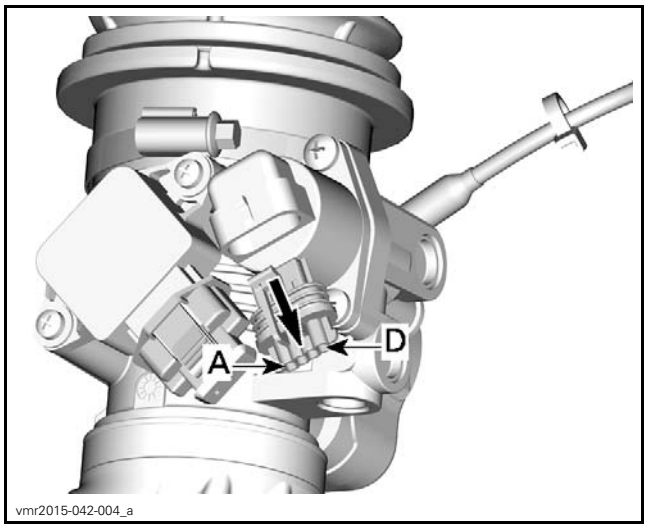
Testing the IACV Resistance

Disconnect IACV from the wiring harness.

Using a multimeter, check the resistance in both windings.

Check the resistance between pins as shown.

IDLE AIR CONTROL VALVE		MEASUREMENT
PIN		RESISTANCE (Ω) @ 20°C (68°F)
A	D	50 ± 5
B	C	



If the resistance of any winding is not good, replace the idle air control valve.

If resistance test of valve windings is good, check continuity of circuits C4, D3, D4, E4. If not good, check/repair wiring/connectors.

Inspecting the IACV Visual

NOTE: Make sure the ignition key is turned off during the following procedure.

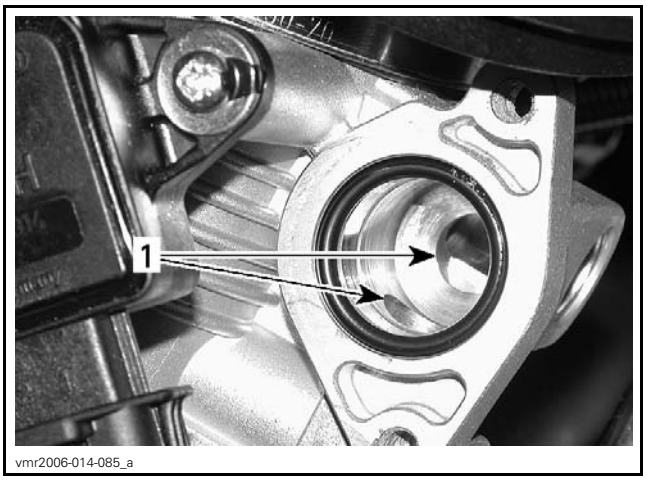
Remove Idle air control valve from throttle body.

Check the piston and bypass channel for dirt/deposits which can cause a sticking piston.

NOTICE Always keep the ignition key turned OFF, while the idle air control valve is removed.

NOTICE Do not try to operate the piston of the idle air control valve when it is dismounted. Also do not move the piston by hand. The drive screw is very sensitive and may be destroyed.

Using a part cleaner, clean idle bypass in throttle body from contamination then blow compressed air to dry it.



1. Clean bore from contamination

Clean all remaining parts and install the idle air control valve on the throttle body.

Proceed with the **Closed Throttle and Idle Actuator Reset**and the *IACV CALIBRATION*. See procedures in this subsection.

IACV Calibration

The IACV calibration is required to avoid a potential erratic or frozen RPM needle.

1. Start the vehicle to increase engine temperature.
2. Let engine run at **idle** until the cooling fan performed a complete cycle (ON/OFF).
3. When the cycle is done, turn ignition key to OFF position.
4. The calibration is completed.

CRANKSHAFT POSITION SENSOR (CPS)

Refer to applicable *ENGINE MANAGEMENT SYSTEM* subsection for component and connector locations.

NOTE: Take into account that a CPS fault can be triggered by bent or missing encoder wheel teeth. First check fault codes using B.U.D.S., then check the encoder wheel teeth condition if necessary. Refer to *MAGNETO AND STARTER* subsections.

CPS Access

Remove the RH side panel. Refer to *BODY* subsection.

To reach the CPS connector, remove protector from engine.

Testing the CPS Resistance

Disconnect the ECM connector.

Install ECM connector on ECM ADAPTER TOOL (P/N 529 036 166).

Using a multimeter, measure resistance as per table.

ECM ADAPTER		MEASUREMENT
PIN		RESISTANCE Ω @ 20°C (68°F)
D1	E1	700 - 900 Ω

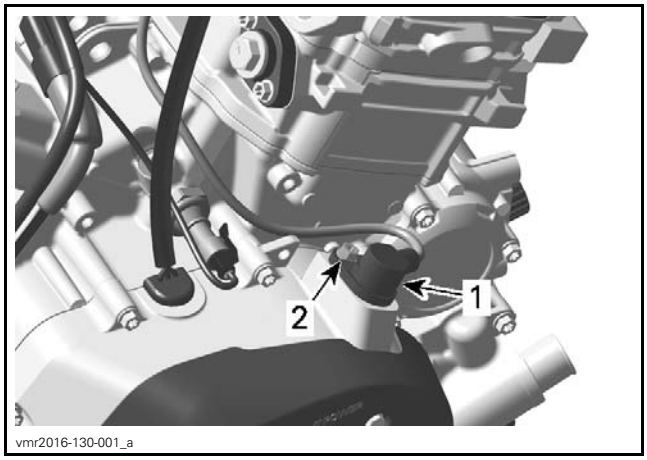
If resistance value is incorrect, check or repair the connectors and the wiring harness between ECM connector and the CPS. If resistance value is still incorrect, replace CPS.

CPS Replacement

Refer to *CPS ACCESS* in this subsection to reach CPS.

Disconnect CPS connector and cut harness locking tie (if applicable).

Remove CPS retaining screw and pull up on CPS to remove it.



1. CPS
2. Retaining screw

Lubricate O-ring of CPS.

O-RING	
Service product	XPS SYNTHETIC GREASE (P/N 293 550 010)

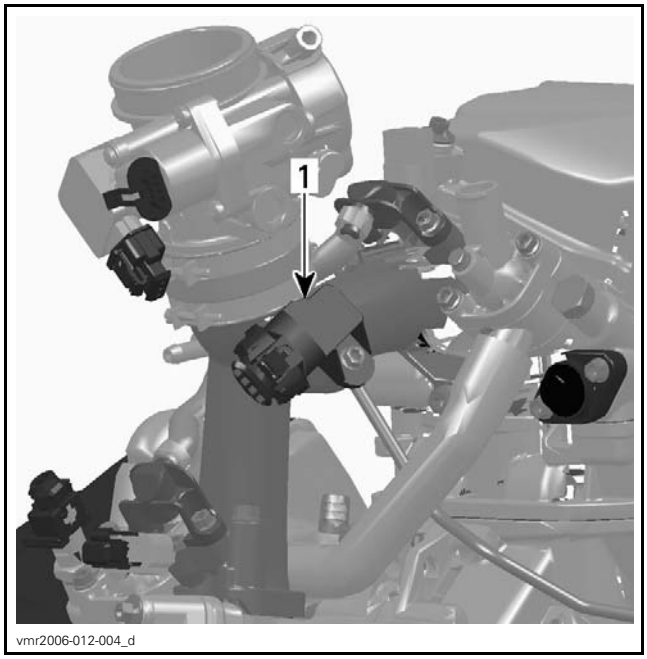
Install new CPS and secure harness with a new locking tie (as applicable).

Tighten CPS retaining screw to specification.

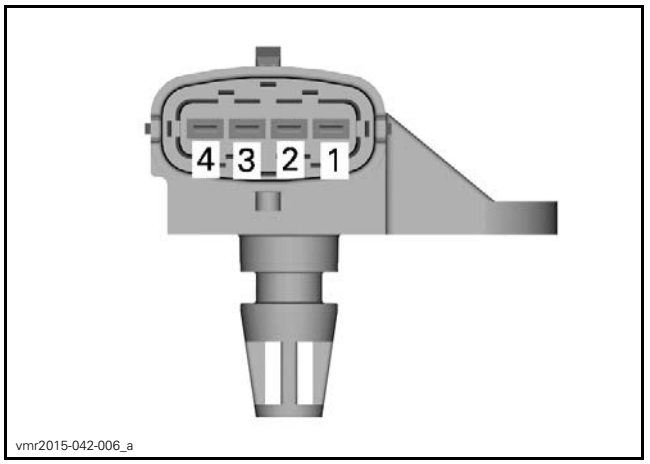
TIGHTENING TORQUE	
CPS retaining screw	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

MANIFOLD ABSOLUTE PRESSURE AND TEMPERATURE SENSOR (MAPTS)

Refer to applicable *ENGINE MANAGEMENT SYSTEM* subsection for component and connector locations.



1. Manifold absolute pressure and temperature sensor (MAPTS)



NOTE: This sensor is a multifunction device.

MAPTS Access

Remove the RH side panel. Refer to *BODY* subsection.

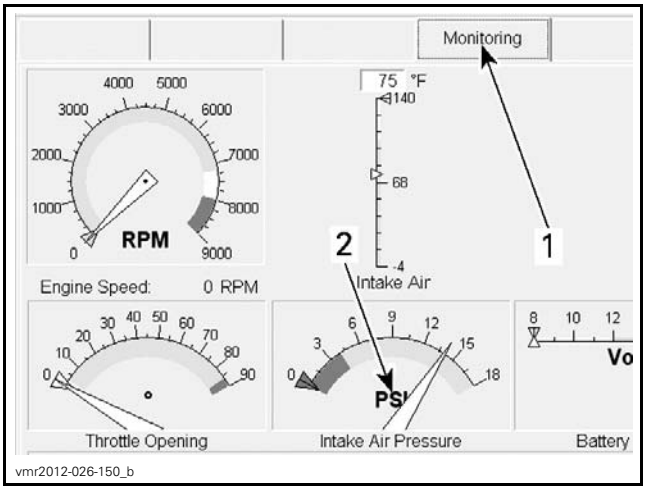
MAPTS Pressure Function

Before the engine is started, when power is applied to the system, the sensor measures the ambient air atmospheric pressure. The ambient pressure is, at that moment, stored in the ECM. Thereafter, once the engine is started, it measures the air pressure in the intake manifold at operating RPMs.

The sensor must be correctly installed on intake manifold. Otherwise, the MAPTS could generate a fault code for an unexpected sensor range at idle when it reads the atmospheric pressure. If this is the case, remove sensor and check for oil or dirt on its end and if problem persists, check throttle plate condition/position and the wiring harness. Perform the following tests.

MAPTS Pressure Function Quick Test

1. Connect vehicle to the latest applicable B.U.D.S. software version.
2. In B.U.D.S., click the following:
   - **Monitoring** tab
   - **ECM** tab.



TYPICAL
1. *Monitoring tab*
2. *MAPTS pressure reading*

3. Look for and take note of the MAPTS pressure reading while the engine is stopped.
4. Perform the same test with a new MAPTS and compare both readings.

Values have to be within ± 3.4 kPa (.5 PSI).

MAPTS PRESSURE FUNCTION QUICK TEST			
RESULT	SERVICE ACTION		
NO READING	Circuit continuity test of MAPTS pressure function	MAPTS input voltage test	Repair or replace wiring
VALUE IS OUT OF RANGE	Replace MAPTS		

Testing the MAPTS Input Voltage

Check the voltage output from ECM to the pressure sensor.

1. Turn ignition key ON.
2. Set emergency engine stop switch to RUN.
3. Remove electrical connector from MAPTS.
4. Using a FLUKE 115 MULTIMETER (P/N 529 035 868), measure for input voltage as per following table.

MAPTS CONNECTOR		MEASUREMENT
PIN		VOLTAGE
1	3	5 Vdc

If voltage test is good, replace the MAPTS.

If voltage test is not good, carry out the *MAPTS CIRCUIT CONTINUITY TEST (PRESSURE FUNCTION)*.

Testing the MAPTS Circuit Continuity (Pressure Function)

1. Disconnect the ECM connector.
2. Install ECM connector on ECM ADAPTER TOOL (P/N 529 036 166).
3. Using a multimeter, check continuity of the following circuits.

MAPTS CIRCUIT CONTINUITY TEST (PRESSURE FUNCTION)		
ECM ADAPTER	MAPTS CONNECTOR	RESISTANCE VALUE
A1	Pin 3	Close to 0 Ω
F2	Pin 4	
G2	Pin 1	

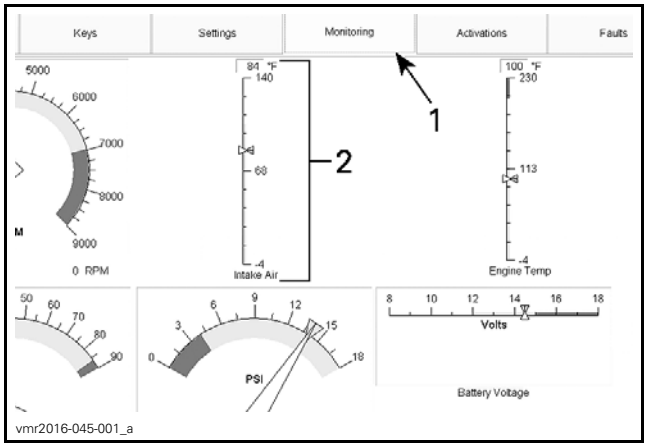
If resistance is not within specification, repair or replace the wiring harness between ECM connector and the MAPTS.

MAPTS Temperature Function

The sensor monitors the temperature in the intake manifold.

Testing the MAPTS Temperature Function

1. Connect vehicle to the applicable B.U.D.S. software version.
2. In B.U.D.S., click the following:
   - **Monitoring** tab
   - **ECM** tab.
3. Look for the **Intake Air** temperature reading while the engine is stopped.



TYPICAL
1. *Monitoring tab*
2. *MAPTS temperature reading*

4. Perform the same test with a new MAPTS and compare both readings.

If the engine MAPTS temperature reading is significantly different than the new MAPTS, replace it.

NOTE: Both sensors must feel the same ambient air temperature.

If there is no reading, carry out a *MAPTS RESISTANCE TEST (TEMPERATURE FUNCTION)*.

Testing the MAPTS Resistance (Temperature Function)

Disconnect the connector from the MAPTS.

Using the FLUKE 115 MULTIMETER (P/N 529 035 868), check the resistance of the sensor itself as shown.

MAPTS		MEASUREMENT
PIN		RESISTANCE Ω @ 20°C (68°F)
1	2	2280 - 2740

If resistance is not within specification, replace the MAPTS.

If resistance tests good, **reconnect** the MAPTS and disconnect the ECM connector.

Install ECM connector on ECM ADAPTER TOOL (P/N 529 036 166).

Using a multimeter, recheck resistance value as per following table.

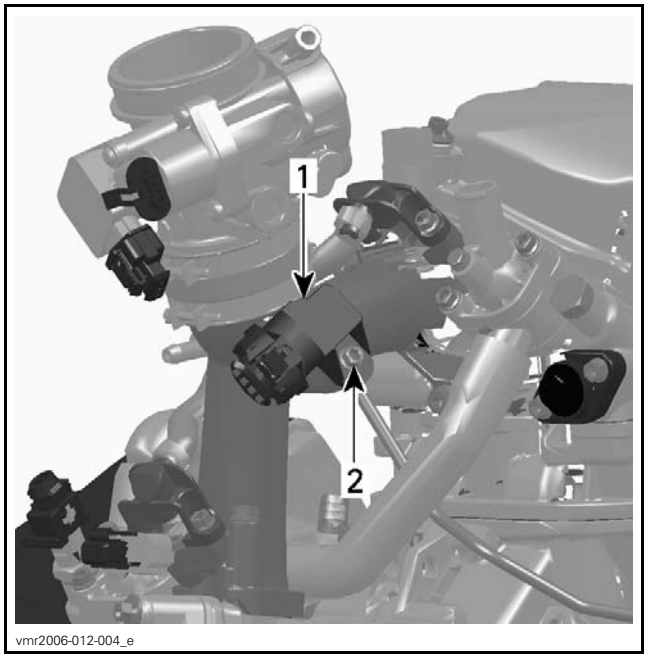
ECM ADAPTER		MEASUREMENT
PIN		RESISTANCE Ω @ 20°C (68°F)
F3	G2	2280 - 2740

MAPTS TEMPERATURE SENSOR TEST RESULTS			
RESULT	SERVICE ACTION		
NO READING	Circuit Continuity Test of MAPTS Temperature Function	MAPTS Input Voltage Test	Repair or replace wiring
INCORRECT RESISTANCE VALUE	Replace MAPTS		

Testing the MAPTS Circuit Continuity (Temperature Function)

MAPTS CIRCUIT CONTINUITY TEST (TEMPERATURE FUNCTION)		
ECM ADAPTER	MAPTS CONNECTOR	RESISTANCE VALUE
G2	Pin 1	Close to 0 Ω
F3	Pin 2	

MAPTS Replacement



TYPICAL - INTAKE MANIFOLD
1. *MAPTS*
2. *Retaining screw*

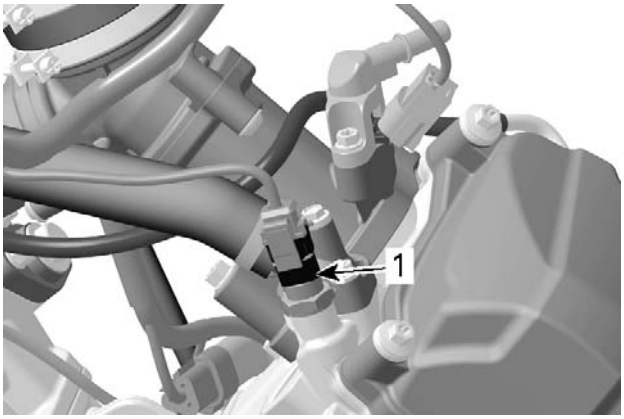
Disconnect MAPTS connector and remove the MAPTS.

Install new MAPTS as per following table.

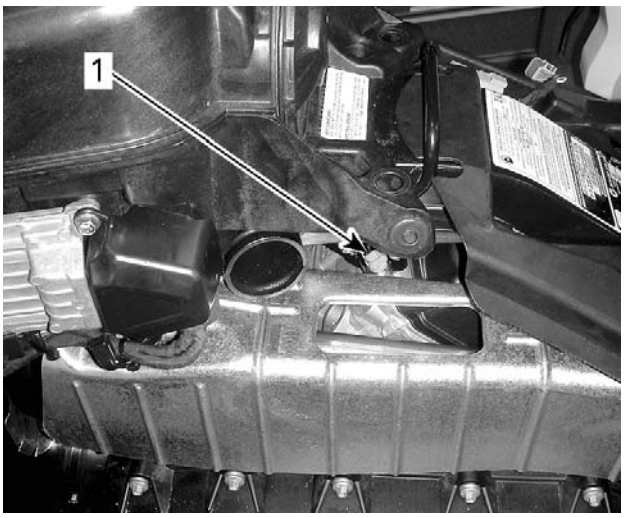
TIGHTENING TORQUE	
Service product	LOCTITE 243 (BLUE) (P/N 293 800 060)
MAPTS retaining screw	6 N•m ± 0.7 N•m (53 lbf•**in** ± 6 lbf•**in**)

CTS (COOLANT TEMPERATURE SENSOR)

Refer to appropriate *ENGINE MANAGEMENT SYSTEM* subsection for component and connector locations.



1. CTS

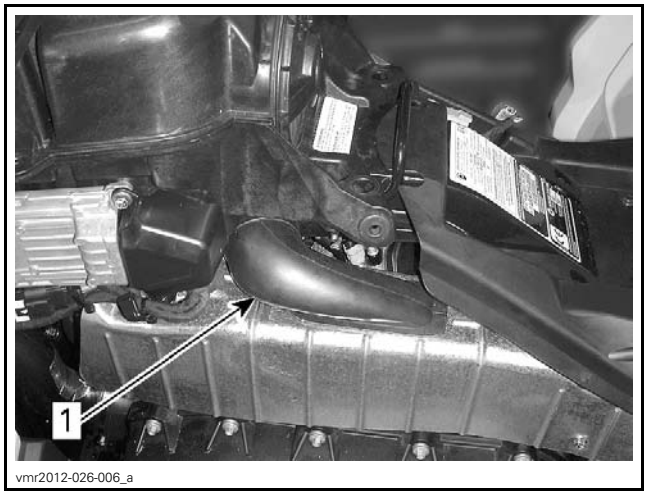


LH SIDE OF VEHICLE
1. CTS

CTS Access

Remove the LH panel. Refer to *BODY* subsection.

Remove the CVT duct.



TYPICAL
1. Pull out

Testing the CTS Resistance

1. Disconnect the ECM connector.
2. Using the following tools, check resistance values.

REQUIRED TOOL	
ECM ADAPTER TOOL (P/N 529 036 166)	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

3. Install ECM connector on the following tool.

ECM ADAPTER		**MEASUREMENT**
PIN		RESISTANCE (Ω) @ 20°C (68°F)
C3	F4	2280 - 2736

If resistance value is incorrect, check wiring continuity between ECM connector and the CTS. Refer to *CTS CIRCUIT CONTINUITY TEST* in this subsection.

Testing the CTS Circuit Continuity

1. Disconnect connector from CTS and check the circuit continuity.

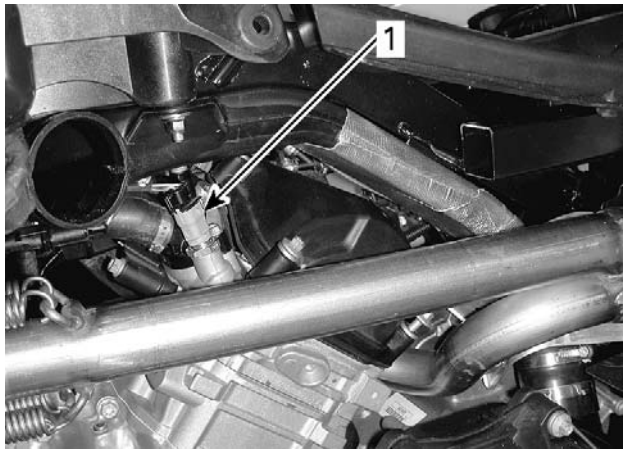
CTS CIRCUIT CONTINUITY TEST		
ECM ADAPTER	CTS CONNECTOR	RESISTANCE VALUE
Pin F4	Pin 1	Close to 0 Ω
Pin C3	Pin 2	

If resistance value is incorrect, repair or replace wiring or connectors/terminals.

If resistance test is good, replace the CTS.

Replacing the CTS

1. Refer to *CTS ACCESS* in this subsection to reach CTS.
2. Remove heat shield over exhaust pipe to expose CTS. Refer to *EXHAUST SYSTEM* subsection.



1. CTS

3. Disconnect CTS connector and remove CTS.
4. Install the new CTS and torque as specified.

TIGHTENING TORQUE	
CTS	16 N•m ± 2 N•m (142 lbf•**in** ± 18 lbf•**in**)

5. Reinstall remaining removed parts.
6. Refill and bleed the cooling system. Refer to *COOLING SYSTEM* subsection.

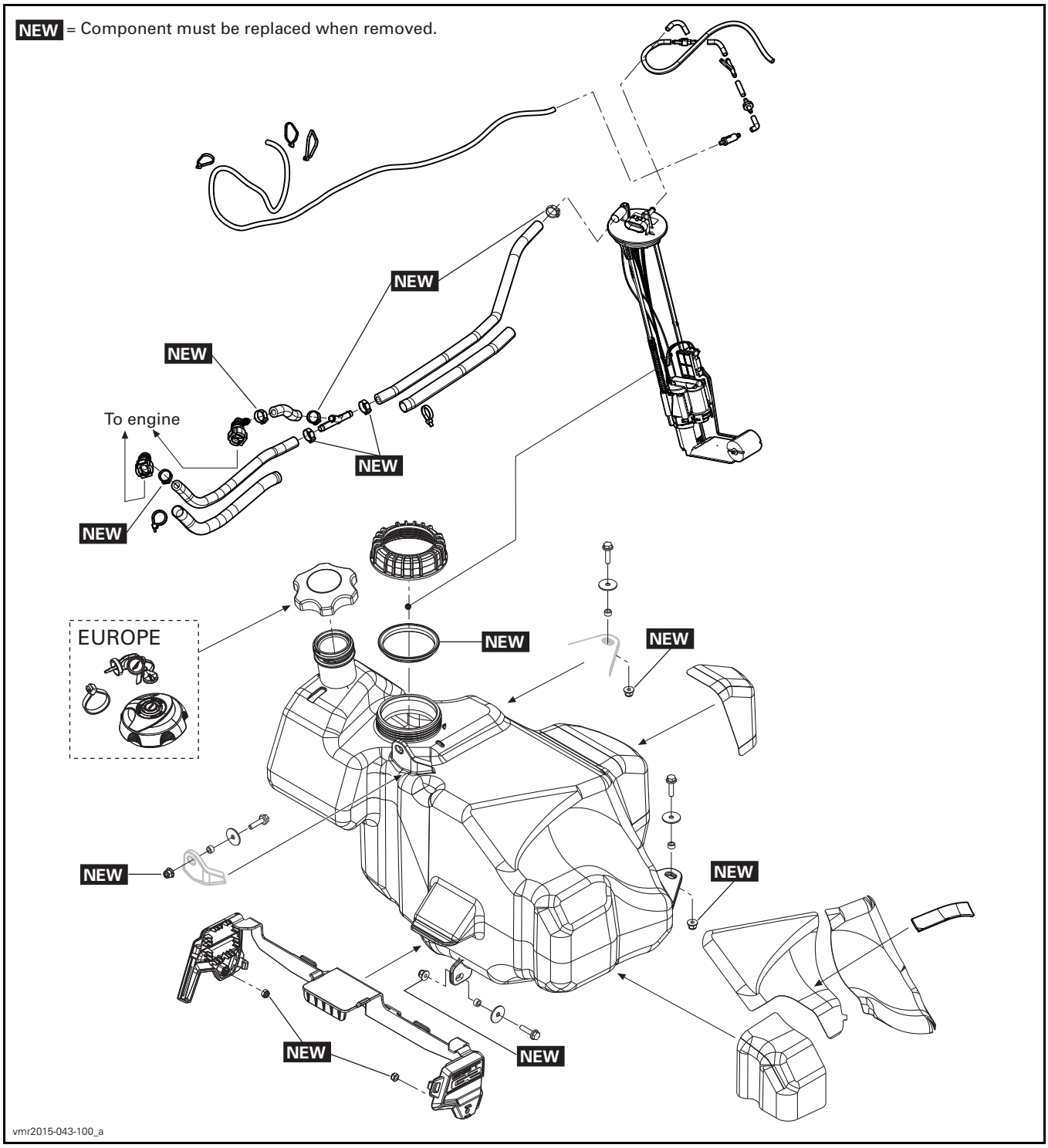
FUEL TANK AND FUEL PUMP

SERVICE TOOLS

Description	Part Number	Page
FLUKE 115 MULTIMETER	529 035 868	12
FUEL HOSE ADAPTER	529 036 023	5
FUEL PUMP NUT TOOL	529 035 899	13
OETIKER PLIERS	295 000 070	8
PRESSURE GAUGE	529 035 709	5
SMALL HOSE PINCHER	295 000 076	18
VACUUM/PRESSURE PUMP	529 021 800	4, 19

SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
FLUKE RIGID BACK PROBE	TP88	12


NEW = Component must be replaced when removed.
NEW
NEW
To engine
NEW
NEW
EUROPE
NEW
NEW
NEW
NEW
NEW
NEW
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GENERAL

⚠ WARNING

Fuel is flammable and explosive under certain conditions. Ensure work area is well ventilated. Do not smoke or allow open flames or sparks in the vicinity.

⚠ WARNING

Always disconnect battery prior disconnecting a fuel system pressure hose.

⚠ WARNING

Always proceed with care and use appropriate safety equipment when working on pressurized fuel system. Wear safety glasses.

⚠ WARNING

Do not allow fuel to spill on hot engine parts and/or on electrical connectors.

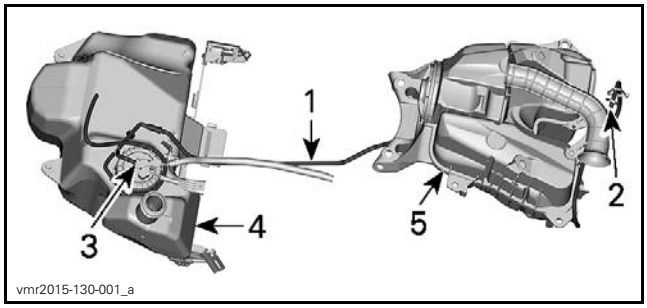
When the repair is completed, ensure that all hoses are connected and secured. Perform the *FUEL PRESSURE TEST* and the *FUEL TANK LEAK TEST* as explained in this subsection.

Fuel lines remain under pressure at all times. Proceed with care when removing/installing high pressure test equipment.

SYSTEM DESCRIPTION

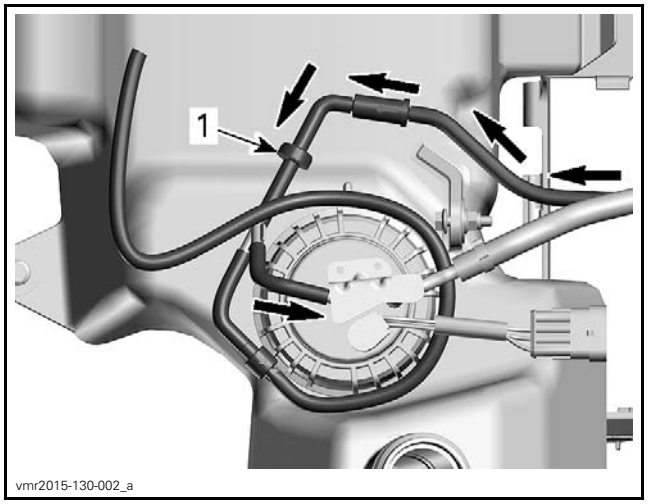
Fuel Tank Vent System

The fuel tank is equipped with a vent system that provides over pressure relief and negative pressure relief of the fuel tank.



TYPICAL - FUEL TANK VENT SYSTEM
1. *Vent hose*
2. *Vent system hose inlet*
3. *Vent system connected to fuel pump*
4. *Fuel tank*
5. *Engine air intake system*

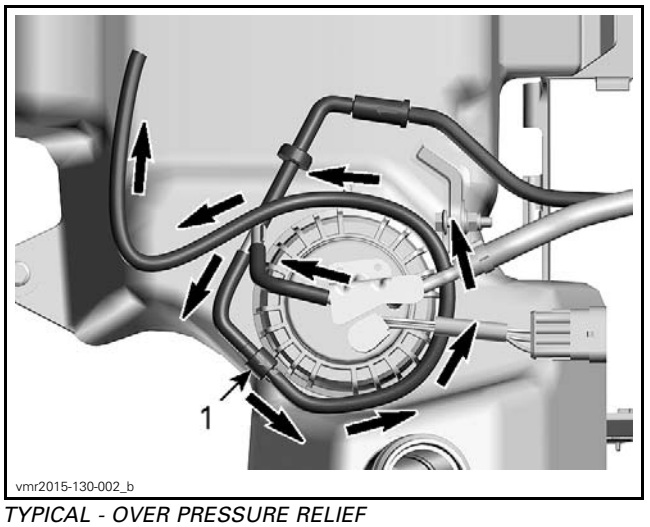
Air can enter the fuel tank at all times through the vent system INLET check valve. This prevents negative pressure within the fuel tank which could cause fuel starvation.



TYPICAL - AMBIENT AIR PRESSURE IN
1. *Vent inlet check valve*

The vent inlet check valve also prevents fuel from flowing out through the inlet of the vent system.

If the pressure in the fuel tank builds up and exceeds 2.5 kPa - 7.6 kPa (.36 PSI - 1.1 PSI), the pressure relief valve opens and lets the excess pressure evacuate through the vent system OUTLET hose.

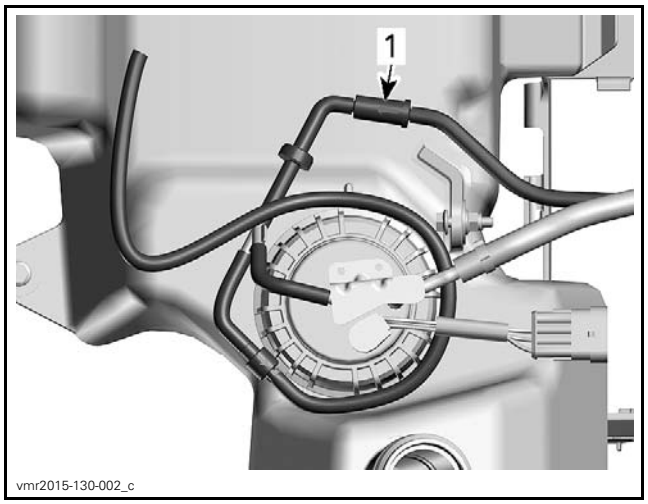


TYPICAL - OVER PRESSURE RELIEF
1. *Outlet pressure relief valve*

Fuel Tank Vent Breather Filter

The vent system is equipped with an in-line breather filter that prevents entry of particles such as dust or small insects. It is located next to the fuel pump, on the inlet hose, before the air inlet check valve.

To access the fuel tank vent breather filter, remove the rear body module.



TYPICAL
1. Fuel tank vent breather filter

Fuel Pump Module

The fuel pump module is inserted in the fuel tank. It provides fuel delivery for the EFI system and encompasses the following components:

– Electric fuel pump
– Fuel pump pre-filter
– Fuel pump filter (650, 850 and 1000 engines)
– Fuel pressure regulator
– Fuel level sender.

Fuel Filters

The system comprises two levels of filtration:

– A replaceable pre-filter element attached to the bottom of the fuel pump.
– On **650, 850 and 1000R models**, a non-replaceable fine filter element that is integral to the fuel pump module.

Fuel Pump Pressure Regulator

The fuel pressure regulator is integral to the fuel pump module. The pressure regulator maintains proper fuel pressure for the EFI system.

INSPECTION

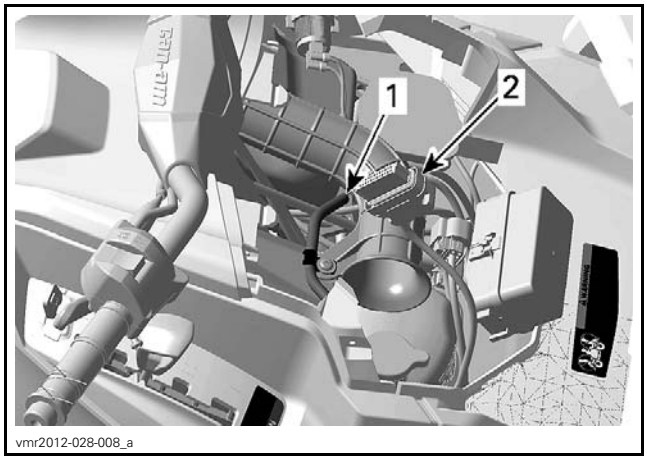
FUEL TANK LEAK TEST

⚠ WARNING

Always carry out a fuel tank leak test whenever the fuel tank shows signs of wear or damage which may cause a leak, or when the fuel pump has been removed or replaced, or if you suspect a leak. If the fuel tank is damaged, the fuel tank should be replaced even if no leak is present. Do not attempt to repair the fuel tank.

1. Refill fuel tank and ensure fuel tank cap is in good condition and properly installed.
2. Remove the gauge support for access to the fuel vent inlet hose.
3. Pressurize the fuel tank through the vent hose.

REQUIRED TOOL	
VACUUM/PRESSURE PUMP (P/N 529 021 800)	



1. Fuel tank vent inlet hose
2. Gauge connector

PRESSURE	TIME WITHOUT PRESSURE DROP
14 kPa (2 PSI)	3 minutes

If pressure drops, locate fuel leak(s) and repair or replace leaking component(s).

To locate a leak, check for a fuel smell or leaking fuel.

To ease locating leak(s), spray soapy water on all hose connections and components; bubbles will indicate the leak location(s).

NOTE: For access to the fuel tank vent system, refer to *FUEL PUMP ACCESS* in this subsection.

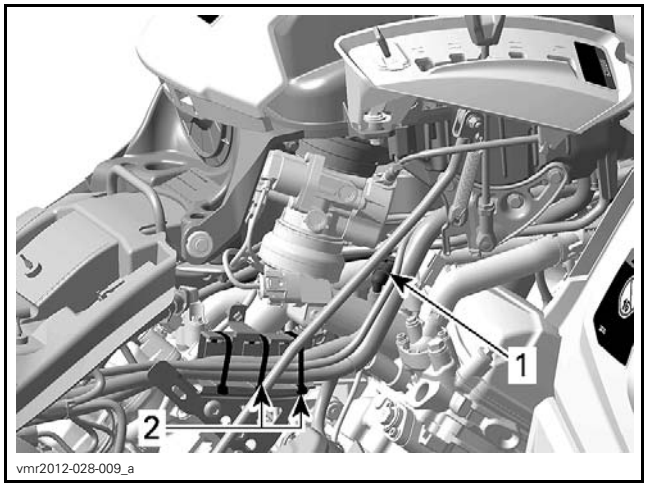
FUEL SYSTEM PRESSURE TEST

The pressure test will show the available pressure in the system. It validates the pressure regulator and the fuel pump, and allows for checking the fuel system for leaks (high pressure side).

NOTE: Refer to the *FUEL SYSTEM DIAGNOSTIC FLOW CHART* in this subsection to help diagnose a fuel system related problem.

1. Ensure the fuel level in the tank is sufficient.
2. Ensure the battery voltage is over 12 volts.
3. Remove seat.
4. Remove RH side body panel, refer to *BODY* subsection.
5. Disconnect the fuel pressure hose from the fuel injector fuel rail. Refer to *DISCONNECTING A FUEL PRESSURE HOSE* in *FUEL HOSE AND OETIKER CLAMPS*.
6. Remove the 2 most forward locking ties securing the fuel hose to the upper cable support.

NOTE: This is required to provide more hose length for proper connection to test equipment.

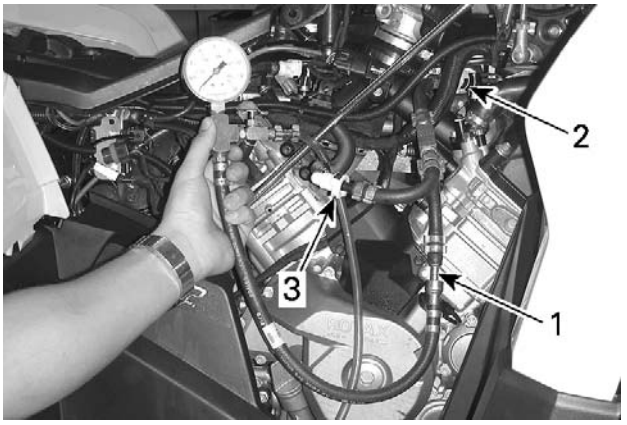


vmr2012-028-009_a

TYPICAL
1. *Forward injector rail fitting*
2. *Locking ties*

7. Install the fuel pressure gauge and fuel hose adapter between the disconnected injector hose and fuel rail (in-line installation).

REQUIRED TOOLS	
PRESSURE GAUGE (P/N 529 035 709)	
FUEL HOSE ADAPTER (P/N 529 036 023)	



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TYPICAL - PRESSURE GAUGE SETUP
1. *Pressure gauge to fuel hose adapter*
2. *Fuel hose adapter to fuel rail*
3. *Fuel hose adapter to fuel pump pressure hose*

8. Reinstall the fuel pump relay (R4) in the forward fuse box.
9. Turn ignition key ON and observe fuel pressure.

FUEL PRESSURE (Valid at 12v ± 0.1v)	350 kPa ± 10 kPa (51 PSI ± 1 PSI)

10. Start engine and observe fuel pressure.
11. Stop engine.
12. Remove test equipment and reconnect fuel hose to injector fuel rail by proceeding in the same manner as for its installation.

Test Conclusion

The fuel pressure should be within specification in static or dynamic tests.

Rapid Pressure Drop

If there is a rapid pressure drop after the engine is stopped, check for leakage at:

– A fuel hose
– A fuel rail.

NOTE: The fuel pump check valve integral to the fuel pump module may also be at fault.

If no leak is detected, replace fuel pump.

Slow Pressure Drop

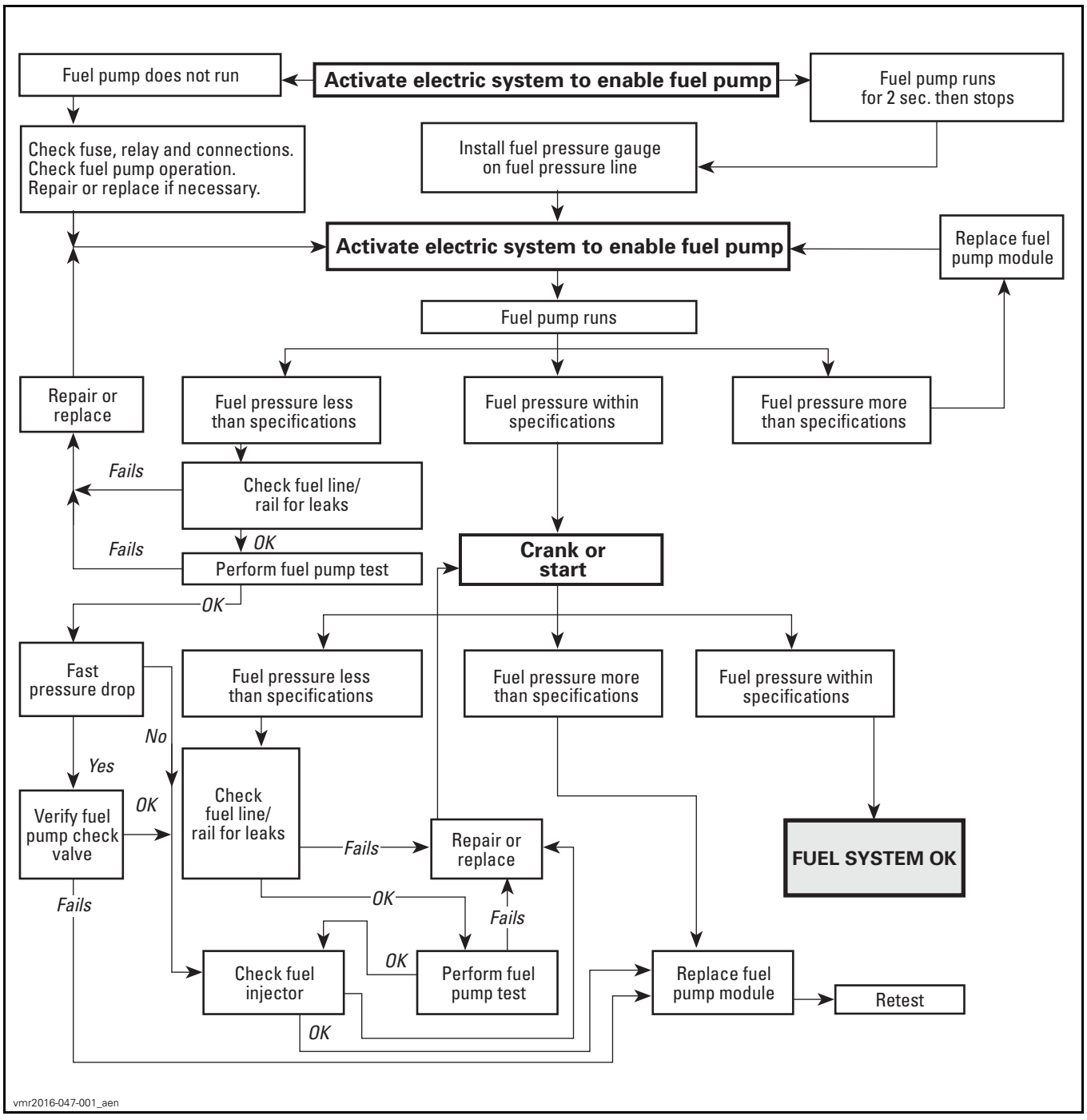
If there is a slow pressure drop after the engine is stopped, check for a fuel injector leak. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

NOTE: The fuel pressure regulator or fuel pump check valve integral to the fuel pump module may also be at fault.

If no leak is detected, replace fuel pump.

TROUBLESHOOTING

FUEL SYSTEM DIAGNOSTIC FLOW CHART



PROCEDURES

FUEL HOSE AND OETIKER CLAMPS

Disconnecting a Fuel Pressure Hose

1. Remove the fuel pump relay (R4) in the front fuse box.
2. Release fuel pressure by running engine until it runs out of fuel.
3. Carefully disconnect the fuel hose fitting from the injector fuel rail by pressing on the release tab of the quick disconnect fitting.

Fuel Hose Replacement

When replacing fuel hoses, be sure to use hoses and clamps as available from BRP parts department. This will ensure continued proper and safe operation.

⚠ WARNING

Use of fuel lines other than those recommended by BRP may compromise fuel system integrity.

⚠ WARNING

Whenever removing a hose in the fuel system, always use new Oetiker clamps at assembly. Then validate fuel system tightness by performing a fuel pressure test.

Oetiker Clamp Replacement

REQUIRED TOOL	
OETIKER PLIERS (P/N 295 000 070)	

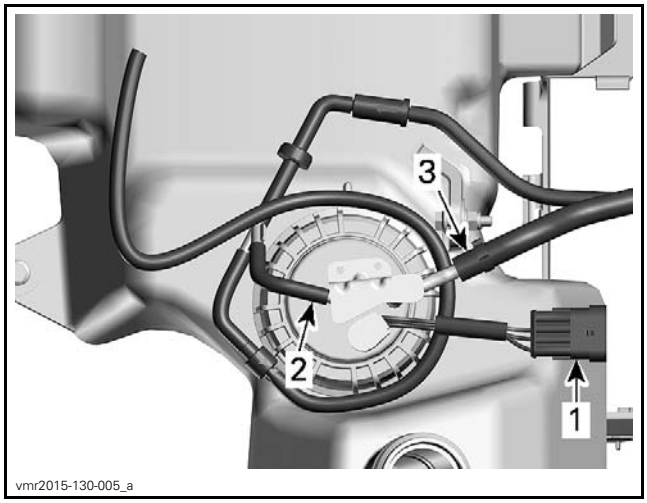
FUEL TANK

Fuel Tank Draining

Remove fuel tank cap and siphon gas into an approved fuel container.

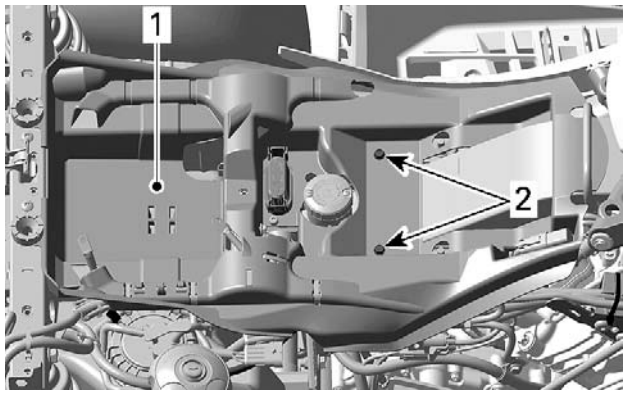
Fuel Tank Removal

1. Drain fuel tank. Refer to *FUEL TANK DRAINING* in this subsection.
2. Disconnect the fuel pressure hose from the fuel injector fuel rail. Refer to *DISCONNECTING A FUEL PRESSURE HOSE* in *FUEL HOSE AND OETIKER CLAMPS*.
3. Disconnect and remove the battery, refer to *CHARGING SYSTEM* subsection.
4. Remove the rear body module, refer to *BODY* subsection.
5. Refer to *EXHAUST SYSTEM* and remove the following:
   – Muffler assembly
   – Muffler/exhaust pipe heat shield.
6. Remove rear frame. Refer to *FRAME* subsection.
7. Disconnect the following from the fuel pump module:
   – Fuel pump electric connector
   – Fuel system vent hose
   – Fuel pump pressure hose.



1. Fuel pump connector
2. Vent hose
3. High pressure fuel hose

8. Disconnect the RED (+) battery cable from the starter solenoid.
9. Remove the 2 screws that secure the front of the battery support.



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1. Battery support
2. Support retaining screws

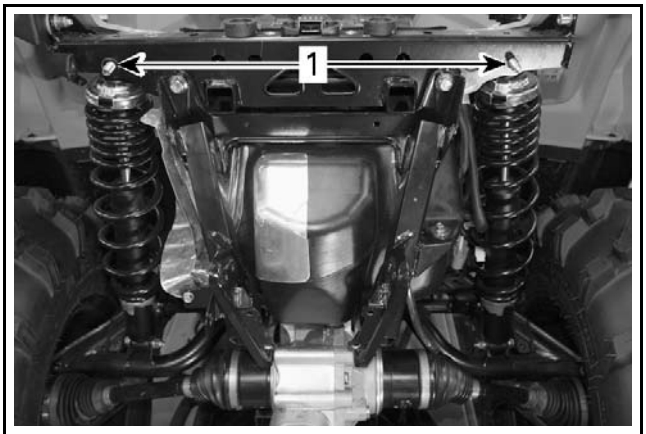
NOTE: It is not necessary to remove the wiring harness or other components from the battery support.

10. Flip the battery support over towards the RH side of the vehicle for access to the rear frame extension.

vmr2012-028-014_a

TYPICAL
1. Battery support
2. Rear frame extension

11. Remove the upper mounting bolt from both rear shock absorbers.



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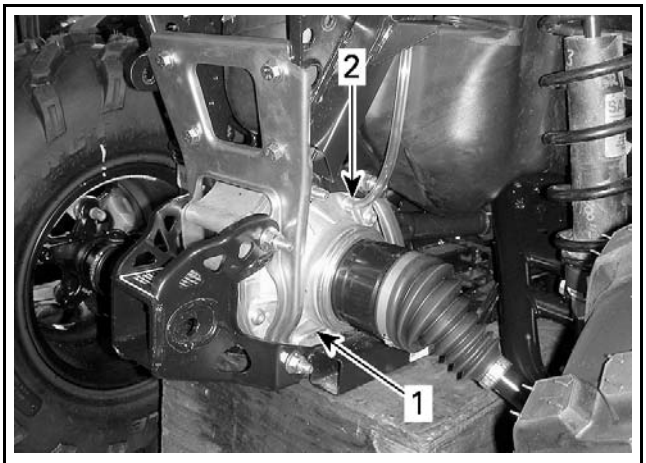
TYPICAL
1. Upper shock mounting bolts

12. Block the front wheels with wheel chocks.
13. Lift back end of vehicle and properly support under the lower rear portion of the frame, near the final drive.

⚠ CAUTION Before working on vehicle, ensure the vehicle is securely supported.

14. Remove vent tube from final drive.

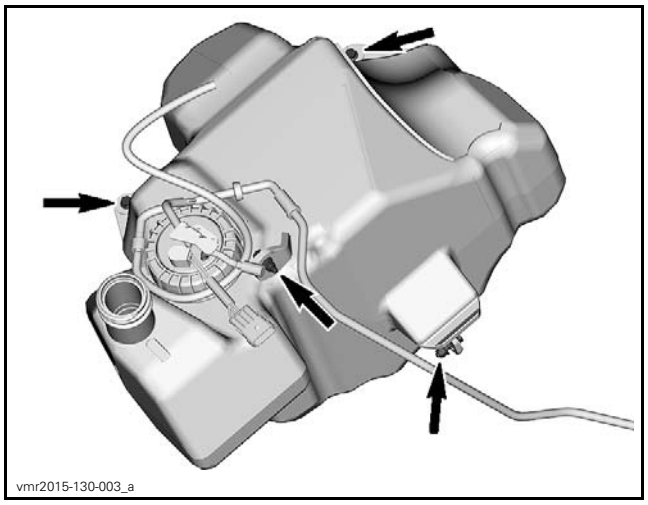


vmr2012-028-017_a

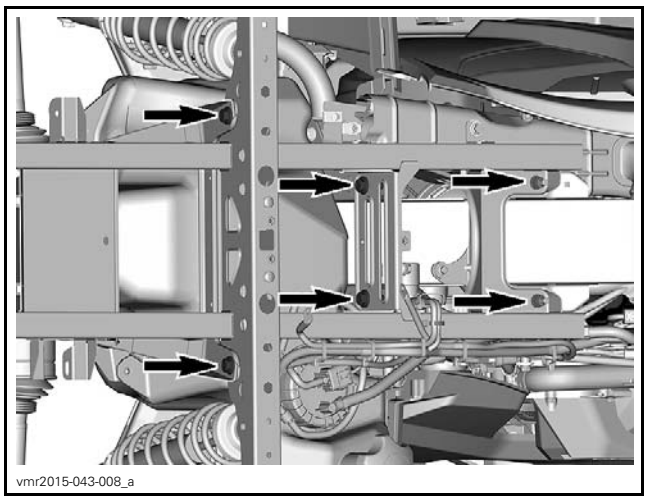
1. Final drive unit
2. Vent tube to remove

15. Remove fuel tank retaining screws (4).

NOTE: Note position of washers and bushings on each screw.


vmr2015-130-003_a

16. Loosen the front 2 nuts and remove the 4 bolts retaining the frame extension.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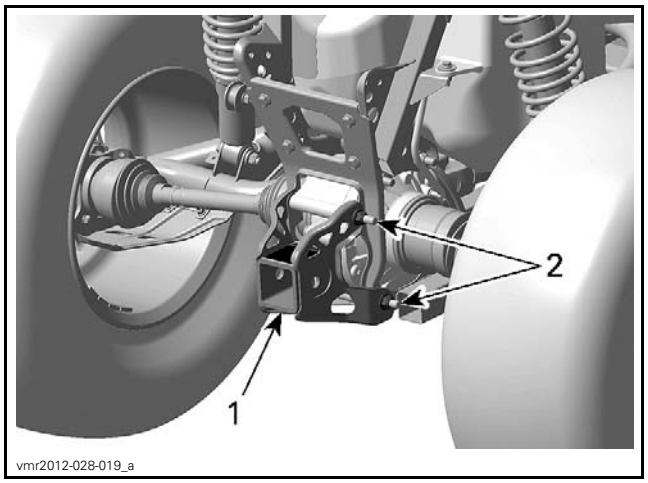
17. Remove nuts and screws securing trailer hitch/final drive protector and rear frame support to rear final drive.



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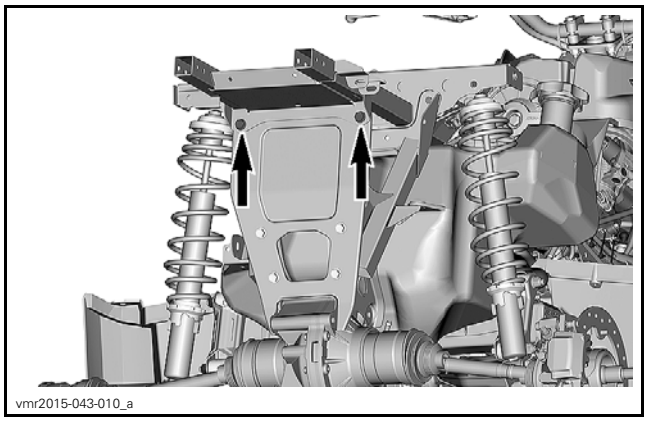
TYPICAL
1. *Trailer hitch*
2. *Bolts to remove*

18. Remove 2 nuts and screws securing rear frame support to rear frame section.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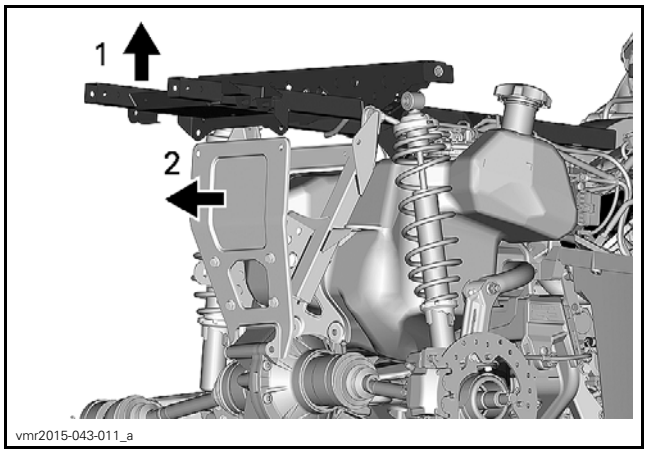

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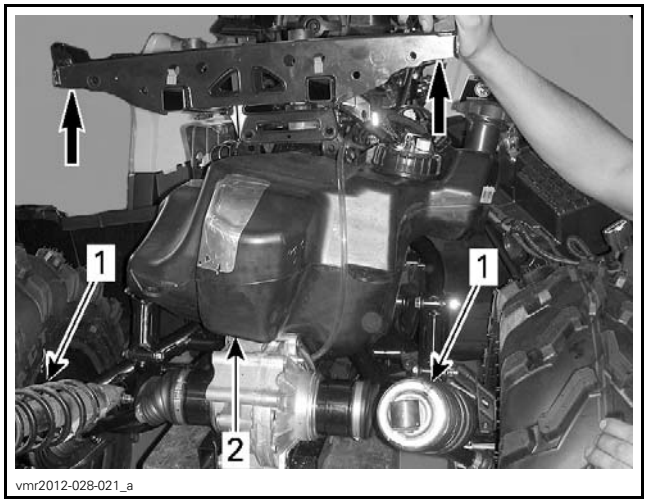
19. Lift up on frame extension and pull fuel tank out of vehicle.

NOTE: When lifting up on the frame extension, the shock absorbers will fall backwards.



vmr2012-028-021_a

TYPICAL
1. *Rear shock absorbers*
2. *Fuel tank*

Fuel Tank Inspection

Inspect fuel tank for any damages or cracks which may result in fuel leaks.

Inspect fuel tank and fuel tank protector on frame for damages.

Inspect protector for damages.

If cracks, gouges or other damages which may lead to a fuel leak, or damages to attachment points that could prevent the tank from being secure are found, replace fuel tank.

Fuel Tank Installation

Installation is the reverse of the removal procedure. However, pay attention to the following.

Install a bushing on each fuel tank mounting screw. The bushing inserts within the fuel tank screw hole cavity.

Be sure to install the washers between the fuel tank and the fastener as noted at removal.

Install **all** fuel tank fasteners loosely.

NOTICE **The fuel tank fasteners must not be tightened to specified torque until complete assembly in vehicle.**

Install all frame component fasteners loosely, then apply torque as specified in the *FRAME* subsection.

Apply specified torque to fuel tank retaining screws.

TIGHTENING TORQUE	
Fuel tank retaining screws	6.5 N•m ± 0.5 N•m (58 lbf•**in** ± 4 lbf•**in**)

Be sure to properly connect and route:
- Fuel tank vent tube
- Fuel pump pressure hose
- Electrical connectors.

Refuel tank and ensure there are no leaks by performing a *FUEL TANK LEAK TEST* and a *FUEL PUMP PRESSURE TEST* as described in this subsection.

FUEL PUMP

Fuel Pump Pressure Test

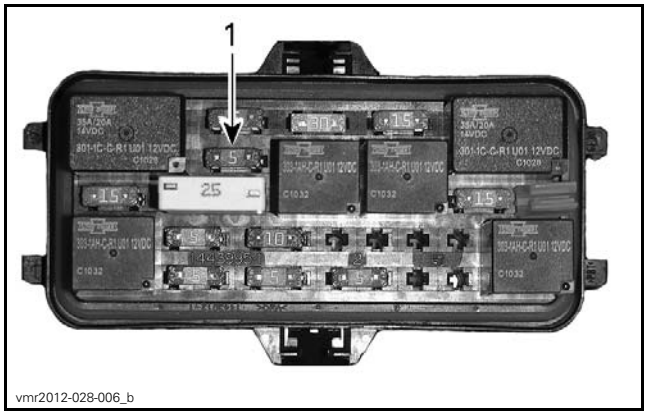
Refer to *INSPECTION* in this subsection.

Fuel Pump Quick Test

1. Turn ignition key to ON.
2. Listen for fuel pump operation.

NOTE: Fuel pump should come ON for a few seconds, then stop.

If fuel pump does not come ON, carry out the following:
- Check fuel pump relay fuse (F15) and fuel pump relay (R4).
- Check in B.U.D.S. for applicable fault codes. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
- Carry out a fuel pump input voltage test.

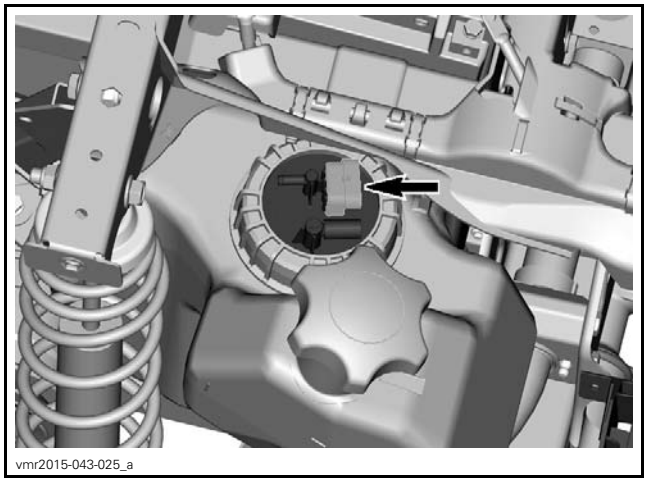


1. Fuel pump relay fuse

Fuel Pump Connector Access

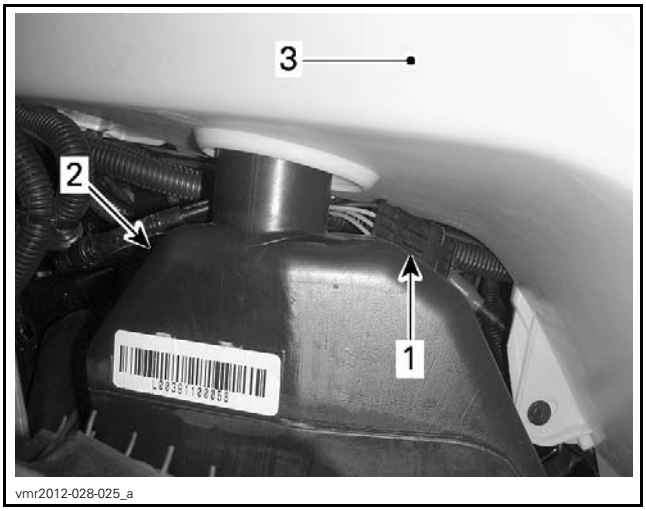
570 Engine

Remove rear body module. Refer to *BODY* subsection.



650, 850 and 1000R Engines

The fuel pump connector can be accessed from under the RH rear fender, just above the forward end of the fuel tank.



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TYPICAL
1. *Fuel pump connector*
2. *Fuel tank*
3. *Underside of RH rear fender*

Fuel Pump Input Voltage Test

1. Disconnect the fuel pump connector.
2. Turn ignition key ON.
3. Read voltage as follows.

NOTE: The fuel pump voltage will be read only when the fuel pump is activated.

REQUIRED TOOLS	
FLUKE 115 MULTIMETER (P/N 529 035 868)	
FLUKE RIGID BACK PROBE (P/N TP88)	

FUEL PUMP INPUT VOLTAGE TEST		
TEST PROBES		VOLTAGE READING
Fuel pump connector Pin 3	Fuel pump connector Pin 4	Battery voltage

If battery voltage is read, carry out a fuel pump resistance test.

If battery voltage is not read, test fuel pump power input as follows.

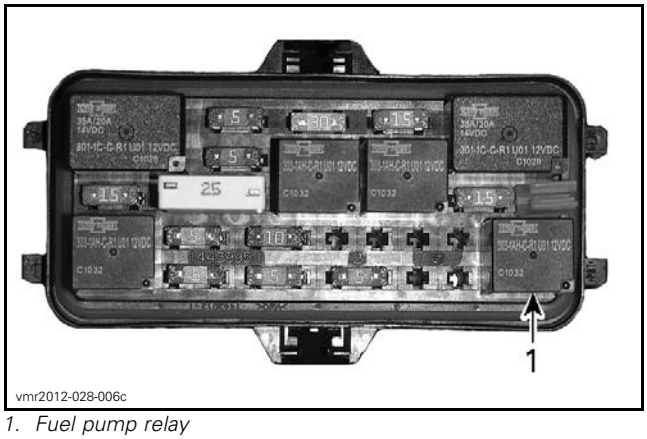
FUEL PUMP POWER WIRE TEST		
TEST PROBES		VOLTAGE READING
Fuel pump connector Pin 3	Battery ground	Battery voltage

If battery voltage is now read, check fuel pump ground circuit between fuel pump connector FP-4 and battery ground.

If battery voltage is still not read, check the following:
- Fuse (F15)
- Fuel pump relay (R4)
- Fuel pump relay input voltage (control and power circuits)
- Fuel pump relay control circuit continuity to ECM-J1
- Wiring and connectors.

Fuel Pump Resistance Test

1. Ensure fuel pump connector is properly connected.
2. Remove fuel pump relay (R4).

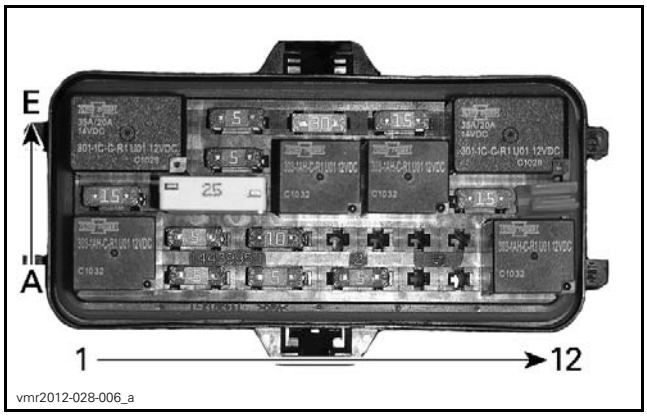


vmr2012-028-006c

1. Fuel pump relay

3. Measure fuel pump resistance as follows.

FUEL PUMP RESISTANCE TEST (AT FUSE BOX)		
TEST PROBES		RESISTANCE Ω @ 20°C (68°F)
Fuse box contact A11	Battery ground	Approximately 2 Ω



FUSE BOX COORDINATES

If resistance test failed, disconnect fuel pump connector and measure resistance at fuel pump connector.

FUEL PUMP RESISTANCE TEST (AT FUEL PUMP CONNECTOR)	
Pins 3 and 4	Approximately 2 Ω

If test failed at pump connector, replace fuel pump.

If test succeeded at pump connector, check wiring and connectors from:

– Fuse box to fuel pump
– Fuel pump to battery ground.

Repair or replace as necessary.

Fuel Pump Access

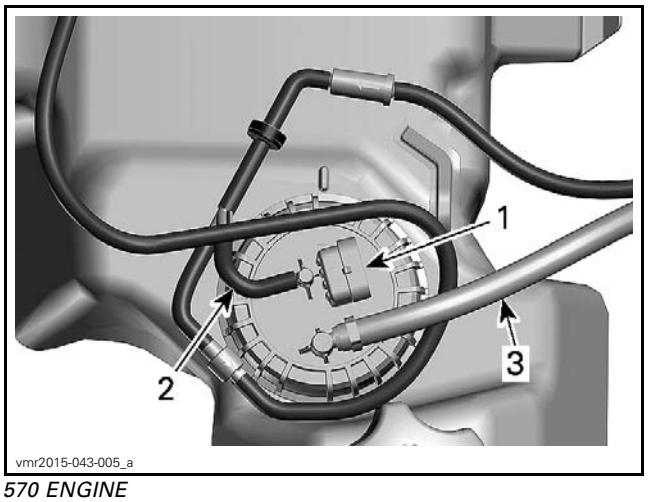
Remove rear body module, refer to *BODY* subsection.

Fuel System Pressure Release

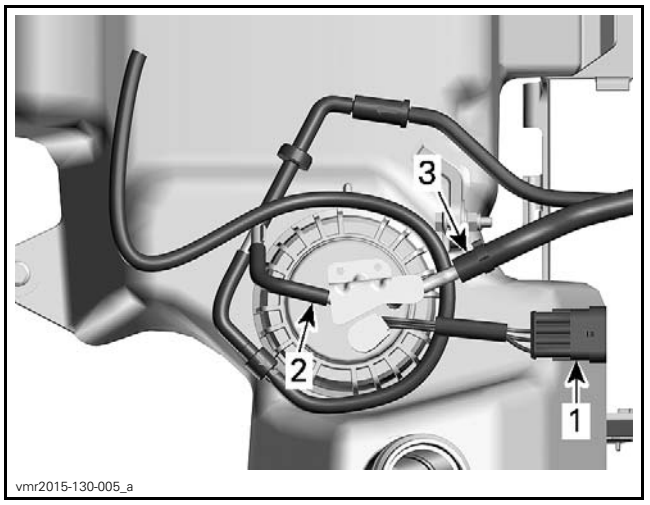
Refer to *DISCONNECTING A FUEL PRESSURE HOSE* in this subsection.

Fuel Pump Removal

1. Release the pressure of the fuel system.
2. Disconnect the following from the fuel pump:
   – Fuel pump electric connector
   – Fuel system vent hose
   – Fuel pump pressure hose.



570 ENGINE
1. *Fuel pump connector*
2. *Vent hose*
3. *High pressure fuel hose*



TYPICAL - 650, 850 AND 1000R ENGINES
1. *Fuel pump connector*
2. *Vent hose*
3. *High pressure fuel hose*

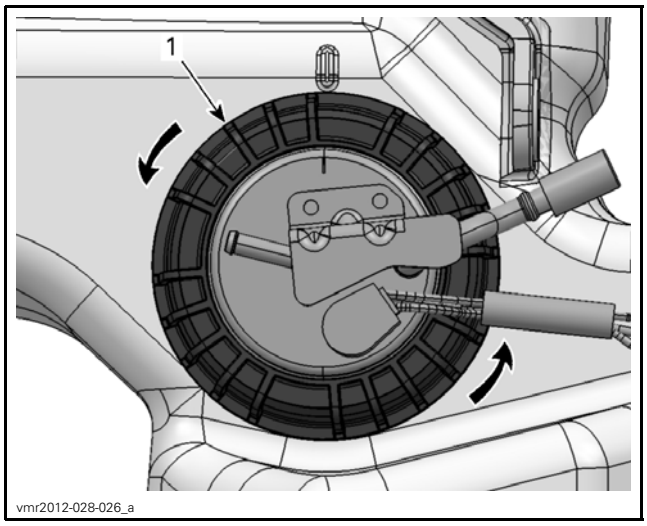
3. Remove fuel pump retaining nut.

⚠ WARNING

Fuel vapors are flammable and explosive under certain conditions. Use only non-sparking tools.

⚠ CAUTION Replace fuel pump gasket whenever fuel pump retaining nut is loosened.

REQUIRED TOOL	
FUEL PUMP NUT TOOL (P/N 529 035 899)	



TYPICAL - FUEL PUMP REMOVAL
1. *Fuel pump retaining nut*

4. Carefully pull out and rotate fuel pump as required.

NOTICE **Pay attention not to damage fuel sender and fuel pump prefilter.**

5. Discard gasket ring.
6. Wipe off any fuel spillage.

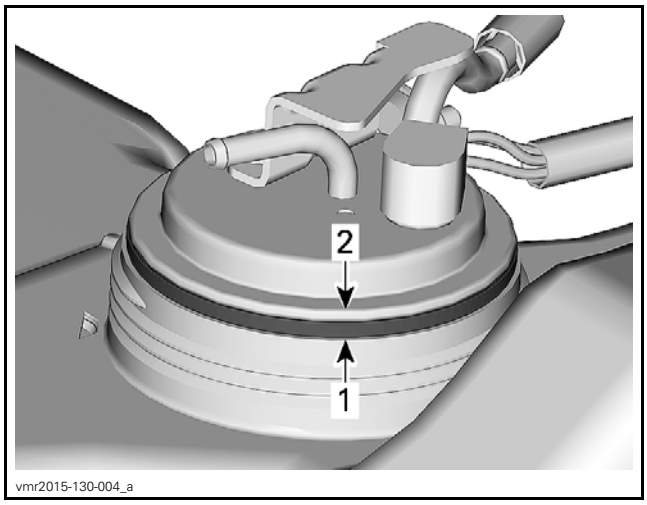
Fuel Pump Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Rotate fuel pump during insertion as per removal procedure.

⚠ CAUTION **Pay attention not to damage fuel sender and fuel pump pre-filter.**

1. Install a NEW gasket ring.
2. Place gasket so that it is properly located between fuel pump and fuel pump mounting neck on fuel tank.

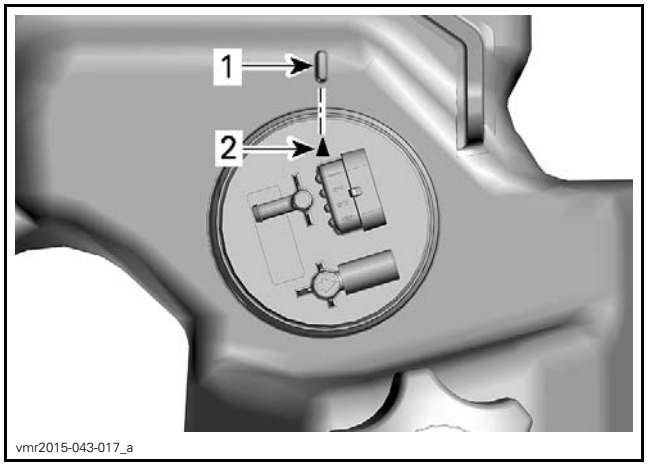


TYPICAL
1. *Gasket ring here*
2. *Fuel pump flange*

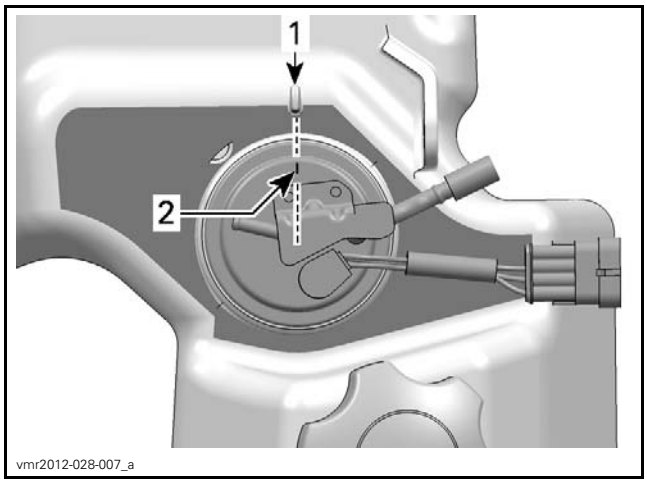
⚠ WARNING

Ensure gasket ring makes good contact all around fuel pump and fuel pump mounting neck on fuel tank.

3. Ensure proper fuel pump orientation as in following illustration.



570 ENGINE
1. *Fuel tank pump index*
2. *Fuel pump index*

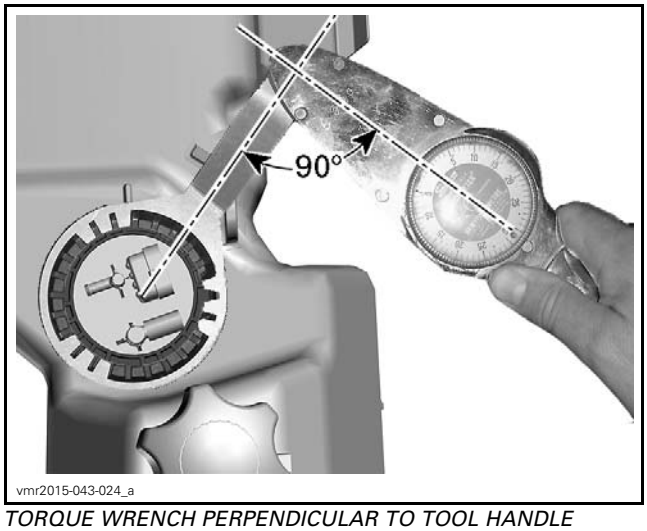


650, 850 AND 1000R ENGINES
1. *Fuel tank pump index*
2. *Fuel pump index*

4. Insert fuel pump retaining nut over the fuel pressure hose and electrical wiring connector.
5. While firmly holding pump against tank, engage fuel pump retaining nut on fuel tank flange.

NOTE: If necessary, move the pump in order to ensure the flange is sitting completely flat on the tank.

6. Tighten fuel pump retaining nut to specification.
   - 6.1 Ensure pump locking ring is fully engaged.
   - 6.2 To apply the proper torque to the fuel pump retaining nut, install the fuel pump nut tool on a torque wrench with it's handle perpendicularly (90°) to the torque wrench.
   - 6.3 Ensure pump is properly aligned with index marks after nut it tightened to specification.



TORQUE WRENCH PERPENDICULAR TO TOOL HANDLE

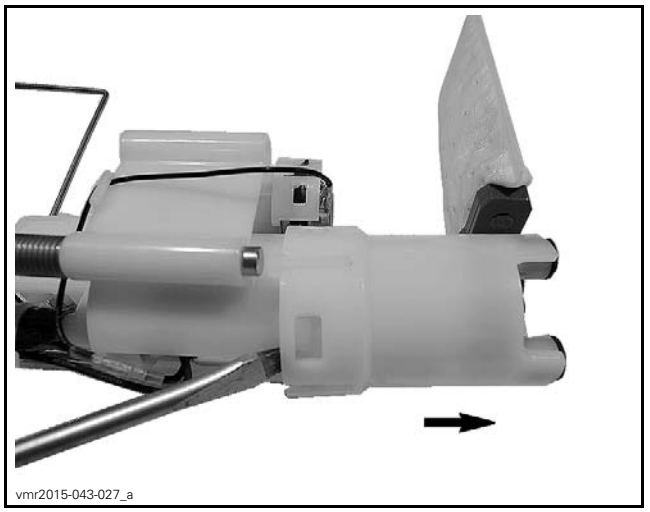
TIGHTENING TORQUE	
Fuel pump retaining nut	29 N•m ± 1 N•m (21 lbf•ft ± 1 lbf•ft)

7. Install fuel pressure hose on fuel pump using a NEW Oetiker clamp.
8. Install fuel vent tube on fuel pump.
9. Install electrical connector on fuel pump.
10. Install fuel pump relay (R4).
11. Refuel tank and ensure there are no leaks by performing a *FUEL TANK LEAK TEST* and a *FUEL PUMP PRESSURE TEST* as described in this subsection.
12. Check fuel level sender operation.

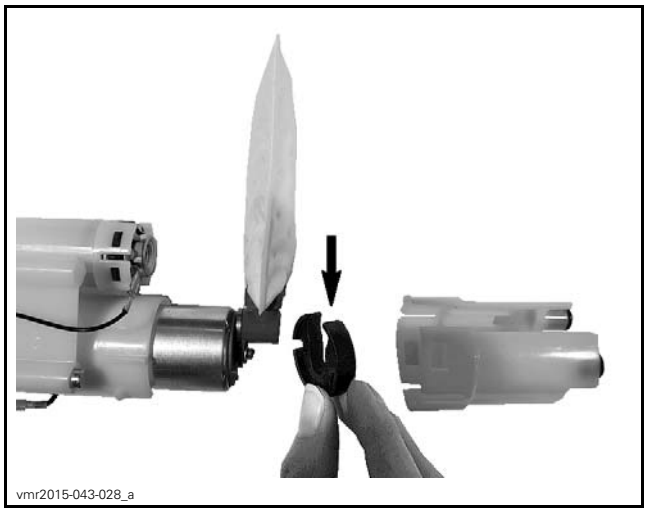
FUEL PUMP PRE-FILTER (STRAINER)

Fuel Pump Pre-filter Replacement (570 Engine)

1. Remove *FUEL PUMP*, see *FUEL PUMP REMOVAL* in this subsection.
2. Unlock 3 tabs on strainer plastic ring.



3. Remove rubber pad.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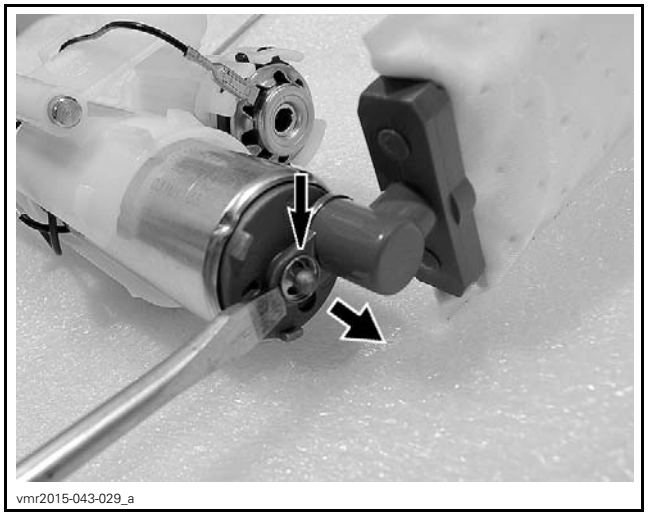
4. Remove push nut securing strainer to fuel pump. Be careful not to break the assembly locator pin.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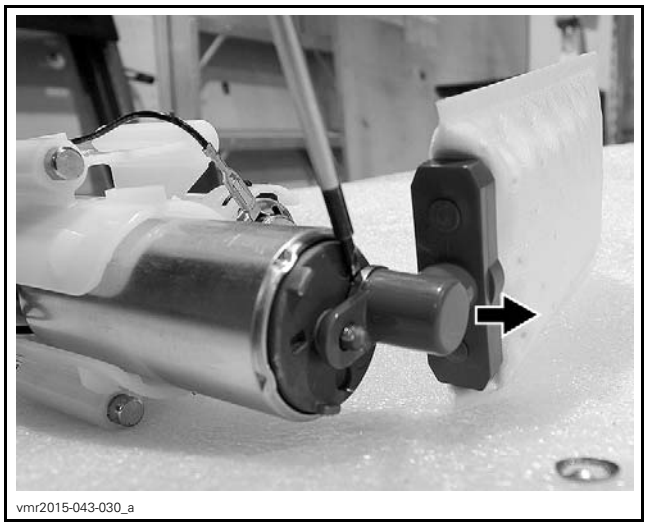
5. Pull strainer off fuel pump.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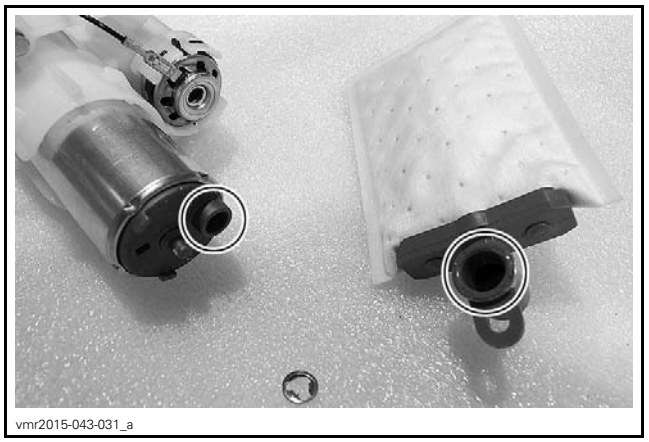
6. Lubricate assembly area of new strainer and fuel pump with O-ring lubricant or clean oil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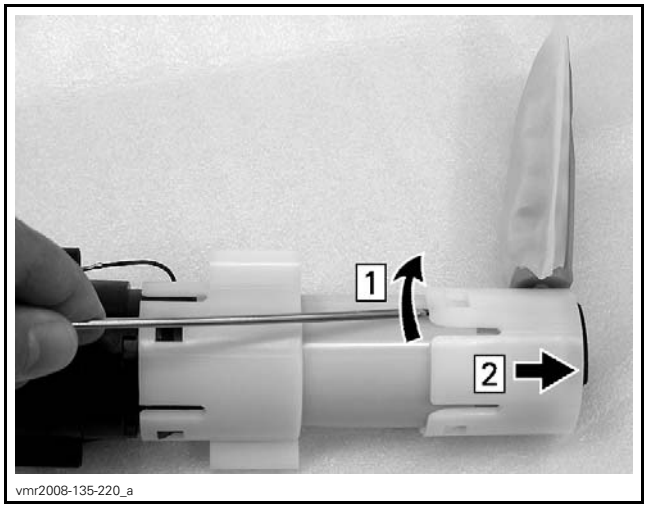
7. Insert the new strainer on fuel pump making sure to press it in tightly against the fuel pump surface.
8. Using a small socket, press in a **NEW** push nut to secure strainer.
9. Reinstall remaining removed parts.

Fuel Pump Pre-filter Replacement (650, 850 and 1000R Engines)

1. Remove *FUEL PUMP*, see *FUEL PUMP REMOVAL* in this subsection.
2. Unlock 3 tabs on strainer plastic ring.



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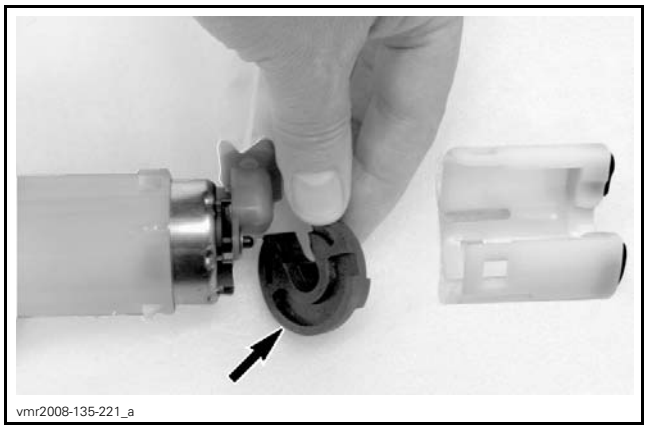
Step 1: Lift these tabs to unlock ring
Step 2: Pull ring off pump inlet

3. Remove rubber pad.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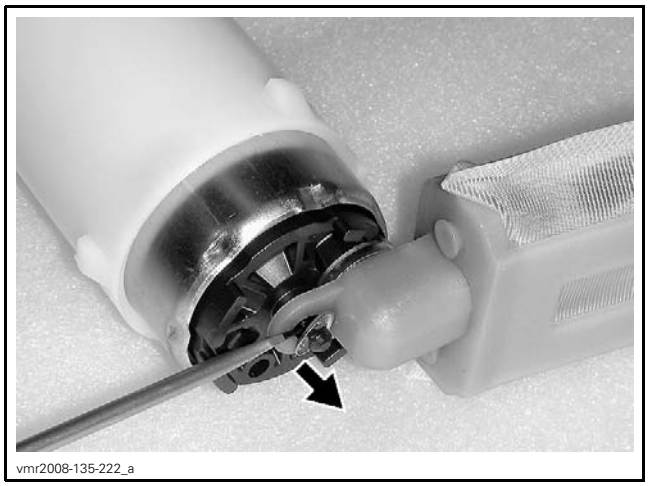
4. Remove push nut securing strainer to fuel pump. Be careful not to break the plastic pin.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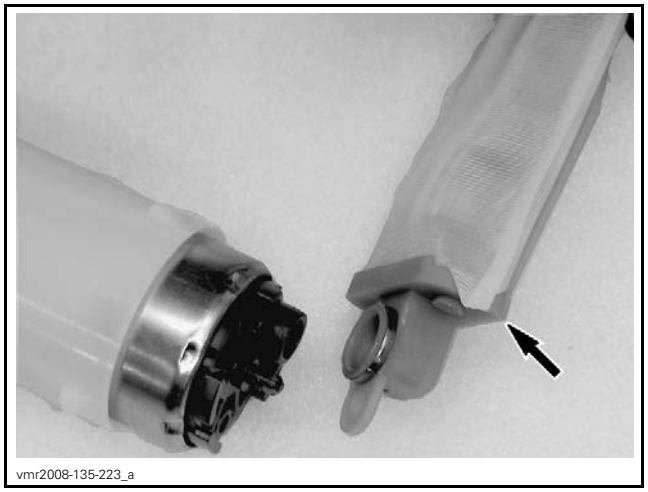
5. Pull strainer off fuel pump.

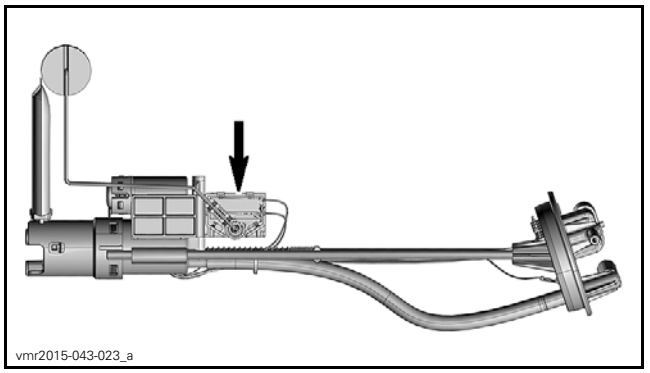

vmr2008-135-223_a

NOTE: A non-serviceable filter is located within the fuel pump module. If it is clogged, replace fuel pump.

6. Insert the new strainer on fuel pump making sure to press it in tightly against the fuel pump surface.
7. Press in a NEW push nut to secure strainer.
8. Reinstall remaining removed parts.

FUEL LEVEL SENDER

The fuel level sender is a float actuated variable resistance type that is part of the fuel pump.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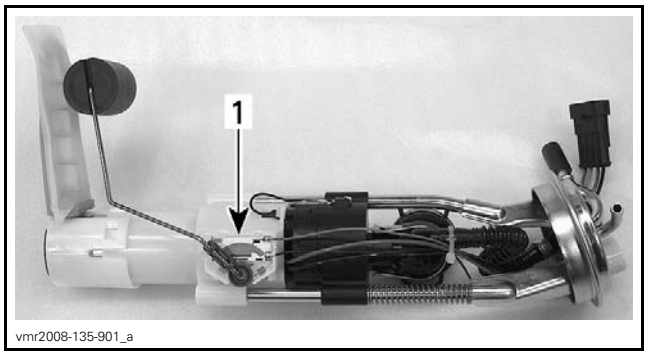
570 ENGINE



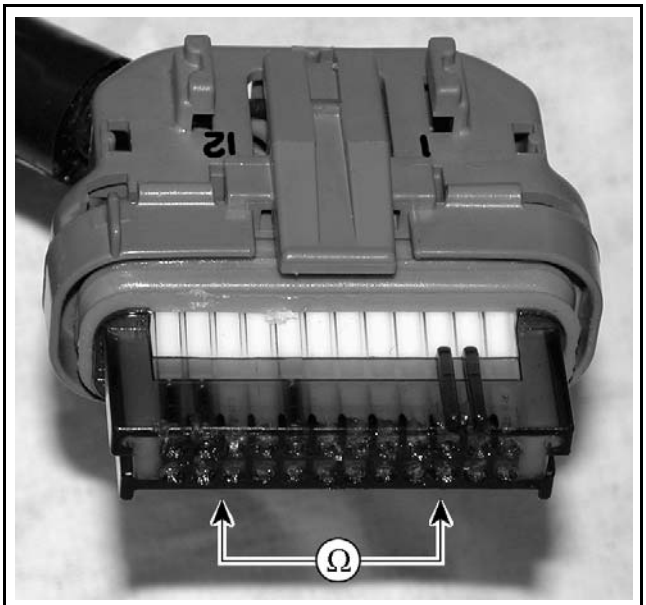
vmr2008-135-901_a

650, 850 AND 1000R ENGINES
1. Fuel level sender

Fuel Level Sender Resistance Test (Fuel Pump Module Installed)

1. Disconnect multifunction gauge, refer to the *LIGHTS/GAUGE/ACCESSORIES* subsection.
2. Measure the resistance of the fuel level sender as follows.

FUEL LEVEL SENDER RESISTANCE TEST		
FUEL LEVEL	GAUGE CONNECTOR	RESISTANCE Ω @ 20°C (68°F)
Full	Pins 4 and 21	5 Ω ± 1
Empty		100 Ω ± 5



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If readings are out of specification, refer to *FUEL LEVEL SENDER RESISTANCE TEST (AT FUEL PUMP CONNECTOR)*.

If readings are as specified, refer to *FUEL LEVEL SENDER INPUT VOLTAGE TEST*.

Fuel Level Sender Resistance Test (at Fuel Pump Connector)

FUEL LEVEL SENDER RESISTANCE TEST		
FUEL LEVEL	FUEL PUMP CONNECTOR	RESISTANCE Ω @ 20°C (68°F)
Full	Pins 1 and 2	5 Ω ± 1
Empty		100 Ω ± 5

If resistance test at fuel pump connector is failed, replace fuel pump module.

Fuel Level Sender Input Voltage Test

1. Set ignition switch to ON.
2. Disconnect fuel pump connector, refer to *FUEL PUMP CONNECTOR ACCESS* in this subsection.
3. Measure for input voltage as follows.

FUEL LEVEL SENDER INPUT VOLTAGE TEST		
FUEL PUMP CONNECTOR	BATTERY	VOLTAGE
Pin 2	Negative terminal	5V

TEST RESULT	SERVICE ACTION
5V is not read	Test wiring continuity between fuel level sender and multifunction gauge
Wiring continuity is good	Replace multifunction gauge
Wiring continuity is not obtained	Repair or replace wiring

Fuel Level Sender Replacement

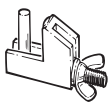
Replace fuel pump. Refer to *FUEL PUMP* in this subsection.

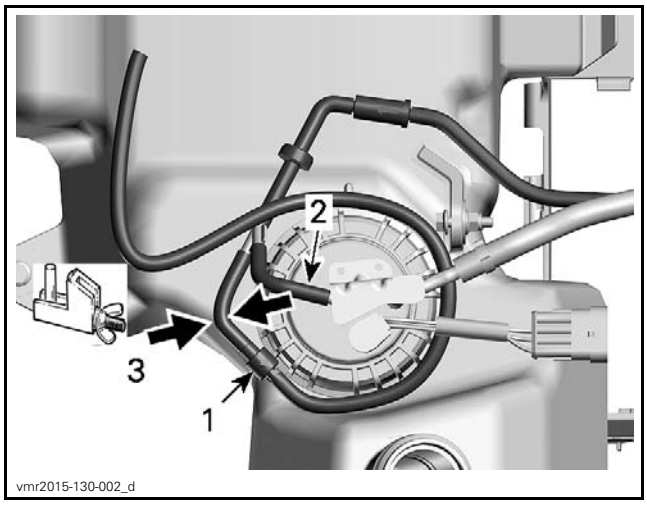
FUEL TANK VENT VALVES

Fuel Tank Vent Valve Test

Inlet Check Valve Test

1. Remove rear body module, refer to *BODY* subsection.
2. Remove multifunction gauge for access to the vent system inlet hose, refer to the *LIGHTS, GAUGE AND ACCESSORIES* subsection.
3. Install a small hose pincher between the vent pressure relief valve and the fuel pump vent inlet.

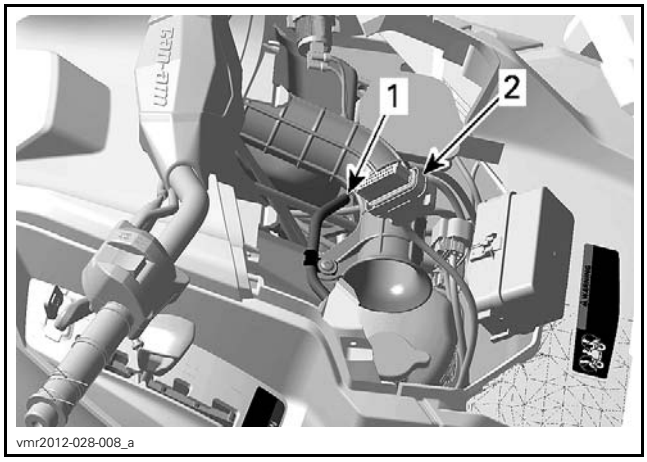
REQUIRED TOOL	
SMALL HOSE PINCHER (P/N 295 000 076)	



TYPICAL
1. *Pressure relief valve*
2. *Fuel pump vent inlet*
3. *Install small hose pincher here*

4. Connect the vacuum/pressure pump to the fuel tank vent hose inlet.

REQUIRED TOOL	
VACUUM/PRESSURE PUMP (P/N 529 021 800)	



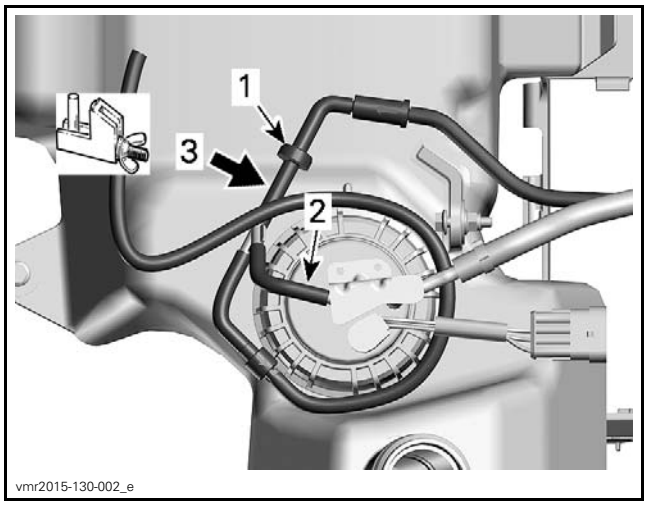
TYPICAL
1. *Fuel tank vent hose inlet*
2. *Gauge connector*

5. Remove fuel tank cap.
6. Set vacuum/pressure pump to **PRESSURE** and activate pump. The gauge on the pump **should not change in reading**.
7. Set vacuum/pressure pump to **VACUUM** and activate pump. The **gauge should increase in reading**.

If the test failed, carry out the following:
– Ensure breather filter is properly installed, refer to *PERIODIC MAINTENANCE PROCEDURES*.
– Ensure inlet check valve is properly installed, refer to *FUEL TANK VENT VALVE INSTALLATION* in this subsection.
– Test inlet check valve separately. If good, replace the breather filter, refer to *PERIODIC MAINTENANCE PROCEDURES*.

Pressure Relief Valve Test

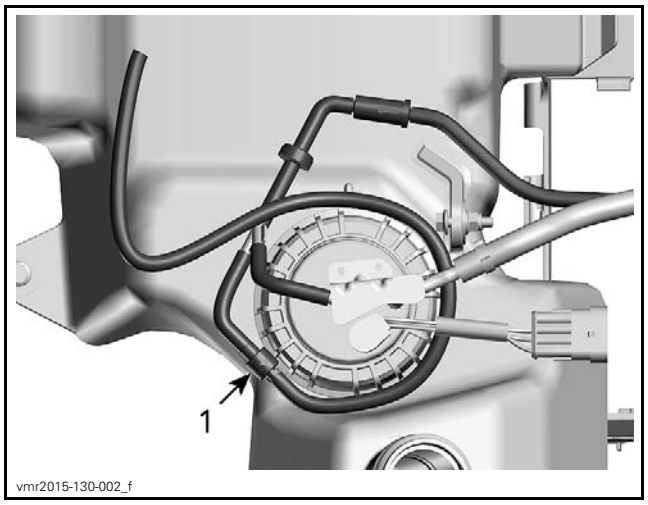
1. Install the small hose pincher between the inlet check valve and the fuel pump vent inlet fitting.



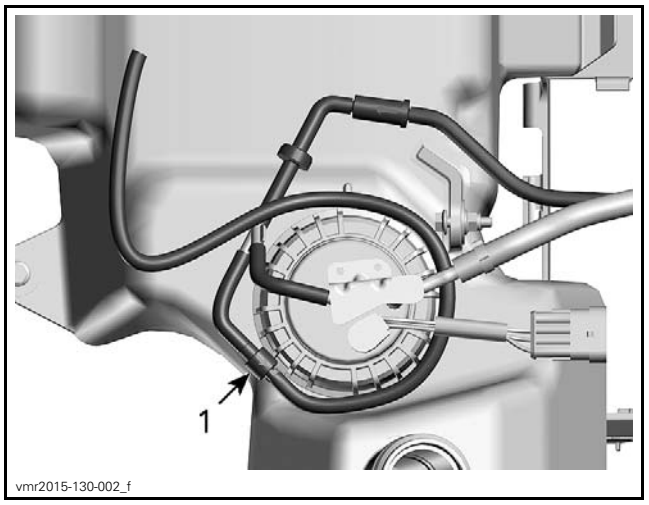
TYPICAL
1. *Inlet check valve*
2. *Fuel pump vent inlet fitting*
3. *Install small hose pincher here*

2. Set vacuum/pressure pump to **PRESSURE** and activate pump. The **gauge should increase in reading**.
3. Set vacuum/pressure pump to **VACUUM** and activate pump. The gauge on the pump **should not change in reading**.

If the test failed, carry out the following:
– Ensure pressure relief valve is properly installed, refer to *PRESSURE RELIEF VALVE INSTALLATION* in this subsection.
– Replace pressure relief valve if it fails the test.



TYPICAL
1. Pressure relief valve flow direction arrow

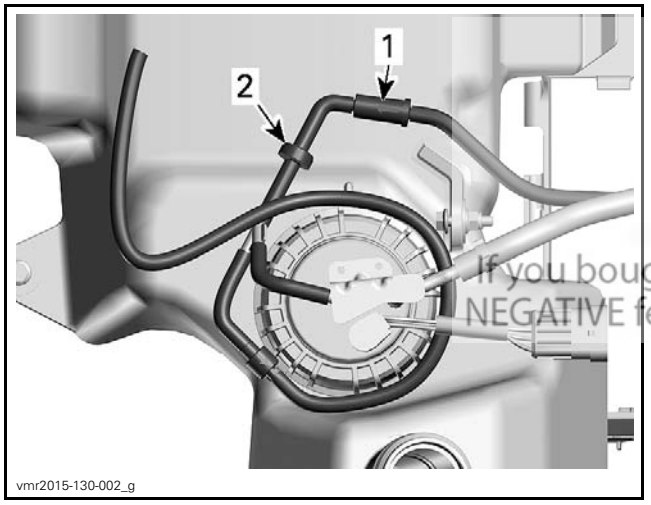


TYPICAL
1. Pressure relief valve flow direction arrow

Fuel Tank Vent Valve Installation

Inlet Check Valve Installation

Ensure white portion of inlet check valve is towards the vent breather filter.



TYPICAL
1. Vent breather filter
2. White portion of inlet check valve

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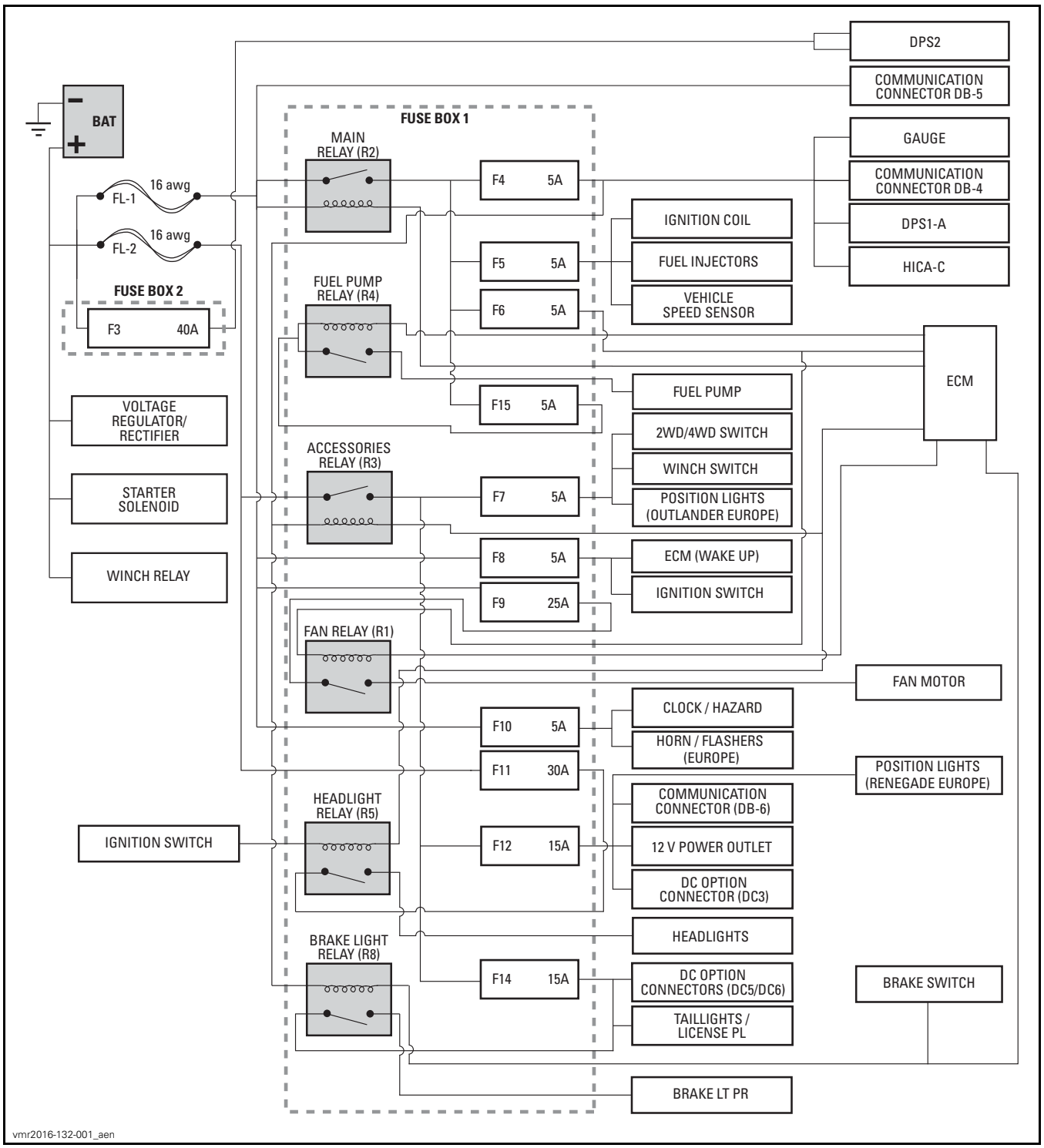
Pressure Relief Valve Installation

Ensure pressure relief valve flow arrow is pointing away from fuel pump vent fitting.

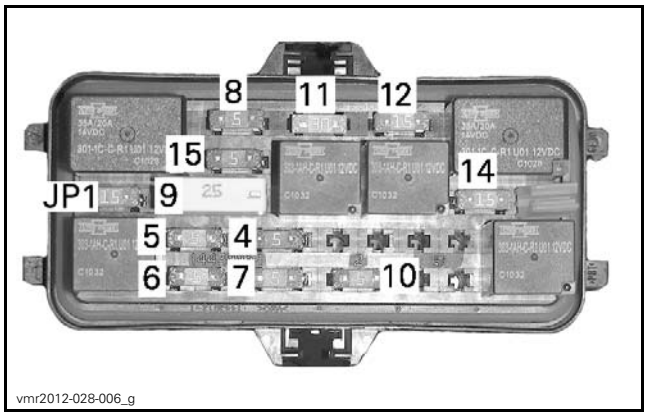
POWER DISTRIBUTION AND GROUNDS

GENERAL

POWER DISTRIBUTION DIAGRAM

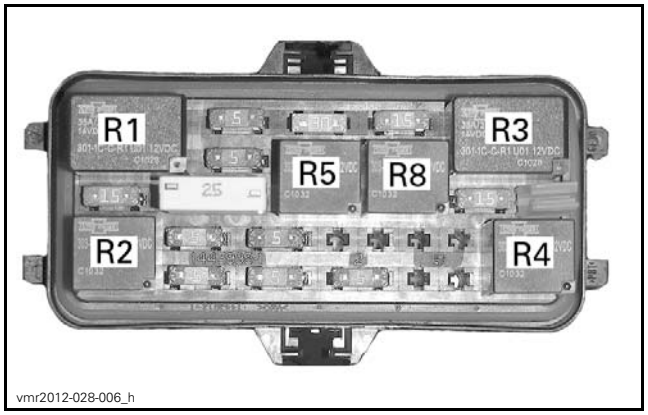


FUSE BOX 1



FUSES

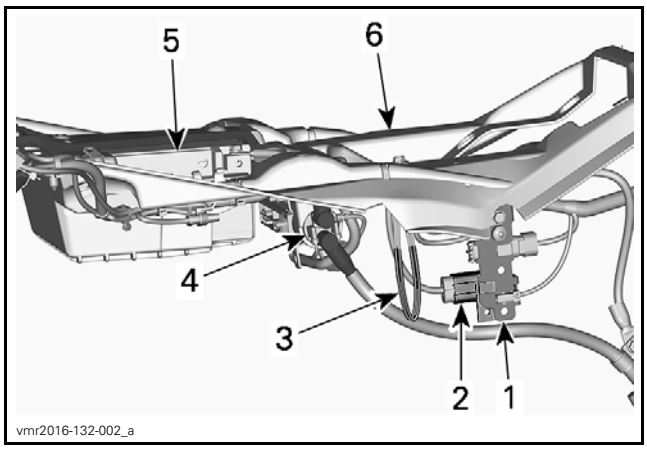
FUSE IDENTIFICATION		
Fuse	4	5 A
	5	5 A
	6	5 A
	7	5 A
	8	5 A
	9	25 A
	10	5 A
	11	30 A
	12	20 A
	14	20 A
	15	5 A
	JP1	Jumper 1 (or 20 A fuse)



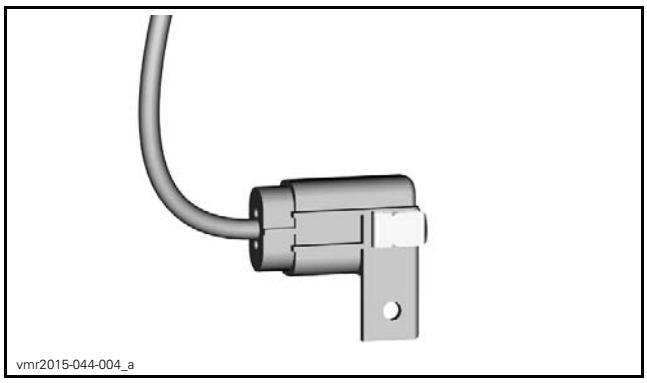
RELAYS

RELAY IDENTIFICATION		RELAY STATE (ON)	RELAY STATE (OFF)
R1	Cooling fan	See *COOLING SYSTEM*	
R2	Main	When ignition key is turned ON AND Run/Stop switch is set to RUN	Approximately 30 seconds after ignition key is turned OFF
R3	Accessories	Same as main relay	When ignition key is turned OFF OR When engine speed is less than 1000 RPM for at least 50 minutes
R4	Fuel pump	See *FUEL TANK AND FUEL PUMP*	
R5	Headlights	Same as main relay	When ignition key is turned OFF OR When engine speed is less than 1000 RPM for at least 50 minutes
R8	Brake lights	See *BRAKES*	

FUSE LINKS AND FUSE BOX 2



LOCATION OF FUSE LINKS AND FB2
1. *Connector support (right side of vehicle)*
2. *Fuse box 2*
3. *Fuse links 1 and 2*
4. *Starter solenoid*
5. *Battery*
6. *Battery support*

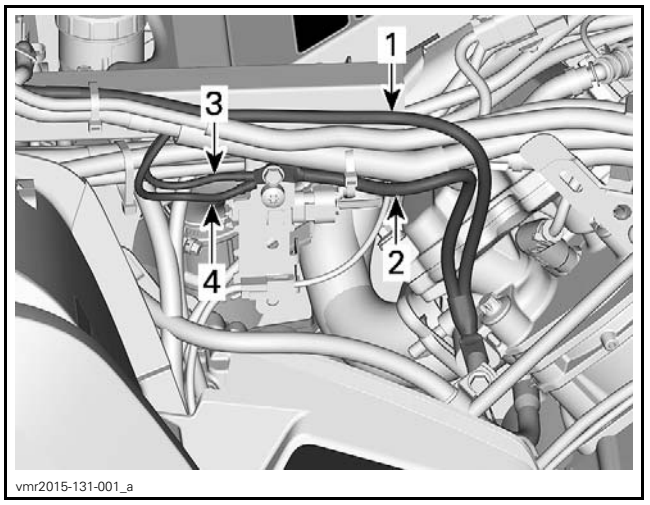


FUSE BOX 2

FUSE LINK IDENTIFICATION			
Fuse links	1	Main	16 awg
	2	Fan/accessories	16 awg
FUSE IN FUSE BOX 2 IDENTIFICATION			
Fuse	3	DPS (dynamic power steering)	40 A

GROUNDS

All grounds are grouped at the same location on RH side of frame.



TYPICAL - RH SIDE
1. *Battery ground*
2. *Engine ground*
3. *DPS ground*
4. *Wiring harness ground*

PROCEDURES

TESTING A FUSE LINK

Measure the fuse link output voltage (at the fuse box). Refer to the *WIRING DIAGRAM*.

If no voltage is measured, carry out the following:
- Remove the right side panel and extension panel.
- Grab each end of the fuse link and gently pull in opposite directions.

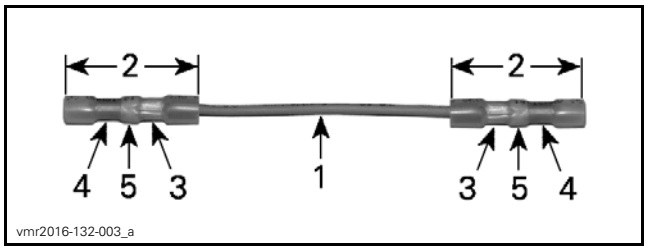
If the fuse link is open, the insulator should stretch and break where the link has failed.

NOTE: Failure of a fuse link is usually due to a severe overload (or short circuit) between the fuse link and the load it protects (the fuse box).

REPLACING A FUSE LINK

NOTICE Before replacing a fuse link, be sure to find and repair the cause of the failure.

The gauge of the fuse link can be identified by the color of its insulator, and by an identification label. Be sure to replace a fuse link by an identical fuse link.
- blue = 18 awg
- black = 16 awg
- gray = 14 awg



PRE-ASSEMBLED REPLACEMENT FUSE LINK
1. *Insulated fuse link wire*
2. *Butt end terminal*
3. *Terminal factory crimped on fuse link*
4. *Crimp here when installing in circuit*
5. *Solder ring*

1. Disconnect the battery.
2. Cut the circuit wiring as close as possible to the fuse link terminals.
3. Remove 8 mm (5/16 in) of insulator from the ends of the circuit wiring.
4. Insert the circuit wire end in the link terminal making sure the wire end bottoms out in the center of the terminal.
5. Crimp the terminal on the bare wire.
6. Using a heat gun, carefully heat the link terminal until the solder ring has melted into the wiring, and the terminal insulator has shrunk tightly around the terminals and wire insulators.
7. Reconnect the battery.

WIRING HARNESS AND CONNECTORS

SERVICE TOOLS

Description	Part Number	Page
CRIMPING TOOL (HEAVY GAUGE WIRE)	529 035 730	14
ECM ADAPTER TOOL	529 036 166	12
ECM TERMINAL REMOVER 2.25	529 036 175	12
ECM TERMINAL REMOVER 3.36	529 036 174	12

SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
GM TERMINAL EXTRACTOR	12094430	13
SNAP-ON TERMINAL REMOVER TOOL	TT600-4	9

GENERAL

The illustrations in this subsection are typical. Several variants of the connector types, such as different number of pin cavities, are used on the vehicle.

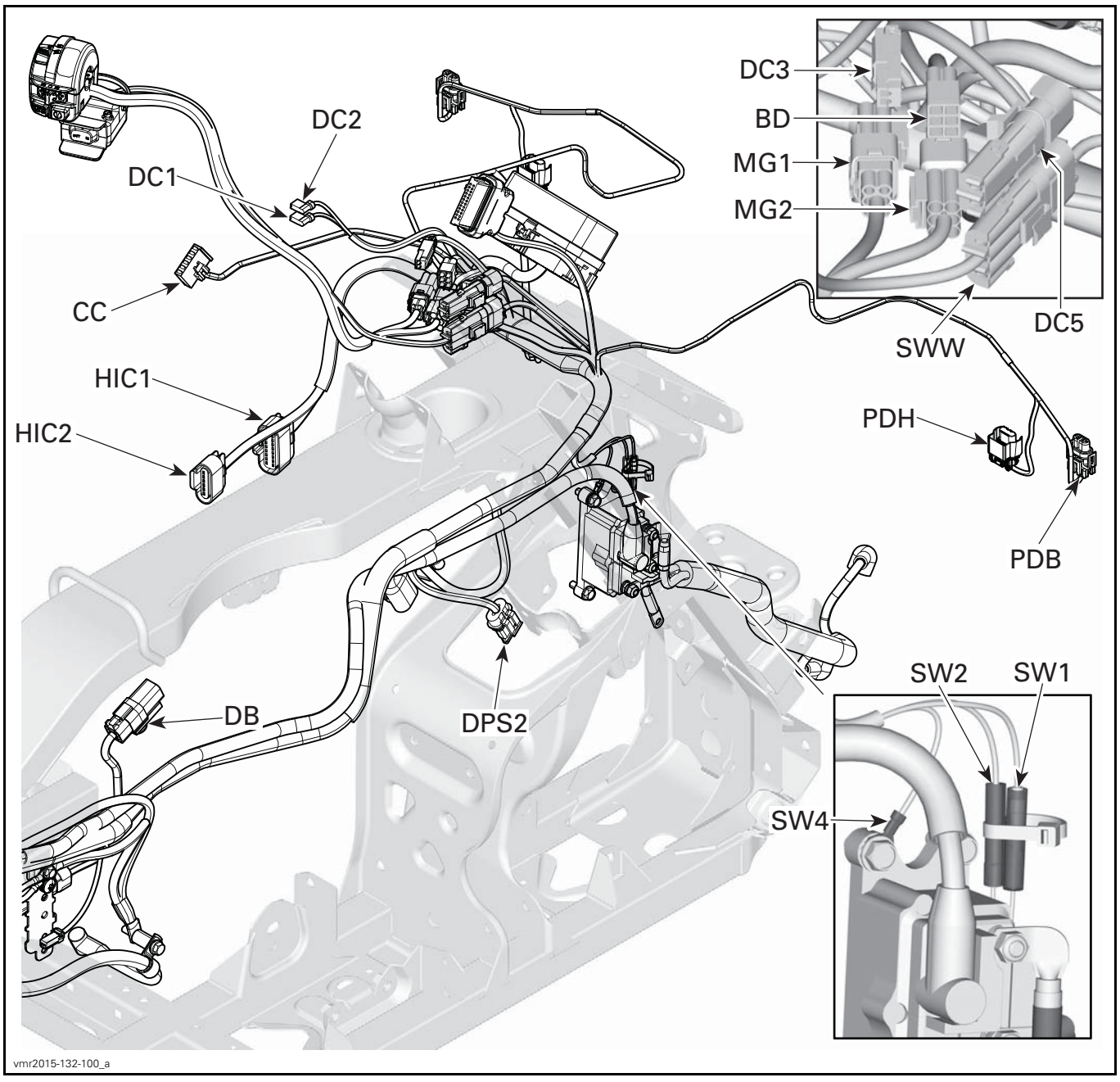
CONNECTOR ABBREVIATION DESCRIPTION

ABBREVIATION	DESCRIPTION
BD	RH multifunction switch
BN1	Ground terminal
BN2	Ground terminal
BN4	Ground terminal
BP1	Positive terminal to PF2
BP2	Positive terminal from battery
BP3	Positive terminal to SM
CC	Ignition switch
CL	Cluster
CRD	Rear RH turn light (Used on European models only)
CRG	Rear LH turn light (Used on European models only)
DB	Diagnostic connector
DC1	Accessory outlet
DC2	Accessory outlet
DC3	Accessory outlet
DC5	Accessory outlet
DC6	Accessory outlet
DC7	Accessory outlet
DPS1	Dynamic power steering
DPS2	Dynamic power steering
DPS3	Dynamic power steering
FL	Fuse link
FP	Fuel pump
FRR	Rear brake light switch
FT	Cooling fan
HIC1	Harness interconnect
HIC2	Harness interconnect
HICa	Harness interconnect (Used on European models only)
MG1	LH multifunction switch
MG2	LH multifunction switch
PDB	RH lower headlight
PDH	RH upper headlight
PF1	Front Fuse box
PF2	Rear fuse holder
PGB	LH LO beam headlight
PGH	LH HI beam headlight
PL	License plate light (Used on European models only)

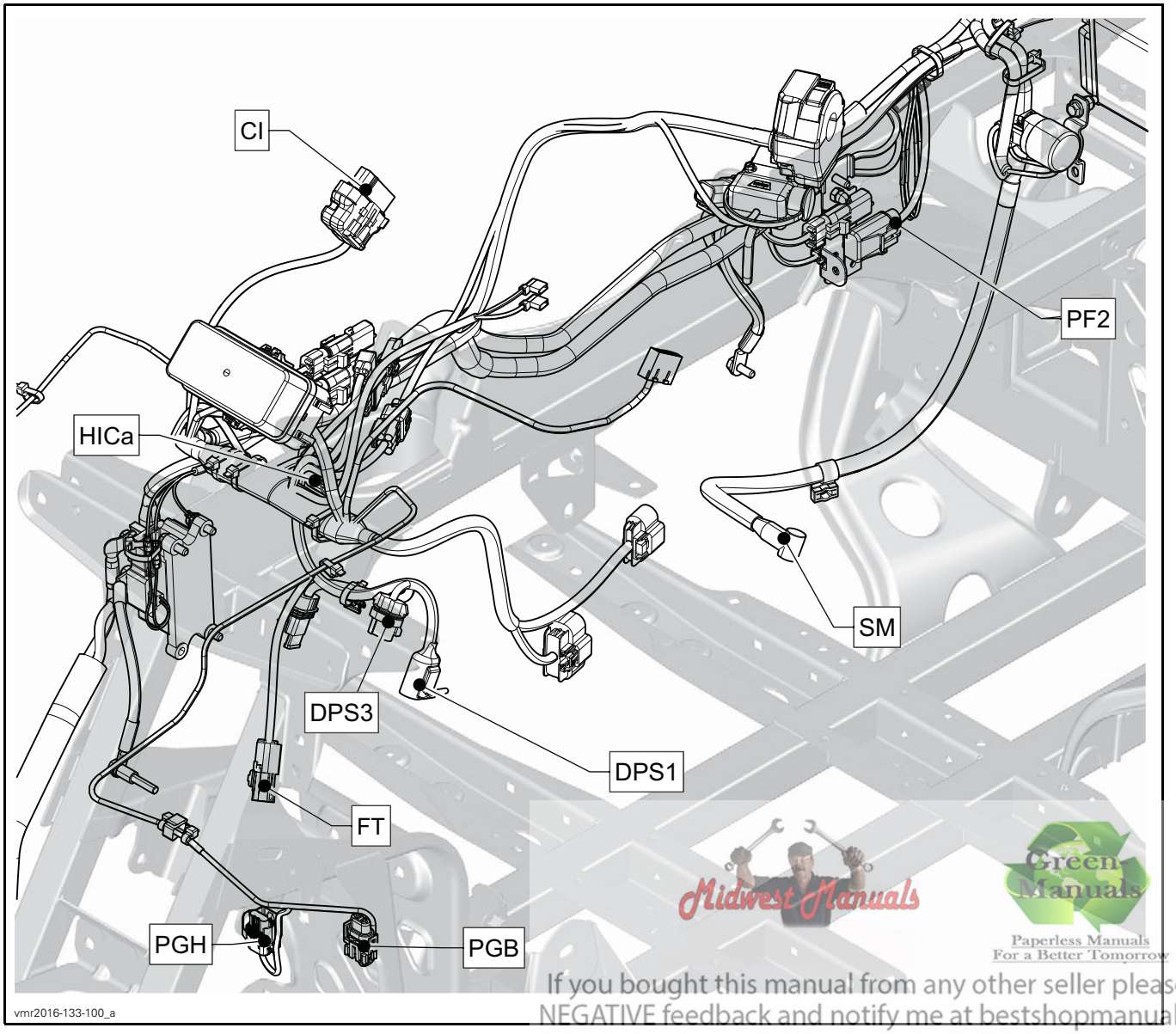
ABBREVIATION	DESCRIPTION
PLD	RH License plate light (Used on European models only)
PLG	LH License plate light (Used on European models only)
PRD	Rear RH light
PRG	Rear LH light
RBL	Trailer harness (Used on European models only)
RD1	Voltage regulator/rectifier
SM	Starter motor
SS1	Starter solenoid
SS2	Starter solenoid
SW1	Winch relay
SW2	Winch relay
SW4	Winch relay
SWW	Winch remote switch

WIRING HARNESS ROUTING

Main Harness (Front 1/2)



Main Harness (Front 2/2)



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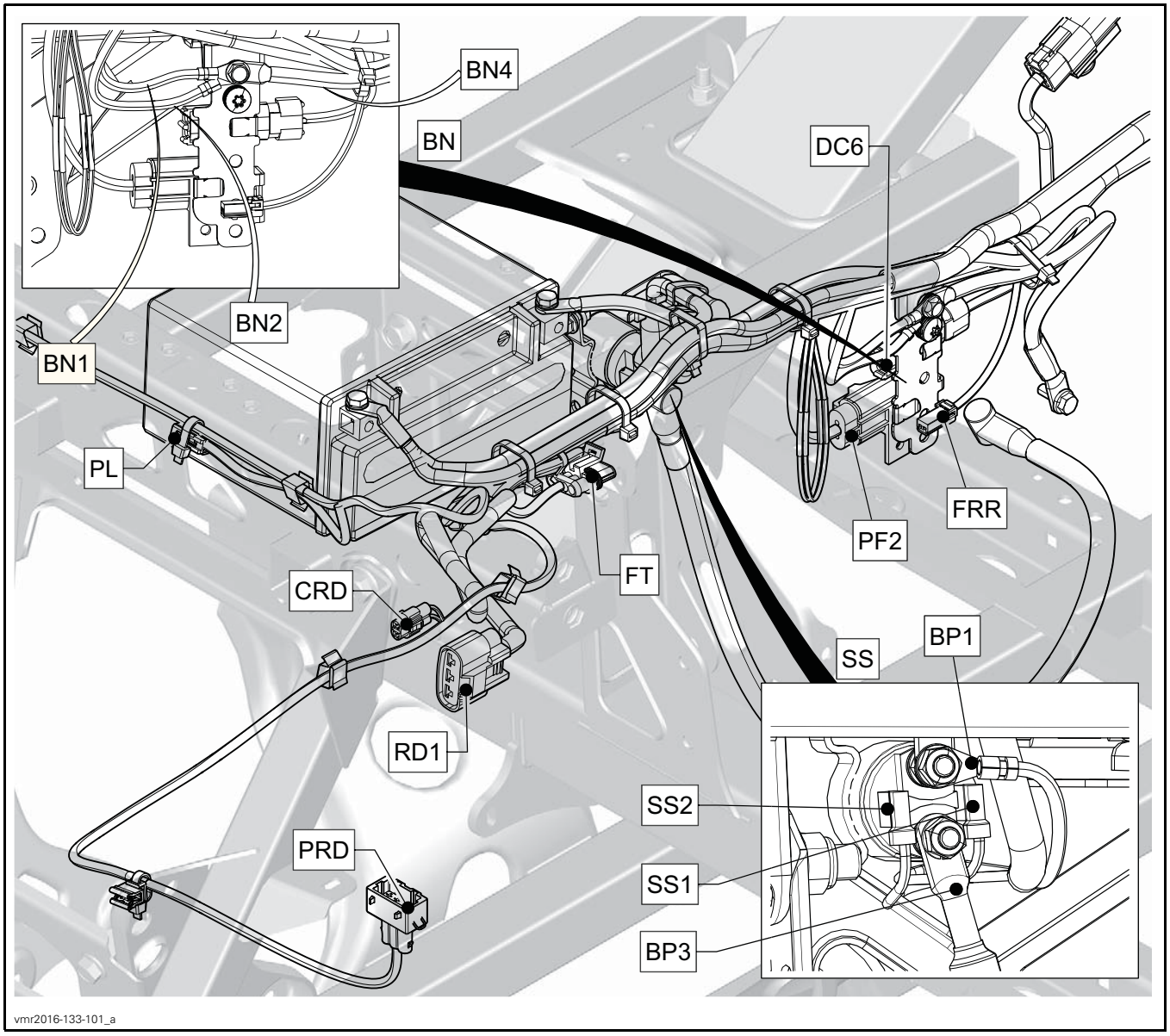
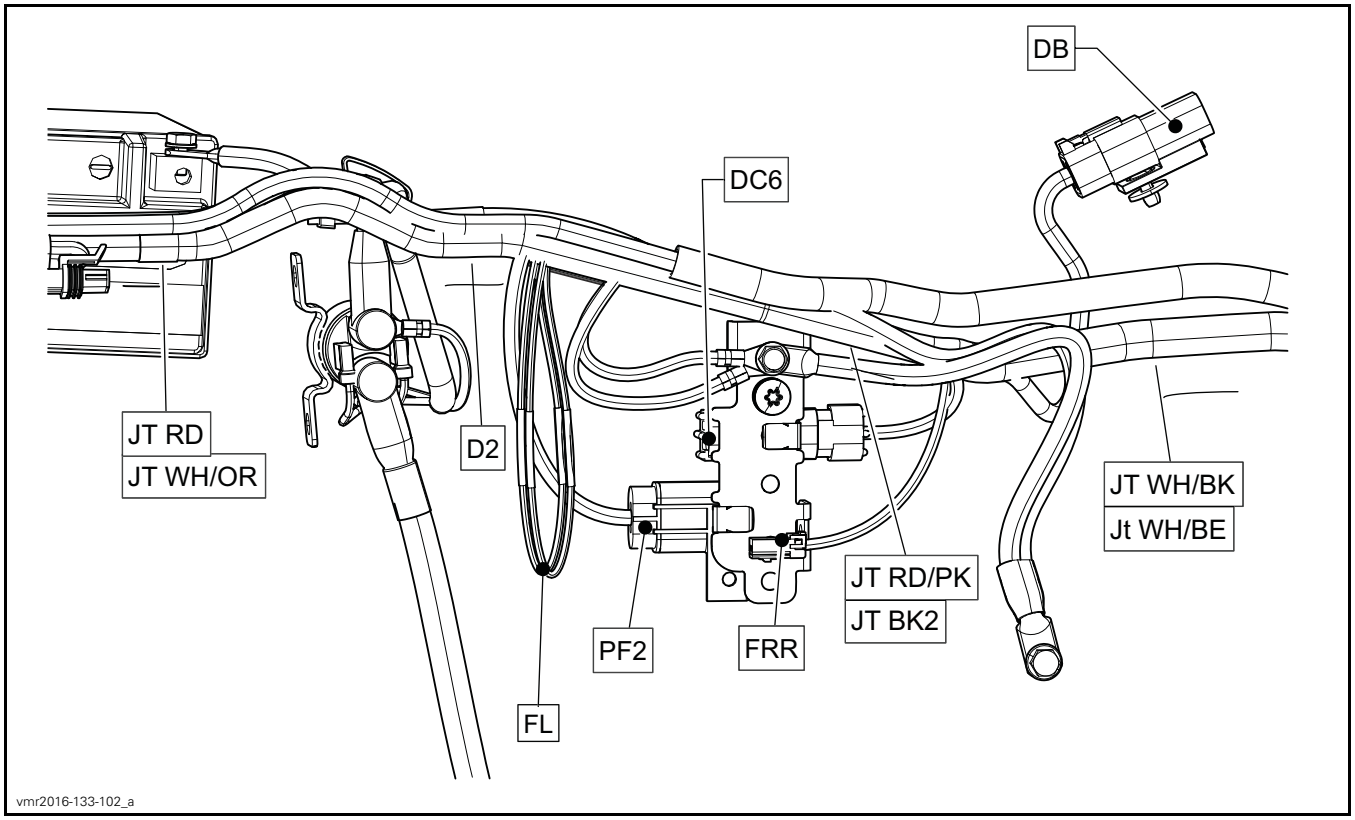
Main Harness (Rear)

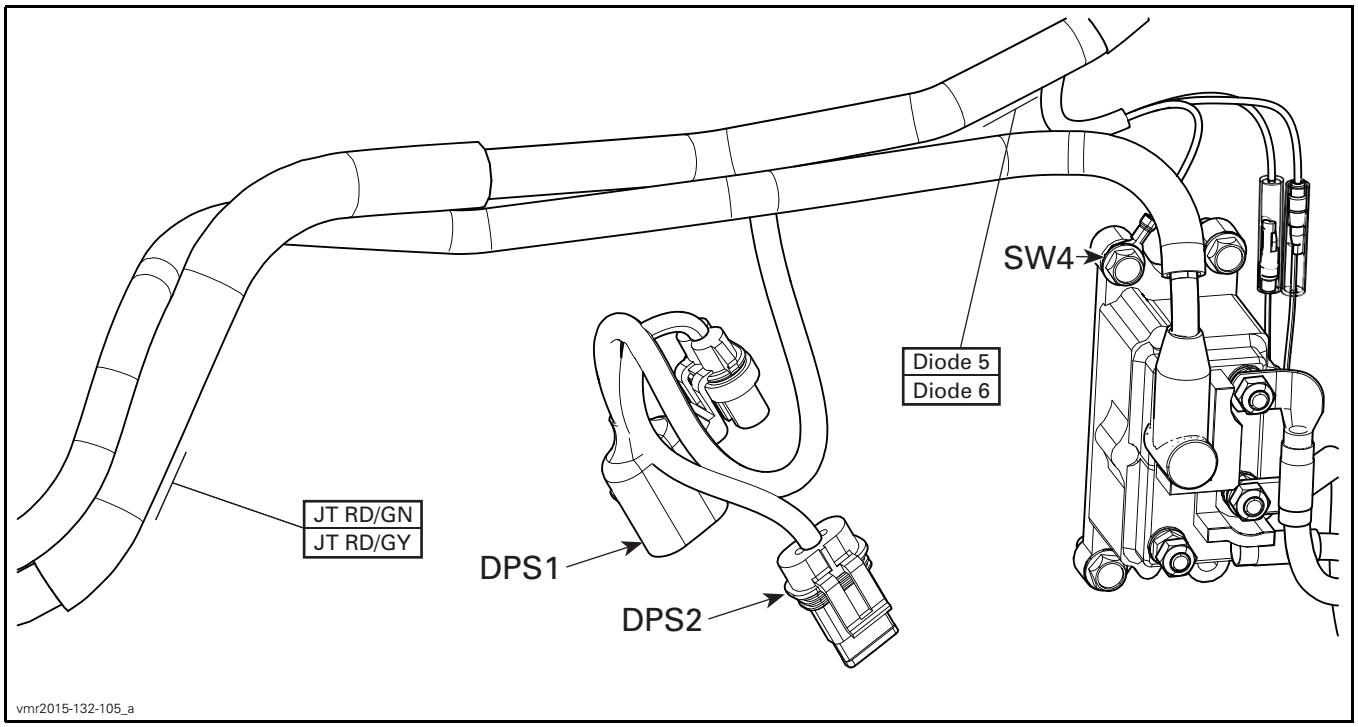


WIRING HARNESS SPLICE LOCATION

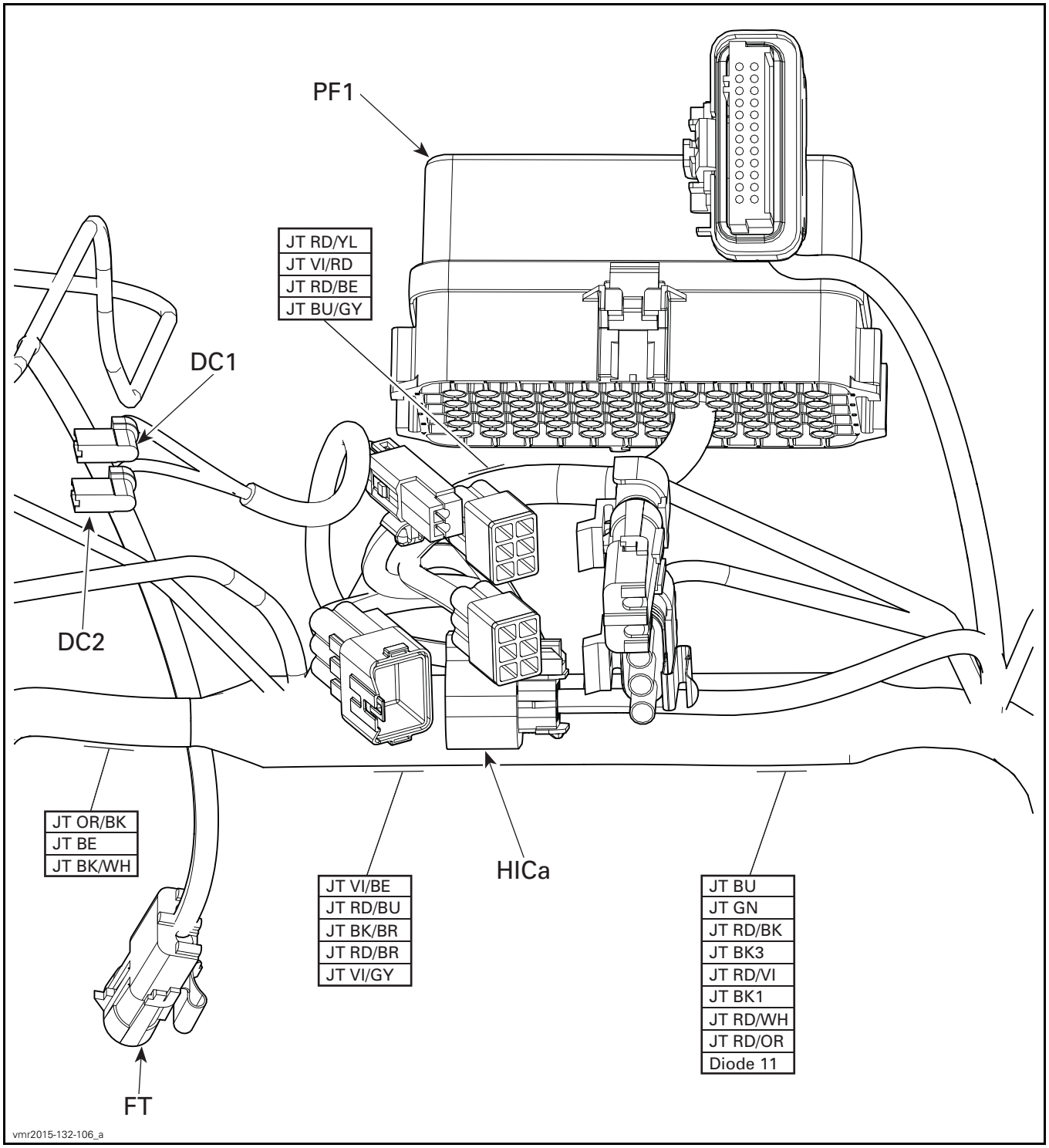
Main Harness (Rear Part)



Main Harness (Front Part 1/2)



Main Harness (Front Part 2/2)



PROCEDURES

DEUTSCH CONNECTORS

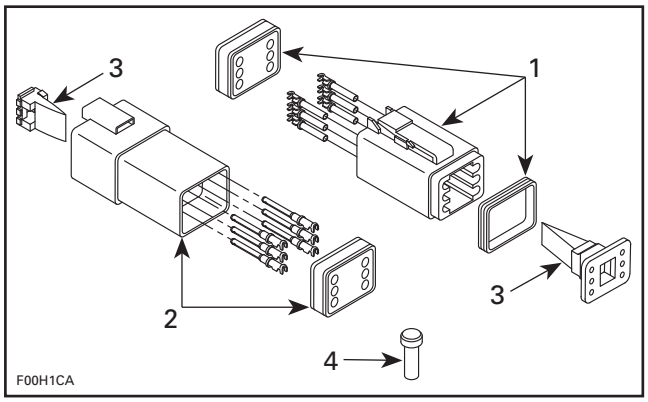
Deutsch Connector Application

A variety of Deutsch connectors are used on various systems:

– Diagnostic connector
– Vehicle speed sensor (VSS) connector.

The following procedures may be used on each as they are similar in construction.

Deutsch Connector Disassembly and Reassembly



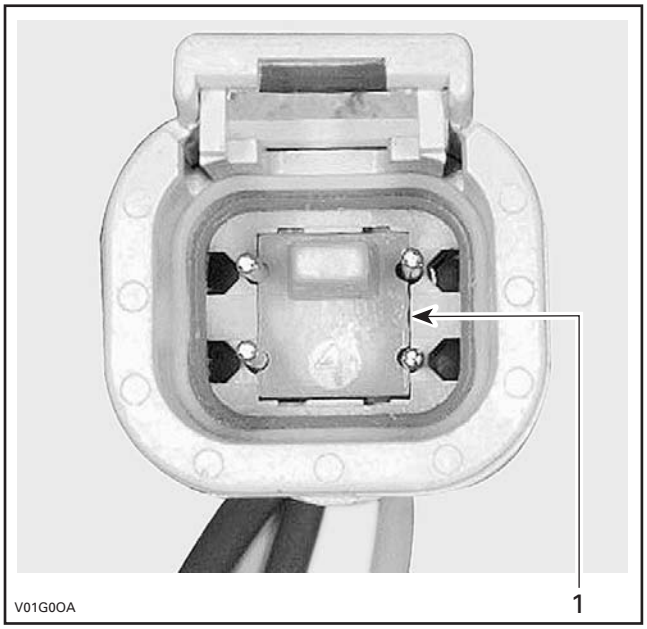
TYPICAL —DEUTSCH CONNECTOR
1. *Male connector*
2. *Female connector*
3. *Secondary lock*
4. *Sealing cap*

NOTICE Do not apply dielectric grease on terminal inside connector.

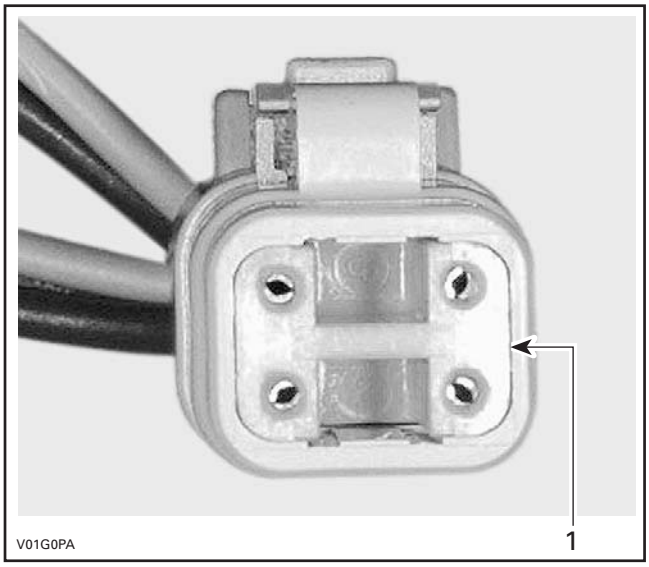
Terminal Removal

To remove terminals from connector, proceed as follows:

1. Using long nose pliers, pull out the secondary plastic lock from between the terminals.



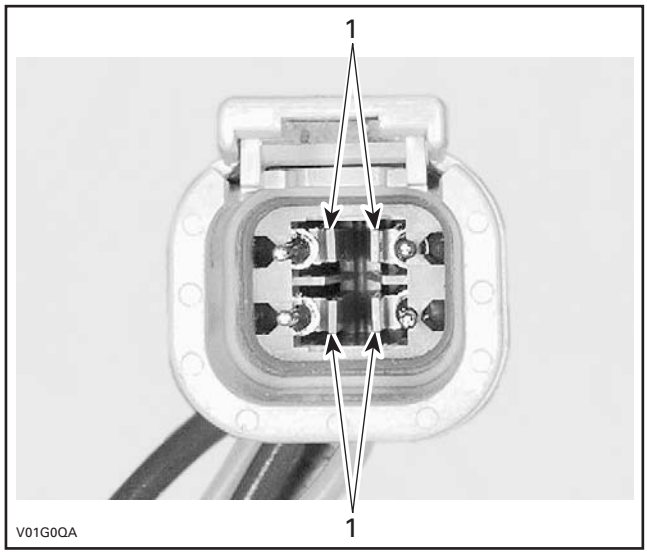
TYPICAL — FEMALE CONNECTOR
1. *Female lock*



TYPICAL — MALE CONNECTOR
1. *Male lock*

NOTE: Before pin extraction, push wire forward to relieve pressure on retaining tab.

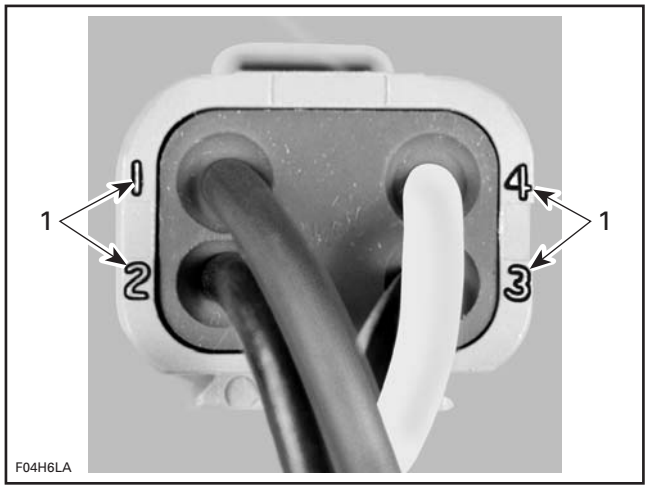
2. Insert a 4.8 mm (.189 in) wide screwdriver blade inside the front of the terminal cavity.
3. Pry the retaining tab away from the terminal while gently pulling the wire and terminal out of the back of the connector.



TYPICAL — FEMALE CONNECTOR
1. Retaining tabs

Terminal Insertion

1. For insertion of a terminal, ensure the secondary plastic lock is removed.
2. Insert terminal through the back of the connector in the appropriate position, and push it in as far as it will go. You should feel or hear the terminal lock engage.
3. Pull back on the terminal wire to be sure the retaining tabs are holding the terminal.
4. After all required terminals have been inserted, the lock must be installed.



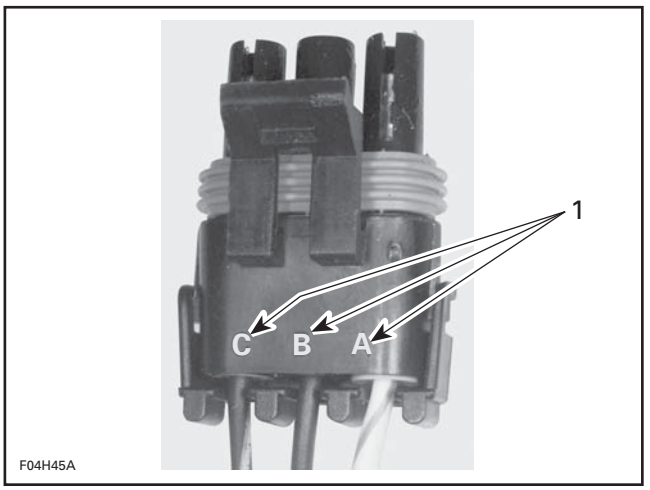
TYPICAL — CONNECTOR PIN-OUT
1. Terminal position identification numbers

PACKARD CONNECTORS

Packard Connector Application

Packard connectors are used to connect:
– Electrical harnesses
– Gauges.

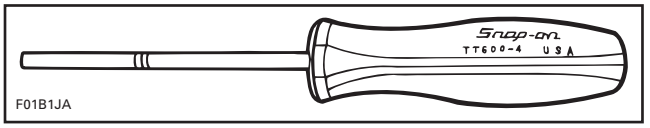
3-Pin Packard Connector



VIEW OF A 3-PIN PACKARD CONNECTOR
1. Identification letters

NOTE: This type of connector also comes in other pin configurations.

To remove a terminal from a 3-pin Packard connector, use the SNAP-ON TERMINAL REMOVER TOOL (P/N TT600-4).

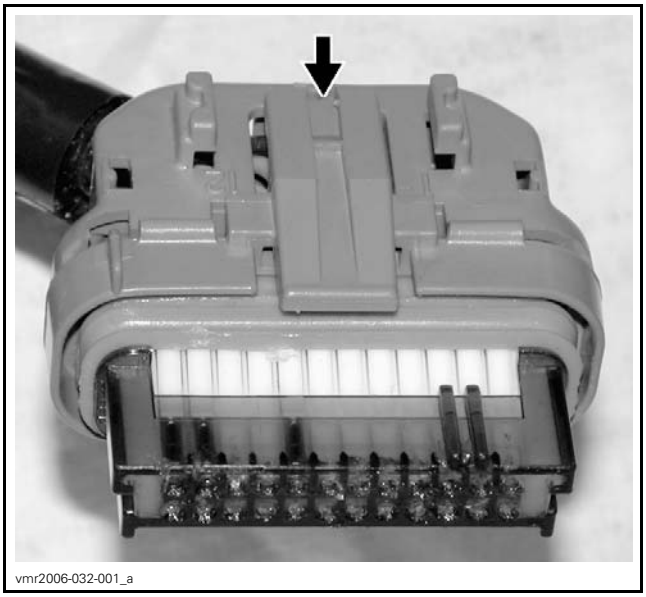


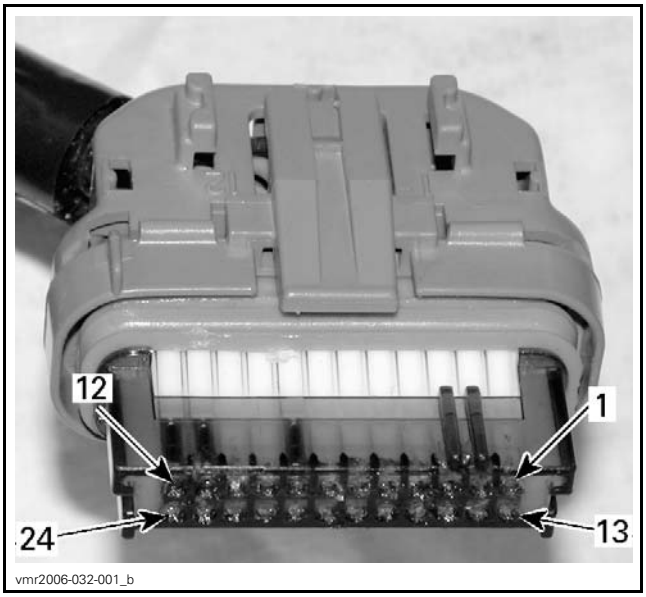
⚠ WARNING

Ensure all terminals are properly crimped on wires and connectors are properly fastened.

PACKARD CONNECTOR (MULTIFUNCTION GAUGE)

Firmly push down tab and hold to unlock connector while pulling it out.

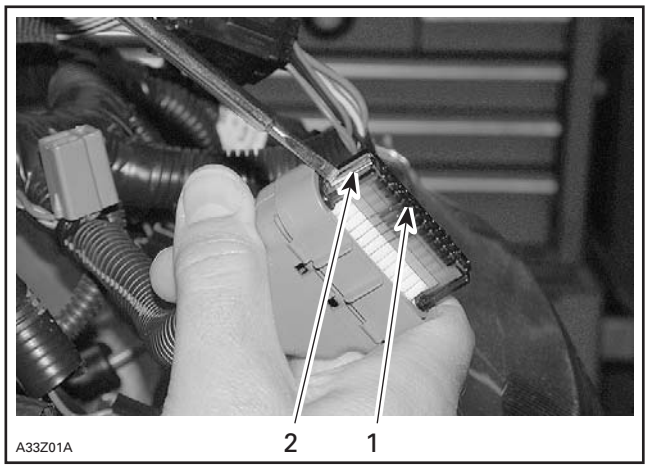

vmr2006-032-001_a



vmr2006-032-001_b

CONNECTOR PINOUT

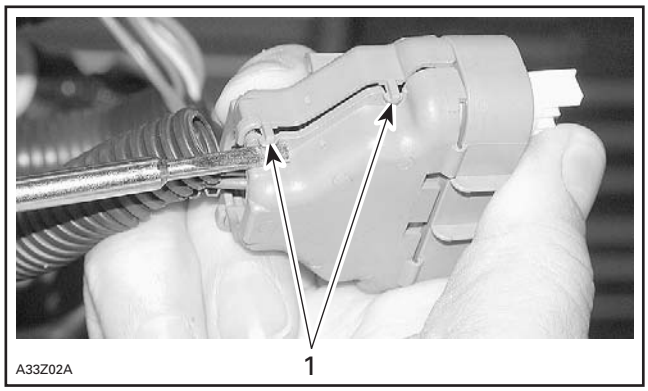
Push on both tabs to remove retainer.



A33Z01A

TYPICAL
1. Retainer
2. Tab (one on each side)

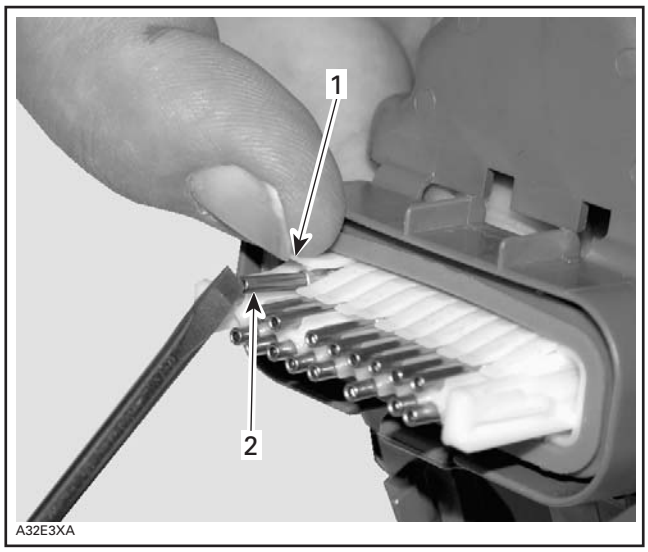
Open housing by lifting 4 tabs.



A33Z02A

TYPICAL
1. Tabs (2 on each side)

Lift the top plastic lock of the female terminal to be removed and hold in position. Lift the female terminal to unlock from the housing and push out of housing.



TYPICAL
1. *Lift and hold plastic lock*
2. *Lift to unlock and push out*

MOLEX CONNECTOR

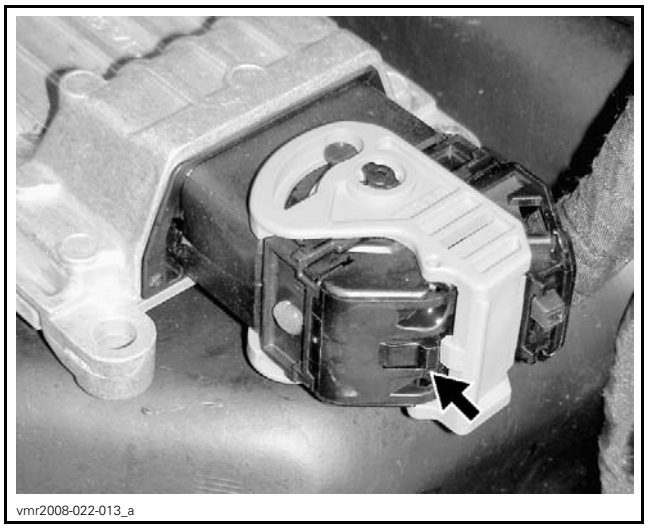
Molex Connector Application

Molex connectors are used on the following system:

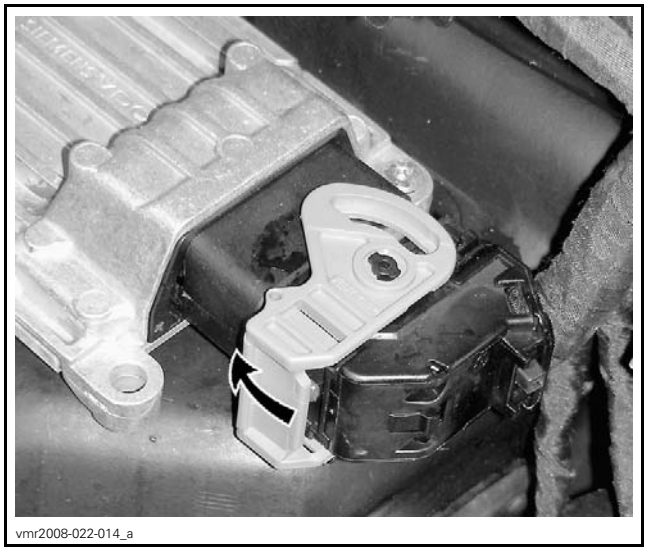
– ECM

Molex Connector Removal

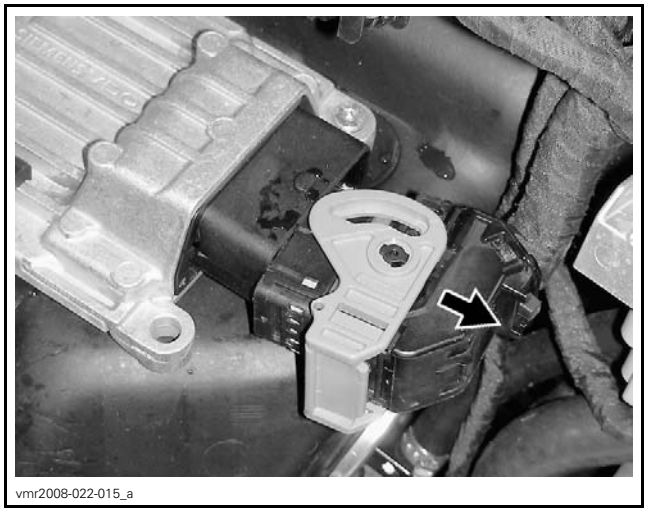
Push and hold the locking tab.



Rotate connector lock until it stops.

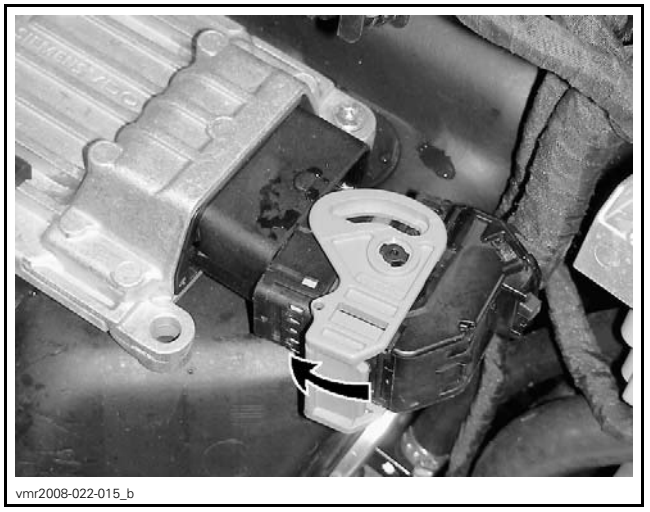


Pull out connector.



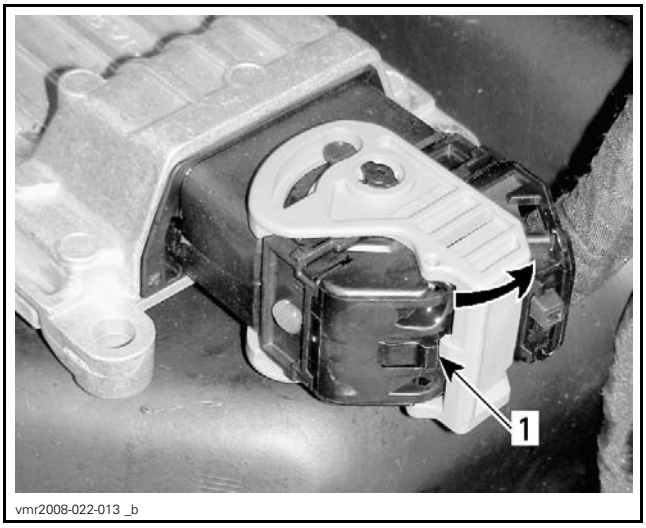
Molex Connector Installation

Fully open connector lock.



Install connector to ECM.

Rotate connector lock until it snaps locked.



vmr2008-022-013 _b

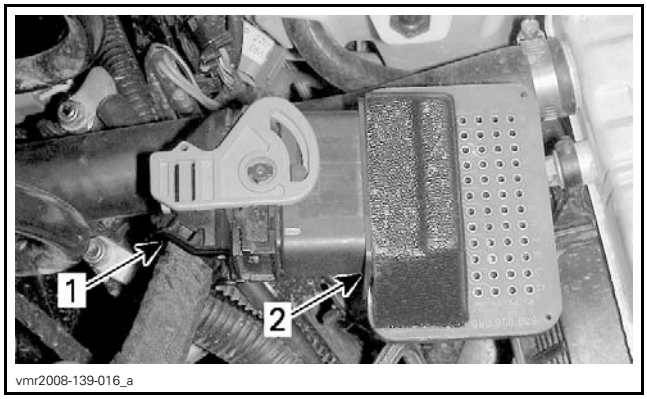
1. Locked here

Molex Connector Probing

The most recommended and safest method to probe ECM connector terminals is to use the ECM ADAPTER TOOL (P/N 529 036 166). This tool will prevent deforming or enlarging terminals which would lead to bad ECM terminal contact creating intermittent or permanent problems.

529036166

Disconnect the ECM connector and reconnect on the tool connector. Probe required terminals directly in the tool holes.



vmr2008-139-016_a

1. ECM connector (harness side)
2. ECM adapter

NOTICE Never probe directly on ECM harness connector. This could change the shape or enlarge the terminals and create intermittent or permanent contact problems.

Molex Connector Inspection

Before replacing an ECM, always check electrical connections.

1. Ensure connector locking mechanism is functioning properly.
2. Ensure all wire terminals (pins) are properly locked in the connector.
3. Ensure they are very tight, make good contact with the pins in the ECM.
4. Ensure the pins in the harness connector and the ECM connector are clean, shiny and corrosion-free.
5. Check wiring harness for signs of scoring.

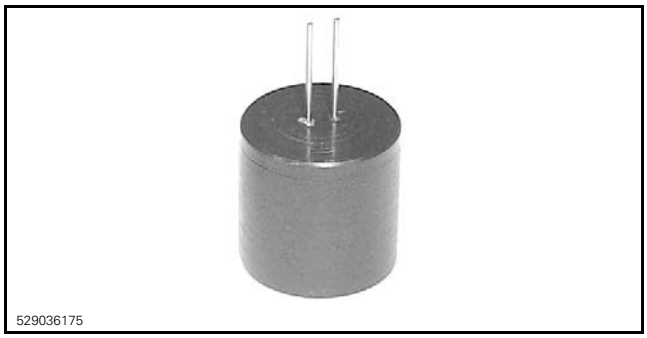
NOTE: A "defective ECM module" could possibly be repaired simply by disconnecting and reconnecting it.

NOTICE Do not apply any lubricant product to the pins of the ECM connector.

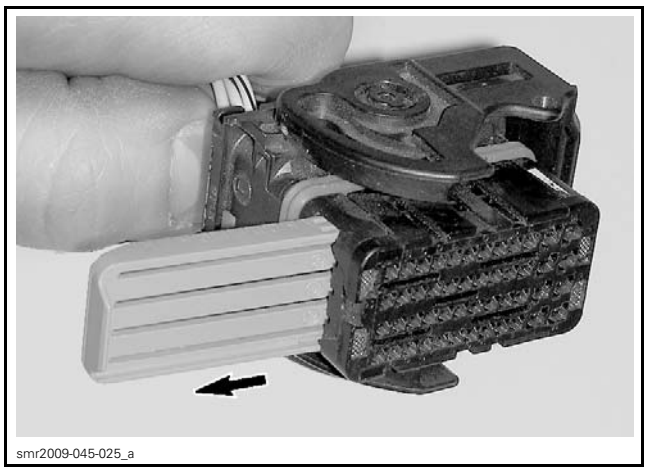
Molex Connector Terminal Removal (Harness Connector)

To remove a signal terminal from the ECM harness connector, use the ECM TERMINAL REMOVER 2.25 (P/N 529 036 175).

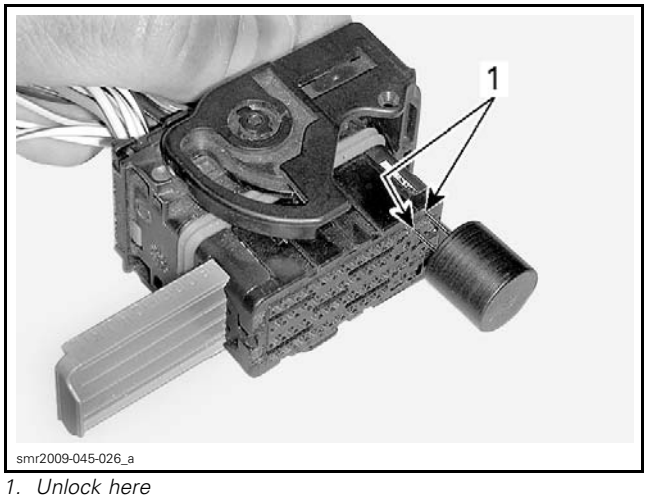
To remove a power terminal, use the ECM TERMINAL REMOVER 3.36 (P/N 529 036 174).


529036175

1. Remove rear protector from connector.
2. Pull out the connector lock.


smr2009-045-025_a

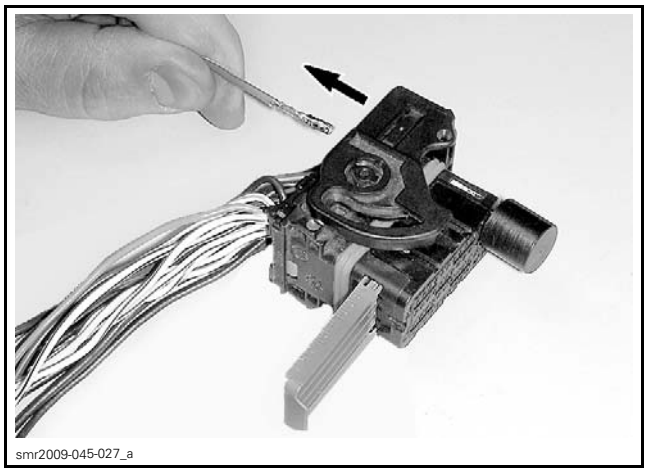
3. Insert tool to unlock terminal.



smr2009-045-026_a

1. Unlock here

4. Gently pull on the wire to extract the terminal out the back of the connector.


smr2009-045-027_a

NOTICE Before installing wire terminals in the connector, ensure all terminals are properly crimped on wires. After installation of wire terminals in the connectors, ensure they are properly locked by gently pulling on them as if to extract them.

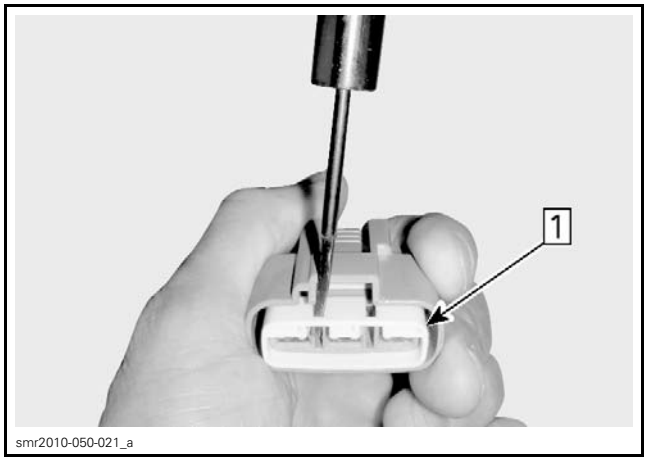
FURUKAWA CONNECTOR

Furukawa Connector Application

Voltage regulator/rectifier.

Terminal Removal

1. Remove the secondary lock (plastic insert).



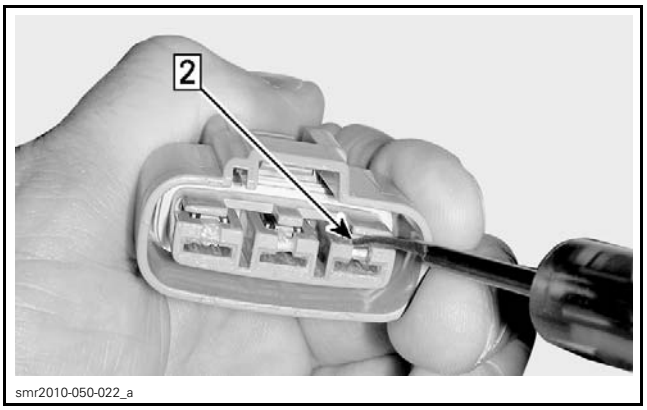
smr2010-050-021_a

Step 1: Remove the secondary lock

2. Carefully insert the GM TERMINAL EXTRACTOR (P/N 12094430) between the lock and the pin to release the pin.

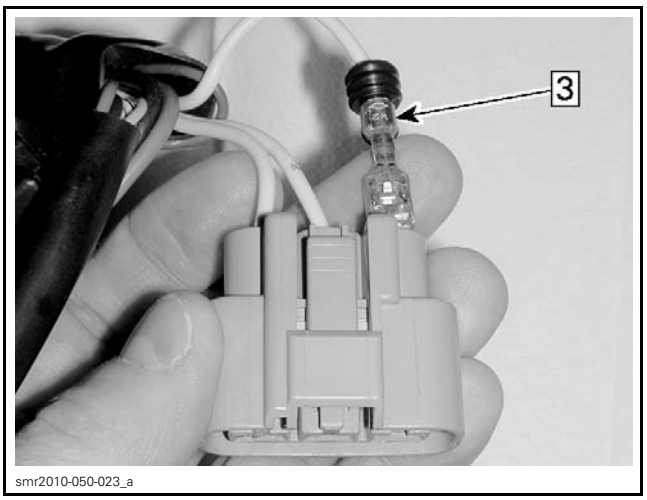
smr2010-052-003

GM TERMINAL EXTRACTOR (P/N 12094430)



Step 2: Insert GM terminal extractor tool (P/N 12094430)

3. Gently pull on the wire to extract the pin out the back of the connector.



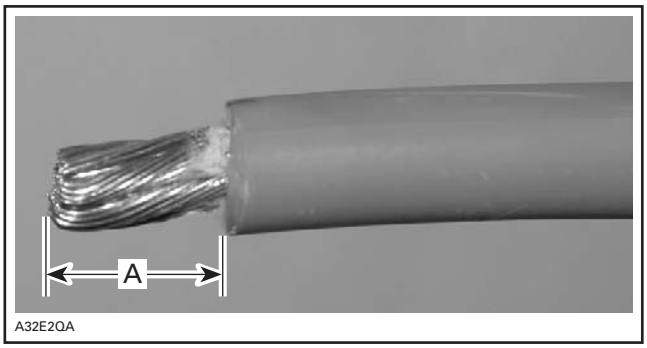
Step 3: Pull wire to extract pin

NOTICE Before installing terminals in the connectors, ensure all terminals are properly crimped on the wires. After installation of the wire terminals in the connectors, ensure they are properly locked by gently pushing on them as if to extract them.

BATTERY AND STARTER CABLE TERMINALS

Cable Crimping

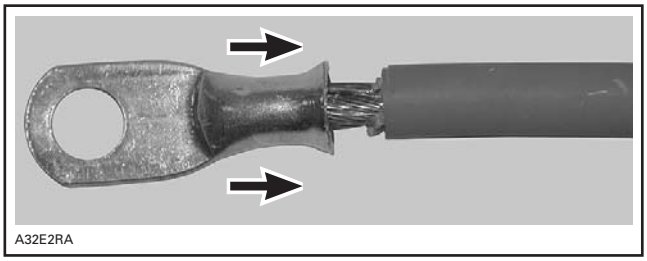
Carefully strip the wire approximately to 10 mm (3/8 in) in length, using a wire stripping tool or sharp blade/knife.



A. 10 mm (3/8 in)

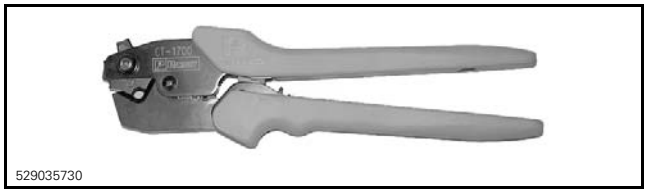
NOTE: Make sure not to cut wire strands while stripping the wire.

Install the appropriate terminal on the wire according to the requirement. Refer to appropriate *PARTS CATALOG*.

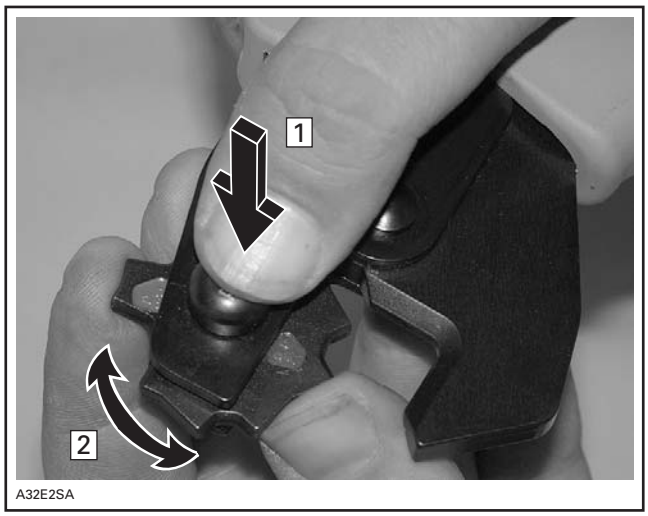


INSTALLATION OF TERMINAL

Follow the instructions provided with the CRIMPING TOOL (HEAVY GAUGE WIRE) (P/N 529 035 730) to select the proper position of the tool.



NOTE: Different wires require different crimping pliers settings.



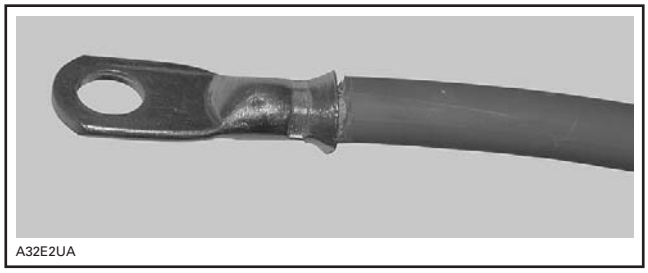
A32E2SA

POSITIONING THE CRIMPING PLIERS
Step 1: Press
Step 2: Rotate

After positioning the crimping pliers, crimp the terminal already installed on wire.

A32E2TA

CRIMPING OF WIRE


A32E2UA

PROPERLY CRIMPED WIRE

To verify, if the wire is properly crimped, apply some pulling force on wire and the terminal at the same time from both directions.

NOTICE Never weld the wire to the terminal. Welding can change the property of the wire and it can become brittle and break.

Install the protective heat shrink rubber tube on the terminal. Heat the heat shrink rubber tube using the heat gun so that it grasps the wire and the terminal.

NOTICE Make sure that the protective heat shrink rubber tube has been properly installed and no part of wire is exposed.

IGNITION SYSTEM

SERVICE TOOLS

Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	2, 4
FLUKE 115 MULTIMETER	529 035 868	3–4

GENERAL

SYSTEM DESCRIPTION

The battery supplies the primary side of ignition coils through the main relay (R2) while the ECM completes the circuit for each cylinder by switching it to ground at the right moment. The ECM can detect an open and short circuit in the primary winding but it does not check the secondary winding.

The Engine Management System (EMS) controls the ignition system. For more information, refer to *ENGINE MANAGEMENT* subsection.

Ignition Timing

Ignition timing is not adjustable.

TROUBLESHOOTING

It is good practice to check for fault codes using the B.U.D.S. software as a first troubleshooting step. Refer to *DIAGNOSTIC AND FAULT CODES* subsection.

Always refer to the *WIRING DIAGRAM* when troubleshooting an electrical circuit.

Refer to *POWER DISTRIBUTION AND GROUNDS* for fuse and relay information.

Refer to *WIRING HARNESS AND CONNECTORS* for vehicle wiring harness layout and component locations.

Refer to *ENGINE MANAGEMENT SYSTEM (EMS)* for powertrain wiring harness layout and component locations.

DIAGNOSTIC GUIDELINES

The following is provided to help in diagnosing the probable cause of a problem. It is a guideline and should not be assumed to list all possible causes.

ENGINE WILL NOT START (ENGINE TURNS OVER)

1. Fouled or defective spark plug
   - *Replace.*
2. Defective CPS
   - *Check operation of CPS and replace if necessary. Refer to ELECTRONIC FUEL INJECTION (EFI) subsection.*
3. Defective trigger wheel
   - *Inspect trigger wheel. Refer to MAGNETO AND STARTER subsection.*
4. Defective ignition circuit
   - *Check fuse 5 of fuse box 1, ignition coil and wiring condition.*
5. Defective fuel pump
   - *Check fuel pump, refer to FUEL TANK AND FUEL PUMP subsection.*
6. Defective fuel injectors or circuit
   - *Check fuel injectors, refer to ENGINE MANAGEMENT SYSTEM subsection.*

ENGINE HARD TO START

1. Spark plug faulty, fouled or worn out
   - *Check spark plug condition. Replace if necessary.*
2. Low fuel pressure
   - *Test fuel pressure, refer to FUEL TANK AND FUEL PUMP subsection.*

ENGINE MISFIRES, RUNS IRREGULARLY

1. Fouled, defective, worn spark plugs
   - *Check/verify heat range/gap/replace.*
2. Damaged trigger wheel/loose CPS
   - *Inspect trigger wheel. Refer to MAGNETO AND STARTER subsection.*
3. Defective ignition circuit
   - *Check ignition coil, fuse 5, and wiring condition.*
4. Poor engine grounds
   - *Check/clean/repair.*

ENGINE CONTINUALLY BACKFIRES

1. Fouled, defective spark plugs
   - *Clean/replace spark plugs.*

2. Damaged trigger wheel/defective or loose CPS
   - *Inspect trigger wheel and CPS, refer to MAGNETO AND STARTER and ELECTRONIC FUEL INJECTION (EFI) subsections.*

PROCEDURES

IGNITION SWITCH

Ignition Switch Quick Test

Turn ignition switch to ON position.

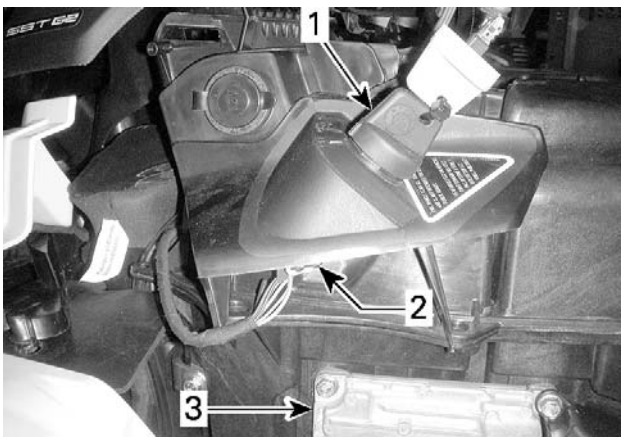
If multifunction gauge turns on (assuming it works), the ignition switch is good.

If multifunction gauge does not turn on, check the following in this order:

– Battery
– Fuse link 1
– Fuse 4, 5 and 8 of fuse box 1
– ECM is properly powered (refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection)
– Ignition switch
– Emergency engine stop switch.

Ignition Switch Access

Refer to *BODY* subsection and remove the LH side panel.

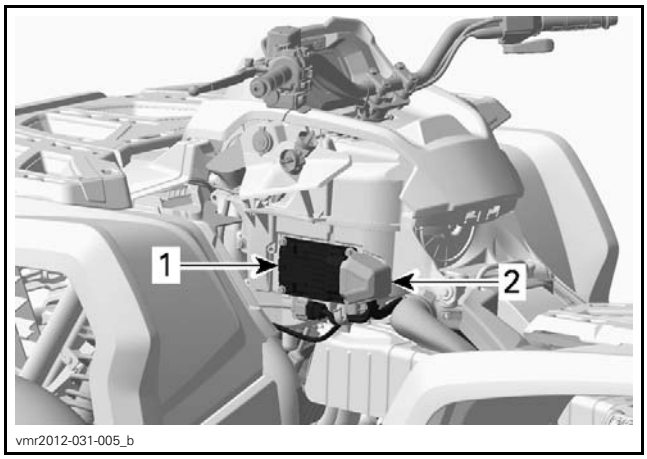


TYPICAL
1. *Ignition key*
2. *Ignition switch connector*
3. *ECM*

EMERGENCY ENGINE STOP SWITCH

Testing the Emergency Engine Stop Switch at ECM

1. Disconnect ECM connector and install it on the ECM adapter tool.



TYPICAL
1. *ECM*
2. *ECM connector cover*

REQUIRED TOOL	
ECM ADAPTER TOOL (P/N 529 036 166)	

2. Remove ignition key switch fuse (F8), refer to *POWER DISTRIBUTION AND GROUNDS* subsection.
3. Turn ignition key to ON position.
4. Test for continuity as per following table.

EMERGENCY ENGINE STOP SWITCH TEST AT ECM			
FUNCTION	FUSE BOX CONTACT	ECM ADAPTER	RESULT
RUN position	5E	A4	Close to 0 Ω
	—	G2 to K3	Open circuit
STOP position	5E	A4	
	—	G2 to K3	Close to 0 Ω

If switch fails the test, refer to *TESTING THE EMERGENCY ENGINE STOP SWITCH AT MULTIFUNCTION SWITCH CONNECTORS*.

Testing the Emergency Engine Stop Switch at Multifunction Switch Connectors

Refer to *WIRING HARNESS AND CONNECTORS* subsection for connector locations.

The emergency engine stop switch is wired into the LH multifunction switch connectors (MG1 and MG2).

1. Remove gauge support, refer to *LIGHTS, GAUGE AND ACCESSORIES* subsection.
2. Disconnect MG1 and MG2 connectors.
3. Test switch continuity as per following table.

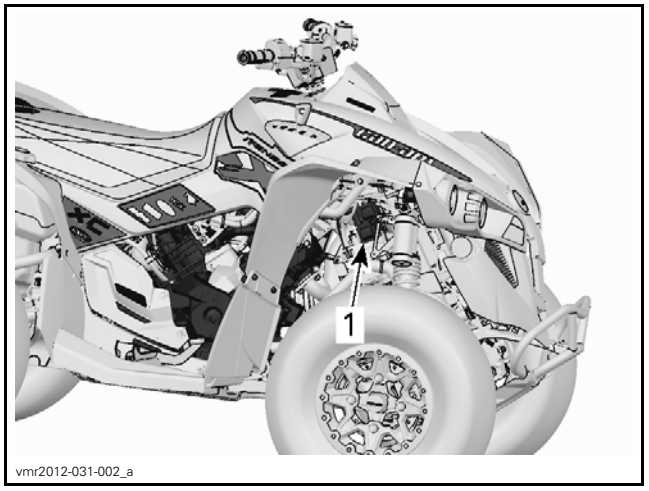
EMERGENCY ENGINE STOP SWITCH PIN-OUT		
FUNCTION	PROBE	RESULT
RUN position	MG1-3 to MG2-3	Open circuit
	MG1-1 to MG1-2	Close to 0 Ω
STOP position	MG1-3 to MG2-3	
	MG1-1 to MG1-2	Open circuit

If switch tests good, test continuity of wiring. Refer to *WIRING DIAGRAM*.

IGNITION COIL

Ignition Coil Access

Refer to *BODY* subsection and remove RH inner fender panel(s) for access to the ignition coil.



TYPICAL
1. Ignition coil location

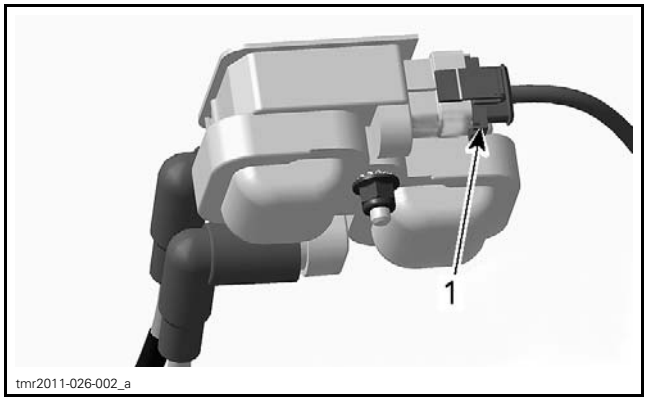
Installing the Ignition Coil

Install a new elastic nut and tighten to the specified torque.

TIGHTENING TORQUE	
Ignition coil retaining bolt	8 N•m ± 1 N•m (71 lbf•**in** ± 9 lbf•**in**)

Testing the Ignition Coil Input Voltage

1. Disconnect the 3-pin connector from the ignition coil. Refer to *IGNITION COIL ACCESS*.



1. Ignition coil connector

2. Set emergency engine stop switch to RUN.
3. Turn ignition switch to ON.
4. Read voltage as per following table.

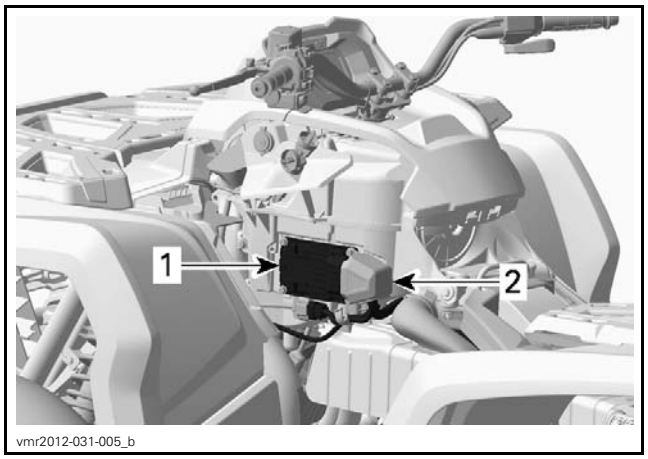
REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

IGNITION COIL INPUT VOLTAGE TEST	
CONNECTORS	VOLTAGE
Pin 2 with battery ground	Battery voltage

If battery voltage is NOT read, check continuity of ignition coil supply circuit. Refer to *WIRING DIAGRAM*.

Testing the Ignition Coil Ground Circuit Continuity

1. Disconnect the ECM connector and connect it to the ECM adapter tool. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.



TYPICAL
1. ECM
2. ECM connector cover

REQUIRED TOOLS	
ECM ADAPTER TOOL (P/N 529 036 166)	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

2. Check wiring continuity as per following table.

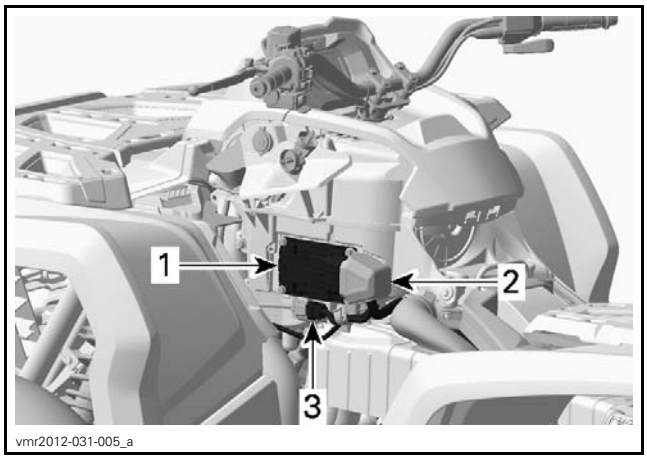
IGNITION COIL GROUND CIRCUIT CONTINUITY TEST		
COMPONENT	PIN (IGNITION COIL CONNECTOR)	PIN (ECM CONNECTOR)
Cylinder 1 (front)	1	M1
Cylinder 2 (rear)	3	M2

Testing the Ignition Coil Resistance

An ignition coil with good resistance measurement can still be faulty. Voltage leakage can occur at high voltage levels which is not detectable with an ohmmeter. Replacing the ignition coil may be necessary as a test.

Primary Windings

1. Disconnect HIC2 connector.



TYPICAL
1. ECM
2. ECM connector cover
3. HIC2 connector

2. Disconnect ECM connector and connect it to the ECM adapter tool.

REQUIRED TOOL	
ECM ADAPTER TOOL (P/N 529 036 166)	

3. Using a multimeter set to Ω, check resistance in primary windings as follows.

IGNITION COIL RESISTANCE TEST			
PRIMARY CIRCUIT	ENGINE CONNECTOR (HIC2)	ECM CONNECTOR	RESISTANCE @ 20°C (68°F)
Cylinder 1 (front)	Pin C	M1	.3 - .6 Ω
Cylinder 2 (rear)		M2	

If any resistance is not good, measure resistance directly on coil. If second test is ok, check wiring.

Secondary Windings

Due to the integrated diode, it is not possible to take any resistance measurement of the secondary winding.

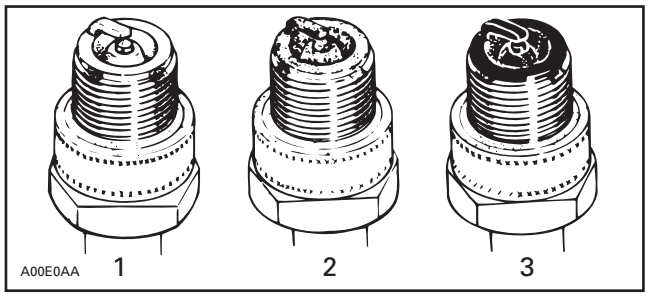
SPARK PLUG

For spark plug replacement procedure, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

Troubleshooting Fouled Spark Plug

Fouling of the spark plug is indicated by irregular running of the engine, decreased engine speed due to misfiring, reduced performance, and increased fuel consumption. This is due to a loss of compression. Other possible causes are: prolonged idling or low-speed riding, a clogged air filter, incorrect fuel, defective ignition system, incorrect spark plug gap, lubricating oil entering the combustion chamber, or too cold spark plug. The plug face of a fouled spark plug has either a wet black deposit or a black carbon fouling. Such coatings form a conductive connection between the center electrode and ground.

Spark Plug Analysis



TYPICAL
1. *Overheated (light grey, white)*
2. *Normal (light brown, brown)*
3. *Fouled (black, wet or dry, dark deposits, grey, melted coating)*

The plug face reveals the condition of the engine, operating condition, method of driving and fuel mixture. For this reason it is advisable to inspect the spark plug at regular intervals, examining the plug face (i.e. the part of the plug projecting into the combustion chamber).

CHARGING SYSTEM

SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
EXTECH INDUCTIVE AMMETER	380941	2
NAPA ULTRA PRO BATTERY LOAD TESTER	95260	2–4

GENERAL

SYSTEM DESCRIPTION

The purpose of the charging system is to keep the battery at a full state of charge.

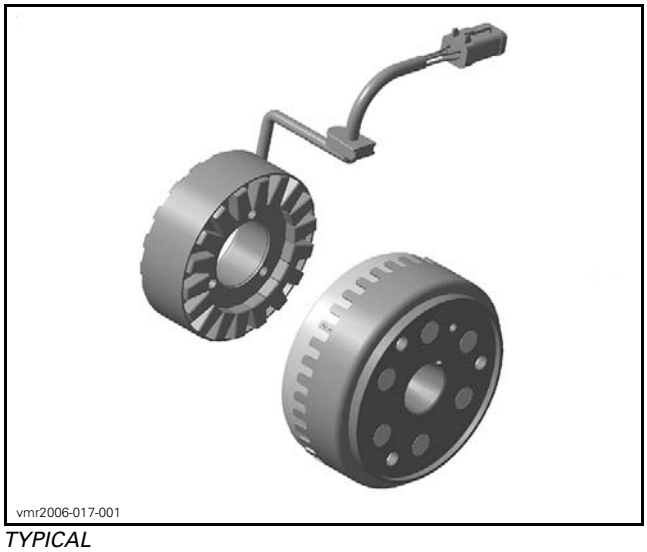
NOTE: For an overview of the vehicle electrical system, refer to *ENGINE MANAGEMENT SYSTEM* section.

Magneto

The magneto is the primary source of electrical energy. It transforms a magnetic field into electric current (AC).

The alternating current is regulated and transformed into direct current (DC) by the voltage regulator, and normally powers all of the vehicle's systems and accessories.

The magneto has a 3 phase delta wound stator.



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TYPICAL

Voltage Regulator

The regulator receives AC current from the magneto and transforms it into direct current (DC).

The voltage regulator output voltage is distributed as follows:

– Fuse links
– Battery.

The voltage regulator limits voltage to prevent any damage to electrical components.

COMPONENT	VOLTAGE Vdc
Voltage Regulator	Minimum 12.5
	Maximum 15

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TYPICAL

Battery

The battery supplies DC power to every electrical and electronic system in the vehicle as well as all accessories. At low engine RPM operation and high current load conditions, it supplements the magneto's output as required, and helps to maintain a steady system voltage.

TROUBLESHOOTING

It is good practice to check for fault codes using the B.U.D.S. software as a first troubleshooting step. Refer to *DIAGNOSTIC AND FAULT CODES* subsection.

BATTERY REGULARLY DISCHARGED OR WEAK

1. Loose or corroded battery cable connections.
   - *Tighten or repair battery cable connections.*
2. Worn or defective battery.
   - *Charge and test battery.*
3. Defective magneto stator.
   - *Test stator, refer to MAGNETO AND STARTER SYSTEM subsection.*
4. Defective regulator/rectifier.
   - *Test system voltage.*
5. Damaged magneto rotor or Woodruff key.
   - *Replace magneto rotor or Woodruff key, refer to MAGNETO AND STARTER SYSTEM subsection.*

PROCEDURES

Ensure battery is fully charged.

Refer to *WIRING HARNESS AND CONNECTORS* subsection for harness layout and connector locations on vehicle.

Refer to appropriate *WIRING DIAGRAM* for additional information.

The magneto is covered in *MAGNETO AND STARTER* subsection.

⚠ WARNING

Ensure vehicle is in PARK when performing charging system tests.

BATTERY LOAD TEST

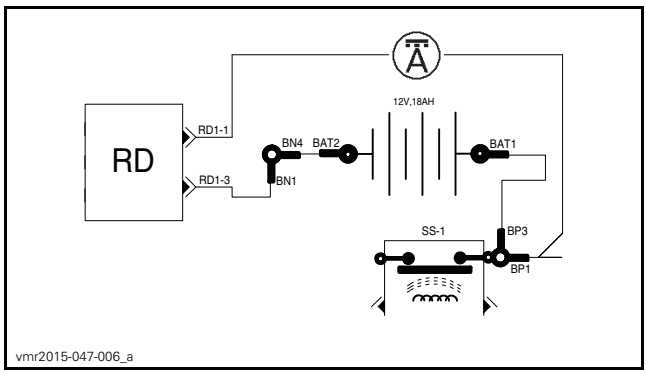
1. Remove seat.
2. Connect a battery load tester such as the NAPA ULTRA PRO BATTERY LOAD TESTER (P/N 95260).
3. Ensure proper test conditions.

TEST CONDITIONS	
Initial battery voltage‡	Above 12.5 Vdc
Engine	OFF
Load	3 times the amp-hour (AH) rating
Time	15 seconds
‡ Required for accurate testing	

SPECIFICATION	
Battery	Above 9.6 Vdc

If battery voltage drops below specification during test, replace battery and perform a *CHARGING SYSTEM LOAD TEST*.

CHARGING SYSTEM LOAD TEST



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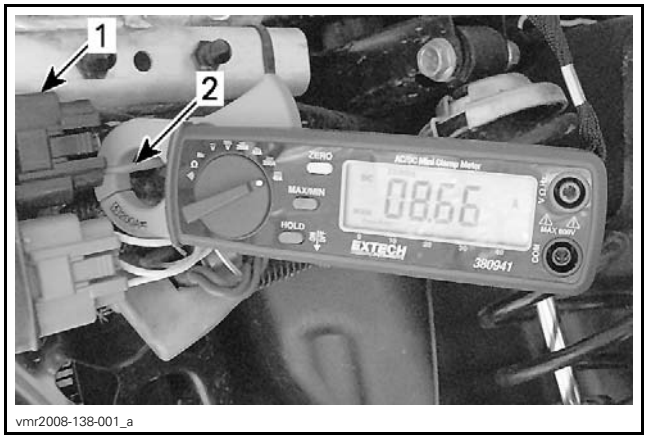
1. Remove seat.
2. Connect a battery load tester such as the NAPA ULTRA PRO BATTERY LOAD TESTER (P/N 95260).
3. Start vehicle and read voltage on tester.

SPECIFICATION	
Voltage	12.5 - 15 Vdc

If voltage is **above** specification, replace regulator and continue *CHARGING SYSTEM LOAD TEST*.

4. Connect an ammeter such as EXTECH INDUCTIVE AMMETER (P/N 380941) around RD1-1 wire.



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DC CURRENT TEST WITH INDUCTIVE AMMETER
1. Output connector of voltage regulator
2. Ammeter clamped over RED wire

5. Ensure proper test conditions.

TEST CONDITIONS	
Battery voltage at idle‡	Above 12.6 Vdc
Engine	Increase to 4000 RPM

TEST CONDITIONS	
Load	As required to decrease battery voltage to 12 Vdc
Time	15 seconds
‡ Required for accurate testing	

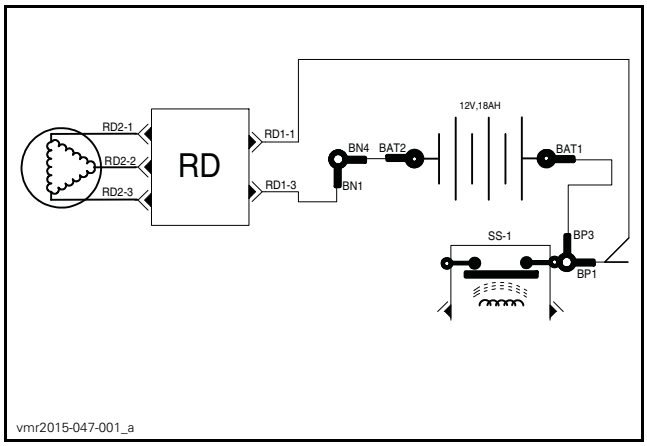
6. Read amperage on ammeter.

MODEL	SPECIFICATION
Base models (no-DPS, not CE)	35 ± 5 Amps
DPS models	41 ± 5 Amps
All CE models	41 ± 5 Amps

If amperage or voltage is not within specification, verify magneto and wires. Refer to *MAGNETO AND STARTER* subsection. Replace:

– Voltage regulator if magneto test is within specifications.
– Magneto if magneto test is not within specifications.

VOLTAGE REGULATOR (RD)



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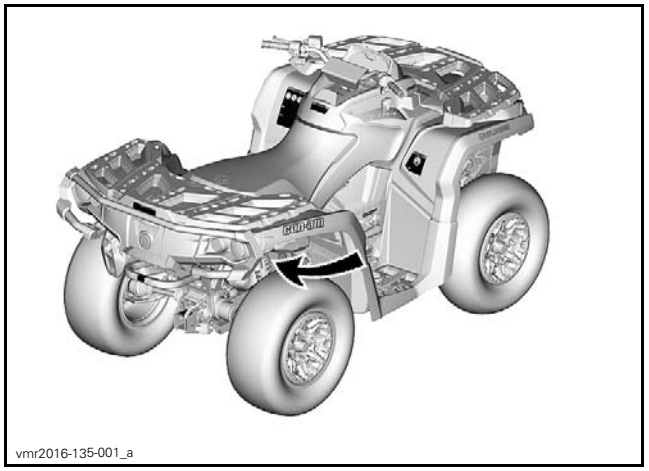
Voltage Regulator Access

The voltage regulator/rectifier is accessible on the RH rear side of the vehicle.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Voltage Regulator Continuity Test

Due to internal circuitry, there is no static test available.

Voltage Regulator Power Test

1. Check voltage at RD1-1.

TEST CONDITIONS	
RD1-1	Hot at all times

BACKPROBE	PROBE	SPECIFICATION
RD1-1	BAT2 (-)	Battery voltage

2. Connect a battery load tester such as the NAPA ULTRA PRO BATTERY LOAD TESTER (P/N 95260).
3. Start vehicle.
4. Ensure proper test conditions.

TEST CONDITIONS	
Battery voltage at idle‡	Above 12.6 Vdc
Engine	Increase to 4000 RPM
Load	As required to decrease battery voltage to 12 Vdc
Time	15 seconds
‡ Required for accurate testing	

5. Measure voltage drop.

BACKPROBE	PROBE	SPECIFICATION
RD1-1	BAT1 (+)	Under 0.2 Vdc

If voltage drop is above specification, locate and repair damaged connector/wire.

Voltage Regulator Ground Test

1. Check ground at RD1-3.

TEST CONDITIONS	
RD1-3	Permanent ground

BACKPROBE	PROBE	SPECIFICATION
RD1-3	BAT1 (+)	Battery voltage

2. Connect a battery load tester such as the NAPA ULTRA PRO BATTERY LOAD TESTER (P/N 95260).
3. Start vehicle.
4. Ensure proper test conditions.

TEST CONDITIONS	
Battery voltage at idle‡	Above 12.6 Vdc
Engine	Increase to 4000 RPM
Load	As required to decrease battery voltage to 12 Vdc
Time	15 seconds
‡ Required for accurate testing	

5. Measure voltage drop.

BACKPROBE	PROBE	SPECIFICATION
RD1-3	BAT2 (-)	Under 0.4 Vdc

If voltage drop is above specification, locate and repair damaged connector/wire.

BATTERY

Battery Information

These vehicles are equipped with a VRLA battery (Valve Regulated Lead Acid). It is a maintenance-free type battery.

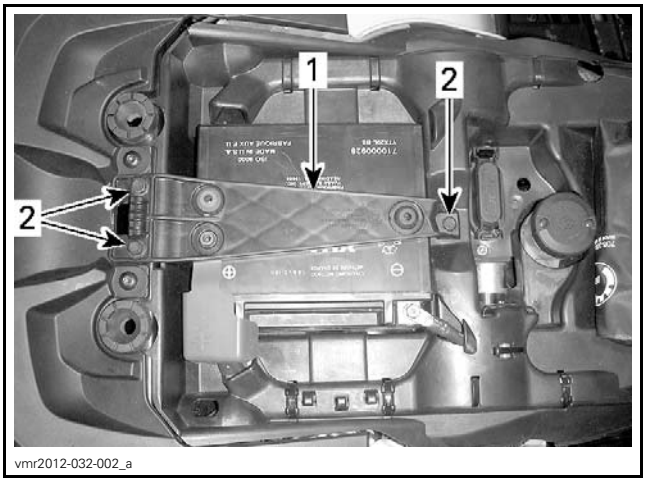
Refer to battery manufacturer's instructions for proper filling, activation and routine charging procedures.

Battery Removal

1. Remove seat.
2. Disconnect BLACK (-) cable first, then the RED (+) cable.

NOTICE **Always respect this order for removal; disconnect BLACK (-) cable first.**

3. Remove battery retaining plate.



TYPICAL
1. Battery retaining plate
2. Retaining plate screws (3)

4. Remove battery.

Battery Cleaning

Clean the battery support, cables and battery posts using a solution of baking soda and water.

Remove corrosion (if so) from battery cable terminals and battery posts using a firm wire brush. Rinse with clear water and dry well.

Battery Inspection

Visually inspect battery casing for cracks or any other damages. If casing is damaged, replace battery and thoroughly clean battery support with a water and baking soda solution.

Inspect condition of battery posts, battery support, holding strap and strap attachment points and wire terminal lugs.

Battery Storage

It is not necessary to remove the battery during vehicle storage but it is recommended for long term storage.

If the battery is left in the vehicle during storage or used infrequently, disconnect the BLACK (-) negative battery cable to eliminate battery current drain from the electrical equipment.

Recharge the battery once a month with an approved battery charger as per manufacturer's recommendations.

Clean battery, battery support and connections as required, refer to *BATTERY CLEANING* in this section.

For other recommendations during storage, refer to battery manufacturers instructions.

⚠ WARNING

Ensure battery is stored in a safe place, out of reach for children.

New Battery Activation

Refer to the instructions provided with the battery.

Battery Charging

⚠ WARNING

Always wear safety glasses and charge in a well ventilated area. Never charge or boost a battery while it is installed on vehicle. Do not open the sealed cap during charging. Do not place battery near open flame.

NOTICE If battery becomes hot, stop charging and allow it to cool before continuing.

NOTE: Sealed VRLA batteries have an internal safety valve. If battery pressure increases due to overcharging, the valve opens to release excess pressure, preventing battery damage.

An automatic charger is a fast and convenient way for error-proof charging.

Always follow the battery manufacturer's charging instructions.

When using a constant current charger, charge battery according to the chart below.

Battery Voltage Below 12.8 V and Above 11.5 V

STANDARD CHARGING (RECOMMENDED)		
BATTERY TYPE	TIME	CHARGE
YTX20L-BS	4 - 9 HOURS	2 A

QUICK CHARGING		
BATTERY TYPE	TIME	CHARGE
YTX20L-BS	50 MINUTES	10 A

Battery Installation

NOTICE Always connect RED (+) cable first then BLACK (-) cable.

Installation is the reverse of removal procedure, however pay attention to the following.

TIGHTENING TORQUE	
Battery retaining plate screws	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)

STARTING SYSTEM

SERVICE TOOLS

Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	4
FLUKE 115 MULTIMETER	529 035 868	5

GENERAL

STARTING SYSTEM OPERATION

When the START button is pressed, 12 Vdc is applied through the start switch (MG1) to the starter solenoid coil. If the engine cranking conditions are met, the ECM completes the starter solenoid control circuit by providing a ground. The starter solenoid then closes its contacts and battery power is applied to the starter for cranking the engine.

Engine Cranking Conditions

The following conditions must be met to allow engine cranking.

– Ignition switch turned ON
– Engine stop switch to RUN
– Transmission in Park, Neutral or a brake pedal/lever is applied
– Start button is pressed and held.

TROUBLESHOOTING

Check for fault codes. Refer to: *DIAGNOSTIC AND FAULT CODES* subsection.

ENGINE WILL NOT TURN

If the starter cranks over the engine with the brakes applied, check the following:

1. Shifter rod adjustment, (refer to appropriate *SHIFTER* subsection
2. Gearbox position indicator switches or the gearbox position sensor (GBPS), (refer to appropriate *GEARBOX AND 4X4 COUPLING UNIT* subsection
3. Switches or sensor wires and connectors, (refer to appropriate *WIRING DIAGRAM*).

If the "Engine cranking conditions" are met and the starter will not crank the engine, check the following:

1. Battery and connections (refer to *CHARGING SYSTEM*)
2. Starter solenoid
3. Start button switch
4. Starter (refer to *MAGNETO AND STARTER* subsection)
5. Wiring and connections.

ENGINE TURNS

Starting system is OK.

1. Verify ignition system. Refer to *IGNITION SYSTEM* subsection.
2. Verify EFI systems. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.
3. Verify mechanical condition of engine. Refer to *ENGINE, CVT AND GEARBOX* section.

PROCEDURES

Ensure battery is fully charged.

Refer to applicable *WIRING HARNESS AND CONNECTORS* for harness layout and connector locations on vehicle.

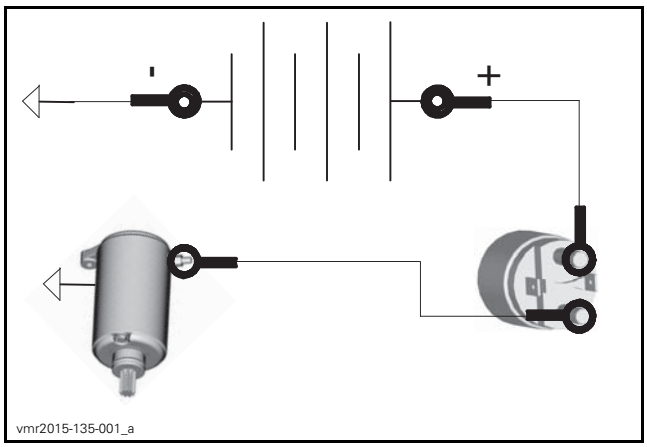
Refer to applicable *WIRING DIAGRAM* for additional information.

⚠ WARNING

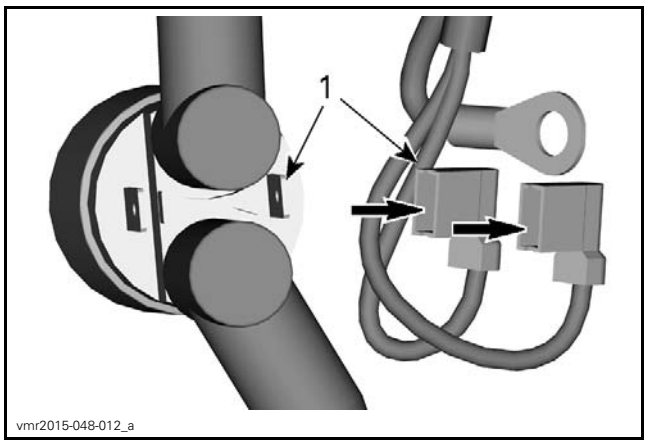
Ensure vehicle is in PARK when performing starting system tests.

STARTING SYSTEM TESTS

Starter Solenoid

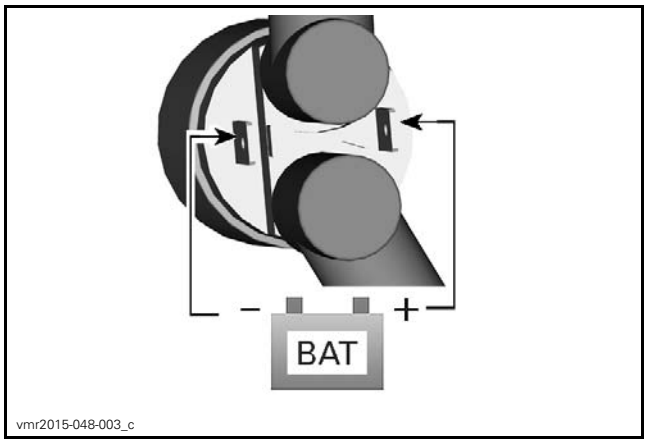


1. Disconnect SS1 and SS2



1. SS1

2. Activate the starter solenoid.
   2.1 Apply 12Vdc to SS1
   2.2 Ground SS2

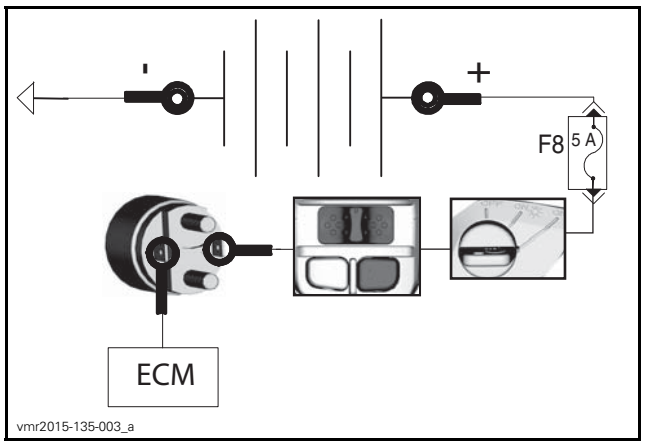


SS1 IS ON THE RIGHT

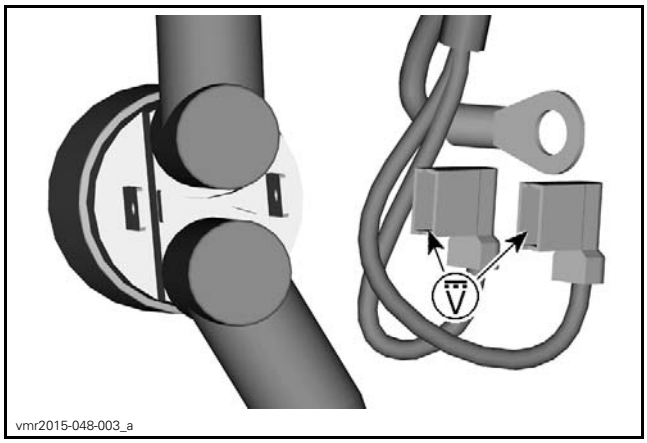
3. If starter turns, verify *STARTER SOLENOID CONTROL CIRCUIT*.

4. If starter does not turn, verify *STARTER SOLENOID CONTINUITY*.

Starter Solenoid Control Circuit



TEST CONDITION	
Engine stop switch	RUN
Ignition switch	ON
Start button	Pressed



SS1 IS ON THE RIGHT

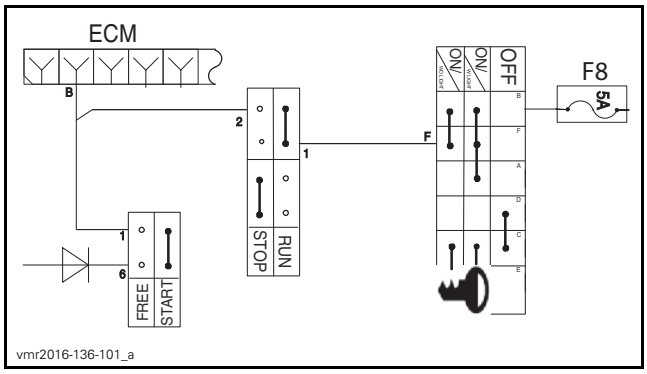
PROBE	PROBE	SPECIFICATION
SS1	SS2	Battery voltage
SS1	BAT -	Battery voltage
BAT +	SS2	Battery voltage

If voltage is as per specification replace starter solenoid.

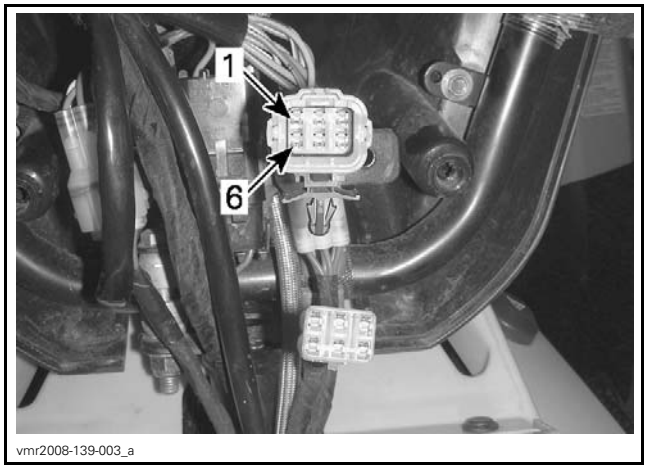
If voltage is not as per specification, verify *STARTER SOLENOID CONTROL POWER CIRCUIT* or *STARTER SOLENOID CONTROL GROUND CIRCUIT* as applicable.

Starter Solenoid Control Power Circuit

NOTE: This procedure also tests the start button.



1. Disconnect MG2 connector.



TYPICAL - MG2 STEERING HARNESS CONNECTOR PIN-OUT

TEST CONDITION	
Engine stop switch	RUN
Ignition switch	ON

PROBE	PROBE	SPECIFICATION
MG2-1	BAT -	Battery voltage.

2. If voltage is not as per specification:
   1. Check fuse(s)
   2. Test engine stop switch. Refer to *IGNITION SYSTEM* subsection
   3. Test ignition switch Refer to *IGNITION SYSTEM* subsection.
3. Test start button.

TEST CONDITION	
Start button	Pressed

PROBE	PROBE	SPECIFICATION
MG2-1	MG2-6	Close to 0Ω

If start button does not test as specified, replace the multifunction switch assembly.

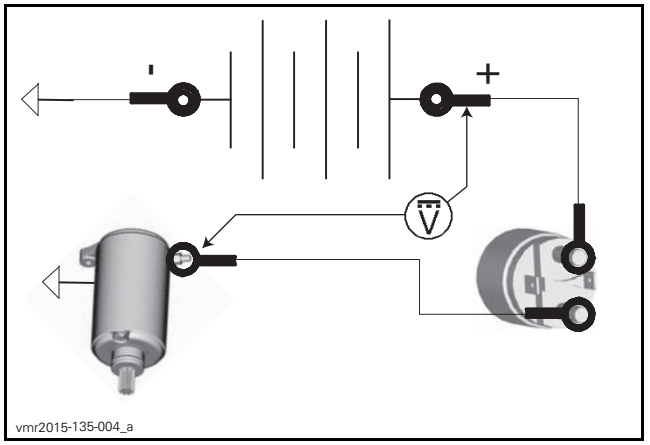
If start switch tests as specified, repair wire to starter solenoid SS1 terminal.

Starter Power Circuit Voltage Drop

NOTE: Engine must be in starting condition for this test. Do not perform on a «No Start» vehicle.

TEST CONDITION	
Fuse F5	Removed‡
Engine stop switch	RUN
Ignition switch	ON
Start button	Pressed
Engine	Cranking
‡ Will prevent engine from starting	

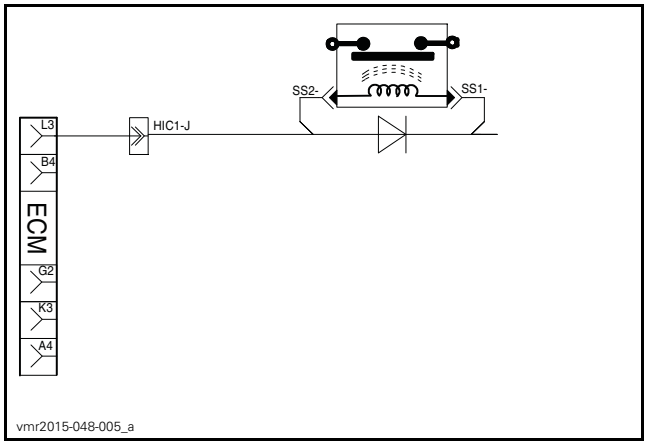
1. Measure voltage drop.



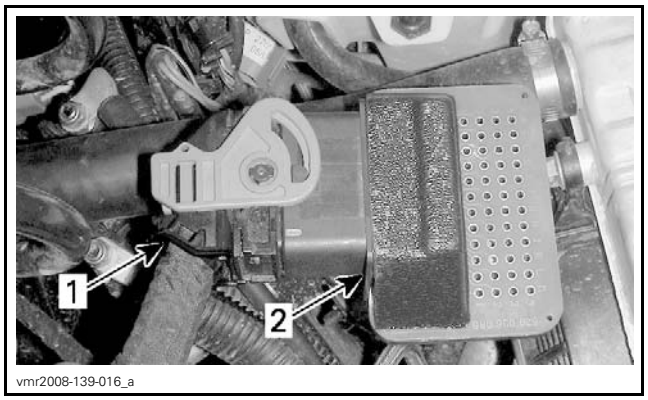
PROBE	PROBE	SPECIFICATION
BAT1	Starter B+ terminal	Below 0.4 Vdc

If voltage drop is above specification, repair or replace sources of high resistance in circuit.

Starter Solenoid Control Ground Circuit



1. Disconnect SS2.
2. Install the ECM connector onto the ECM ADAPTER TOOL (P/N 529 036 166)



1. ECM connector
2. ECM adapter tool

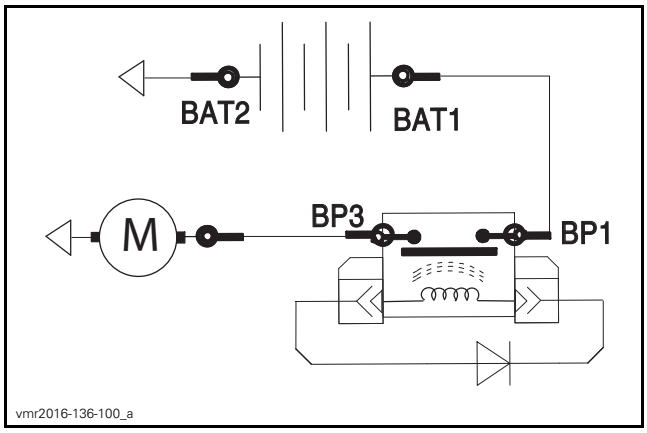
PROBE	PROBE	SPECIFICATION
SS2	ECM-L3	Close to 0Ω

If resistance is not as specified, repair or replace wiring/connections.

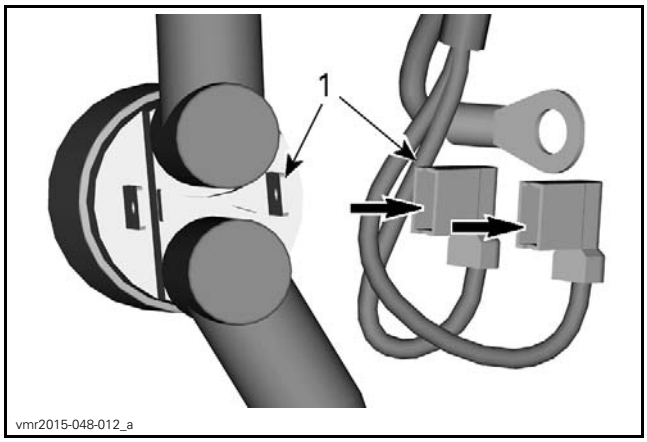
If solenoid power control circuit and ground control circuit both test good, test ECM ground circuits. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection.

NOTE: Supply a ground with a jumper wire if you suspect that the ECM is not supplying a ground to the solenoid.

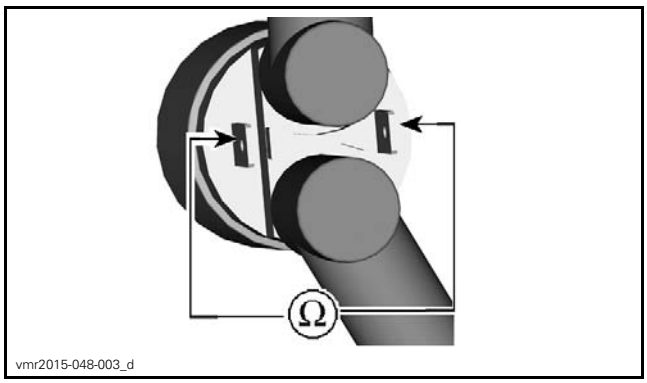
Starter Solenoid Continuity



1. Disconnect the BLACK (-) negative battery cable.
2. Disconnect SS1 and SS2



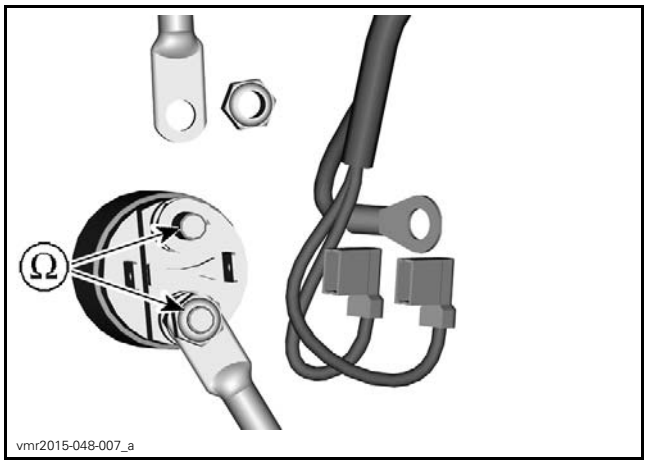
1. SS1



PROBE	PROBE	SPECIFICATION @ 20°C (68°F)
SS1	SS2	Close to 6Ω

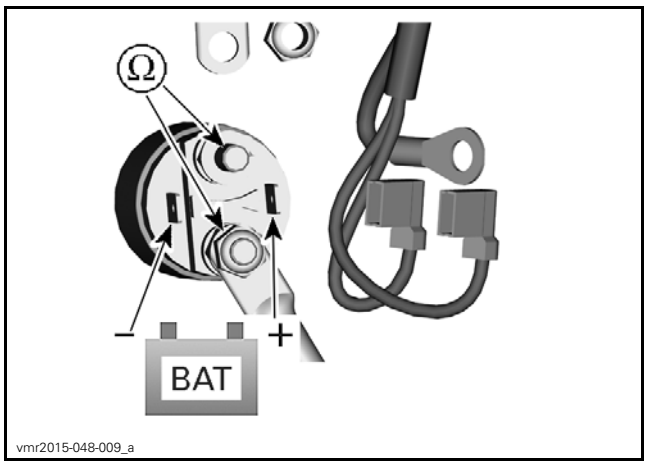
If resistance is not as per specification, replace the solenoid.

3. Disconnect BP3.



PROBE	PROBE	SPECIFICATION
BP3	Terminal to starter motor	O.L.

4. Jump starter solenoid.



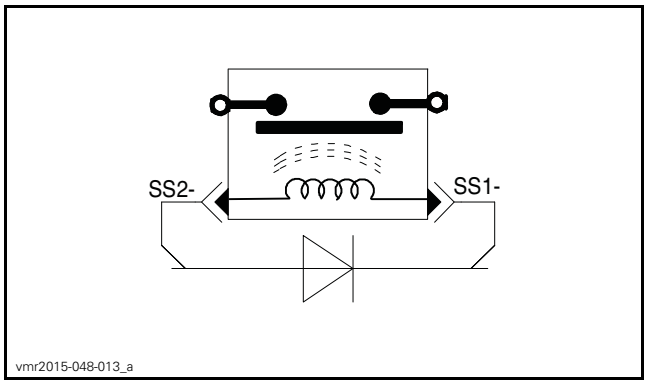
SS1 IS ON THE RIGHT

PROBE	PROBE	SPECIFICATION
BP3	Terminal to starter motor	Close to 0Ω

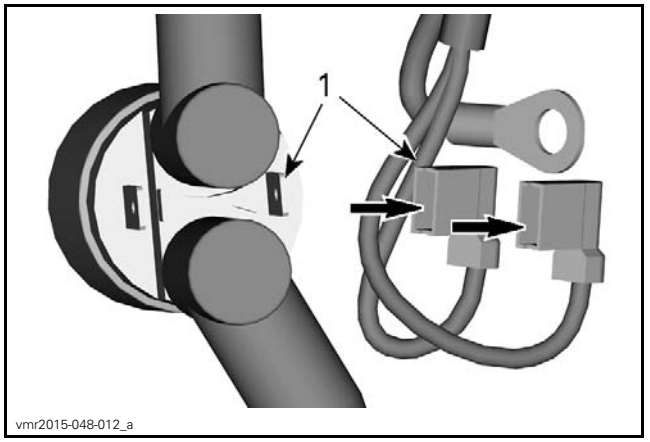
If resistance is not as per specification, replace the solenoid.

If starter power and ground circuits are good, refer to *MAGNETO AND STARTER* subsection for starter diagnosis and replacement.

Solenoid Diode Test

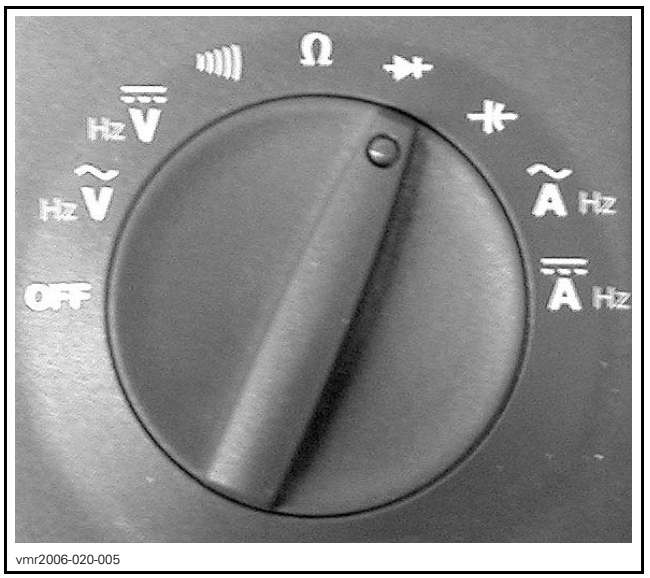


1. Disconnect SS1 and SS2 from starter solenoid.

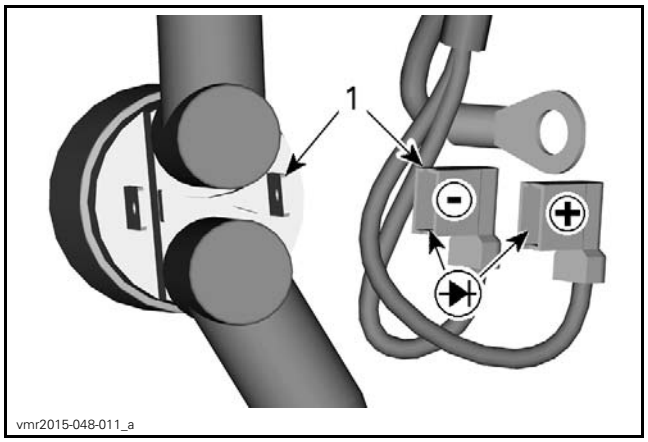


1. SS1

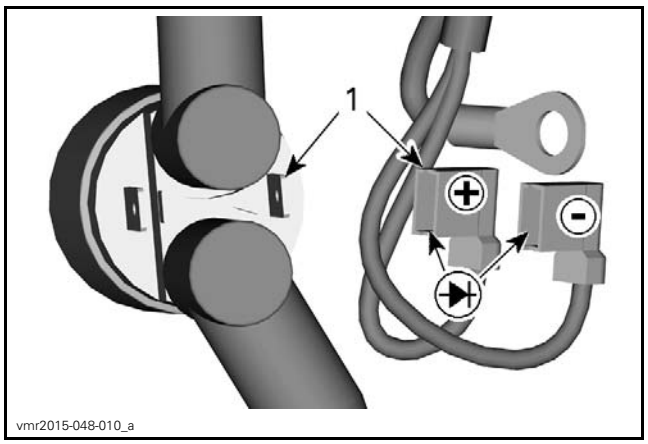
2. Use the FLUKE 115 MULTIMETER (P/N 529 035 868) and set it to the diode symbol as shown.



3. Probe wires while paying attention to the diode polarity.



FORWARD POLARITY, MUST BE AROUND 0.5 V



REVERSE POLARITY, MUST BE OPEN CIRCUIT
1. SS1

If test failed, replace diode. Refer to *WIRING HARNESS AND CONNECTORS* for diode location.

NOTE: The diode is integrated in the harness near the starter solenoid.

RF DIGITALLY ENCODED SECURITY SYSTEM (RF D.E.S.S.)

GENERAL

SYSTEM DESCRIPTION

The following components are specially designed for this system: ECM, D.E.S.S. key and engine cut-off switch.

This system allows the engine to start only if a D.E.S.S. key is installed on engine cut-off switch and the key is recognized as valid by the ECM.

The D.E.S.S. key contains a magnet and a RFID chip.

– The magnet closes the hall effect switch inside the engine cut-off switch.
– The RFID chip contains a unique digital code. It is the equivalent of the tooth-pattern cut on a conventional ignition key.

Up to 8 D.E.S.S. keys may be programmed in the ECM memory using the appropriate diagnostic software. The keys can also be erased individually.

NOTE: If desired, a D.E.S.S. key can be used on another vehicle equipped with the D.E.S.S. system. It only needs to be programmed for that vehicle.

D.E.S.S. Messages

When starting the engine with a D.E.S.S. key on the engine cut-off switch, the key is identified by the ECM and D.E.S.S. messages will be displayed in the multifunction gauge according to the key recognition. See table.

MESSAGE	DESCRIPTION
BAD KEY	Displayed when a wrong key is used.
DESS KEY NOT RECOGNIZED	Displayed when key is not recognized by the ECM. This may occur because magnetic interference, remove and clean key and D.E.S.S. post.
NORMAL KEY	Displayed at power up when a normal key is used.
PERFORMANCE KEY	Displayed at power up when a performance key is used.

PROCEDURES

D.E.S.S. KEY

D.E.S.S. Key Programming

1. Connect the vehicle to the applicable B.U.D.S. version.

Refer to the **B.U.D.S. directory** on *KNOWLEDGE CENTER* for all diagnostic software related information, including:

– Diagnostic software version required according to the vehicle
– Current version download link
– User manual (programming keys, reading fault codes, writing data to modules etc.)
– Installation instructions
– Navigation through menus
– BRP BUDS chart

2. Search keyword: "BUDS".

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3. Install a D.E.S.S. key on the post.
4. Briefly press on START button. DO NOT start the engine.
5. Click the **Read Data** button in B.U.D.S.

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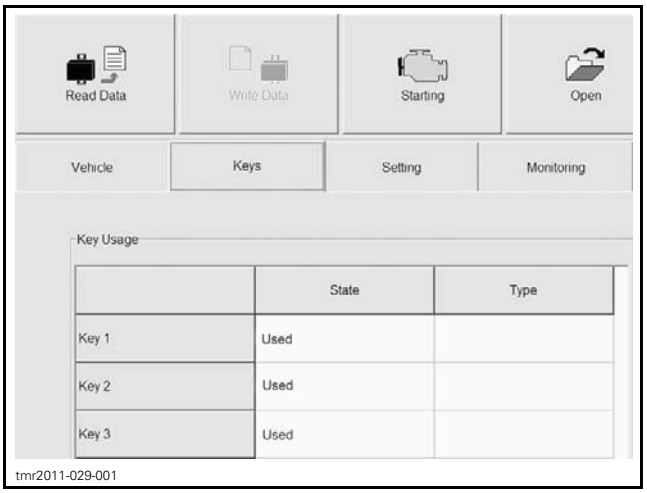
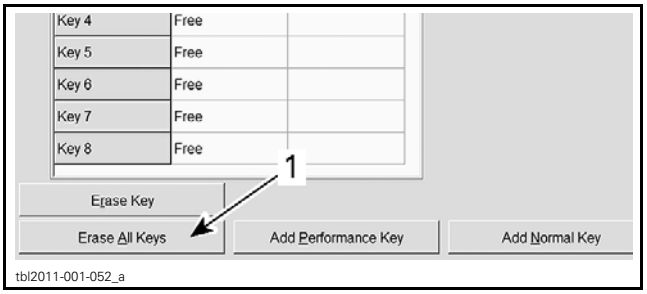
6. Click on **Keys** tab.



KEYS TAB

7. Click on **Erase All Keys** button.

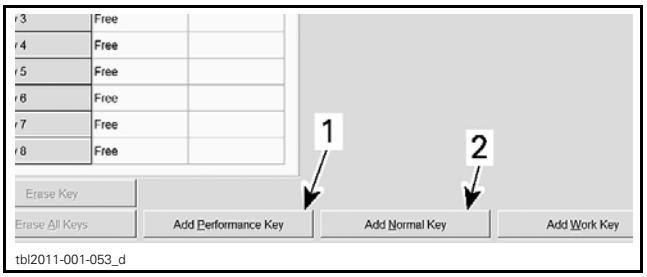


1. Click here to erase all keys

8. Click "YES" to confirm the action.
9. Check the color of the key to be programmed.

KEY	KEY TYPE
GRAY key	Performance key
GREEN key	Normal key

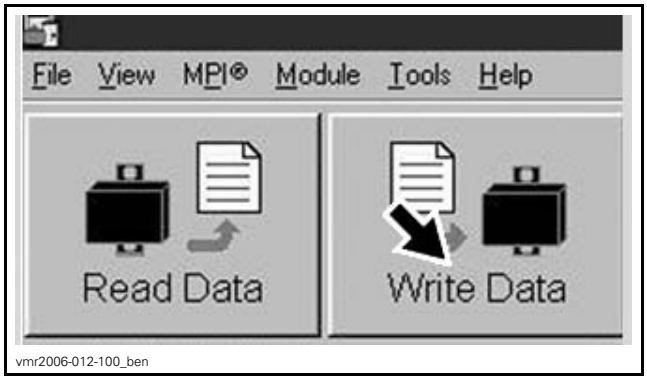
10. Click on the appropriate **Add Key** button.



TYPICAL
1. Add Performance Key button
2. Add Normal Key button

NOTE: The **Add Work Key** button is not used for these vehicles.

11. Remove the key.
12. Insert the next key to be programmed.
13. Briefly press START button. DO NOT start the engine.
14. Click on the appropriate **Add Key** button.
15. Repeat to program more keys if needed.
16. Click on **Write Data** button to transfer new settings and information to the ECM.



WRITE DATA BUTTON

17. Erase occurred fault(s) in the fault tabs.
18. Remove the D.E.S.S. key from the post and wait for the vehicle electrical system to completely shut down.
19. Click on EXIT button to end the B.U.D.S. session.
20. Disconnect all cables and hardware from the vehicle.
21. Ensure to reinstall the connector into its housing.

DIAGNOSTIC TIPS

Check for fault codes as first step.

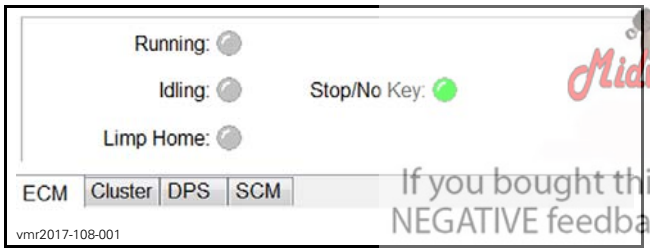
IMPORTANT: When troubleshooting an electrical system fault, check battery condition, cables and connections first.

RFID Pin Identification

Refer to *WIRING DIAGRAM*.

RFID CONNECTOR PIN	SPECIFICATIONS with RFID post connected and key installed
A	ECM ground
B	12 - 15 Vdc
C	5 Vdc
D	12 Vdc

Stop / No Key Indicator



MONITORING PAGE, ECM TAB

Midwest Manuals
Green Manuals
Paperless Manuals
For a Better Tomorrow
If you bought this manual from any other seller please leave them NEGATIVE feedback and notify me at bestshopmanuals@gmail.com

Possible causes:

– No key installed
– Engine stop button in STOP position
– No voltage at RFID-B connector
– No ground at RFID-A connector

Condition can be duplicated by unplugging the RFID connector.

LIGHTS

SERVICE TOOLS

Description	Part Number	Page
FLUKE 115 MULTIMETER	529 035 868	3–4

SERVICE PRODUCTS

Description	Part Number	Page
DIELECTRIC GREASE	293 550 004	1

GENERAL

NOTICE It is recommended to always disconnect the battery when replacing any electric or electronic parts. Always disconnect battery exactly in the specified order, BLACK (-) cable first.

TROUBLESHOOTING

DIAGNOSTIC TIPS

NOTE: It is a good practice to check for fault codes using B.U.D.S. software as a first troubleshooting step. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

IMPORTANT: When troubleshooting an electrical system fault, check battery condition, cables and connections first.

Testing a Circuit

Check the related-circuit fuse condition with a fuse tester or test lamp (a visual inspection could lead to a wrong conclusion).

NOTE: If the electrical system is left activated for a certain period of time, the accessory relay will shut down. See *ACTIVATING THE ELECTRICAL SYSTEM* in this subsection for details.

Inspecting an Electrical Connection

When replacing an electric or electronic component, always check electrical connections. Make sure they are tight, make good contact, and are corrosion-free. Dirty, loose or corroded contacts are poor conductors and are often the source of a system or component malfunction.

Pay particular attention to ensure that pins are not bent or pushed out of their connectors.

Ensure all wire terminals are properly crimped on wires, and connector housings are properly fastened.

Check for signs of moisture, corrosion or dullness. Clean pins properly and coat them with DIELECTRIC GREASE (P/N 293 550 004) or other appropriate lubricant when reassembling them, except if otherwise specified such as for the ECM connector.

Pay attention to ground wires.

For wiring harness connector locations, refer to *WIRING HARNESS AND CONNECTORS* subsection.

DIAGNOSTIC GUIDELINES

LOW AND HIGH BEAM HEADLIGHTS WILL NOT COME ON SIMULTANEOUSLY (650, 850 AND 1000R MODELS)

1. Jumper JP1 is open circuit or missing.
   - *Check jumper (fuse) JP1 in front fuse box, refer to POWER DISTRIBUTION subsection.*

BRAKE LIGHTS WILL NOT COME ON WHEN BRAKES ARE APPLIED

1. Defective fuse.
   - *Check fuse, refer to the appropriate BRAKE LIGHT CIRCUIT PROTECTION in this subsection.*
2. Defective brake relay.
   - *Test brake relay (R8), refer to POWER DISTRIBUTION subsection.*
3. Defective brake light switch(es).
   - *Refer to BRAKE LIGHT SWITCHES in the BRAKE subsection.*
4. Defective wiring/connectors.
   - *Test wiring continuity, refer to applicable WIRING DIAGRAM.*

TURN SIGNAL LIGHTS WILL NOT COME ON WHEN SELECTED (CE MODELS)

1. Defective fuse.
   - *Check fuse, refer to the appropriate TURN SIGNAL/HAZARD CIRCUIT PROTECTION in this subsection.*
2. Defective Flasher Module.
   - *Replace flasher module, refer to TURN SIGNALS/HAZARD in this subsection.*
3. Defective wiring/connectors.
   - *Test wiring continuity, refer to applicable WIRING DIAGRAM.*
4. Defective Turn Signal Switch.
   - *Test switch, refer to appropriate TURN SIGNALS/HAZARD in this subsection and to applicable WIRING DIAGRAM.*

HAZARD LIGHTS WILL NOT COME ON WHEN SELECTED (CE MODELS ONLY)

1. Defective fuse.
   - *Check fuse, refer to TURN SIGNAL/HAZARD CIRCUIT PROTECTION in this subsection.*
2. Hazard lights 12 Vdc input circuit open.
   - *Check wiring and connectors, refer to the appropriate TURN SIGNAL/HAZARD in this subsection. Refer to WIRING DIAGRAM.*
3. Hazard lights selector switch defective.
   - *Test switch, refer to the appropriate TURN SIGNAL/HAZARD in this subsection. Refer to WIRING DIAGRAM.*
4. Defective wiring/connector between hazard lights selector switch and flasher module.
   - *Refer to applicable WIRING DIAGRAM.*
5. Flasher module ground circuit open.
   - *Test wiring and connectors, refer to applicable WIRING DIAGRAM.*
6. Defective flasher module.
   - *Replace flasher module, refer to the appropriate TURN SIGNAL/HAZARD in this subsection.*

HAZARD LIGHTS COME ON WITHOUT BEING SELECTED (CE MODELS ONLY)

1. Hazard lights switch or wiring short circuit.
   - *Check for water in LH multifunction switch.*
   - *Test hazard light switch and wiring, refer to applicable WIRING DIAGRAM.*
2. Flasher module parallel Resistor is open.
   - *Test resistor (between hazard switch output and ground), refer to applicable WIRING DIAGRAM.*

TURN SIGNAL/HAZARD LIGHTS INDICATOR IN MULTIFUNCTION GAUGE WILL NOT COME ON WITH TURN SIGNAL OR HAZARD LIGHTS SELECTED ON, IGNITION SWITCH ON (CE MODELS ONLY)

1. Signal wire from flasher module to multifunction gauge open circuit.
   - *Test circuit continuity from flasher module (MC2–4) to multifunction gauge (C1–8).*
2. Defective flasher module.
   - *Replace flasher module, refer to the appropriate FLASHER MODULE in this subsection.*
3. Defective multifunction gauge.
   - *Replace multifunction gauge, refer to GAUGE subsection.*

HAZARD LIGHTS INDICATOR NOT WORKING WITH IGNITION SWITCH OFF (OUTLANDER 450 / 570 CE MODELS ONLY)

1. Defective hazard LED indicator.
   - *Test LED. Observe polarity.*

HAZARD LIGHTS INDICATOR NOT WORKING WITH IGNITION SWITCH OFF (OUTLANDER 650 / 850 / 1000R CE MODELS ONLY)

1. Diode D10 open circuit.
   - *Test diode, refer to applicable WIRING DIAGRAM.*

POSITION LIGHTS WILL NOT COME ON (CE MODELS ONLY)

1. Defective fuse.
   - *Check fuse, refer to the appropriate POSITION LIGHTS in this subsection.*
2. Power or ground circuit wiring.
   - *Check wiring continuity, refer to WIRING DIAGRAM.*
3. Defective light bulbs
   - *Test/replace light bulbs.*

PROCEDURES

ACTIVATING THE ELECTRICAL SYSTEM

NOTICE Activating the electrical system repeatedly or using electrical equipment will discharge the battery and you may not be able to start the engine.

Models with a RF D.E.S.S. key

Press and release the START button for less than half a second and the electrical system will turn ON:

– For 30 seconds, **without** powering any equipment, if the D.E.S.S. key is **NOT** installed on the D.E.S.S. post **OR** if the Emergency Engine Stop switch is set to the STOP position;

– For 10 minutes, powering equipment, if the RF D.E.S.S. key is installed on the D.E.S.S. post **AND** Emergency Engine Stop is set to the RUN position. The electrical system will be shutdown after 30 seconds if either the D.E.S.S. key is removed **OR** the Emergency Engine Stop is set to the STOP position.

NOTE: If the vehicle is connected to B.U.D.S. and the RF D.E.S.S. key is installed on its post, the electrical system will not shut down.

Models with a conventional ignition key

Turn the ignition key to the ON position

HEADLIGHTS (MODELS WITH 4 HEADLIGHTS)

Headlight Wire Identification

HEADLIGHTS RELAY (R5)		
FUNCTION	PIN	COLOR
12 volt input from fuse F11 (headlights power)	C6	YE/BK
12 volt input from fuse F4 (relay winding input)	D6	OR/GN
12 volt output to light switch	D7	RD/BU
Relay winding ground (from ECM K2)	C7	OR/BK

LIGHT SWITCH		
FUNCTION	PIN	COLOR
12 volt input from headlights relay	MG1-4 MG2-4	RD/BU
12 volt output to high beam headlights	MG2-5	BU
12 volt output to low beam headlights	MG2-2	GN

Headlights Circuit Protection

CONDITION	CIRCUIT PROTECTION
Unswitched	Fuse 11

Testing the Headlights

1. Disconnect LOW beam and HIGH beam headlight bulb connectors. Refer to *REPLACING THE HEADLIGHT BULB* in this subsection.
2. Activate the electrical system, refer to *ACTIVATING THE ELECTRICAL SYSTEM* in this subsection.
3. Measure the voltage on headlight connector as follows.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

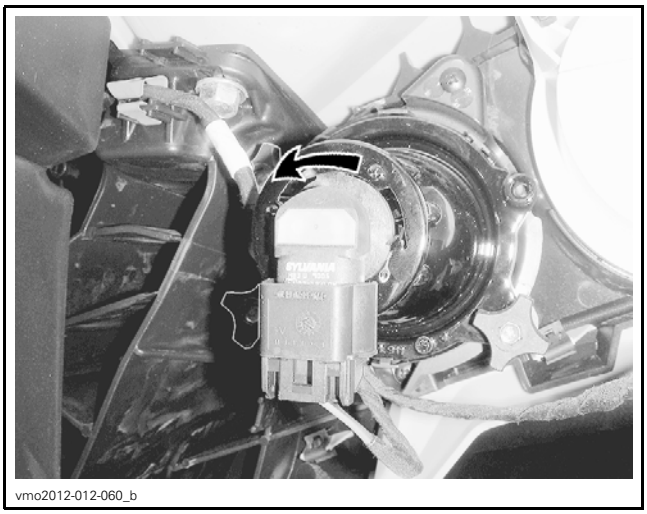
LIGHT SWITCH POSITION	WIRE COLOR		VOLTAGE
LO beam	GN (Low beam connector)	BK	Battery voltage
HI beam (Models with a DPS)			
HI beam	BU (Hi beam connector)		

Replacing the Headlight Bulb

NOTICE Never touch glass portion of a halogen bulb with bare fingers, it shortens its operating life. If glass is touched, clean it with isopropyl alcohol which will not leave a film on the bulb.

1. Unplug connector from bulb.

2. Rotate bulb.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TYPICAL

3. Pull bulb out.
4. Properly reinstall removed parts in the reverse order of their removal.
5. Validate headlight operation.

HEADLIGHTS (MODELS WITH 2 HEADLIGHTS)

Headlight Wire Identification

ACCESSORY RELAY (R3)		
FUNCTION	PIN	COLOR
12 volt input from fusible link FL-2	E12	RD/GN
12 volt input from F4 (relay winding input)	E10	OR/GN
12 volt output to light switch (through F12)	D10	RD/YE before F12 and RD/BK after F12
Relay winding ground (from ECM K2)	D12	OR/BK

LIGHT SWITCH		
FUNCTION	PIN	COLOR
12 volt input from relay R3 (through fuse F12)	MG2-4	RD/BU
12 volt output to high beam headlights	MG2-5	BU
12 volt output to low beam headlights	MG2-2	GN

Headlights Circuit Protection

CONDITION	CIRCUIT PROTECTION
Supplied when relay R3 is activated	Fuse 12 of fuse block 1 (from accessory relay R3)

Testing the Headlight

1. Disconnect headlight bulb connectors. Refer to *REPLACING THE HEADLIGHT BULB* in this subsection.
2. Activate the electrical system, refer to *ACTIVATING THE ELECTRICAL SYSTEM* in this subsection.
3. Measure the voltage on headlight connector as follows.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

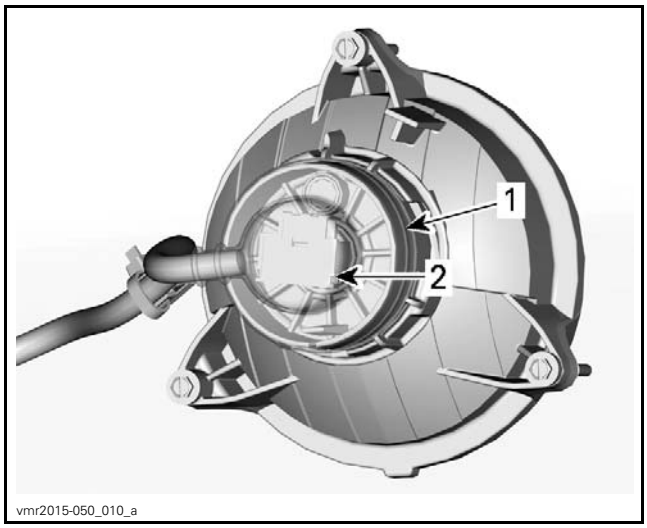
4. Measure the voltage on headlight connector as follows.

LIGHT SWITCH POSITION	WIRE COLOR		VOLTAGE
LO beam	GN (Low beam connector)	BK	Battery voltage
HI beam			No voltage
Lo beam	BU (Hi beam connector)		
HI beam			Battery voltage

Replacing the Headlight Bulb

NOTICE **Never touch glass portion of a halogen bulb with bare fingers, it shortens its operating life. If glass is touched, clean it with isopropyl alcohol which will not leave a film on the bulb.**

1. Remove cover.
2. Unplug connector.
3. Remove bulb.



1. Cover
2. Connector

4. Properly reinstall removed parts in the reverse order of their removal.
5. Validate headlight operation.

HEADLAMP BEAM AIMING (ALL MODELS)

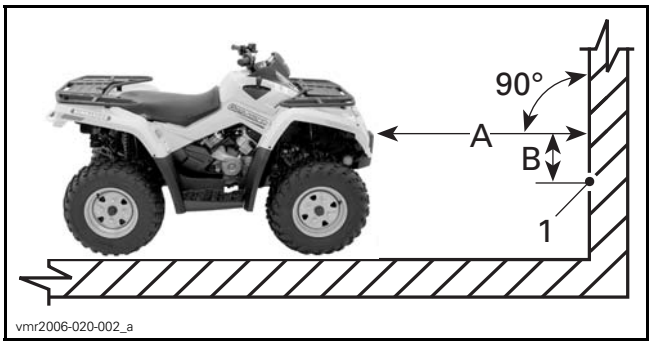
NOTE: Load vehicle as per normal use.

1. Position vehicle on a level surface 5 m (16 ft) in front of a test surface (wall or screen) as in first illustration.
2. Measure the distance from the center of each headlight to the ground (high beam and low beam).
3. Trace a line on the test surface parallel to the ground at each measured height (one for high beam and one for low beam).

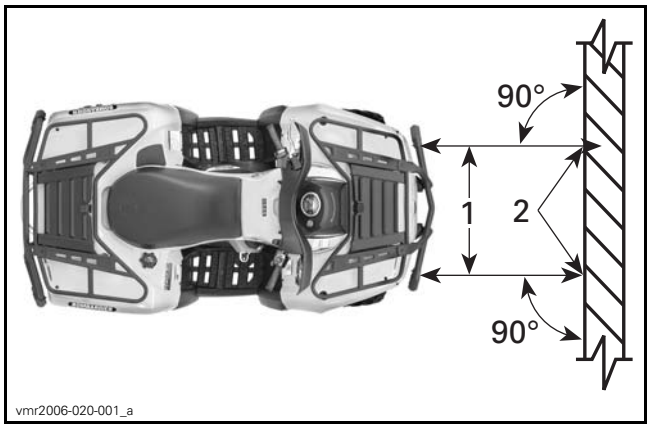
Low beam aiming is correct when the crest of the low beam is **below** the applicable horizontal center line traced on the test surface as per specification.

High beam aiming is correct when the center of the high beam (focus point) is **below** the applicable horizontal center line traced on the test surface as per specification.

SPECIFICATION	
Low beam crest (top of low beam)	25 mm to 125 mm (1 in to 5 in) **below** applicable line
High beam center (focus point)	



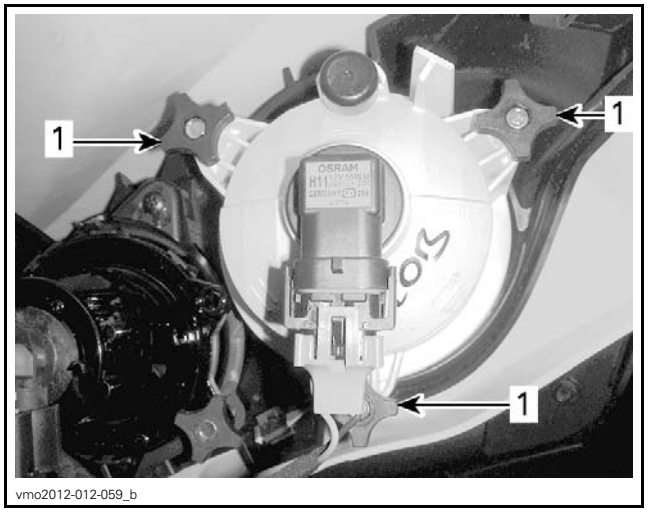
TYPICAL
1. Light beam center
A. 5 m (16 ft)
B. Beam aiming specification



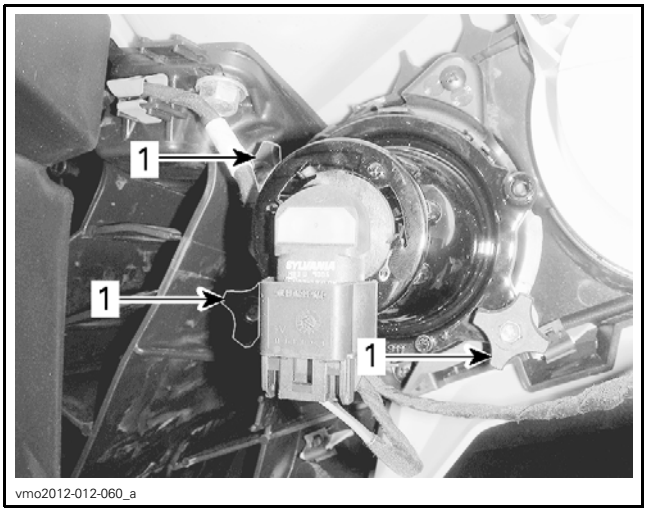
TYPICAL
1. Headlight center lines
2. Light beam center

Adjusting Beam Aiming (Models with 4 Headlights)

Turn adjustment knobs to adjust beam height and side orientation to specification.



OUTLANDER LOW BEAM
1. Adjustment knobs



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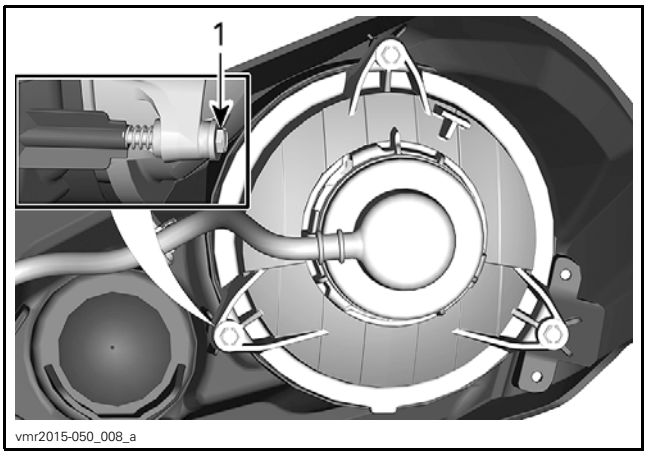
OUTLANDER HIGH BEAM AND RENEGADE LOW BEAM/HIGH BEAM
1. Adjustment knobs

Adjusting Beam Aiming (Models with 2 Headlights)

Turn adjustment knobs to adjust beam height and side orientation to specification.



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1. Adjustment knobs

TAILLIGHTS/BRAKE LIGHTS (MODELS WITH 2 TAILLIGHTS)

Brake Light Switch

For brake light switch location and testing, refer to *BRAKES* subsection.

Brake Light Wire Identification

BRAKE LIGHT RELAY (R8)		
FUNCTION	PIN	COLOR
12 volt input from fuse F14 (brake light power)	C8	RD/VI
12 volt input from F4 (relay winding input)	D8	OR/GN
12 volt output to LH and RH brake lights	D9	WH/OR
Relay winding ground (from brake light switch(es))	C9	RD/OR

Brake Light Circuit Protection

CONDITION	CIRCUIT PROTECTION
Supplied when: Accessories relay R3 activated Brake relay R8 activated	Fuse 14 (from Accessories relay R3)

Taillight Wire Identification

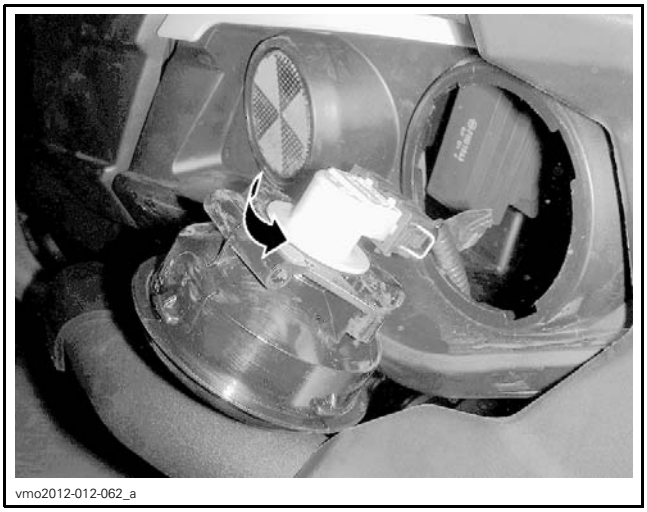
FUNCTION	PIN	CIRCUIT PROTECTION
Supplied when Accessories relay R3 activated	3	RD/VI
Ground from BK2	2	BK

Taillight Circuit Protection

CONDITION	CIRCUIT PROTECTION
Supplied when Accessories relay R3 activated	Fuse 14 (from Accessories relay R3)

Taillight/Brake Light Bulb Replacement

1. Unplug connector from bulb.
2. Rotate light bulb counterclockwise to remove it from taillight.


vmo2012-012-062_a

ROTATE BULB COUNTERCLOCKWISE

3. Remove bulb socket from taillight.

Installation is the reverse of the removal procedure.

TAILLIGHT/BRAKE LIGHT (MODELS WITH A SINGLE TAILLIGHT)

Brake Light Switch

For brake light switch location and testing, refer to *BRAKES* subsection.

Brake Light Wire Identification

BRAKE LIGHT RELAY (R8)		
FUNCTION	PIN	COLOR
12 volt input from fuse F4 (brake light power)	C8	OR/GN
12 volt input from F4 (relay winding input)	D8	OR/GN
12 volt output to brake light	D9	WH/OR
Relay winding ground (from brake light switch(es))	C9	RD/OR

Brake Light Circuit Protection

CONDITION	CIRCUIT PROTECTION
Supplied when: Main relay R2 activated Brake relay R8 activated	Fuse 4 of fuse block 1 (from main relay R2)

Taillight Wire Identification

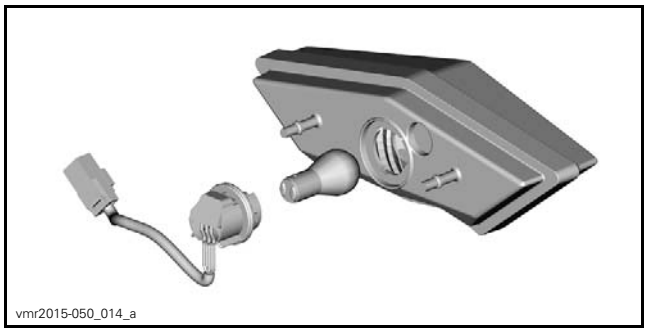
FUNCTION	PIN	COLOR
Supplied when main relay R2 activated	2	OR/GN
Ground from BN1	3	BK

Taillight Circuit Protection

CONDITION	CIRCUIT PROTECTION
Supplied when main relay R2 activated	Fuse 4 of fuse block 1 (from main relay R2)

Replacing the Taillight/Brake Light Bulb

1. Disconnect the taillight connector.
2. Rotate the socket counterclockwise to remove it from taillight.


vmr2015-050_014_a

3. Remove the bulb from the socket.

Installation is the reverse of the removal procedure.

POSITION LIGHTS (CE MODELS WITH 4 HEADLIGHTS)

Headlight Wire Identification

NOTE: The position lights and licence plate light are supplied whenever the accessory relay R3 is activated.

ACCESSORY RELAY (R3)		
FUNCTION	PIN	COLOR
12 volt input from fusible link FL-2	E12	RD/GN
12 volt input from F4 (relay winding input)	E10	OR/GN
12 volt output to lights (through F7)	D10	RD/YE before F12 and RD/BK after F7
Relay winding ground (from ECM K2)	D12	OR/BK

Position Light Circuit Protection

CONDITION	CIRCUIT PROTECTION
Supplied when relay R3 is activated	Fuse 7 (from accessories relay R3)

POSITION LIGHTS (CE MODELS WITH 2 HEADLIGHTS)

Headlight Wire Identification

NOTE: The position lights and licence plate light are supplied whenever the accessory relay R3 is activated.

ACCESSORY RELAY (R3)		
FUNCTION	PIN	COLOR
12 volt input from fusible link FL-2	E12	RD/GN
12 volt input from F4 (relay winding input)	E10	OR/GN
12 volt output to position lights (through F12)	D10	RD/YE before F12 and RD/BK after F12
Relay winding ground (from ECM K2)	D12	OR/BK

Position Light Circuit Protection

NOTE: The position lights and licence plate light are supplied whenever the accessory relay R3 is activated.

CONDITION	CIRCUIT PROTECTION
Supplied when relay R3 is activated	Fuse 12 of fuse block 1 (from accessories relay R3)

TURN SIGNALS/HAZARD (CE MODELS WITH 4 HEADLIGHTS)

Turn Signal/Hazard Lights Wire Identification

FLASHER MODULE		
FUNCTION	PIN	COLOR
12 volt input from fuse F10 (unswitched)	MC2-1	RD/WH
12 volt input from fuse F7 (switched)	MC1-5	RD/BK
RH turn 12 volt input from turn signal switch	MC1-1	BE/BROWN
LH turn 12 volt input from turn signal switch	MC1-2	BE/GY
Output to RH turn signal lights	MC2-2	BR
Output to LH turn signal lights	MC2-3	GY
Output to multifunction gauge (turn signal indicator)	MC2-4	OR
Ground	MC1-4	BK
Hazard 12 volt input from hazard switch	MC1-6	BE/RD

TURN SIGNAL SWITCH (IN MULTIFUNCTION SWITCH)		
FUNCTION	PIN	COLOR
12 volt input from fuse F10 (unswitched)	MG3-3	RD/BK
RH turn 12 volt output to flasher module	MG3-1	BE/BR
LH turn 12 volt output to flasher module	MG3-2	BE/GY

HAZARD SWITCH		
FUNCTION	PIN	COLOR
12 volt input from fuse F10 (unswitched)	MG3-3	RD/BK
12 volt output to flasher module	MG3-5	BE/RD
12 volt output to wake up gauge		

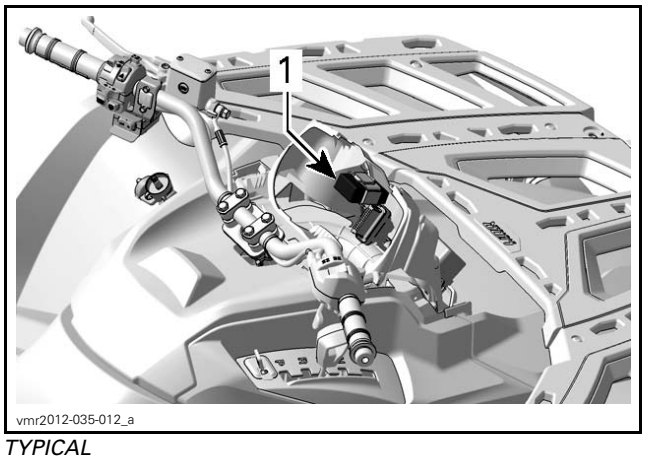
Turn Signal/Hazard Circuit Protection

TURN SIGNAL CIRCUIT	
CONDITION	CIRCUIT PROTECTION
Supplied with Accessories relay (R3) activated	Fuse 7 (from Accessories relay R3)
Battery power (continuous)	Fuse 10

HAZARD CIRCUIT	
CONDITION	CIRCUIT PROTECTION
Battery power (continuous)	Fuse 10

Flasher Module Access

Remove multifunction gauge.



TYPICAL
1. Flasher module location

TURN SIGNALS/HAZARD (CE MODELS WITH 2 HEADLIGHTS)

Turn Signal/Hazard Lights Wire Identification

FLASHER MODULE		
FUNCTION	PIN	COLOR
12 volt input from fuse F8 (unswitched)	MC2-1	BE
12 volt input from accessory relay R3	MC1-5	RD/BK
RH turn 12 volt input from turn signal switch	MC1-1	BE/BR
LH turn 12 volt input from turn signal switch	MC1-2	BE/GY
Output to RH turn signal lights	MC2-2	BR
Output to LH turn signal lights	MC2-3	GY
Output to multifunction gauge (turn signal indicator)	MC2-4	OR
Ground	MC1-4	BK
Hazard 12 volt input from hazard switch	MC1-6	BE/RD

TURN SIGNAL SWITCH (IN MULTIFUNCTION SWITCH)		
FUNCTION	PIN	COLOR
12 volt input from fuse F8 (unswitched)	MG3-3	BE
RH turn 12 volt output to flasher module	MG3-1	BE/BR
LH turn 12 volt output to flasher module	MG3-2	BE/GY

HAZARD SWITCH		
FUNCTION	PIN	COLOR
12 volt input from fuse F8 (unswitched)	MG3-3	BE
12 volt output to flasher module	MG3-5	BE/RD
12 volt output to hazard pilot lamp		

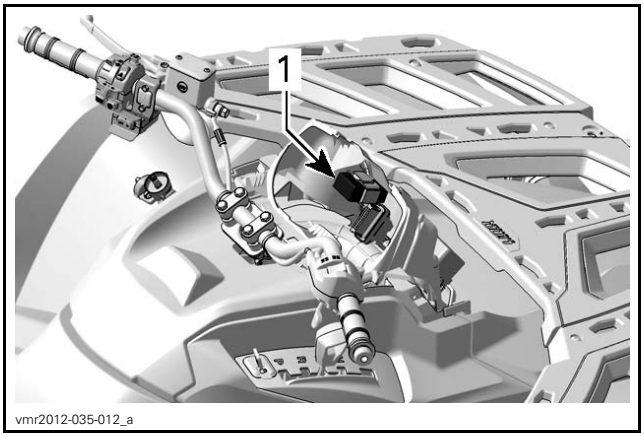
Turn Signal/Hazard Circuit Protection

TURN SIGNAL CIRCUIT	
CONDITION	CIRCUIT PROTECTION
Supplied when R3 is activated	Fuse 12 of fuse block 1 (from accessory relay R3)
Battery power (continuous)	Fuse 8 of fuse block 1

HAZARD CIRCUIT	
CONDITION	CIRCUIT PROTECTION
Battery power (continuous)	Fuse 8 of fuse block 1

Flasher Module Access

Remove multifunction gauge.



1. Flasher module location

GAUGE

SERVICE TOOLS

Description	Part Number	Page
FLUKE 115 MULTIMETER	529 035 868	14

SERVICE PRODUCTS

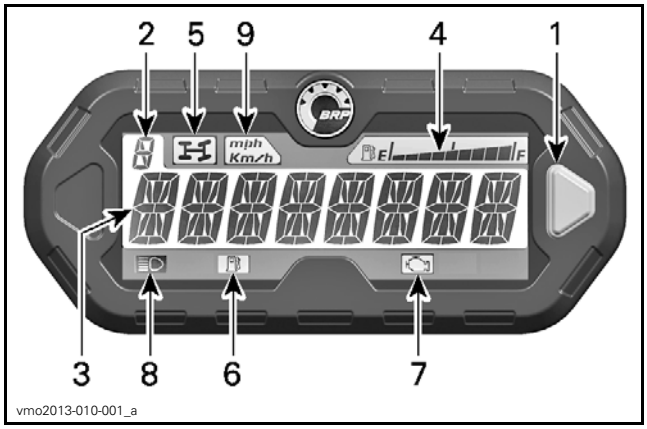
Description	Part Number	Page
DIELECTRIC GREASE	293 550 004	10

GENERAL

NOTICE It is recommended to always disconnect the battery when replacing any electric or electronic parts. Always disconnect battery exactly in the specified order, BLACK (-) cable first.

COMPACT DIGITAL MULTIFUNCTION GAUGE

Multifunction Gauge Description



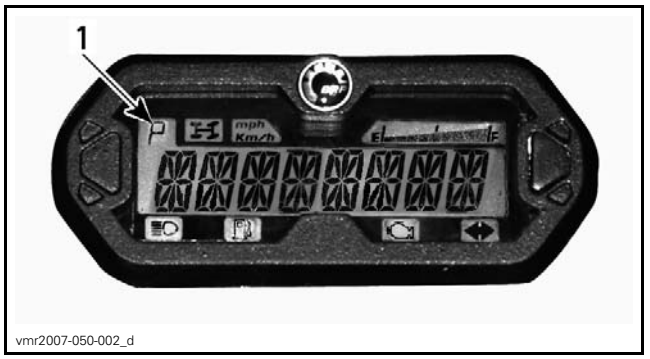
1. *Selector button*
2. *Transmission position display*
3. *Main screen*
4. *Fuel level display*
5. *4WD indicator lamp*
6. *Low fuel level indicator lamp*
7. *Check engine indicator lamp*
8. *High beam indicator lamp*
9. *MPH, Km/h indicator lamp*
10. *Signal lights/hazard lights indicator lamp (CE models)*

1) Selector Button

The selector button is used to navigate or change settings in the multifunction gauge.

2) Transmission Position Display

This display will show transmission position.



1. *Transmission position*

DISPLAY	FUNCTION
P	Park
R	Reverse
N	Neutral
H	High range
L	Low range

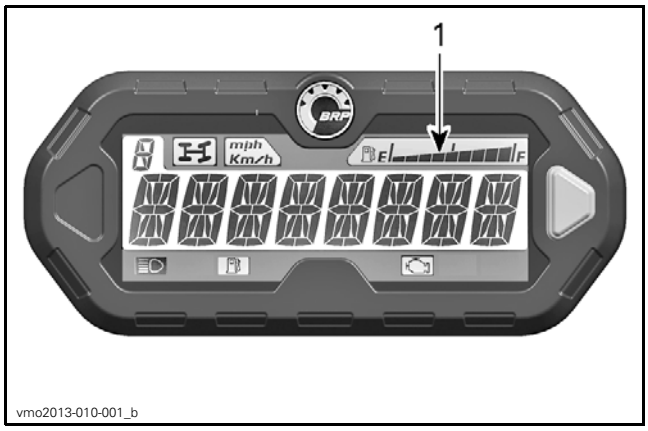
3) Main Screen

The main screen is used to display numerous functions of the multifunction gauge.

Refer to *MULTIFUNCTION DISPLAY MODES* for the available display modes.

4) Fuel Level Display

Bar gauge continuously indicates the level of fuel in the fuel tank while riding.



vmo2013-010-001_b

1. Fuel level display

5) 4WD Indicator Lamp

When this indicator is ON, it indicates the **4WD** system is activated.

6) Low Fuel Level Indicator Lamp

When this indicator is ON, it indicates that there is approximately 5 L (1.3 U.S. gal.) of fuel left in fuel tank.

7) Check Engine Indicator Lamp

When this indicator is ON, it indicates an engine fault code, look for a message in the main screen display.

When this indicator blinks, it indicates that **LIMP HOME** mode is activated.

8) High Beam Indicator Lamp

When this indicator is ON, it indicates that **high beam** is selected on the headlights switch and that the ignition key is in the "ON with lights" position.

9) KM/H or MPH Indicator Lamp

mph
Km/h

The applicable lamp turns on to indicate the active speedometer unit of display.

10) Turn signal/Hazard lights Indicator Lamp

When this indicator is ON, it indicates:
– A turn signal is activated, or
– The hazard lights are activated.

Multifunction Display Modes

Speed Mode

In this mode, the display shows the speed of the vehicle either in km/h or in MPH.

vdd2008-001-084

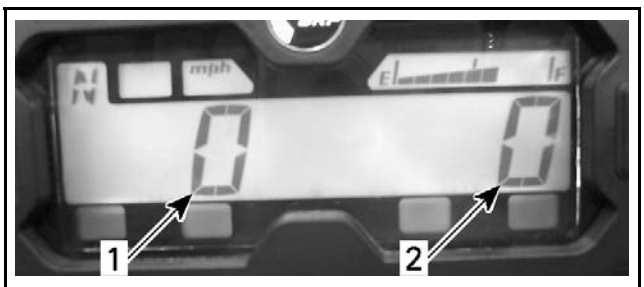
RPM Mode

In this mode, the display shows the engine RPM.

vdd2008-001-089

Combined Mode

In this mode, the display shows the speed of the vehicle and the engine RPM.



vdd2008-001-085_a

1. Vehicle speed
2. Engine RPM

Odometer (OD)

Odometer records the total distance travelled either in miles or kilometers.

vsi2009-018-030

Clock

Shows current time.

vmo2011-008-001

Refer to *PROCEDURES* to set current time.

Trip Meter (TP)

The trip meter records the travelled distance since it has been reset. Distance travelled is displayed either in kilometers or miles.

vsi2009-018-031

Press and HOLD the selector button for 2 seconds to reset the trip meter.

Trip Hour Meter (TH)

The trip hour meter records vehicle running time when the electrical system is activated. It can be used to establish traveling time between 2 places.

vsi2009-018-032

Press and HOLD the selector button for 2 seconds to reset the hour meter.

Engine Hour Meter (EH)

The engine hour meter records engine running time.

vsi2009-018-033

Message Display Mode

If an abnormal engine condition occurs, a message may scroll across the main screen in conjunction with a pilot lamp.

Refer to *DIAGNOSTIC AND FAULT CODES* subsection.

Navigating the LCD Gauge

⚠ WARNING

Never adjust or set functions on the multifunction gauge while riding the vehicle.

Default Display Mode

After vehicle startup, the default display mode is either:

– Vehicle speed
– Engine revolutions per minute (RPM)
– Both parameters simultaneously (combined mode).

To change from one display to the other, proceed as follows.

1. Turn ignition key to ON to power-up the system.
2. Wait until the "greeting message" has been displayed.

3. Press and release selector button once to display OD (odometer).
4. Press the selector button again, this time for 2 seconds.

This will change the Mode to either Speed, RPM or Combined.

vdd2008-001-083

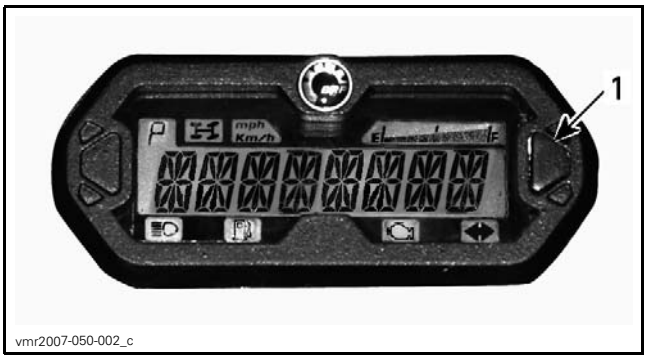
5. To select another mode, repeat steps 3 and 4 until the desired mode is displayed.

Temporary Display Mode

In the temporary display mode, the following functions are available:

– Odometer
– Clock
– Trip meter (resettable)
– Trip Hour meter (resettable)
– Engine hour meter.

Press and release selector button to change the default display mode to the temporary mode.



vmr2007-050-002_c

1. Selector button

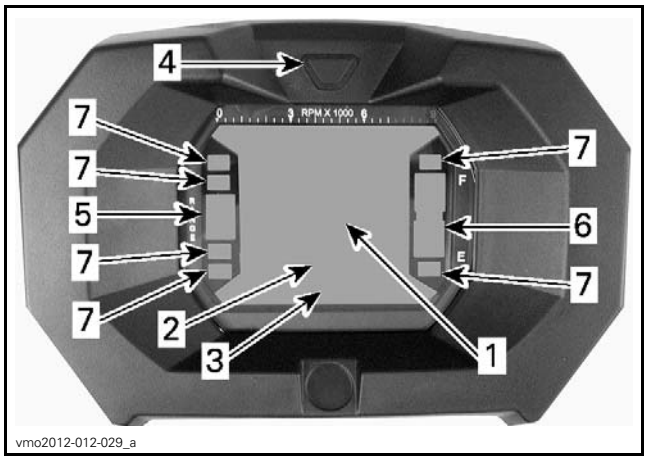
The gauge will display the selected mode for 10 seconds then will return to the normal display mode.

While in a resettable mode, push and HOLD selector button for 2 seconds to reset it.

FULL SIZE DIGITAL MULTIFUNCTION GAUGE

Multifunction Gauge Description

The multifunction gauge is located in the middle of the handlebar.



vmo2012-012-029_a

1. Display 1
2. Display 2
3. Display 3
4. Selector button
5. Transmission position display
6. Fuel level display
7. Indicator lamps

Speedometer

This display will show vehicle speed.

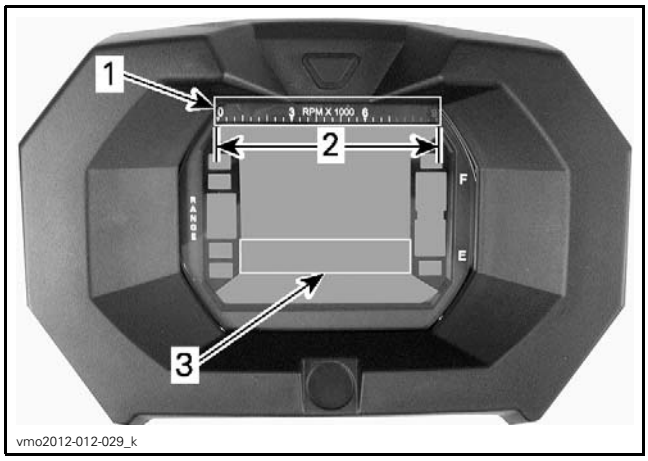
vmo2012-012-029_i

1. Vehicle speed (Display 1)

Tachometer

Measures engine revolutions per minute (RPM). Multiply by 1000 to obtain the actual revolutions.

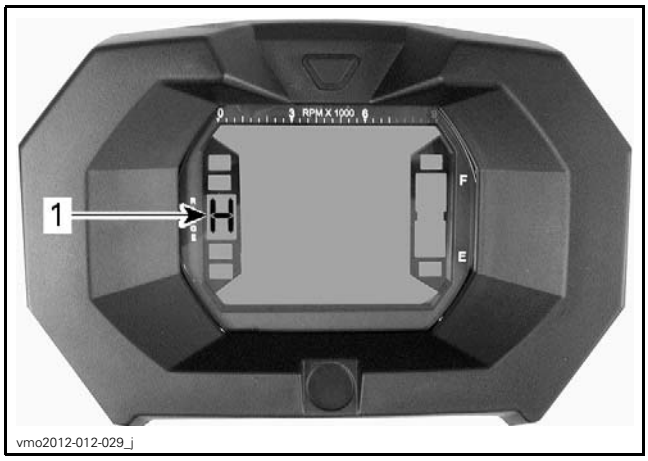
NOTE: RPM may also be displayed via Display 2 (mode) display.



1. *Tachometer*
2. *Operating range*
3. *Tachometer via Display 2 (mode)*

Transmission Position Display

This display will show transmission position.



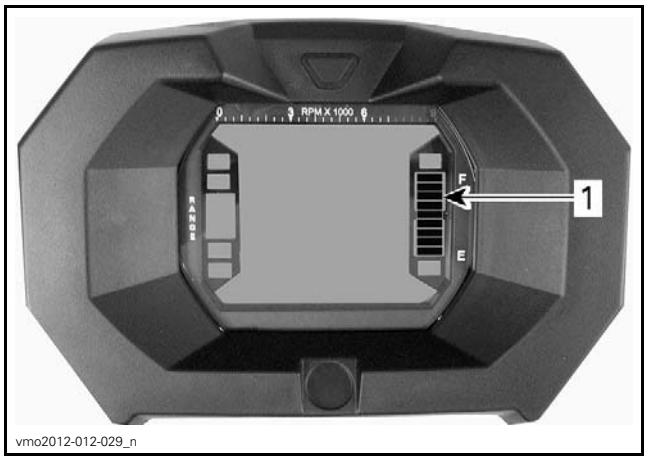
1. *Transmission position*

DISPLAY	FUNCTION
P	Park
R	Reverse
N	Neutral
H	High gear
L	Low gear

NOTE: If the letter "E" is displayed in the transmission position display, it means that there is a electrical communication error. Contact an authorized Can-Am dealer.

Fuel Level Display

Bar gauge continuously indicates the fuel level in the fuel tank.



1. *Fuel level display*

Low fuel level Indicator Lamp

When this indicator turns ON, it indicates that there is approximately 5 L (1.3 U.S. gal.) of fuel left in fuel tank.

4WD Indicator Lamp

When this indicator is ON, it indicates the **4WD** system is activated.

Brake Lock Indicator Lamp

When this indicator is ON, it indicates the brake is activated for more than 15 seconds (while riding).

High Beam Indicator Lamp

When this indicator is ON, it indicates that **high beam** is selected.

Check Engine Indicator Lamp

When this indicator is ON, it indicates an engine fault code, look for a message at the LCD display.

Refer to *DIAGNOSTIC AND FAULT CODES* subsection.

Turn Signal/Hazard Lights Indicator Lamp

CE Models

When this indicator is ON, it indicates:
– A turn signal is activated, or
– Hazard lights are activated.

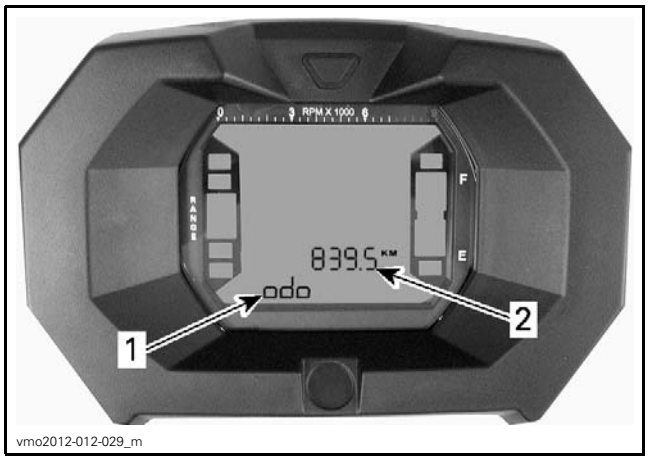
Multifunction Display Modes

⚠ WARNING

Never adjust or set functions on the multifunction gauge while riding the vehicle.

The available modes may be displayed by pressing the selector button.

NOTE: An abbreviation of the mode selected will also be displayed in Display 3.



1. Display 2 (mode)
2. Display 3 (mode/message)

A) Odometer

Records the total distance travelled.

B) Clock

Shows current time.

Press and HOLD selector button to set clock.

C) Trip Meter

Records the distance travelled since it has been reset.

Press and HOLD display selection button to reset.

D) Hour Meter (Trip Time)

Records the vehicle running time when the electrical system is activated since it has been reset.

Press and HOLD display selection button to reset.

E) Engine Hour Meter

Records engine running time.

F) Engine RPM

Measures engine revolutions per minute (RPM).

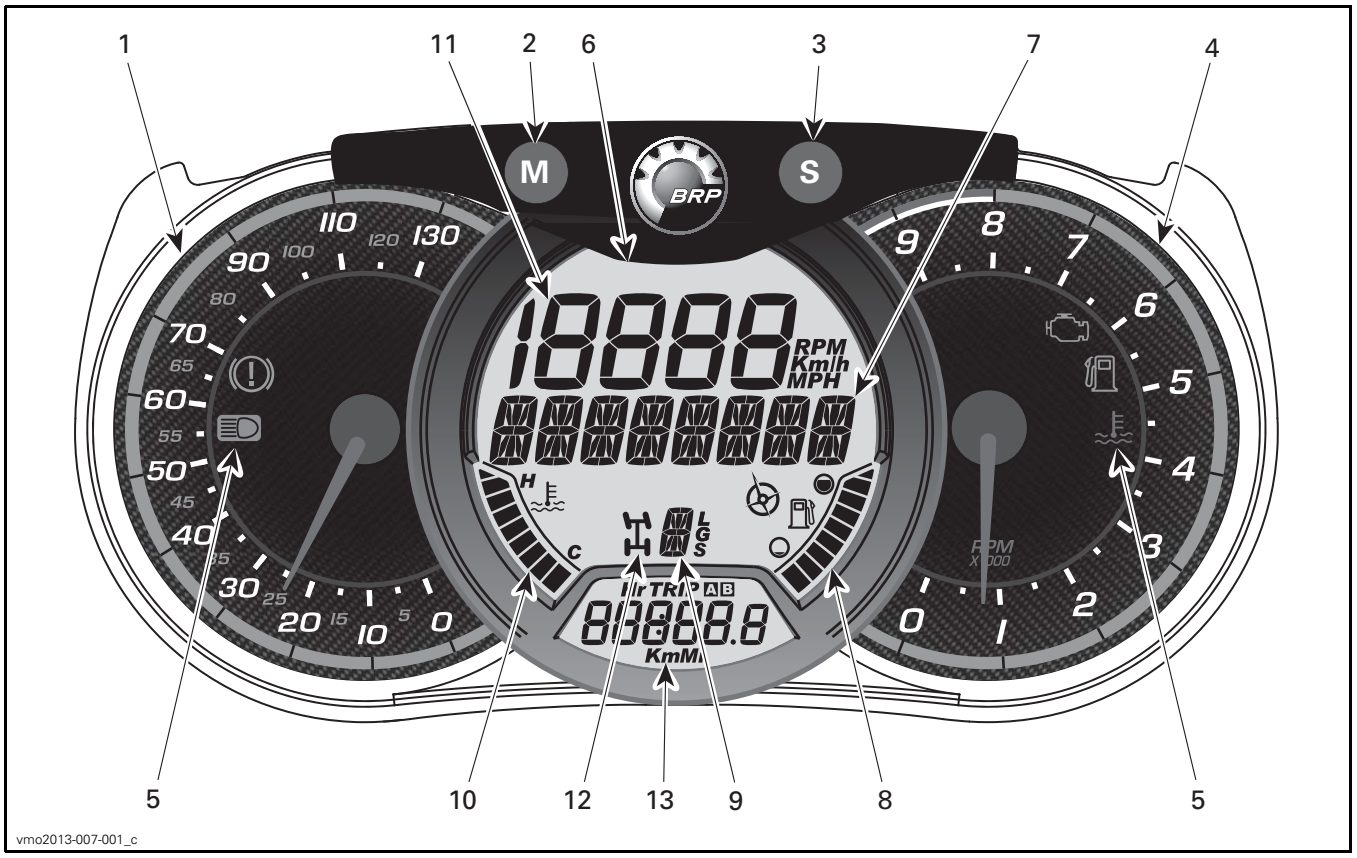
ANALOG / DIGITAL MULTIFUNCTION GAUGE

Multifunction Gauge Description

The Multifunction Gauge (Analog/digital) is comprised of a digital gauge and two analog gauges (speedometer and tachometer).

The engine temperature and fuel level bar graphs are comprised in the digital gauge.

The indicators lamps are comprised in both analog gauges.



TYPICAL

1. *Analog speedometer*
2. *MODE (M) button*
3. *SET (S) button*
4. *Analog tachometer (RPM)*
5. *Indicator lamps*
6. *Main digital display*
7. *Multifunction display*
8. *Fuel level indicator*
9. *Gearbox position indicator*
10. *Engine temperature indicator*
11. *Numerical display*
12. *2WD/4WD indicator*
13. *Secondary digital display*

⚠ WARNING

Do not adjust the display while riding. You could lose control.

1) Analog Speedometer

Measures vehicle speed in km/h or mph.

2) MODE (M) Button

Pressing the MODE (M) button will scroll through the functions of the main digital display.

FUNCTION SEQUENCE	OPTIONS
Air Suspension (LTD model only)	Press ACS button to change setting (1 to 6)
Numerical Display is flashing	Press SET (S) to scroll and select desired function and press MODE (M) to confirm
Multifunction display is flashing	Press SET (S) to scroll and select desired function and press MODE (M) to confirm

3) SET (S) Button

Pressing the SET (S) button will scroll through the functions of the secondary digital display.

FUNCTION SEQUENCE	INFORMATION DISPLAYED
Clock	XX:XX (24:00 time base) XX:XX A or P (12:00 AM/PM time base)
Cumulative distance odometer	XXXXX.X km or mi
Trip distance — odometer A (TRIP A)	XXXXX.X km or mi
Trip distance — odometer B (TRIP B)	XXXXX.X km or mi
Engine time chronometer (Hr)	XXXXX.X
Trip time chronometer (HrTRIP)	XXXXX.X

To reset any trip functions, push and hold the MODE (M) button for three seconds.

4) Analog Tachometer (RPM)

Measures engine revolutions per minute (RPM). Multiply by 1000 to obtain actual revolutions.

5) Indicator Lamps

Indicator lamps will inform you of various conditions or problems.

An indicator lamp can flash alone or in combination with another lamp.

INDICATOR LAMP(S)		DESCRIPTION
All indicator lamps	On	All indicator lamps are activated when ignition switch is ON and the engine is not started
	On	Low Fuel
	On	Check Engine
	On	High Engine Temperature
	On	Headlights in the HIGH beam position
	On	Brake is pressed for more than 15 seconds while riding

6) Main Digital Display

Displays useful real-time information to the rider.

7) Multifunction Display

The vehicle speed or the engine revolutions (RPM) can be displayed. See *MODE (M) BUTTON* in this section.

Important messages can also be displayed. Refer to table below.

MESSAGE	DESCRIPTION
BRAKE	Message displayed when the brakes are applied continuously for 15 seconds.
NORMAL KEY	Displayed at power up when a the normal key is used.
PERFORMANCE KEY	Displayed at power up when a the performance key is used.
OVERRIDE	Override is displayed when the override switch is pressed and the shift lever is set to reverse gear.
MAINTENANCE REQUIRED	Displayed in the gauge when a periodic maintenance will soon be required. To erase this message, refer to *PROCEDURES* in this subsection.

If an abnormal engine condition occurs, a message can be combined with a pilot lamp. Refer to *DIAGNOSTIC AND FAULT CODES* subsection.

8) Fuel Level Indicator

Bar graph that continuously indicates the level of fuel left in the fuel tank.

9) Gearbox Position Indicator

Displays the selected gearbox position.

LTD Models

As a second function, will indicate the current ACS position setting.

10) Engine Temperature Indicator

Bar graph that continuously indicates the engine coolant temperature.

11) Numerical Display

The vehicle speed or the engine revolutions (RPM) can be displayed. See *MODE (M) BUTTON* in this section.

12) 2WD/4WD Indicator

When this indicator is ON, the 4WD system is activated.

13) Secondary Digital Display

Displays useful real time information to the rider. For display function informations, refer to *SET (S) BUTTON*.

Gauge Setup

Setting Metric/Imperial Units

Use B.U.D.S. software to select metric or imperial units.

Setting Clock

Use B.U.D.S. software or do the following:

1. Press SET (S) button to select clock display.
2. Push and hold SET (S) button for three seconds.

3. Press SET (S) button to select 12:00 AM PM or 24:00 time base.
4. If 12:00 AM PM time base is selected, A or P flashes. Press SET (S) button to select A (AM) or P (PM).
5. Press SET (S) to select the first digit of the hour.
6. Press SET (S) to select the second digit of the hour.
7. Press SET (S) to select first digit of the minutes.
8. Press SET (S) to select second digit of the minutes.

Setting Language

The gauge display language can be changed using B.U.D.S. software.

TROUBLESHOOTING

DIAGNOSTIC TIPS

NOTE: It is a good practice to check for fault codes using B.U.D.S. software as a first troubleshooting step. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

IMPORTANT: When troubleshooting an electrical system fault, check battery condition, cables and connections first.

Testing a Circuit

Check the related-circuit fuse condition with a fuse tester or test lamp (a visual inspection could lead to a wrong conclusion).

NOTE: If the ignition switch is left ON for a certain period of time, the accessory relay will shut down.

Inspecting an Electrical Connection

When replacing an electric or electronic component, always check electrical connections. Make sure they are tight, make good contact, and are corrosion-free. Dirty, loose or corroded contacts are poor conductors and are often the source of a system or component malfunction.

Pay particular attention to ensure that pins are not bent or pushed out of their connectors.

Ensure all wire terminals are properly crimped on wires, and connector housings are properly fastened.

Check for signs of moisture, corrosion or dullness. Clean pins properly and coat them with DIELECTRIC GREASE (P/N 293 550 004) or other appropriate lubricant when reassembling them, except if otherwise specified such as for the ECM connector.

Pay attention to ground wires.

For wiring harness connector locations, refer to *WIRING HARNESS AND CONNECTORS* subsection.

DIAGNOSTIC GUIDELINES

MULTIFUNCTION GAUGE WILL NOT COME ON

1. Multifunction gauge not powered up.
   - *Check fuse(s), refer to CIRCUIT PROTECTION in this subsection.*
   - *Test multifunction gauge 12 Vdc input and ground circuits as per WIRING IDENTIFICATION in this subsection. Refer to applicable WIRING DIAGRAM.*
2. Defective Multifunction Gauge.
   - *Replace multifunction gauge.*

MULTIFUNCTION GAUGE COMMUNICATION ERROR

1. Multifunction gauge CAN circuit open.
   - *Ensure multifunction gauge is properly connected and powered up.*
   - *Check for applicable fault code using B.U.D.S., refer to DIAGNOSTIC AND FAULT CODES subsection.*
   - *Carry out TESTING THE CAN RESISTOR in this subsection.*
   - *Carry out a continuity test of the multifunction gauge CAN wires, refer to applicable WIRING DIAGRAM.*

NO FUEL QUANTITY INDICATION

1. Defective fuel level sender or wiring.
   - *Refer to FUEL TANK AND FUEL PUMP subsection.*
2. Defective Multifunction Gauge.
   - *Replace multifunction gauge, refer to PROCEDURES in this subsection.*

PROCEDURES

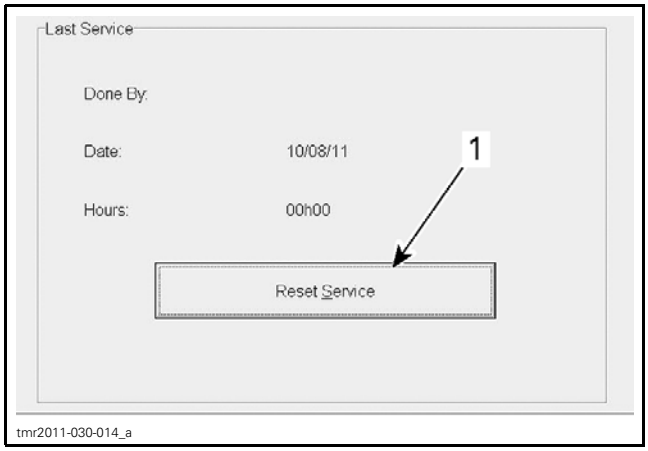
MULTIFUNCTION GAUGE

Resetting the "Maintenance Required" Message Using B.U.D.S.

Connect to the latest applicable B.U.D.S. software version. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

Select **Vehicle** tab.

Click on the **Reset Service** button.



TYPICAL
1. Reset Service button

Resetting the "Maintenance Required" Message Using the Gauge Button

1. Select display and hold button as per following table:

GAUGE TYPE	DISPLAY	BUTTON (HOLD)
Analog / digital multifunction gauge	Odometer	SET (S)
Full size digital multifunction gauge	Odometer	Selector button
Compact digital multifunction gauge	Default	Selector button

2. While holding the button, alternate between LOW beam and HIGH beam 3 times.

NOTE: Step 2 must be started on high beam and completed within **2 seconds**.

3. Release SET button.

Wiring Identification

FUNCTION	PIN	COLOR
12 volt input from fuse F4	17	ORANGE/YELLOW
12 volt input from fuse F8	16	RED/WHITE
Ground	20	BLACK
CAN LO	18	WHITE/BLACK
CAN HI	19	WHITE/BEIGE
Fuel level gauge supply	4	BROWN/PINK
Fuel level gauge ground	21	VIOLET/PINK
2WD/4WD switch signal (-)	7	BLACK/BEIGE
HI beam signal (+)	5	BLUE
Vehicle speed sensor signal (VSS)	9	PINK

Circuit Protection

CONDITION	CIRCUIT PROTECTION
Supplied at all times	Fuse 8 of fuse block 1 (from fusible link 1)
Supplied with main relay activated	Fuse 4 of fuse block 1 (from main relay R2 in fuse block 1)

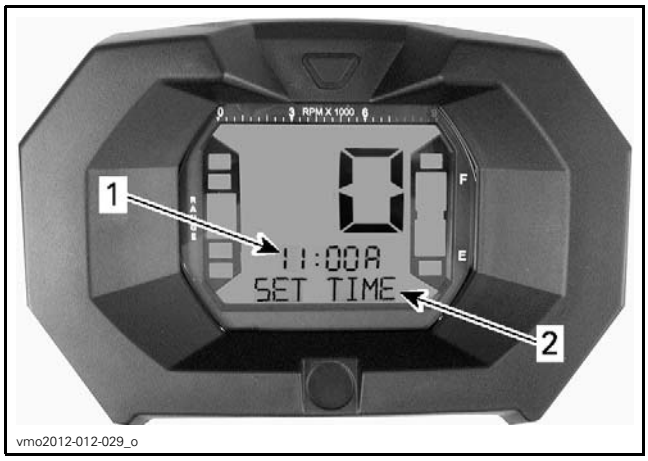
Setting the Clock Using the Gauge Selector Button

Compact and Full Size Digital Multifunction Gauges

To set current time, proceed as follows:

1. Select the clock display.

COMPACT DIGITAL MULTIFUNCTION GAUGE



FULL SIZE DIGITAL MULTIFUNCTION GAUGE
1. *Time (Display 2)*
2. *Message (Display 3)*

2. Press and HOLD selector button.

NOTE: On the full size gauge, "SET TIME" will appear on display 3.

3. Choose the 12-hour (12H) or 24-hour (24H) format by pressing button.
4. If the 12-hour format was selected, choose Am (A) or Pm (P) by pressing button.
5. Choose hour first digit by pressing button.
6. Choose hour second digit by pressing button.
7. Choose minutes first digit by pressing button.
8. Choose minutes second digit by pressing button.
9. Press button to enter settings (CLOCK will appear on display).

NOTE: The gauge will display the current time for 10 seconds then will return to the normal display mode.

Analog / Digital Multifunction Gauge

1. Press SET (S) button to select clock display.
2. Push and hold SET (S) button for three seconds.
3. Press SET (S) button to select 12:00 AM PM or 24:00 time base.
4. If 12:00 AM PM time base is selected, A or P flashes. Press SET (S) button to select A (AM) or P (PM).
5. Choose hour first digit by pressing SET (S) button.
6. Choose hour second digit by pressing SET (S) button.
7. Choose minutes first digit by pressing SET (S) button.
8. Choose minutes second digit by pressing SET (S) button.
9. Press SET (S) button.

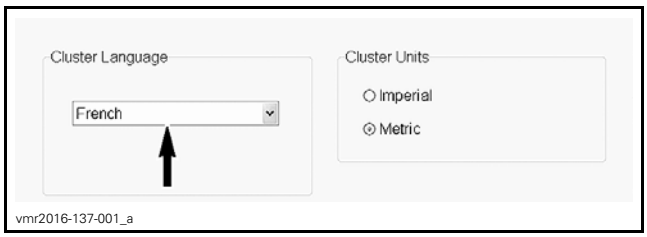
Setting Using B.U.D.S.

Connect to the applicable B.U.D.S. software. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

Language Selection

In B.U.D.S., select the:
– **Setting** page tab
– **Cluster** page tab.

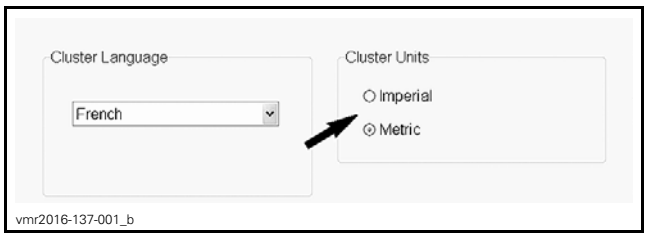
Scroll and select the desired display language in the **Cluster Language** box.



Selecting Units

In B.U.D.S., select the:
– **Setting** page tab
– **Cluster** page tab.

Select **Imperial** or **Metric** in the **Cluster Units** box.



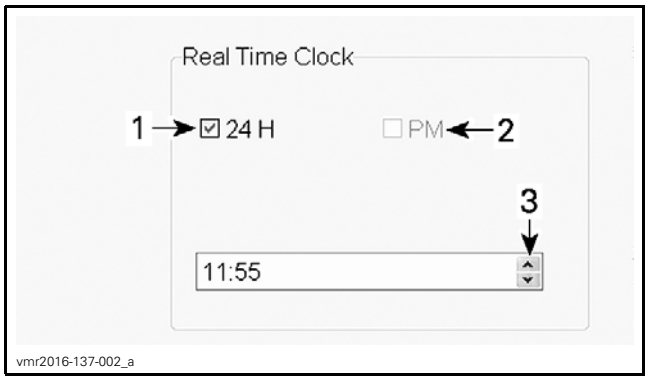
Setting the Clock

In B.U.D.S., select the:
– **Setting** page tab
– **Cluster** page tab.

To set clock to the 24-hour format, check the **24 H** box. To set it to the 12-hour format, leave the box empty.

If 12-hour format was selected, check the **PM** box if required.

Set hour and minutes using the up or down arrows.

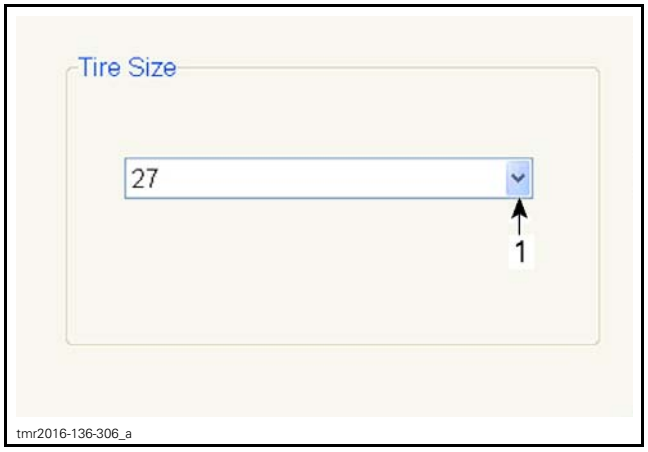


TYPICAL
1. *24 H box*
2. *PM box*
3. *Arrows*

Selecting Tire Size

Select **Setting** and **ECM** tabs.

Scroll and select the appropriate tire diameter (see inscriptions on the tires) in the **Tire Size** box.



1. *Tire Size box*

Testing Using B.U.D.S.

Connect to the latest applicable B.U.D.S. software version. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.

Wow Test

This function is used to check if the indicator lights, display and analog indicators (if applicable) are functional.

NOTE: This function does not test the signals or external circuits.

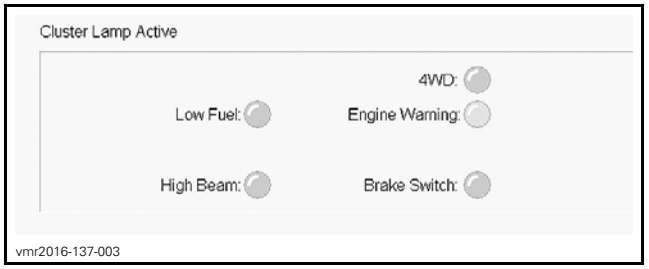
In B.U.D.S., select the:
- **Activation** page
- **Cluster** tab.

Click on the **WOW Test** button.

Indicator Lights Monitoring

In B.U.D.S., select the:
- **Monitoring** page
- **Cluster** tab.

Use the **Cluster Lamp Active** box to monitor different indicator lights outputs.



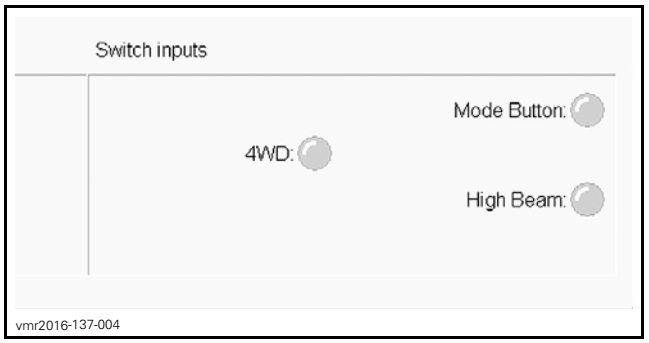
TYPICAL - CLUSTER LAMP ACTIVE BOX

This function confirms that the signals are broadcasting and the indicator lights should be ON in the multifunction gauge.

Switch Input Monitoring

In B.U.D.S., select the:
- **Monitoring** page
- **Cluster** tab.

Use the **Switch Inputs** box to monitor different switch inputs as you activates the switches.



TYPICAL - SWITCH INPUTS BOX

This function confirms that the multifunction gauge receives the inputs.

Vehicle Parameters Monitoring

In B.U.D.S., select the:
- **Monitoring** page
- **Cluster** tab.

In the upper area of the B.U.D.S. cluster page, the following indications are displayed.
- Engine speed (RPM)
- Vehicle speed
- Fuel level.

These indications confirm that the applicable signals are transmitted and the information should be displayed in the multifunction gauge.

Testing the CAN Resistor

Models with a 1 connector DPS

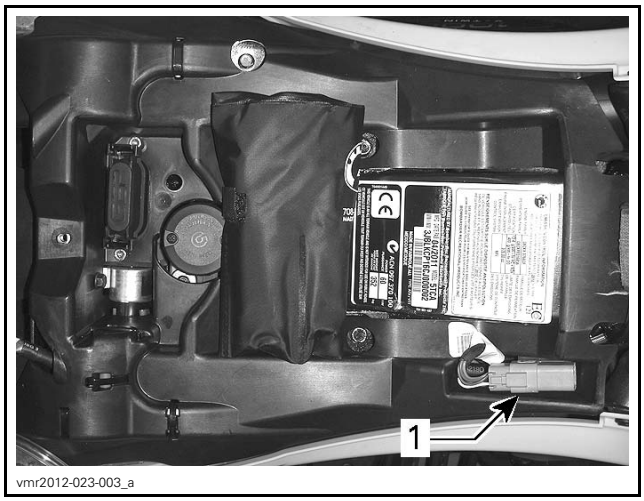
Disconnect DPS connector. Refer to the appropriate *DYNAMIC POWER STEERING (DPS)* subsection.

Models with a 3 connectors DPS

Disconnect DPS1 (control) connector. Refer to the appropriate *DYNAMIC POWER STEERING (DPS)* subsection.

All Models

1. Remove seat to access diagnostic link connector (DB).
2. Remove diagnostic link connector from its holder.



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1. Diagnostic link connector (DB)

3. Measure the resistance of the CAN resistors as follows.

REQUIRED TOOL	
FLUKE 115 MULTIMETER (P/N 529 035 868)	

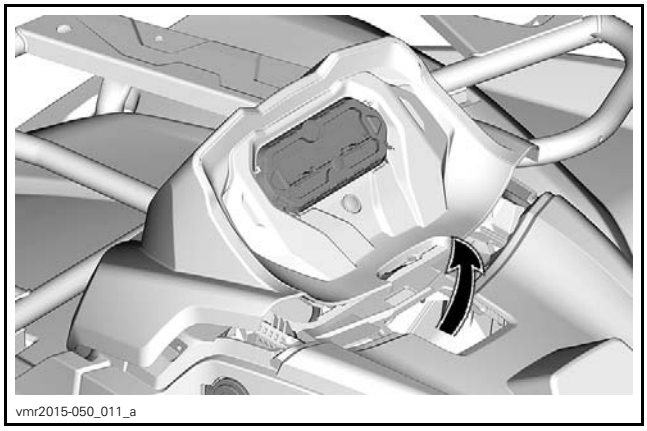
CAN RESISTOR TEST	
DIAGNOSTIC LINK CONNECTOR	RESISTANCE
Pins 1 and 2	Approximately 60 Ω

NOTE: This tests both the ECM and the Cluster CAN resistors and wires.

TEST RESULT	
READING	POSSIBLE CAUSE
Approximately 60 Ω	ECM and CLUSTER CAN wires and resistors good
Approximately 120 Ω	CAN wire to CLUSTER open CAN wire to ECM open CLUSTER CAN resistor open ECM CAN resistor open
Infinite (open circuit)	CAN wire to DB connector open circuit

Removing the Multifunction Gauge (Outlander 450 / 570)

1. Remove the gauge support by pulling it up.



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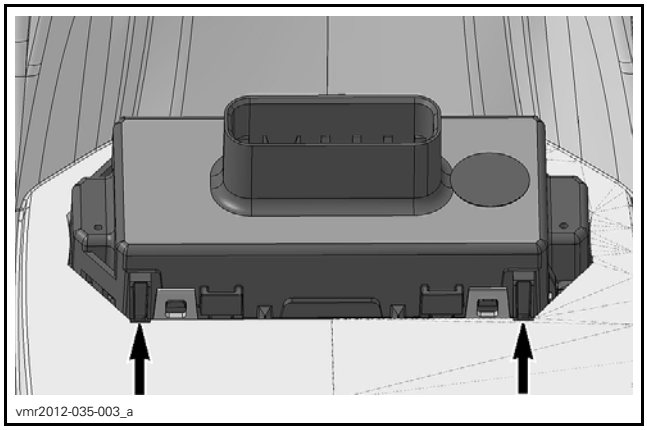
2. Disconnect the gauge connector.
3. From the back of the gauge support, release the gauge retaining tabs and remove the gauge from its support.



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GAUGE RELEASE TABS (4)

Removing the Multifunction Gauge (Outlander 650 / 850 / 1000R)

Remove gauge outer support.

– Push in on both sides of its leading edge to disengage it.
– Lift up and pull forward to remove.

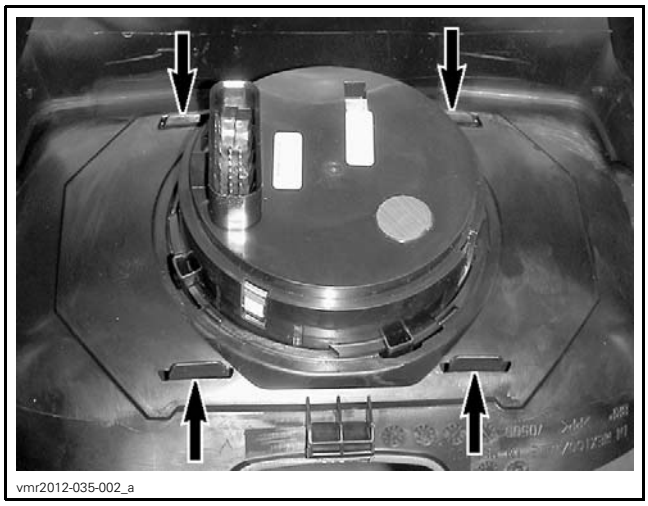
NOTE: There are a total of 6 tabs that retain the gauge support.

OUTER GAUGE SUPPORT REMOVAL
1. Push in and lift up here (both sides)

Full Size digital Multifunction gauge

Disconnect the gauge connector.

From the back of the outer gauge support, release the bezel retaining tabs and remove the bezel.



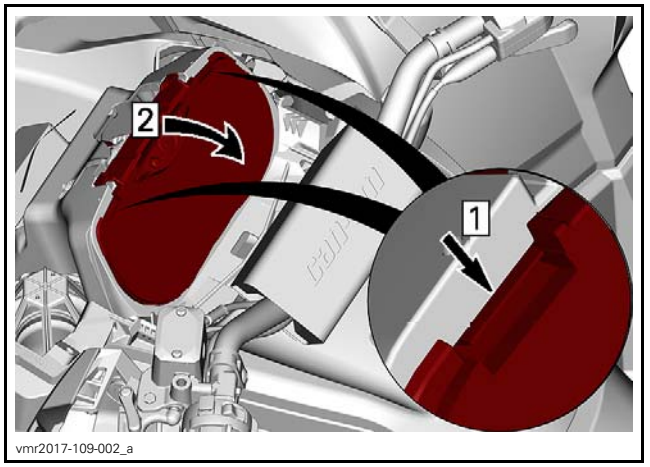
BEZEL RETAINING TABS

From the back of gauge support, rotate the gauge clockwise to release it from its support.

Analog / Digital Multifunction Gauge

Release tabs.

Tilt gauge rearward.

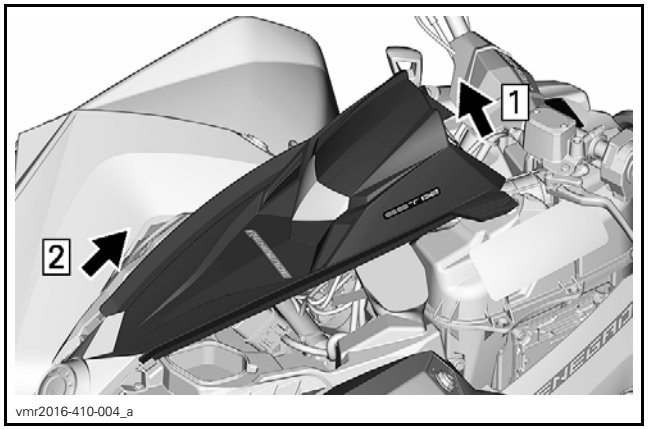


Disconnect the gauge connector.

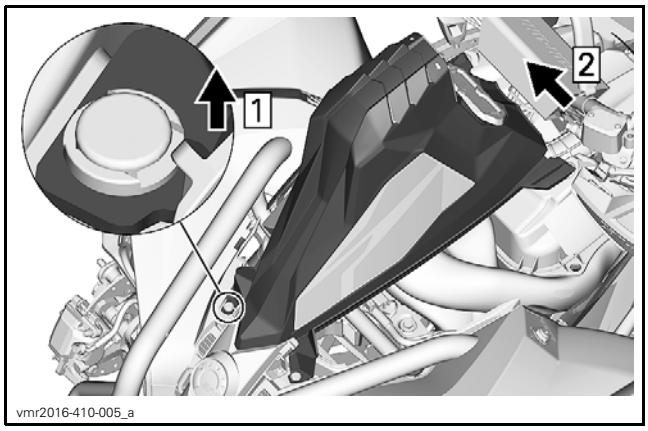
Remove gauge from the inner support by pulling it up.

Removing the Multifunction Gauge (Renegade)

1. Remove console panel, refer to *BODY* subsection.
2. Remove the gauge support as shown.

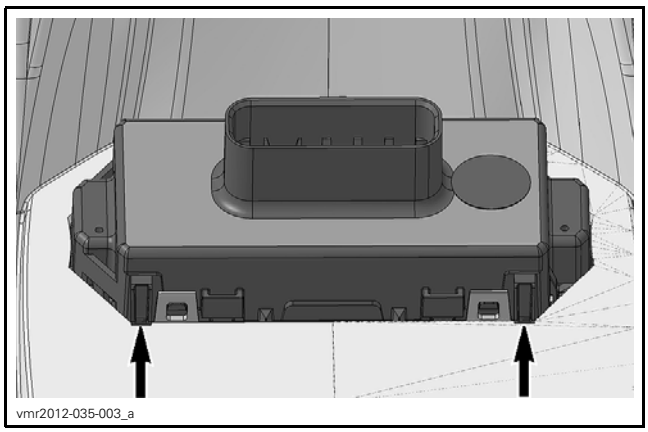


EXCEPT X MR MODEL



X MR MODEL

3. From the back of the gauge support, release the gauge retaining tabs and remove the gauge from its support.



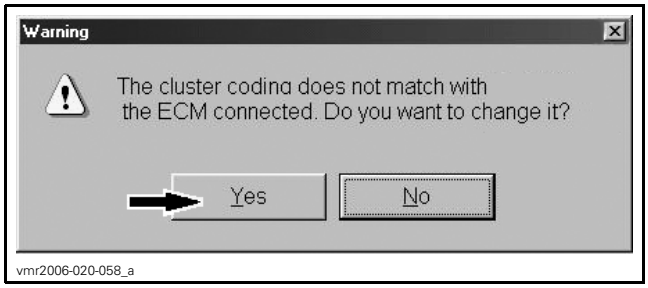
GAUGE RELEASE TABS (4)

Installing the Multifunction Gauge

For the installation, reverse the removal procedure.

New Multifunction Gauge Registration (coding)

Whenever the multifunction gauge is replaced, B.U.D.S. must be used to register it in the ECM. Simply click **Yes** when the following message appears.



ACCESSORIES

SERVICE PRODUCTS

Description	Part Number	Page
DIELECTRIC GREASE	293 550 004	1

GENERAL

NOTICE It is recommended to always disconnect the battery when replacing any electric or electronic parts. Always disconnect battery exactly in the specified order, BLACK (-) cable first.

TROUBLESHOOTING

DIAGNOSTIC TIPS

Testing a Circuit

Check the related-circuit fuse condition with a fuse tester or test lamp (a visual inspection could lead to a wrong conclusion).

NOTE: If the electrical system is left activated for a certain period of time, the accessory relay will shut down. See *ACTIVATING THE ELECTRICAL SYSTEM* in this subsection for details.

Inspecting an Electrical Connection

When replacing an electric or electronic component, always check electrical connections. Make sure they are tight, make good contact, and are corrosion-free. Dirty, loose or corroded contacts are poor conductors and are often the source of a system or component malfunction.

Pay particular attention to ensure that pins are not bent or pushed out of their connectors.

Ensure all wire terminals are properly crimped on wires, and connector housings are properly fastened.

Check for signs of moisture, corrosion or dullness. Clean pins properly and coat them with DIELECTRIC GREASE (P/N 293 550 004) or other appropriate lubricant when reassembling them, except if otherwise specified such as for the ECM connector.

Pay attention to ground wires.

For wiring harness connector locations, refer to *WIRING HARNESS AND CONNECTORS* subsection.

PROCEDURES

ACTIVATING THE ELECTRICAL SYSTEM

NOTICE Activating the electrical system repeatedly or using electrical equipment will discharge the battery and you may not be able to start the engine.

Models with a RF D.E.S.S. key

Press and release the START button for less than half a second and the electrical system will turn ON:

- For 30 seconds, **without** powering any equipment, if the D.E.S.S. key is **NOT** installed on the D.E.S.S. post **OR** if the Emergency Engine Stop switch is set to the STOP position;
- For 10 minutes, powering equipment, if the RF D.E.S.S. key is installed on the D.E.S.S. post **AND** Emergency Engine Stop is set to the RUN position. The electrical system will be shutdown after 30 seconds if either the D.E.S.S. key is removed **OR** the Emergency Engine Stop is set to the STOP position.

NOTE: If the vehicle is connected to B.U.D.S. and the RF D.E.S.S. key is installed on its post, the electrical system will not shut down.

Models with a Conventional Ignition Key

Turn the ignition key to the ON position

12 VOLT POWER OUTLET

Removing and Installing a 12 Volt Power Outlet

Refer to *BODY* and remove the LH side panel.

Unplug the connectors of the power outlet.

Unscrew the retaining nut.

Reverse procedure for installation.

12 Volt Power Outlet Wire Identification

FUNCTION	PIN	COLOR
12 volt power supply from fuse F12	2	RD/BR
Ground (to ground terminal BK3)	1	BK

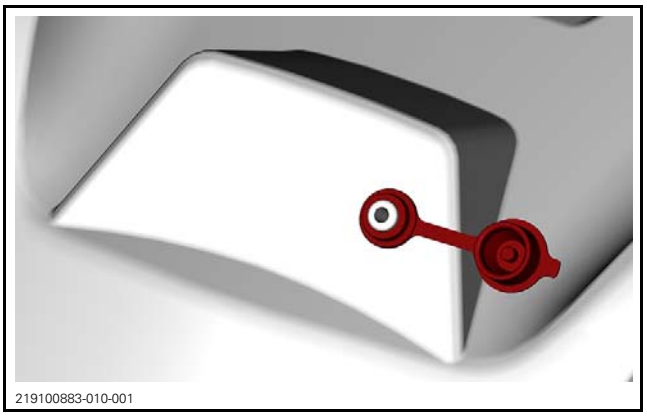
12 Volt Power Outlet Circuit Protection

CONDITION	CIRCUIT PROTECTION
Accessories relay (R3) activated	Fuse 12 (from relay R3)

HEATED VISOR CONNECTORS

Removing and Installing the Front Heated Visor Connector

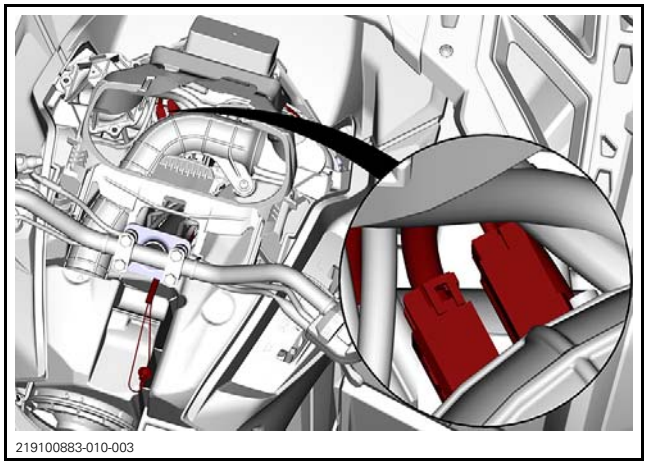
Unscrew the cap from the connector.



Refer to *GAUGE* and remove the gauge support.

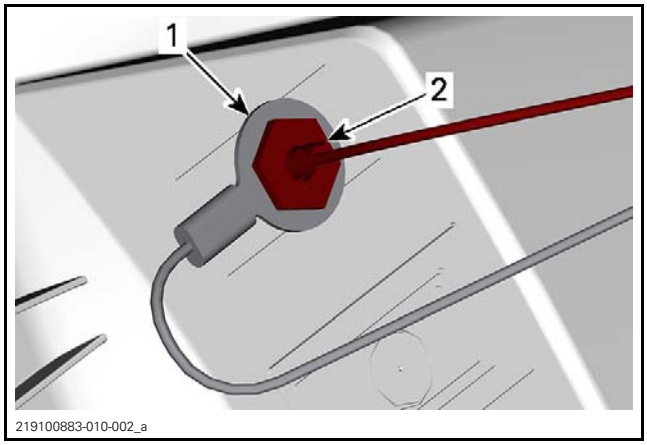
Refer to *BODY* and remove:
- Windshield
- Console

Disconnect the other end of the harness from the accessory connector.



The installation is the reverse of the removal procedure, however, pay attention to the following.

Install the negative wire eyelet between the console and the connector body.



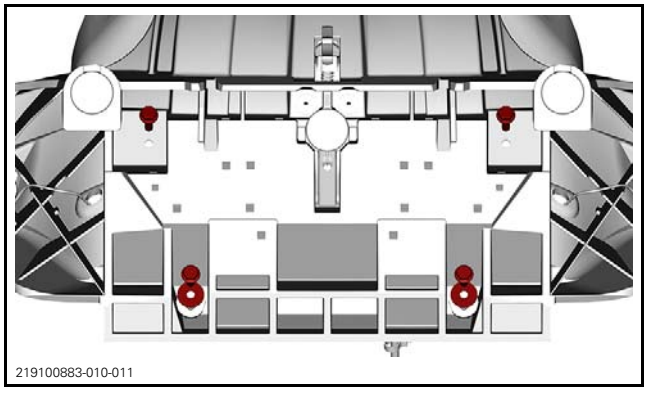
UNDERNEATH THE CONSOLE
1. *Negative eyelet*
2. *Connector body*

Removing and Installing the Rear Heated Visor Connector

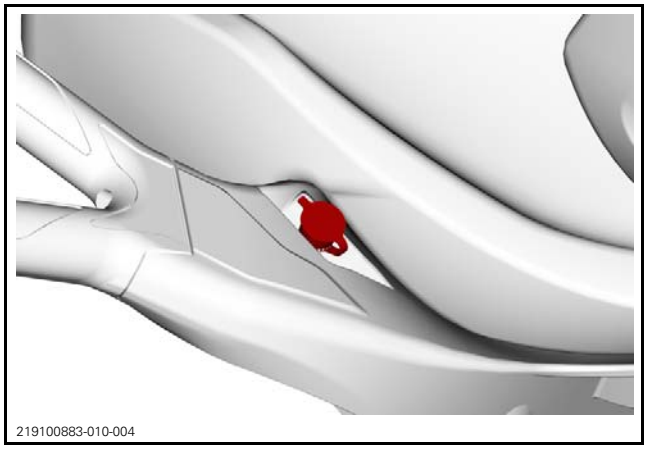
Remove the rear seat.

Underneath, disconnect the seat harness connector.

Separate the seat cushion from the base.



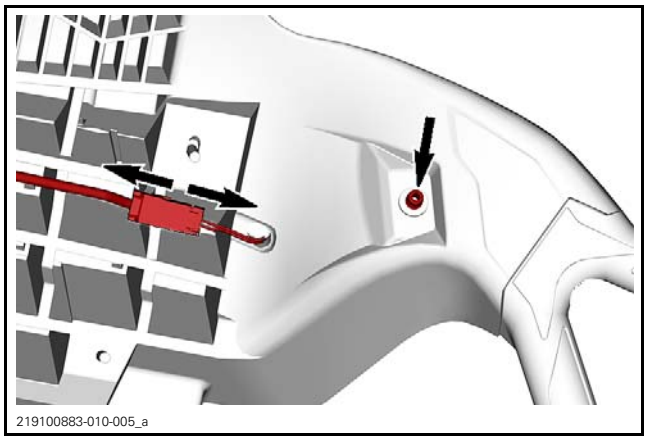
Remove the heated visor connector cap.



Cut the black wire near the eyelet.

Remove the heated visor connector from the handhold, then pass it through the openings.

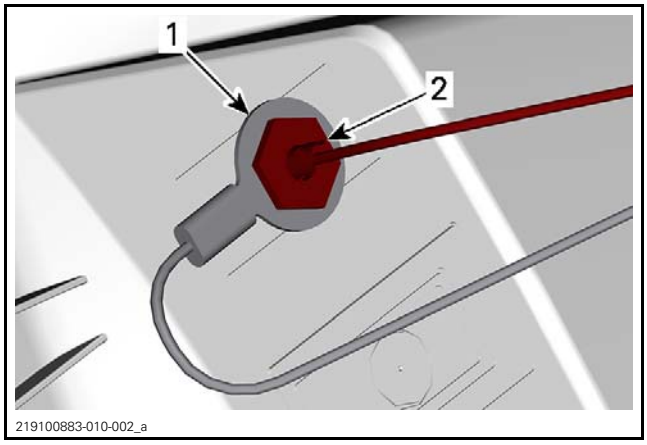
Disconnect the wires from the seat harness.



The installation is the reverse of the removal procedure, however, pay attention to the following.

Pass the wires through the openings, then crimp the new eyelet to the black wire.

Install the eyelet between the seat base and the connector body.



TYPICAL - UNDERNEATH THE SEAT BASE
1. *Negative eyelet*
2. *Connector body*

TIGHTENING TORQUE	
Seat cushion retaining screws	5 N•m ± 1 N•m (44 lbf•**in** ± 9 lbf•**in**)
Handhold retaining screws	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)

Heated Visor Connectors Wire Identification

The heated visor connectors are connected to the DC3 accessory connector through an extension harness.

To verify the extension Harness, refer to *TESTING THE REAR EXTENSION HARNESS OUTPUT VOLTAGE* in *HEATED PASSENGER GRIPS*.

FUNCTION	PIN	COLOR
12 volt power supply from fuse F12	Welded	RD/BN
Ground (to ground terminal BK3)	Eyelet	BK

Heated Visor Connectors Circuit Protection

CONDITION	CIRCUIT PROTECTION
Accessories relay (R3) activated	Fuse 12 (from relay R3)

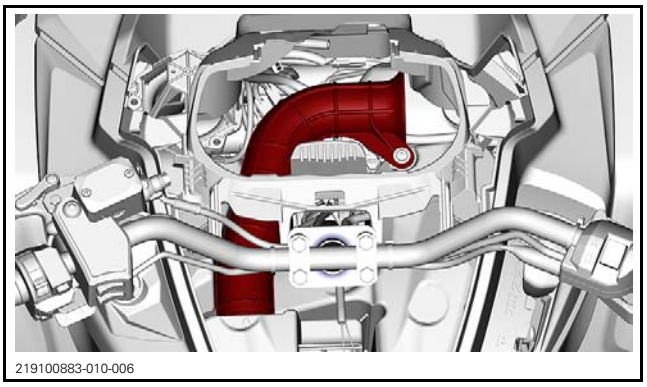
HEATED THROTTLE LEVER

Removing and Installing the Heated Throttle Lever

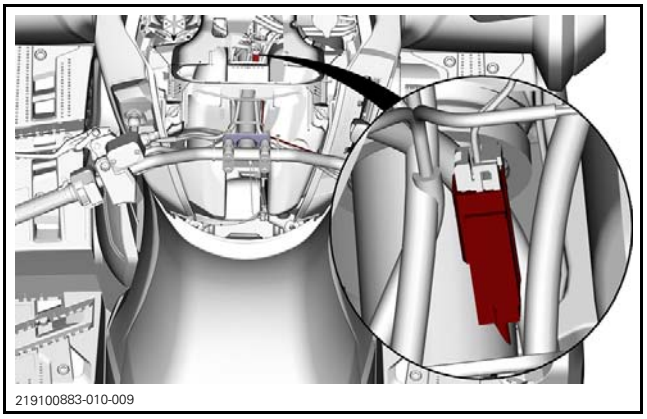
Refer to *GAUGE* and remove the gauge support.

Refer to *BODY* and remove:
– Windshield
– Console

Remove the air intake tube retaining screw.


219100883-010-006

Move the air intake tube aside, and disconnect the throttle lever wires from the accessories connector.


219100883-010-009

Note the wire routing and cable ties position.

Cut the cable ties.

Refer to *STEERING SYSTEM* and remove the throttle lever.

The installation is the reverse of the removal procedure, however, pay attention to the following.

TIGHTENING TORQUE	
Air intake tube retaining screw	1.6 N•m ± 0.4 N•m (14 lbf•**in** ± 4 lbf•**in**)

Heated Throttle Lever Wire Identification

The throttle lever heated element is connected to a switch which is to connected to connector DC5.

FUNCTION	PIN	COLOR
12 volt power supply to switch from fuse F14	B	WH
Switch ground (to ground terminal BK3)	A	BK
Positive power supply to heating element (variable voltage)	2 Throttle lever side	OR
Heating element ground	1 Throttle lever side	BK

Heated Throttle Lever Circuit Protection

CONDITION	CIRCUIT PROTECTION
Accessories relay (R3) activated	Fuse 14 (from relay R3)

Testing the Throttle Lever Heating Element

Refer to *REMOVING AND INSTALLING THE HEATED THROTTLE LEVER* for connector access.

Disconnect the heating element connector.

Measure the heating element resistance as per following table.

THROTTLE LEVER HEATING ELEMENT TEST		
HEATER WIRE		RESISTANCE @ 20°C (68°F)
OR	BK	21 to 26 Ω

If the resistance is out of specification, replace the throttle lever.

If resistance is good, carry out *TESTING THE THROTTLE LEVER HEATING ELEMENT INPUT VOLTAGE*.

Testing the Throttle Lever Heating Element Input Voltage

IMPORTANT: Make sure the switch power supply and ground are good before carrying out this test.

Refer to *REMOVING AND INSTALLING THE HEATED THROTTLE LEVER* for connector access.

Activate the electrical system or start engine.

Backprobe the heating element connector and measure voltage as per following table.

HEATING ELEMENT CONNECTOR		SELECTED HEAT LEVEL	VOLTAGE (APPROXIMATE)
OR wire	BK wire	1	3 to 3.5 Vdc
		2	6 to 7 Vdc
		3	9 to 10.5 Vdc
		4	12 to 14 Vdc

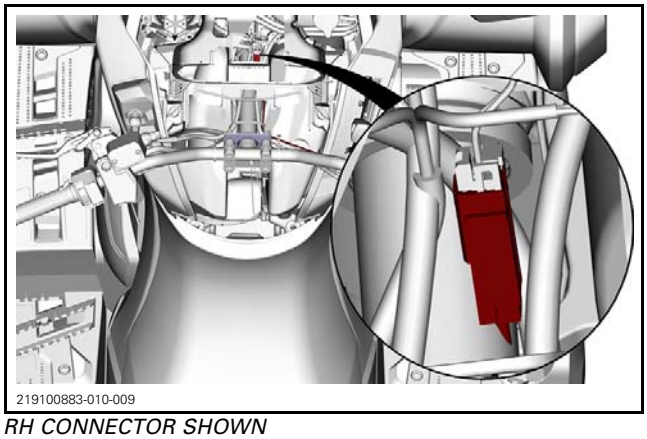
If voltage is out of specifications, replace the switch.

HEATED HANDLEBAR GRIPS

Removing and Installing the Heated Handlebar Grips

Refer to *BODY* and remove:
– Windshield
– Console
– Gauge support

Disconnect the heated grip wires from the switch harness.



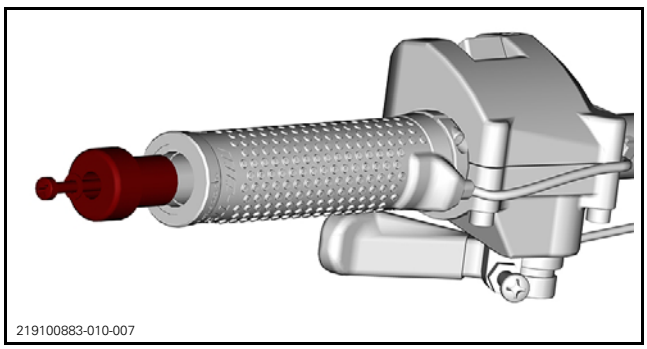
RH CONNECTOR SHOWN

Note the wire routing and cable ties position.

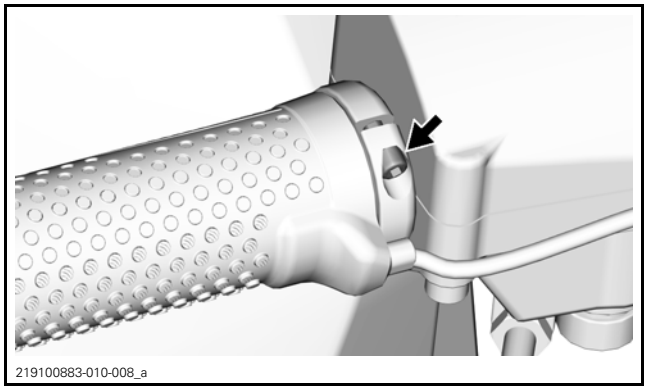
Cut the cable ties.

On the LH side, split the multifunction switch.

Remove the handlebar tip.



Loosen the grip clamping screw.



Remove the grip.

NOTE: If the grip does not come off, cut it lengthwise.

The installation is the reverse of the removal procedure, however, pay attention to the following.

TIGHTENING TORQUE	
Clamping screw	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)
Handlebar tip screw	0.4 N•m ± 0.1 N•m (4 lbf•**in** ± 1 lbf•**in**)

Heated Handlebar Grips Wire Identification

The heated handlebar grips switch is connected to connector DC5.

FUNCTION	PIN	COLOR
12 volt power supply to switch from fuse F14	B	WH
Switch ground (to ground terminal BK3)	A	BK
Positive power supply to heating element (variable voltage)	2 Switch side	RD
Heating element ground	1 Switch side	BK

Heated Handlebar Grips Circuit Protection

CONDITION	CIRCUIT PROTECTION
Accessories relay (R3) activated	Fuse 14 (from relay R3)

Testing the Handlebar Grips Heating Element

If only one element is heating up, carry out this test.

If no element is heating up, carry out *TESTING THE HEATED HANDLEBAR GRIPS INPUT VOLTAGE*.

Refer to *REMOVING AND INSTALLING THE HEATED HANDLEBAR GRIPS* for connector access.

Disconnect the heating element connector.

Measure resistance as per following table.

GRIPS HEATING ELEMENT TEST		
HEATER WIRE		RESISTANCE @ 20°C (68°F)
RD	BK	8.5 to 10.5 Ω

If the resistance is out of specification, replace the grip.

If resistance is good, verify the accessory harness wiring continuity.

Testing the Heated Handlebar Grips Input Voltage

If no element is heating up, carry out this test.

If only one element is heating up, verify the accessory harness wiring continuity and carry out *TESTING THE HANDLEBAR GRIPS HEATING ELEMENT*.

IMPORTANT: Make sure the switch power supply and ground are good before carrying out this test.

Refer to *REMOVING AND INSTALLING THE HEATED HANDLEBAR GRIPS* for connector access.

Activate the electrical system or start engine.

Backprobe the heating element connector and measure voltage as per following table.

HEATING ELEMENT CONNECTOR		SELECTED HEAT LEVEL	VOLTAGE (APPROXIMATE)
OR wire	BK wire	1	3 to 3.5 Vdc
		2	6 to 7 Vdc
		3	9 to 10.5 Vdc
		4	12 to 14 Vdc

If voltage is out of specifications, replace the switch.

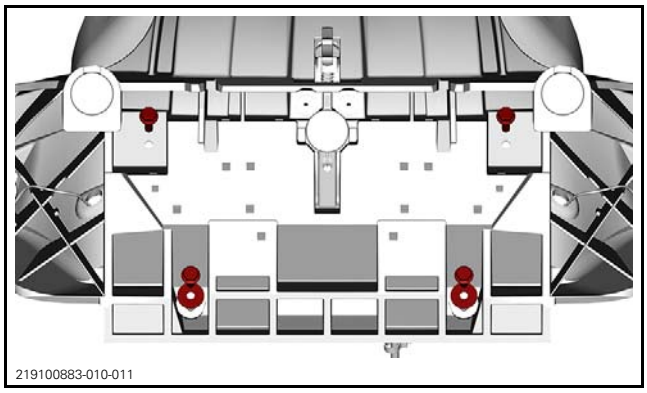
HEATED PASSENGER GRIPS

Removing and Installing the Heated Passenger Grips

Remove the rear seat.

Underneath, disconnect the seat harness connector.

Separate the seat cushion from the base.



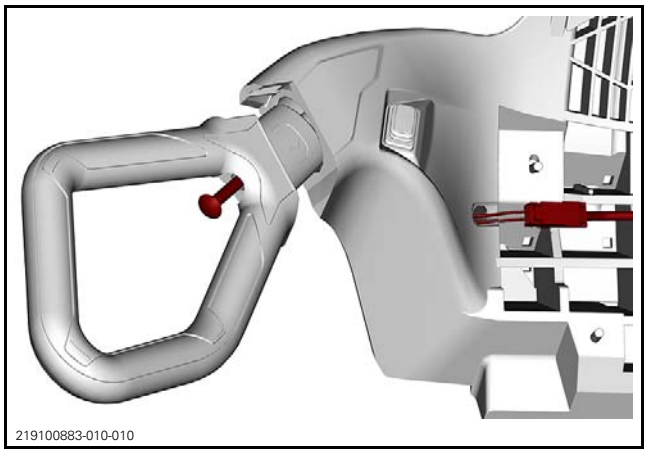
Note the wire routing.

Disconnect the wires from the seat harness.

Cut the heating element wires (on the handhold side).

Remove the handhold retaining screw.

Remove the handhold from the seat base.



The installation is the reverse of the removal procedure, however, pay attention to the following.

Once the wires are passed through the opening, insert and lock the terminals in the connector housing as per following table.

WIRE	CONNECTOR HOUSING PIN
GY	1
GN	2
RD	3

TIGHTENING TORQUE	
Seat cushion retaining screws	5 N•m ± 1 N•m (44 lbf•**in** ± 9 lbf•**in**)
Handhold retaining screws	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)

Heated Passenger Grips Wire Identification

The heated passenger grips connector is connected to the DC3 accessory connector through an extension harness.

FUNCTION	COLOR
12 volt power supply to switch from fuse F12	RD/BK
12 volt power supply to heating element (HI)	RD
12 volt power supply to heating element (LO)	GN
Heating element ground (to ground terminal BK3)	GY

Heated Passenger Grips Circuit Protection

CONDITION	CIRCUIT PROTECTION
Accessories relay (R3) activated	Fuse 12 (from relay R3)

Testing the Rear Extension Harness Output Voltage

Remove the rear seat.

Underneath, disconnect the seat harness connector.

REAR EXTENSION HARNESS CONNECTOR		VOLTAGE (APPROXIMATE)
RD/BR wire	BK wire	12 Vdc

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Testing the Passenger Grips Switch Output

If no element is heating up, carry out this test.

If only one element is heating up, verify the accessory harness wiring continuity and carry out *TESTING THE PASSENGER GRIPS HEATING ELEMENT*.

IMPORTANT: Make sure the switch power supply is good before carrying out this test.

Backprobe the switch connector and measure voltage as per following table.

HEAT LEVEL	HEATED ELEMENT CONNECTOR		VOLTAGE (APPROXIMATE)
HI	RD wire	GY wire	12 Vdc
LO	GN wire		12 Vdc

If voltage is out of specifications, replace the switch.

If voltage is good, verify seat harness wiring continuity.

Testing the Passenger Grips Heating Element

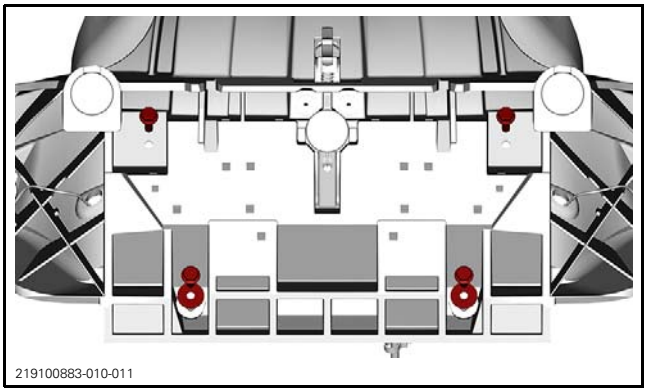
If only one element is heating up, carry out this test.

If no element is heating up, verify the accessory harness wiring continuity and carry out *TESTING THE PASSENGER GRIPS SWITCH OUTPUT*.

Remove the rear seat.

Underneath, disconnect the seat harness connector.

Separate the seat cushion from the base.



Disconnect the heating element connector.

Measure resistance as per following table.

GRIPS HEATING ELEMENT TEST		
HEATER WIRE		RESISTANCE @ 20°C (68°F)
GN	GY	13 to 17 Ω
RD		6 to 8 Ω

If the resistance is out of specification, replace the handhold.

HORN (OUTLANDER 650 / 850 / 1000R AND RENEGADE CE MODELS)

Horn Wire Identification

HORN SWITCH (IN MULTIFUNCTION SWITCH)		
FUNCTION	PIN	COLOR
12 volt input from fuse F10 (unswitched)	MG3-3	RD/WH
12 volt output to horn	MG3-4	BE/BK

HORN		
FUNCTION	PIN	COLOR
12 volt input from horn switch	2	BE/BK
Ground	1	BK

Horn Circuit Protection

CONDITION	CIRCUIT PROTECTION
Battery power (unswitched)	Fuse 10

HORN (OUTLANDER 450 / 570 CE MODELS)

Horn Wire Identification

HORN SWITCH (IN MULTIFUNCTION SWITCH)		
FUNCTION	PIN	COLOR
12 volt input from fuse F8	MG3-3	BE
12 volt output to horn	MG3-4	BE/BK

HORN		
FUNCTION	PIN	COLOR
12 volt input from horn switch	2	BE/BK
Ground	1	BK

Horn Circuit Protection

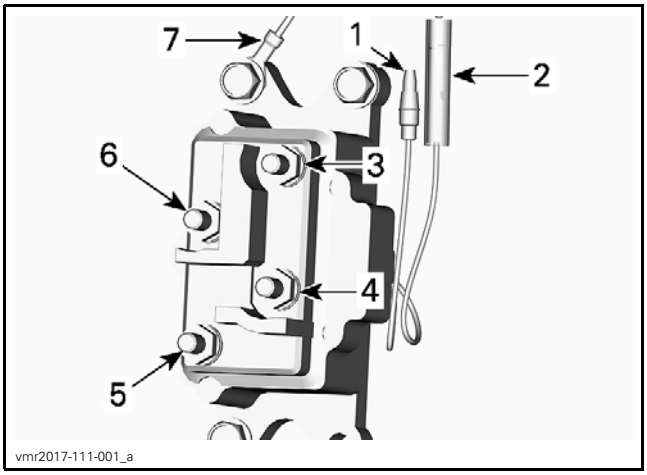
CONDITION	CIRCUIT PROTECTION
Unswitched from fusible link FL-1	Fuse 8 of fuse block 1

WINCH

Winch Wire Identification

WINCH RELAY		
FUNCTION	PIN	COLOR
12 volt input from battery (winch power)	BP4	RD
Ground (Wire)	SW4	BK
Ground (Cable)	BN4	BK
12 volt input from switch (IN)	SW1	GN/BU
12 volt input from switch (OUT)	SW2	LT BU
Motor power (switches polarity depending on rotation direction)	SW3	RD (with blue sleeve)
Motor power (switches polarity depending on rotation direction)	SW5	RD (with yellow sleeve)

NOTE: The small black wire at terminal SW4 connected to the diodes is used to prevent electric arcs in the switch. It can also be connected to BN4.



WINCH RELAY
1. *To GN / BU wire*
2. *To LT BU wire*
3. *To winch motor cable with BLUE sleeve*
4. *To BK ground cable*
5. *To winch motor cable with YELLOW sleeve*
6. *To RD positive cable*
7. *BK ground wire (can also be connected with the ground cable)*

WINCH SWITCH (OUTLANDER 650 / 850 / 1000R AND RENEGADE)		
FUNCTION	PIN	COLOR
12 volt input from fuse 7	A	RD/BK
12 volt output to relay winding (IN)	C	GN/BU
12 volt output to relay winding (OUT)	B	LT BU

WINCH SWITCH (OUTLANDER 450 / 570)		
FUNCTION	PIN	COLOR
12 volt input from fuse 12	A	RD/BK
12 volt output to relay winding (IN)	C	GN/BU
12 volt output to relay winding (OUT)	B	BU/GN

NOTICE Before testing, make sure the winch is in FREESPOOL mode (Freespool clutch disengaged).

Winch Relay Access

Refer to *BODY* and remove the RH inner fender panel.

Winch Switch Circuit Protection

CONDITION	CIRCUIT PROTECTION
Supplied when accessories relay R3 is activated	Outlander 450 / 570 Fuse 12
	All models except 450 / 570 Fuse 7

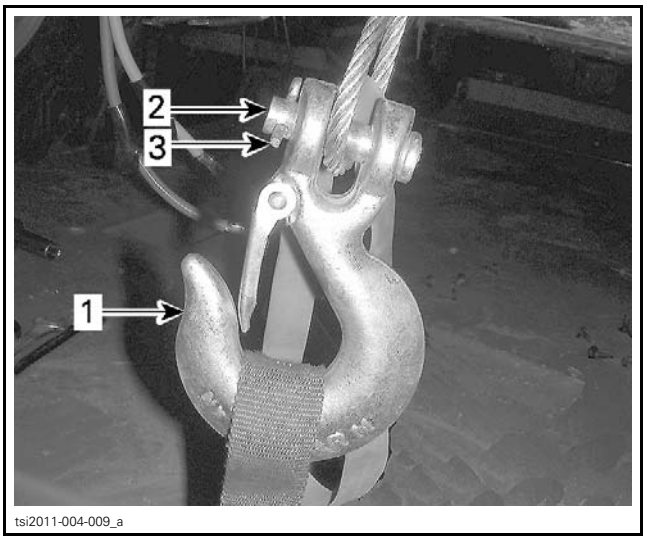
Removing the Winch

1. Disconnect, the battery BLACK (-) cable first, then the RED (+) cable.

⚠ WARNING

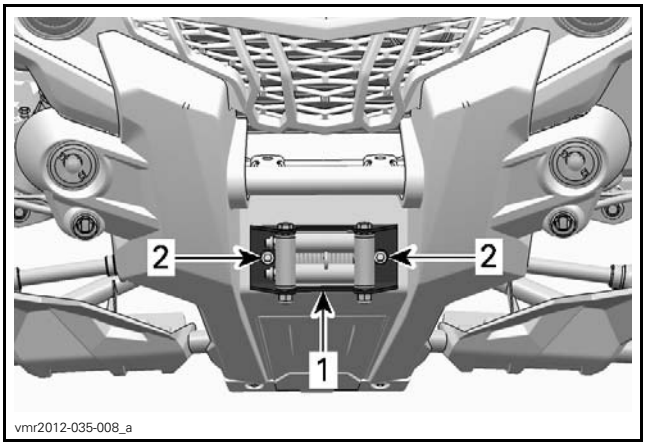
Always respect this order for disassembly; disconnect BLACK (-) cable first.

2. Remove the hook.
   2.1 Remove and discard the cotter pin.
   2.2 Remove the hook pin.



1. *Hook*
2. *Hook pin*
3. *Cotter pin*

3. Remove the winch cable fairlead.

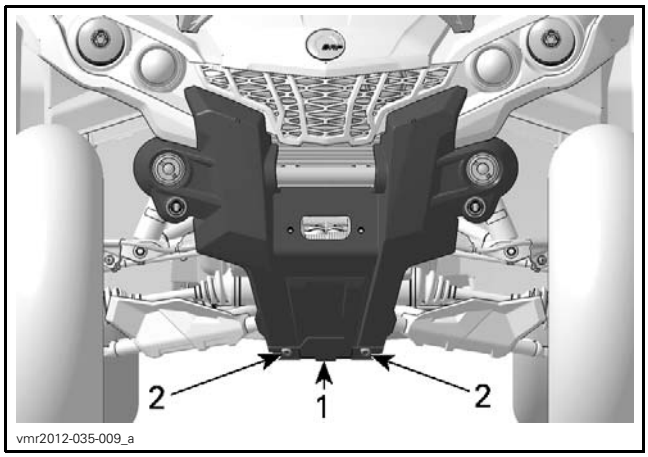


TYPICAL
1. *Winch fairlead*
2. *Fairlead retaining screws*

650 / 850 / 1000R Models

4. Remove the front skid plate.

NOTE: On CE models, disconnect the turn signal lights and front marker lights.

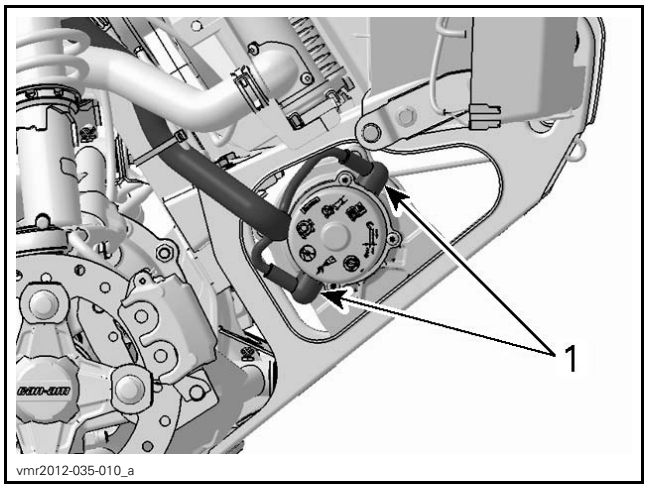


1. Front skid plate
2. Retaining screws

All Models

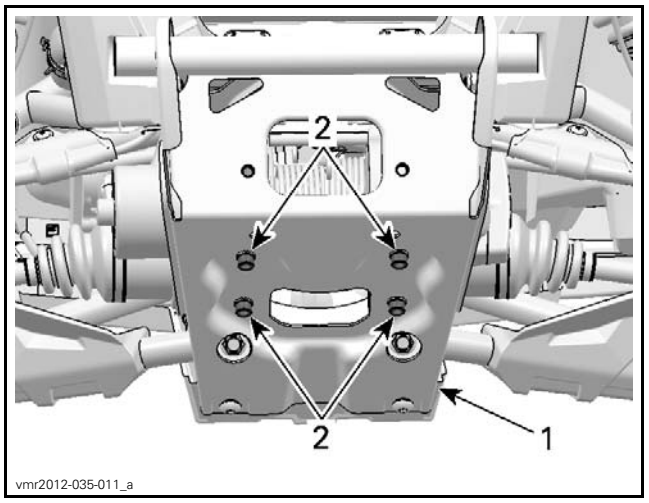
5. Disconnect both winch power cables.

NOTE: Note the position of the power cables for reinstallation.



TYPICAL
1. Winch power cables

6. Remove the four winch retaining screws from the front bumper support.



TYPICAL
1. Front bumper support
2. Winch retaining screws

7. Remove winch.

Installing the Winch

For the installation, reverse the removal procedure, however pay attention to the following.

Connect winch power cables as noted at removal.

NOTE: If the winch power cables are not connected correctly, the winch motor will operate in the reverse direction of selection.

TIGHTENING TORQUE	
Winch retaining screws	16 N•m ± 2 N•m (142 lbf•**in** ± 18 lbf•**in**)
Winch power cables	7 N•m ± .5 N•m (62 lbf•**in** ± 4 lbf•**in**)
Winch fairlead elastic nuts	16 N•m ± 2 N•m (142 lbf•**in** ± 18 lbf•**in**)

Install a **new** cotter pin on the hook pin.

FRONT DRIVE

SERVICE TOOLS

Description	Part Number	Page
BACKLASH MEASUREMENT TOOL	529 035 665	469
CV BOOT CLAMP PLIER	529 036 120	467
CV JOINT EXTRACTOR	529 036 005	467
SPANNER SOCKET	529 035 649	471

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 277	293 800 073	473
LOCTITE 648 (GREEN)	413 711 400	475
XPS SYNTHETIC GREASE	293 550 010	467, 473, 475

FRONT DRIVE SHAFTS AND FRONT PROPELLER SHAFT

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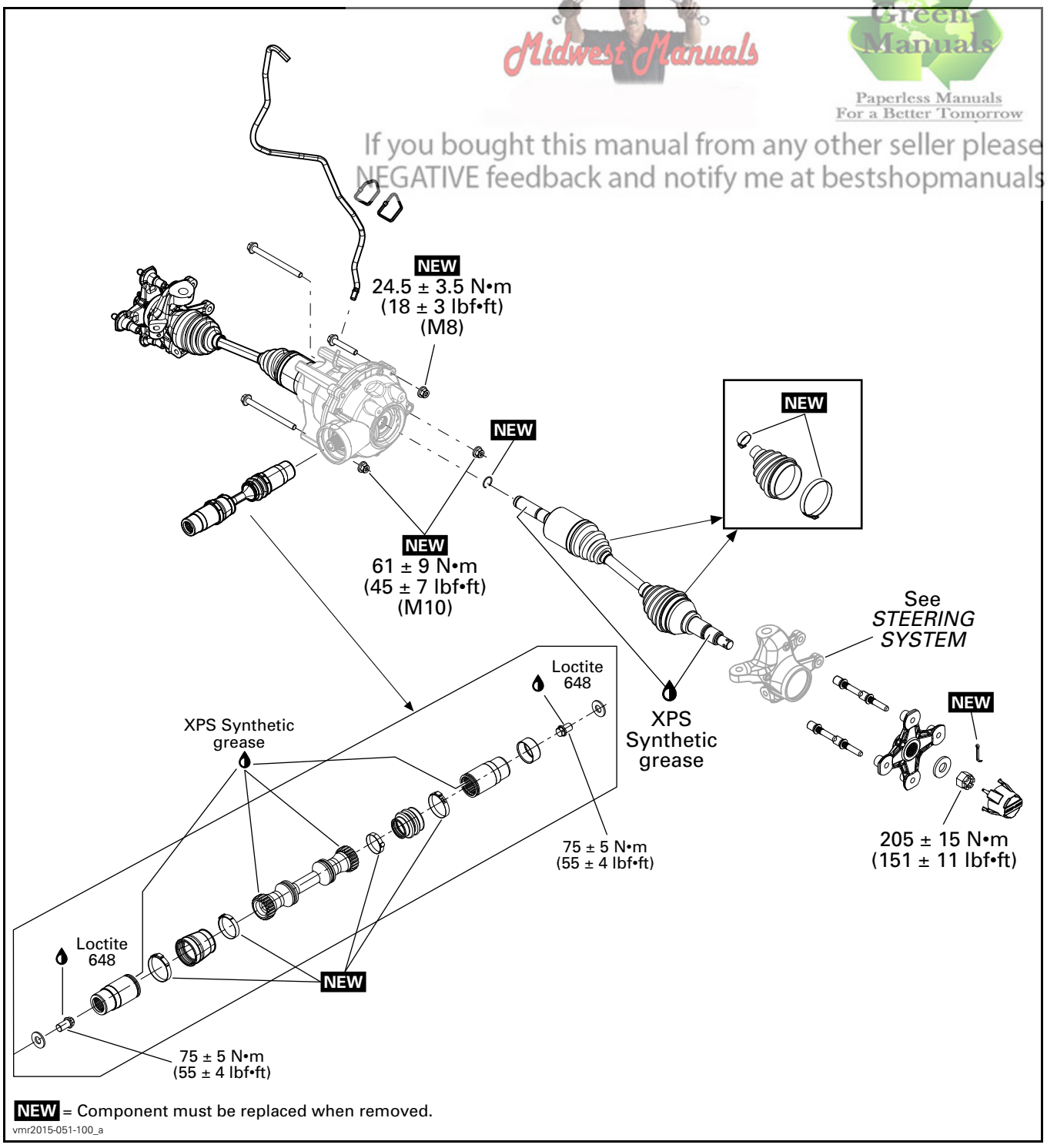

NEW = Component must be replaced when removed.

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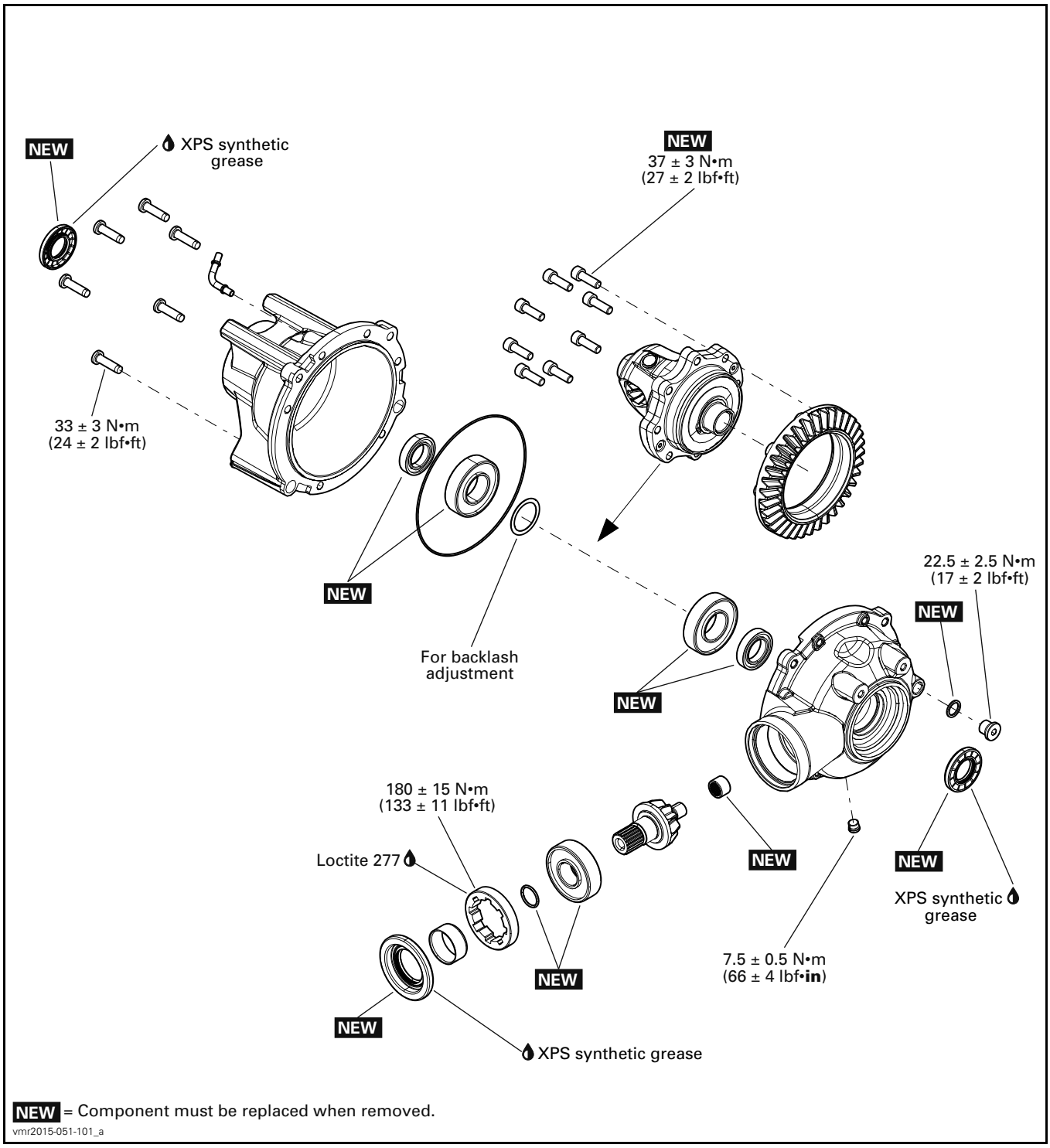
FRONT DIFFERENTIAL



NEW = Component must be replaced when removed.

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GENERAL

The procedure explained below is the same for the RH and LH sides unless otherwise instructed.

SYSTEM DESCRIPTION

The Visco-Lok® system constantly monitors front wheel speed and, if it detects one wheel spinning faster than its mate, it progressively sends more power to the wheel with the better traction.

The Visco-Lok system is comprised of two principal components, a shear pump and the controlled multi-plate clutch.

A unique feature of the shear pump is that it is self-contained and independent. It does not require an external source of hydraulic fluid. The self-contained viscous shear pump generates a pressure proportional to wheel speed differential - meaning the difference in rotational speed between the two wheels. This pressure engages the friction clutch via a piston to transmit the torque.

In the event of a failure, the Visco-Lok carrier/ring gear and pinion gear will have to be replaced.

NOTE: The Visco-Lok shear pump is not serviceable. If the pump is disassembled, the viscous fluid contained inside will be lost and it cannot be replaced.

PROCEDURES

WHEEL HUB

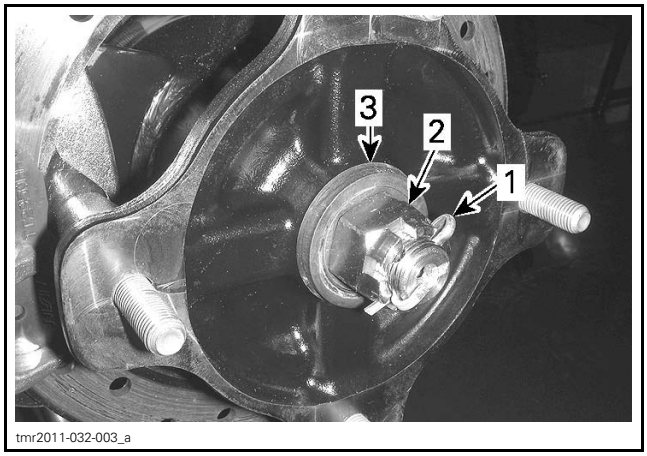
Wheel Hub Removal

Lift and support vehicle.

Select the 4WD position and place the transmission lever on "P".

Remove caliper from knuckle. Refer to *BRAKES* subsection.

Remove the following parts:
- Wheel cap
- Cotter pin
- Castellated nut
- Belleville washer.



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TYPICAL
1. *Cotter pin*
2. *Castellated nut*
3. *Belleville washer*

Remove wheel hub.

Wheel Hub Inspection

Check wheel hub for cracks or other damages.

Check inner splines for wear or other damages.

If any damage is detected on wheel hub, replace it with a new one.

Wheel Hub Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

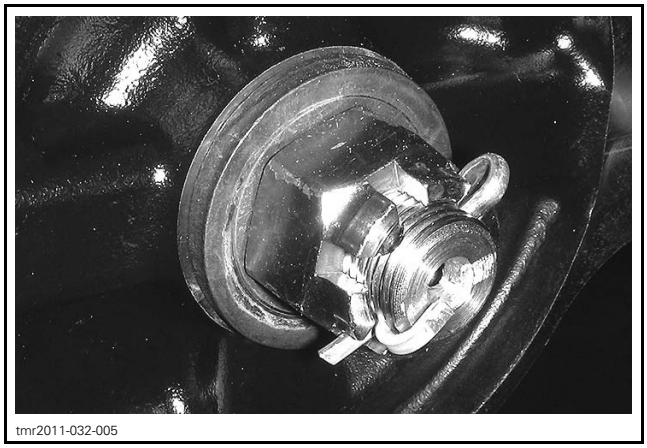
Install Belleville washer with its convex side outwards.

Tighten castellated nut to specification.

TIGHTENING TORQUE	
Castellated nut	205 N•m ± 15 N•m (151 lbf•ft ± 11 lbf•ft)

NOTE: Tighten further castellated nut if required to align grooves with drive shaft hole.

Install a NEW cotter pin.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FRONT DRIVE SHAFT

Front Drive Shaft Removal

Lift and support vehicle.

Remove inner fender panel(s). Refer to *BODY* subsection.

Remove the *KNUCKLE*. Refer to *STEERING SYSTEM* subsection.

Remove shock absorber lower bolt.

Lift and attach the following parts to make room.

– Shock absorber
– Upper suspension arm.

Strongly pull drive shaft out of differential.

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PULL DRIVE SHAFT

Discard the stop ring at the end of the shaft.

Front Drive Shaft Inspection

Inspect the condition of boots. If there is any damage or evidence of leaking lubricant, replace them. Refer to *DRIVE SHAFT BOOT* in this subsection.

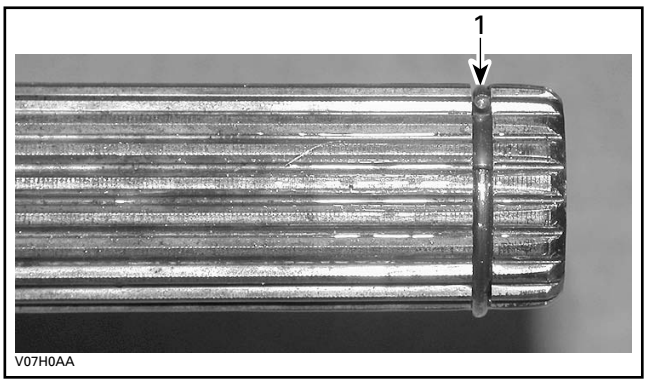
Check splines for excessive wear. Replace if necessary.

NOTE: If the splines on plunging joint are worn, a check of differential inner splines should be done.

Front Drive Shaft Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install a NEW stop ring.



TYPICAL
1. Stop ring

Apply XPS SYNTHETIC GREASE (P/N 293 550 010) on the splines.

Ensure that wear ring is close to the differential.

DRIVE SHAFT BOOT

Drive Shaft Boot Removal

Remove *FRONT DRIVE SHAFT*. See procedure in this subsection.

Remove drive shaft boot clamps.

REQUIRED TOOL
CV BOOT CLAMP PLIER (P/N 529 036 120)

529036120

Dislodge the large end of the boot.

Separate the joint from the shaft. Two procedures can be done.

Without the Special Tool

Clamp joint housing in a vise.

Align shaft with joint.

Pull hard on shaft to remove from joint.

Remove boot from drive shaft.

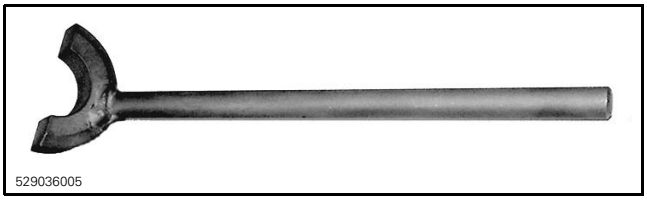
Remove and discard the circlip. A new one is included in the boot kit.

With the Special Tool

Place drive shaft in vice with the joint downward.

Install the tool on bearing.

REQUIRED TOOL
CV JOINT EXTRACTOR (P/N 529 036 005)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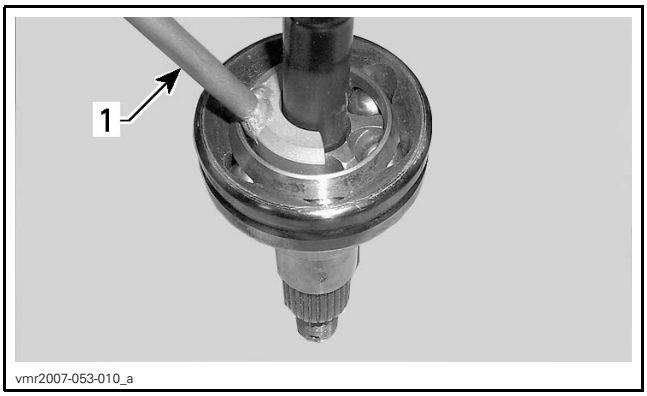

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TYPICAL — CV JOINT SHOWN
1. Joint extractor tool

With an hammer, hit on the tool to separate joint from shaft.

When joint and shaft are separated, remove boot from drive shaft.

Remove and discard the circlip. A new one is included in the boot kit.

Drive Shaft Boot Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install the **NEW** circlip.

Pack bearing area with grease (included with the new boot kit).

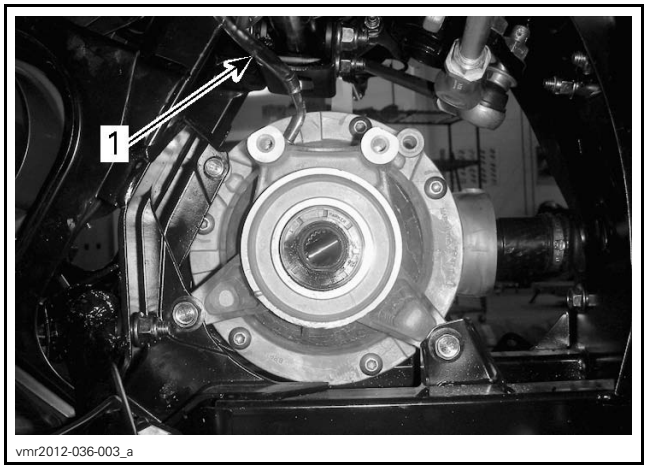
NOTE: Do not use or add other grease.

Install **NEW** drive shaft boot clamps.

FRONT DIFFERENTIAL

Front Differential Removal

1. Drain front differential. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.
2. Remove both front drive shafts. Refer to *FRONT DRIVE SHAFT* in this subsection.
3. Detach vent hose from front differential.



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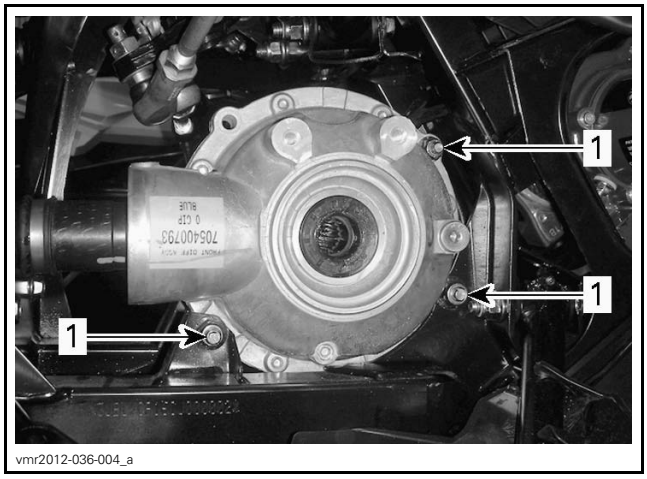
FROM LH SIDE
1. Vent hose

4. Remove bolts securing front differential to frame.



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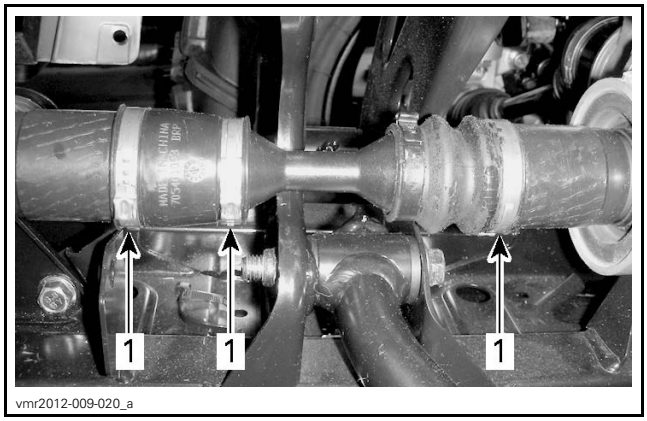
1. Bolts securing front differential to frame

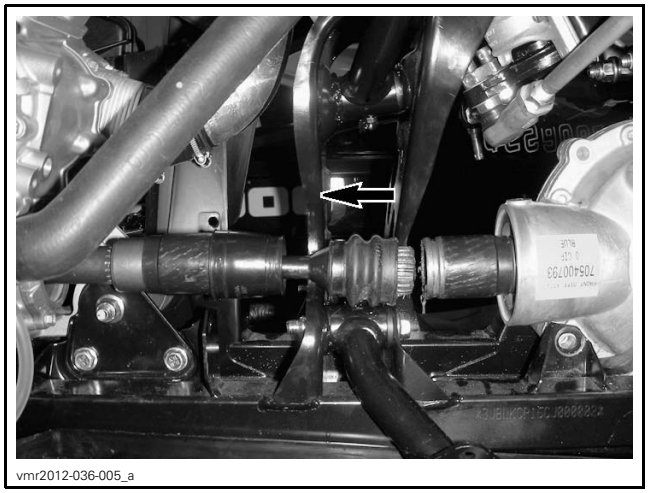
5. Remove the following Oetiker clamps from front propeller shaft.



vmr2012-009-020_a

1. Oetiker clamps

6. Detach front propeller shaft from front differential by moving it rearward.


vmr2012-036-005_a

FRONT PROPELLER SHAFT MOVED REARWARD

7. Remove front differential by pulling it from RH side.

NOTICE **Be careful not to knock or to bend vent hose fitting while removing front differential.**

Front Differential Inspection (Assembled)

Manually turn the pinion gear; it should turn smoothly. Repair if necessary.

Check if oil seals are brittle, hard or damaged. Replace if necessary.

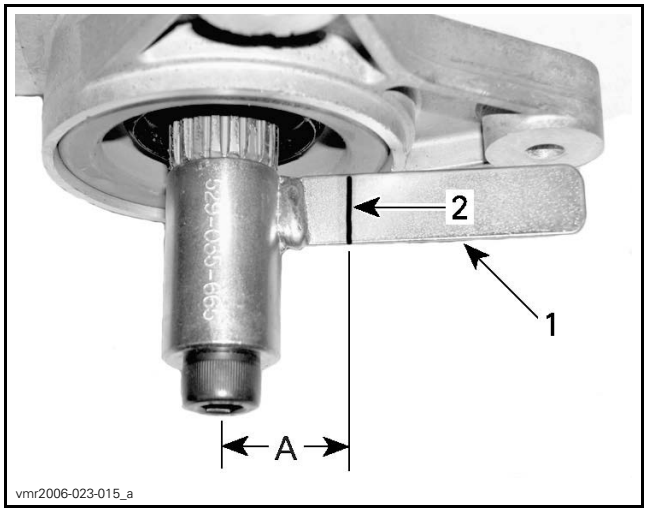
Backlash Inspection

When measuring backlash, the differential cover should be upside down to pull the ring gear out of mesh.

Using a dial indicator and the BACKLASH MEASUREMENT TOOL (P/N 529 035 665), measure the backlash.

Place the backlash measurement tool at the end of pinion gear.

From center of tool bolt, measure 25.4 mm (1 in) and scribe a mark on the tab.

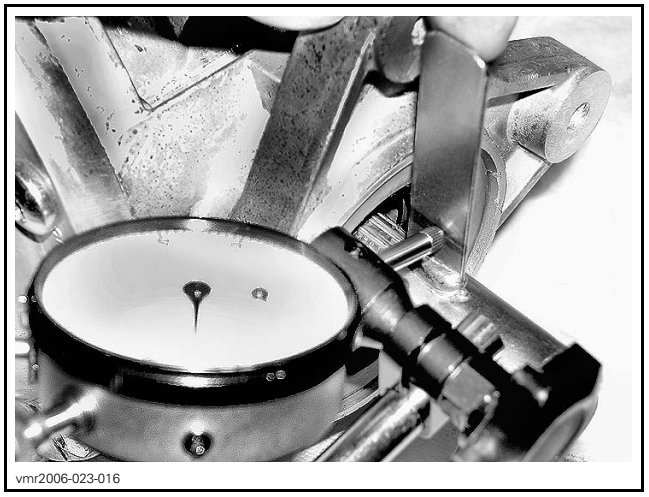


vmr2006-023-015_a

1. Tab of backlash measurement tool
2. Mark on tab
A. 25.4 mm (1 in)

Position the dial indicator tip against the tab at a 90° angle and right on the previously scribed mark.

Gently, move the tool tab back and forth. Note the backlash result.


vmr2006-023-016

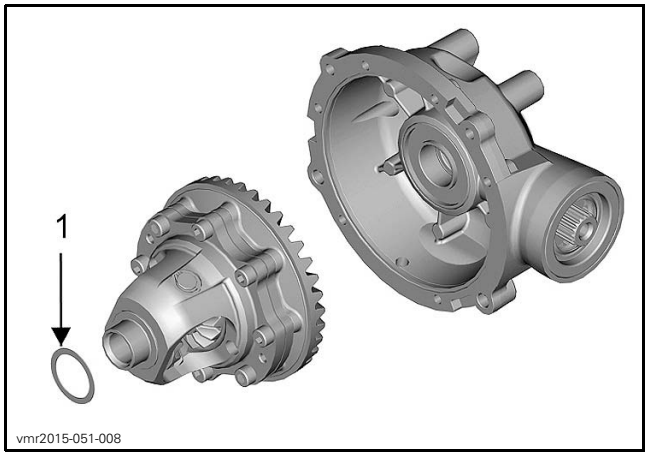
Rotate pinion gear 1/2 turn and recheck backlash. Note the result.

Rotate pinion gear 1 turn and recheck backlash.

BACKLASH SPECIFICATION
0.1 mm (.004 in) to 0.25 mm (.01 in)

If backlash is out of specification, split final drive housing and adjust shim thickness as per following guideline.

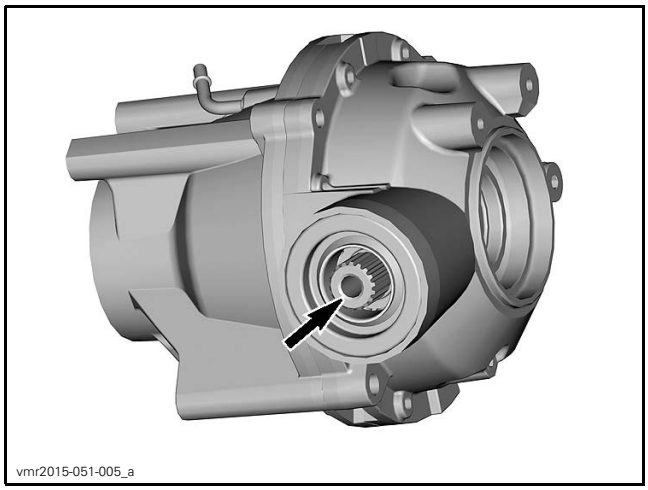
BACKLASH ADJUSTMENT GUIDELINE	
BACKLASH MEASUREMENT	WHAT TO DO
Below 0.1 mm (.004 in)	Remove shim(s) and recheck backlash
Above 0.25 mm (.01 in)	Add shim(s) and recheck backlash



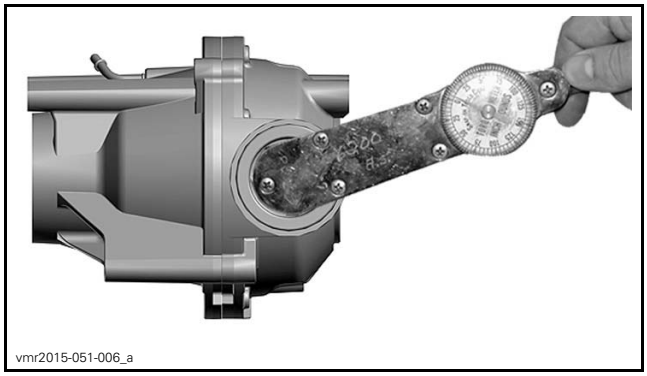
1. Backlash shim

Preload Inspection

Screw the propeller shaft screw in pinion gear.



Using a needle torque wrench, measure the preload.



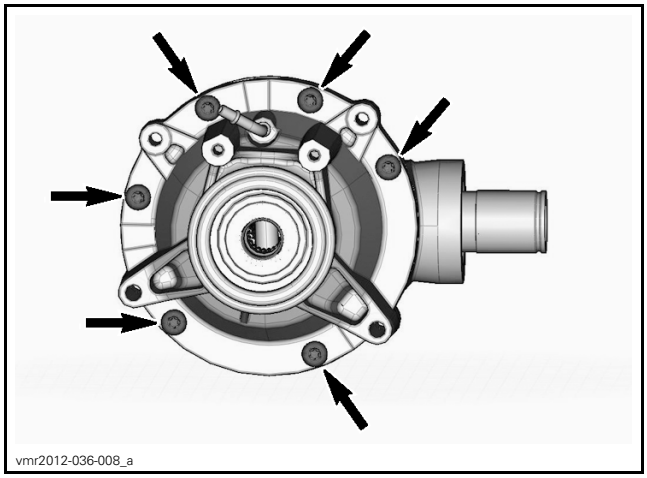
PRELOAD SPECIFICATION
Maximum 0.50 N•m (4 lbf•**in**)

If preload is out of specification, split front differential housing and check all bearings conditions.

Front Differential Disassembly

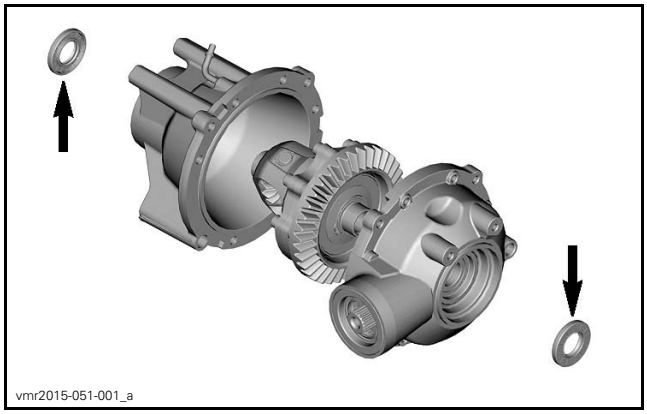
Differential Housing

Remove front differential housing screws.



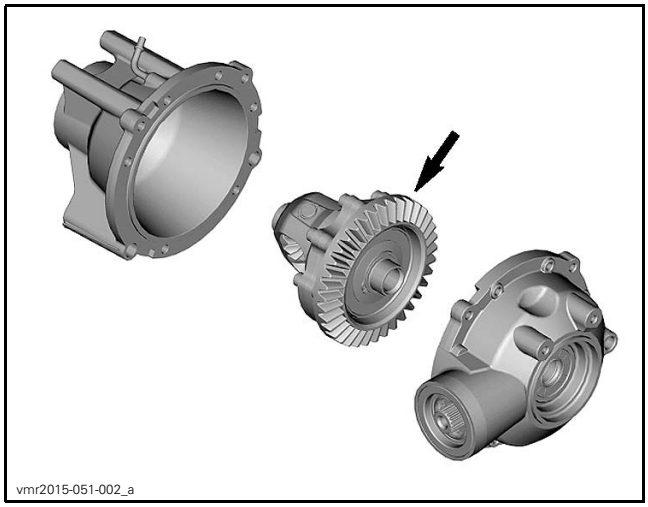
Separate half housings.

Remove oil seals.

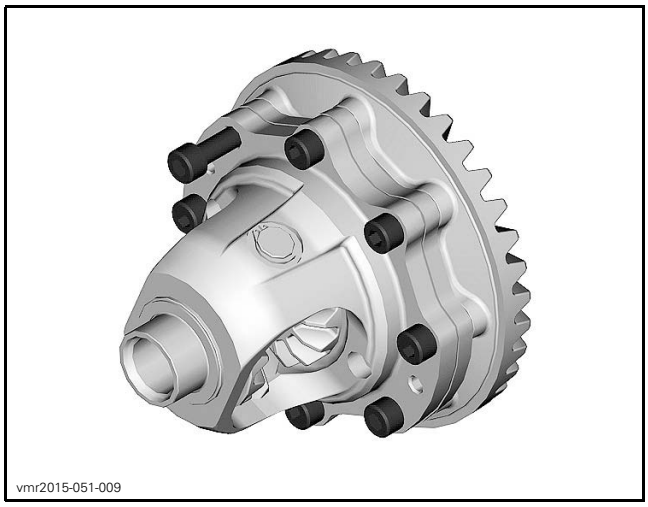


Visco-Lok Carrier/Ring Gear

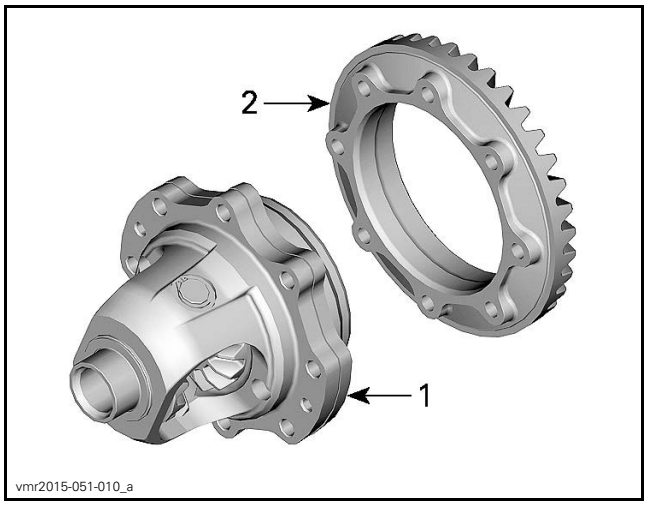
Remove Visco-Lok carrier/ring gear out of half housing.



Remove screws securing ring gear to Visco-Lok unit.



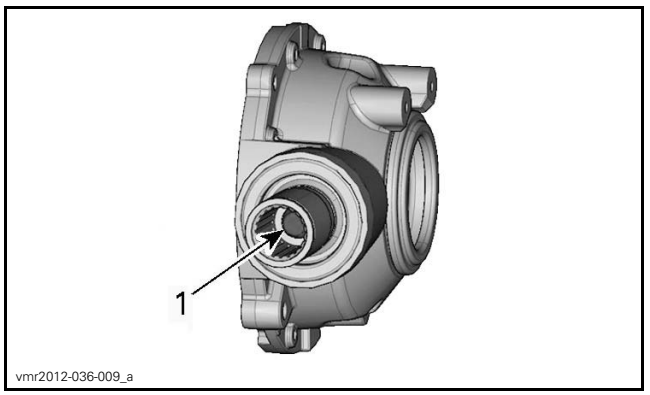
Separate ring gear from Visco-Lok unit.



1. Visco-Lok unit
2. Ring gear

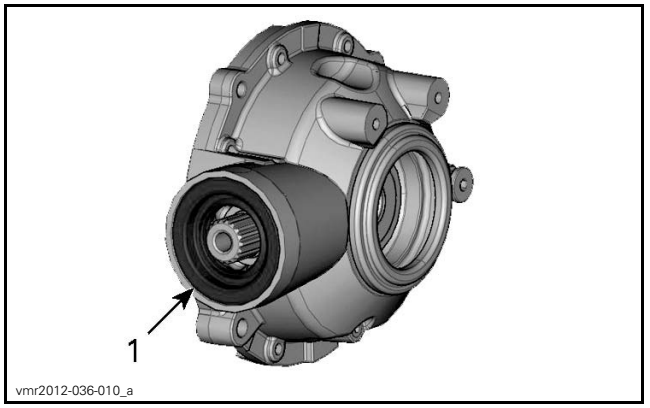
Pinion Gear

Remove screw retaining front propeller shaft adapter.



1. Retaining screw

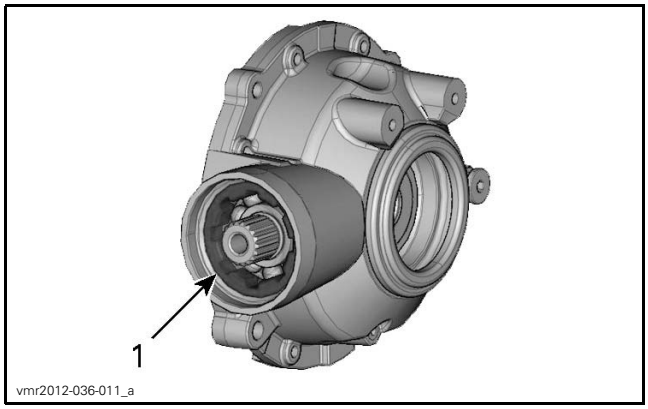
Remove and discard oil seal.



1. Oil seal

Unscrew the pinion nut.

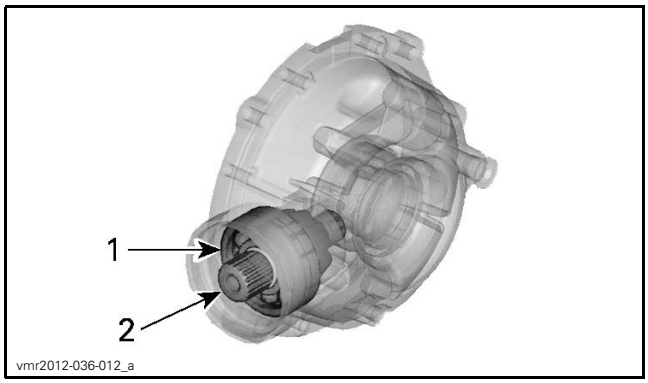
REQUIRED TOOL
SPANNER SOCKET (P/N 529 035 649)



1. Pinion nut

Remove bearing and pinion gear together.

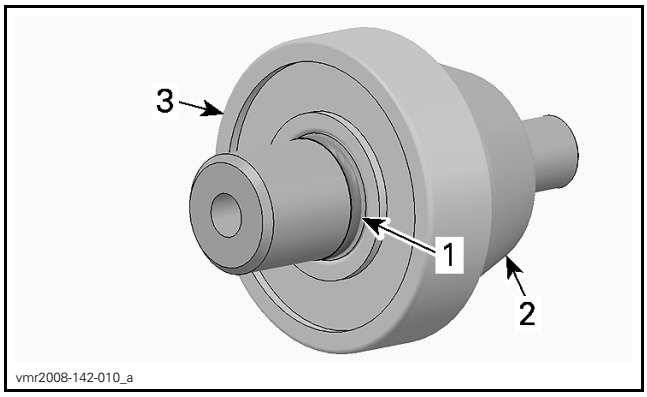
RECOMMENDED TOOLS	QTY
Pipe: 78 mm (3-1/16 in) diameter x 127 mm (5 in) in length	1
Threaded rod: M10 x 1.25, 178 mm (7 in) length	1
M10 x 1.25 nut	3
Flat bar	1



1. Bearing
2. Pinion gear

Remove and discard O-ring.

Remove bearing from pinion gear.



1. O-ring
2. Pinion gear
3. Bearing

Remove and discard the needle bearing.

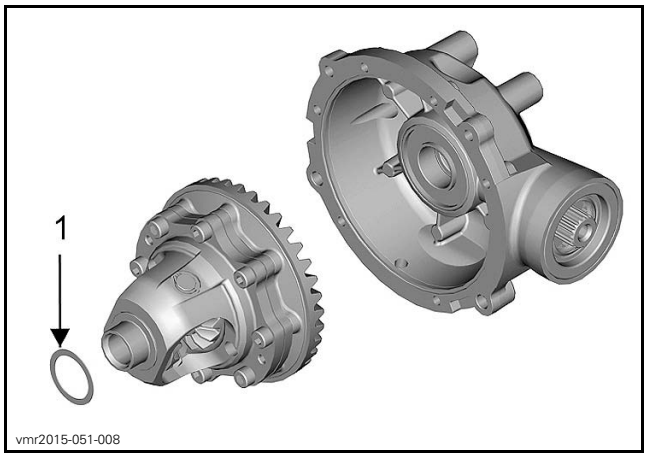
Front Differential Assembly

Adjustment is required when any of the following part is changed.

– Pinion gear
– Ring gear
– Viscolok unit
– Housing.

As a preliminary setup, install shim according to the following table.

RECOMMENDED SHIM THICKNESS	
BACKLASH	0.5 mm (.02 in) (as a preliminary adjustment)



1. Backlash shim

Prior to finalizing assembly, proceed in this order:

– Temporarily assemble final drive using recommended torques.
– Do not apply thread locker product.
– Do not install a new pinion nut.
– Check backlash.
– Check preload.

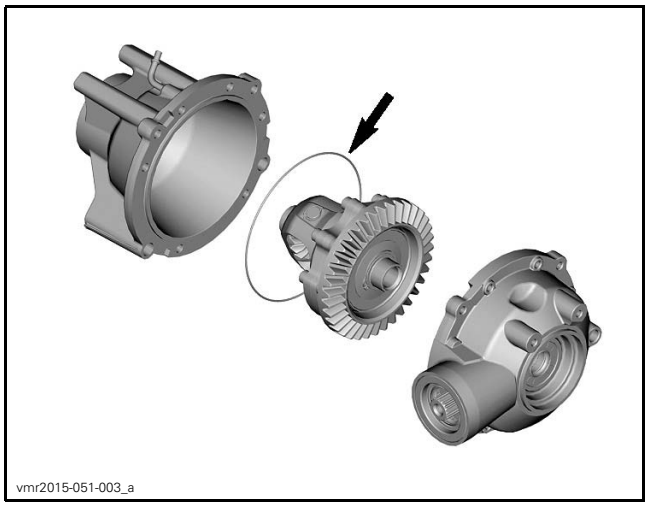
Visco-Lok Carrier/Ring Gear

The installation is the reverse of the removal procedure. However, pay attention to the following.

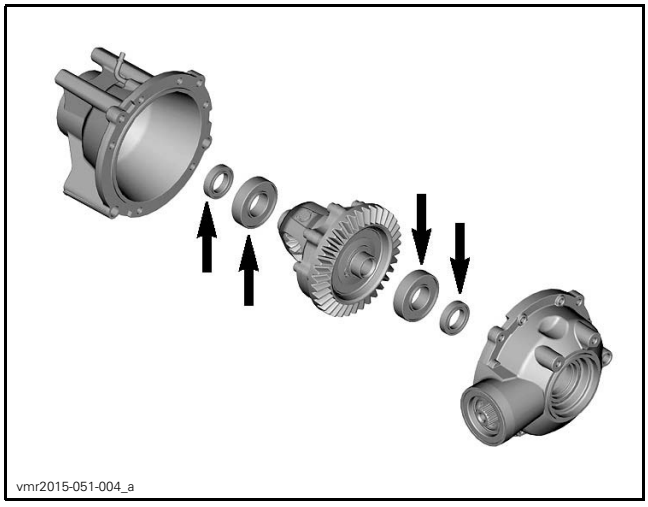
Tighten Visco-Lok / ring gear screws to specification.

TIGHTENING TORQUE	
Visco-Lok / ring gear screws	37 N•m ± 3 N•m (27 lbf•ft ± 2 lbf•ft)

Check condition of seal. Replace if damaged.


vmr2015-051-003_a

Check bearings. Replace with **NEW** bearings if necessary.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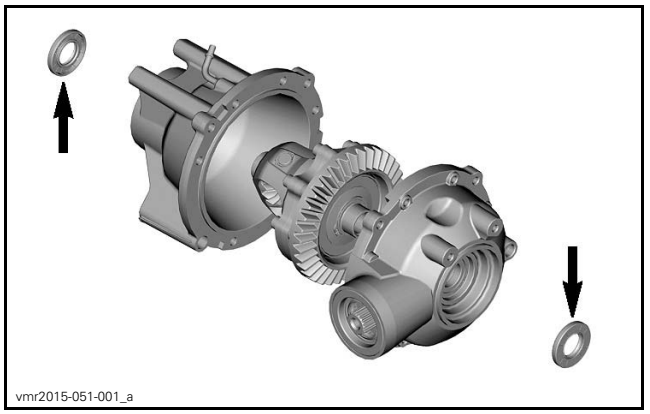
Apply XPS SYNTHETIC GREASE (P/N 293 550 010) on **NEW** oil seals and install.


vmr2015-051-001_a

Tighten differential housing screws to specification.

TIGHTENING TORQUE	
Differential housing screws	23.5 N•m ± 3.5 N•m (17 lbf•ft ± 3 lbf•ft)

Pinion Gear

Install a **NEW** ball bearing.

Install a **NEW** O-ring.

Install a **NEW** needle bearing.

Apply LOCTITE 277 (P/N 293 800 073) to pinion nut.

Install and tighten the pinion nut to specification.

TIGHTENING TORQUE	
Pinion nut	180 N•m ± 15 N•m (133 lbf•ft ± 11 lbf•ft) **+** LOCTITE 277 (P/N 293 800 073)

Apply XPS SYNTHETIC GREASE (P/N 293 550 010) on **NEW** oil seal and install.

Tighten front propeller shaft adapter retaining screw to specification.

TIGHTENING TORQUE	
Front propeller shaft adapter retaining screw	75 N•m ± 5 N•m (55 lbf•ft ± 4 lbf•ft)

Front Differential Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

When inserting the small portion of propeller shaft into propeller shaft boot, make sure both parts of propeller shaft are well indexed.

TIGHTENING TORQUE	
M8 nut securing front differential to frame	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)
M10 nuts securing front differential to frame	61 N•m ± 9 N•m (45 lbf•ft ± 7 lbf•ft)

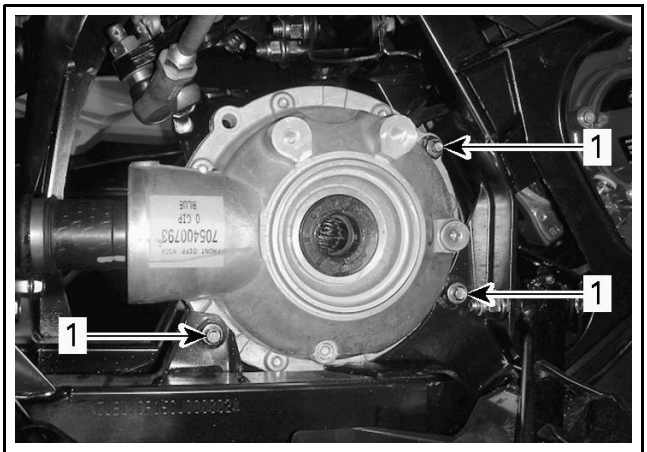
Install **NEW** Oetiker clamps.

Refill front differential with recommended oil. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

FRONT PROPELLER SHAFT

Front Propeller Shaft Removal

1. Lift and support vehicle.
2. Remove front wheel. Refer to *WHEELS AND TIRES* subsection.
3. Remove inner fender panel(s). Refer to *BODY* subsection.
4. Remove bolts securing front differential to frame.



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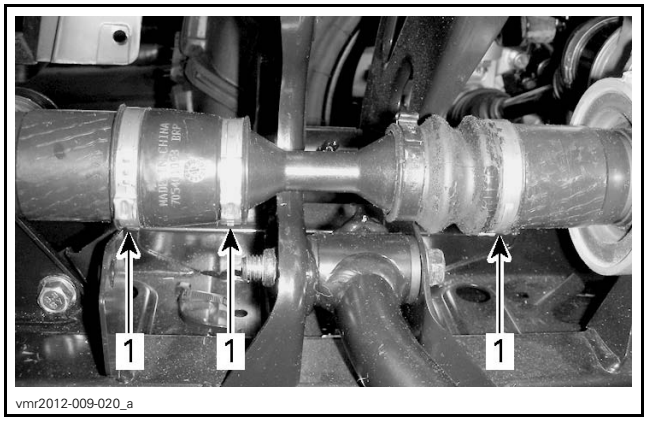
1. Bolts securing front differential to frame

5. Remove the following Oetiker clamps from front propeller shaft.



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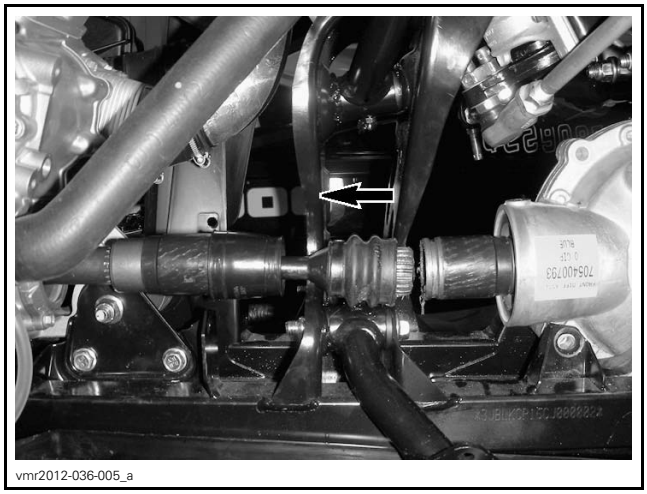
1. Oetiker clamps

6. Detach front propeller shaft from front differential by moving it rearward.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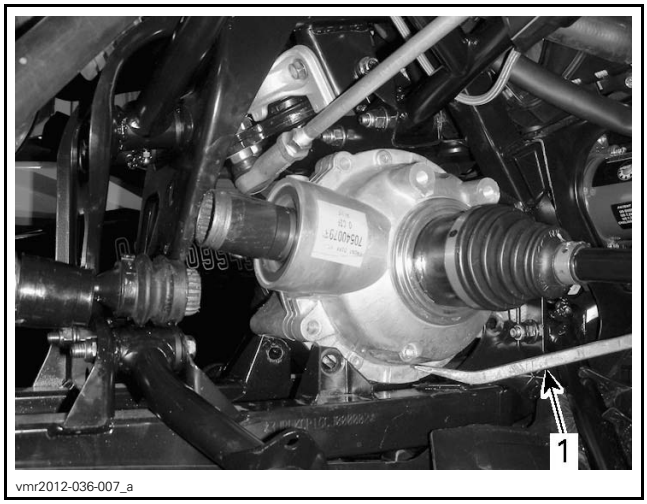
FRONT PROPELLER SHAFT MOVED REARWARD

7. Pry front differential upwards to make room.



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1. Pry bar

8. Remove front propeller shaft by pulling it forward.

9. Remove front propeller shaft adapters from engine and from front differential.

Front Propeller Shaft Inspection

Inspect if propeller shaft is not bent or twisted.

Check propeller shaft splines for wear or damage.

Check if propeller shaft bellows is pierced or brittle.

Front Propeller Shaft Installation

The installation is the reverse of removal procedure. However, pay attention to the following.

Apply XPS SYNTHETIC GREASE (P/N 293 550 010) on splines.

Tighten propeller shaft adapter screw to specification.

TIGHTENING TORQUE	
Propeller shaft adapter screw **(differential side: M10x16)**	75 N•m ± 5 N•m (55 lbf•ft ± 4 lbf•ft) **+** LOCTITE 648 (GREEN) (P/N 413 711 400)
Propeller shaft adapter screw **(engine side: M12x20)**	75 N•m ± 5 N•m (55 lbf•ft ± 4 lbf•ft) **+** LOCTITE 648 (GREEN) (P/N 413 711 400)

REAR DRIVE (570 / 650 / 850 / 1000R)

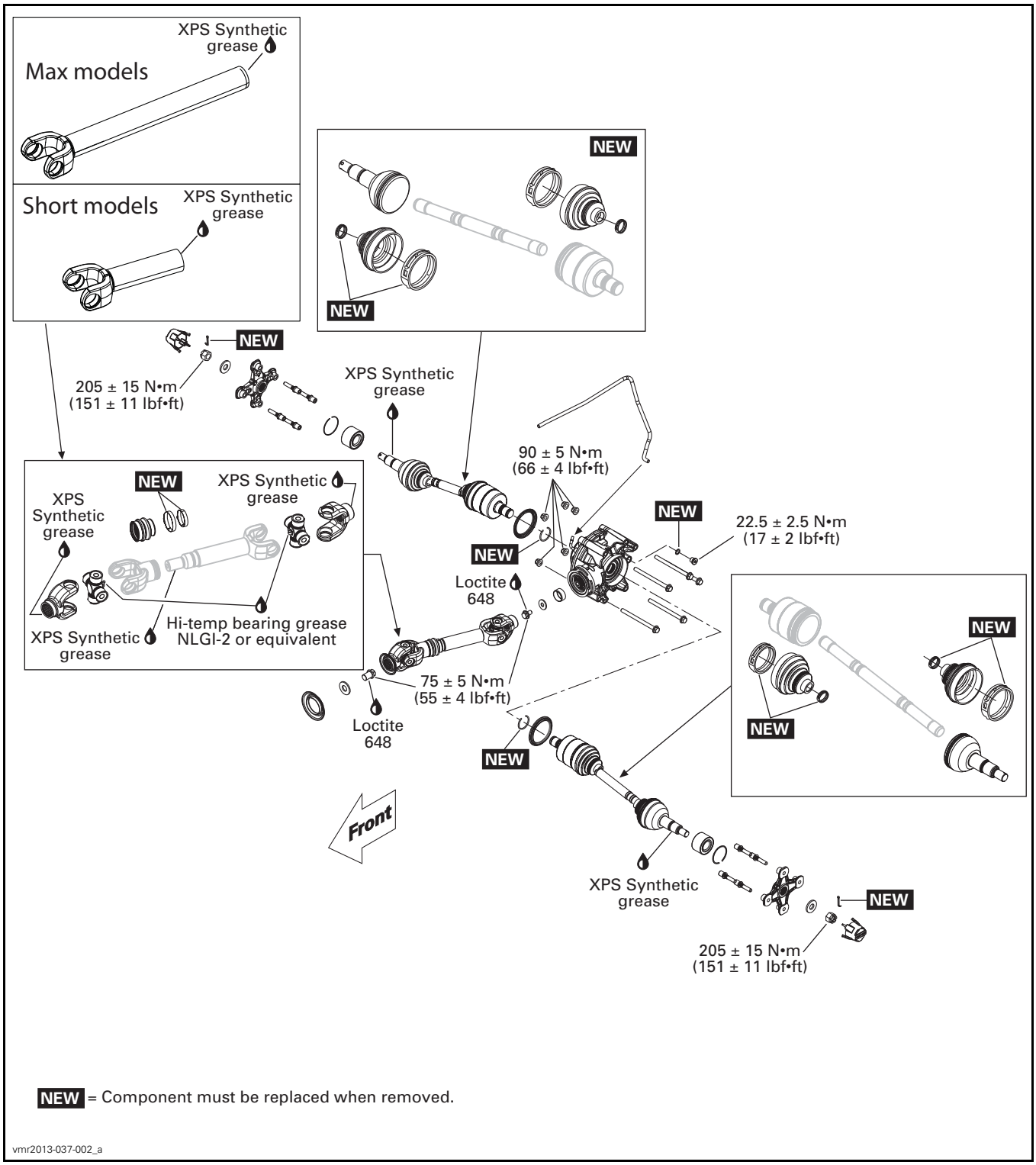
SERVICE TOOLS

Description	Part Number	Page
BACKLASH MEASUREMENT TOOL	529 035 665	10
CV BOOT CLAMP PLIER	529 036 120	5
CV JOINT EXTRACTOR	529 036 005	5
SPANNER SOCKET	529 035 649	12

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 277	293 800 073	14–15
LOCTITE 648 (GREEN)	413 711 400	8
XPS SYNTHETIC GREASE	293 550 010	4, 8

DRIVE SHAFTS AND PROPELLER SHAFT



NEW = Component must be replaced when removed.

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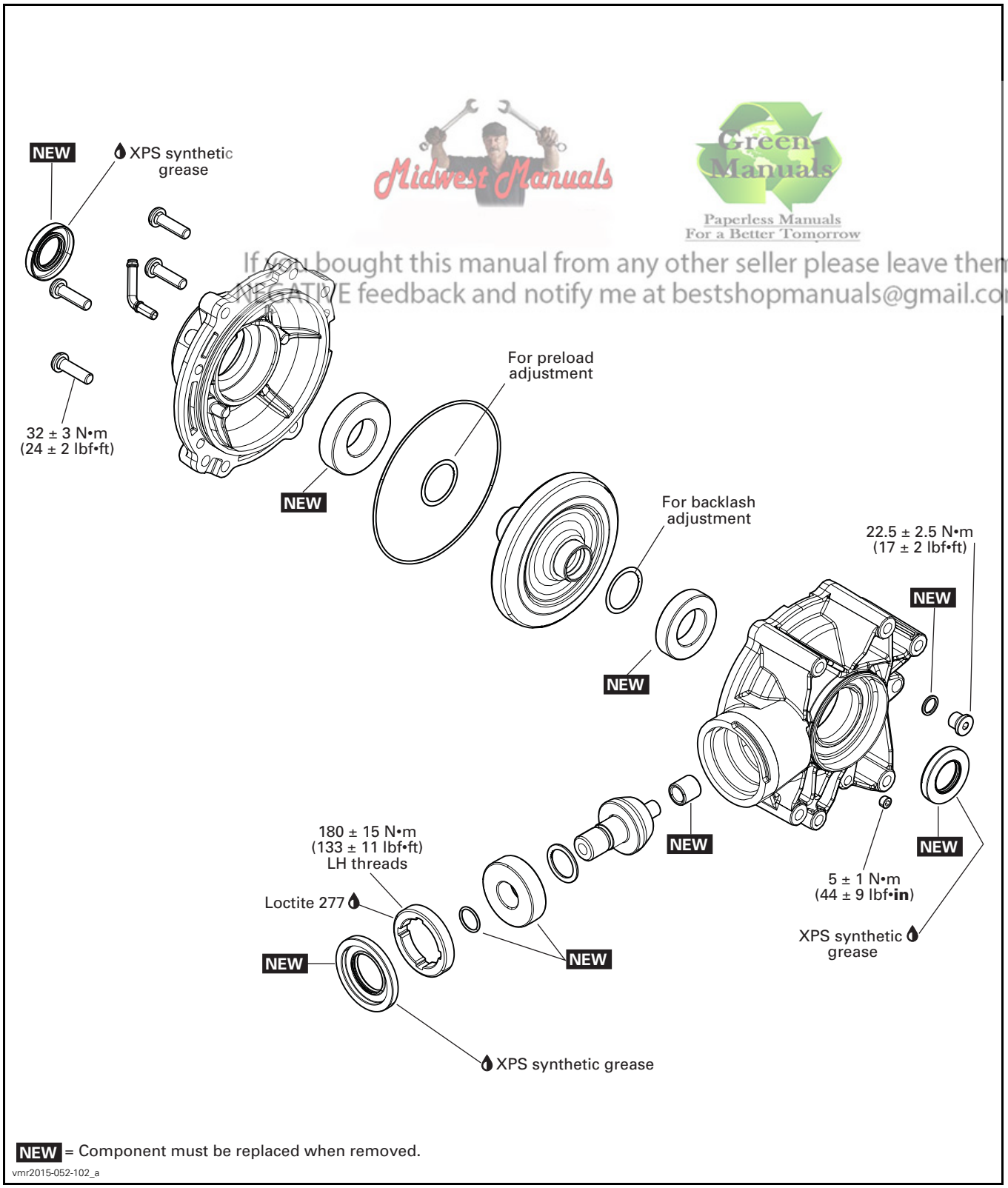
REAR FINAL DRIVE



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PROCEDURES

WHEEL HUB

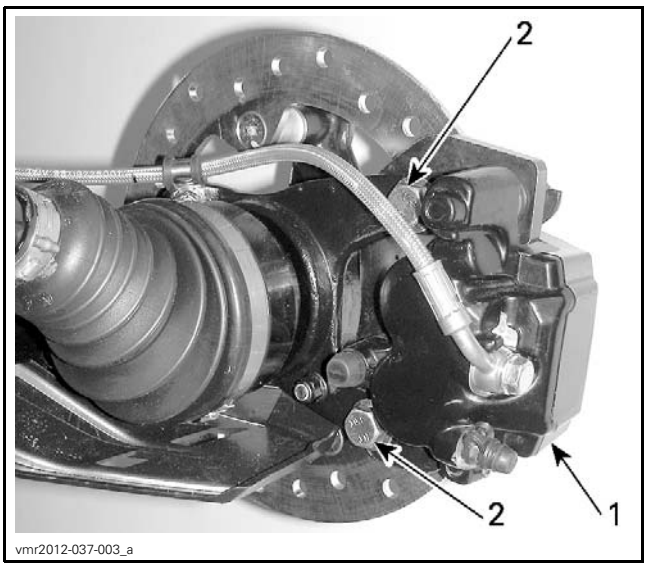
Removing the Wheel Hub

Lift and support vehicle.

Remove the wheel.

Remove the following parts:

– Caliper mounting bolts (if applicable), refer to *BRAKES* subsection
– Hub cap
– Cotter pin
– Wheel hub nut
– Belleville washer.



1. Caliper
2. Remove bolts

Remove wheel hub.

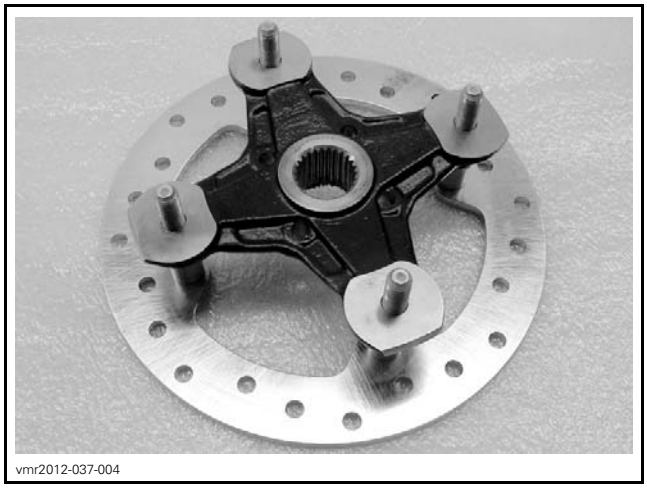
Inspecting the Wheel Hub

Remove disk from RH wheel hub as necessary.

Check wheel hub for cracks or other damages.

Check inner splines for wear or other damages.

If any damage is detected on wheel hub, replace it with a new one.

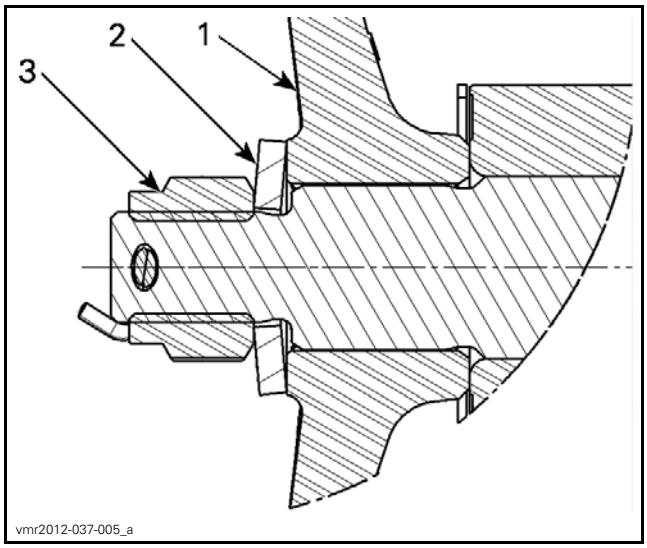


Installing the Wheel Hub

The installation is the reverse of removal procedure. Pay attention to the following.

Apply XPS SYNTHETIC GREASE (P/N 293 550 010) on drive shaft splines.

Install Belleville washer with its convex side outward.

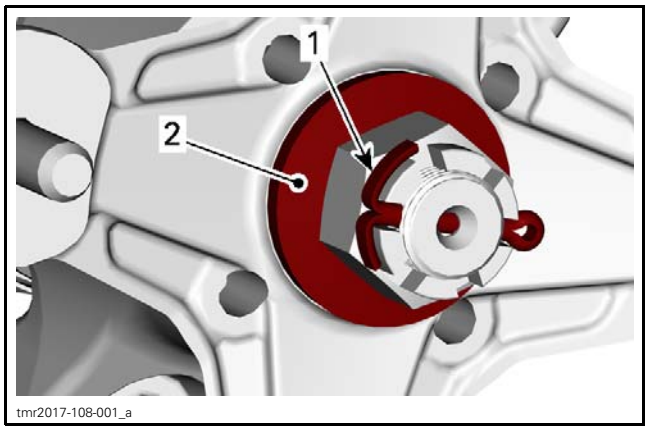


1. Wheel hub
2. Washer — Convex side here
3. Nut

TIGHTENING TORQUE	
Wheel hub nut	205 N•m ± 15 N•m (151 lbf•ft ± 11 lbf•ft)

NOTE: If required, tighten castle nut further to align grooves with drive shaft hole.

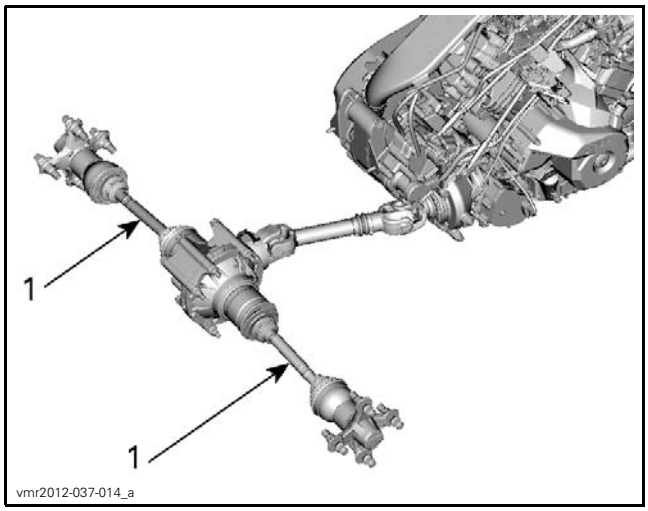
Install a NEW cotter pin, bend as shown.



1. Cotter pin correctly bent
2. Domed (convex) side here

DRIVE SHAFT

Removing the Drive Shaft



TYPICAL
1. Drive shafts

Lift and support vehicle.

Remove the wheel hub. See procedure in this subsection.

Remove trailing arm. Refer to *REAR SUSPENSION*.

Strongly pull drive shaft out of final drive.

Inspecting the Drive Shaft

Inspect the condition of boots. If there is any damage or evidence of leaking lubricant, replace them. Refer to *DRIVE SHAFT BOOT*.

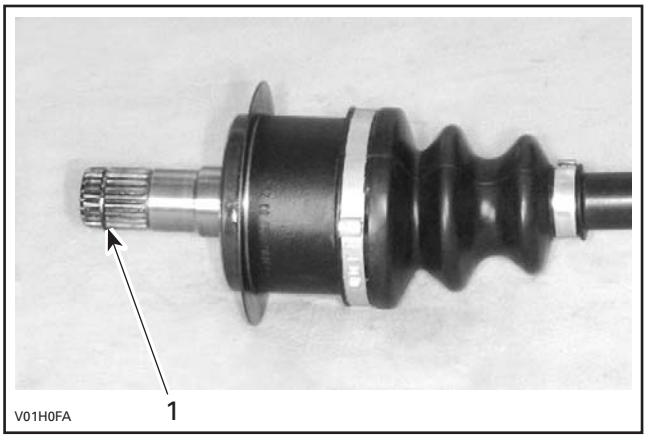
Check shaft splines. Replace drive shaft if necessary.

Check dust shield on drive shaft end. Replace if necessary.

Installing the Drive Shaft

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install a NEW stop ring.



TYPICAL
1. NEW stop ring

After drive shaft insertion in rear final drive, validate if properly locked.

DRIVE SHAFT BOOT

Removing the Drive Shaft Boot

Remove the drive shaft from vehicle. See procedure in this subsection.

Remove drive shaft boot clamps using the following tool:

REQUIRED TOOL	
CV BOOT CLAMP PLIER (P/N 529 036 120)	

Dislodge the large boot end.

Separate the joint from the shaft. Two procedures can be done.

Without the Special Tool

Clamp joint housing in a vise.

Align shaft with joint.

Pull hard on shaft to remove from joint.

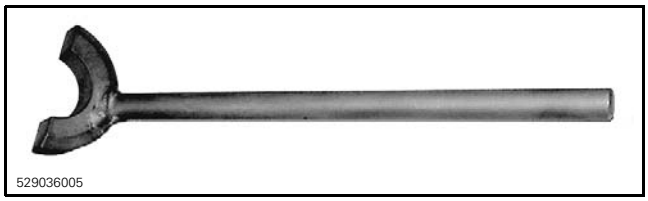
Remove boot from drive shaft.

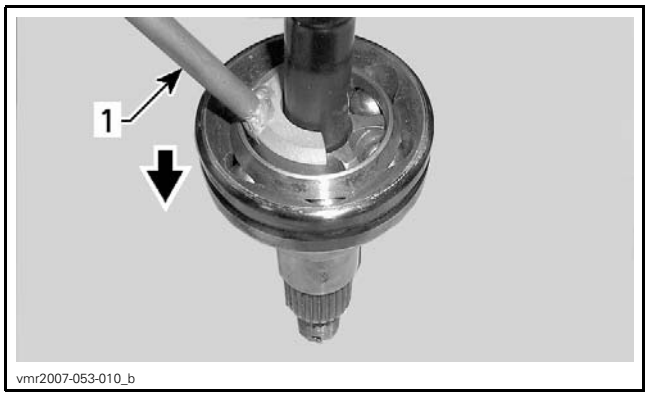
Remove and discard the circlip. A new one is included in the boot kit.

With the Special Tool

Place drive shaft in vice with the joint downward.

Install the CV JOINT EXTRACTOR (P/N 529 036 005) on bearing.


529036005



vmr2007-053-010_b

TYPICAL — CV JOINT SHOWN
1. Joint extractor tool

With an hammer, hit on the tool to separate joint from shaft.

When joint and shaft are separated, remove boot from drive shaft.

Remove and discard the circlip. A new one is included in the boot kit.

Remove drive shaft boot.

Installing the Drive Shaft Boot

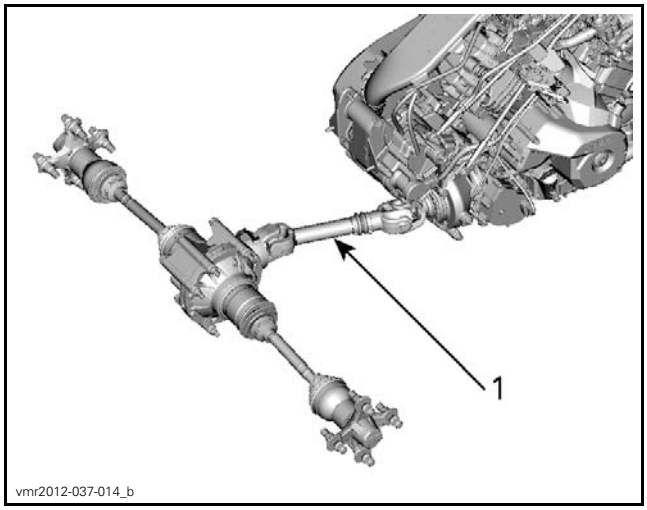
For installation, reverse the removal procedure. Pay attention to the following.

Pack bearing area with grease (included with the new boot kit).

NOTE: Do not use any other grease.

PROPELLER SHAFT

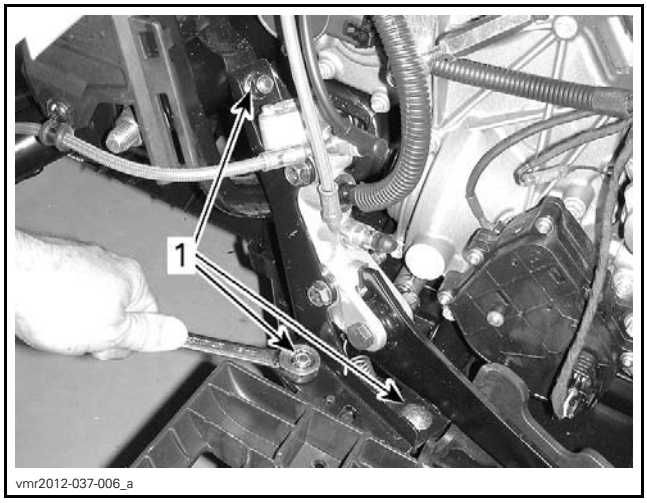
Removing the Propeller Shaft



vmr2012-037-014_b

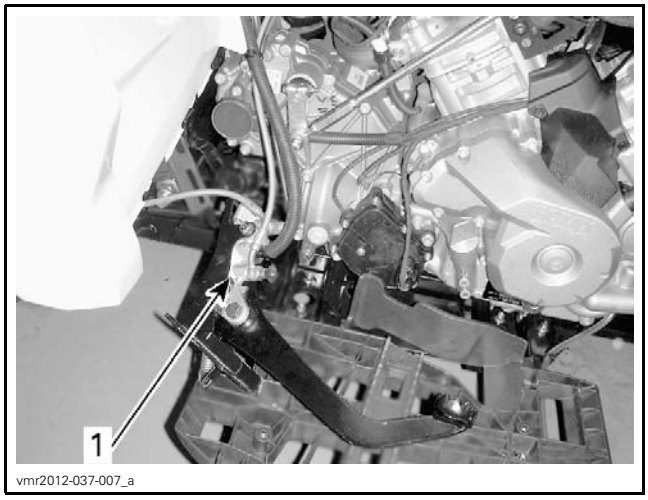
TYPICAL
1. Propeller shaft

1. Remove wheels. Refer to *WHEELS AND TIRES* subsection.
2. Drain oil from rear final drive. Refer to *PERIODIC MAINTENANCE PROCEDURES*.
3. Detach brake master cylinder from frame (Outlander only). Refer to *BRAKES* subsection.



vmr2012-037-006_a

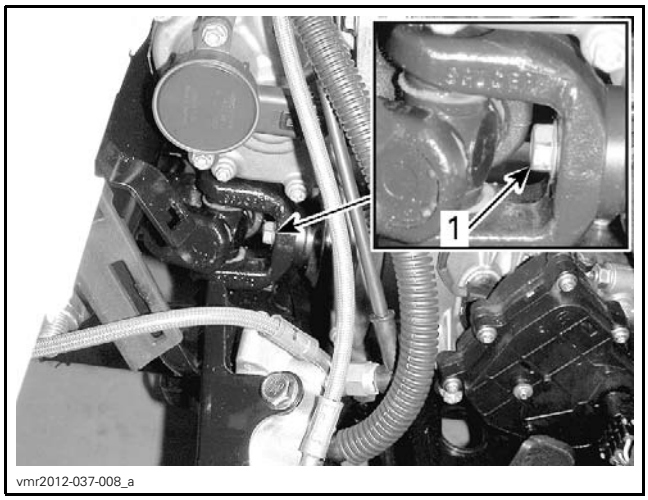
1. Remove retaining screws



1. Master cylinder moved apart

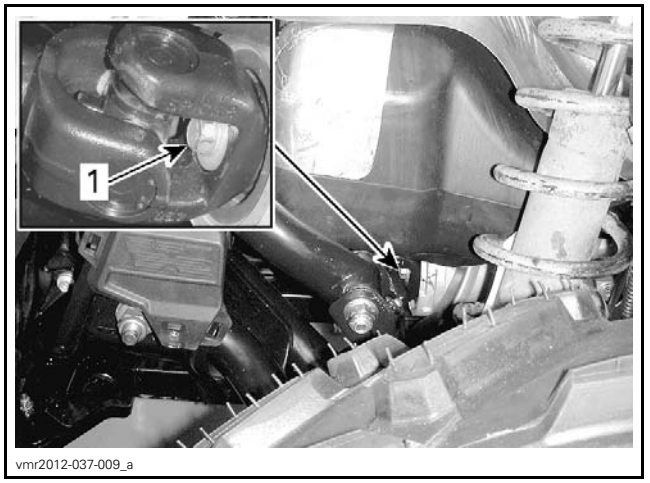
4. Lift and support vehicle.
5. From RH side of vehicle, remove propeller shaft screw from gearbox output shaft.

NOTE: Heat screw to break the threadlocker bond prior to removal.



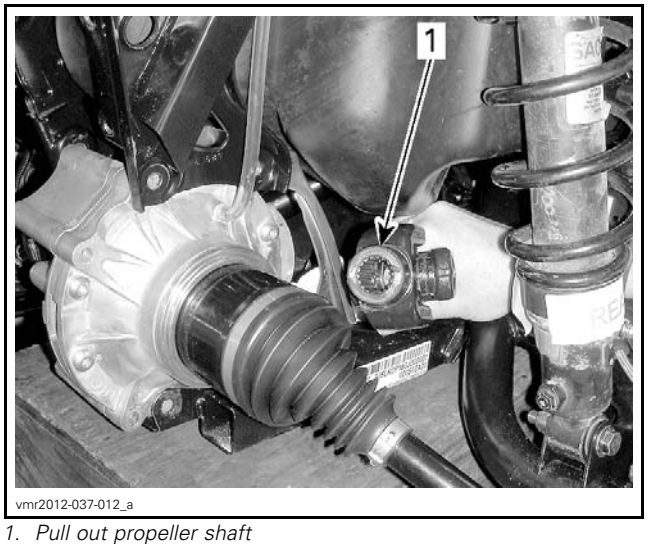
TYPICAL — RH SIDE OF VEHICLE
1. Remove screw

6. From LH side of vehicle, remove propeller shaft screw from rear final drive yoke.



TYPICAL — LH SIDE OF VEHICLE
1. Remove screw

7. Remove rear final drive retaining bolts. Refer to *REAR FINAL DRIVE* in this subsection.
8. Remove bolts from rear retaining plate. Refer to *REAR FINAL DRIVE* in this subsection.
9. Move the rear final drive rearward to allow dislodging the propeller shaft.
10. Dislodge the propeller shaft from the gearbox.
11. Remove the propeller shaft.



1. Pull out propeller shaft

Inspecting the Propeller Shaft

Inspect if propeller shaft is not bent or twisted.

Check propeller shaft splines for wear or damage.

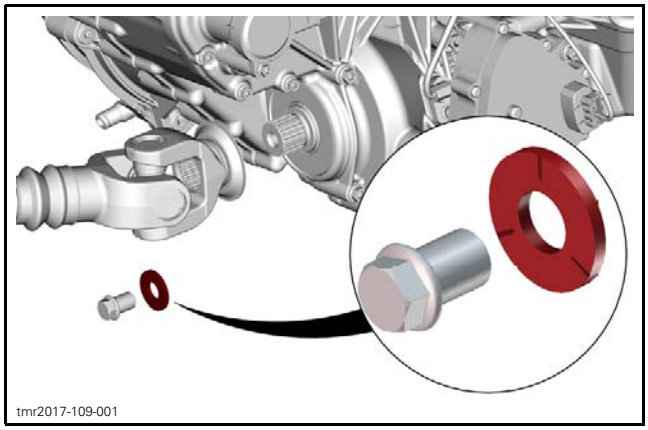
Check if propeller shaft bellow is cracked, pierced or brittle.

Installing the Propeller Shaft

Installation is essentially the reverse of removal procedure. Pay attention to the following details.

Apply XPS SYNTHETIC GREASE (P/N 293 550 010) to splines.

On the engine side, Install the Belleville with the notches towards the screw head.



TYPICAL

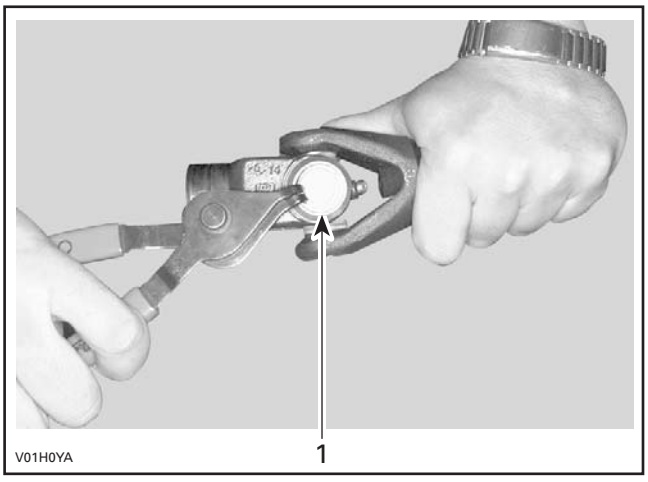
TIGHTENING TORQUE	
Propeller shaft screw (rear final drive side)	75 N•m ± 5 N•m (55 lbf•ft ± 4 lbf•ft)
Propeller shaft screw (gearbox side)	75 N•m ± 5 N•m (55 lbf•ft ± 4 lbf•ft) + LOCTITE 648 (GREEN) (P/N 413 711 400)

Refill rear final drive. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

PROPELLER SHAFT U-JOINTS

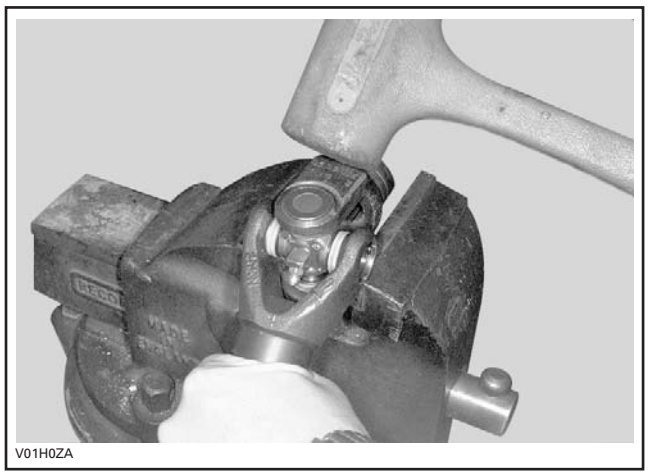
Removing the Propeller Shaft U-Joint

Remove internal snap ring from bearing caps.



1. Snap ring

Support inner yoke in vice and drive other yoke down with a soft hammer.



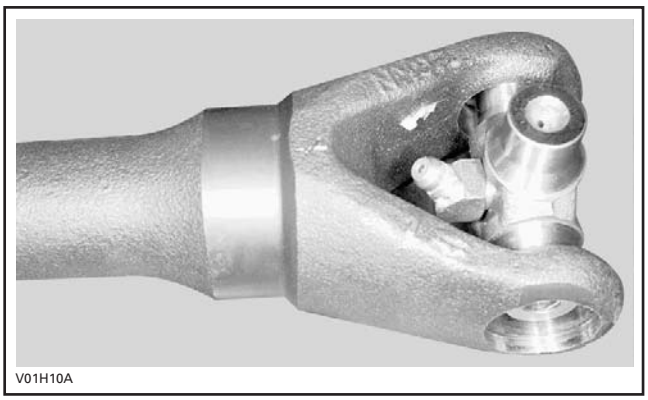
Support U-joint in vice and drive inner yoke down to remove remaining bearing caps.

Remove U-joint cross.

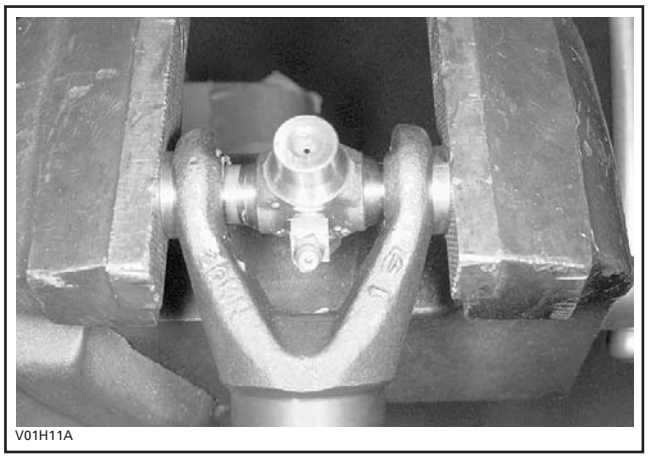
Installing the Propeller Shaft U-Joint

Install new U-joint in inner yoke.

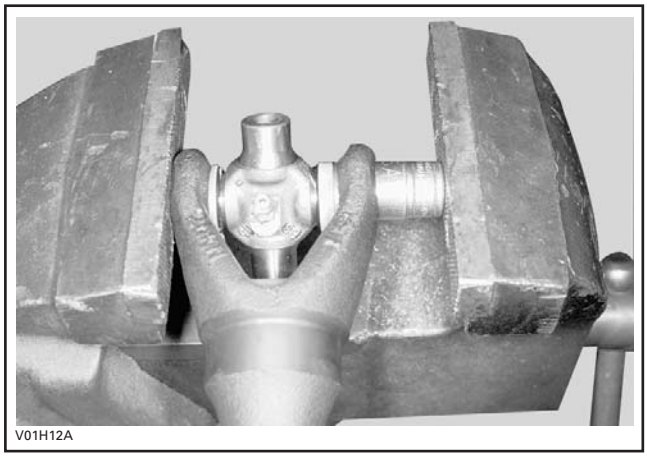
NOTE: Position propeller shaft U-joint as shown for proper grease fitting location.



Install bearing caps. Use a vise to push bearing caps.



Using a suitable pusher, fully seat bearing cap on one side.


V01H12A

Install snap ring.

Complete installation for the other bearing caps.

Grease U-joint. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

REAR FINAL DRIVE

Removing the Rear Final Drive

Drain oil. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

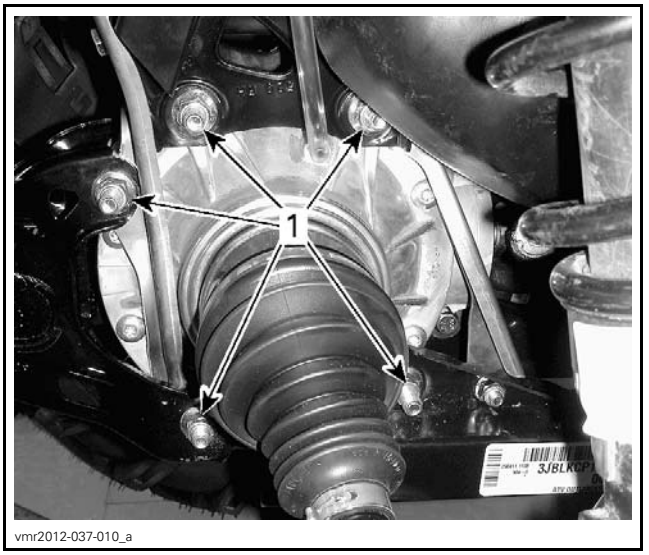
Lift and support vehicle.

Support rear bottom end of frame.

Remove drive shafts. See procedure in this subsection.

Remove rear propeller shaft screw from the rear final drive yoke. Refer to *PROPELLER SHAFT* in this subsection.

Remove rear final drive bolts.



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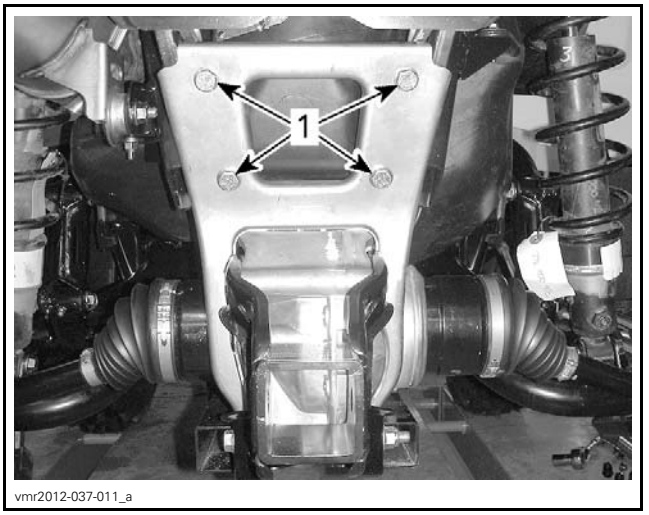
1. Remove bolts

Remove bolts from rear retaining plate.



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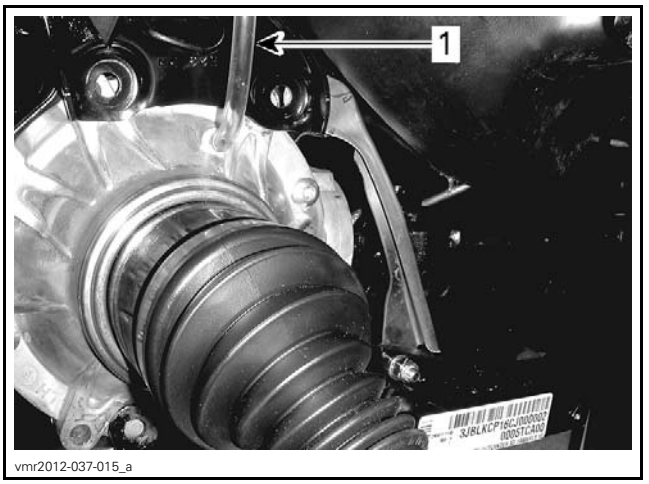
1. Remove bolts

Unplug the vent hose from final drive.



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1. Pull out

Remove the final drive.

Inspecting the Rear Final Drive (Assembled)

Manually turn rear final drive gear; it should turn smoothly. Repair if necessary.

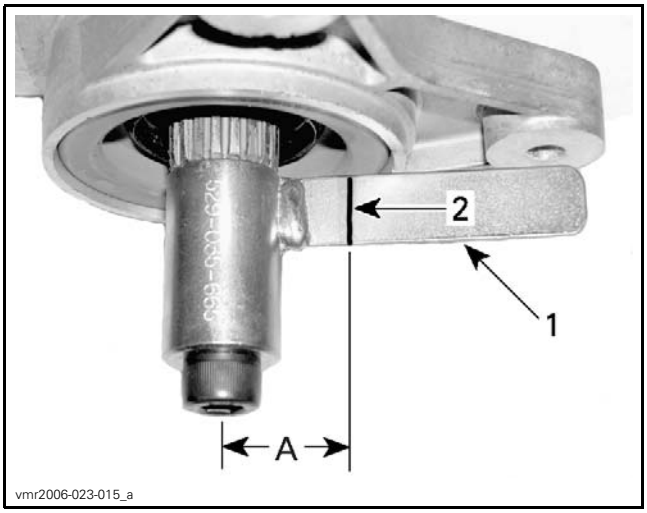
Check if oil seals are brittle, hard or damaged. Replace if necessary.

Measuring the Backlash

Using a dial indicator and the BACKLASH MEASUREMENT TOOL (P/N 529 035 665), measure the backlash.

Place the backlash measurement tool at the end of pinion gear.

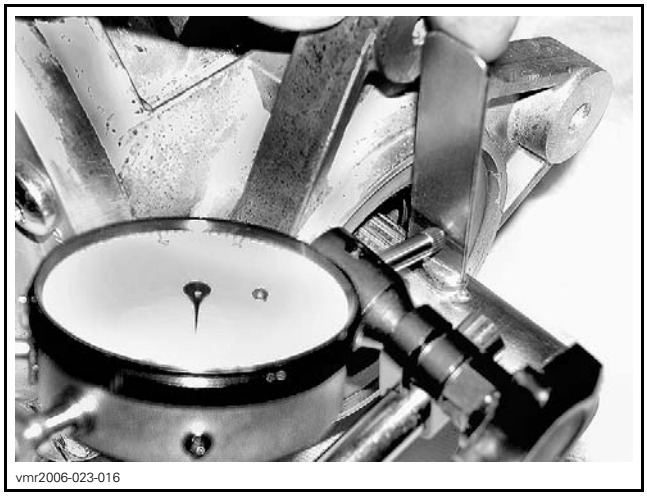
From center of tool bolt, measure 25.4 mm (1 in) and scribe a mark on the tab.



1. Tab of backlash measurement tool
2. Mark on tab
A. 25.4 mm (1 in)

Position the dial indicator tip against the tab at a 90° angle and right on the previously scribed mark.

Gently, move the tool tab back and forth. Note the backlash result.



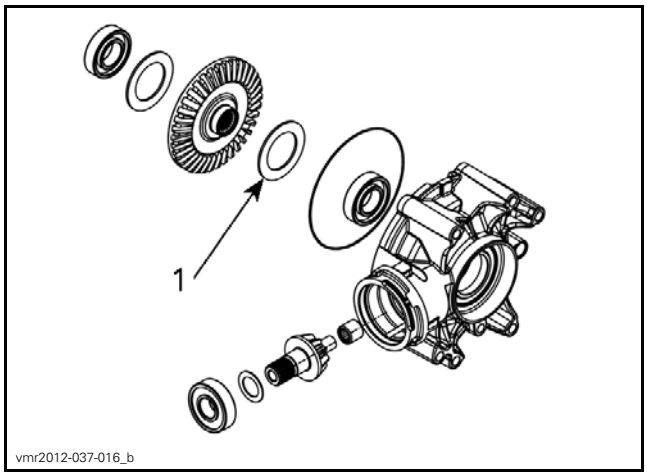
Rotate pinion gear 1/2 turn and recheck backlash. Note the result.

Rotate pinion gear 1 turn and recheck backlash.

BACKLASH SPECIFICATION
0.05 mm (.002 in) to 0.36 mm (.014 in)

If backlash is out of specification, split final drive housing and adjust shim thickness as per following guideline.

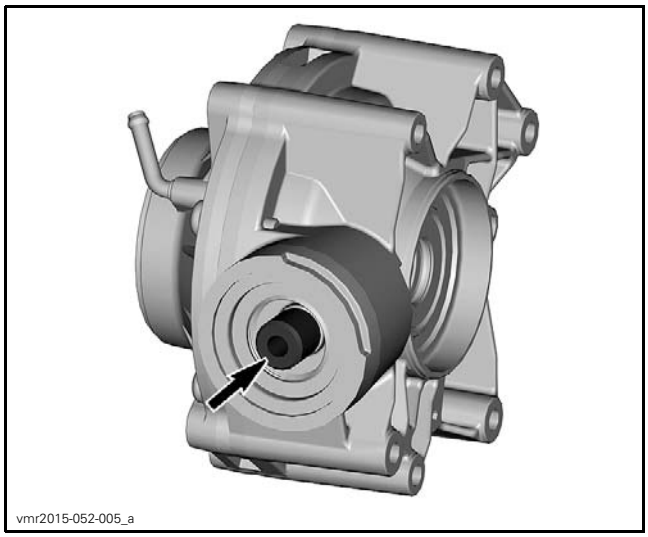
BACKLASH ADJUSTMENT GUIDELINE	
BACKLASH MEASUREMENT	WHAT TO DO
Below 0.05 mm (.002 in)	Add shim(s) and recheck backlash
Above 0.36 mm (.014 in)	Remove shim(s) and recheck backlash



1. Backlash shim

Measuring the Preload

Screw the propeller shaft screw in pinion gear.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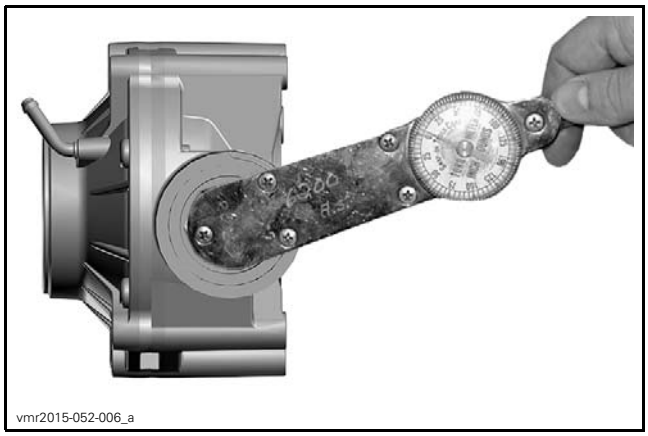
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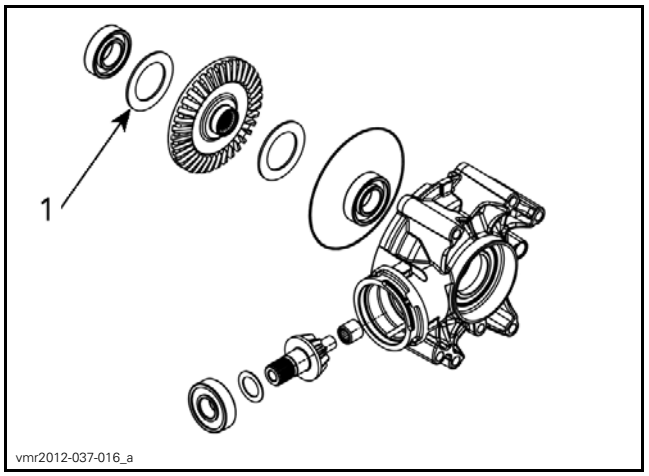
PRELOAD SPECIFICATION
0.06 N•m (.5 lbf•**in**) to 0.50 N•m (4 lbf•**in**)

If preload is out of specification, split final drive housing and adjust shim thickness as per following guideline.

PRELOAD GUIDELINE	
PRELOAD MEASUREMENT	WHAT TO DO
Below 0.06 N•m (.5 lbf•**in**)	Add shim(s) and recheck preload
Above 0.50 N•m (4 lbf•**in**)	Remove shim(s) and recheck preload



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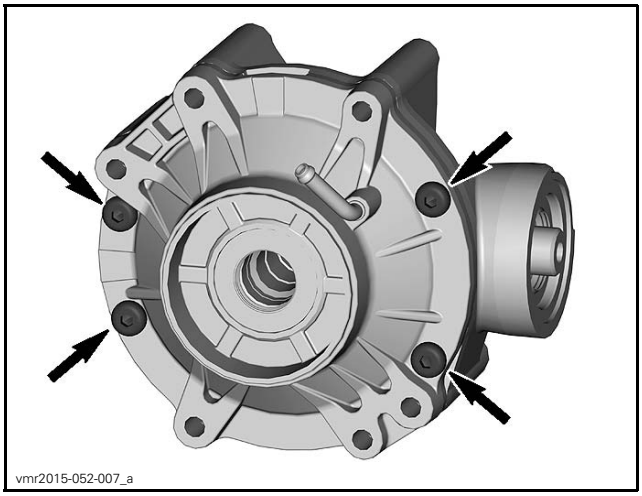
1. Preload shim

Disassembling the Rear Final Drive

Ring Gear

Remove the final drive housing screws.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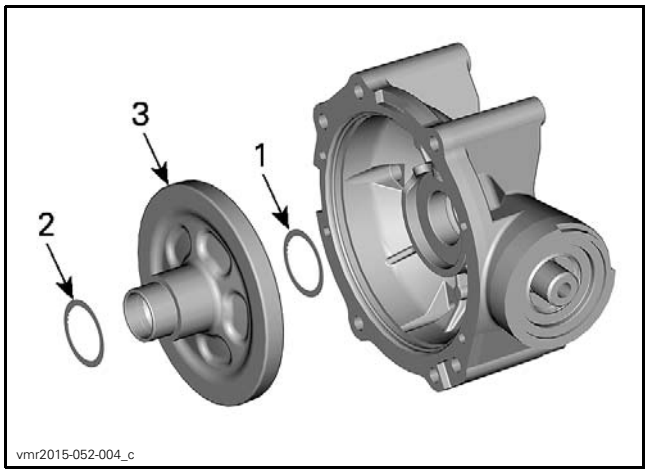
Split final drive housings.

NOTE: Be careful to keep track of shims on ring gear.

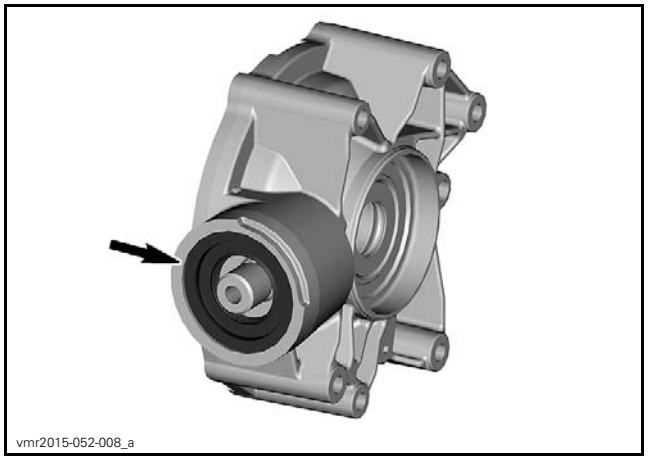


1. Backlash shim
2. Preload shim
3. Ring gear

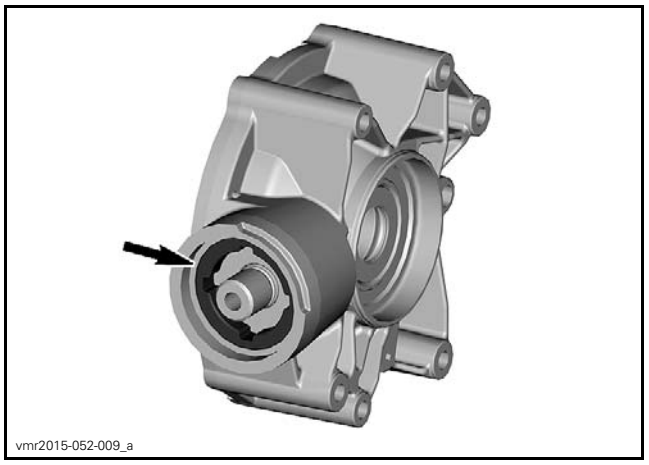
Extract ring gear out of half housing.

Pinion Gear

Remove and discard oil seal.

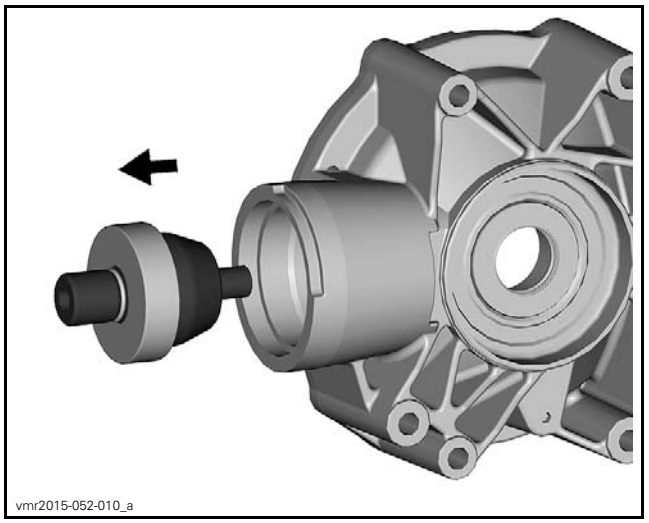


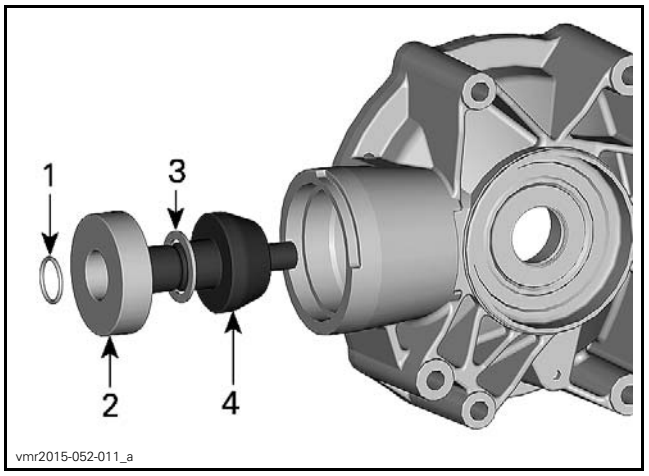
Unscrew the pinion nut. Use the SPANNER SOCKET (P/N 529 035 649).



NOTE: The pinion nut is left hand threaded. Unscrew by turning clockwise.

Remove the bearing along with the pinion gear. Be careful to keep track of shims. Discard bearing.



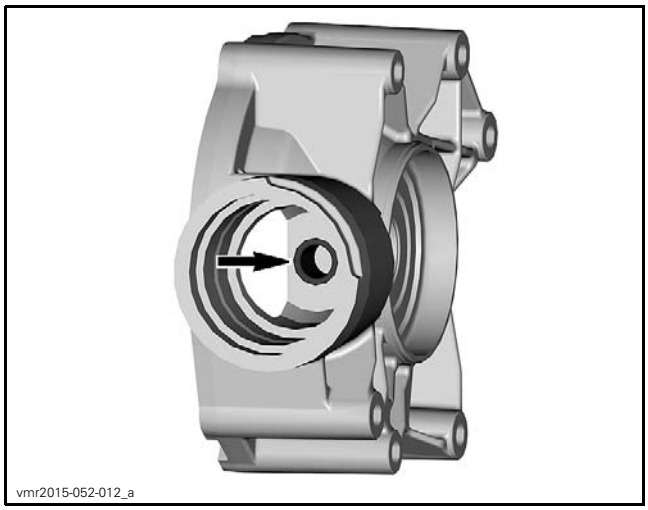


1. O-ring
2. Ball bearing
3. Pinion gear shim
4. Pinion gear

The pinion gear and bearing can be easily removed using the following suggested tool:

PART	QTY
Pipe: 83 mm (3-1/4 in) diameter x 127 mm (5 in)	1
Threaded rod: M10 x 1.25 x 178 mm (7 in)	1
M10 x 1.25 nut	3
Flat bar	1

Remove and discard the needle bearing.



Assembling the Rear Final Drive

Adjustment is required when any of the following part is changed.

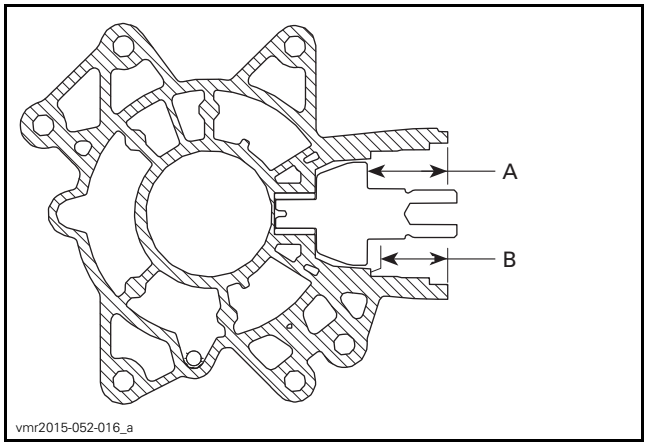
– Pinion gear
– Ring gear
– Housing.

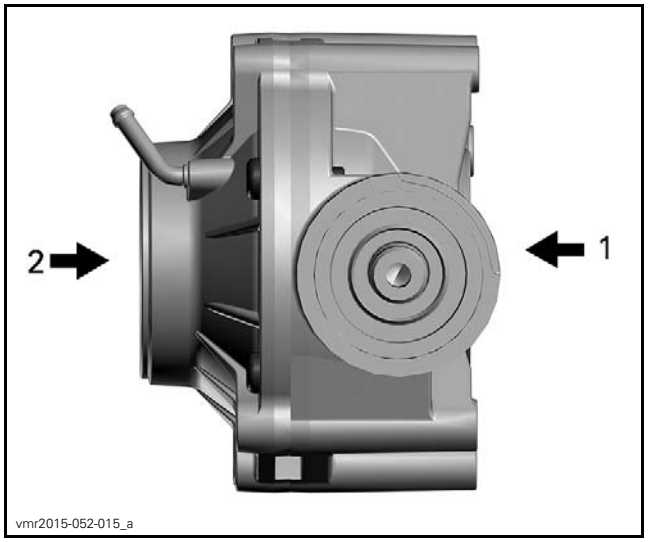
As a preliminary setup, install shims according to the following table.

RECOMMENDED SHIM THICKNESS	
PINION GEAR	See procedure for pinion gear shim thickness
BACKLASH	0.5 mm (.02 in) (as a preliminary adjustment)
PRELOAD	

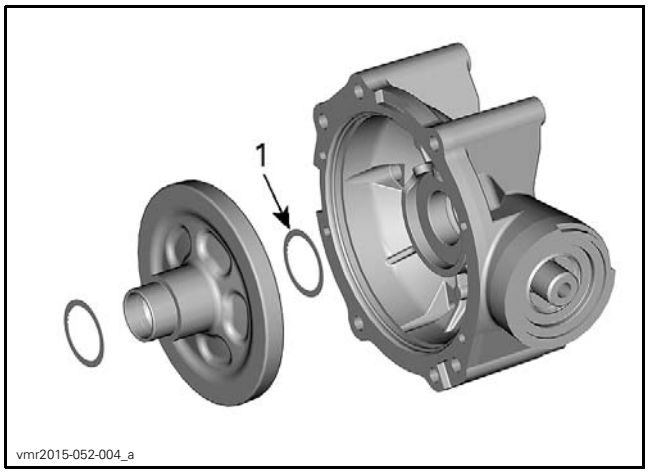
Procedure for pinion gear shim thickness:

1. Remove the old pinion gear and install the new one without the ball bearing. The new pinion will be located at the "zero" location.
2. Measure the distance "A" between outside surface of the gear case and the shim surface of pinion.
3. Measure the distance "B" between outside surface of the gear case and the bearing shoulder of the gear case.
4. The shim thickness will be "A-B-0.53 mm (.021 in)".
5. Select the good combination of shim to match the thickness calculated on step 4.

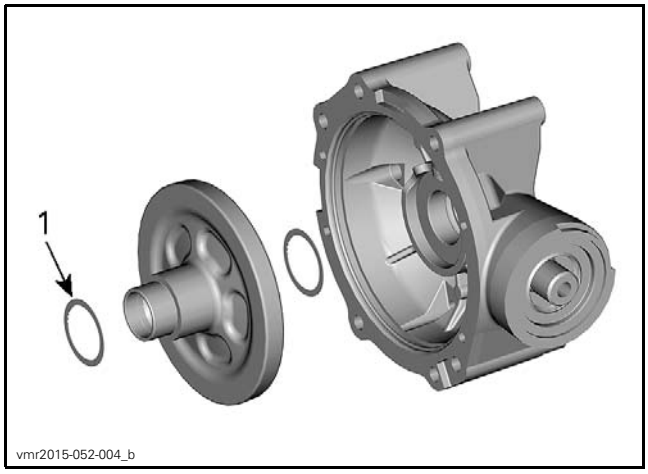




1. Backlash side
2. Preload side



1. Backlash shim



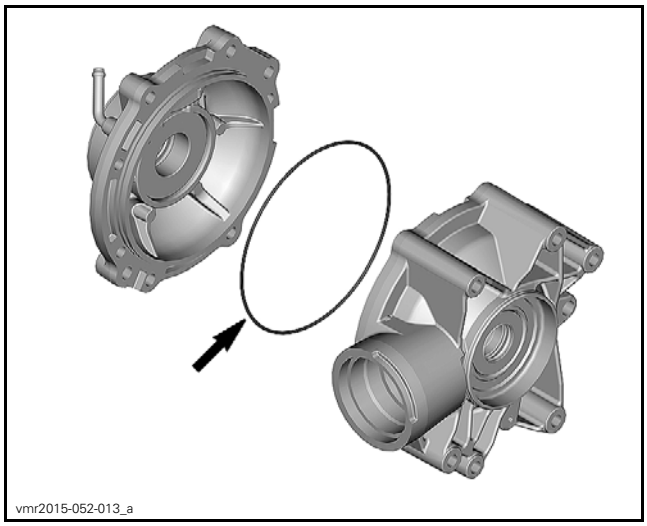
1. Preload shim

Prior to finalizing assembly, proceed in this order:
- Temporarily assemble final drive using recommended torques.
- Do not apply thread locker product.
- Do not install a new pinion nut.
- Check backlash.
- Check preload.

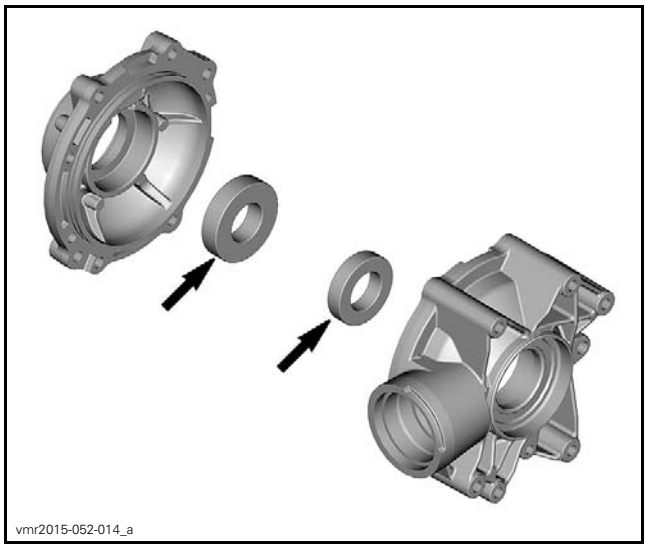
Ring Gear

The installation is the reverse of the removal procedure. However, pay attention to the following:

Check condition of seal. Replace if damaged.



Install **NEW** bearings.



Tighten final drive housing screws as per specification.

TIGHTENING TORQUE	
Final drive housing screws	32 N•m ± 3 N•m (24 lbf•ft ± 2 lbf•ft)

Pinion Gear

The installation is the reverse of the removal procedure. However, pay attention to the following:

Install a **NEW** needle bearing.

Install the shim(s) then a **NEW** ball bearing.

install a **NEW** O-ring.

Apply LOCTITE 277 (P/N 293 800 073) to pinion nut.

Install and tighten the pinion nut as per specification.

TIGHTENING TORQUE	
Pinion nut (LH THREADS)	180 N•m ± 15 N•m (133 lbf•ft ± 11 lbf•ft) + LOCTITE 277 (P/N 293 800 073)

Lubricate and install a NEW oil seal.

Installing the Rear Final Drive

The installation is the reverse of the removal procedure. However, pay attention to the following:

Install the lowest rear final drive retaining screws first.

Install all screws and nuts prior to tighten.

Tighten nuts to specification.

TIGHTENING TORQUE	
Final drive retaining nuts	90 N•m ± 5 N•m (66 lbf•ft ± 4 lbf•ft)

Refill the final drive with recommended oil. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

WHEELS AND TIRES

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 767 (ANTISEIZE LUBRICANT)	293 800 070	627

PROCEDURES

TIRES

⚠ WARNING

Do not rotate tires. The front and rear tires have a different size. Respect direction of rotation when applicable.

Tire Pressure

⚠ WARNING

Tire pressure greatly affects vehicle handling and stability. Insufficient pressure may cause tire to deflate and rotate on wheel. Excessive pressure may burst the tire. Always follow recommended pressure.

Check pressure when tires are **cold** before using the vehicle. Tire pressure changes with temperature and altitude. Recheck pressure if one of these conditions has changed.

TIRE PRESSURE	FRONT	REAR
MIN.	41.4 kPa (6 PSI)	41.4 kPa (6 PSI)
MAX. Use when total load is greater than 131.5 kg (290 lb)	48.3 kPa (7 PSI)	68.9 kPa (10 PSI)

Tire Inspection

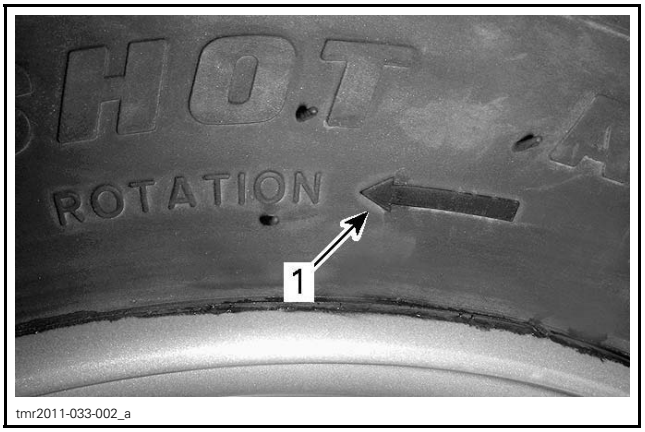
Check tire for presence of slits, bulges, wear or other damage. Replace if necessary.

Tire Replacement

Use an automotive tire changer to replace tires.

⚠ WARNING

- Replace tires only with the same type and size as original tires.
- For unidirectional tread pattern, ensure that the tires are installed in the correct direction of rotation.



TYPICAL
1. Direction of rotation

WHEELS

Wheel Removal

Loosen nuts just enough to be able to unscrew them once the vehicle will be off the ground.

Lift and support the vehicle.

Remove nuts, then remove wheel.

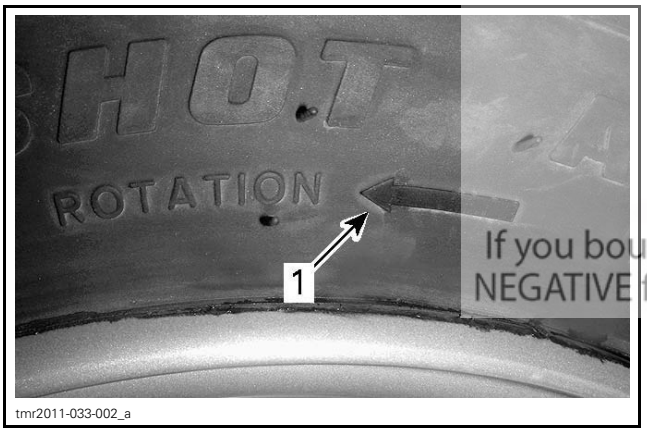
Wheel Inspection

Inspect wheel for wear or damage especially at the mounting holes.

Wheel Installation

At installation, it is recommended to apply LOCTITE 767 (ANTISEIZE LUBRICANT) (P/N 293 800 070) on threads.

Check if tires are unidirectional.



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TYPICAL
1. Direction of rotation

Midwest Manuals
Green Manuals
Paperless Manuals
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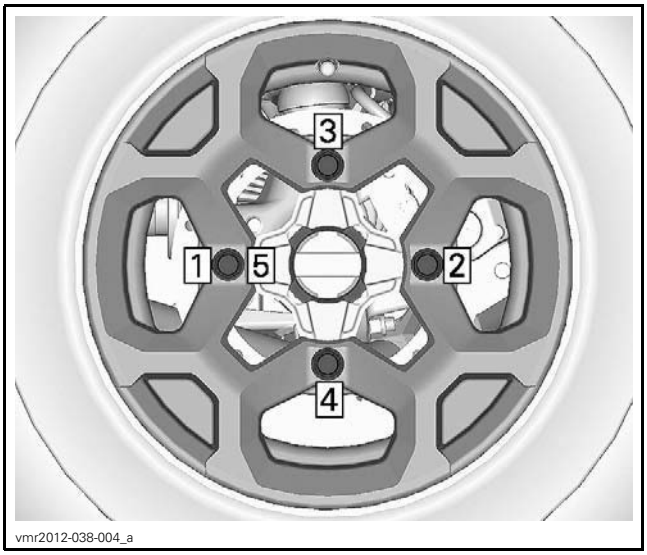
Install wheel with the tire in the right direction of rotation.

Install lug nuts with the taper towards the wheel.

Tighten wheel lug nuts to the specified torque using the illustrated sequence.

WHEEL LUG NUTS	
TORQUE	100 N•m ± 10 N•m (74 lbf•ft ± 7 lbf•ft)



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TYPICAL - TIGHTENING SEQUENCE

NOTICE Always use the recommended wheel nuts for the type of wheel. Using a different nut could cause damages to the rim or studs.

STEERING SYSTEM (OUTLANDER 570 / 650 / 850 / 1000R AND RENEGADE)

SERVICE TOOLS

Description	Part Number	Page
STEERING ALIGNMENT TOOL	529 036 059	5

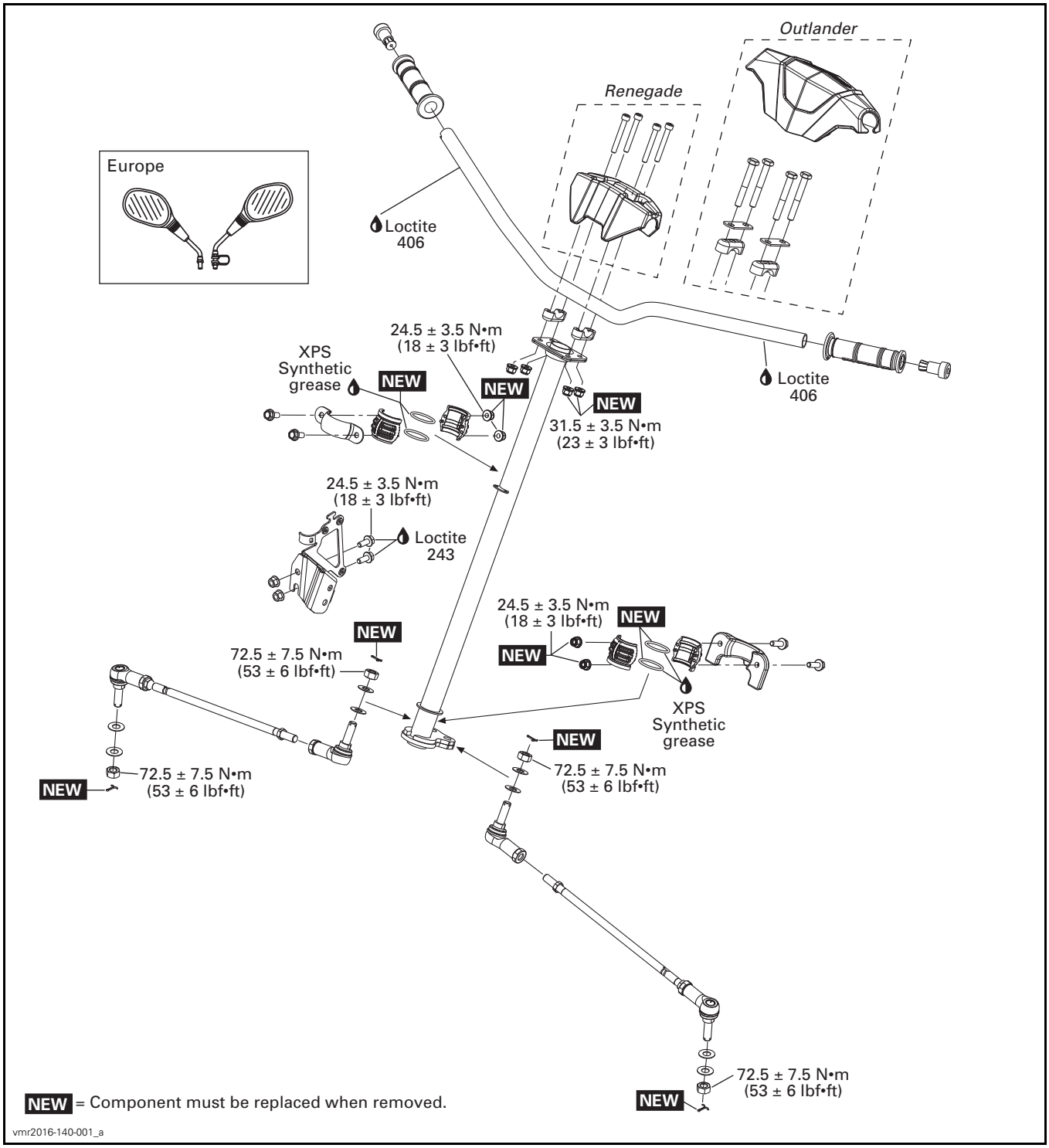
SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
SMOOTHFLOW™ TAPERED TIP	16 ga #511 rtt-b	6

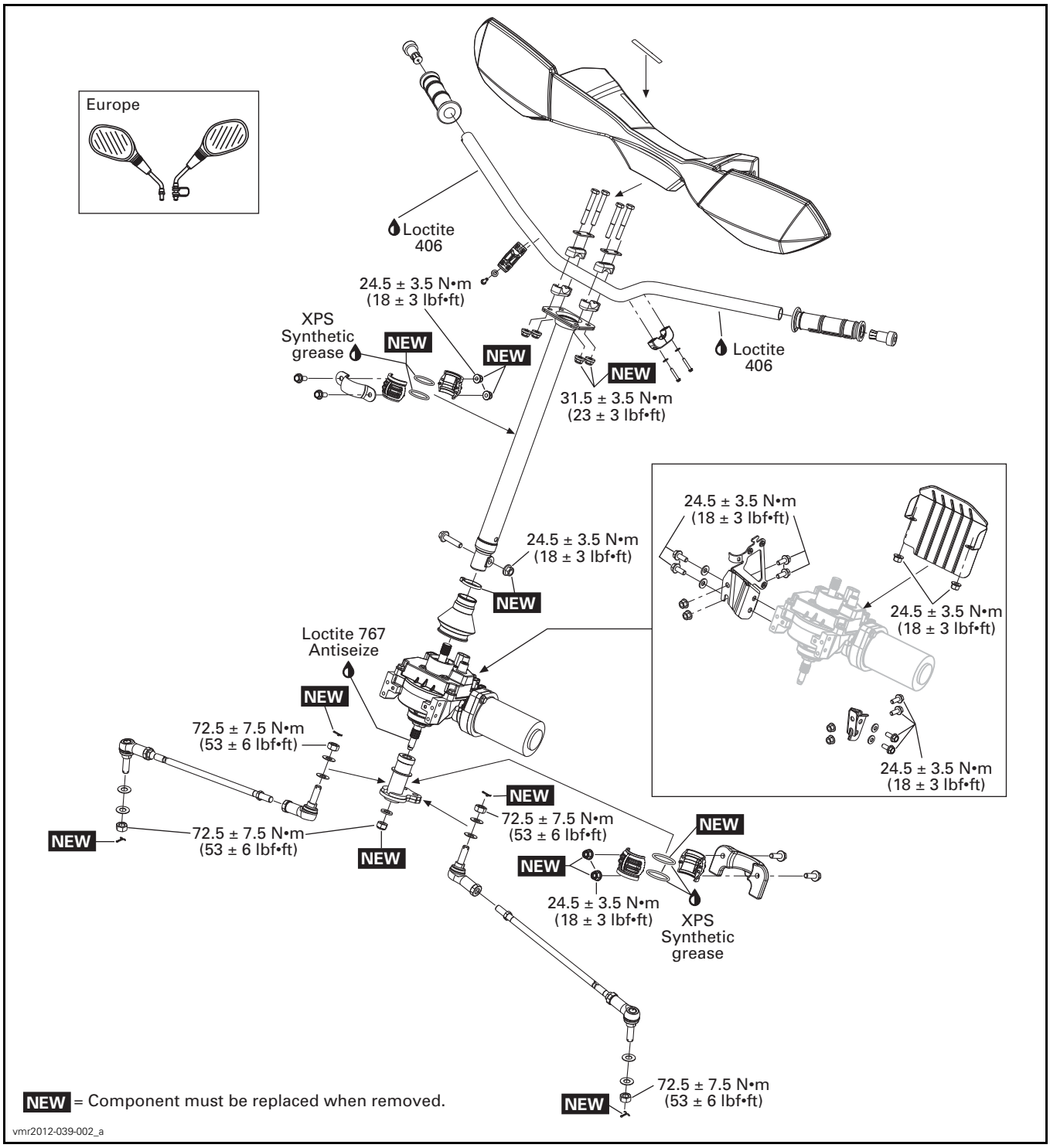
SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 406 (GLUE)	293 800 100	6
LOCTITE 767 (ANTISEIZE LUBRICANT)	293 800 070	13
PULLEY FLANGE CLEANER	413 711 809	6
XPS SYNTHETIC GREASE	293 550 010	13

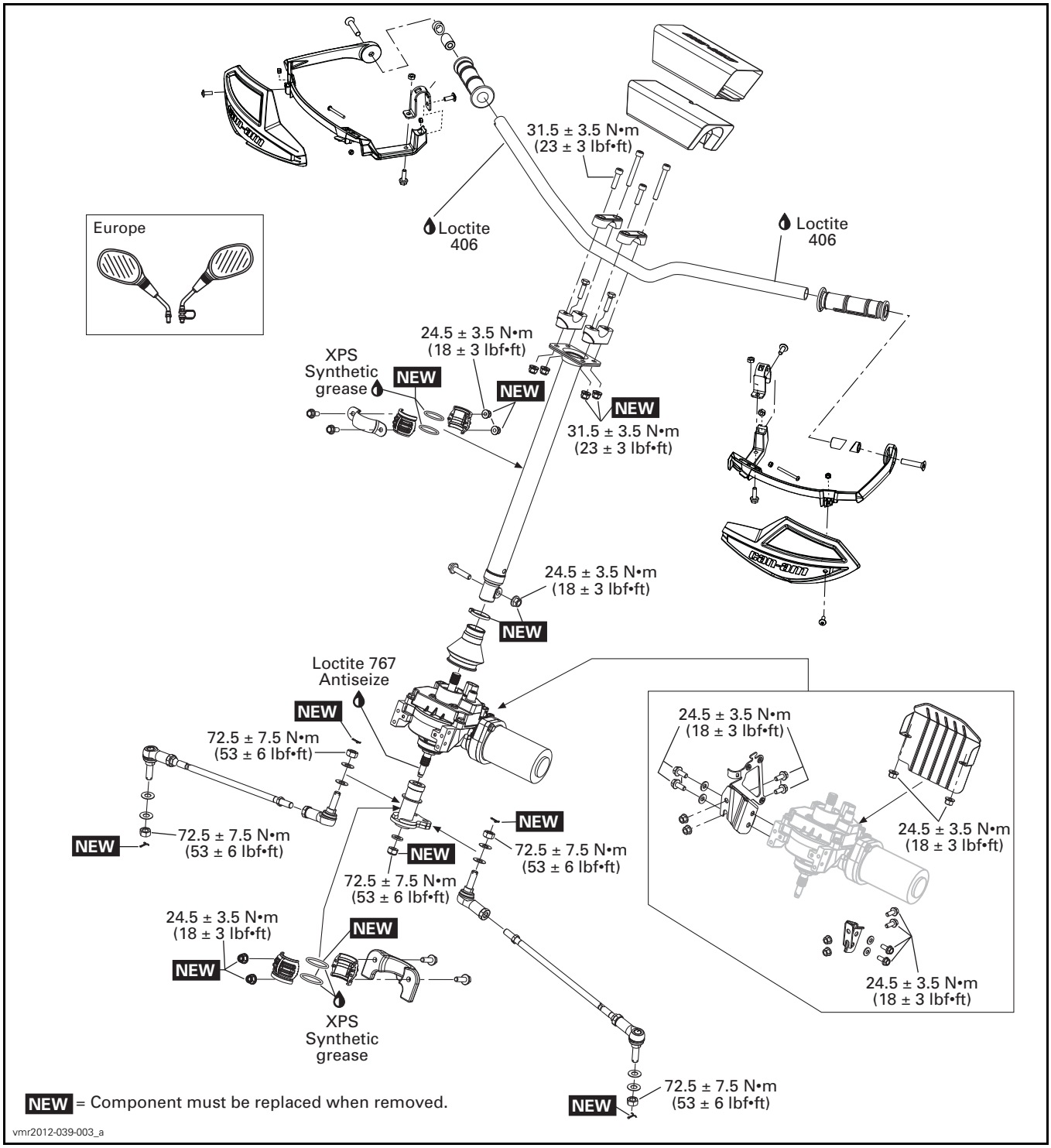
Outlander and Renegade Without DPS



Outlander with DPS



Renegade with DPS



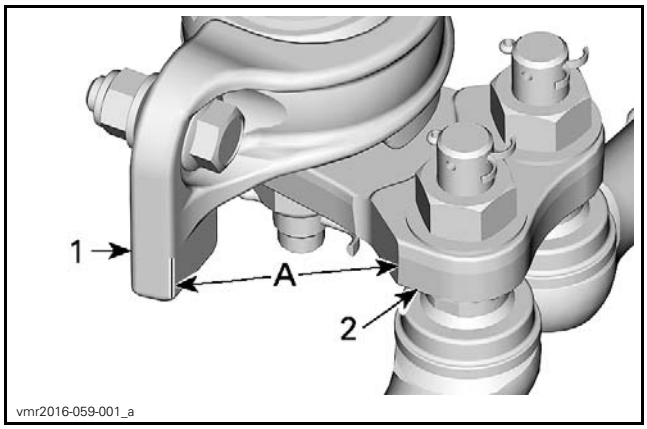
GENERAL

The procedures described below are the same for the RH and LH sides, unless otherwise instructed.

ADJUSTMENT

ALIGNING THE WHEELS

1. Place vehicle on a level surface.
2. Check pressure in each tire. Adjust to recommended pressure.
3. Lift and secure vehicle off the ground so that the suspension is fully extended.
4. Remove both inner fenders to have easy access to pitman arm.
5. Center pitman arm by measuring equal distances, ±1mm, between the edges as per the following illustration, on both sides of the pitman arm.



A. Equal distance ± 1 mm (1/32 in) on both sides
1. Steering column lower attach
2. Pitman arm

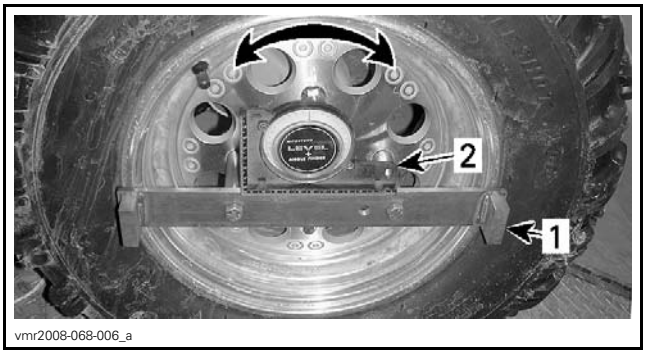
6. Secure handlebar without moving steering column.
7. Remove two wheel nuts on the LH rear wheel and install the steering alignment tool.

REQUIRED TOOL	
STEERING ALIGNMENT TOOL (P/N 529 036 059)	

8. Place a rope around all four tires using an elastic, link both ends together.

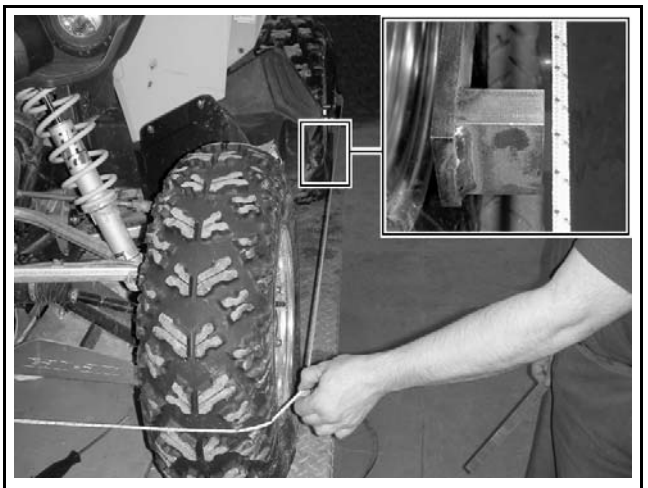
NOTE: The rope must be placed at the center of the wheels.

9. Rotate the front wheel to position the alignment tool level with the rope. Ensure rope passes over the spacer blocks on the alignment tool.



1. Steering adjustment tool
2. Angle gauge or level

10. At the LH front of wheel, near the front of the rim, pull on the rope so that it does not touch the first spacer block on the alignment tool.



TYPICAL

11. Slowly move rope back until it just makes contact with both spacers.

NOTE: Ensure rope remains in this position as you carry out the following steps.

TYPICAL

12. Measure the distance between the rope and the rim, at the front and at the rear of the wheel rim.

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TYPICAL — FRONT OF WHEEL

vmr2008-068-009

TYPICAL — REAR OF WHEEL

13. Calculate the difference between the front and rear measurements and compare with following specifications.

MODELS	SPECIFICATION
All Outlanders	0 mm to 3 mm (0 in to .118 in) **toe-in**
All Renegades	3 mm to 5.6 mm (.118 in to .22 in) **toe-in**

14. If the wheel toe measurement is out of specification, carry out the following:

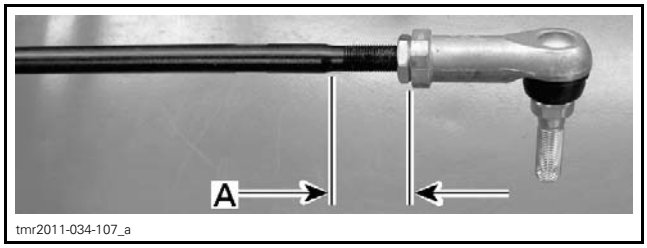
    14.1 Loosen tie-rod end lock nuts.

    14.2 Adjust tie-rod length.

    NOTE: For a toe-in adjustment, the distance must be longer at the front of the wheel. Lengthen tie-rod to increase toe-in, and vise-versa.

⚠ WARNING

The maximum unengaged tie-rod length must not exceed 32 mm (1.26 in) Tie rod unengaged length must be the same at both ends of the tie-rod.



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A. Maximum tie-rod end length

    14.3 Tighten tie-rod end lock nuts to specification.

TIGHTENING TORQUE	
Tie-rod end locking nut	34 N•m ± 2 N•m (25 lbf•ft ± 1 lbf•ft)

15. Repeat procedure for other front wheel.
16. Put the vehicle back on the ground.
17. Remove the handlebar securing device.
18. Place the front wheels in straight ahead position and adjust the handlebar in its center position by loosening the 4 bolts clamping the handlebar on the steering column.

PROCEDURES

HANDLEBAR GRIP

Removing the Handlebar Grip

1. Loosen the screw at the end of handlebar grip.
2. Remove the handlebar grip cap.
3. Cut and remove the handlebar grip.

Installing the Handlebar Grip

1. Remove all rubber residues of the old grip before installing the new.
2. Clean the handlebar with PULLEY FLANGE CLEANER (P/N 413 711 809) or alcohol to remove any greasy matter on it.
3. Install handlebar grip by blowing compressed air between handle grip and handlebar.
4. Install a SMOOTHFLOW™ TAPERED TIP (P/N 16 GA #511 RTT-B) from EFD Inc on a bottle of LOCTITE 406 (GLUE) (P/N 293 800 100).
5. Lift a part of the grip using a small screwdriver and inject glue (about 4 spots per side).

NOTE: The glue dries quickly. Do not apply it before installing grip.

6. Apply pressure on the grip for approximately 30 seconds to set the glue.
7. Install the handlebar grip cap and tighten screws to specification.

TIGHTENING TORQUE	
Handlebar grip cap screw	0.4 N•m (3.5 lbf•**in**)

HANDLEBAR COVER

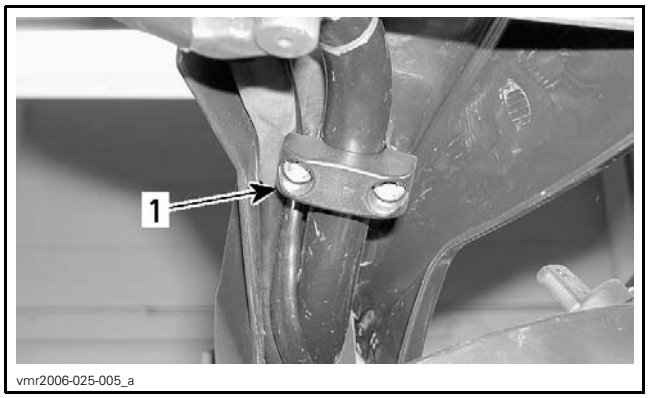
Removing the Handlebar Cover

Outlander

Pull on plastic handlebar cover to remove it from the handlebar.

Outlander XT

Unscrew both plastic U-clamps that attach handlebar cover to the handlebar.



TYPICAL
1. Plastic U-clamp

Renegade

Remove the 4 screws that secure the steering cover and handlebar to the steering head.

Renegade X xc

Remove the fabric steering cover, then pull the protective foam from the handlebar.

Inspecting the Handlebar Cover

Check covers for cracks or other damages. Replace if necessary.

Installing the Handlebar Cover

The installation is the reverse of removal procedure.

Renegade X xc 800R/1000

NOTE: Ensure handlebar "U" clamps in handlebar cover are tightened equally (equal distance on each side of clamps).

HANDLEBAR

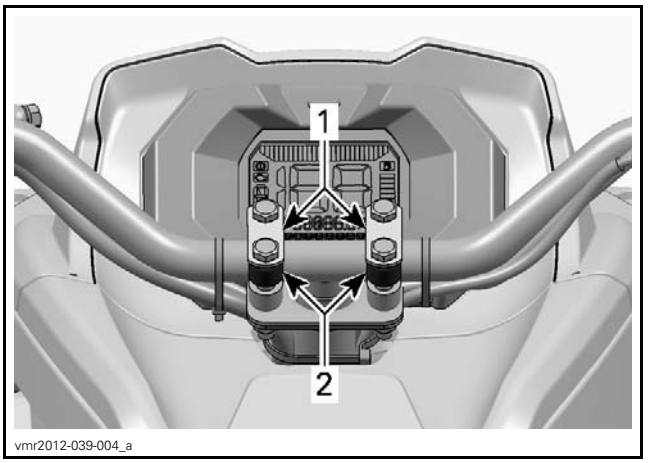
Removing the Handlebar

All Outlander Models

1. Remove handlebar cover.

NOTE: Remove handlebar grips, throttle handle, brake handle and multifunction switch only if the handlebar is defective and requires replacement.

2. Remove handlebar mounting bolts, stiffener and handlebar clamps.



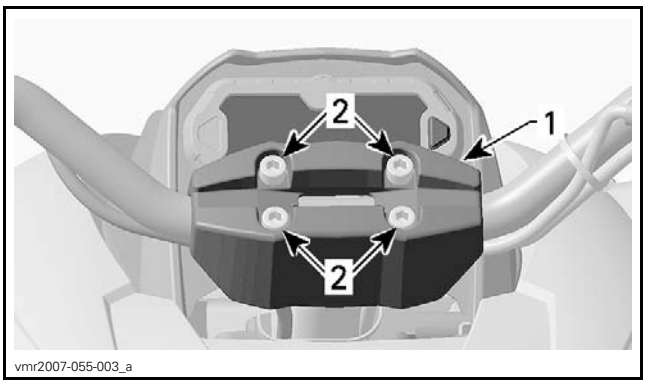
TYPICAL
1. Stiffeners
2. Handlebar clamps

3. Remove the handlebar.

Renegade Model

NOTE: Handlebar grips, throttle and brake levers as well as the multifunction switch should be removed only if the handlebar is defective and requires replacement.

1. Unscrew the four socket screws securing the moulded handlebar support.

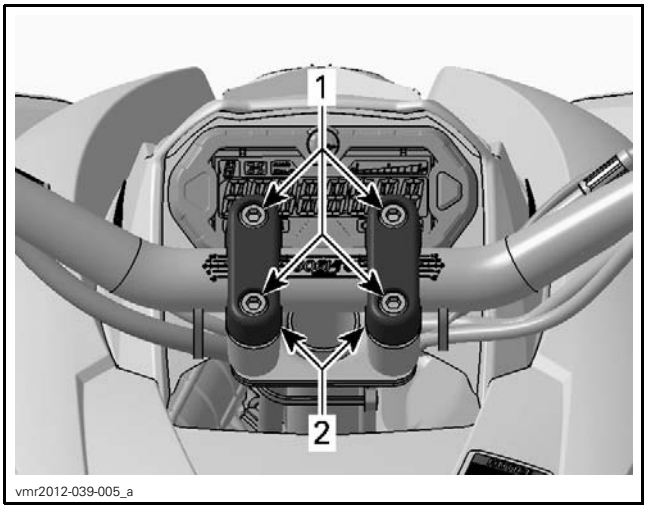


TYPICAL
1. Moulded handlebar support
2. Socket screws

2. Remove handlebar.

Renegade Models (X xc Model)

1. Remove fabric steering cover.
2. Pull foam protector from handlebar.
3. Remove the four socket screws, then remove the handlebar clamps.



1. Socket screws
2. Handlebar clamps

Inspecting the Handlebar

Inspect the handlebar for damage, cracks or bending. Replace if any of these problems is detected.

Installing the Handlebar

For the installation, reverse the removal procedure.

NOTE: Ensure handlebar "U" clamps are tightened equally (equal distance on each side of clamps).

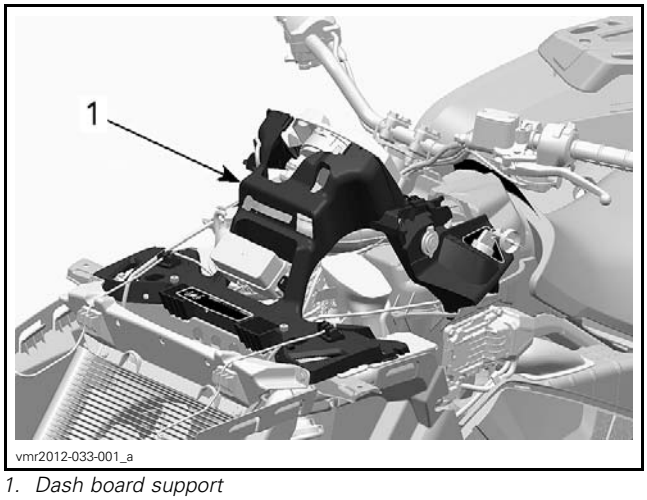
STEERING CONNECTORS

Steering Connector Access

1. Remove gauge support, refer to *GAUGE* subsection.

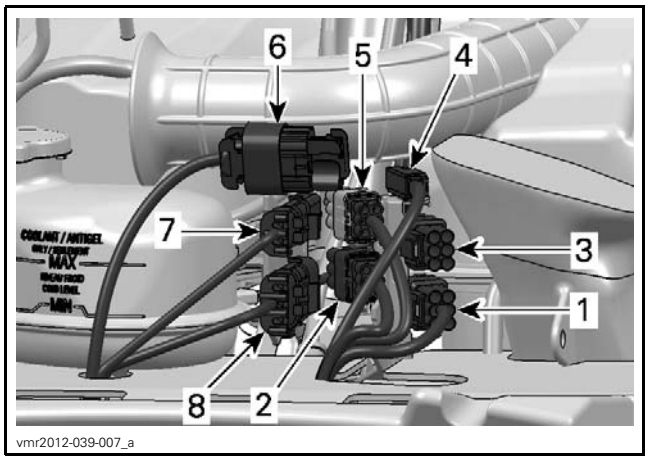
1. Gauge support

2. Remove front body module, refer to body subsection.
3. Remove dash board support.



1. Dash board support

Steering Connector Identification



STEERING CONNECTOR IDENTIFICATION
1. *MG1 (LH multifunction switch)*
2. *MG2 (LH multifunction switch)*
3. *MG3 (LH multifunction switch)*
4. *DC3 (DC power connector)*
5. *HIC1 (Engine interconnect)*
6. *HICA (Accessory interconnect)*
7. *SWW 2 (Switch winch)*
8. *SWW 1 (Switch winch)*

MULTIFUNCTION SWITCH

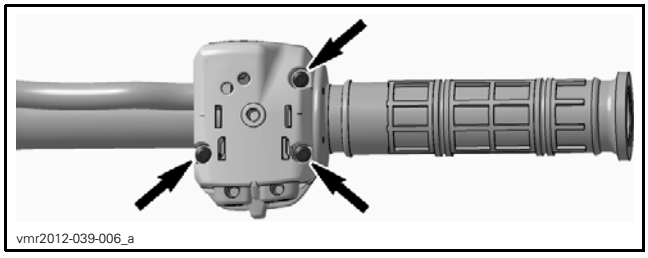
Removing the Multifunction Switch (From the Vehicle)

Remove gauge support. Refer to *GAUGE* subsection.

Carry out steps in *REMOVING THE MULTIFUNCTION SWITCH (AT HANDLEBAR)*.

Removing the Multifunction Switch (At Handlebar)

1. Remove multifunction switch screws.



TYPICAL - MULTIFUNCTION SWITCH

2. Separate multifunction switch from handlebar.
3. Disconnect multifunction switch steering connectors, refer to *STEERING CONNECTOR IDENTIFICATION* in this subsection:
   - MG1
   - MG2
   - MG3.
4. Take note of the positions of the locking ties securing the steering harness, then cut them and remove the multifunction switch steering harness from the vehicle.

Installing the Multifunction Switch

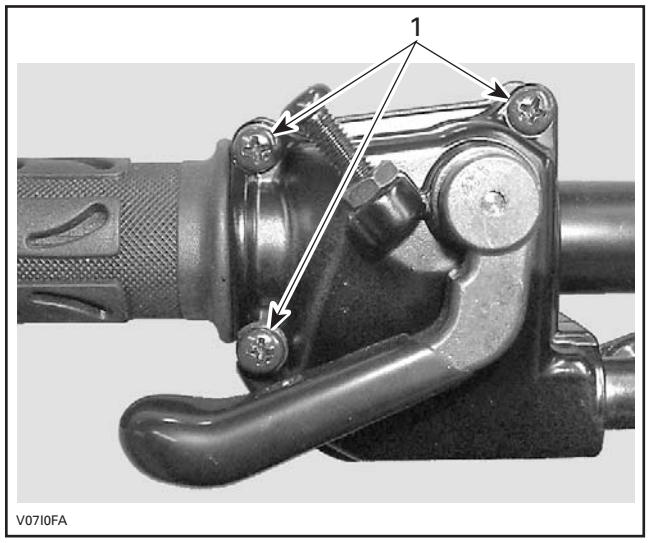
For installation, reverse the removal procedure.

NOTICE **Be sure to route and secure the multifunction switch steering harness as noted prior to removal.**

THROTTLE LEVER

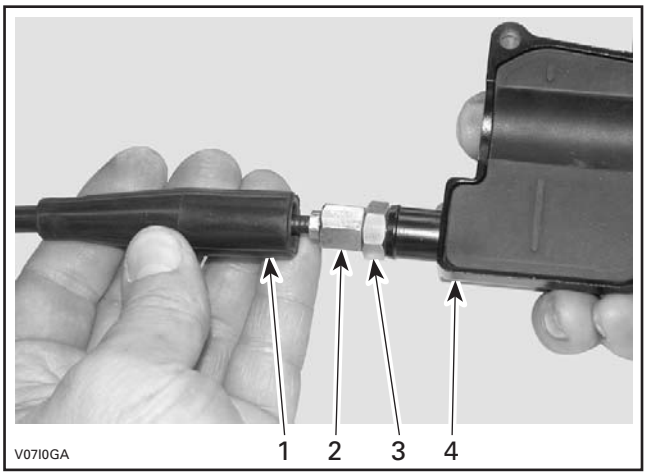
Removing the Throttle Lever

1. Disconnect the HIC1 connector (2/4WD switch), refer to *STEERING CONNECTORS* in this subsection.
2. Remove throttle lever housing retaining screws.



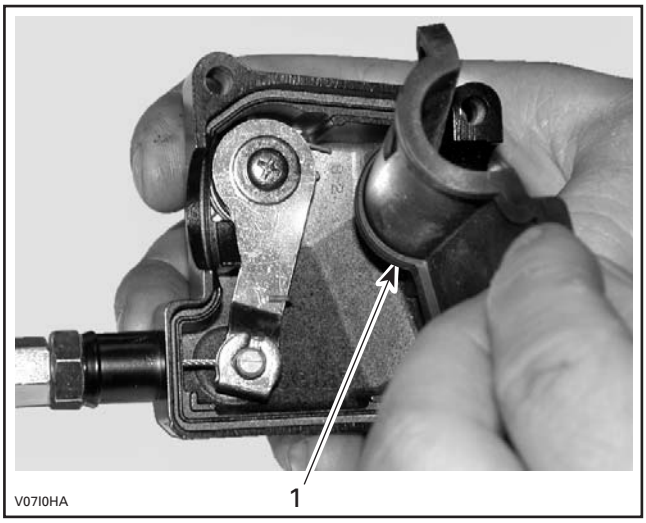
TYPICAL - THROTTLE LEVER HOUSING
1. *Remove retaining screws*

3. Separate throttle lever housing from handlebar.
4. Slide rubber protector back to expose throttle cable adjuster.



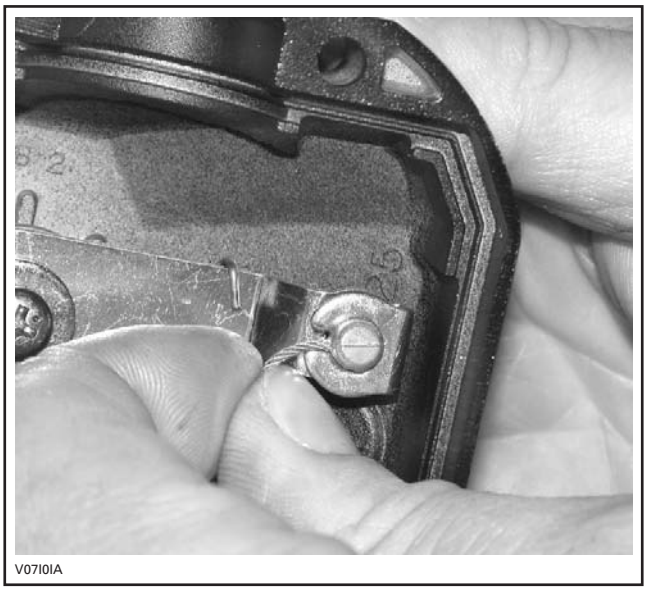
1. *Cable protector*
2. *Throttle cable adjuster*
3. *Lock nut*
4. *Throttle lever housing*

5. Loosen lock nut and screw in the throttle cable adjuster.
6. Remove inner housing protector.



1. *Inner housing protector*

7. Slide cable in clip slot and remove the end of the cable from clip.



8. Remove throttle cable from housing.

Installing the Throttle Lever

For installation, reverse the removal procedure.

Adjust throttle cable. Refer to *THROTTLE CABLE ADJUSTMENT* in *ELECTRONIC FUEL INJECTION (EFI)* subsection.

BRAKE LEVER

Removing the Brake Lever From the Vehicle

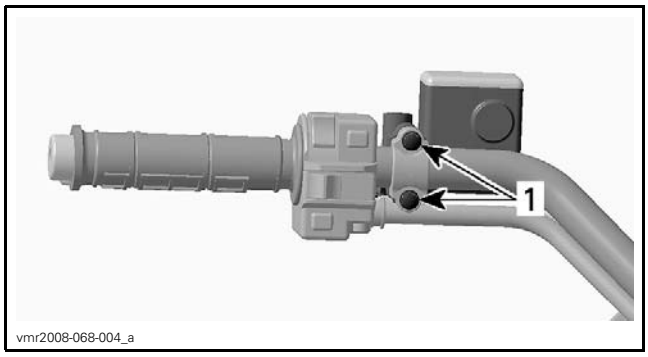
1. Carry out steps in *REMOVING THE BRAKE LEVER (AT HANDLEBAR)*.

NOTICE **Avoid spilling brake fluid on plastic, rubber or painted parts.**

2. Disconnect brake hose, refer to *BRAKES* subsection.

Removing the Brake Lever (At Handlebar)

1. Remove brake lever retaining screws.



TYPICAL
1. Remove these retaining screws

2. Separate brake lever from handlebar.

Installing the Brake Lever

For installation, reverse the removal procedure however, pay attention to the following.

TIGHTENING TORQUE	
Brake lever mounting screw	9 N•m ± 1 N•m (80 lbf•**in** ± 9 lbf•**in**)

⚠ WARNING

If brake hose was disconnected, bleed brake system. Refer to *BRAKES* subsection.

STEERING COLUMN BEARING

The steering column bearing(s) used on these vehicles are half bushings.

For inspection and replacement of steering column half bushings, refer to *STEERING COLUMN* in this subsection.

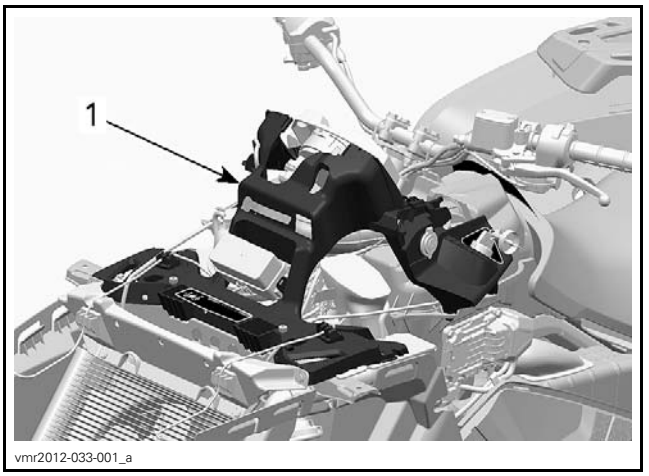
STEERING COLUMN

Removing the Steering Column (Without DPS)

1. Remove gauge support, refer to *GAUGE* subsection.
2. Remove the front body module, refer to *BODY* subsection.

Outlander Models

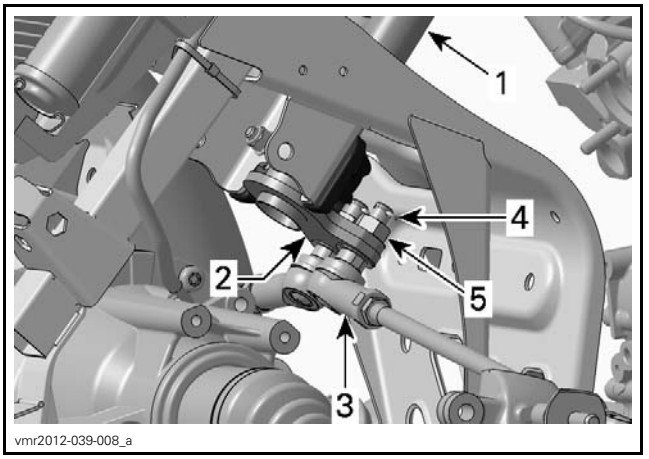
3. Remove dash board support.



TYPICAL - OUTLANDER MODELS
1. Dash board support

All Models

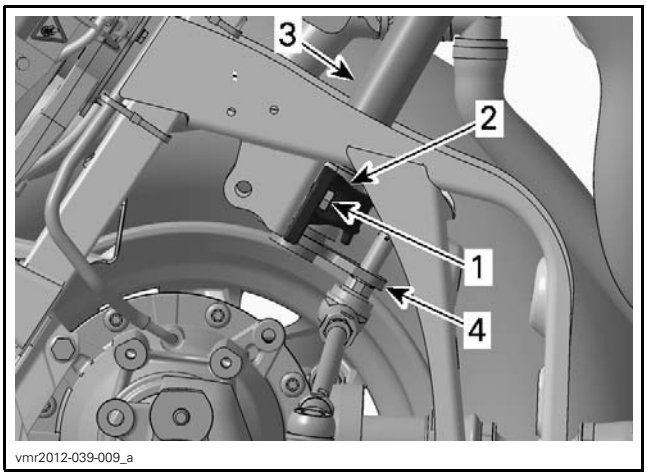
4. Remove the air intake silencer. Refer to *AIR INTAKE SYSTEM* subsection.
5. Remove handlebar, refer to *REMOVING THE HANDLEBAR* in this subsection. Also remove locking ties and separate wiring harnesses and hoses from the steering column.
6. Disconnect the tie-rods from the pitman arm at the bottom of the steering column. Refer to *TIE-ROD*, in this subsection.



TYPICAL
1. Steering column
2. Pitman arm
3. Tie-rod end
4. Cotter pin
5. Tie-rod retaining nut

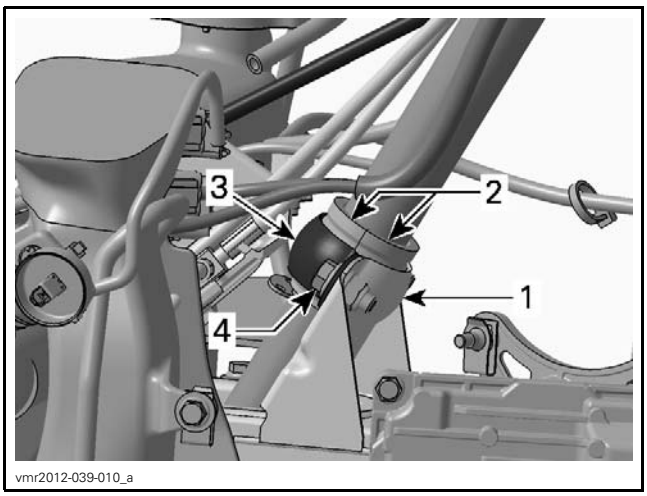
NOTE: When removing tie-rods from pitman arm, take note of positions of flat washers for installation.

7. Remove lower half bushing retaining bolts and pull retainer off of half bushings.



TYPICAL
1. *Lower retainer mounting screws (2)*
2. *Lower half bushing retainer*
3. *Steering column*
4. *Pitman arm*

8. Remove upper half bushing retaining bolts and pull retainer off of half bushings.



TYPICAL
1. *Upper steering column support*
2. *Half bushings*
3. *Half bushing retainer*
4. *Retainer mounting screws (2)*

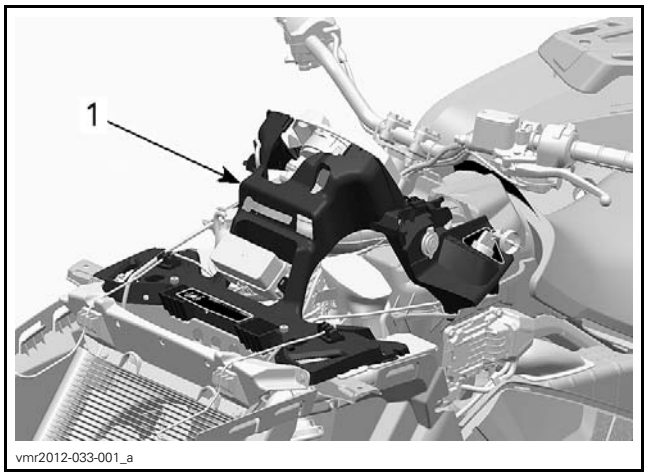
9. Pull steering column from vehicle.

Removing the Steering Column (With DPS)

1. Remove gauge support, refer to *GAUGE* subsection.
2. Remove the front body module, refer to *BODY* subsection.

Outlander Models

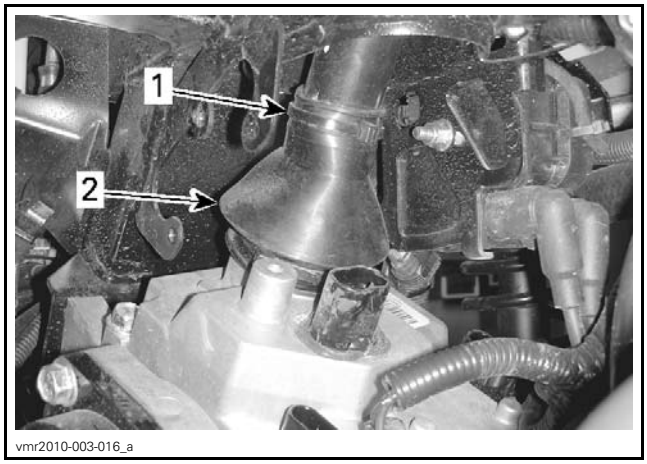
3. Remove dash board support.



TYPICAL - OUTLANDER MODELS
1. *Dash board support*

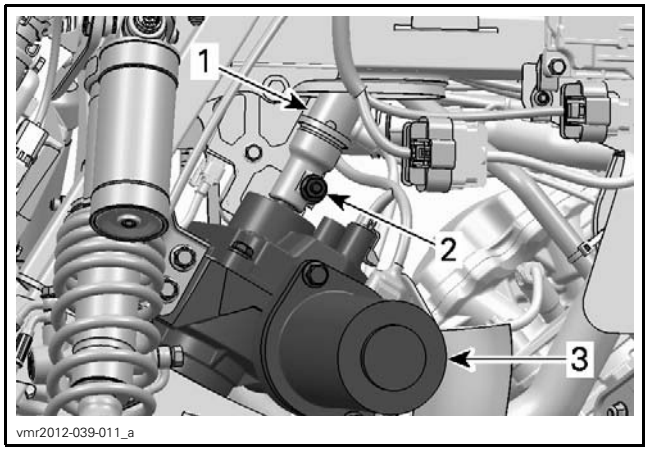
All Models

4. Remove the air intake silencer. Refer to *AIR INTAKE SYSTEM* subsection.
5. Remove handlebar, refer to *REMOVING THE HANDLEBAR* in this subsection. Also remove locking ties and separate wiring harnesses and hoses from the steering column.
6. Cut the locking ties securing the boot at the bottom of the steering column.



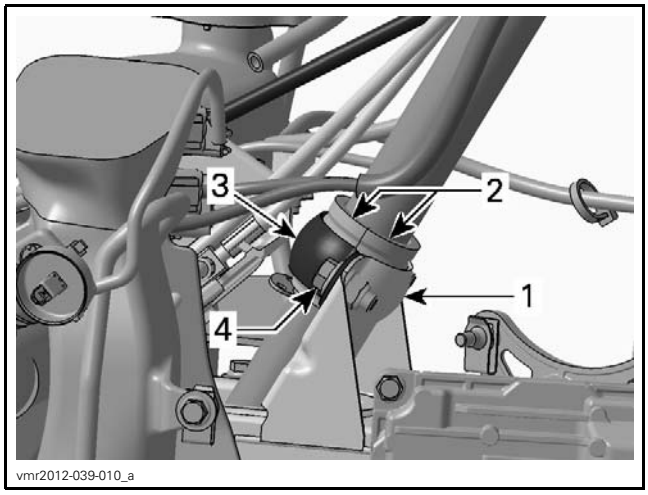
7. Roll up the boot to access the steering column pinch bolt.
8. Remove sthe pinch bolt.

NOTE: Some parts in following illustration not shown for clarity of illustration.



1. Steering column
2. Steering column lower pinch bolt
3. DPS unit

9. Remove upper half bushing retaining bolts and pull retainer off of half bushings.



TYPICAL
1. Upper steering column support
2. Half bushings
3. Half bushing retainer
4. Retainer mounting screws (2)

10. Pull steering column from vehicle.

Inspecting the Steering Column

1. Inspect steering column for wear, cracks or bending. Replace if any of these problems is detected.
2. Check steering column O-rings for brittleness, hardness, wear or other damage. Replace if necessary.
3. Clean and check steering column half bushings. If they show signs of wear or cracking, replace them.

Installing the Steering Column

For the installation, reverse the removal procedure however, pay attention to the following.

PRODUCT	
O-rings and half bushings	XPS SYNTHETIC GREASE (P/N 293 550 010)
DPS input and output shaft splines	LOCTITE 767 (ANTISEIZE LUBRICANT) (P/N 293 800 070)

Install **NEW** cotter pins (as applicable per model). Both ends of cotter pins must be folded.

Install **NEW** elastic nuts where used.

Torque all fasteners as specified in the applicable exploded view.

Carry out a steering alignment, refer to *ALIGNING THE WHEELS* in this subsection.

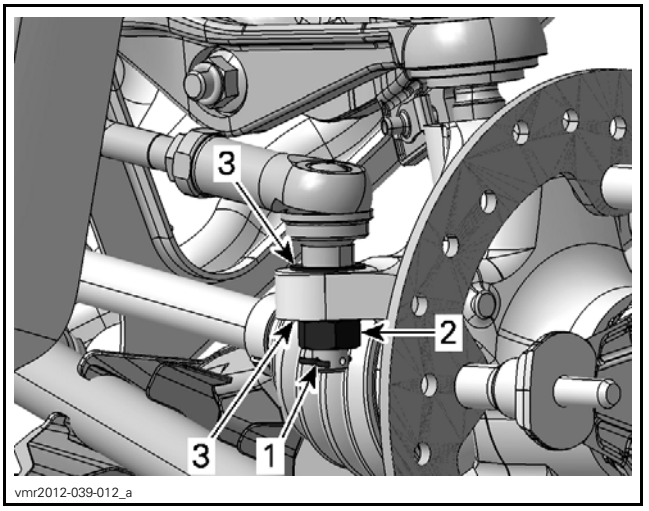
Reset the torque sensor offset, refer to *RESETTING THE TORQUE OFFSET* in the appropriate *DYNAMIC POWER STEERING (DPS)* subsection.

TIE-ROD

NOTE: Use the same procedure for RH and LH side.

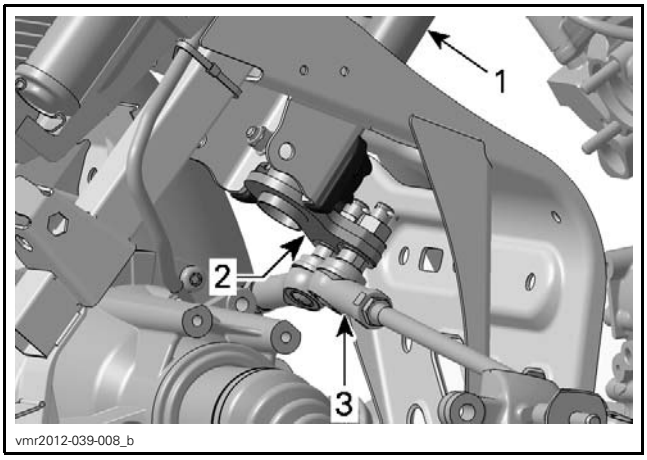
Removing the Tie-Rod

1. Place vehicle on jack stands and remove the applicable wheel.
2. Remove tie-rod end from steering knuckle by removing:
   – Cotter pin (discard)
   – Retaining nut
   – Hardened washers (note position).



TYPICAL - TIE ROD AT STEERING KNUCKLE
1. Cotter pin
2. Elastic nut
3. Hardened washers

3. If completely removing tie-rod from vehicle, repeat previous step at pitman arm.



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TYPICAL
1. *Steering column*
2. *Pitman arm*
3. *Tie-rod end*

Inspecting the Tie-Rod

Inspect tie-rod for straightness, cracks and other damages. Replace as required.

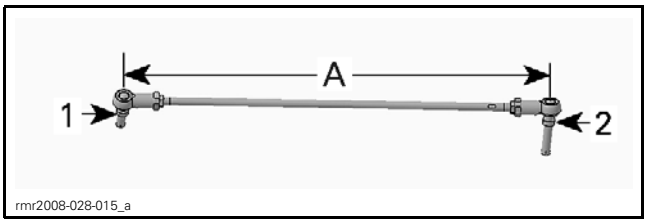
Inspect tie-rod ends for wear or excessive play. If excessive, replace the tie-rod end.

Installing the Tie-Rod

For the installation, reverse the removal procedure. Pay attention to the following details.

When installing a new tie-rod or tie-rod end, adjust tie-rod to nominal length.

TIE-ROD NOMINAL LENGTH	
Dimension "A" - center to center	416.4 mm (16.394 in)



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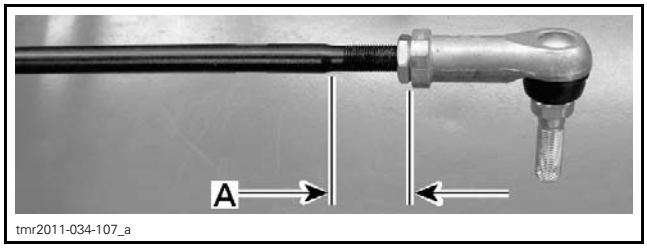
NOMINAL LENGTH
1. *Pitman arm side*
2. *Knuckle side*

A. 416.4 mm (16.394 in)

TIE-ROD MAXIMUM UNENGAGED LENGTH	
Dimension "A" - Shoulder to tie rod end face	32 mm (1.26 in)

⚠ WARNING

Maximum tie-rod unengaged length must not exceed specification. Both tie-rod ends must be engaged equally.



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MAXIMUM TIE-ROD UNENGAGED LENGTH
A. 32 mm (1.26 in)

Install **NEW** cotter pins. Both ends of cotter pins must be folded.

Check the steering alignment, refer to *ALIGNING THE WHEELS* in this subsection.

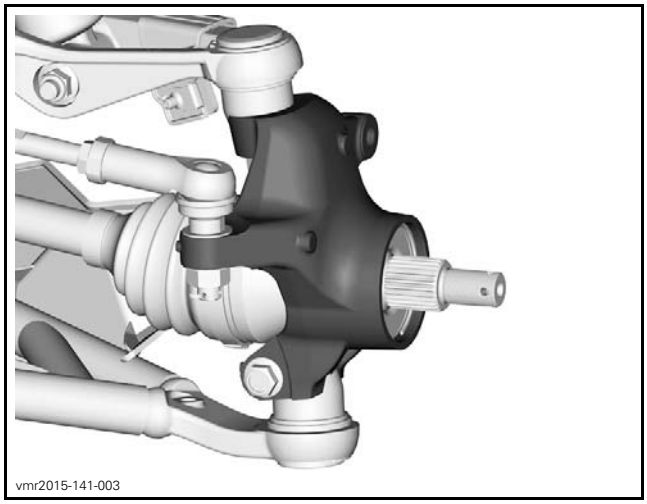
Apply specified torques.

TIGHTENING TORQUE	
Tie-rod lock nut	34 N•m ± 2 N•m (25 lbf•ft ± 1 lbf•ft)
Tie rod end retaining nut	72 N•m ± 7 N•m (53 lbf•ft ± 5 lbf•ft)

KNUCKLE

Removing the Knuckle

1. Safely lift and support the front of vehicle.
2. Remove front wheel.
3. Detach tie-rod end from knuckle, refer to *TIE-ROD* in this subsection.
4. Remove brake caliper, refer to *BRAKES* subsection.
5. Remove wheel hub, refer to the appropriate *FRONT DRIVE* subsection.


vmr2015-141-003

6. Detach upper suspension arm from knuckle, refer to *FRONT SUSPENSION*.
7. Detach lower suspension arm from knuckle, refer to *FRONT SUSPENSION*.

8. Remove knuckle from vehicle.

Inspecting the Knuckle

Check knuckle for cracks or other damages. Replace if necessary.

Check if wheel bearing turns freely and smoothly. See *WHEEL BEARINGS* in this subsection.

Installing the Knuckle

The installation is the reverse of removal procedure.

WHEEL BEARINGS

Inspecting the Wheel Bearing (Maintenance)

Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

Inspecting the Wheel Bearing (During Component Removal)

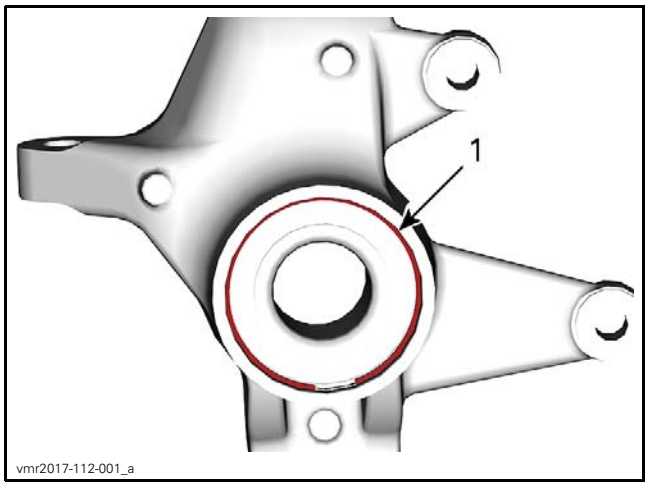
Whenever the drive axle or knuckle is removed, check wheel bearing as follows:

– Check if wheel bearing turns freely and smoothly.
– Check seal condition.

Replace if necessary.

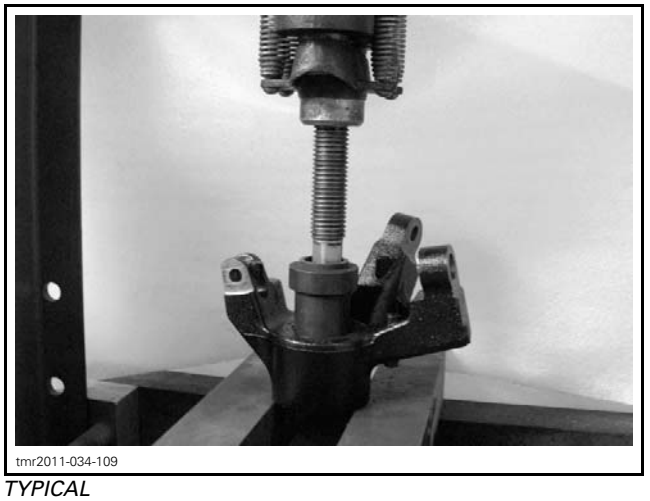
Removing the Wheel Bearing

1. Remove knuckle from vehicle, refer to *REMOVING THE KNUCKLE* in this subsection.
2. Remove the circlip.



1. Circlip

3. Install knuckle on a press.
4. Remove bearing from knuckle using an appropriate bearing remover.



TYPICAL

NOTE: It may be necessary to heat the knuckle to remove bearing.

⚠ WARNING

Clean all grease from outside and inside of knuckle before heating it.

Installing the Wheel Bearing

The installation is the reverse of the removal procedure. However, pay attention to the following.

To ease wheel bearing installation:

– Place bearing in a freezer for 10 minutes.
– Place knuckle in oven to 100°C (212°F) for 30 minutes maximum.

When knuckle is cooled down, install NEW circlip and NEW seal.

PITMAN ARM (WITHOUT DPS)

The pitman arm is replaced with the steering column. Refer to *STEERING COLUMN* in this subsection.

PITMAN ARM (WITH DPS)

Refer to the appropriate *DYNAMIC POWER STEERING (DPS)* subsection.

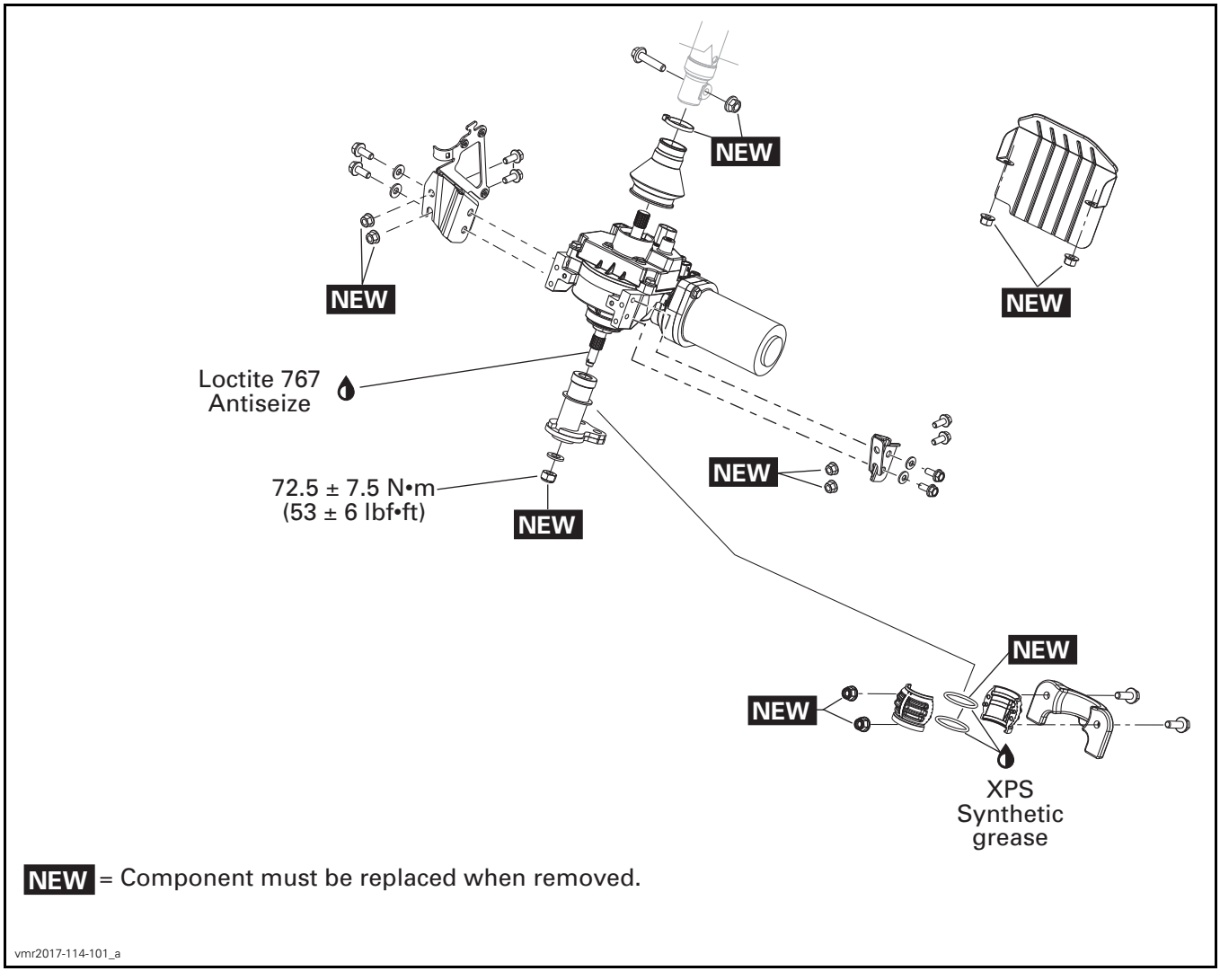
DYNAMIC POWER STEERING (DPS) - 3-CONNECTOR TYPE

SERVICE TOOLS

Description	Part Number	Page
PITMAN ARM JIG	529 036 225	22, 24
PITMAN ARM PULLER	529 036 227	23
POSITIONING ADAPTOR	529 036 230	23

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 767 (ANTISEIZE LUBRICANT)	293 800 070	24
XPS SYNTHETIC GREASE	293 550 010	18



NEW = Component must be replaced when removed.

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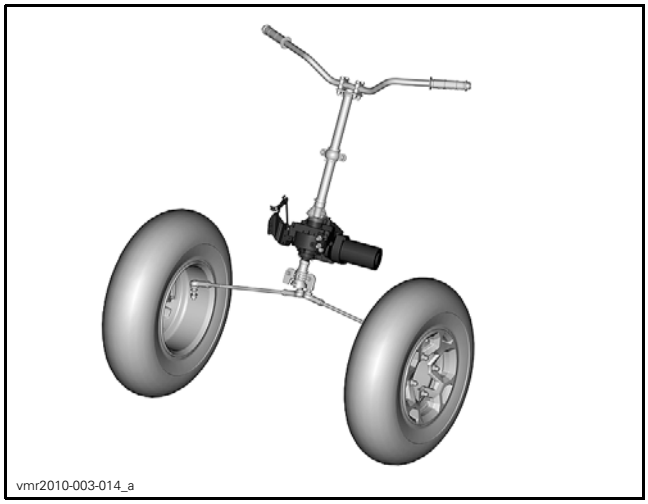
GENERAL

SYSTEM DESCRIPTION (FEATURES)

The Dynamic Power Steering (DPS) provides a computer controlled, variable power assist, achieved by an electric motor to optimize the amount of steering input required by the rider.



1. Dynamic power steering unit (DPS)

The DPS system uses the following parameters to determine how much steering assist it provides:
- Engine RPM
- Battery/electrical system voltage
- Vehicle speed
- DPS shaft torque sensor input.
- DPS temperature.

The amount of steering assist provided is dependent on the handlebar effort (steering torque), electrical power available, and vehicle speed.

The greater the handlebar effort (torque), the greater the assist will be.

The slower the vehicle speed, the greater the assist will be.

If the electrical system is activated but the engine is **not** running, there is **no** power assist provided.

When the handlebar is in the straight ahead position, there is no steering assist.

Steering torque may also come from the wheels due to rough terrain. Steering kickback is reduced while providing feedback to the driver.

The greater the power steering assist, the greater the load on the electrical system.

When the electrical system is under high load (battery not at full charge, operating the vehicle for prolonged periods of time at slow speed and low RPM which, requires higher power steering assist), the battery power reserve will gradually decrease. This further increases the load on the charging system and the electrical system voltage will drop. As system voltage drops, so does power steering assist.

NOTE: It is important to maintain the battery at a full state of charge to ensure proper DPS operation. The magneto output is 650 watts to minimize battery drain and system voltage drop.

DPS Assist Mode

The DPS system provides three rider selectable modes of operation.

NOTE: The system automatically adjusts to the speed of the vehicle and driving conditions. the modes are designed to meet the preference of the rider.

The following DPS modes are preset in the vehicle.

DPS MODE	
DPS MAX.	Maximum steering assist
DPS MED.	Medium steering assist
DPS MIN.	Minimum steering assist

A fourth mode of operation is available as an accessory to adjust the steering assist level for operation with an approved BRP track kit.

Derating Explanation

Derating is an internal protection system integrated in the DPS electronic module.

This system protects the electronic components when DPS works too hard and the internal temperature reaches a critical level.

It also protects electronics when current ripples in the system are too high. These current ripples can be caused by:
- Loose battery connections
- Low battery voltage
- Bad grounds
- Defective stator or bad stator output wires connection
- Failed regulator
- High electrical loads.

The internal protection system decreases the assistance level available to protect its electronic board. The normal assistance level will return

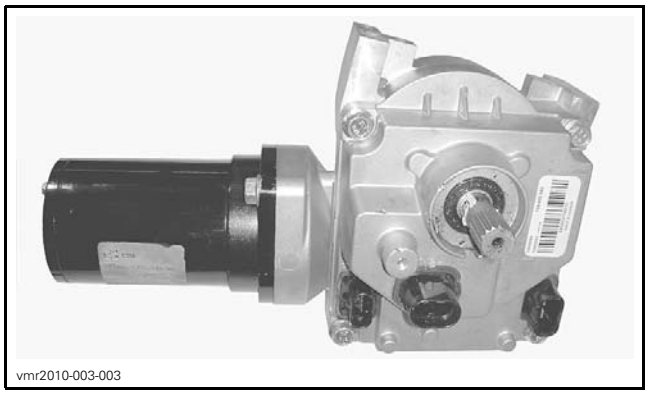
when riding conditions are back to normal and the internal temperature decrease and/or when the ripples in the electric circuit decreases.

NOTE: This reaction is a normal protective behavior of the unit and it does not necessarily raise a fault in the cluster.

DPS SYSTEM DESCRIPTION (COMPONENTS)

DPS Unit

The DPS unit is a self contained unit that includes the steering gear, the DPS module, the DPS motor, and the torque sensor.



TYPICAL - DPS UNIT

The DPS module provides DC power to the motor. The amount and duration of that DC power is determined by the inputs to the DPS module. The direction in which the motor turns is changed by reversing the polarity of the circuit current.

The DPS motor does not "spin", but rather turns in very small increments based on the amount, duration, and direction of DC power delivered by the DPS module.

NOTE: Should the DPS unit fail, vehicle steering is still available with increased steering effort.

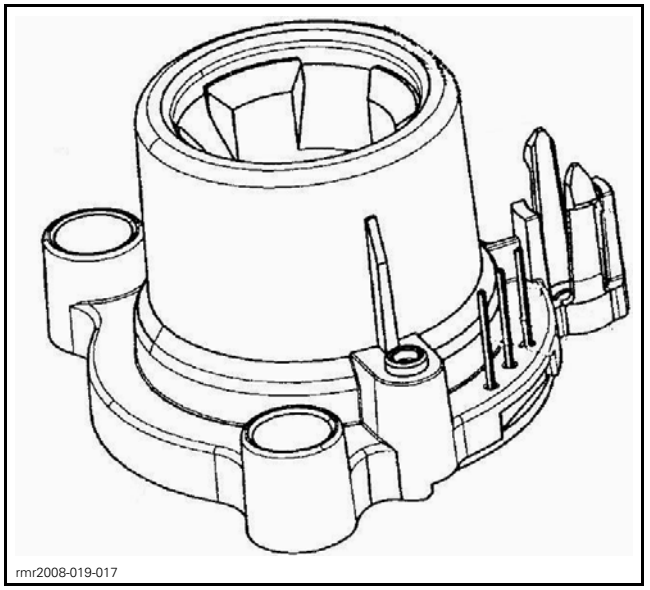
DPS Unit Protection

To protect the DPS electronic components, the steering assist behavior will change as follows.

CONDITION	DPS BEHAVIOR
When motor internal temperature reaches a certain temperature (DPS continuously estimates it)	Steering assist will gradually decrease
DPS **internal board temperature** is above 85°C (185°F)	
DPS **internal board temperature** is above 100°C (212°F)	Steering assist is stopped

When the DPS unit temperature is back within normal operating range, normal steering assist will resume.

Steering Torque Sensor



The steering column is connected to the shaft on the DPS unit. A small area of the DPS shaft is magnetized. Inside the DPS unit, a torque sensor surrounds the magnetized area of the DPS shaft.

When the handlebar is turned, torque is applied to the shaft which tends to twist the shaft slightly, deforming the magnetic field in the shaft. The sensor detects the torque by measuring the deviation of the magnetic field.

The torque sensor is very sensitive and can detect very small changes in the magnetic field. The harder the handlebar is turned, the greater the magnetic deviation, the greater the power steering assist.

ADJUSTMENT

RESETTING THE TORQUE OFFSET

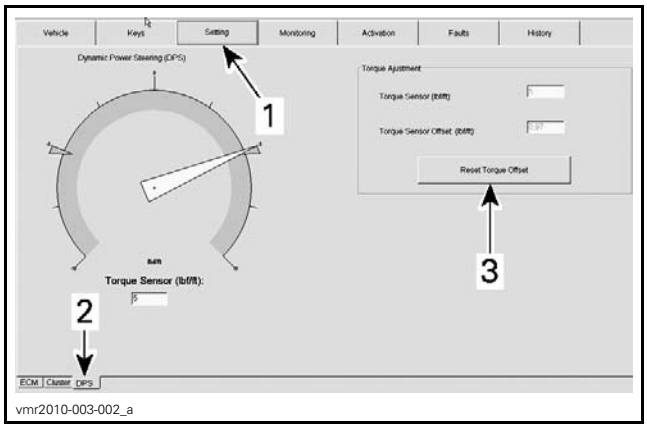
When replacing the following parts or adjusting steering alignment, the sensor torque offset **MUST** be reset to zero) for proper system operation.

PART ADJUSTED OR REPLACED	WHAT TO DO
– DPS unit – Steering column half bushings – Steering column – Tie rod – Tie rod end – Knuckle – Wheel bearing – Ball joint – Front suspension arm (lower/upper) – Pitman arm – Steering alignment	Reset Torque Offset in **Setting, DPS**

1. Ensure the wheels are correctly aligned, refer to *ALIGNING THE WHEELS* in the appropriate *STEERING SYSTEM* subsection.
2. Connect vehicle to the latest applicable B.U.D.S. software version.
3. In B.U.D.S., select **Read Data**.
4. Choose the **Setting** page tab.
5. At the bottom LH corner of the **Setting** page, choose the **DPS** tab.

NOTICE **Ensure handlebar is free and centered within ±10 degrees of center position. There MUST NOT be any effort applied to the steering column.**

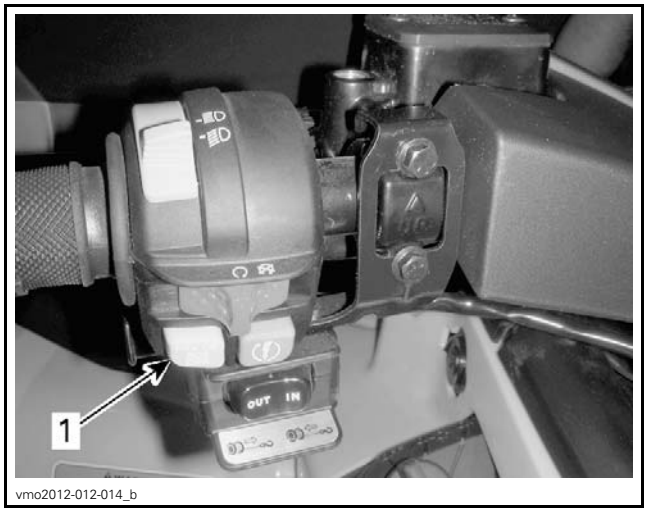
6. Press **Reset Torque Offset** button.



DPS TORQUE OFFSET RESET
1. Setting page tab
2. DPS tab
3. Reset Torque Offset button

DPS ASSIST MODE

1. **To view** the active DPS ASSIST mode, momentarily press and release the OVERRIDE/DPS button on the LH multifunction switch assembly.

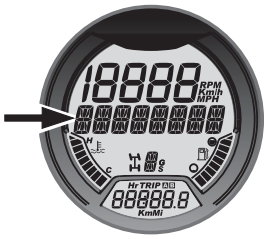


1. OVERRIDE/DPS/ACS button

The active DPS mode will be displayed in the lower portion of multifunction gauge.

LCD gauge

1. DPS mode indication



ANALOG/DIGITAL GAUGE

1. DPS mode display

2. **To change** DPS ASSIST mode, press and hold the OVERRIDE/DPS button for approximately 2 seconds to go to the next setting.

The DPS system will toggle to the following available mode. The newly activated DPS mode will be briefly displayed in the multifunction gauge.

3. Repeat previous step to toggle through the available mode.

NOTE: The DPS mode of operation cannot be changed if the vehicle is in reverse. The DPS/Override switch must be released between each DPS mode selection.

TROUBLESHOOTING

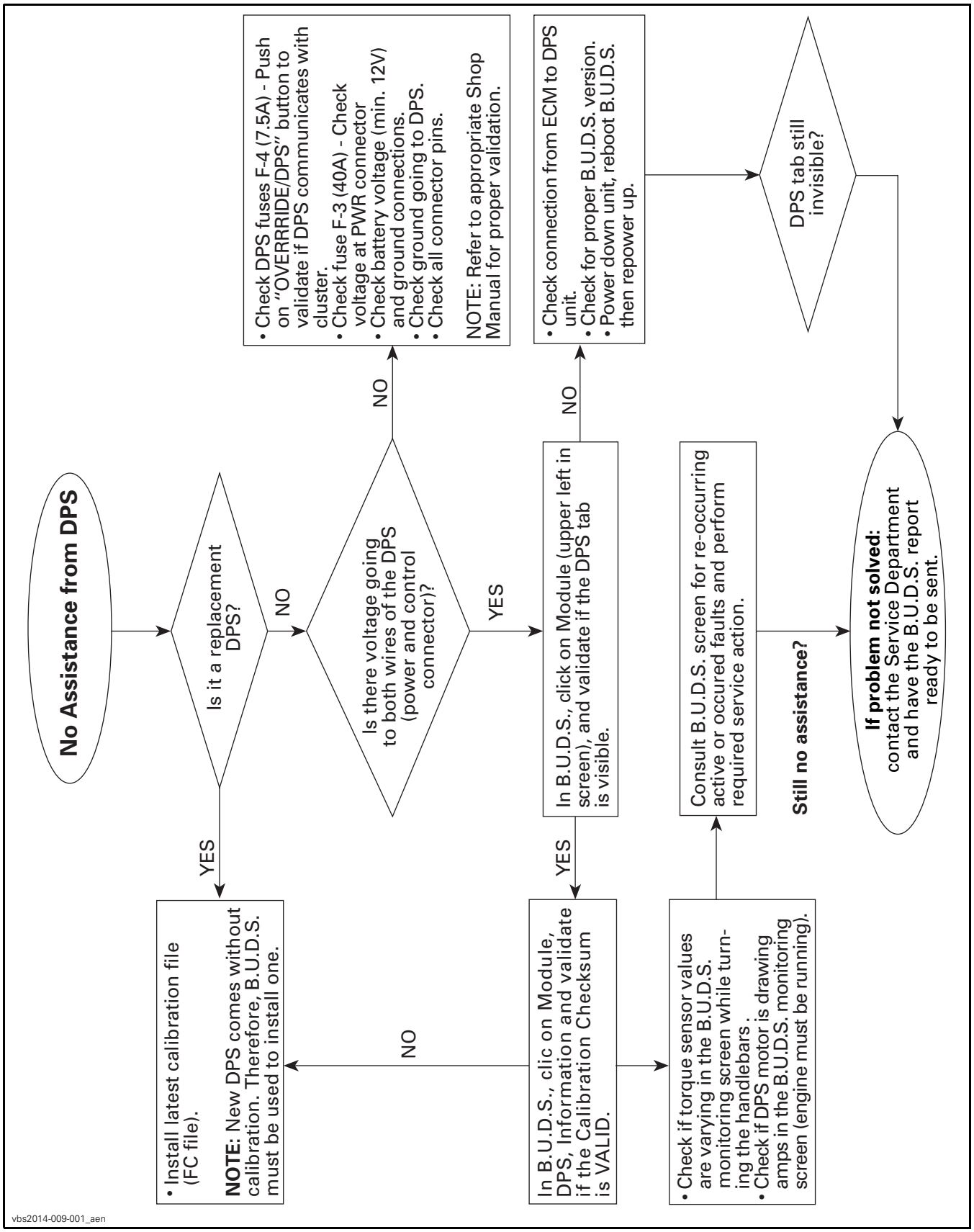
TROUBLESHOOTING FLOW CHARTS

Use the troubleshooting flow charts to diagnose a problem. If a problem cannot be solved, contact a service representative for support before replacing a DPS.

Here is the list of provided flow charts:

– Flow chart A: No Assistance From DPS
– Flow chart B: DPS Intermittent Assistance
– Flow chart C: Derating or Limited Assistance
– Flow chart D: Free Play Felt in Steering System
– Flow chart E: Steering Turn Easier on One Side than the Other.

Flow Chart A


No Assistance from DPS
Is it a replacement DPS?
YES
NO
Is there voltage going to both wires of the DPS (power and control connector)?
NO
• Check DPS fuses F-4 (7.5A) - Push on "OVERRRIDE/DPS" button to validate if DPS communicates with cluster.
• Check fuse F-3 (40A) - Check voltage at PWR connector
• Check battery voltage (min. 12V) and ground connections.
• Check ground going to DPS.
• Check all connector pins.
NOTE: Refer to appropriate Shop Manual for proper validation.
YES
In B.U.D.S., click on Module (upper left in screen), and validate if the DPS tab is visible.
NO
• Check connection from ECM to DPS unit.
• Check for proper B.U.D.S. version.
• Power down unit, reboot B.U.D.S. then repower up.
DPS tab still invisible?
• Install latest calibration file (FC file).
NOTE: New DPS comes without calibration. Therefore, B.U.D.S. must be used to install one.
NO
In B.U.D.S., clic on Module, DPS, Information and validate if the Calibration Checksum is VALID.
YES
• Check if torque sensor values are varying in the B.U.D.S. monitoring screen while turning the handlebars .
• Check if DPS motor is drawing amps in the B.U.D.S. monitoring screen (engine must be running).
Consult B.U.D.S. screen for re-occurring active or occured faults and perform required service action.
Still no assistance?
If problem not solved: contact the Service Department and have the B.U.D.S. report ready to be sent.
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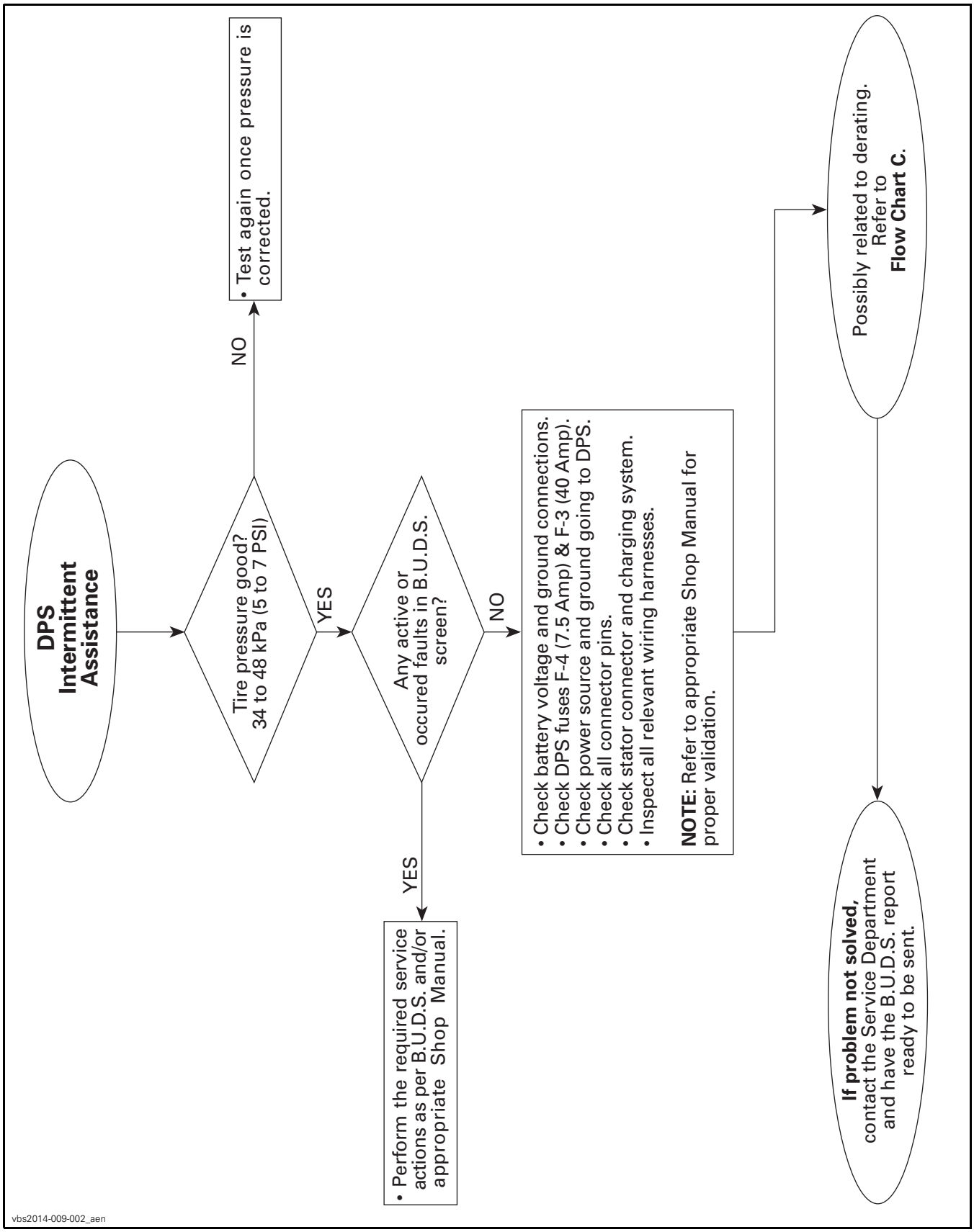
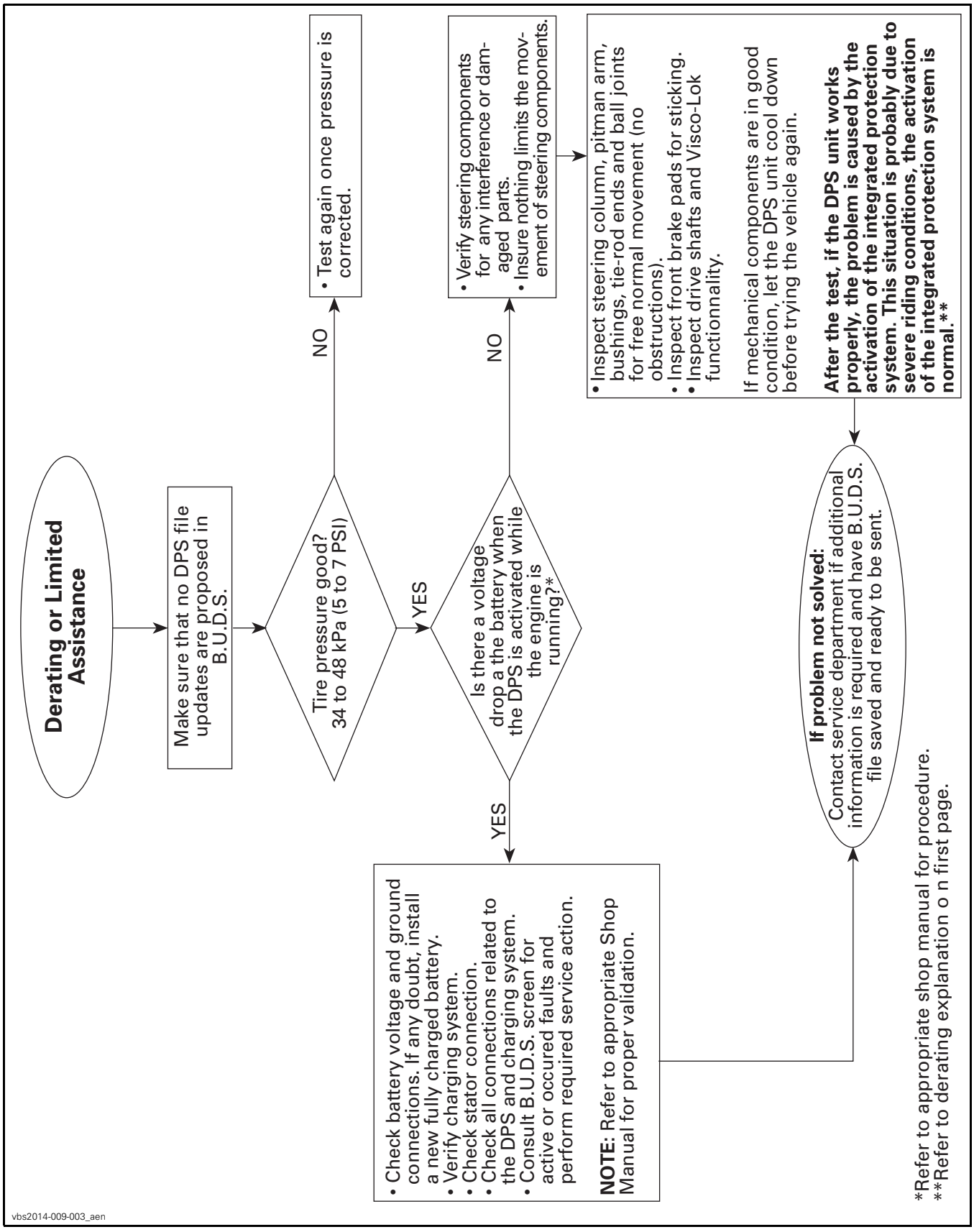
Flow Chart B


DPS Intermittent Assistance
Tire pressure good? 34 to 48 kPa (5 to 7 PSI)
NO
• Test again once pressure is corrected.
YES
Any active or occured faults in B.U.D.S. screen?
YES
• Perform the required service actions as per B.U.D.S. and/or appropriate Shop Manual.
NO
• Check battery voltage and ground connections.
• Check DPS fuses F-4 (7.5 Amp) & F-3 (40 Amp).
• Check power source and ground going to DPS.
• Check all connector pins.
• Check stator connector and charging system.
• Inspect all relevant wiring harnesses.
NOTE: Refer to appropriate Shop Manual for proper validation.
Possibly related to derating. Refer to **Flow Chart C**.
If problem not solved, contact the Service Department and have the B.U.D.S. report ready to be sent.
vbs2014-009-002_aen

Flow Chart C


Derating or Limited Assistance
Make sure that no DPS file updates are proposed in B.U.D.S.
Tire pressure good? 34 to 48 kPa (5 to 7 PSI)
NO
• Test again once pressure is corrected.
YES
Is there a voltage drop a the battery when the DPS is activated while the engine is running?*
NO
• Verify steering components for any interference or damaged parts.
• Insure nothing limits the movement of steering components.
• Inspect steering column, pitman arm, bushings, tie-rod ends and ball joints for free normal movement (no obstructions).
• Inspect front brake pads for sticking.
• Inspect drive shafts and Visco-Lok functionnality.
If mechanical components are in good condition, let the DPS unit cool down before trying the vehicle again.
After the test, if the DPS unit works properly, the problem is caused by the activation of the integrated protection system. This situation is probably due to severe riding conditions, the activation of the integrated protection system is normal.**
YES
• Check battery voltage and ground connections. If any doubt, install a new fully charged battery.
• Verify charging system.
• Check stator connection.
• Check all connections related to the DPS and charging system.
• Consult B.U.D.S. screen for active or occured faults and perform required service action.
NOTE: Refer to appropriate Shop Manual for proper validation.
If problem not solved:
Contact service department if additional information is required and have B.U.D.S. file saved and ready to be sent.
*Refer to appropriate shop manual for procedure.
**Refer to derating explanation o n first page.
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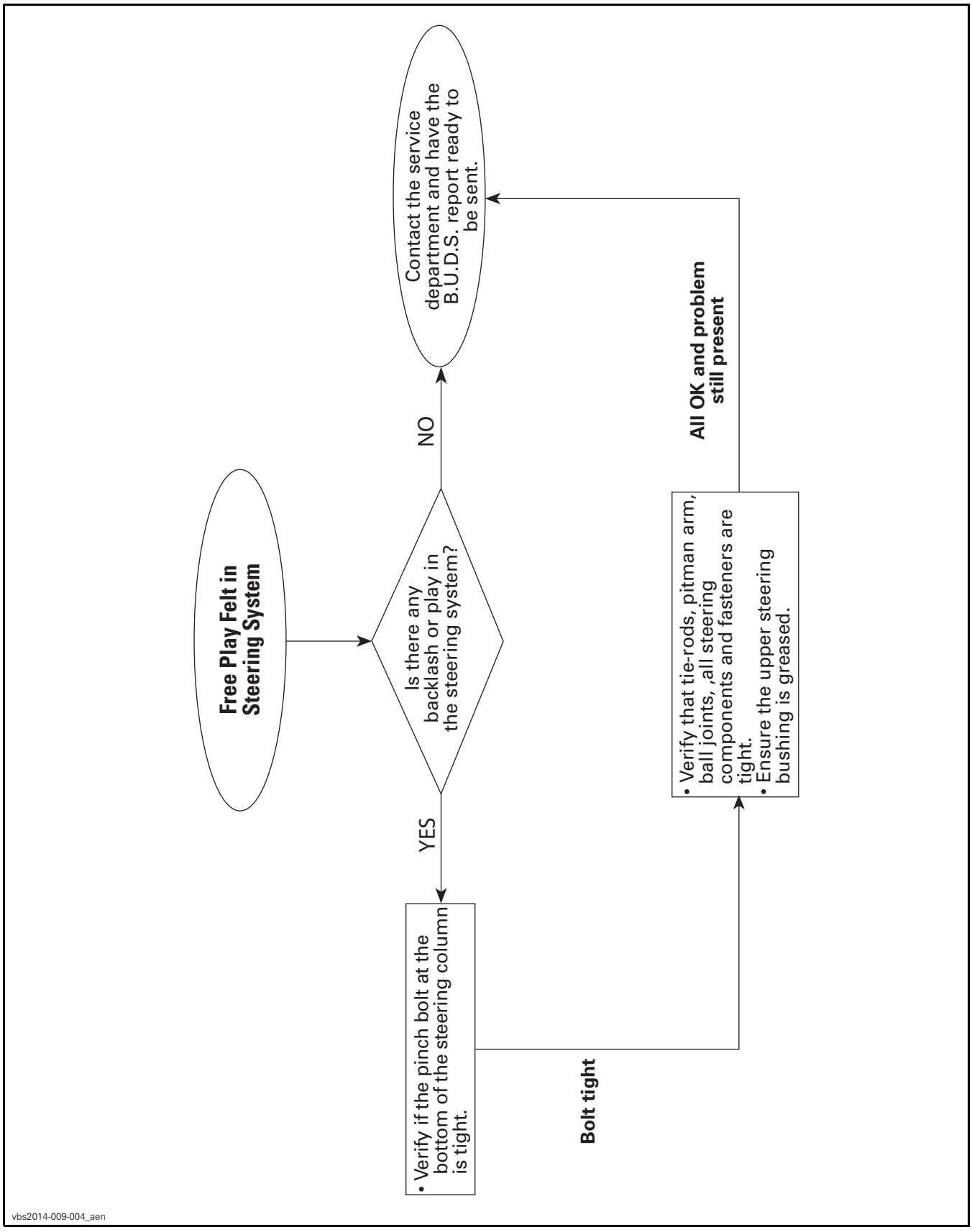
Flow Chart D


Free Play Felt in Steering System
Is there any backlash or play in the steering system?
NO
Contact the service department and have the B.U.D.S. report ready to be sent.
YES
• Verify if the pinch bolt at the bottom of the steering column is tight.
Bolt tight
• Verify that tie-rods, pitman arm, ball joints, ,all steering components and fasteners are tight.
• Ensure the upper steering bushing is greased.
All OK and problem still present
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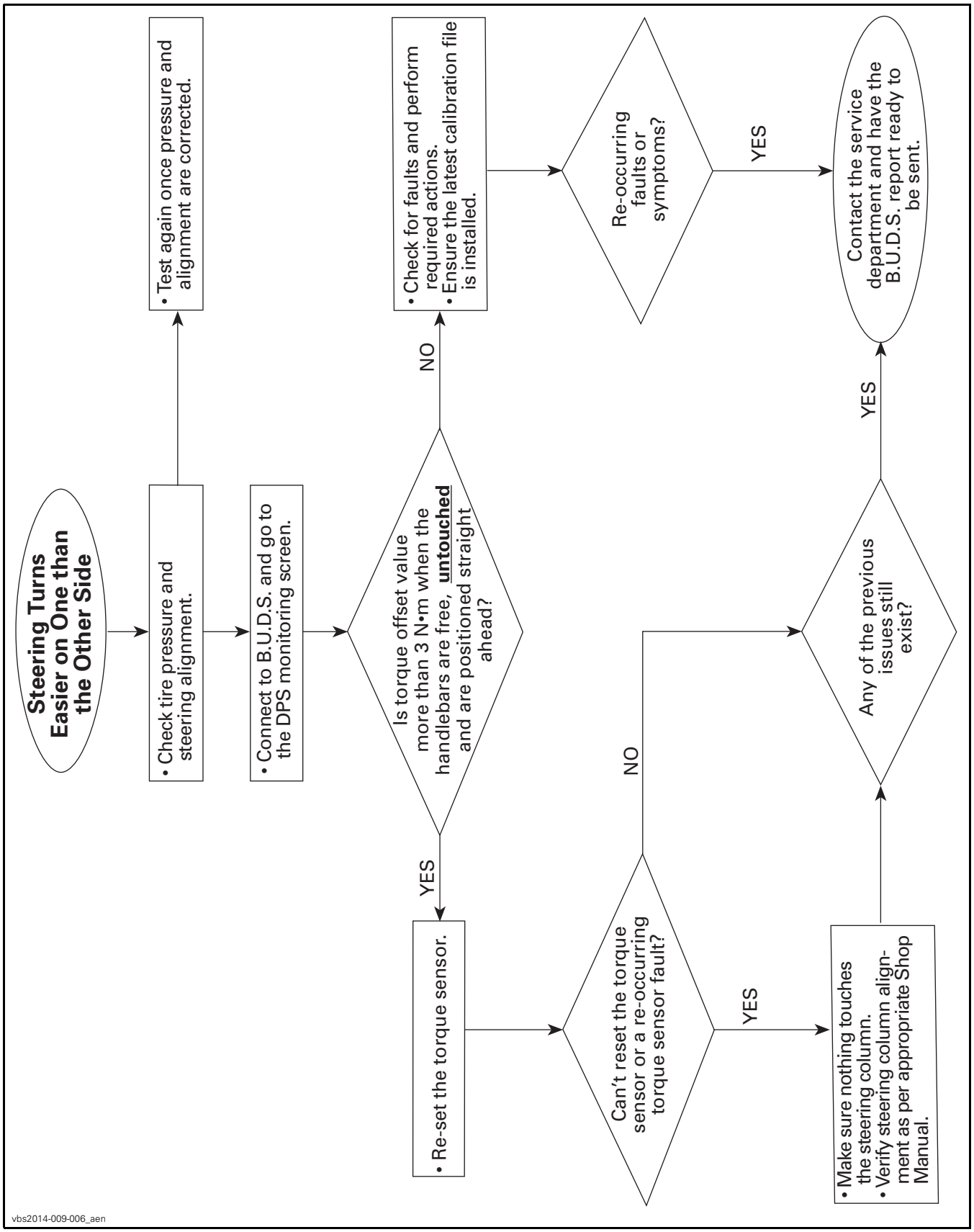
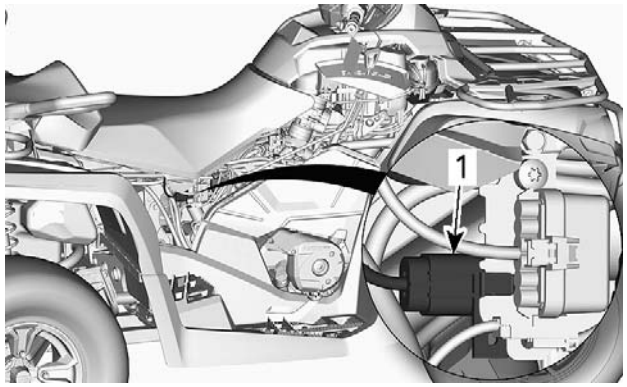
Flow Chart E


Steering Turns Easier on One than the Other Side
• Check tire pressure and steering alignment.
• Test again once pressure and alignment are corrected.
• Connect to B.U.D.S. and go to the DPS monitoring screen.
Is torque offset value more than 3 N•m when the handlebars are free, untouched and are positioned straight ahead?
NO
• Check for faults and perform required actions.
• Ensure the latest calibration file is installed.
Re-occurring faults or symptoms?
YES
Contact the service department and have the B.U.D.S. report ready to be sent.
YES
• Re-set the torque sensor.
Can't reset the torque sensor or a re-occurring torque sensor fault?
NO
Any of the previous issues still exist?
YES
• Make sure nothing touches the steering column.
• Verify steering column alignment as per appropriate Shop Manual.
YES
vbs2014-009-006_aen

PROCEDURES

DPS UNIT

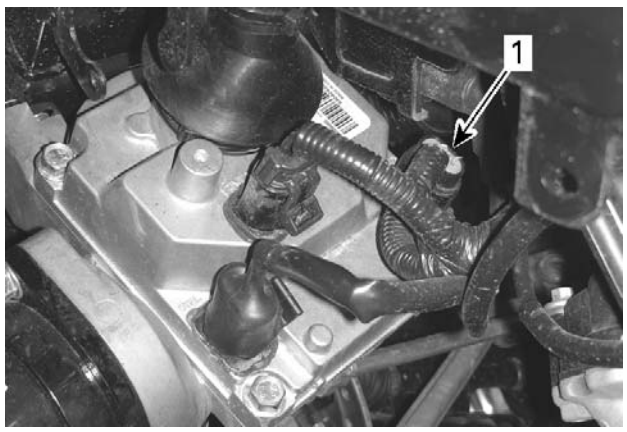
DPS Unit Fuse Location



1. DPS (F2) fuse

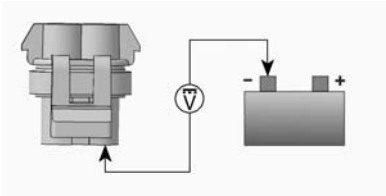
Testing the DPS Unit Input Voltage (Power Side)

1. Disconnect the DPS PWR (power) connector.



TYPICAL
1. DPS PWR connector (motor power)

2. Test for 12 Vdc DPS motor power at DPS2-A and DPS2-B as per following table.

MULTIMETER PROBE POSITIONS		VOLTAGE
DPS2 power connector pin A	Battery ground	Battery voltage
DPS2 power connector pin B		
 rmr2008-028-091_a		

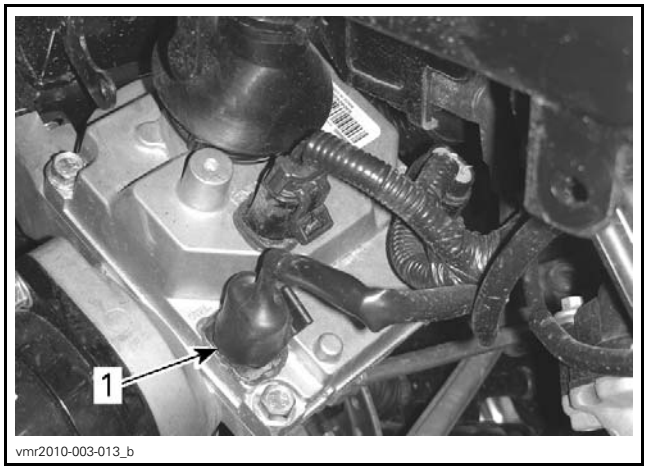
If NO voltage is measured, test the 40 A DPS fuse in the rear fuse holder (F2). If good, check wires and connector pins. Replace or repair defective parts and reset fault codes.

If battery voltage is measured, carry out the following *TESTING THE DPS UNIT INPUT VOLTAGE (CONTROL SIDE)*.

NOTE: This test may also be carried out by connecting a 12 Vdc test light between each DPS PWR connector pins (A and B), and the battery (-) negative terminal. The test light must come on bright.

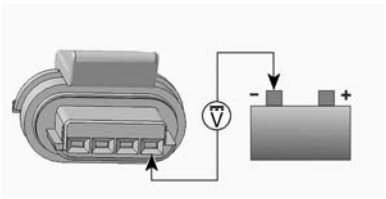
Testing the DPS Unit Input Voltage (Control Side)

1. Disconnect DPS CTRL (control) connector.



TYPICAL
1. DPS CTRL (control) connector

2. Set the ignition switch to ON.
3. Set the engine RUN/STOP switch to RUN.
4. Test for 12 Vdc power to the DPS module at DPS1-A as per following table.

MULTIMETER PROBE POSITIONS	VOLTAGE
DPS control connector (pin A) and battery ground	Battery voltage
 rmr2008-028-093_a	

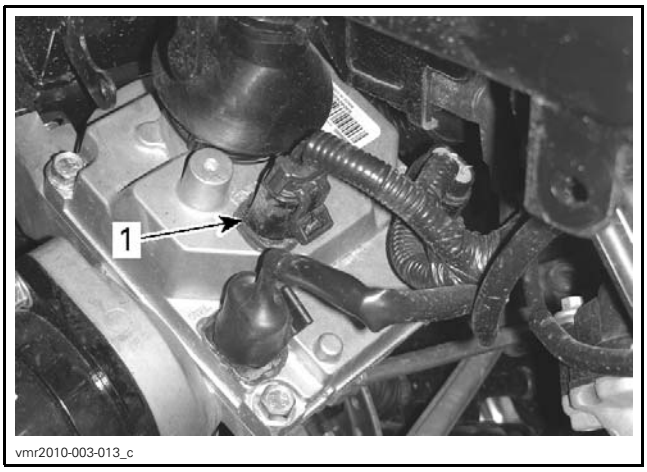
If NO voltage is measured, check wires and connector pins from DPS unit to the Relays/Speedo fuse in front fuse box (PF1-F4). Replace or repair defective parts and reset fault codes.

If battery voltage is measured, carry out the following *TESTING THE DPS UNIT GROUND CIRCUIT*.

NOTE: This test may also be carried out by connecting a 12 Vdc test light between the DPS control connector (pin A), and the battery (-) negative terminal. The test light must come on bright.

Testing the DPS Ground Circuit

1. Disconnect the DPS ground connector (GDN).



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TYPICAL
1. DPS ground connector (GDN)

2. Test for continuity between DPS3-A and DPS3-B to battery ground.

MULTIMETER PROBE POSITIONS		READING
DPS GDN connector pin A	Battery ground	Continuity (close to 0 Ω)
DPS GDN connector pin B		

If there is NO continuity or a high resistance is measured, check wires and connector pins from DPS unit to chassis ground post. Replace or repair defective parts and reset fault codes.

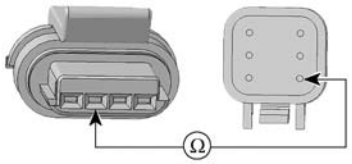
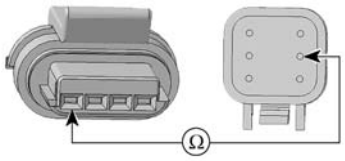
If there is good continuity, carry out the following *TESTING THE DPS UNIT COMMUNICATION LINK (CAN) CONTINUITY*.

NOTE: This test may also be carried out by connecting a 12 Vdc test light between each GDN connector pin and the battery (+) positive terminal. The test light must come on bright.

Testing the DPS Unit Communication Link (CAN) Continuity

NOTE: DPS unit must receive an RPM signal to provide power steering assist.

1. Disconnect the DPS control connector and the diagnostic connector.
2. Test continuity of CAN Bus Wires at DPS1-C and DPS1-D.

MULTIMETER PROBE POSITIONS	RESISTANCE @ 20°C (68°F)
DPS control connector (pin C) and diagnostic connector (pin 1)	Below 1 Ω
 rmr2008-028-094_a	
DPS control connector (pin D) and diagnostic connector (pin 2)	
 rmr2008-028-094_b	

If resistance measured is out of specification, check wires and connector pins. Carry out repairs as required and reset fault codes using B.U.D.S software.

If resistance measured is good, replace the DPS unit and reset fault codes using B.U.D.S software.

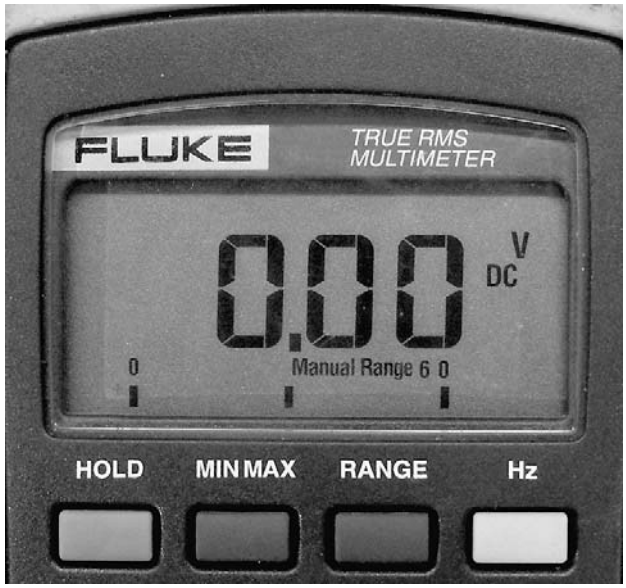
Testing the DPS System Load

If the charging system cannot sustain normal voltage when the DPS is operating, DPS ASSIST may be greatly reduced or nonexistent. Carry out the following steps.

1. Measure the battery voltage.

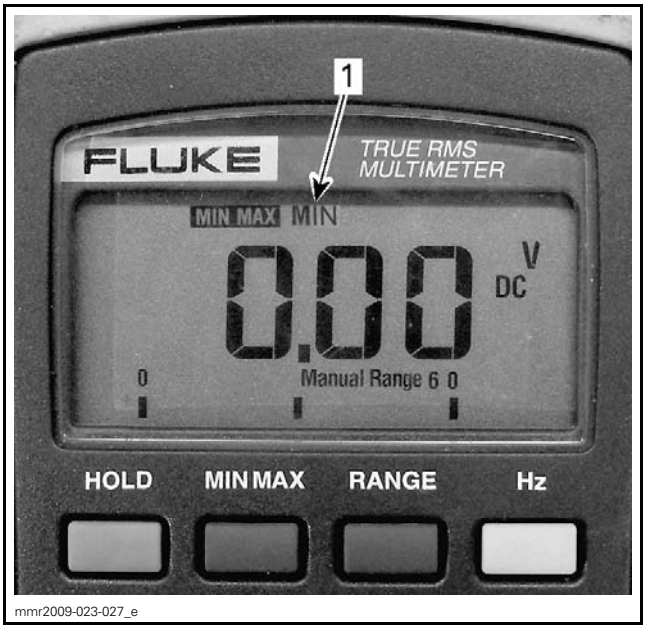
NOTE: If battery voltage is low, recharge battery.

2. Ensure the vehicle transmission is set to PARK.
3. Start the engine.
4. Note the voltage on the multimeter with the engine running (charging system voltage).
5. Press the RANGE button repeatedly to select Manual Range 6 0.



VDC SELECTED TO MANUAL RANGE 6 0

6. Press the MIN MAX button on the multimeter to engage the MIN function.



1. MIN function selected

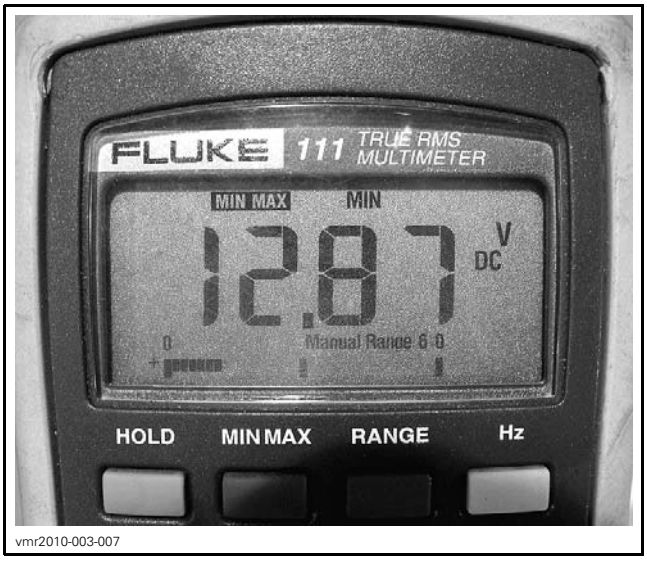
7. Turn the handlebar momentarily against the steering frame stops to each side.

NOTE: Do not hold steering against frame stops for an extended period of time.

8. Read the MIN charging system voltage recorded while the handlebar was turned against each stop.

DPS SYSTEM LOAD TEST			
PROBE POSITIONS		STEERING POSITION	VOLTAGE READING
Battery (-) terminal	DPS fuse holder pin B	LH stop	At least 12 Vdc
		RH stop	

NOTE: Turning the handlebar momentarily against the frame stops generates maximum DPS load (maximum current draw on electrical system). Electrical system must sustain at least 12 Vdc for proper DPS operation.



vmr2010-003-007

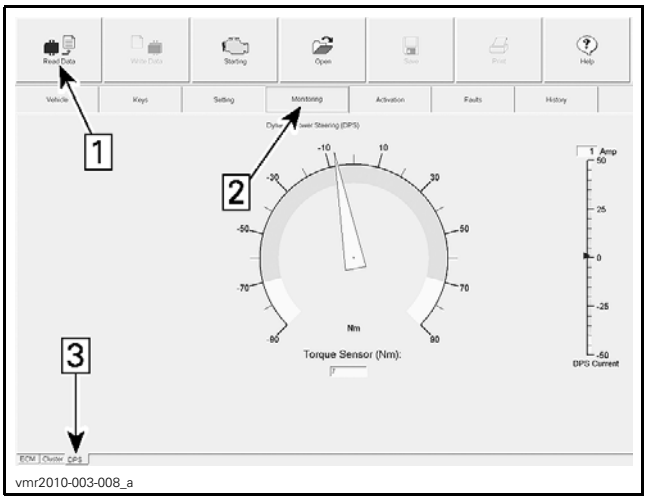
If the electrical system cannot sustain at least 12 Vdc, check the following:

– Battery
– Battery connections
– DPS unit power and ground connections
– Charging system
– Frame and engine ground studs.

If the previously listed items, carry out the following *TESTING THE DPS UNIT CURRENT*.

Testing the DPS Unit Current

1. Connect vehicle to the latest applicable B.U.D.S. software version.
2. Click on the **Read Data** button.
3. Choose the **Monitoring** page tab.
4. At the bottom of the **Monitoring** page, choose the **DPS** tab.



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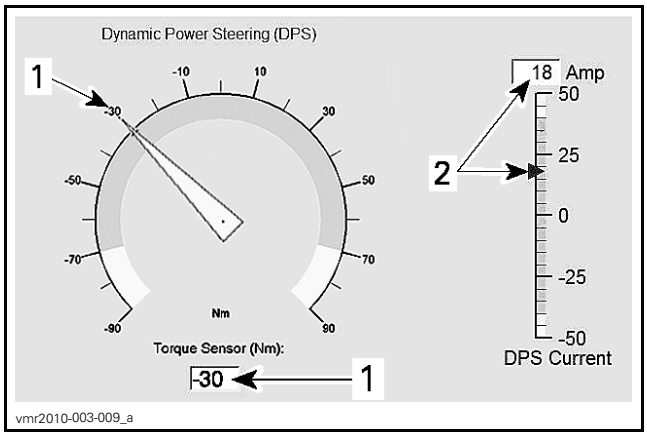
Step 1: Press Data button
Step 2: Select Monitoring page tab
Step 3: Select DPS tab

5. With the vehicle engine running in PARK, turn the handlebar side to side, momentarily against each stop and observe the indications on the B.U.D.S. DPS **Monitoring** page.

The DPS **Torque Sensor Nm** increase with torque applied to handlebar.

The **DPS Current** ammeter should increase proportionately to the torque applied, and decrease with the torque as steering assist is provided.



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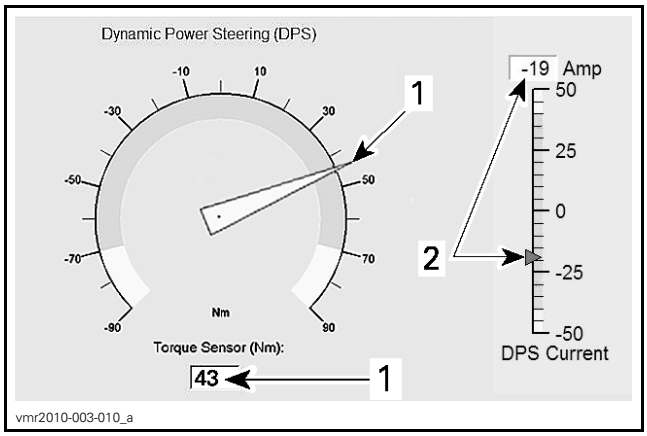
TYPICAL - LH TURN
1. Torque sensor indication (negative)
2. DPS current indication (positive)



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TYPICAL - RH TURN
1. Torque sensor indication (positive)
2. DPS current indication (negative)

NOTE: Increase and decrease in torque and current readings is very brief as steering assist is quickly provided. Current draw should remain within green scale but may momentarily peak to 60 amps, then drop off close to 0 amps as torque applied is nulled out by steering assist. A residual torque of 2 N•m (18 lbf•**in**) with a corresponding current draw is acceptable.

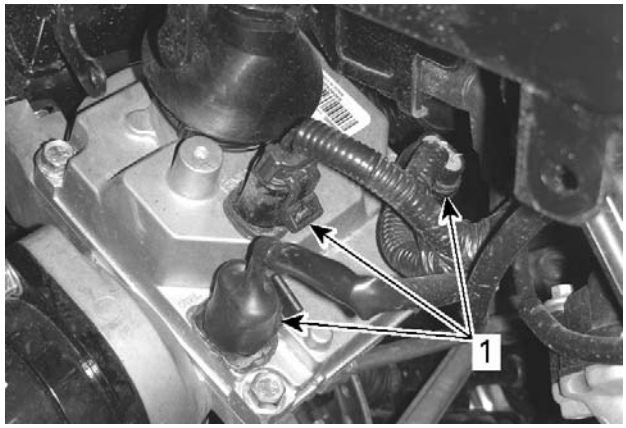
If current draw tends to remain high, carry out the following:

– Steering alignment check.

– Steering column shim adjustment at half bushings as described in the *INSTALLING THE DPS UNIT* procedure detailed in this section.
– *RESETTING THE TORQUE OFFSET RESET* procedure detailed in this section.
– Replace DPS unit.

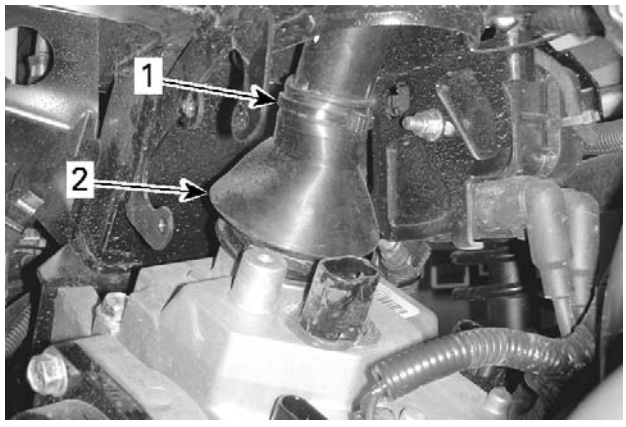
Removing the DPS Unit

1. Remove the front body module, refer to *BODY* subsection.
2. Remove both inner fender panels
3. Remove the CVT air inlet duct assembly, refer to *AIR INTAKE SYSTEM* subsection.
4. Disconnect the 3 electrical connectors from the DPS unit.



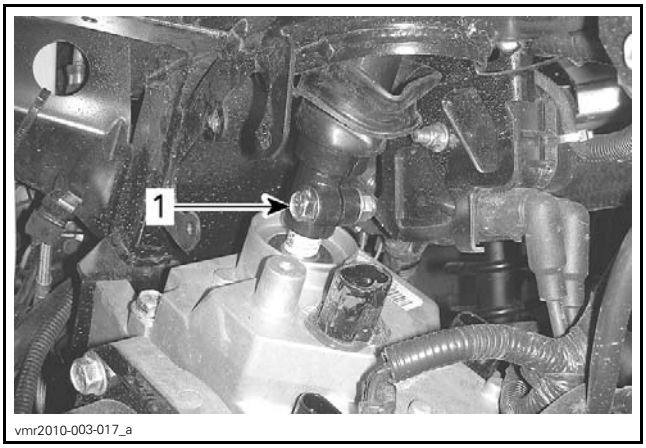
TYPICAL
1. DPS connectors (3x)

5. Cut the locking tie securing the bellows at the bottom of steering column near the DPS unit, and pull the bellows upwards sufficiently to access the steering column pinch bolt.



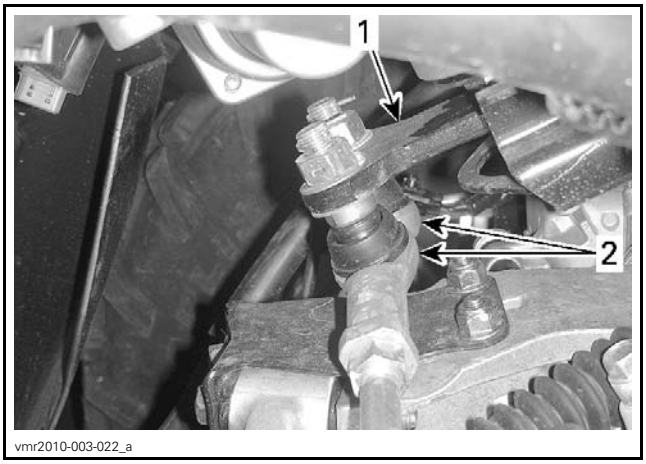
TYPICAL
1. Cut this locking tie
2. Steering column bellows

6. Remove the steering column pinch bolt and retaining nut. Discard the retaining nut.



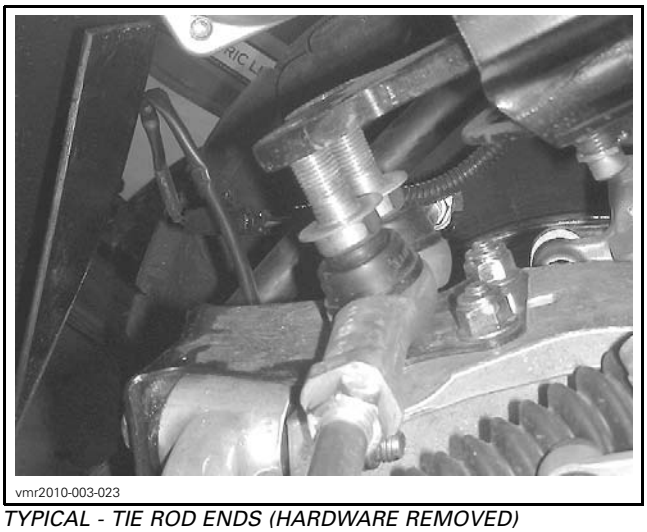
TYPICAL
1. Steering column pinch bolt

7. Remove the hardware that secures both tie-rod ends to the pitman arm (steering lever). Discard cotter pins.



TYPICAL
1. Pitman arm
2. Tie rod ends

8. Turn the steering to each side and disengage each tie-rod end from the pitman arm.

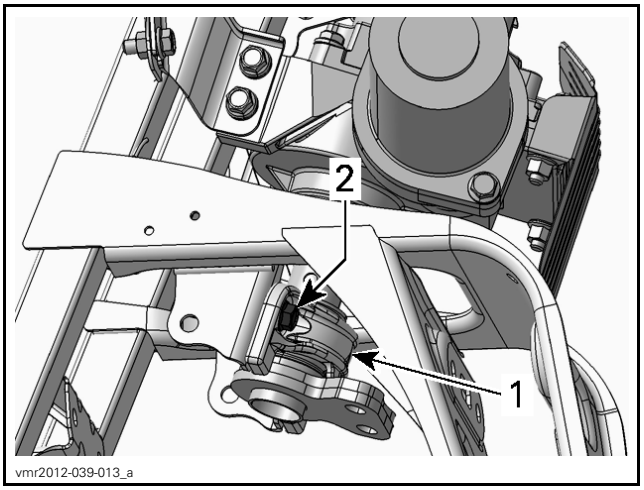

vmr2010-003-023

TYPICAL - TIE ROD ENDS (HARDWARE REMOVED)

9. Pull up on the steering column to partly disengage it from the DPS unit.

NOTE: A mechanical stop on the steering column will prevent you from fully disengaging the steering column.

10. Remove the lower half bushing retainer that secures the steering shaft to the frame.



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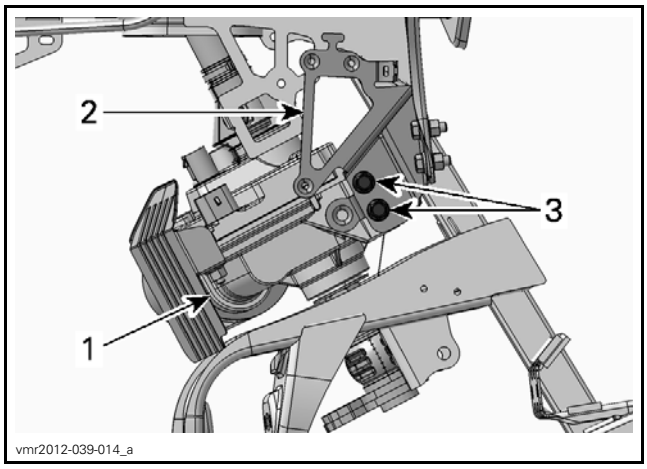
1. Lower half bushing retainer
2. Bolts to remove (2)

11. Remove the 2 hexagonal flanged screws securing the DPS unit to the RH support bracket.



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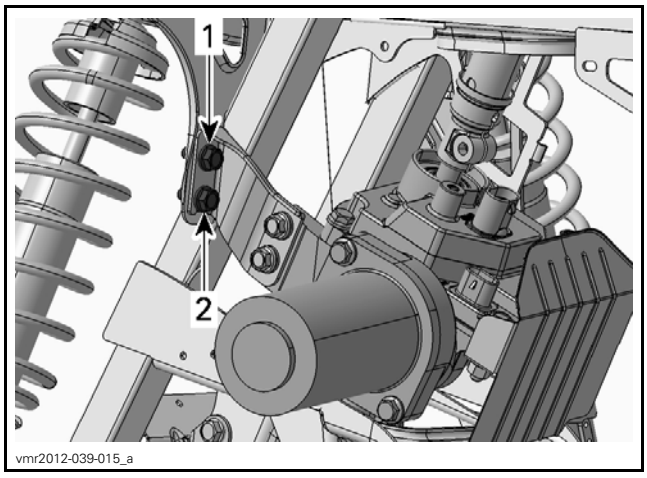
DPS REMOVAL - RH SIDE
1. DPS
2. RH DPS support bracket
3. Remove these screws (2)

NOTE: Discard the conical spring washers on the DPS retaining screws.

12. On the LH side of the DPS unit, remove the DPS support bracket from the frame in the following manner:

    12.1 Remove the top retaining screw.

    12.2 Loosen the lower retaining screw sufficiently for the bracket to become loose on the frame.



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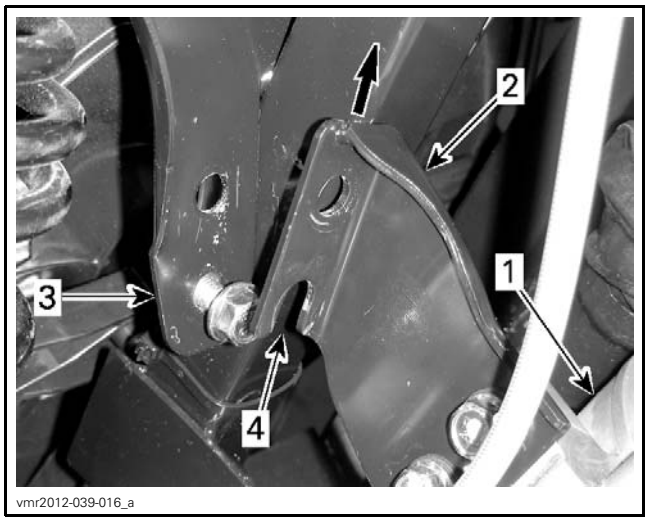
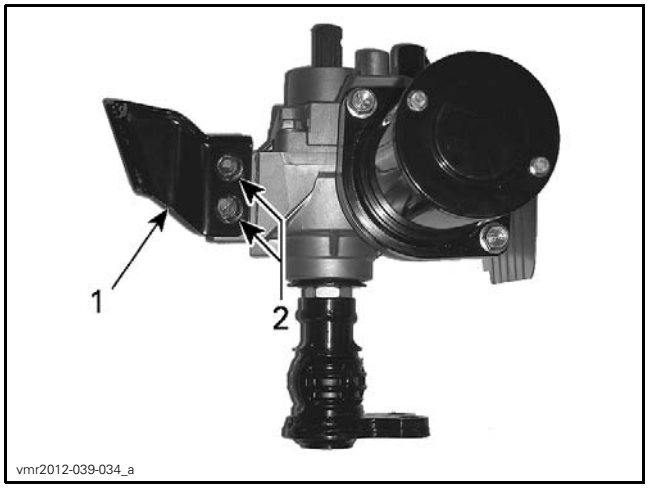
DPS REMOVAL - LEFT SIDE
Step 1: Remove DPS retaining screws (2 each side)
Step 2: Discard conical washers under screw head

13. Pull up on DPS unit to remove the DPS unit and support bracket from the frame.



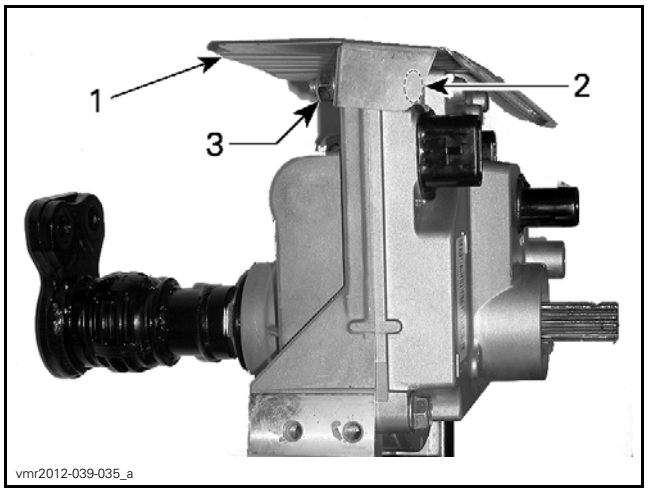
TYPICAL - LH DPS SUPPORT BRACKET
1. *DPS unit*
2. *DPS support bracket*
3. *Vehicle frame*
4. *Slotted hole in DPS support bracket*

14. If replacing DPS unit, remove the following from the DPS unit:
    - LH DPS support bracket
    - DPS heat shield.



1. *LH DPS support bracket*
2. *Retaining screws*

NOTE: When removing the DPS heat shield, hold the DPS housing screws steady using a wrench to as you remove the 2 heat shield retaining nuts.

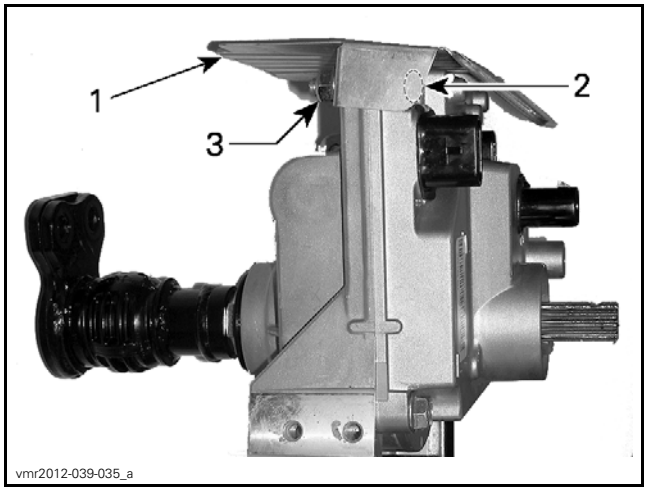


1. *DPS heat shield*
2. *Retaining screws to hold steady (2 not visible)*
3. *Retaining nuts to remove*

Installing the DPS Unit

IMPORTANT: The following hardware **must all be replaced with new ones**:
- Hexagonal forming screws with threadlocker
- Conical spring washers
- Elastic nuts.

1. If the DPS unit is being replaced, install heat shield from old DPS unit onto new DPS unit.



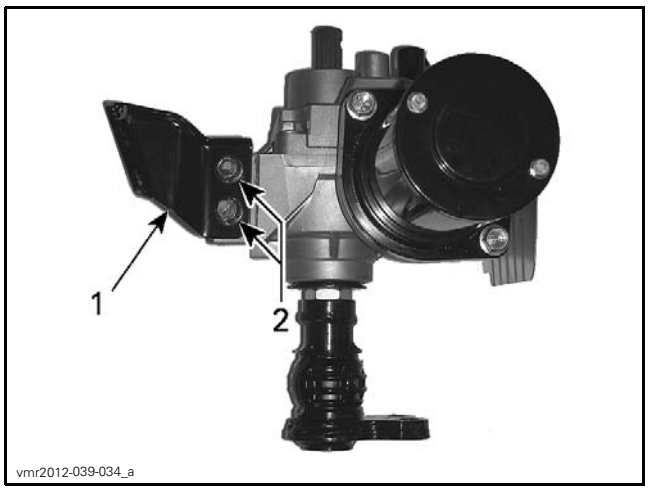
1. *DPS heat shield*
2. *Retaining screws to hold steady (2 not visible)*
3. *Retaining nuts to remove (2)*

NOTE: **Important:** Hold DPS housing screws steady using a wrench as you apply specified torque to heat shield retaining nuts.

TIGHTENING TORQUE	
Retaining nuts, DPS heat shield	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

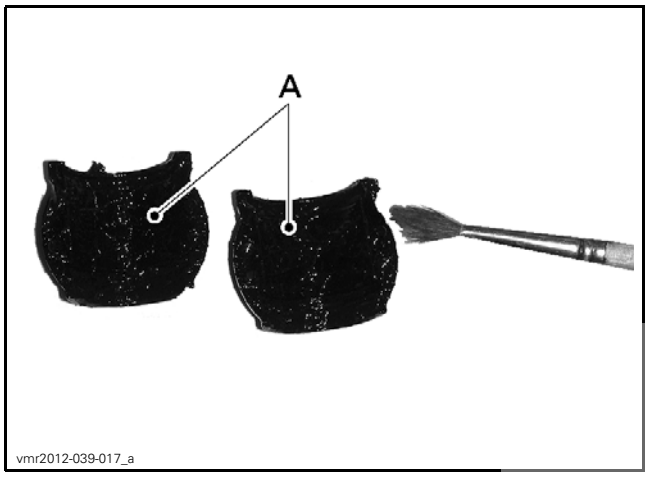
2. Install LH DPS support bracket loosely using NEW fasteners.

NOTE: Important: Install the retaining screws to the DPS support bracket loosely at this time. This is required to ensure proper DPS alignment at a later step when all steering and DPS fasteners are tightened to specified torque.

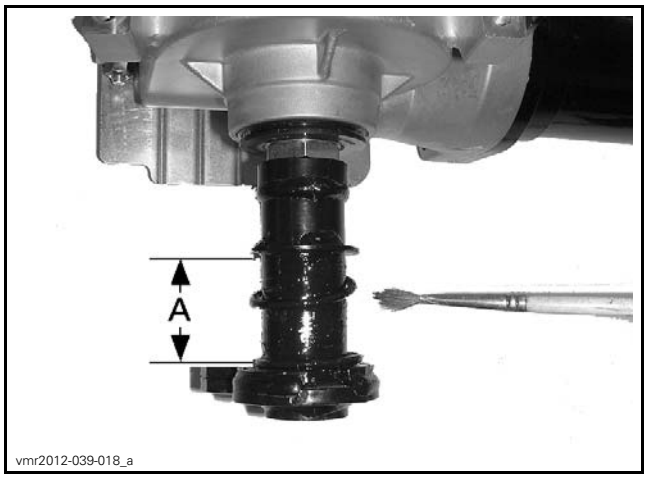


1. LH DPS support bracket
2. Retaining screws

3. Ensure "O" rings on steering shaft are in good condition.
4. Apply XPS SYNTHETIC GREASE (P/N 293 550 010) to:
   – The inside of both steering shaft half bushings
   – The steering shaft and "O" rings.

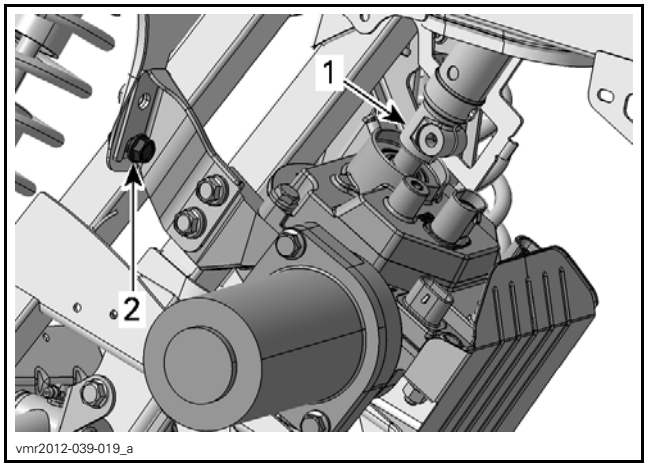


A. XPS synthetic grease (P/N 293 550 010) here



A. XPS synthetic grease (P/N 293 550 010) here

5. Insert the steering column onto the DPS input shaft
6. Position the LH DPS support bracket onto the hexagonal forming screw that was left on the frame DPS mount.



1. Steering column onto the DPS input shaft here
2. LH DPS support bracket onto the hexagonal forming screw here

NOTE: The DPS shaft splines have a key which **must be aligned** with the keyway in the steering column.

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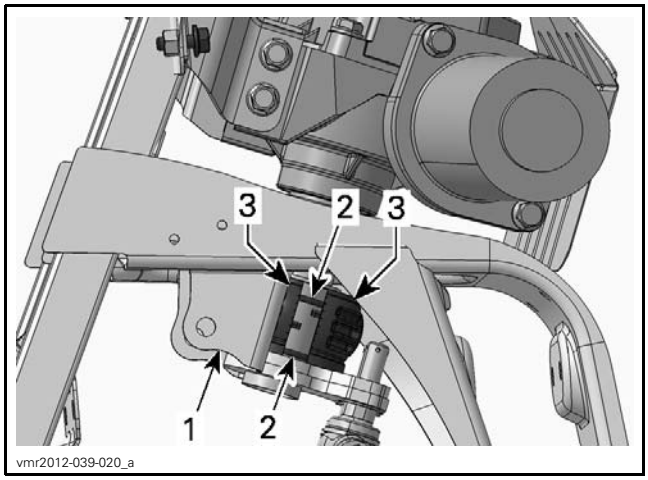
TYPICAL - STEERING COLUMN INDEXED TO DPS SHAFT SPLINES

7. Ensure the following are properly positioned on the lower steering shaft and lower steering shaft mount.
   – O-rings
   – Steering shaft half bushings.



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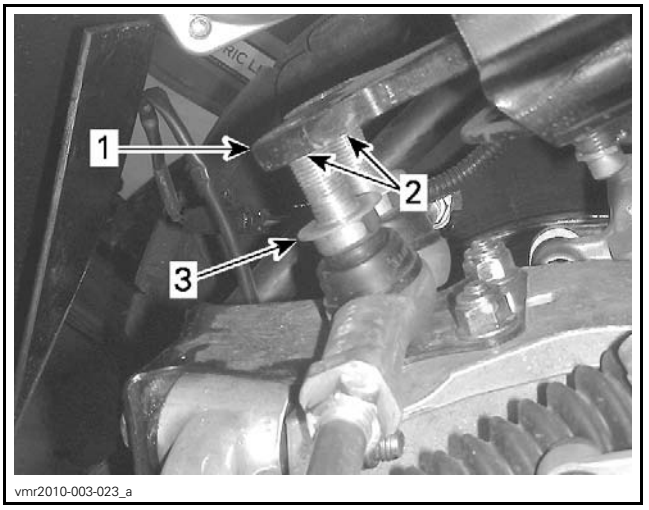
1. Lower steering shaft mount
2. O-rings
3. Steering shaft half bushings

8. Install the 3 remaining hexagonal forming screws that secure the DPS unit **loosely** using **NEW** fasteners.

NOTE: Ensure the support bracket retaining screws have a **NEW** conical spring washer between the screw head and the DPS frame support.

Ensure both tie rod ends have a hardened steel washer on them, then insert the tie-rod ends onto the pitman arm.



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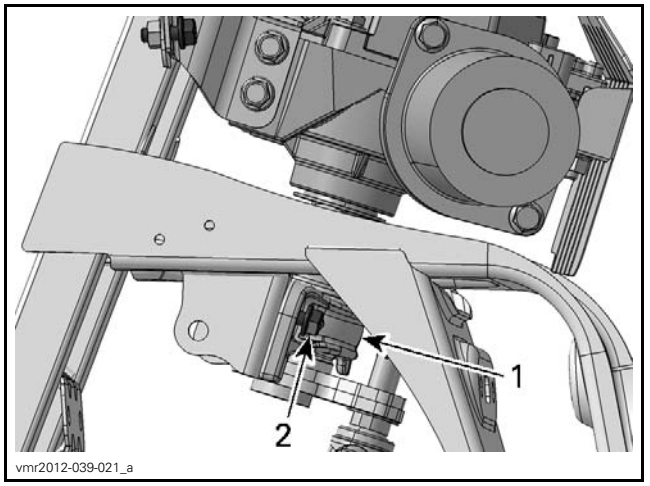
TYPICAL
1. Pitman arm
2. Tie rod ends inserted in pitman arm
3. Hardened steel washer on tie rod end

9. Install the lower half bushing retainer **loosely** using **NEW** fasteners.



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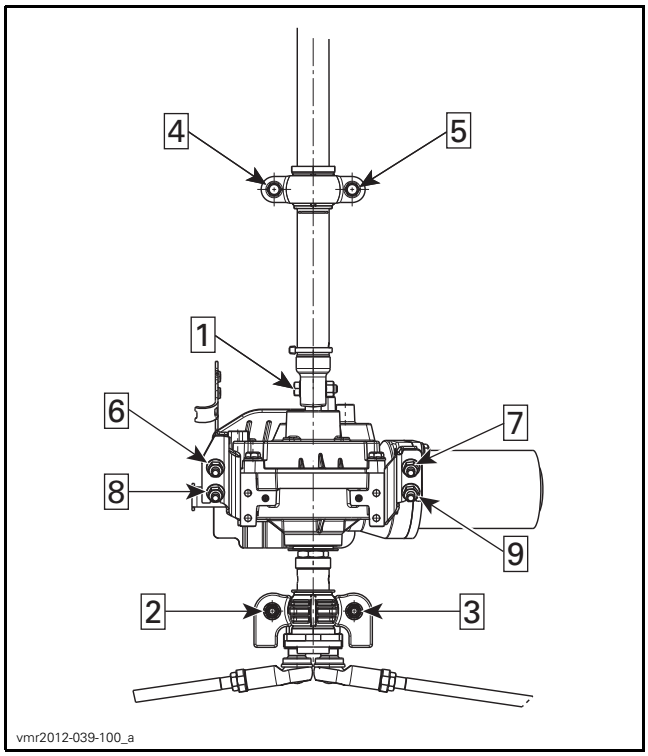
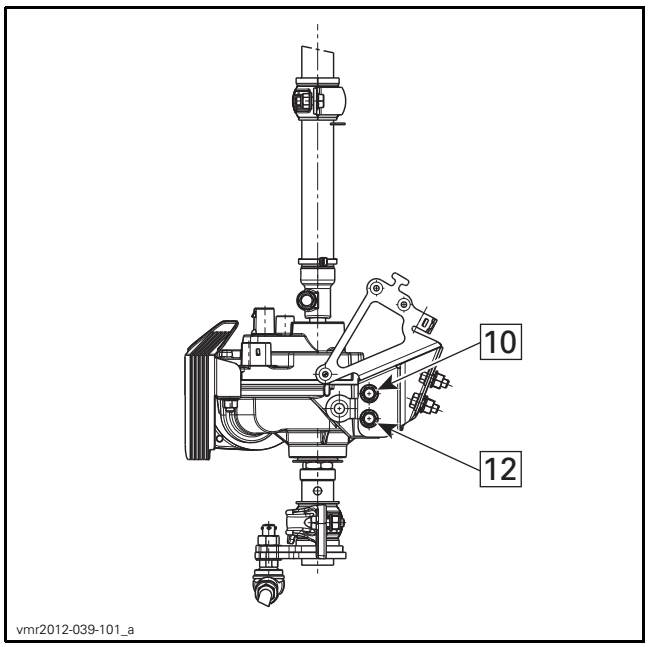
1. Lower half bushing retainer
2. Hexagonal forming screws installed loosely

10. Install steering column pinch bolt and a **NEW** elastic nut **loosely**.
11. Tighten the steering and DPS fasteners to specified torque using the torque sequence specified in the following 3 illustrations.

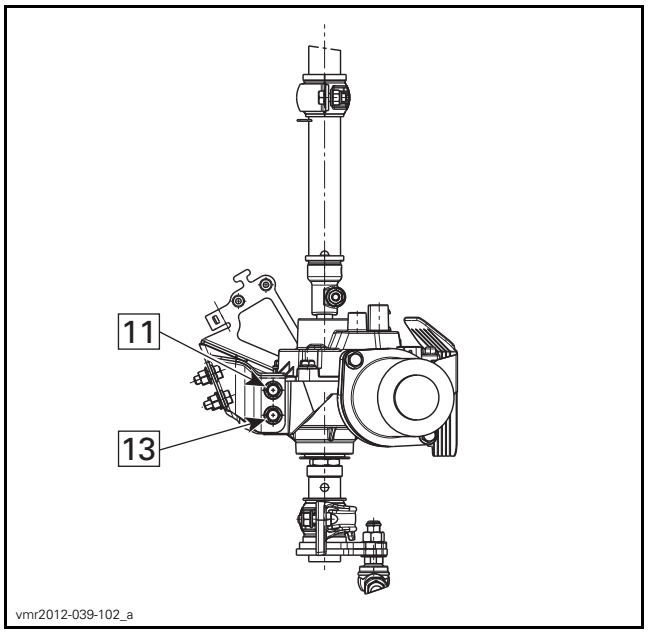
TIGHTENING TORQUE	
DPS retaining screws	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)
DPS bracket retaining screws	
Steering column retainer	
Steering column pinch bolt	



DPS AND STEERING TORQUE SEQUENCE (1 OF 3)



DPS AND STEERING TORQUE SEQUENCE (2 OF 3)

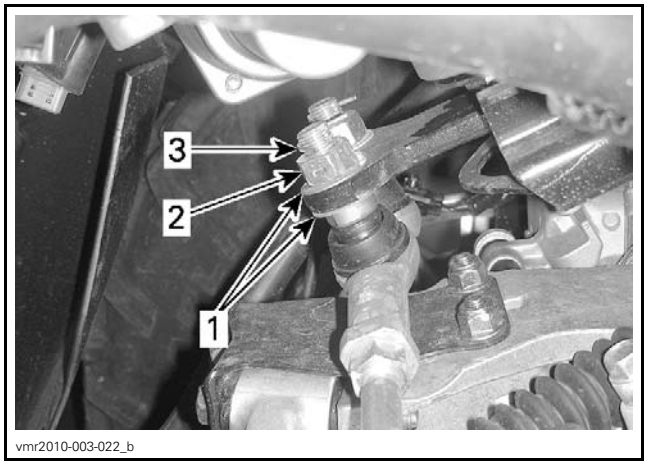


DPS AND STEERING TORQUE SEQUENCE (3 OF 3)

12. Install the second hardened steel washer and nut on each tie-rod end. Tighten retaining nuts as specified.

TIGHTENING TORQUE	
Tie-rod end to pitman arm	72.5 N•m ± 7.5 N•m (53 lbf•ft ± 6 lbf•ft)

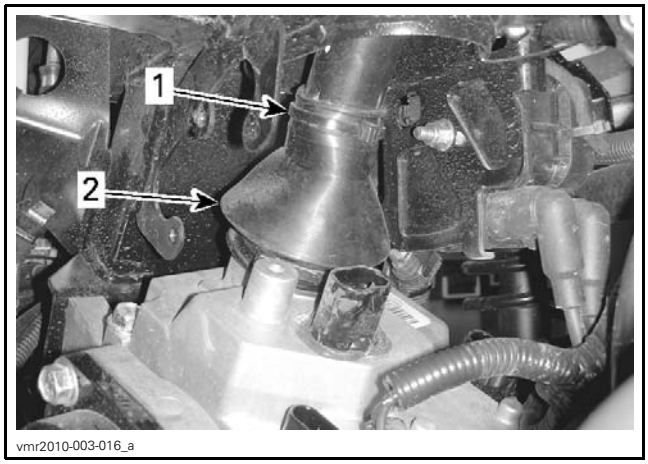
13. Install NEW cotter pins on the tie-rod ends.



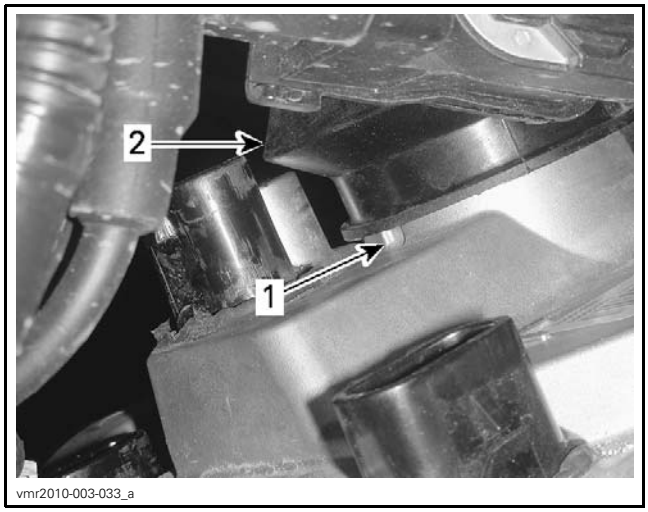
TYPICAL
1. *Hardened steel washers (one each side of pitman arm)*
2. *Tie rod end retaining nut (torque applied)*
3. *NEW cotter pin installed*

14. Pull bellows down over steering column pinch bolt and edge of DPS unit housing extension. Secure bellows using the appropriate locking tie.

NOTE: Ensure the locking tie is on the tube part of the steering column, **not** on the forged end. Bellows should cover end of ring flange on DPS unit but **not** cover the drainage hole at the bottom of the ring flange. **Do not** install a locking tie on the DPS end of the bellows. Lower portion of bellows **MUST** remain floating over the DPS housing.

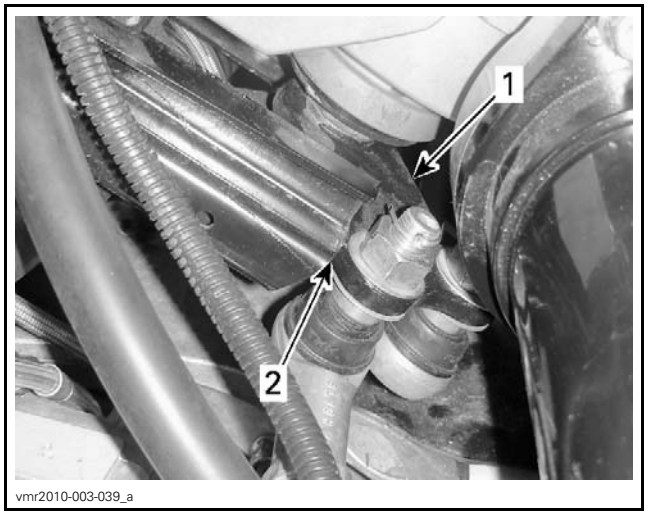


TYPICAL
1. *Locking tie location*
2. *Steering column bellows*



TYPICAL
1. *Drainage hole in DPS ring flange*
2. *Steering column bellows*

15. Turn handlebar fully to each side and check for proper contact between pitman arm and pitman arm frame stops (both sides).



TYPICAL - LH ILLUSTRATED
1. *Pitman arm*
2. *Contact point with frame stop*

NOTE: Contact between pitman arm and pitman arm stops must be checked with vehicle weight on wheels.

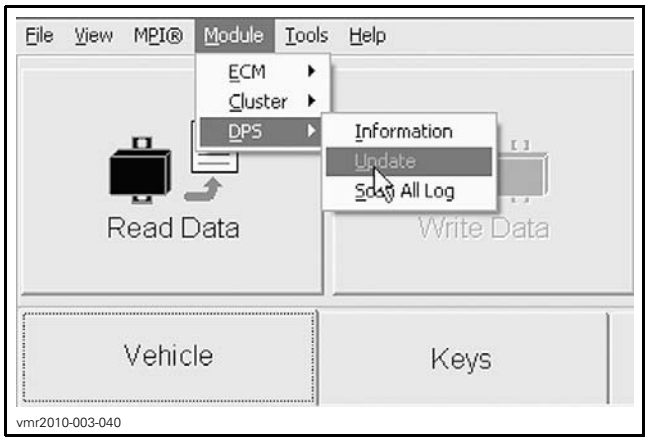
16. Reconnect DPS electrical connectors.
17. Perform a steering alignment as described in the applicable *STEERING SYSTEM* subsection.
18. If installing a replacement DPS unit, refer to *UPDATING THE ELECTRONIC MODULE* in this subsection.
19. Perform the torque offset reset. Refer to *RESETTING THE TORQUE OFFSET* in this subsection.
20. Install all other removed parts in the reverse order of removal.
21. Carry out a test ride of the ATV to ensure proper operation of the DPS unit.

Updating the Electronic Module

New DPS units **do not** come with the required software programmed into the unit. A DPS unit fault will be generated when the vehicle is powered up. The check engine light will come on and a DPS FAULT message will appear in the multifunction gauge.

To update the software, proceed as follows:

1. Connect the ATV to the latest applicable B.U.D.S. software version.
2. Select the **Read Data** button.
3. In the **Module** menu, choose the **DPS** submenu and install the latest DPS software **Update** file as applicable to the type ATV (Outlander or Renegade).



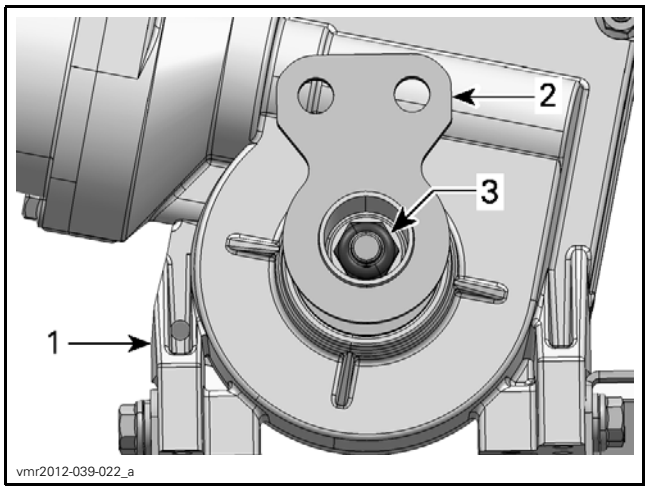
DPS SOFTWARE UPDATE

4. Once the correct DPS software file is installed, go to the **Faults** page and clear the fault codes.
5. Carry out the *RESETTING THE TORQUE OFFSET* procedure as described in this subsection.
6. Test drive the ATV to ensure proper DPS operation.

PITMAN ARM

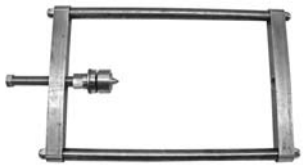
Removing the Pitman Arm

1. Remove DPS unit from vehicle, refer to *REMOVING THE DPS* in this subsection.
2. Remove Pitman arm retaining nut and washer.

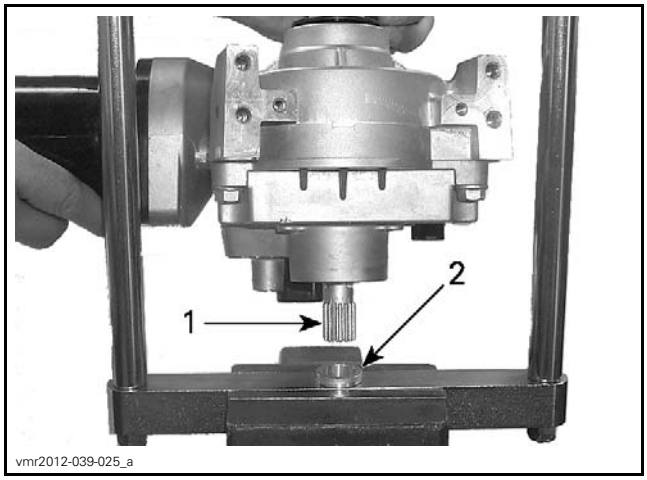


1. *DPS*
2. *Pitman arm*
3. *Pitman arm nut and washer*

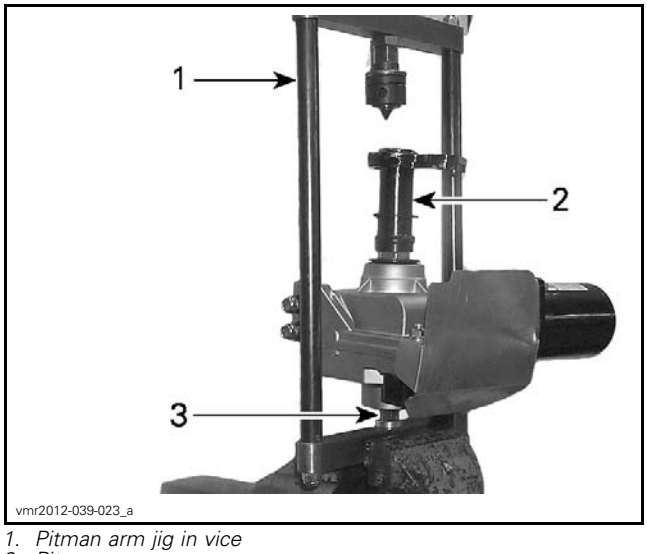
3. Install the pitman arm jig in a vise with the positioning screw upward.

REQUIRED TOOLS	
PITMAN ARM JIG (P/N 529 036 225)	

4. Insert the DPS input shaft in the Pitman arm jig receptacle with the Pitman arm facing up.



1. *DPS input shaft*
2. *Shaft receptacle in Pitman arm jig*

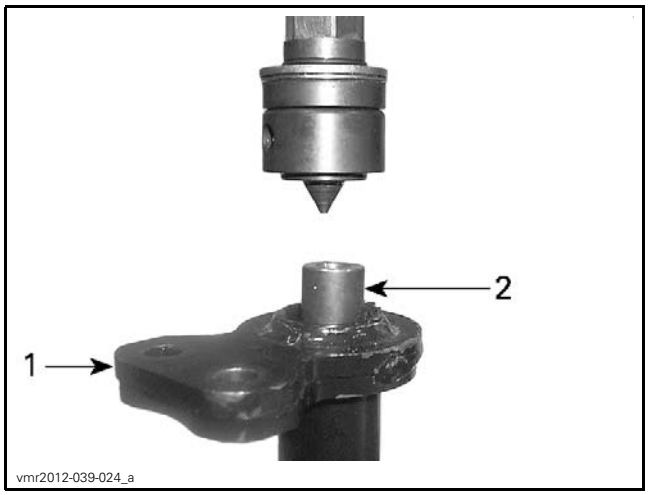


1. *Pitman arm jig in vice*
2. *Pitman arm up*
3. *DPS input shaft inserted in jig*

5. Insert the positioning adapter in the Pitman arm so its point rests in the DPS output shaft.

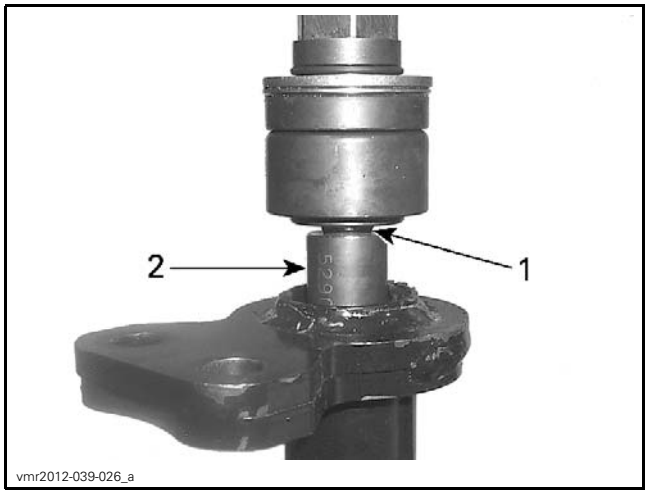
NOTE: A countersunk hole is machined in tip of the DPS output shaft to accept and center the positioning adapter point.

REQUIRED TOOL	
POSITIONING ADAPTOR (P/N 529 036 230)	



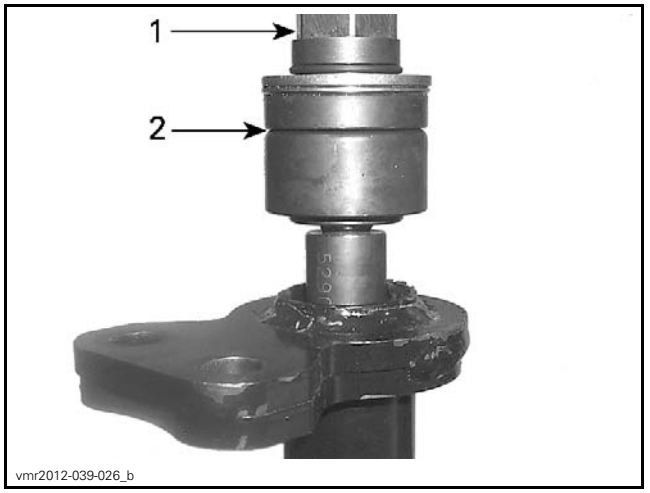
1. Pitman arm
2. Positioning adapter

6. Turn the jig positioning screw until the screw tip rests snugly in the positioning adapter.



1. Jig screw tip
2. Positioning adapter

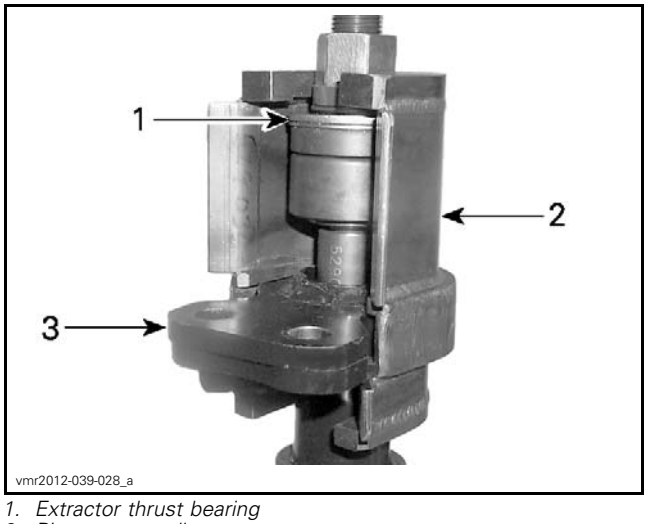
7. Turn the extractor nut down until their is no space between the extractor and the positioning tip.



1. Extractor nut
2. No space here

8. Install the universal Pitman arm puller over the Pitman arm and the extractor thrust bearing.

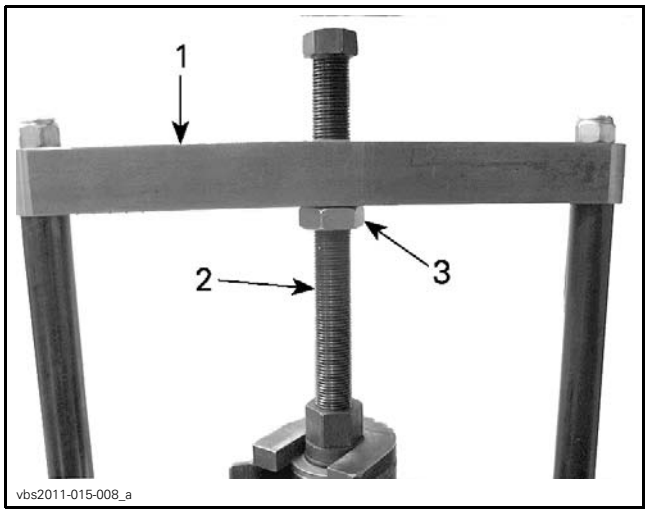
REQUIRED TOOL	
PITMAN ARM PULLER (P/N 529 036 227)	



1. Extractor thrust bearing
2. Pitman arm puller
3. Pitman arm

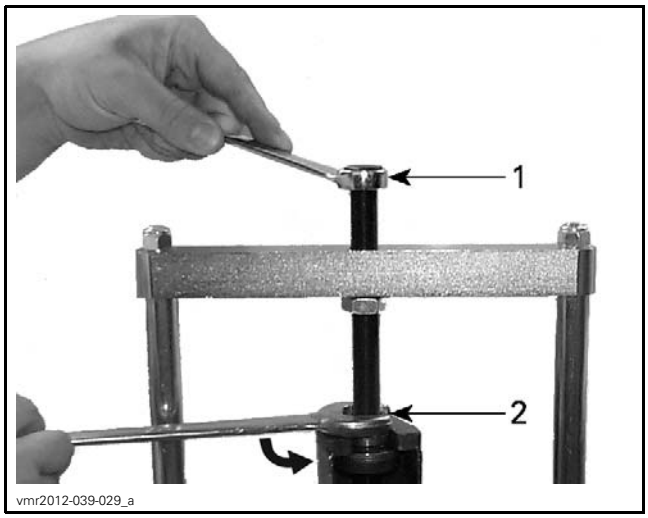
9. Lock the positioning screw by screwing the lock nut tightly against jig upper bar.

NOTE: Be sure to hold the position screw steady to prevent its tip from backing off the positioning adapter.



1. Jig upper bar
2. Positioning screw
3. Lock nut

10. As you hold the positioning screw steady, turn the extractor nut up to pull the Pitman arm off the DPS output shaft.

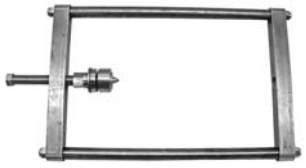


1. Positioning screw (held steady)
2. Extractor nut (turned up)

11. Remove Pitman arm puller.
12. Unscrew positioning screw.
13. Remove Pitman arm from the DPS shaft.

Installing the Pitman Arm

1. Install Pitman arm jig in a vise with positioning screw upward.

REQUIRED TOOL	
PITMAN ARM JIG (P/N 529 036 225)	

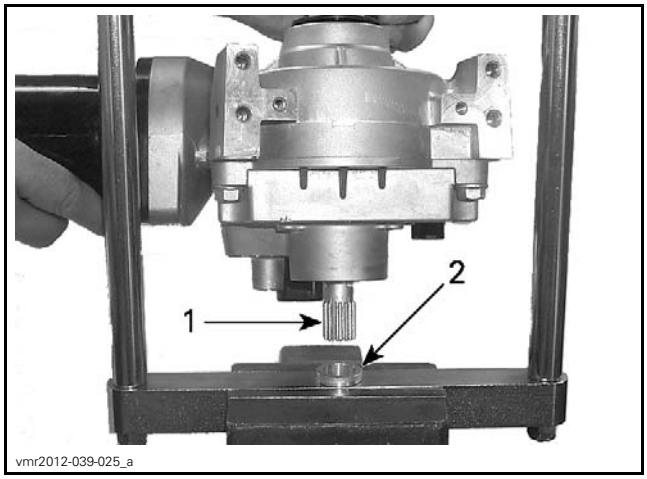
2. Apply antiseize lubricant on DPS output shaft splines; completely cover all the splines with a light coat.

SERVICE PRODUCT	
DPS output shaft splines	LOCTITE 767 (ANTISEIZE LUBRICANT) (P/N 293 800 070)

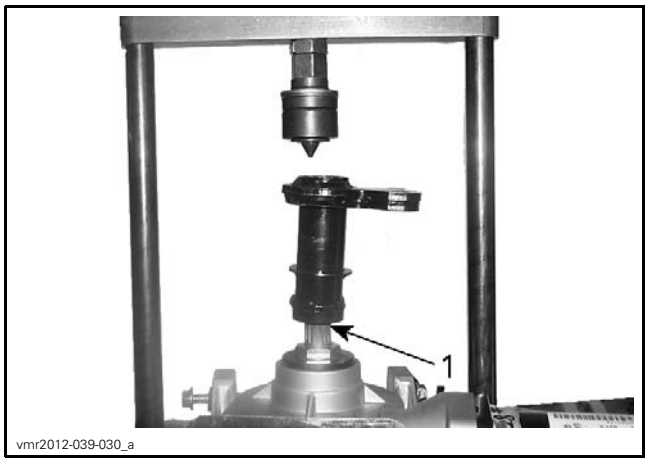
3. Place Pitman arm on DPS shaft as per following illustration.

NOTE: Be sure to correctly align the Pitman arm shaft key with the keyway (ground off splines) on the DPS output shaft.

4. Insert the DPS input shaft in the Pitman arm jig receptacle with the Pitman arm facing up.



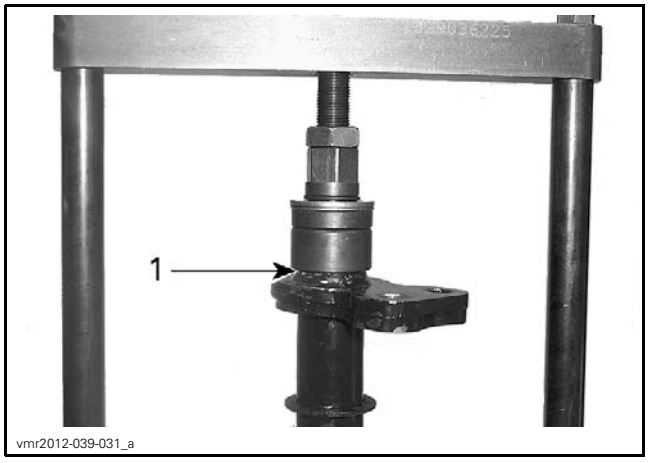
1. DPS input shaft
2. Shaft receptacle in Pitman arm jig



1. Spline keyway alignment here

5. Turn the jig positioning screw until the alignment point makes proper contact with the Pitman arm.

NOTE: Ensure positioning screw is centered in Pitman arm tube.

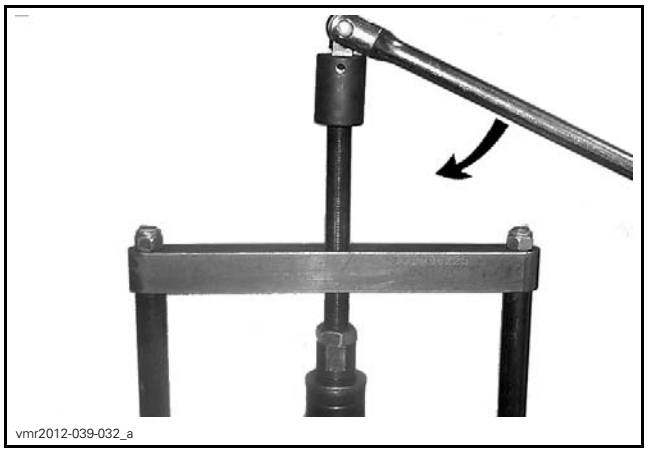


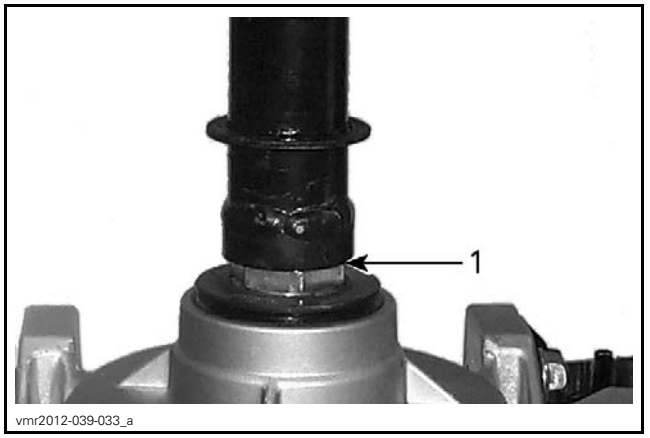
1. Ensure proper contact here

6. Turn the positioning screw to push the Pitman arm on the DPS output shaft until it bottoms out on the DPS output shaft nut.

NOTE: Ensure specified torque is applied.

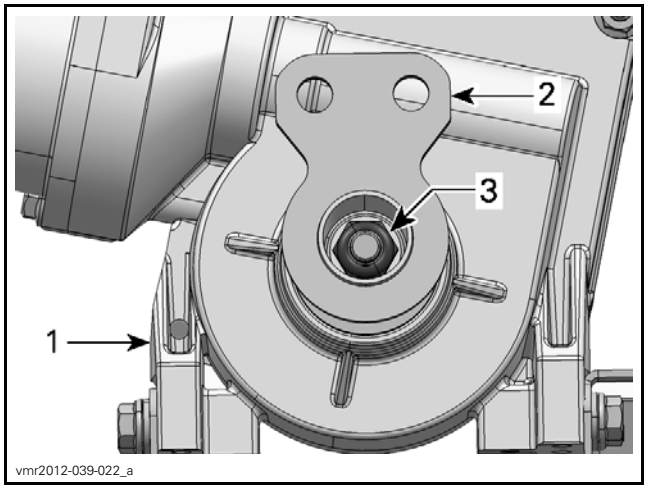
TIGHTENING TORQUE	
Positioning screw torque	50 N•m (37 lbf•ft)





1. Ensure proper contact here

7. Unscrew positioning screw and remove pusher adapter and pull out DPS unit.
8. Install Pitman arm retaining washer and nut. Tighten nut as specified.



1. DPS
2. Pitman arm
3. Pitman arm nut and washer

TIGHTENING TORQUE	
Pitman arm retaining nut	72.5 N•m ± 7.5 N•m (53 lbf•ft ± 6 lbf•ft)

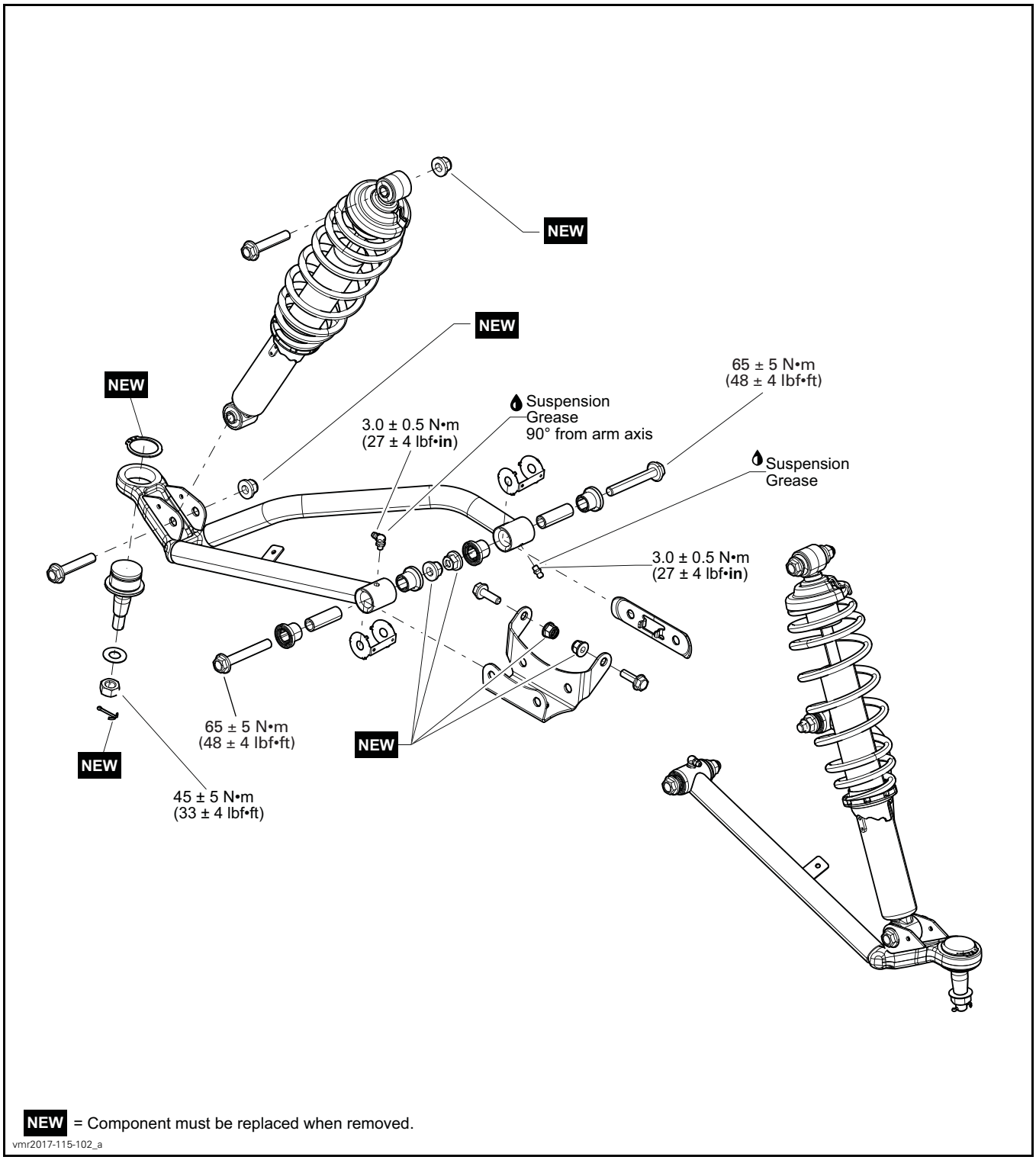
9. Carry out a steering alignment as described in this subsection.

FRONT SUSPENSION

SERVICE TOOLS

Description	Part Number	Page
BALL JOINT REMOVAL TOOL	529 036 310	9

UPPER SUSPENSION ARMS AND COMPONENTS (OUTLANDER 450 / 570)



NEW = Component must be replaced when removed.

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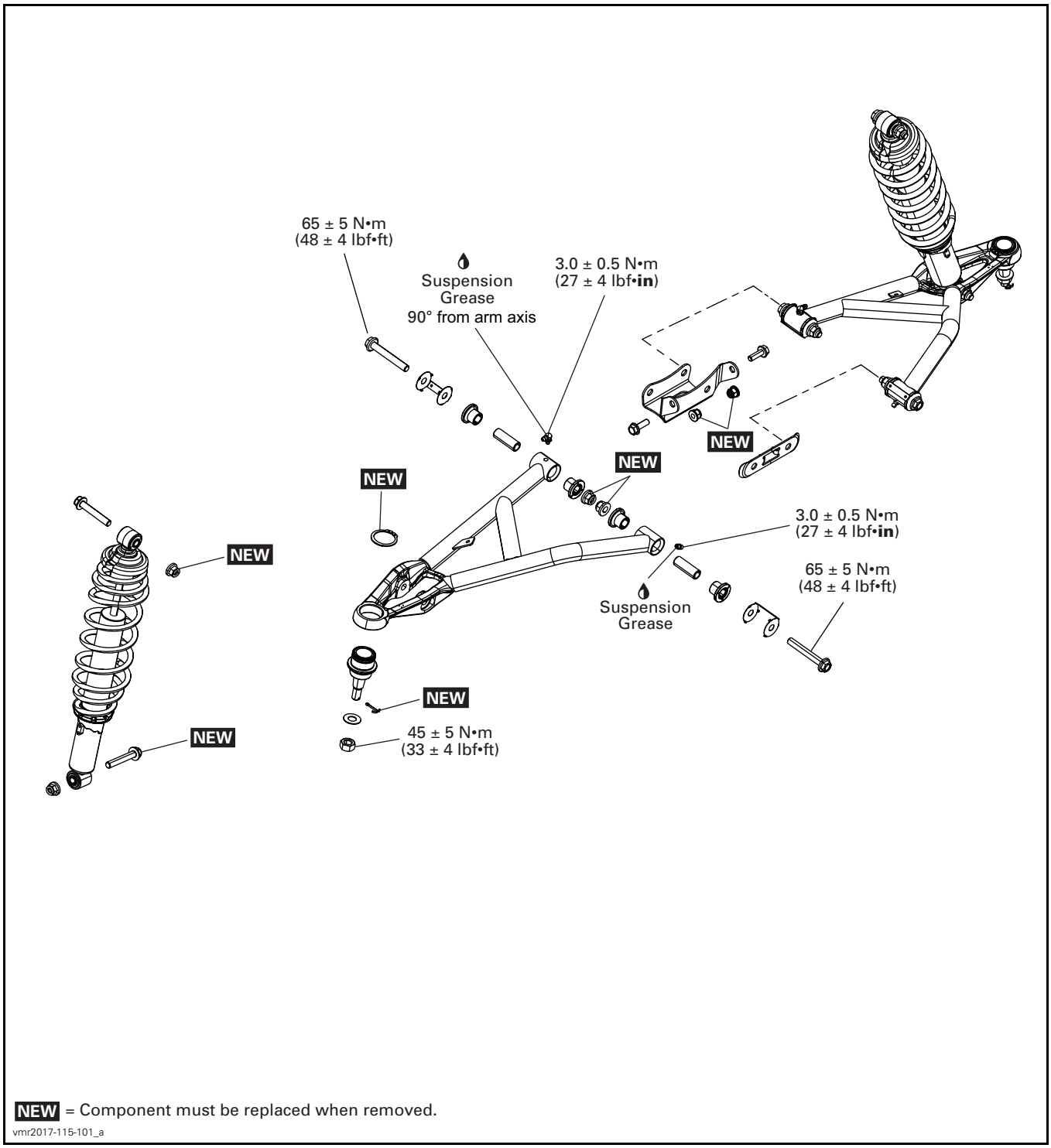
UPPER SUSPENSION ARMS AND COMPONENTS (OUTLANDER 650 / 850 / 1000R AND RENEGADE)



NEW = Component must be replaced when removed.

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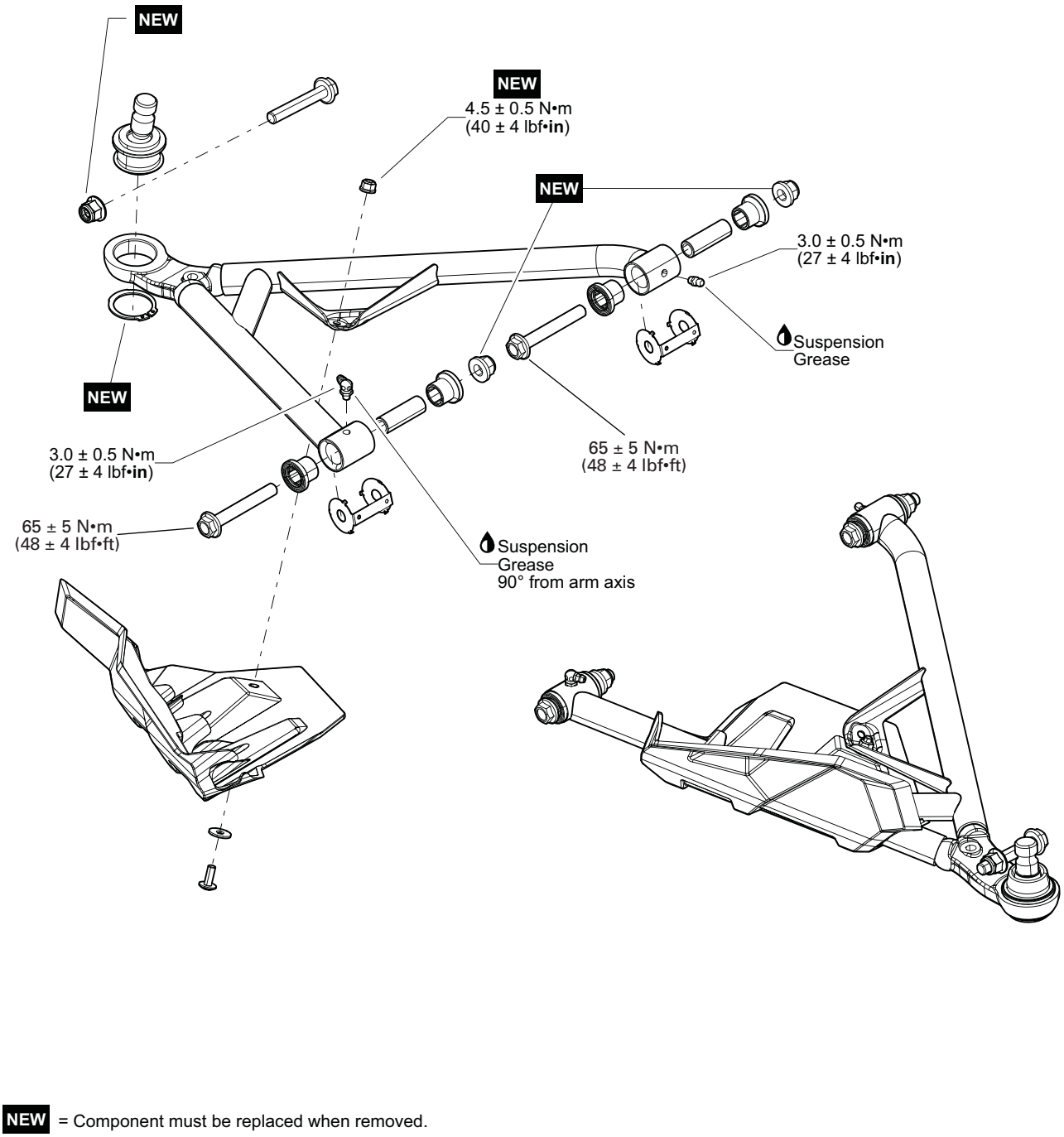
LOWER SUSPENSION ARMS AND COMPONENTS (ALL MODELS)



NEW = Component must be replaced when removed.

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GENERAL

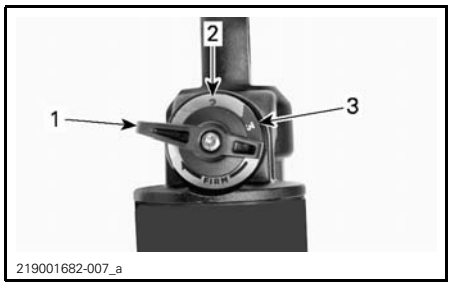
The procedure explained below is the same for the RH and LH sides unless otherwise noted.

ADJUSTMENT

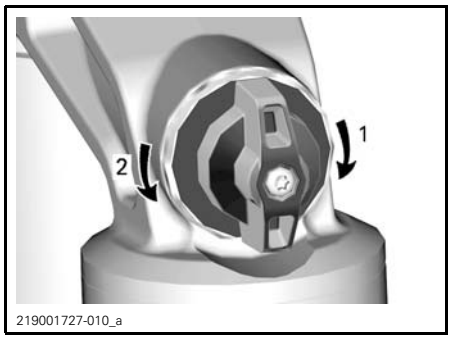
SHOCK DAMPING ADJUSTMENTS (APPLICABLE MODELS)

Compression damping controls how the shock absorber reacts when riding.

POSITION	SETTING	RESULT ON BIG BUMPS
1	Soft	Softer compression damping
2	Medium (Factory)	Medium compression damping
3	Hard	Firmer compression damping



1. *Position 1*
2. *Position 2*
3. *Position 3*



COMPRESSION DAMPING
1. **Increases** *damping (stiffer)*
2. **Decreases** *damping (softer)*

Turn adjuster clockwise to **increase** shock damping action (stiffer).

Turn adjuster counterclockwise to **decrease** shock damping action (softer).

ACTION	RESULT
Increasing compression damping force	Firmer compression damping
Decreasing compression damping force	Softer compression damping

⚠ WARNING

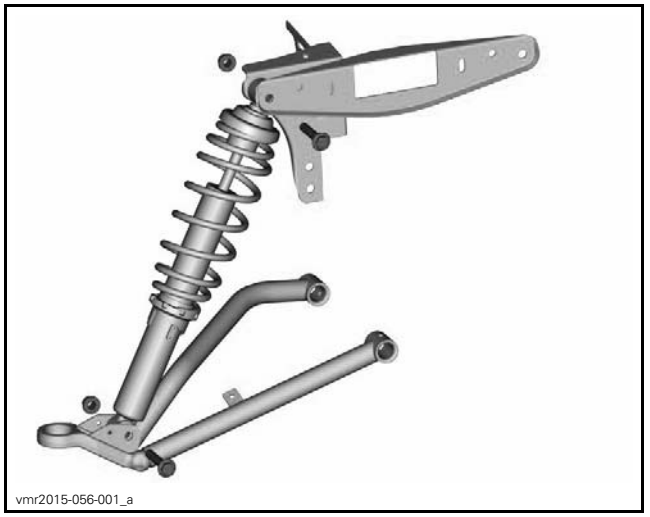
Make sure compression damping setting is the same on both sides.

PROCEDURES

SHOCK ABSORBER

Removing the Shock Absorber

1. Safely lift and support the vehicle off the ground.
2. Remove screws and nuts retaining the shock absorber.

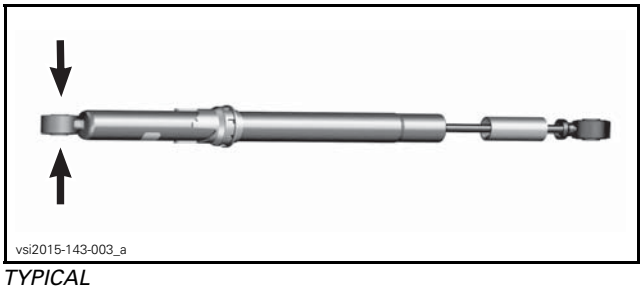


3. Remove shock absorber.

Inspecting the Shock Absorber

Remove spring from shock absorber. Refer to *SPRINGS* in this subsection.

Secure the end of shock eyelet in a vise with its rod upward.



TYPICAL

NOTICE Do not clamp directly on shock body.

Extend and compress the piston several times over its entire stroke. Check that it moves smoothly and with uniform resistance with its rod upward.

Check the following conditions that will denote a defective shock:

– A skip or a hang back when reversing stroke at mid travel.
– Seizing or binding condition except at extreme end of either stroke.
– Oil leakage.
– A gurgling noise, after completing one full compression and extension stroke.

Replace if any faults are present.

Installing the Shock Absorber

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install shock absorber screws from front towards rear of vehicle.

Tighten shock absorber nuts to specification.

TIGHTENING TORQUE	
Shock absorber nut (450 / 570)	61 N•m ± 9 N•m (45 lbf•ft ± 7 lbf•ft)
Shock absorber nut (650 / 850 / 1000R)	73 N•m ± 7 N•m (54 lbf•ft ± 5 lbf•ft)

SHOCK ABSORBER BUSHINGS

Refer to *SHOCK ABSORBER BUSHINGS* in *REAR SUSPENSION* subsection for complete procedures.

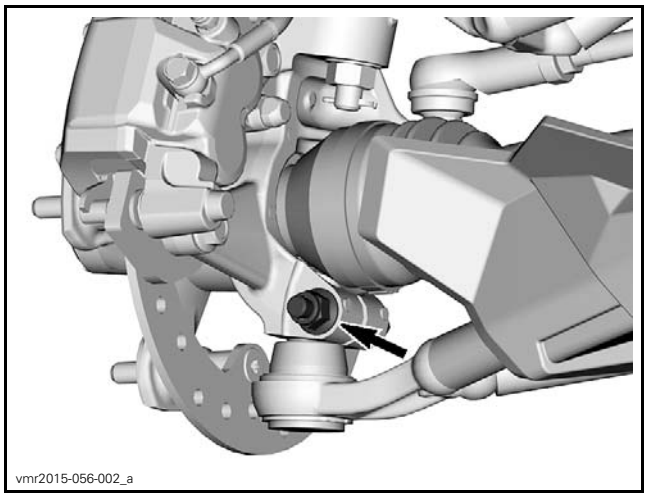
SPRINGS

Refer to *SPRINGS* in *REAR SUSPENSION* subsection for complete procedures.

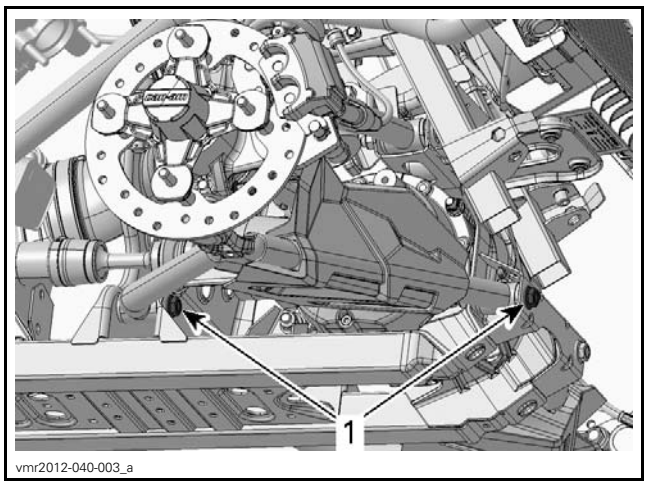
LOWER SUSPENSION ARM

Removing the Lower Suspension Arm

1. Safely lift and support the vehicle off the ground.
2. Remove wheel, refer to *WHEELS AND TIRES* subsection.
3. Remove screw and nut securing lower ball joint to knuckle.

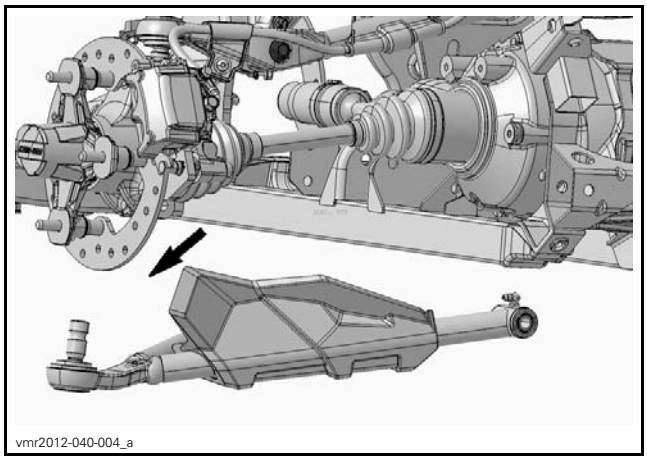


4. Remove screws and nuts securing suspension arm to frame.



1. Suspension arm screws

5. Remove suspension arm.



MOVE OUTWARDS

Installing Lower Suspension Arm

The installation is the reverse of the removal procedure. However, pay attention to the following.

Lubricate suspension arm. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

Tighten ball joint nut to specification.

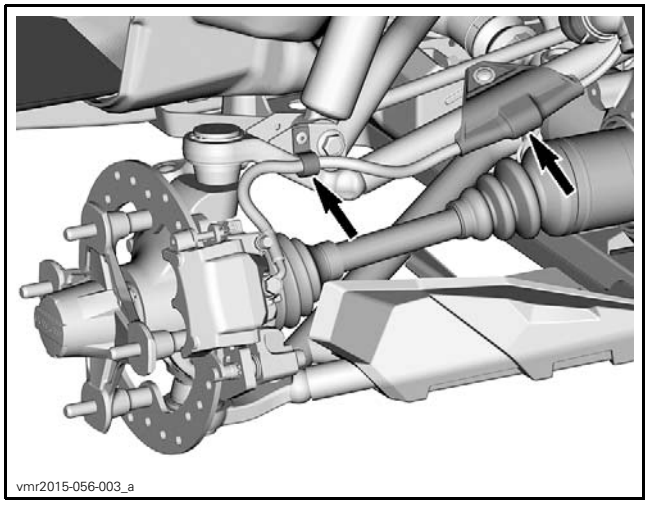
TIGHTENING TORQUE	
Nut securing ball joint to knuckle	45 N•m ± 5 N•m (33 lbf•ft ± 4 lbf•ft)

Perform steering alignment procedure. Refer to *STEERING ALIGNMENT* subsection.

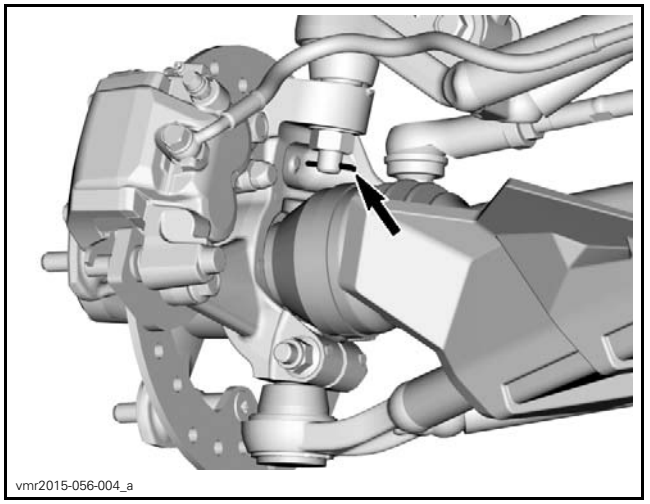
UPPER SUSPENSION ARM

Removing the Upper Suspension Arm

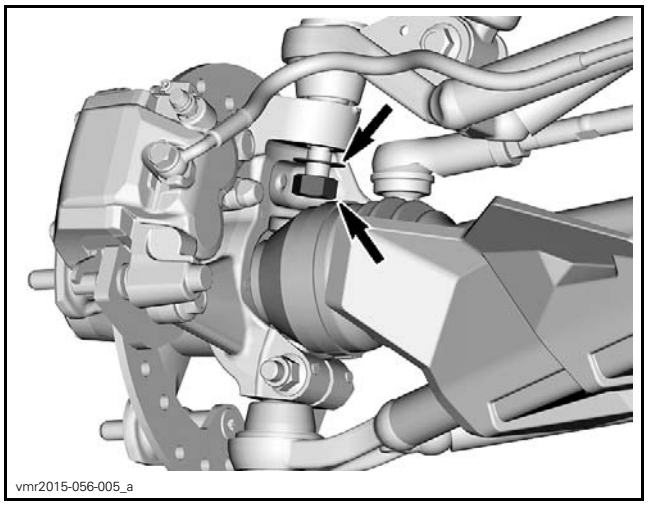
1. Safely lift and support the vehicle off the ground.
2. Remove wheel, refer to *WHEELS AND TIRES* subsection.
3. Remove fasteners retaining brake hose to vehicle.


vmr2015-056-003_a

4. Remove and discard cotter pin retaining ball joint.


vmr2015-056-004_a

5. Remove ball joint nut and washer.


vmr2015-056-005_a

6. Carefully move brake hose aside.
7. Using a plastic hammer, carefully hit on the knuckle side to separate ball joint from knuckle.

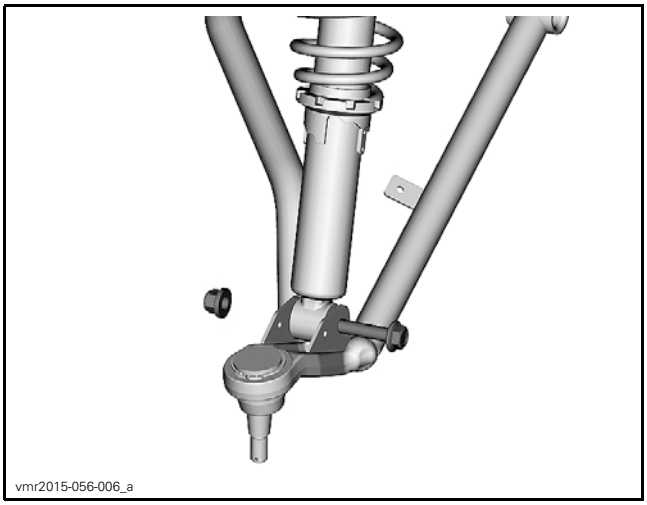
NOTE: A ball joint remover can be used if the ball joint is jammed into knuckle.

NOTICE Never hit on suspension arm to avoid damaging it permanently.

tmr2011-035-020

TYPICAL - CAREFULLY HIT ON KNUCKLE SIDE

8. Remove screw and nut securing suspension arm to shock absorber.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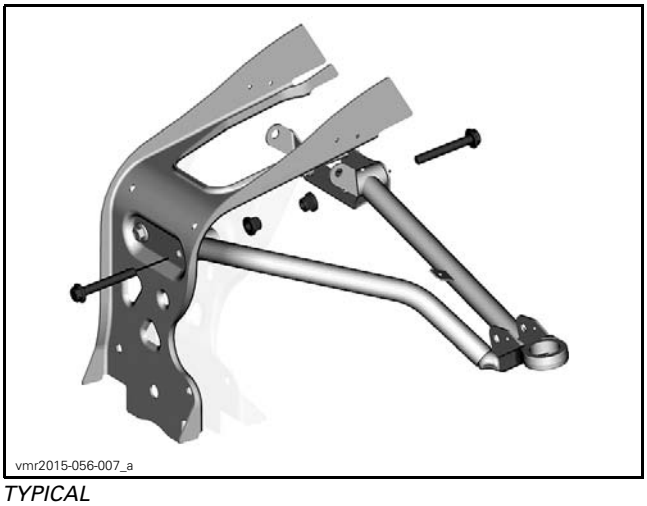
TYPICAL

9. Remove screws and nuts securing suspension arm to frame.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TYPICAL

10. Remove suspension arm.

Installing the Upper Suspension Arm

The installation is the reverse of the removal procedure. However, pay attention to the following.

Lubricate suspension arm. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

Install a **NEW** cotter pin to secure ball joint nut. Both end of cotter pin must be folded.

Tighten shock absorber nut to specification.

TIGHTENING TORQUE	
Shock absorber nut (450 / 570)	61 N•m ± 9 N•m (45 lbf•ft ± 7 lbf•ft)
Shock absorber nut (650 / 850 / 1000R)	73 N•m ± 7 N•m (54 lbf•ft ± 5 lbf•ft)

Tighten ball joint nut to specification.

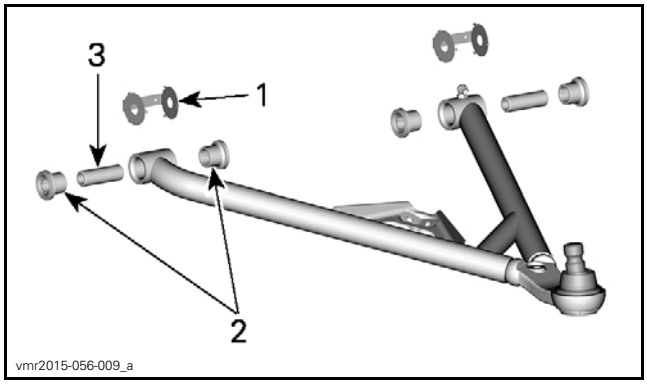
TIGHTENING TORQUE	
Ball joint nut	45 N•m ± 5 N•m (33 lbf•ft ± 4 lbf•ft)

Perform steering alignment procedure. Refer to *STEERING ALIGNMENT* subsection.

SUSPENSION ARM BUSHINGS

Removing the Suspension Arm Bushings

1. Remove wear plates, bushings and sleeves from suspension arm.



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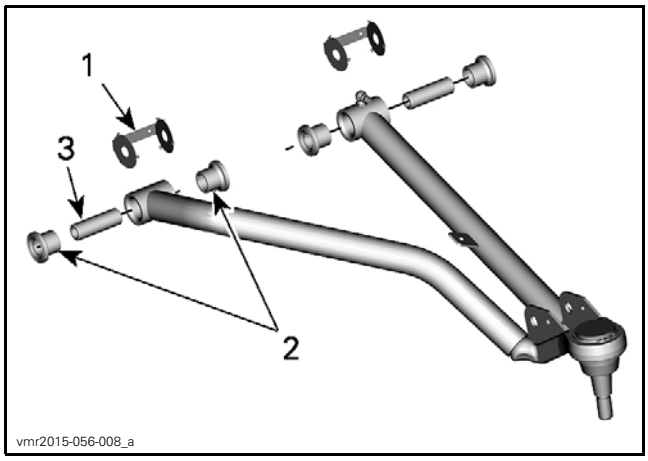
LOWER SUSPENSION ARM
1. *Wear plates*
2. *Bushings*
3. *Sleeves*



TYPICAL - UPPER SUSPENSION ARM
1. *Wear plates*
2. *Bushings*
3. *Sleeves*

Installing Suspension Arm Bushings

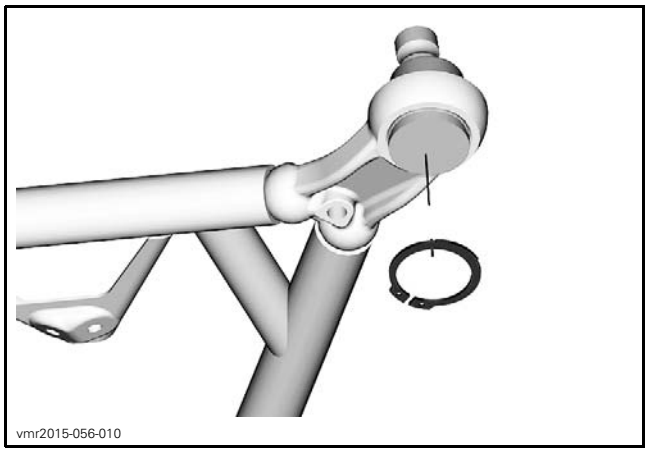
The installation is the reverse of the removal procedure. However, pay attention to the following.

Lubricate suspension arm. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

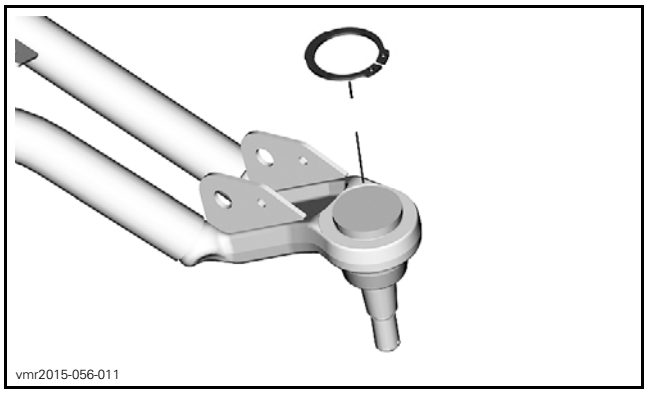
BALL JOINTS

Removing the Ball Joint

1. Remove suspension arm from vehicle. Refer to *REMOVING SUSPENSION ARM* in this subsection.
2. Remove circlip from ball joint.



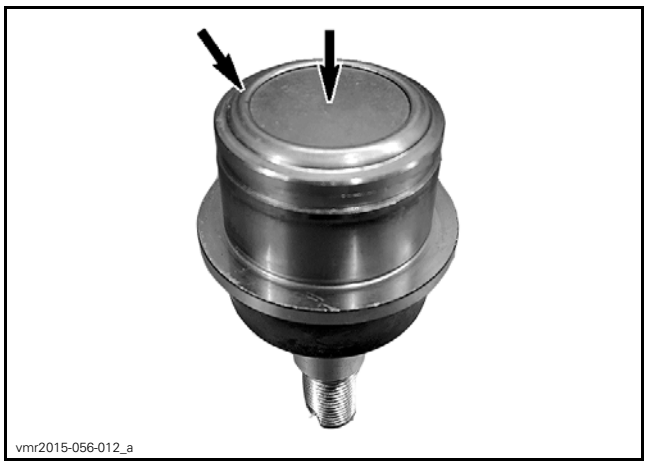
LOWER BALL JOINT



UPPER BALL JOINT

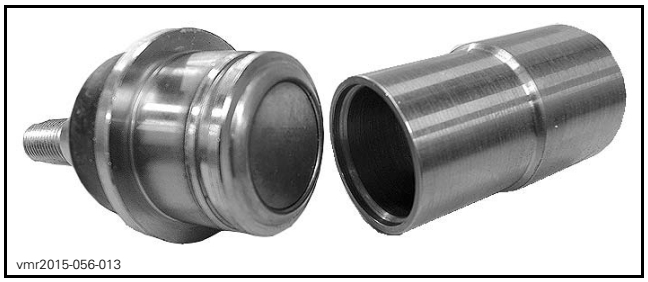
3. Install suspension arm on a press.

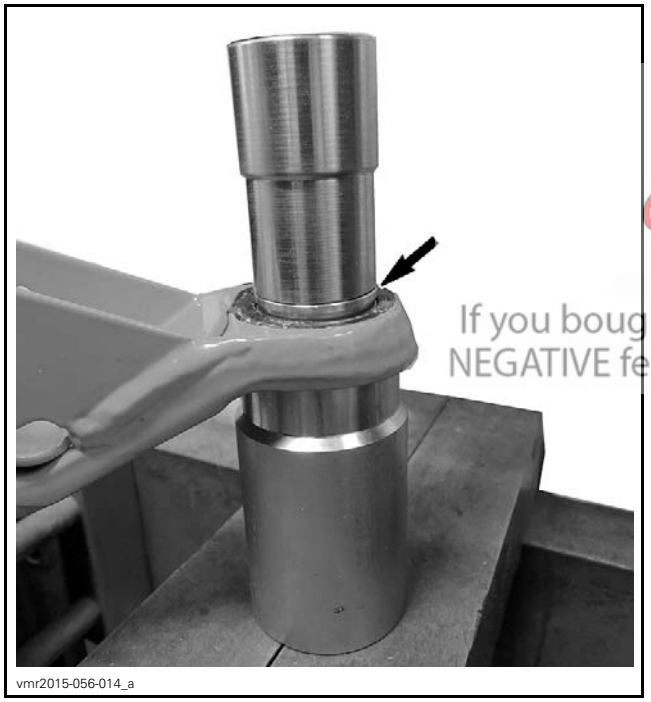
NOTICE Pressing on the center or on the lip of the ball joint will damage it.



DO NOT PRESS THERE

NOTE: The BALL JOINT REMOVAL TOOL (P/N 529 036 310) is design to apply force only on the outside edge of the ball joint.


vmr2015-056-013


vmr2015-056-014_a

CONTACT BETWEEN TOOL AND BALL JOINT ON THE OUTSIDE EDGE ONLY

4. Remove ball joint from suspension arm.

NOTICE Make sure that suspension arm is properly supported on the press during ball joint removal.

Installing Ball Joint

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install a NEW circlip to secure ball joint.

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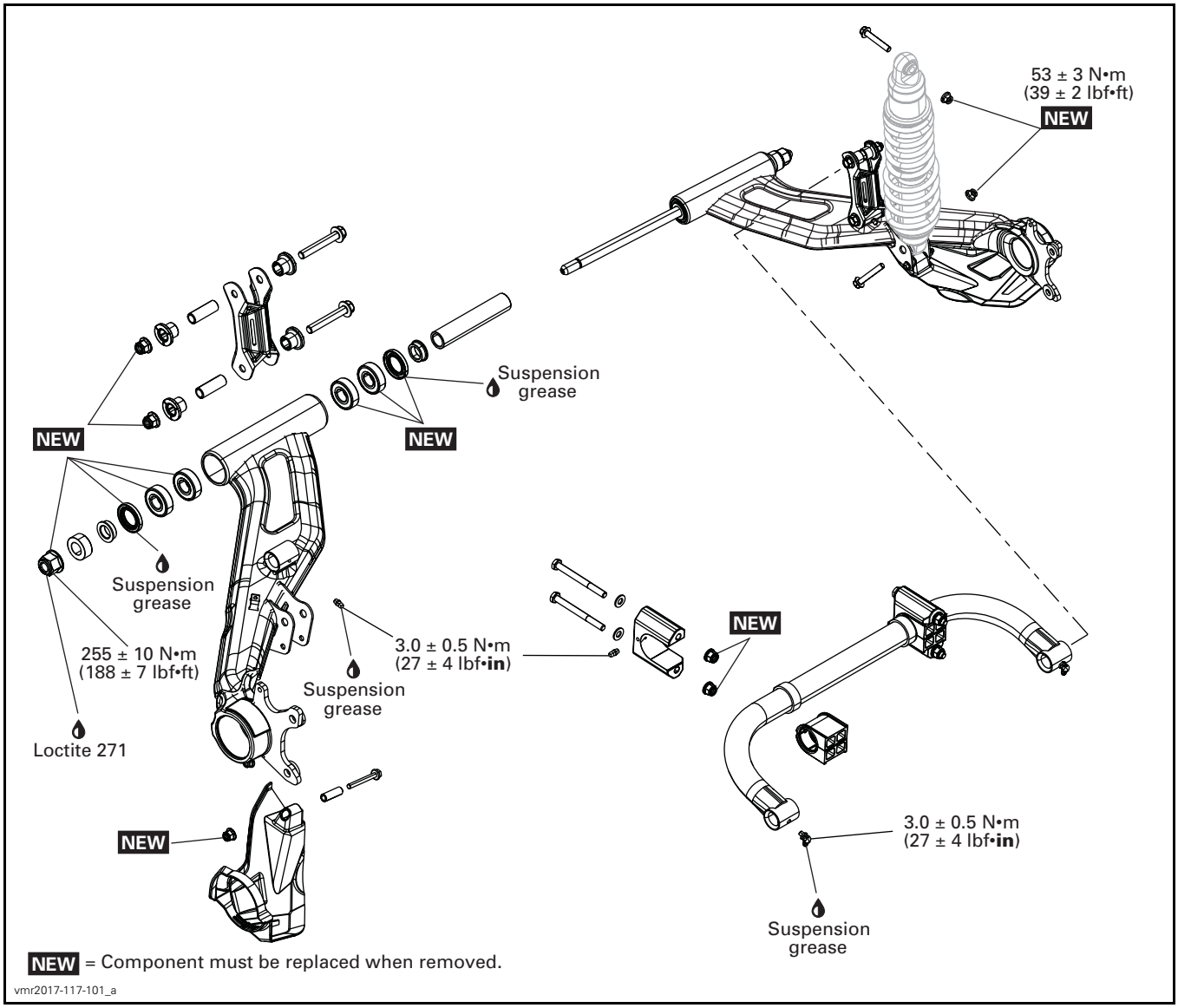
REAR SUSPENSION (OUTLANDER 570 / 650 / 850 / 1000R AND RENEGADE)

SERVICE TOOLS

Description	Part Number	Page
SPRING COMPRESSOR	529 036 184	4

SERVICE PRODUCTS

Description	Part Number	Page
SUSPENSION GREASE	293 550 033	8



GENERAL

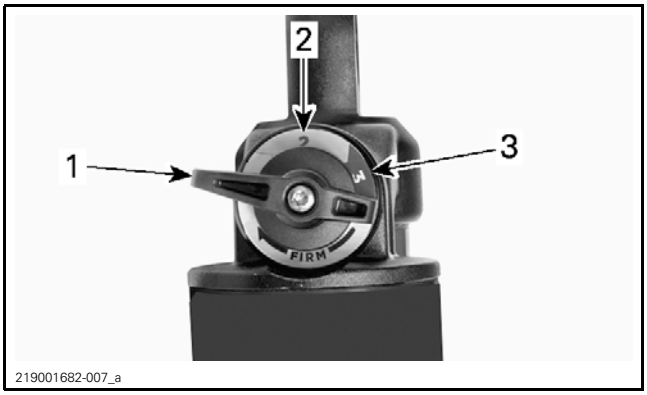
The procedure described below is the same for the RH and LH sides, unless otherwise instructed.

ADJUSTMENT

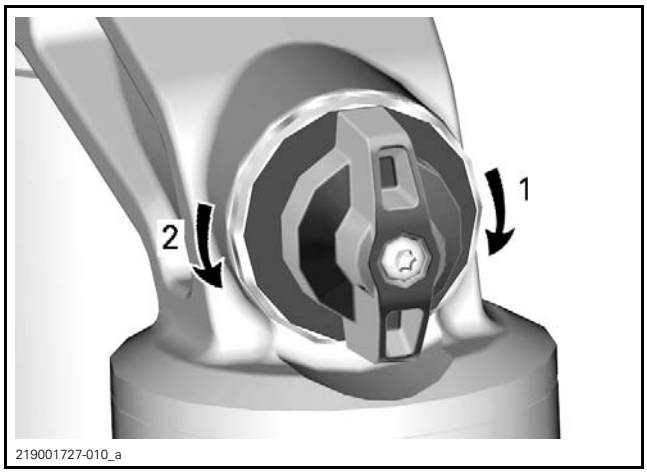
SHOCK DAMPING ADJUSTMENTS (APPLICABLE MODELS)

Compression damping controls how the shock absorber reacts when riding.

POSITION	SETTING	RESULT ON BIG BUMPS
1	Soft	Softer compression damping
2	Medium (Factory)	Medium compression damping
3	Hard	Firmer compression damping



1. Position 1
2. Position 2
3. Position 3



COMPRESSION DAMPING
1. **Increases** *damping (stiffer)*
2. **Decreases** *damping (softer)*

Turn adjuster clockwise to **increase** shock damping action (stiffer).

Turn adjuster counterclockwise to **decrease** shock damping action (softer).

ACTION	RESULT
Increasing compression damping force	Firmer compression damping
Decreasing compression damping force	Softer compression damping

⚠ WARNING

Make sure compression damping setting is the same on both sides.

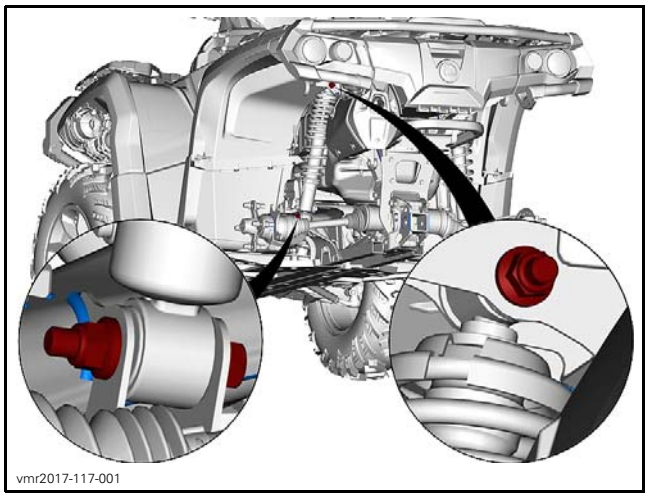
PROCEDURES

SHOCK ABSORBERS

NOTE: For specific information on air shock absorber, refer to the *AIR CONTROLLED SUSPENSION (ACS)* subsection.

Removing the Shock Absorber

1. Safely lift and support the vehicle off the ground.
2. Remove shock absorber retaining bolts.

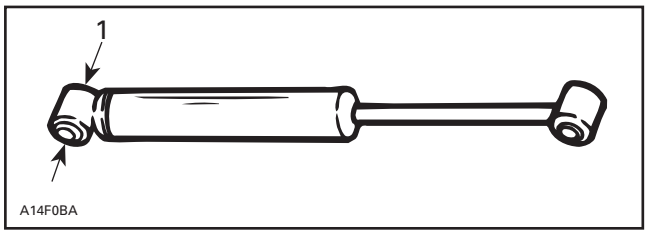

vmr2017-117-001

3. Remove shock absorber.

Inspecting the Shock Absorber

Remove spring from shock absorber. Refer to *SPRINGS* in this subsection.

Secure the end of shock body in a vise with its rod upward.



TYPICAL
1. Clamp here

NOTICE Do not clamp directly on shock body.

Extend and compress the piston several times over its entire stroke. Check that it moves smoothly and with uniform resistance with its rod upward.

Check the following conditions that will denote a defective shock:

– A skip or a hang back when reversing stroke at mid travel
– Seizing or binding condition except at extreme end of either stroke
– Oil leakage
– A gurgling noise, after completing one full compression and extension stroke.

Replace if any faults are present.

Installing the Shock Absorber

The installation is the reverse of the removal procedure. However, pay attention to the following.

Tighten shock absorber nuts to specification.

TIGHTENING TORQUE	
Shock absorber nuts	53 N•m ± 3 N•m (39 lbf•ft ± 2 lbf•ft)

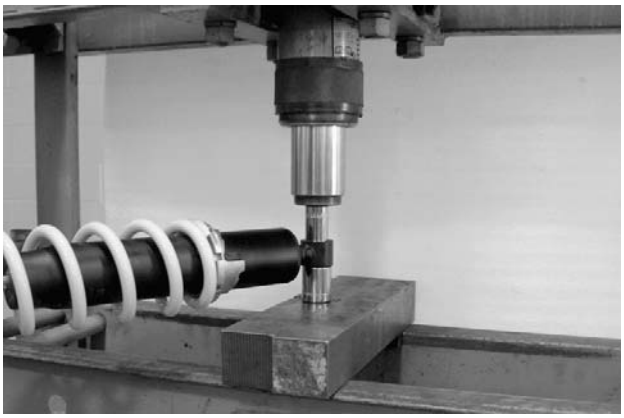
SHOCK ABSORBER BUSHINGS

NOTE: For specific information on air shocks, refer to the *AIR CONTROLLED SUSPENSION (ACS)* subsection.

Replacing the Shock Absorber Bushing

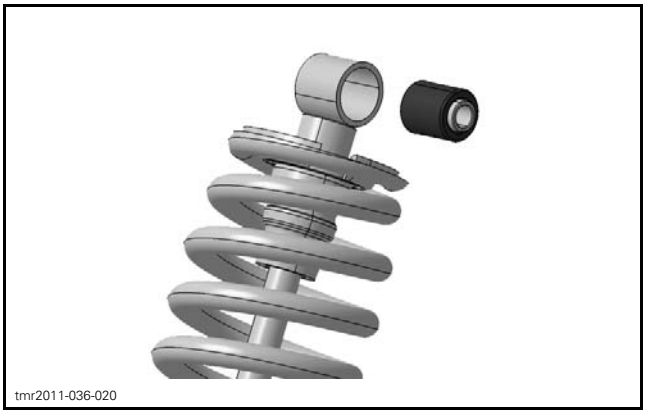
All Shock Absorbers Except HPG

1. Remove shock absorber from vehicle. Refer to *SHOCK ABSORBERS* in this subsection.
2. Install shock absorber on a press.
3. Use an appropriate socket to push bushing.


tmr2011-036-021

TYPICAL

4. Remove bushing from shock absorber.

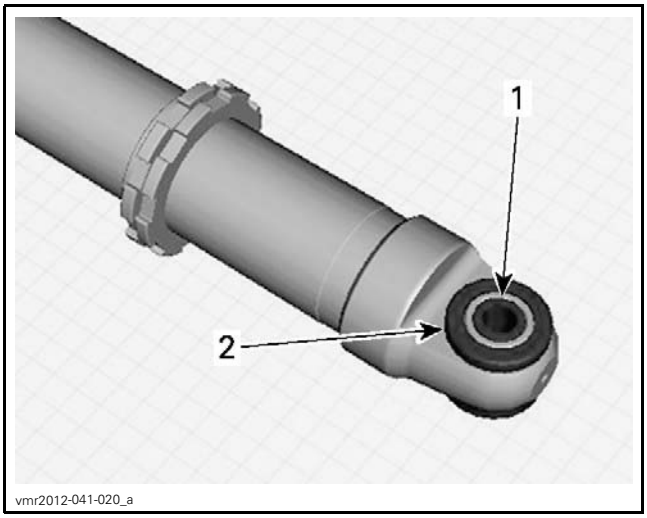

tmr2011-036-020

TYPICAL

5. Install a NEW bushing as the reverse of removal.
6. Install shock absorber on vehicle.

HPG Shock Absorber (without Remote Reservoir)

1. Remove shock absorber from vehicle. Refer to *SHOCK ABSORBERS* in this subsection.
2. Install shock absorber on a press.
3. Use an appropriate socket to push inner bushing.
4. Remove outer bushings.



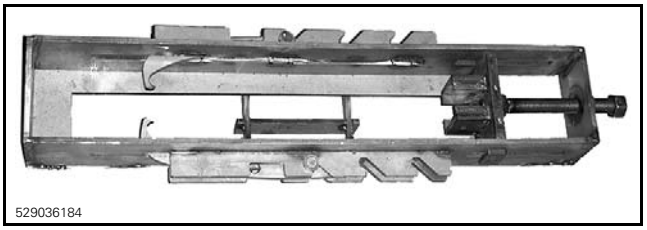
TYPICAL
1. *Inner bushing*
2. *Outer bushing*

5. Install **NEW** bushings as the reverse of removal.
6. Install shock absorber on vehicle.

SPRINGS

Removing the Spring

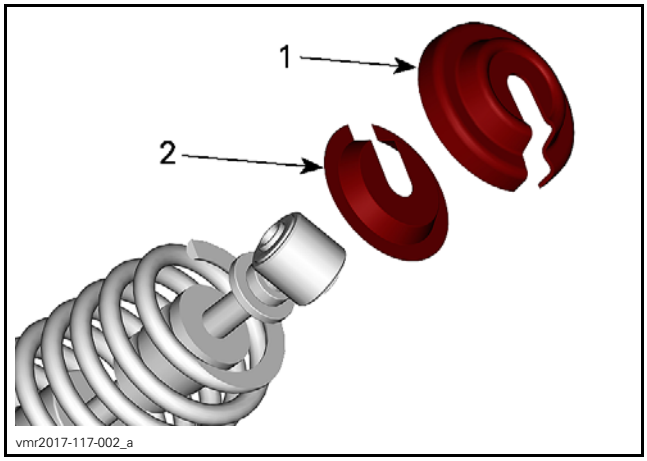
1. Remove shock absorber from vehicle. Refer to *SHOCK ABSORBERS* in this subsection.
2. Use SPRING COMPRESSOR (P/N 529 036 184).



3. Place the tool in a vise.
4. Position the shock absorber in the tool.
5. Install the spring compressor pins.
6. Tighten spring remover screw until the spring is sufficiently compressed to remove spring stopper (and cap if applicable).

Shock Absorber with a Cam Preload Adjuster

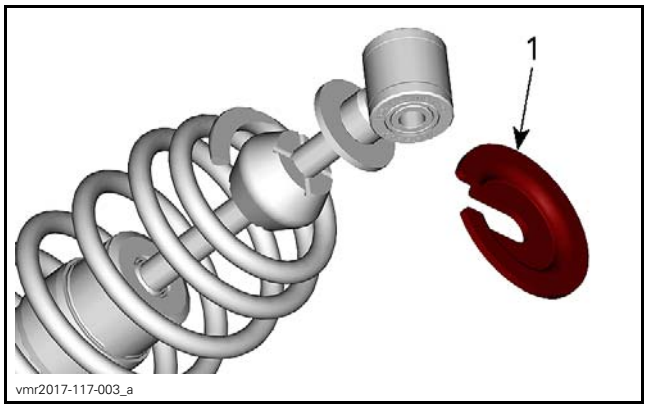
Remove spring cap and stopper.



TOP - TYPICAL CAM PRELOAD ADJUSTER TYPE
1. *Spring cap*
2. *Spring stopper*

Shock Absorber with a Threaded Preload Adjuster

Remove spring stopper.



BOTTOM - TYPICAL THREADED RING PRELOAD ADJUSTER TYPE
1. *Spring stopper*

7. Release spring remover screw.
8. Remove spring from shock absorber.

Inspecting the Spring

Inspect the spring for damage.

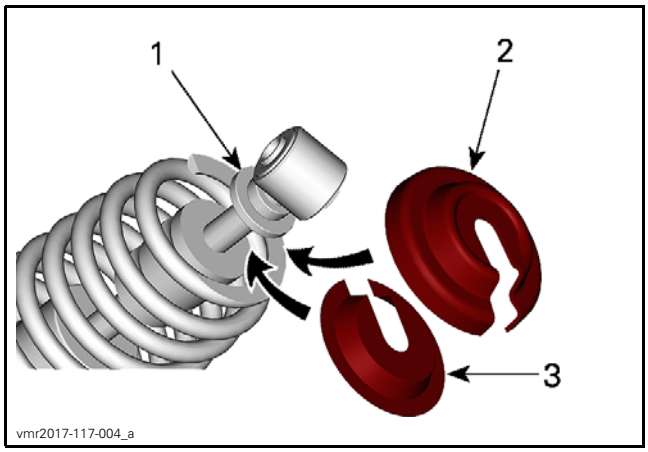
Replace if necessary.

Installing the Spring

The installation is the reverse of the removal procedure. However, pay attention to the following.

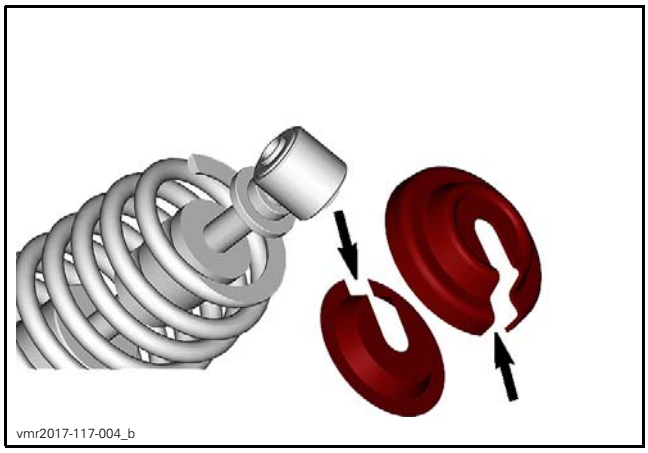
Shock Absorber with a Cam Preload Adjuster

Install the spring stopper and cap underneath the built-in washer.



TOP - TYPICAL CAM PRELOAD ADJUSTER TYPE
1. *Built-in washer*
2. *Spring cap*
3. *Spring stopper*

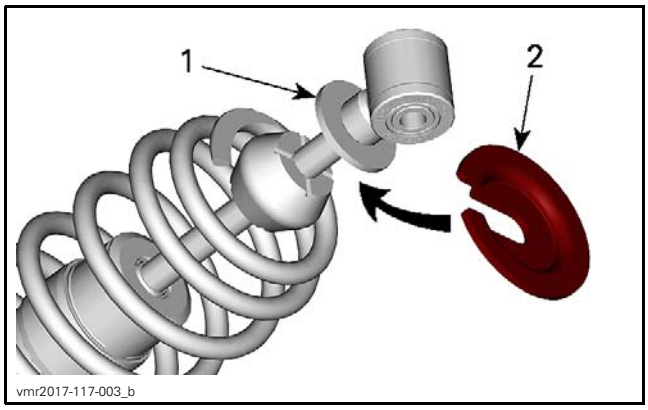
Orient the openings 180° apart.



TOP - TYPICAL CAM PRELOAD ADJUSTER TYPE (OPENINGS 180° APART)

Shock Absorber with a Threaded Preload Adjuster

Install the spring stopper underneath the built-in washer.

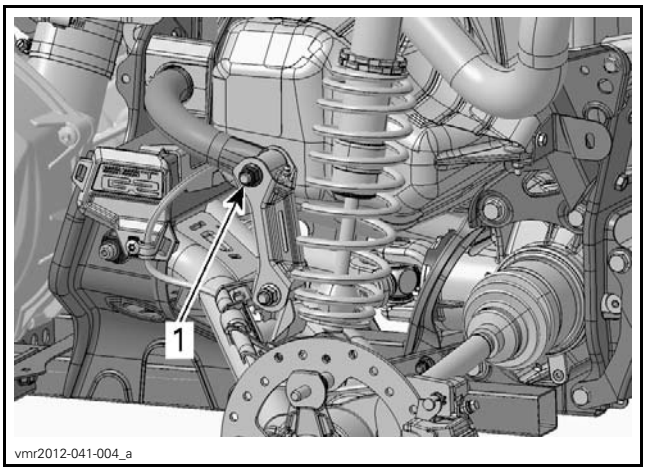


BOTTOM - TYPICAL THREADED RING PRELOAD ADJUSTER TYPE
1. *Built-in washer*
2. *Spring stopper*

STABILIZER BAR

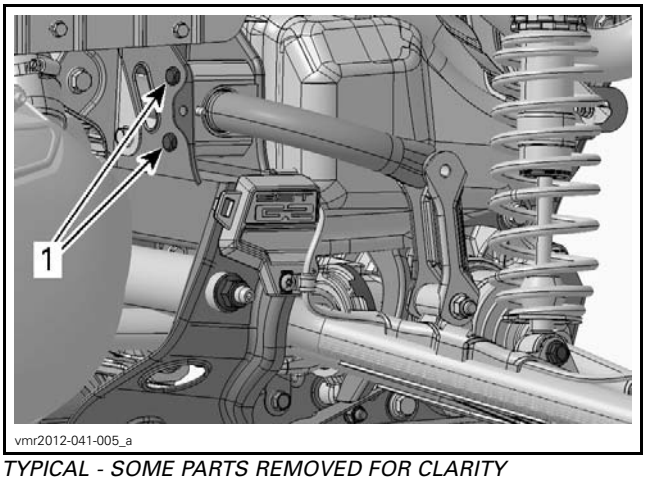
Removing the Stabilizer Bar

1. Safely lift and support the vehicle off the ground.
2. Remove rear wheels, refer to *WHEELS AND TIRES* subsection.
3. Refer to *EXHAUST SYSTEM* and remove:
   – Muffler
   – Y-Exhaust pipe.
4. Detach stabilizer bar from link arm (both sides).



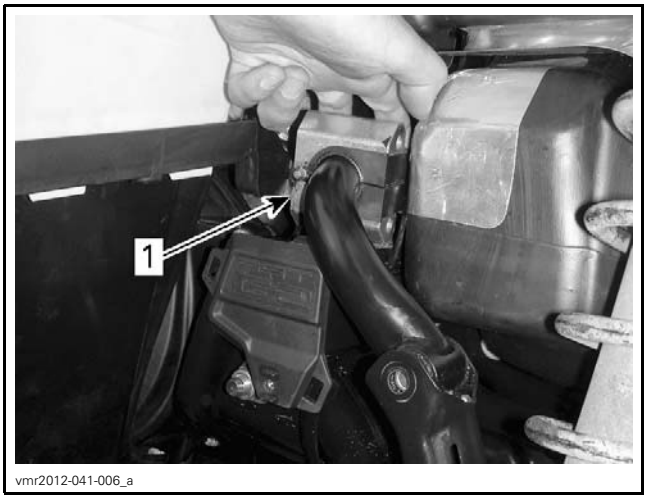
TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. *Bolt securing stabilizer bar*

5. Remove bolts and nuts securing stabilizer bar to frame (both sides).



TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. *Bolts securing stabilizer bar*

6. Remove stabilizer bar bushing holders (both sides).



1. Stabilizer bar bushing holder

7. Remove stabilizer bar.

Inspecting the Stabilizer Bar

Check stabilizer bar for cracks, bending or other damages.

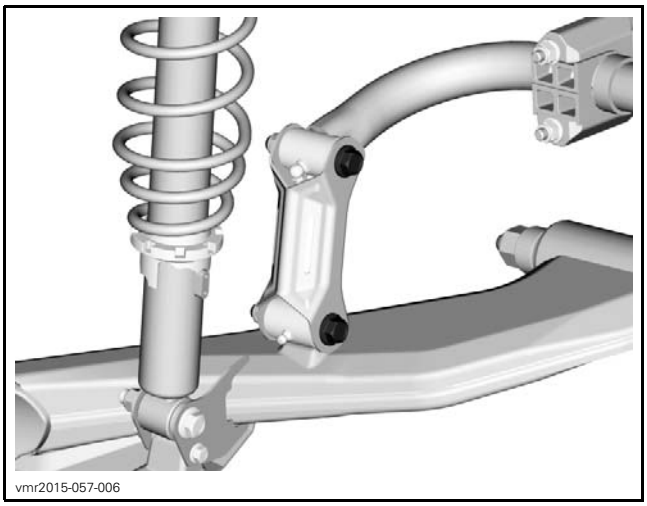
Replace if necessary.

Installing the Stabilizer Bar

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install all stabilizer bar retaining bolts loosely.

Position link arm bolts with their heads towards the inside.



TYPICAL

Tighten stabilizer bar retaining bolts to specification.

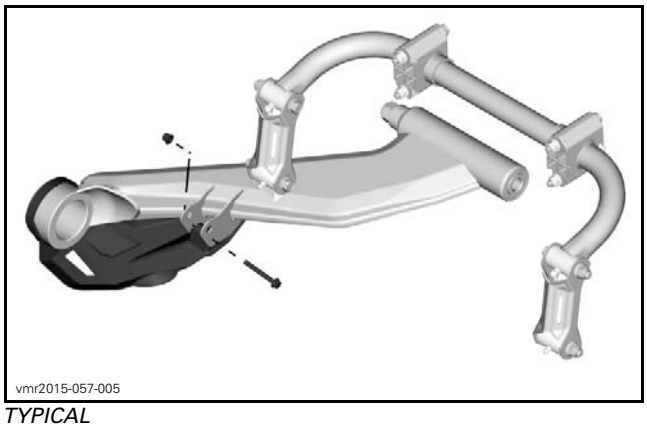
TIGHTENING TORQUE	
Bolts securing stabilizer bar to frame	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)
Bolts securing stabilizer bar to link arm	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)

Lubricate stabilizer bar. Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

TRAILING ARM

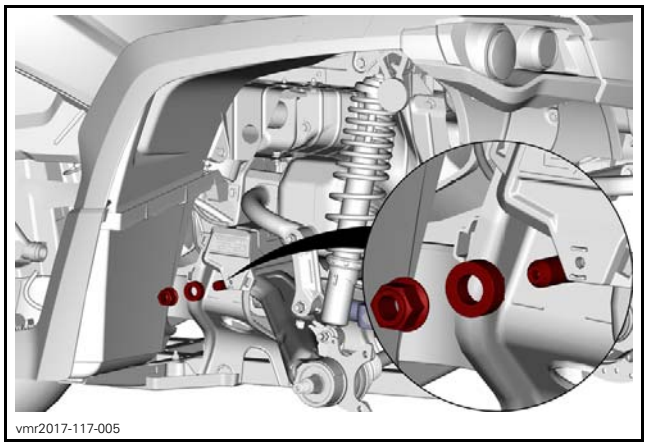
Removing the Trailing Arm

1. Safely lift and support the vehicle off the ground.
2. Remove wheel hub, refer to *REAR DRIVE* subsection.
3. Remove protective plate from trailing arm.

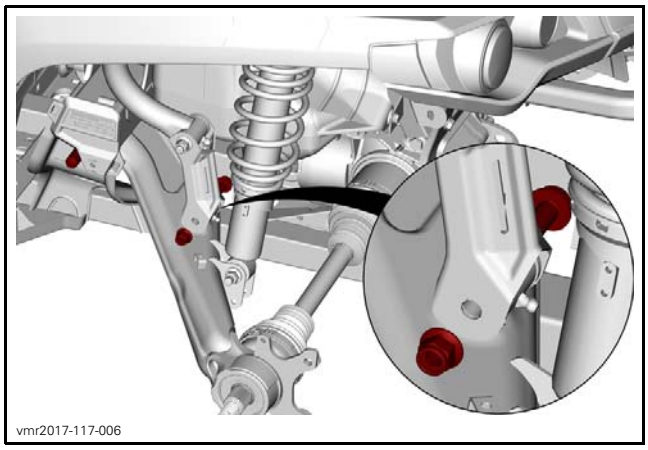


TYPICAL

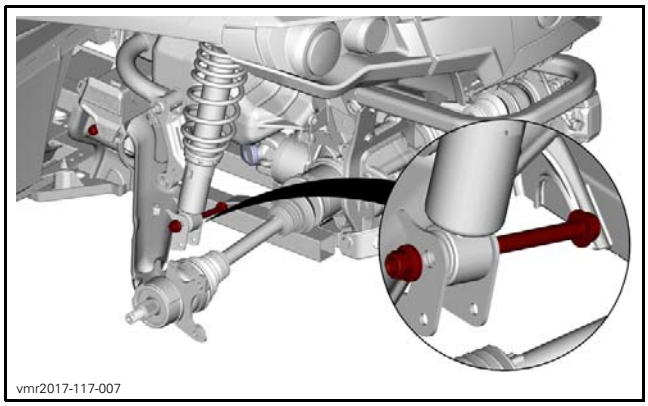
4. Detach the brake hose P clamp from the trailing arm.
5. Remove the nut and washer securing the trailing arm pivot shaft.



6. Remove the stabilizer bar link arm lower bolt.

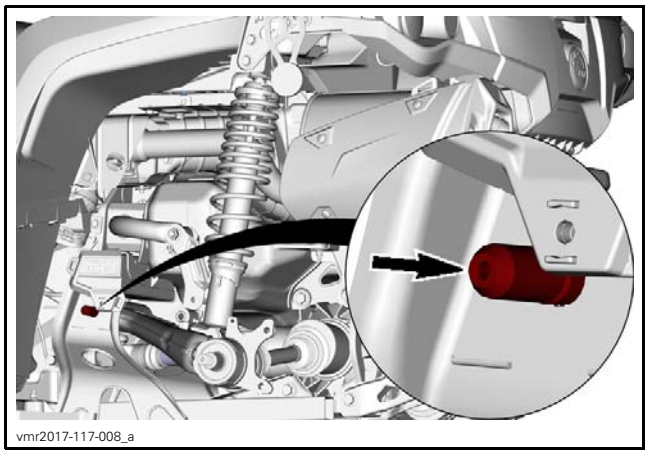

vmr2017-117-006

7. Remove the shock absorber lower retaining bolt.


vmr2017-117-007

8. Firmly hold trailing arm, then:
   – Remove shock absorber lower bolt
   – Pull trailing arm pivot shaft from the opposite side to free the trailing arm.

NOTE: If only one trailing arm is removed, pull pivot shaft just enough to free the trailing arm.

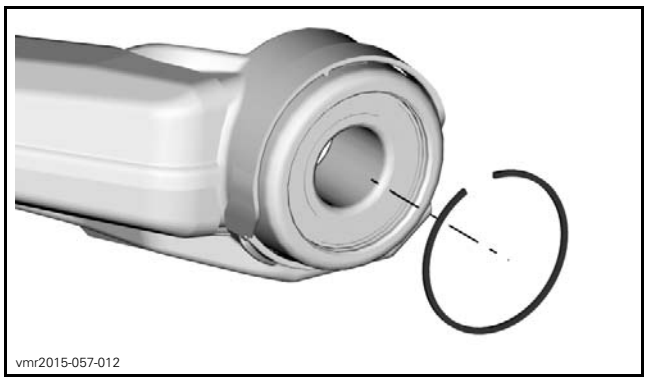

vmr2017-117-008_a

9. Remove trailing arm from the vehicle.

Disassembling the Trailing Arm

Removing Drive Shaft Bearing

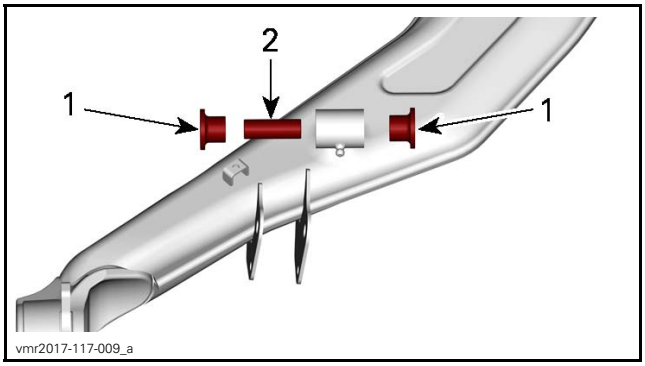
1. Remove circlip securing bearing into trailing arm.


vmr2015-057-012

2. Install trailing arm on a press.
3. Use an appropriate bearing remover.
4. Remove drive shaft bearing from trailing arm.

Removing the Link Arm Inner Bushing

Remove both bushings and the sleeve from the trailing arm.

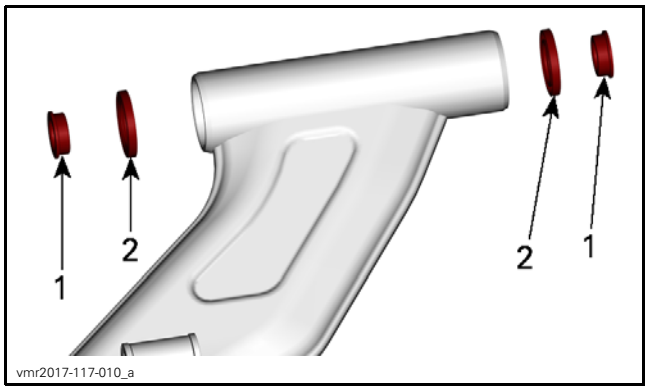


vmr2017-117-009_a

1. Bushings
2. Sleeve

Removing the Trailing Arm Pivot Bearing

1. Remove both spacers and seals from trailing arm pivot.

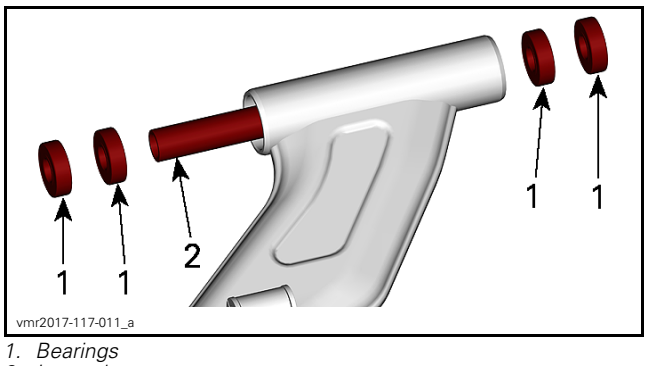


1. Spacers
2. Seals

2. Use an appropriate bearing remover.
3. Remove pivot bearings by pulling them outwards.

NOTE: Remove one bearing at a time.

4. Remove inner sleeve from trailing arm.



1. Bearings
2. Inner sleeve

Inspecting the Trailing Arm

Check trailing arms for:
– Cracks
– Bending.

Check seals condition.

Check inner race of each pivot bearing with your finger:
– Bearings should turn smoothly and quietly.

Replace all damaged parts.

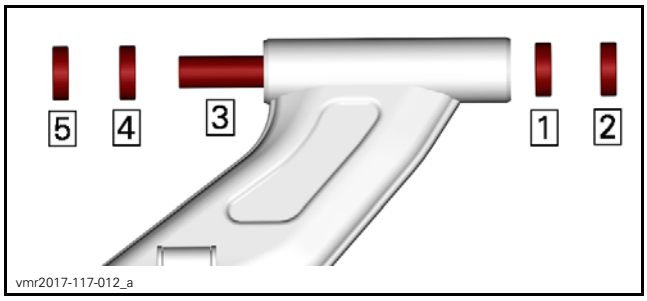
Assembling and Installing the Trailing Arm

The installation is the reverse of the removal procedure. However, pay attention to the following.

Install the following NEW parts:
– Trailing arm pivot nuts
– Pivot bearings
– Pivot seals
– Circlip.

Use an appropriate shaft to center trailing arm inner spacer during pivot bearings installation.

Install pivot bearings and inner spacer as per the following sequence.

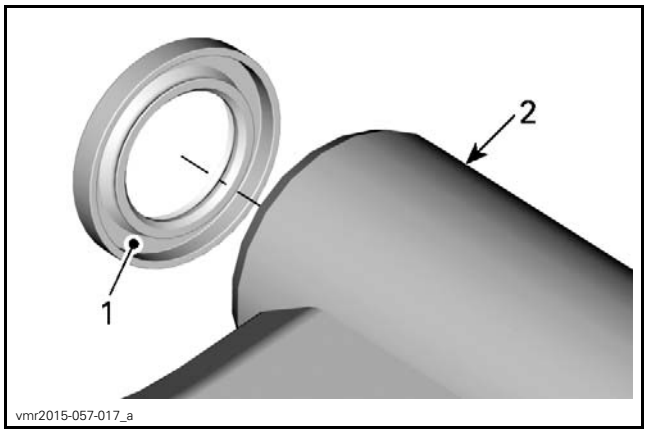


LH SHOWN
Step 1: Insert inner bearing on RH side
Step 2: Insert outer bearing on RH side
Step 3: Center inner sleeve with RH side bearings using a shaft
Step 4: Insert inner bearing on LH side
Step 5: Insert outer bearing on LH side

Lubricate trailing arm pivot seals.

LUBRICATION	
Pivot seals	SUSPENSION GREASE (P/N 293 550 033)

Install the trailing arm pivot seal with its cavity facing inwards.



1. Seal cavity
2. Trailing arm

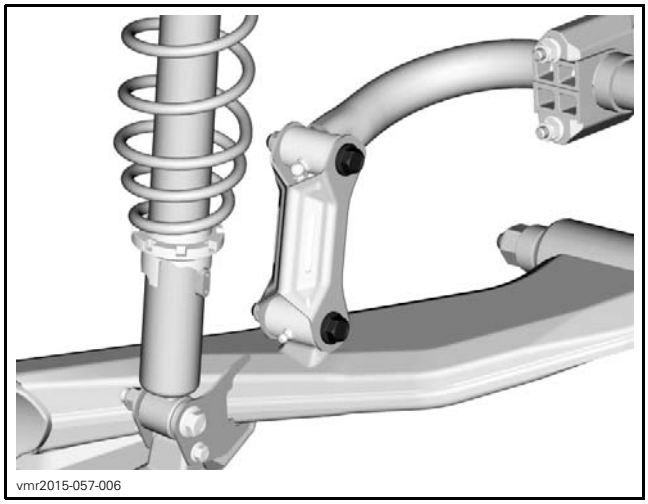
Center trailing arm pivot shaft.

Install the spacers.

Tighten trailing arm pivot nuts as per the following sequence.

TIGHTENING SEQUENCE		
Trailing arm pivot nuts	RH side nut	Tighten nut until it reaches end of threads
	LH side nut	255 N•m ± 10 N•m (188 lbf•ft ± 7 lbf•ft)

Position link arm bolts with their heads towards the inside.



TYPICAL

Tighten trailing arm fasteners to specification.

TIGHTENING TORQUE	
Bolts securing trailing arm to link arm	48 N•m ± 6 N•m (35 lbf•ft ± 4 lbf•ft)
Shock absorber nuts	53 N•m ± 3 N•m (39 lbf•ft ± 2 lbf•ft)
Protective plate retaining nuts	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)

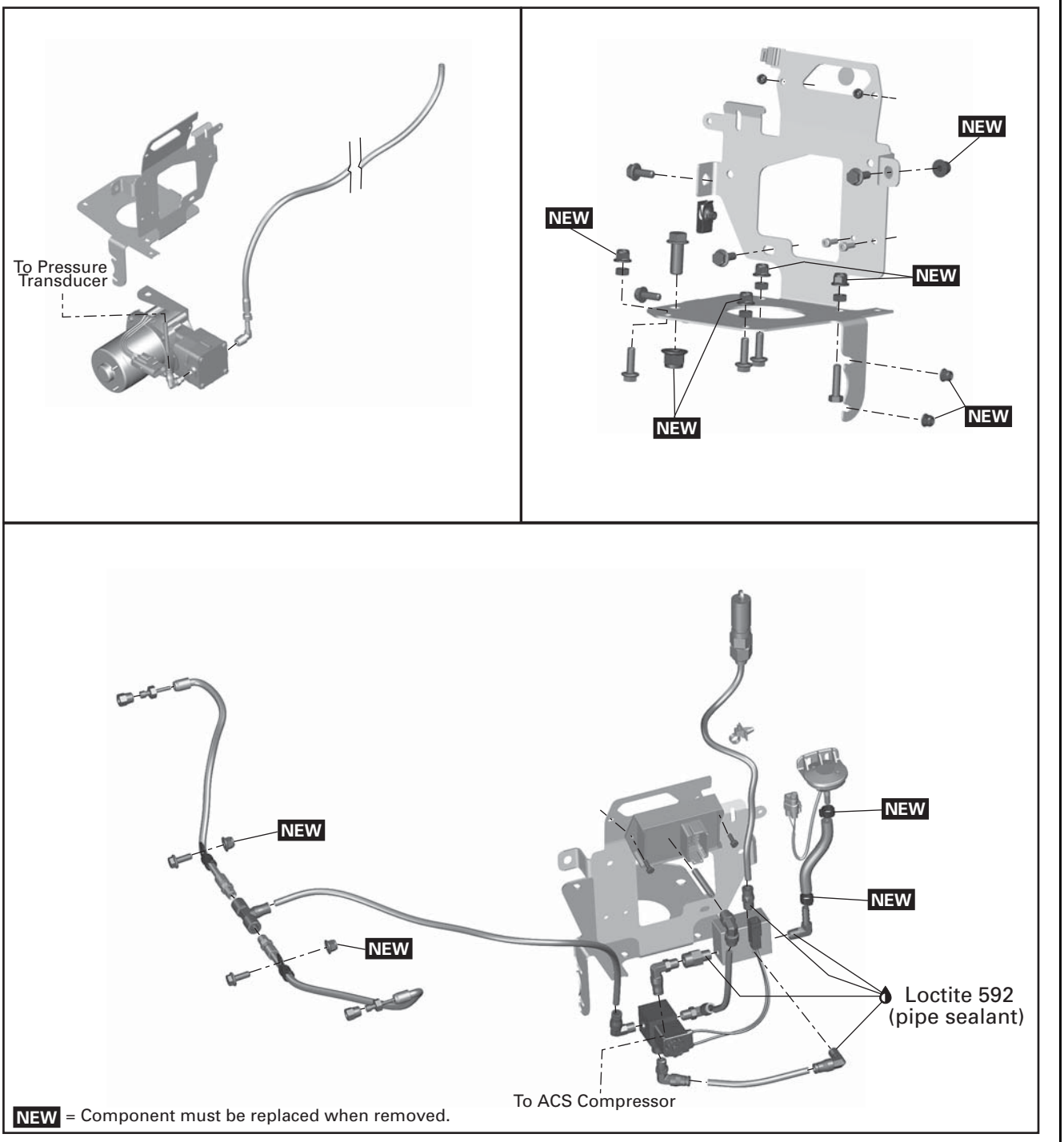
AIR CONTROLLED SUSPENSION (ACS)

SERVICE TOOLS

Description	Part Number	Page
FLUKE 115 MULTIMETER	529 035 868	8, 11–14, 17–18
OETIKER PLIERS	295 000 070	19
SPRING COMPRESSOR	529 036 184	20

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 592 (PIPE SEALANT)	293 800 018	9, 11, 16, 21



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GENERAL

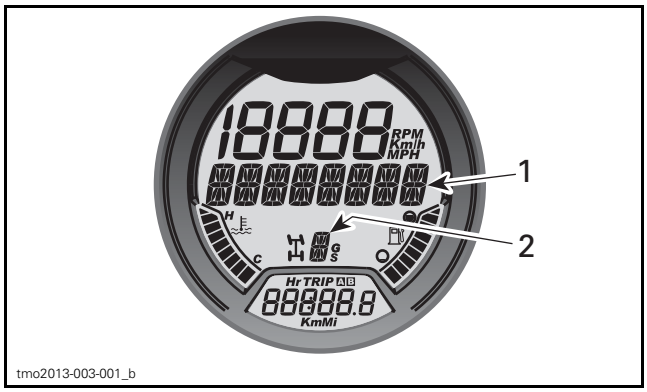
Be careful while manipulating nylon hoses, they must not be kinked.

⚠ CAUTION The ACS suspension system may be under high pressure (up to 6 bar (85 PSI)). Release air pressure prior to working on the system. Refer to *RELEASING AIR PRESSURE IN SYSTEM FOR SERVICING*.

SYSTEM DESCRIPTION (FEATURES)

The ACS suspension automatically keeps air pressure constant with changing rider weights or loads applied. The system can be adjusted on the fly to suit rider's preferences.

The multifunction gauge indicates suspension setting as follows.



1. AIR_SUSP *displayed*
2. *Actual setting*

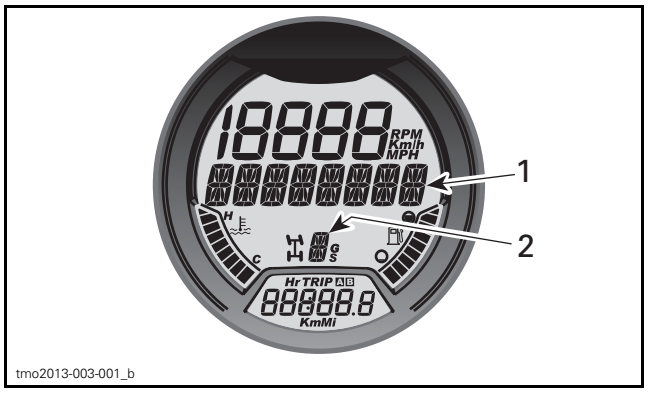
Refer to the following table to know the ACS pressure related to multifunction gauge setting.

ACS SUSPENSION SETTINGS			
SETTING	PRESSURE	RIDING COMFORT	RECOMMENDED LOAD
ACS 1	0.35 bar (5 PSI)	Softest	Operator only
ACS 2	1.4 bar (20 PSI)	Soft	
ACS 3	2 bar (30 PSI)	Semi-soft	Transporting a passenger OR a cargo
ACS 4	2.75 bar (40 PSI)	Semi-firm	
ACS 5	4.5 bar (65 PSI)	Firm	Transporting a passenger AND a cargo
ACS 6	6 bar (85 PSI)	Firmest	

Changing ACS Setting

To change the ACS setting proceed as follows:

Press MODE (M) button to display AIR_SUSP.



1. AIR_SUSP *displayed*
2. *Actual setting*

Press and release ACS button until the requested setting is displayed.

TYPICAL
1. *ACS button*

The requested setting is controlled by the ACS electronic module. The module is equipped with a pressure transducer to keep air pressure constant in the system. Depending on the rider adjustment, the module will increase pressure using the compressor or release pressure using the solenoid release valve.

ACS Setting Acknowledgement

If ACS suspension was set to *ACS 5* or *ACS 6* before shutting down the vehicle, the multifunction gauge will scroll an acknowledgement message at startup.

To acknowledge the ACS suspension setting, press and release ACS button while message appears.

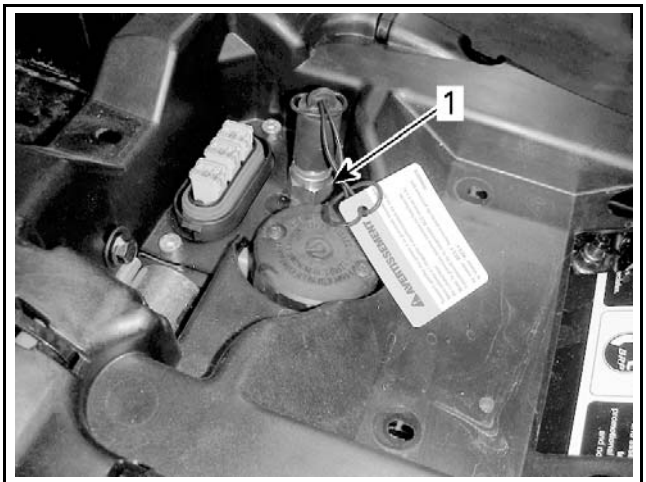
NOTE: If the message is not acknowledged, the suspension will automatically return to setting *ACS 3*.

NOTE: If the MODE (M) button in the multi-function gauge is pressed while the acknowledgement message appears, the suspension will directly return to setting *ACS 3*.

NOTE: If the vehicle transmission is set to REVERSE position at startup, the override message will be displayed instead of acknowledgement message.

Using the Auxiliary Line to Inflate Tires

The ACS system is equipped with an auxiliary line specially designed to inflate tires. The air pressure in this auxiliary line is controlled by a second pressure transducer connected to the ACS module.



vmo2013-007-018_a

1. Auxiliary line adaptor to inflate tire

To ensure that the use of the auxiliary line will not change the pressure setting inside shock absorber, the system has been divided in two zones using check valves. With this layout, both pressure zones are independent to eliminate any air pressure variation.

NOTE: The auxiliary line output pressure will vary according to the ACS suspension setting. The *ACS 1* adjustment will provide less pressure than the *ACS 6* adjustment.

NOTICE **Never inflate tires above the recommended pressure.**

ACS SYSTEM		
ZONE	LINK WITH	PRESSURE TRANSDUCER LOCATION
High-pressure zone	Shock absorbers	Inside ACS module
Low-pressure zone	Auxiliary line	In line between solenoid release valve and compressor

Releasing Air Pressure in System for Servicing

Put ACS setting to 1 before servicing ACS system. Refer to *CHANGING ACS SETTING* subsection.

SYSTEM DESCRIPTION (COMPONENTS)

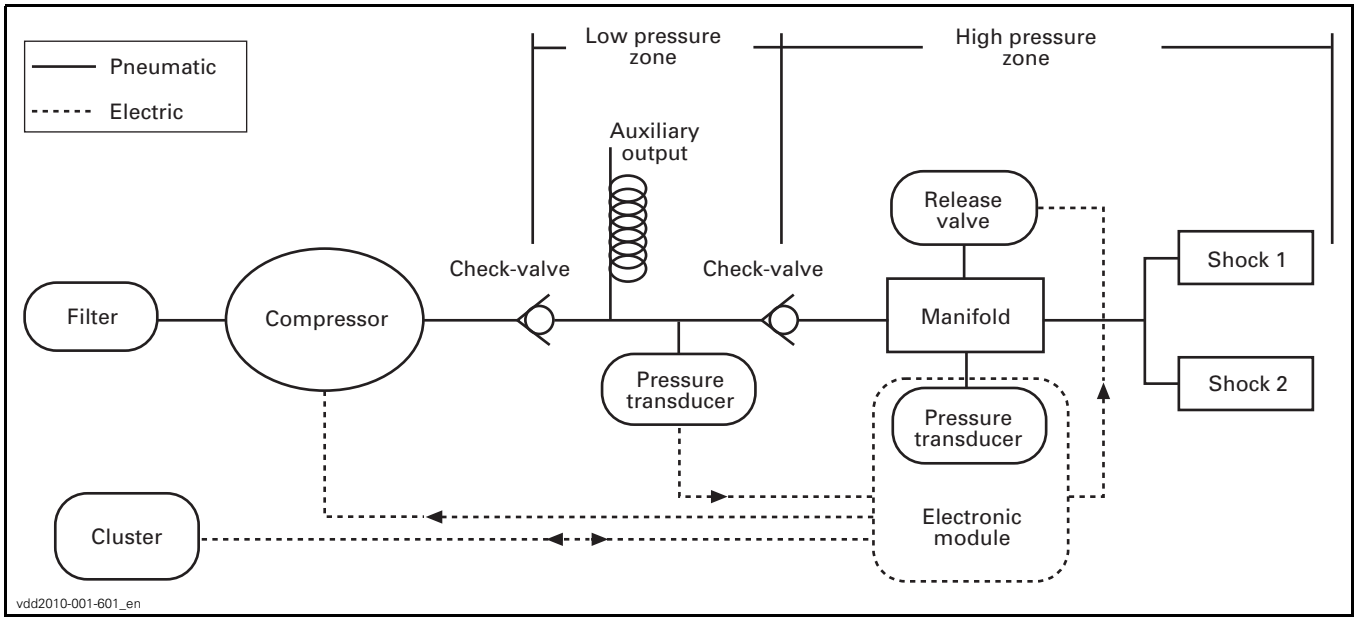
Fuse and Relay

1. ACS fuse (F12) is located in the front fuse box.
2. ACS compressor relay (R15) is located above the ACS module.

ACS Main Components

ACS COMPONENTS	MAIN FUNCTION
Filter (air intake)	To filter air intake of the compressor
Compressor	To pressurize the system
Solenoid release valve	To release air from the system
Electronic module	To control the compressor or the solenoid release valve
Manifold	To split the air hoses and allows to manually release air in the system
Pressure transducer (Low-pressure zone)	To monitor the air pressure of the auxiliary line
Pressure transducer (High-pressure zone)	To monitor the air pressure of the shock absorbers
Check valve (compressor)	To protect the compressor

ACS COMPONENTS	MAIN FUNCTION
Check valve (between both zones)	To eliminate air pressure variation between low and high pressure zone
Auxiliary line	To inflate tire
Cluster	To monitor the air pressure setting



TROUBLESHOOTING

DIAGNOSTIC TIPS

Error Code (AIR FAULT) Displayed in Gauge

The error code AIR FAULT can appear on the multifunction gauge for different reasons that are not necessarily related to a failure of the ACS system.

If the error code appears on the multifunction gauge, it indicates a disparity between the requested and the actual suspension settings. There might be an obstruction on the release valve, or the release valve itself may be defective.

Error Code Displayed and Suspension Setting Can Not Be Adjusted

If there is no leak, it is probably an electrical problem. In this case, an electrical failure of the compressor or the solenoid valve will result the impossibility to change the actual suspension setting.

After multiple attempts to change suspension setting, the module will activate error code AIR FAULT. Refer to *TROUBLESHOOTING GUIDELINES* for further troubleshooting procedure.

ACS Level Blinking in the Gauge

The ACS level will blink in the gauge until the requested position is reached. If it blink for a long period during a request to inflate the suspension, it may indicates a major leak in the system.

In this case, the module will automatically shut down the compressor to prevent it from overheating.

The shut down procedure will stay active until the next restart of the vehicle (Key OFF/key ON).

If there is a major leak in the system, refer to *ACS SYSTEM LEAK TEST* in *TROUBLESHOOTING WITH B.U.D.S.* further in this subsection.

TROUBLESHOOTING GUIDELINES

Requested Setting Display Does Not Change in Gauge

1. Check the override/ACS button as detailed in *OVERRIDE SWITCH* in the *LIGHTS GAUGE AND ACCESSORIES* subsection.

Suspension Setting Can Not Be Changed/Level Blinking in the Gauge

1. Check the override/ACS button as detailed in *OVERRIDE SWITCH* in the *LIGHTS GAUGE AND ACCESSORIES* subsection.
2. Check fuse (F12).
3. Check ACS module signal continuity.
4. Check ACS module input voltage.
5. Check ACS module ground.

Refer to *ACS MODULE* to see the complete testing procedures.

Suspension Setting Can Be Reached to Decrease Pressure Only

1. Check fuse (F3) and relay (R15).
2. Check ACS compressor operation.
3. Check ACS compressor input voltage.

Refer to *ACS COMPRESSOR* to see the complete testing procedures.

Suspension Setting Can Be Reached To Increase Pressure Only

1. Check for unplug or kinked hoses.
2. Check ACS compressor connection.
3. Check ACS solenoid valve operation.
4. Check ACS solenoid valve input voltage.

Refer to *ACS SOLENOID VALVE* to see the complete testing procedures.

No Pressure Output from the Auxiliary Line

1. Ensure that ACS suspension setting is adjusted to *ACS 6* to provide the maximum air pressure in the auxiliary line.
2. Check pressure transducer for air leakage.
3. Check signal continuity of the auxiliary line pressure transducer.
4. Check input voltage of the auxiliary line pressure transducer.
5. Check ground of the auxiliary line pressure transducer.
6. Check compressor operation.

Multifunction Gauge Display Flickers OFF and Back ON

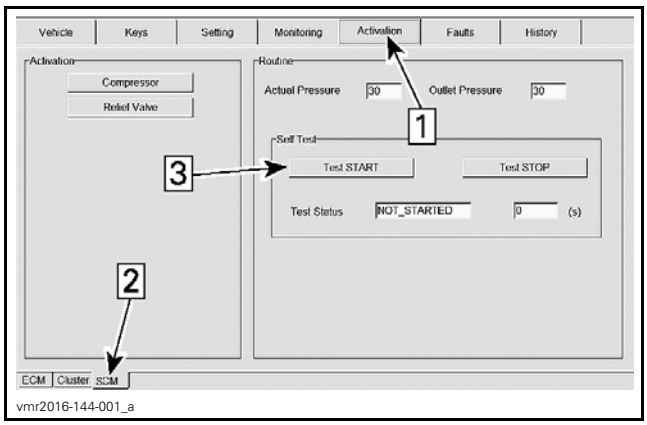
1. Check diode (D7) of the solenoid valve.

NOTE: The diode (D7) is located on the main harness near the ACS sub-harness junction. Refer to the appropriate *WIRING DIAGRAM* for location.

TROUBLESHOOTING WITH B.U.D.S.

ACS System Leak Test

1. Connect vehicle to B.U.D.S. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Select **Activation** page.
3. Select **SCM** folder.
4. Press **Test START** button to proceed.

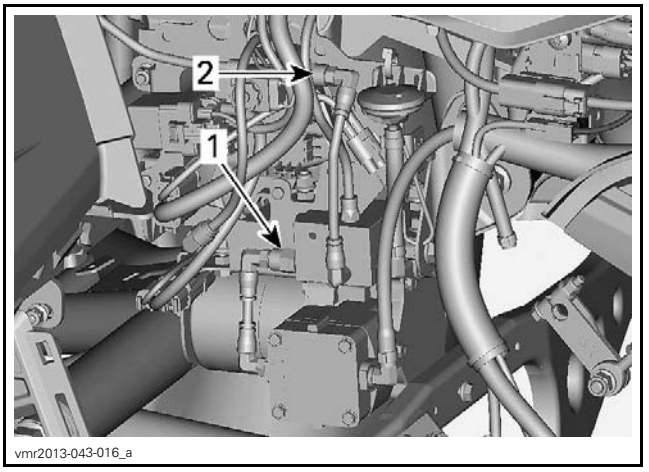


Step 1: Activation page
Step 2: SCM folder
Step 3: Leak Test START button

After pressing **Test START** button, the compressor will pressurize the air system at 6.5 bar (90 PSI) for approximately 1 minutes and B.U.D.S. will monitor the system for any leakage. The result will be indicated in the TEST STATUS box.

If a leak is detected, pressurize the system again and inspect hoses and fittings with soapy water to locate the faulty component.

If no leak is detected from hoses or fittings, inspect the compressor check valve and the auxiliary line check valve with soapy water.

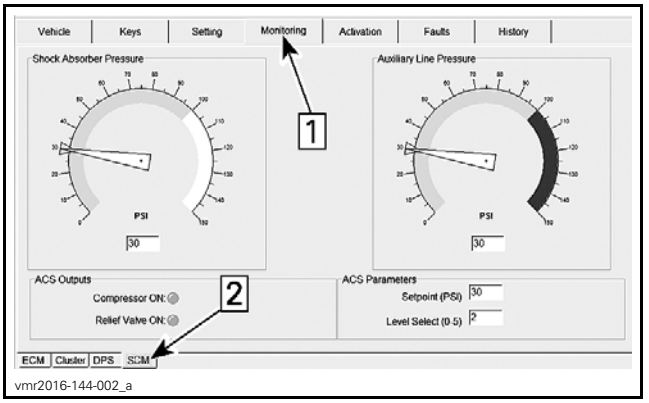


1. Auxiliary line check valve
2. Compressor check valve

ACS Air Pressure Monitoring

To monitor air pressure in the system during troubleshooting operation, proceed as follows:

1. Connect vehicle to B.U.D.S. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Select **Monitoring** page.
3. Select **SCM** folder.



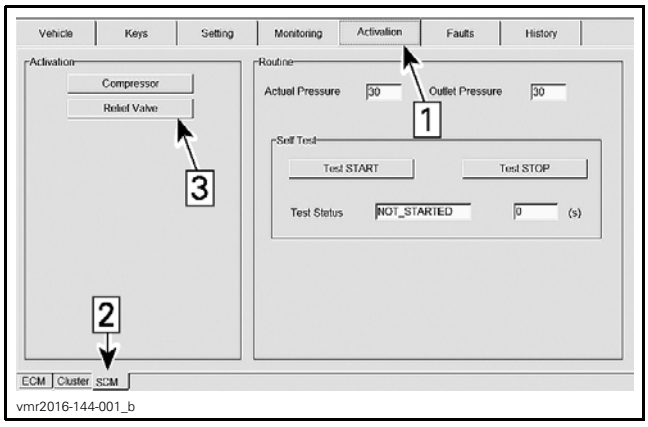
Step 1: Monitoring page
Step 2: SCM folder

PROCEDURES

ACS SOLENOID VALVE

ACS Solenoid Valve Operation Test

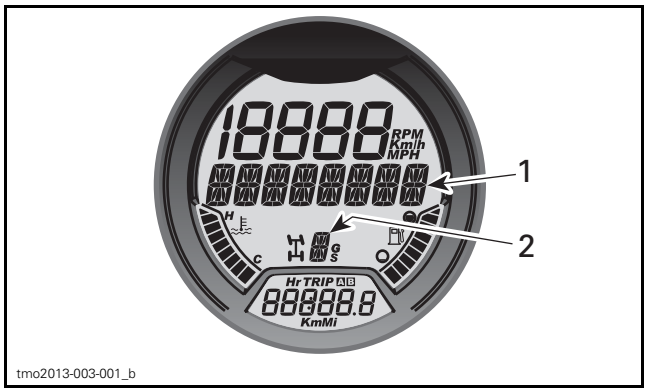
1. Connect vehicle to B.U.D.S. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Select **Activation** page.
3. Select **SCM** folder.
4. Press **Relief Valve** button to proceed.



Step 1: Activation page
Step 2: SCM folder
Step 3: Solenoid valve operation test button

ACS Solenoid Valve Input Voltage Test

1. Remove seats and RH side panel.
2. Place ignition switch to ON position.
3. Press MODE (M) button to display **AIR_SUSP**.
4. Set suspension mode to **ACS 2** using the **ACS** button.
5. Wait until the actual setting shows 2.



1. **AIR_SUSP** *displayed*
2. *Actual setting*

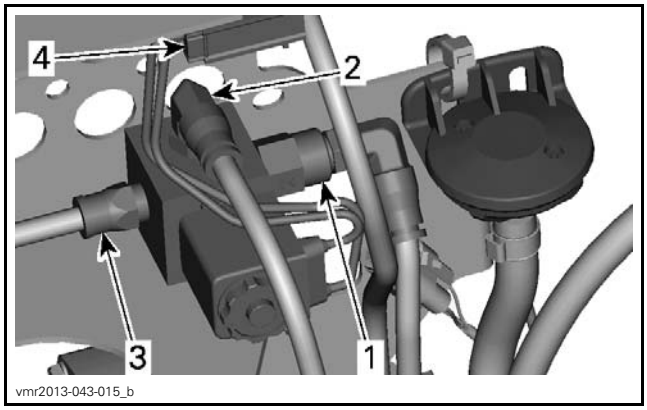
NOTE: Make sure to wait enough time in order to let the system adjust the air pressure.

6. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc.
7. Back probe solenoid connector (without disconnecting).
8. Set suspension mode to **ACS 1** using the **ACS** button.
9. Measure voltage between solenoid connector terminals as per the following table.

TEST PROBES	VOLTAGE
Pin 2 (YL/GN)	Battery voltage (± 12 Vdc)
Pin 1 (BK)	

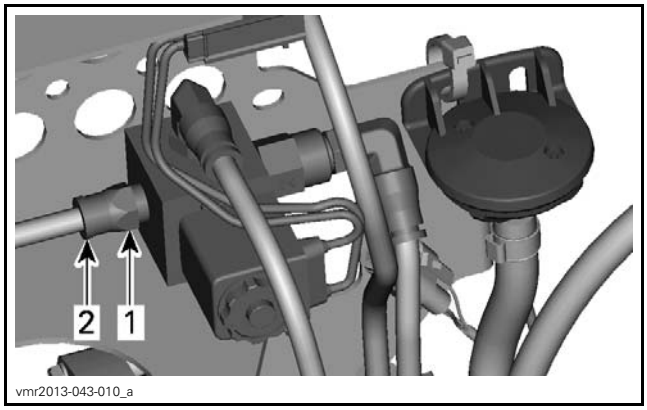
ACS Solenoid Valve Removal

1. Release air pressure, refer to *RELEASING AIR PRESSURE IN SYSTEM FOR SERVICING* in this subsection.
2. Disconnect the following hoses and connector from solenoid valve air fittings.
   - Manifold air inlet hose (from manifold)
   - Module hose
   - Rear suspension shocks hose
   - Solenoid connector.



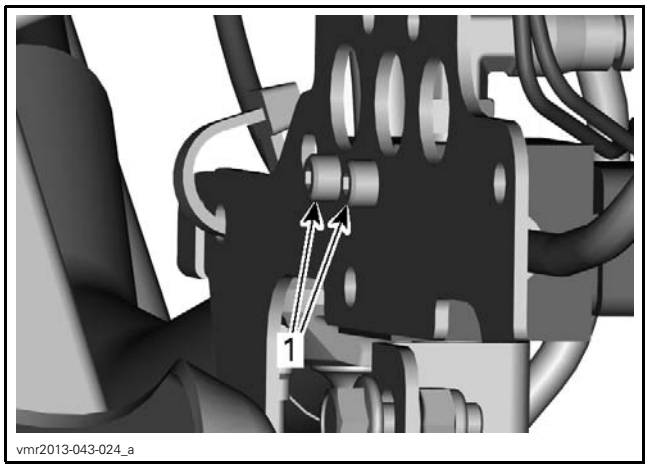
1. *Manifold air inlet hose (from compressor)*
2. *Module hose*
3. *Rear suspension Shocks hose*
4. *Solenoid connector*

3. To disconnect hoses, proceed as follows:
   3.1 Push fitting ring toward manifold.
   3.2 Hold ring in place.
   3.3 Pull air hose.



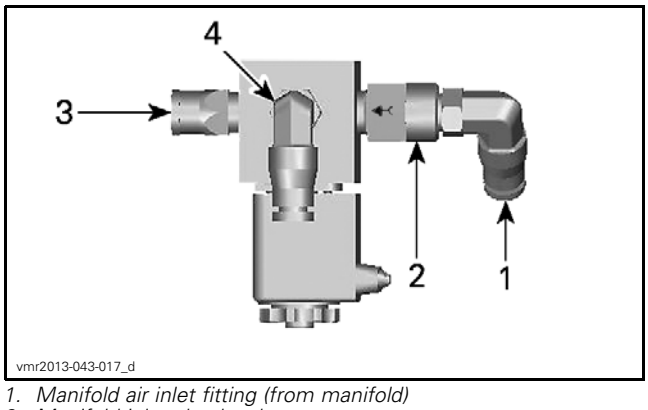
1. *Fitting*
2. *Fitting ring*

4. Remove solenoid retaining screws.



1. Retaining screws

5. Unscrew air fittings and check valve.



1. Manifold air inlet fitting (from manifold)
2. Manifold inlet check valve
3. Shocks fitting
4. Module fitting

ACS Solenoid Valve Installation

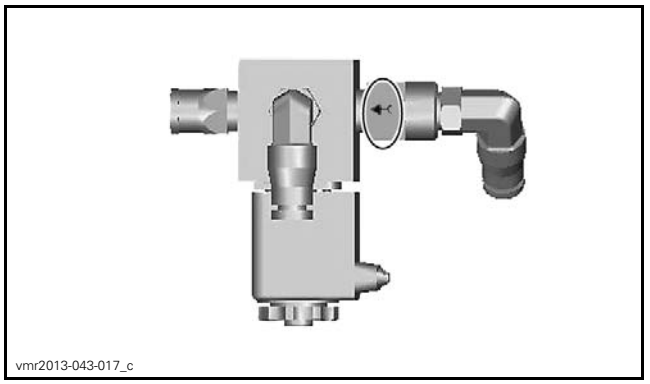
The installation procedure is the reverse of removal procedure, however pay attention to the following.

If fitting is the one previously removed (old one), apply LOCTITE 592 (PIPE SEALANT) (P/N 293 800 018) on all male fittings.

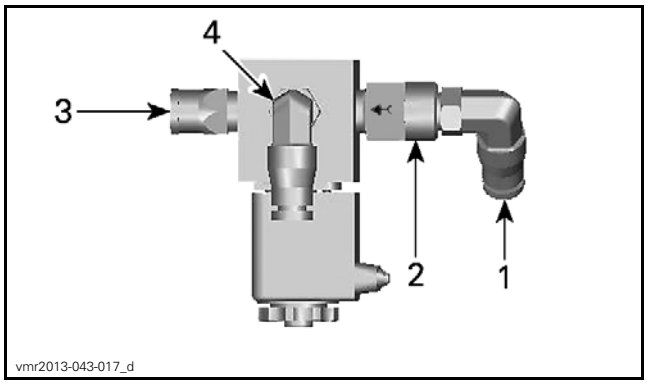
If fitting is a new one, do not apply sealant, it should be already applied on male threads.

On check valve apply LOCTITE 592 (PIPE SEALANT) (P/N 293 800 018) on male threads.

Install air fittings and check valve as follows with arrows pointing toward solenoid.

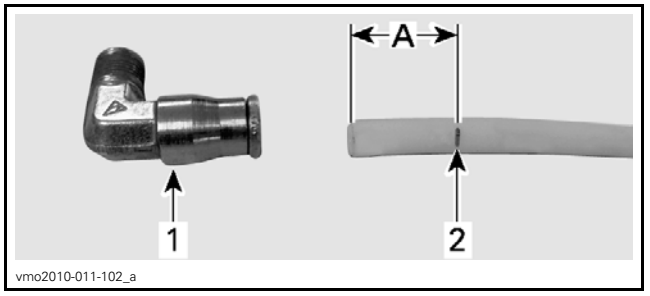


Install air fittings and check valve as follows.



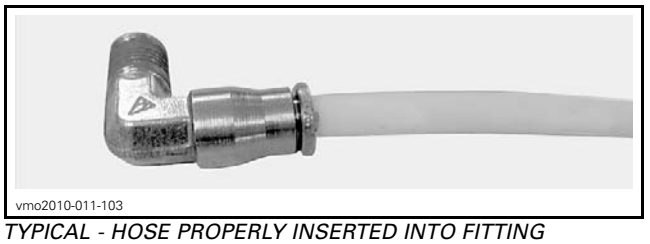
RETAINING SCREWS ARE OFFSET TOWARD MODULE FITTING
1. Manifold air inlet fitting (from manifold)
2. Auxiliary line check valve
3. Shocks fitting
4. Module fitting

Ensure that air hoses are properly inserted into fittings, refer to the following illustrations.



TYPICAL - PUSH HOSE UNTIL THE MARK IS COMPLETELY INSERTED
1. Fitting
2. Mark

A. Must be inserted into fitting

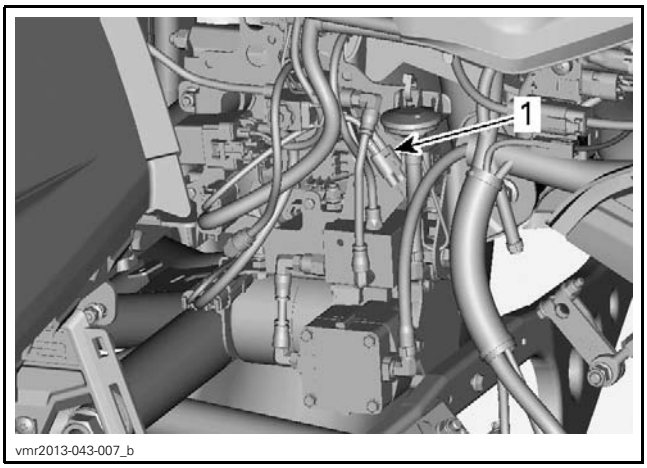


TYPICAL - HOSE PROPERLY INSERTED INTO FITTING

ACS MANIFOLD

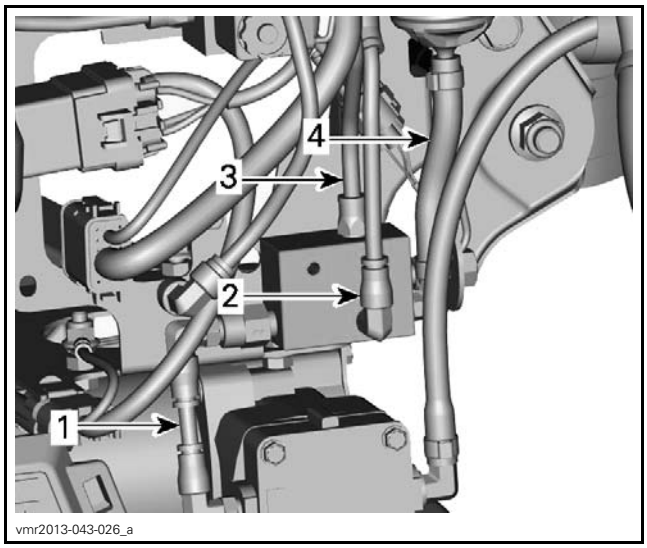
ACS Manifold Removal

1. Release air pressure, refer to *RELEASING AIR PRESSURE IN SYSTEM FOR SERVICING* in this subsection.
2. Disconnect pressure transducer connector.



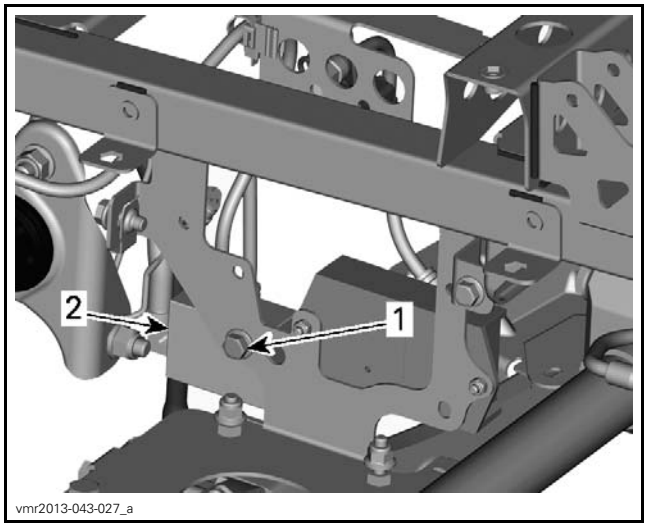
1. Connector of auxiliary line pressure transducer

3. Disconnect the following hoses and connector from solenoid valve air fittings.
   - Air inlet hose (from compressor)
   - Solenoid valve hose
   - Auxiliary line hose
   - Pressure transducer.
4. To disconnect hoses, proceed as follows:
   - 4.1 Push fitting ring toward manifold.
   - 4.2 Hold ring in place.
   - 4.3 Pull air hose.



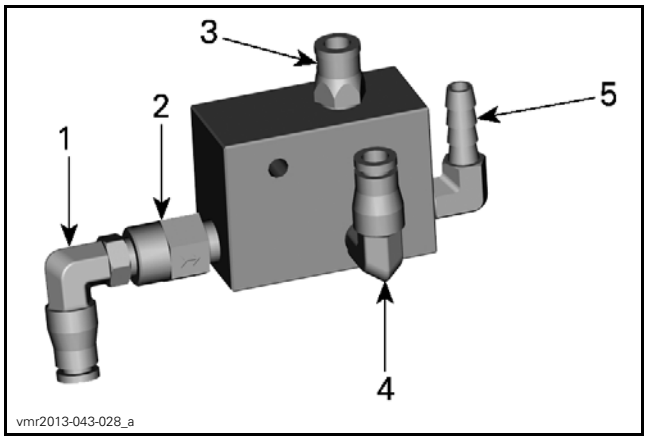
1. Inlet hose (from compressor)
2. Solenoid valve hose
3. Auxiliary valve hose
4. Pressure transducer hose

5. Remove retaining screw securing manifold to support.



1. ACS manifold retaining screw
2. ACS manifold

6. Unscrew air fittings and check valve.



1. Manifold air inlet fitting (from compressor)
2. Compressor line check valve
3. Auxiliary line fitting
4. Solenoid line fitting
5. Pressure transducer fitting

ACS Manifold Installation

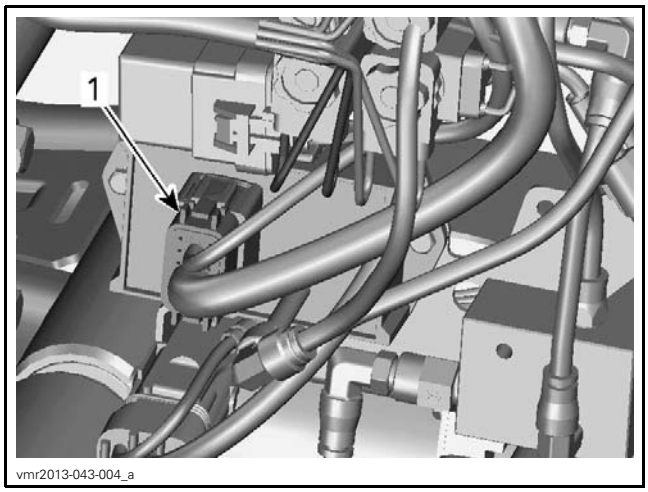
The installation procedure is the reverse of removal procedure, however pay attention to the following.

Apply LOCTITE 592 (PIPE SEALANT) (P/N 293 800 018) on male fittings.

ACS MODULE

ACS Module Signal Circuit Continuity Test

1. Remove seats and RH side panel.
2. Disconnect multifunction gauge from vehicle. Refer to *LIGHTS, GAUGE AND ACCESSORIES* subsection.
3. Disconnect ACS module connector.



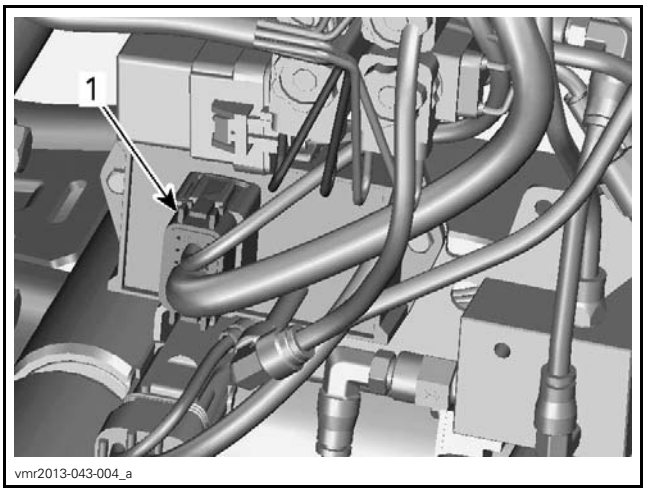
1. Module connector

4. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω.
5. Measure resistance as per the following tables.

TEST PROBES		RESISTANCE
GAUGE	MODULE	
Pin 18 (WH/BK)	Pin 5 (WH/BK)	Close to 0 Ω
Pin 19 (WH/BE)	Pin 6 (WH/BE)	Close to 0 Ω

ACS Module Input Voltage Test

1. Disconnect module connector.



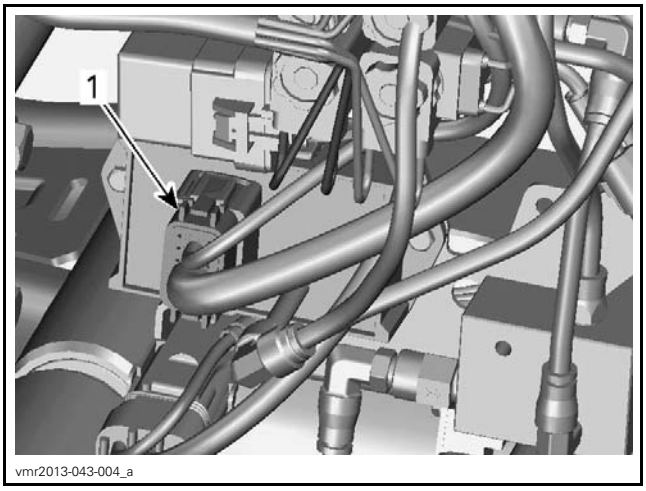
1. Module connector

2. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc.
3. Place ignition switch to ON position.
4. Measure voltage as per the following table.

TEST PROBES	VOLTAGE
Pin 12 (OR/GN)	Battery voltage (± 12 Vdc)
Battery negative (-) post	

ACS Module Ground Test

1. Verify if compressor is properly grounded to frame before performing the ground test.
2. Disconnect module connector.



1. Module connector

3. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc.
4. Place ignition switch to ON position.
5. Measure voltage as per the following table.

TEST PROBES	VOLTAGE
Pin 7 (BK)	Battery voltage (± 12 Vdc)
Battery negative (-) post	

If compressor does not work:

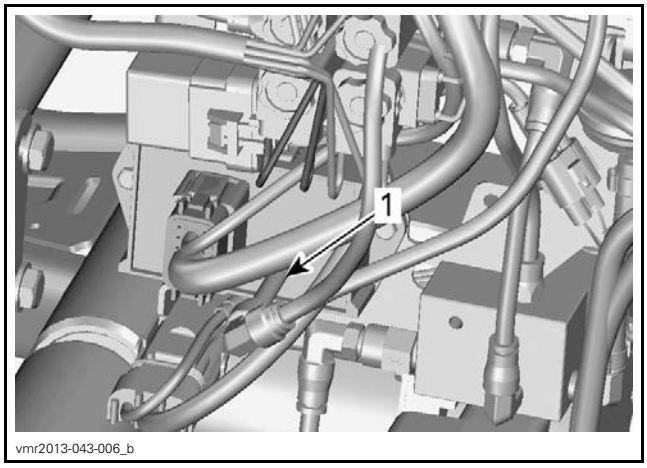
TEST PROBES	VOLTAGE
HIC8 (RD/PK)	Battery voltage (± 12 Vdc)
Battery negative (-) post	

If valves do not work:

TEST PROBES	VOLTAGE
DB1-6 (RD/BR)	Battery voltage (± 12 Vdc)
Battery positive (+) post	

ACS Module Removal

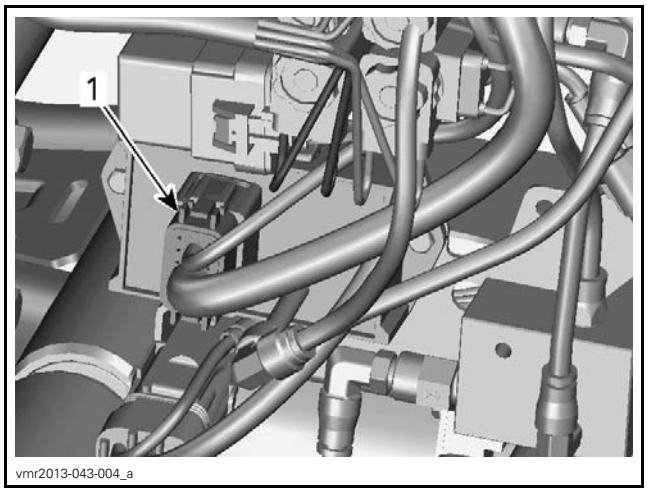
1. Release air pressure, refer to *RELEASING AIR PRESSURE IN SYSTEM FOR SERVICING* in this subsection.
2. Disconnect module hose from solenoid valve air fitting as follows:
   2.1 Push fitting ring toward manifold.
   2.2 Hold ring in place.
   2.3 Pull air hose.



1. Module hose

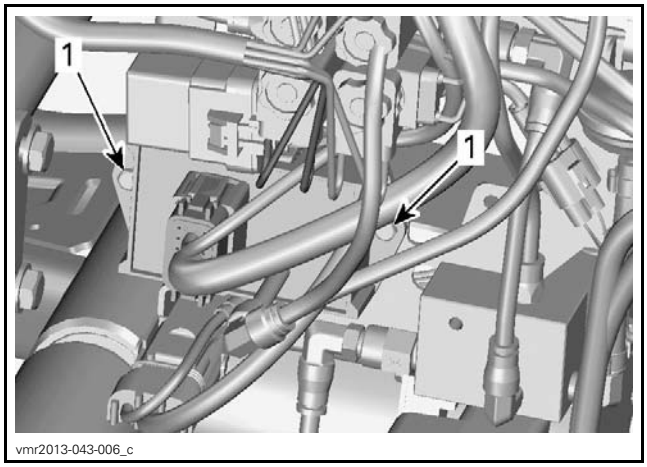
NOTICE Do not attempt to disconnect hose from module.

3. Disconnect module connector.



1. Module connector

4. Remove module retaining bolts and nuts.



1. Module retaining bolt

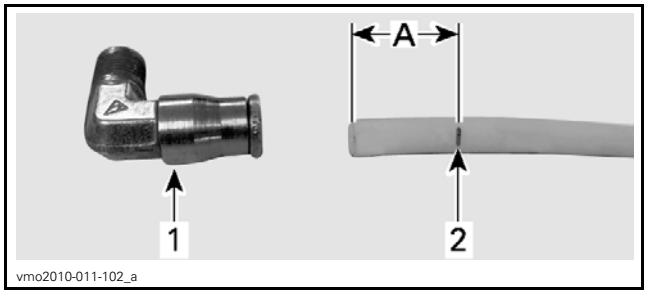
5. Remove module from vehicle.

ACS Module Installation

The installation procedure is the reverse of removal procedure, however pay attention to the following.

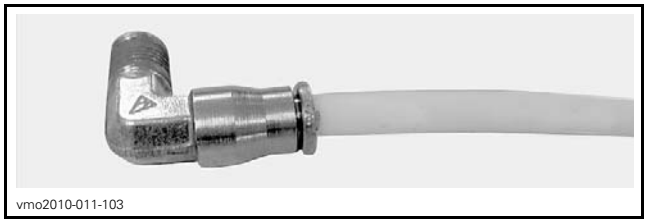
If a new ACS module is installed, check diode (D7) of the solenoid valve to ensure that it is not defective as it can damage the ACS module. The diode (D7) is located on the main harness near the ACS sub-harness junction. Refer to the appropriate *WIRING DIAGRAM* for diode location.

Ensure that air hoses are properly inserted into fittings, refer to the following illustrations.



TYPICAL - PUSH HOSE UNTIL THE MARK IS COMPLETELY INSERTED
1. *Fitting*
2. *Mark*

A. Must be inserted into fitting



TYPICAL - HOSE PROPERLY INSERTED INTO FITTING

ACS COMPRESSOR RELAY (R15)

ACS Relay Continuity Test

1. Remove relay (R15), located above the ACS module.
2. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω.
3. Measure resistance as per the following table.

TEST PROBES	RESISTANCE
Terminal 30 (pin 12B)	Open (OL)
Terminal 87 (pin 11A)	

4. Apply 12 volts on terminals 86 (pin 11B) and 85 (pin 12A).
5. Measure resistance again as per the following table.

TEST PROBES	RESISTANCE
Terminal 30 (pin 12B)	Close to 0 Ω
Terminal 87 (pin 11A)	

If results are not as per the above tables, replace relay.

ACS Relay Input Voltage Test

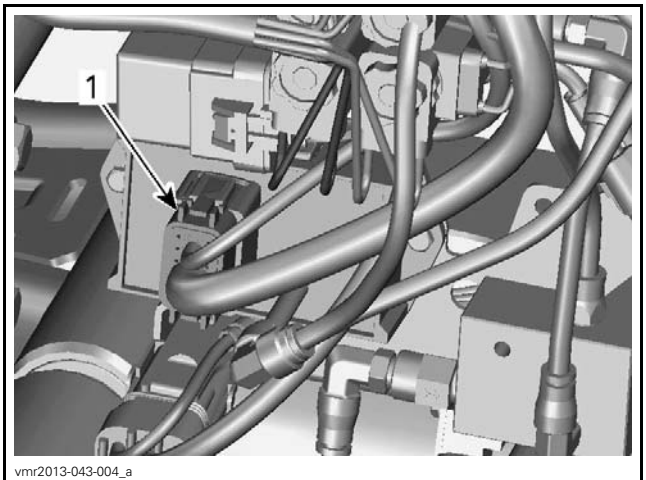
1. Remove relay (R15), located above the ACS module.
2. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc.
3. Place ignition switch to ON position.
4. Measure voltage as per the following tables.

TEST PROBES		**RESISTANCE**
FUSE BOX	BATTERY	
Pin E8 (RD/BR)	Negative (-) post	Battery voltage (± 12 Vdc)
Pin E9 (RD/YL)	Negative (-) post	Battery voltage (± 12 Vdc)

If voltage is not as specified, check wiring, connector and terminal condition.

ACS Relay Ground Wire Continuity Test

1. Remove relay (R15), located above the ACS module.
2. Disconnect module connector.



1. *Module connector*

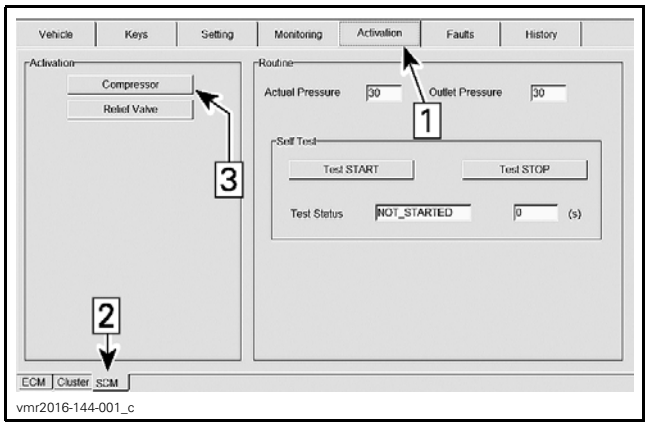
3. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω.
4. Measure resistance as per the following table.

TEST PROBES	RESISTANCE
Module pin 8 (OR/PK)	Close to 0 Ω
Relay winding ground wire (OR/PK)	

ACS COMPRESSOR

ACS Compressor Operation Test

1. Connect vehicle to B.U.D.S. Refer to *COMMUNICATION TOOLS AND B.U.D.S.* subsection.
2. Select **Activation** page.
3. Select **SCM** folder.
4. Press **Compressor** button to proceed.



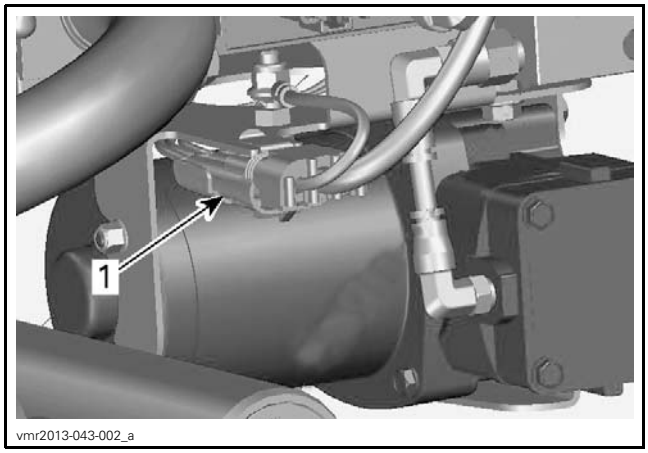
vmr2016-144-001_c

Step 1: Activation page
Step 2: SCM folder
Step 3: Compressor operation test button

5. Verify if compressor works properly.

ACS Compressor Power Wire Continuity Test (from Relay)

1. Remove relay (R15), located above the ACS module.
2. Disconnect compressor connector.



vmr2013-043-002_a

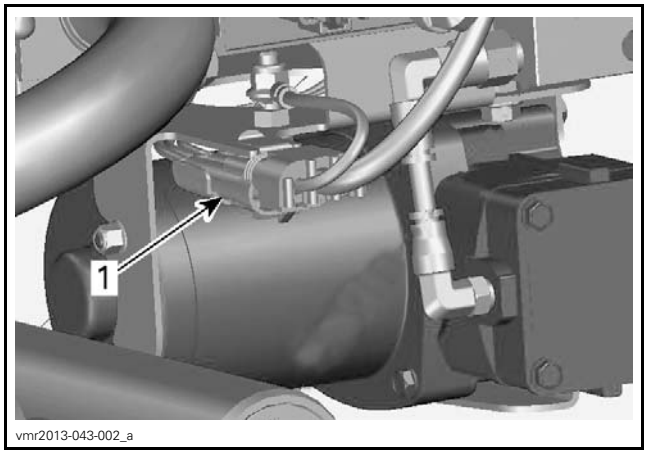
1. Compressor connector

3. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω.
4. Measure resistance as per the following table.

TEST PROBES	RESISTANCE
Compressor pin C (RD/WH)	Close to 0 Ω
Terminal 87 (RD/WH)	

ACS Compressor Input Voltage Test

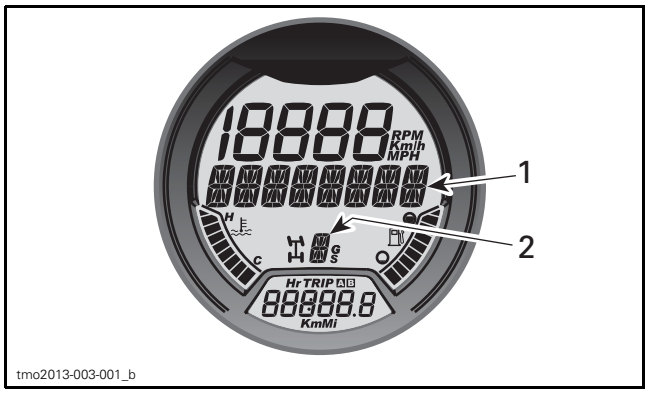
1. Reinstall the ACS relay (R15).
2. Release air pressure, refer to *RELEASING AIR PRESSURE IN SYSTEM FOR SERVICING* in this subsection.
3. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc.
4. Disconnect compressor connector.



vmr2013-043-002_a

1. Compressor connector

5. Place ignition switch to ON position.
6. Probe compressor connector.
7. Press MODE (M) button to display **AIR_SUSP**.
8. Set suspension mode to **ACS 2** using the **ACS** button.



tmo2013-003-001_b

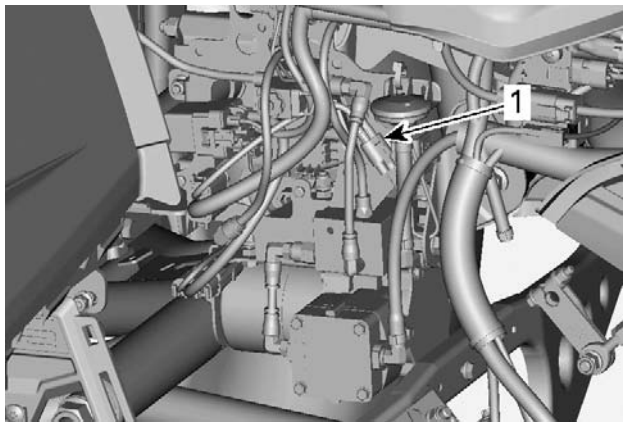
1. AIR_SUSP *displayed*
2. *Actual setting*

9. Measure voltage between compressor connector terminals as per the following table.

TEST PROBES	VOLTAGE
Pin C (RD/WH)	Battery voltage (± 12 Vdc)
Pin A (BK)	

ACS Compressor Removal

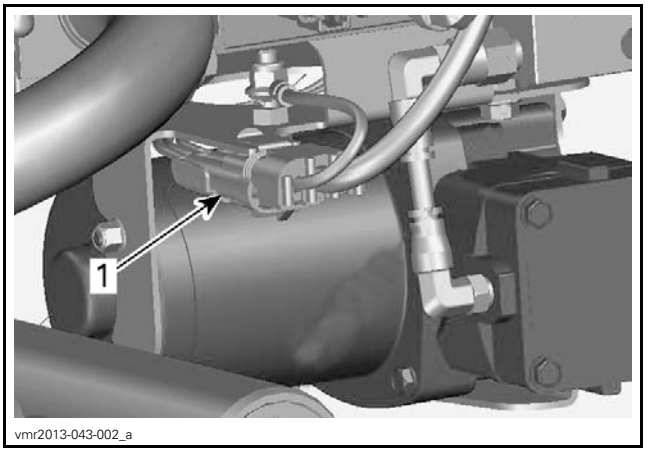
1. Release air pressure, refer to *RELEASING AIR PRESSURE IN SYSTEM FOR SERVICING* in this subsection.
2. Refer to the *BODY* section and remove the following:
   - RH side panel
   - RH footrest.
3. Remove solenoid valve. Refer to *ACS SOLENOID VALVE REMOVAL*.
4. Remove manifold. Refer to *ACS MANIFOLD REMOVAL*.
5. Remove module. Refer to *ACS MODULE REMOVAL*.
6. Remove connector of auxiliary line pressure transducer from support.



vmr2013-043-007_b

1. *Connector of auxiliary line pressure transducer*

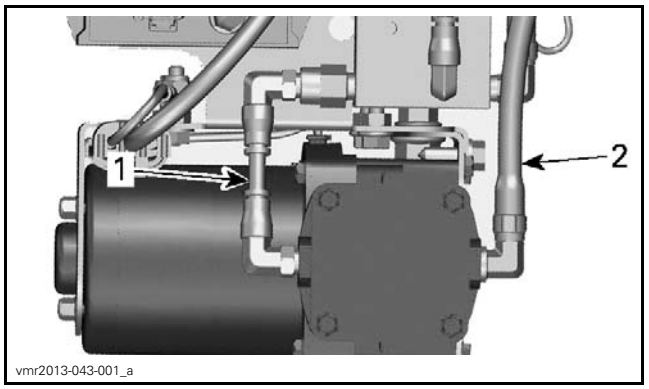
7. Disconnect compressor connector.



vmr2013-043-002_a

1. *Compressor connector*

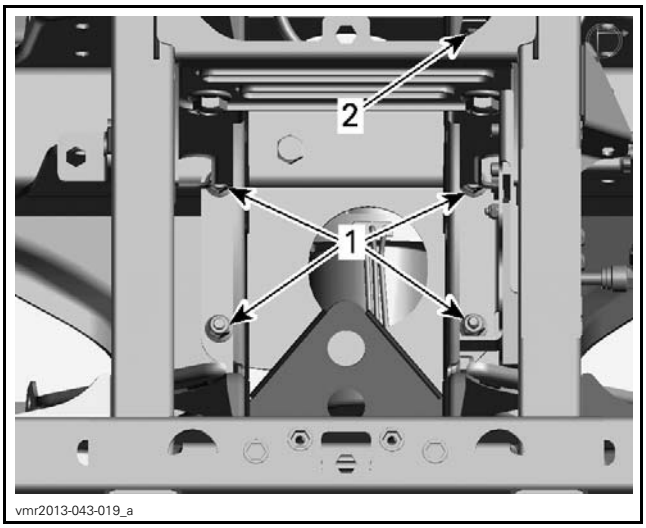
8. Disconnect the following hoses from compressor air fittings.
   - Compressor air inlet hose
   - Compressor air outlet hose.



vmr2013-043-001_a

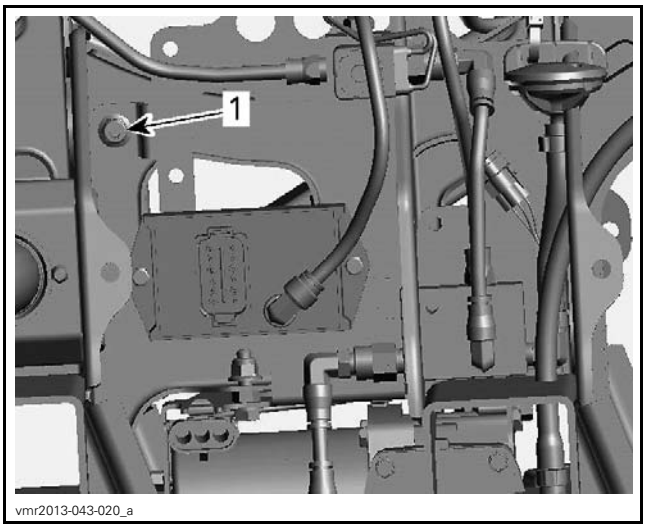
1. *Compressor air inlet hose*
2. *Compressor air outlet hose*

9. To disconnect hoses, proceed as follows:
   - 9.1 Push fitting ring toward manifold.
   - 9.2 Hold ring in place.
   - 9.3 Pull air hose.
10. Remove compressor support rear retaining bolts and nuts.
11. Remove compressor side retaining bolt and nut.



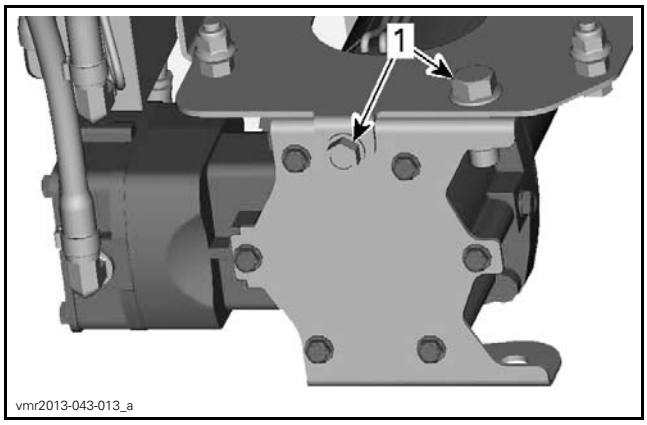
TYPICAL - PARTS REMOVED FOR CLARITY
1. *Compressor support rear retaining bolts*
2. *Compressor support side retaining bolt*

12. Remove compressor front retaining screw.

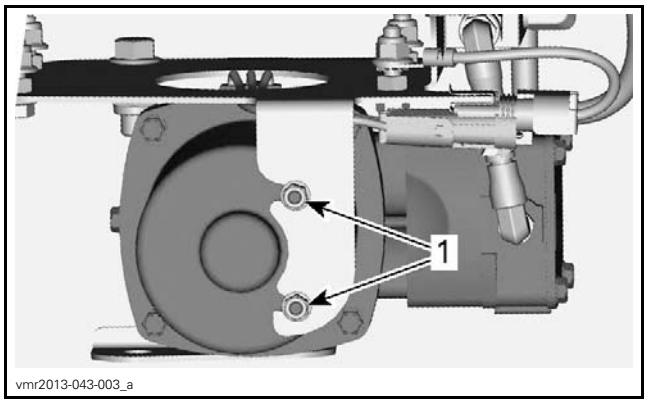


1. *Front retaining screw*

13. Remove compressor from vehicle by pulling it upwards.
14. Detach compressor connector from compressor support.
15. Remove mounting nuts from compressor support.
16. Remove rear compressor support from compressor.



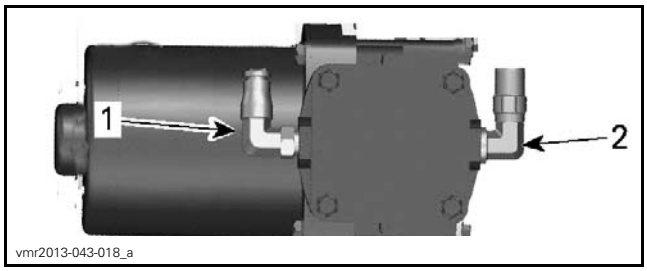
TYPICAL
1. *Compressor front support mounting bolts*



TYPICAL
1. *Compressor rear support mounting nuts*

NOTICE **Do not remove front support from compressor.**

17. Remove the following fittings from compressor.
    – Compressor air inlet fitting
    – Compressor air outlet fitting.



TYPICAL
1. *Compressor air inlet fitting*
2. *Compressor air outlet fitting*

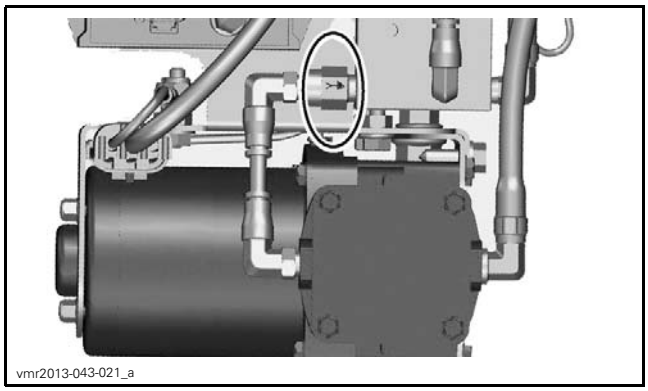
ACS Compressor Installation

The installation procedure is the reverse of removal procedure, however pay attention to the following.

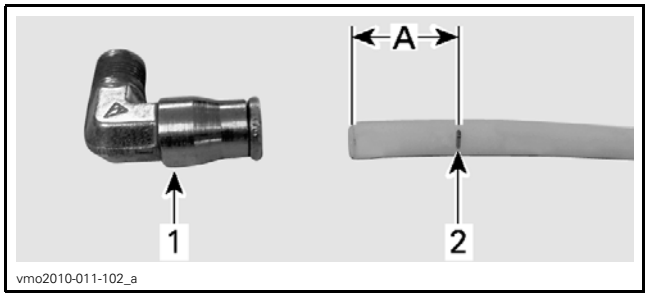
If fitting or valve is the one previously removed (old one), apply LOCTITE 592 (PIPE SEALANT) (P/N 293 800 018) on all male threads.

If fitting or valve is a new one, do not apply sealant, it should be already applied on male threads.

Ensure that check valve is installed with arrows pointing toward the manifold.


vmr2013-043-021_a

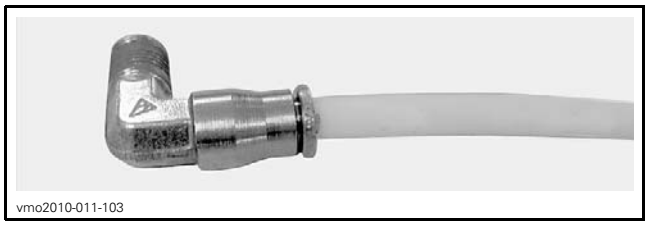
Ensure that air hoses are properly inserted into fittings, refer to the following illustrations.



vmo2010-011-102_a

PUSH HOSE UNTIL THE MARK IS COMPLETELY INSERTED
1. *Fitting*
2. *Mark*

A. Must be inserted into fitting


vmo2010-011-103

HOSE PROPERLY INSERTED INTO FITTING

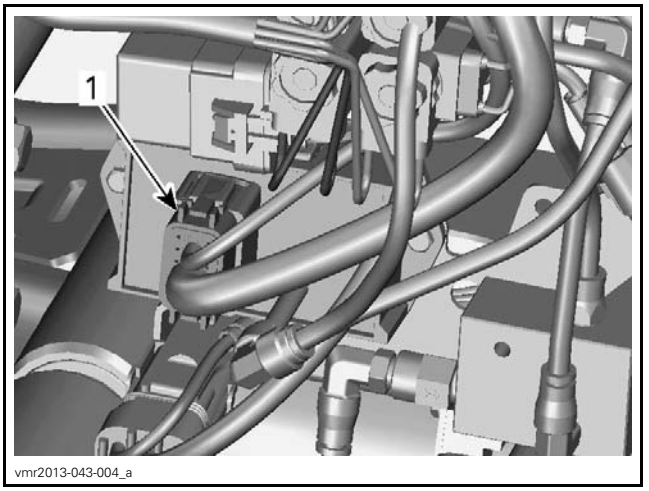
ACS AIR FILTER

ACS compressor picks up air from air box.

PRESSURE TRANSDUCER

Pressure Transducer Signal Circuit Continuity Test

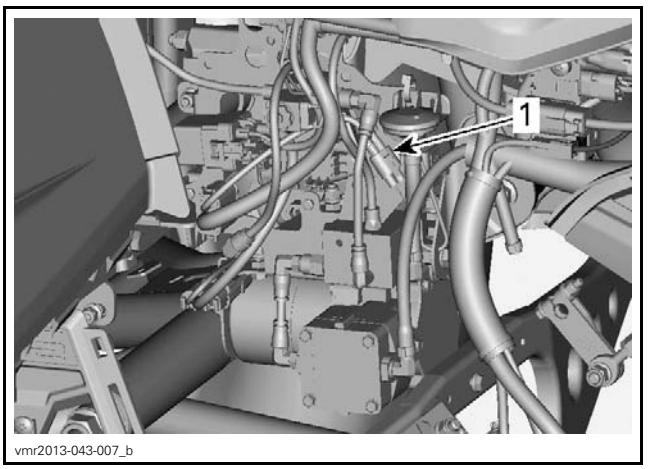
1. Remove seats and RH side panel.
2. Disconnect module connector.



vmr2013-043-004_a

1. Module connector

3. Disconnect pressure transducer connector.



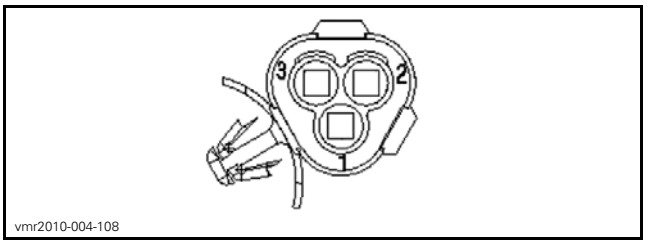
vmr2013-043-007_b

1. Pressure transducer connector

4. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Ω.
5. Measure resistance as per the following table.

TEST PROBES	RESISTANCE
Pressure transducer pin 2 (PK/BR)	Close to 0 Ω
Module pin 3 (PK/BR)	

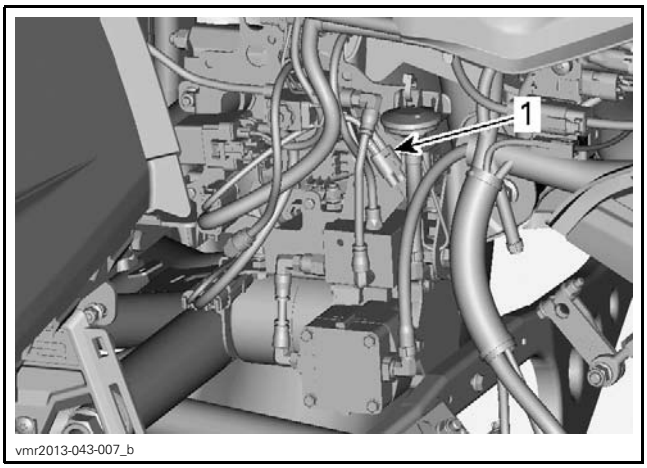
Refer to the following illustration for the pressure transducer connector pinout.



vmr2010-004-108

Pressure Transducer Input Voltage Test

1. Remove seats and RH side panel.
2. Disconnect pressure transducer connector.

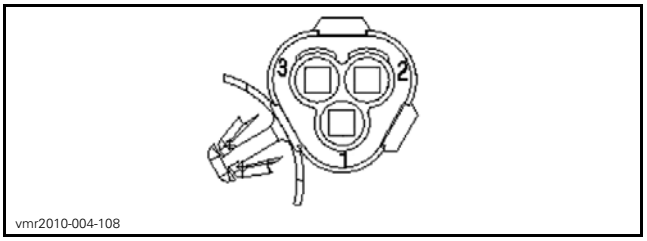


1. Pressure transducer connector

3. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc.
4. Place ignition switch to ON position.
5. Measure voltage as per the following table.

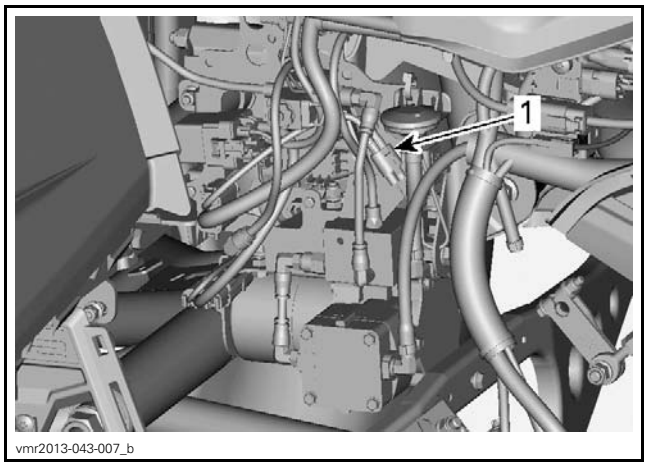
TEST PROBES	VOLTAGE
Pin 3 (PK/OR)	Battery voltage (± 12 Vdc)
Battery negative (-) post	

Refer to the following illustration for the pressure transducer connector pinout.



Pressure Transducer Ground Test

1. Remove seats and RH side panel.
2. Disconnect pressure transducer connector.

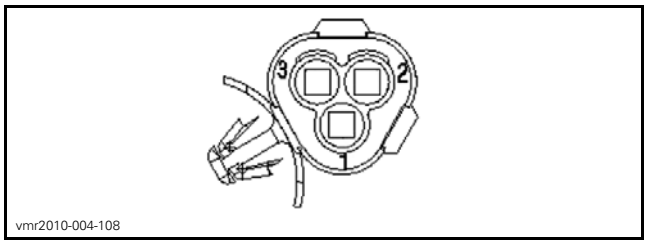


1. Pressure transducer connector

3. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc.
4. Place ignition switch to ON position.
5. Measure voltage as per the following table.

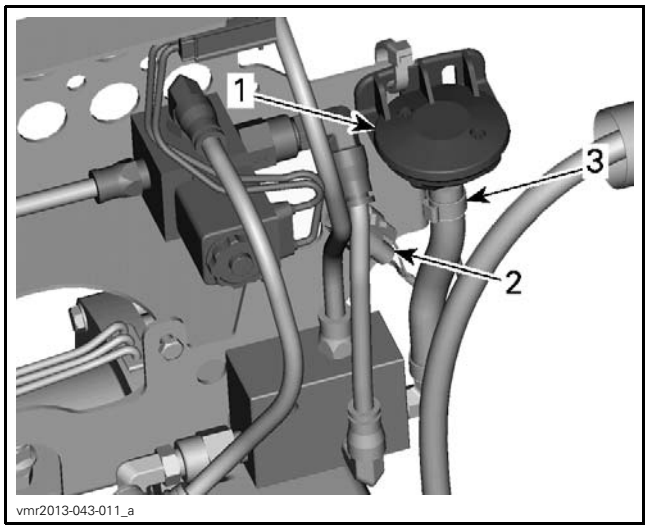
TEST PROBES	VOLTAGE
Pin 1 (BK)	Battery voltage (± 12 Vdc)
Battery positive (+) post	

Refer to the following illustration for the pressure transducer connector pinout.



Pressure Transducer Replacement

1. Release air pressure, refer to *RELEASING AIR PRESSURE IN SYSTEM FOR SERVICING* in this subsection.
2. Disconnect pressure transducer connector.
3. Remove Oetiker clamp.
4. Remove pressure transducer from hose.



1. *Auxiliary line pressure transducer*
2. *Connector*
3. *Oetiker clamp*

5. Install a new pressure transducer on hose.
6. Install a new Oetiker clamp using OETIKER PLIERS (P/N 295 000 070).
7. Connect pressure transducer connector.
8. Ensure that there is no air leaks from pressure transducer hose. Refer to *ACS SYSTEM LEAK TEST (WITH B.U.D.S.)*.

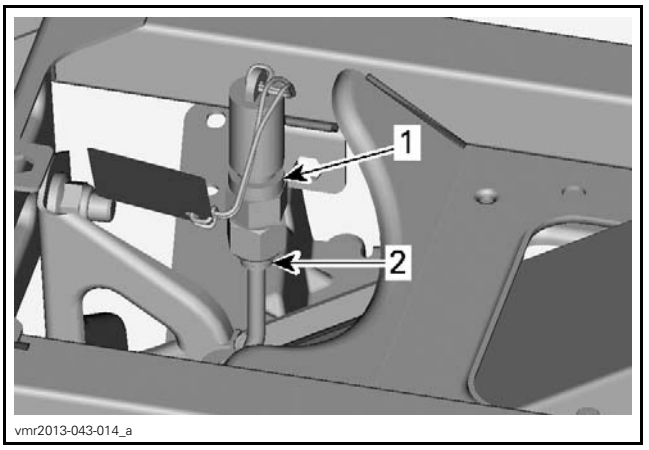
ACS HOSES

ACS Hose and Fitting Replacement

1. Release air pressure, refer to *RELEASING AIR PRESSURE IN SYSTEM FOR SERVICING* in this subsection.
2. Locate hose or fitting to be replaced.
3. Remove it from vehicle.
4. Install the new hose or fitting.
5. Perform a *ACS SYSTEM LEAK TEST (WITH B.U.D.S.)*.

Auxiliary Line Adapter Replacement

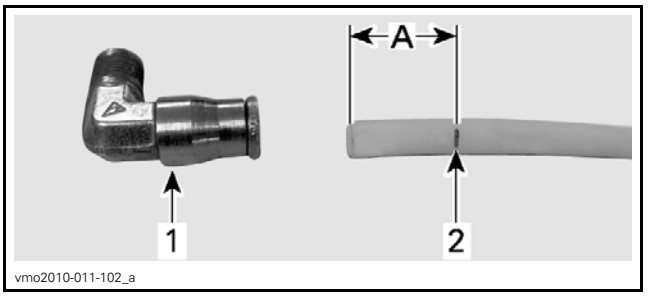
1. Release air pressure, refer to *RELEASING AIR PRESSURE IN SYSTEM FOR SERVICING* in this subsection.
2. Disconnect auxiliary line hose from adapter as follows:
   - 2.1 Push fitting ring toward adapter.
   - 2.2 Hold ring in place.
   - 2.3 Pull air hose.



1. *Auxiliary line adapter*
2. *Fitting ring*

3. Install new adapter.
4. Secure adapter support using rivets.
5. Connect auxiliary line hose into adapter.

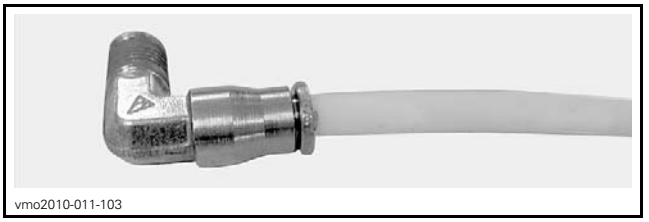
Ensure that air hoses are properly inserted into fittings, refer to the following illustrations.



TYPICAL - PUSH HOSE UNTIL THE MARK IS COMPLETELY INSERTED

1. *Fitting*
2. *Mark*

A. *Must be inserted into fitting*



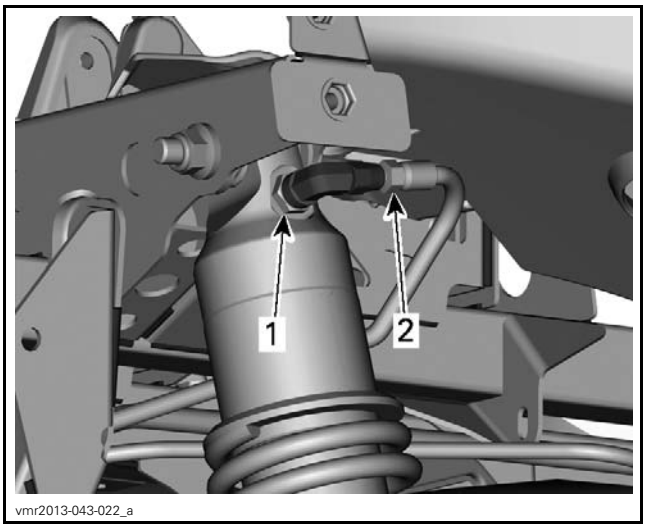
TYPICAL - HOSE PROPERLY INSERTED INTO FITTING

SHOCK ABSORBERS

Shock Absorber Removal

1. Lift rear of vehicle until rear shock absorbers are fully extended.
2. Install jack stands or blocks under the frame to support the vehicle.

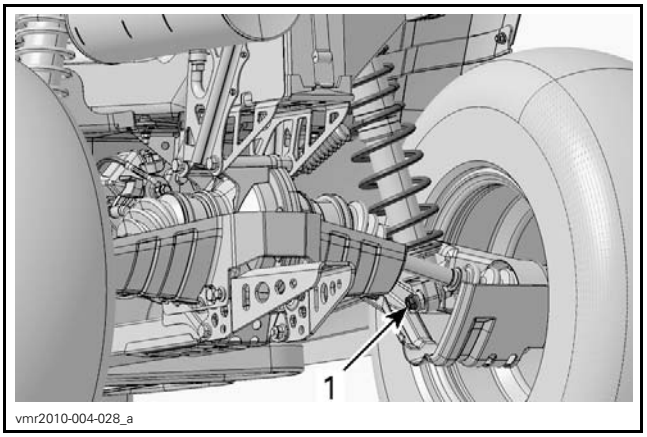
3. Unscrew air hose from shock absorber as follows:
   3.1 Install an appropriate wrench on shock fitting to hold it in place.
   3.2 Unscrew air hose fitting using another wrench.



1. Shock absorber fitting
2. Air hose fitting

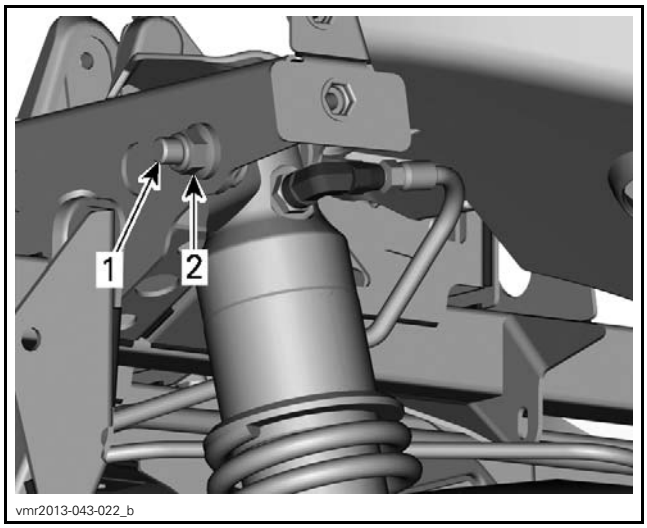
NOTICE To avoid damaging the shock fitting threads, install a wrench on the shock fitting to hold it in place while unscrewing the air hose fitting.

4. Remove the shock absorber lower bolt and nut.



TYPICAL
1. Shock absorber lower bolt

5. Remove the shock absorber upper bolt and nut.



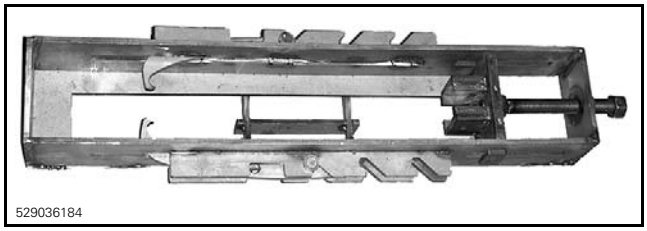
1. Shock absorber upper bolt
2. Shock absorber upper nut

6. Remove shock absorber from vehicle.

Shock Absorber Disassembly

NOTICE Be careful while manipulating or installing the shock absorber in the spring remover tool. The shock absorber body must not be scratched or damaged to avoid air leakage.

1. Secure the SPRING COMPRESSOR (P/N 529 036 184) in a vise.

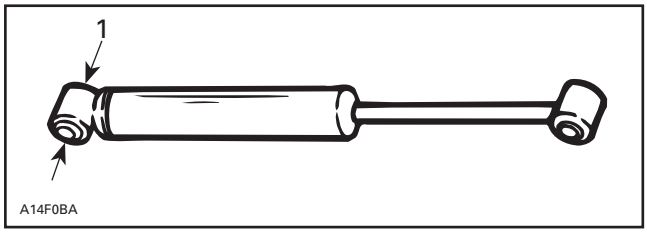


2. Position the shock absorber in the tool and install the spring compressor hooks.
3. Tighten the spring compressor tool screw until the spring is sufficiently compressed to remove spring locking devices.
4. Remove spring stopper and its cap then loosen the spring compressor tool screw.
5. Remove circlip and spring retainer.
6. Remove spring from shock.

Shock Absorber Inspection

Inspect the spring for damage. Replace if necessary.

Secure the end of shock body in a vise with its rod upward.



TYPICAL
1. Clamp here

NOTICE Do not clamp directly on shock body.

Inspect shock absorber as following:

1. Examine the shock absorber for leaks.
2. Extend and compress the shock absorber shaft several times over its entire stroke.
3. Check that the shock absorber shaft moves smoothly and with uniform resistance with its rod upward.

Any of the following conditions will denote a defective shock absorber:

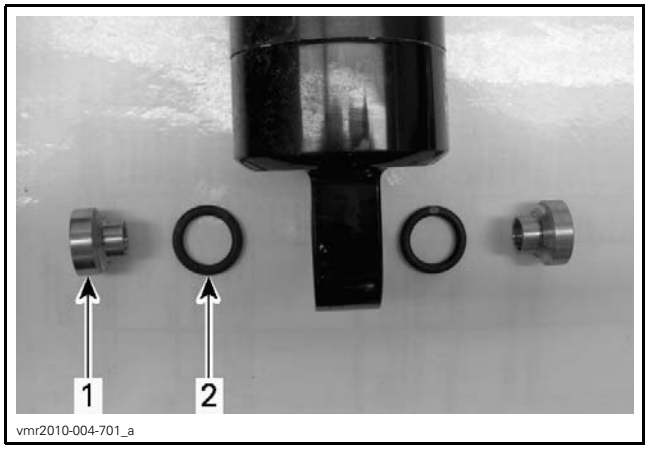
– A skip or a hang back when reversing stroke at mid travel.
– Seizing or binding condition except at extreme end of either stroke.
– A gurgling noise, after completing one full compression and extension stroke.

Replace shock absorber if any faults are present.

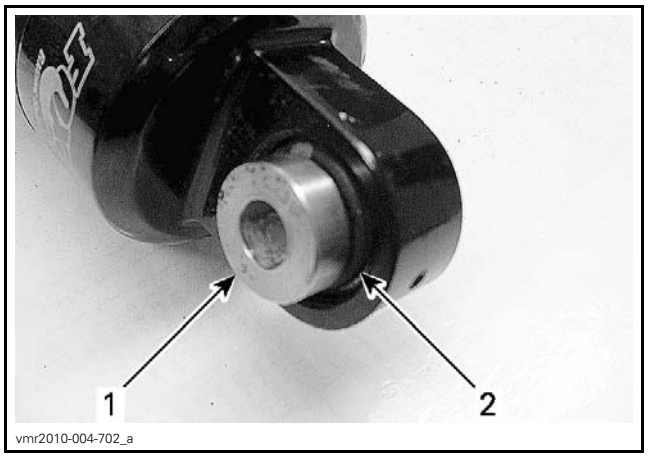
Shock Absorber Assembly and Installation

Assembly and installation are the reverse of disassembly and removal procedures, however pay attention to the following.

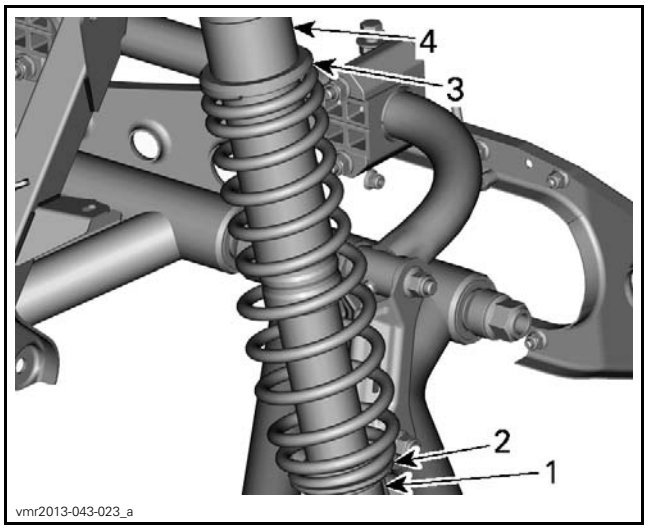
Assemble shock absorber as per the following illustrations.



TYPICAL
1. Sleeve
2. O-ring



TYPICAL
1. Sleeve
2. O-ring



TYPICAL
1. Small sleeve
2. Lower cap
3. Upper cap
4. Large sleeve

Torque upper and lower shock absorber bolts.

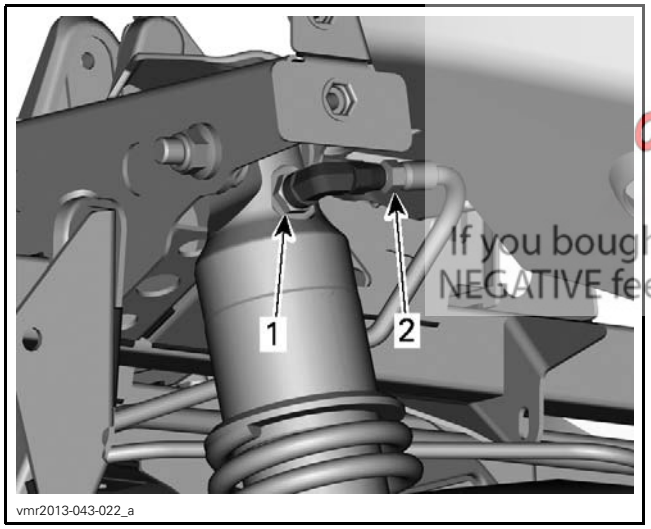
TIGHTENING TORQUE	
Shock absorber bolts	53 N•m (39 lbf•ft)

If the same shock absorber is reused, apply LOCTITE 592 (PIPE SEALANT) (P/N 293 800 018) on air hose sleeve male threads.

While holding shock fitting with a wrench, tighten air hose fitting.

NOTICE Never screw shock absorber air hose by using the air hose fitting only. To avoid damaging the shock fitting threads, install a wrench on the shock fitting to hold it in place while screwing the air hose fitting.

TIGHTENING TORQUE	
Air hose fitting	19 N•m (168 lbf•**in**)



1. Shock absorber fitting
2. Air hose fitting

Ensure that there is no air leaks from shock absorber fitting and air hose. Refer to *ACS SYSTEM LEAK TEST (WITH B.U.D.S.)*.

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BRAKES

SERVICE TOOLS

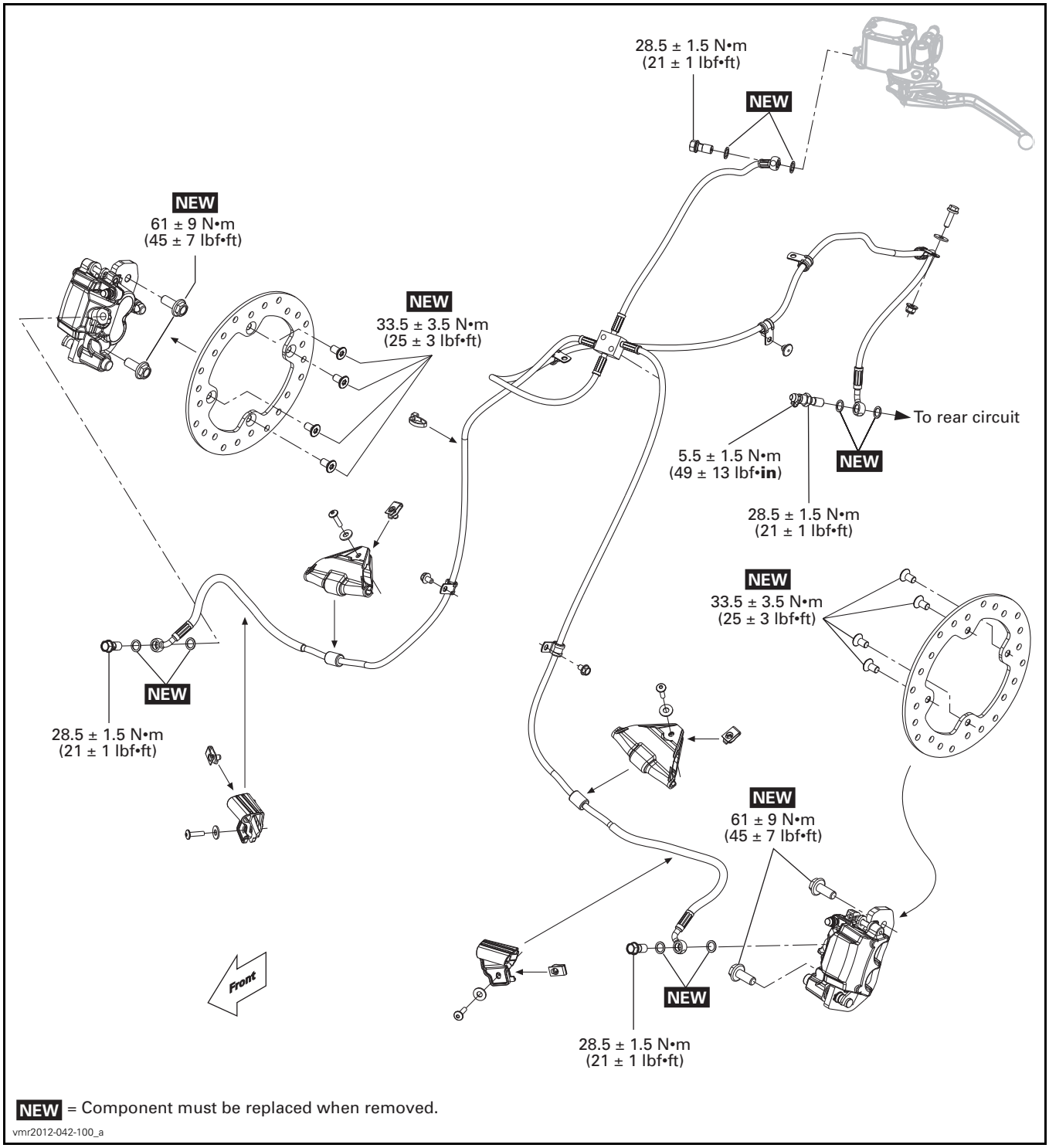
Description	Part Number	Page
ECM ADAPTER TOOL	529 036 166	8

SERVICE PRODUCTS

Description	Part Number	Page
XPS BRAKES AND PARTS CLEANER (USA)	219 701 705	12
XPS BRAKES AND PARTS CLEANER	219 701 776	12
XPS SYNTHETIC GREASE	293 550 010	10

OUTLANDER (FRONT CIRCUIT)

All Except CE Models



NEW = Component must be replaced when removed.

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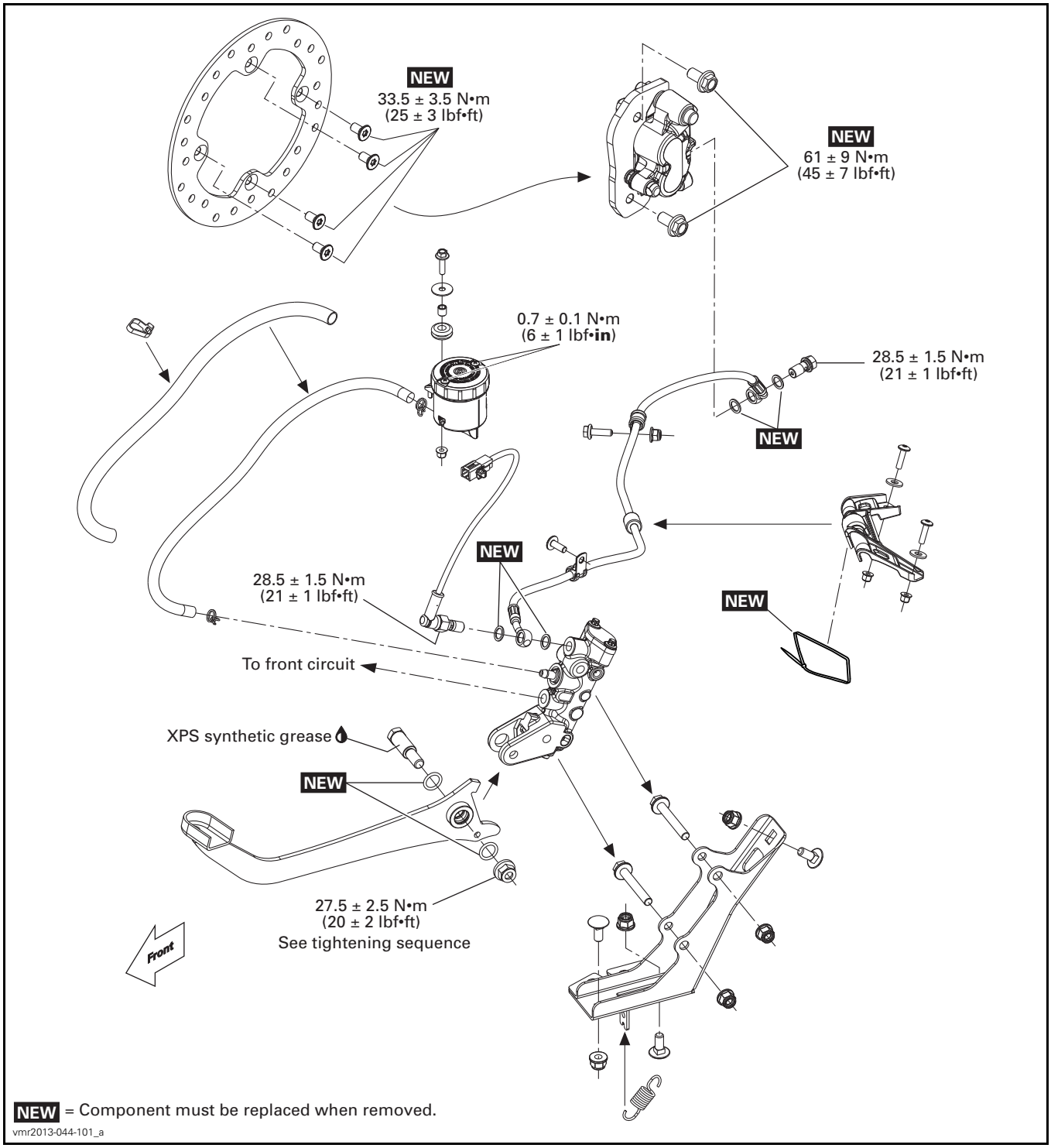
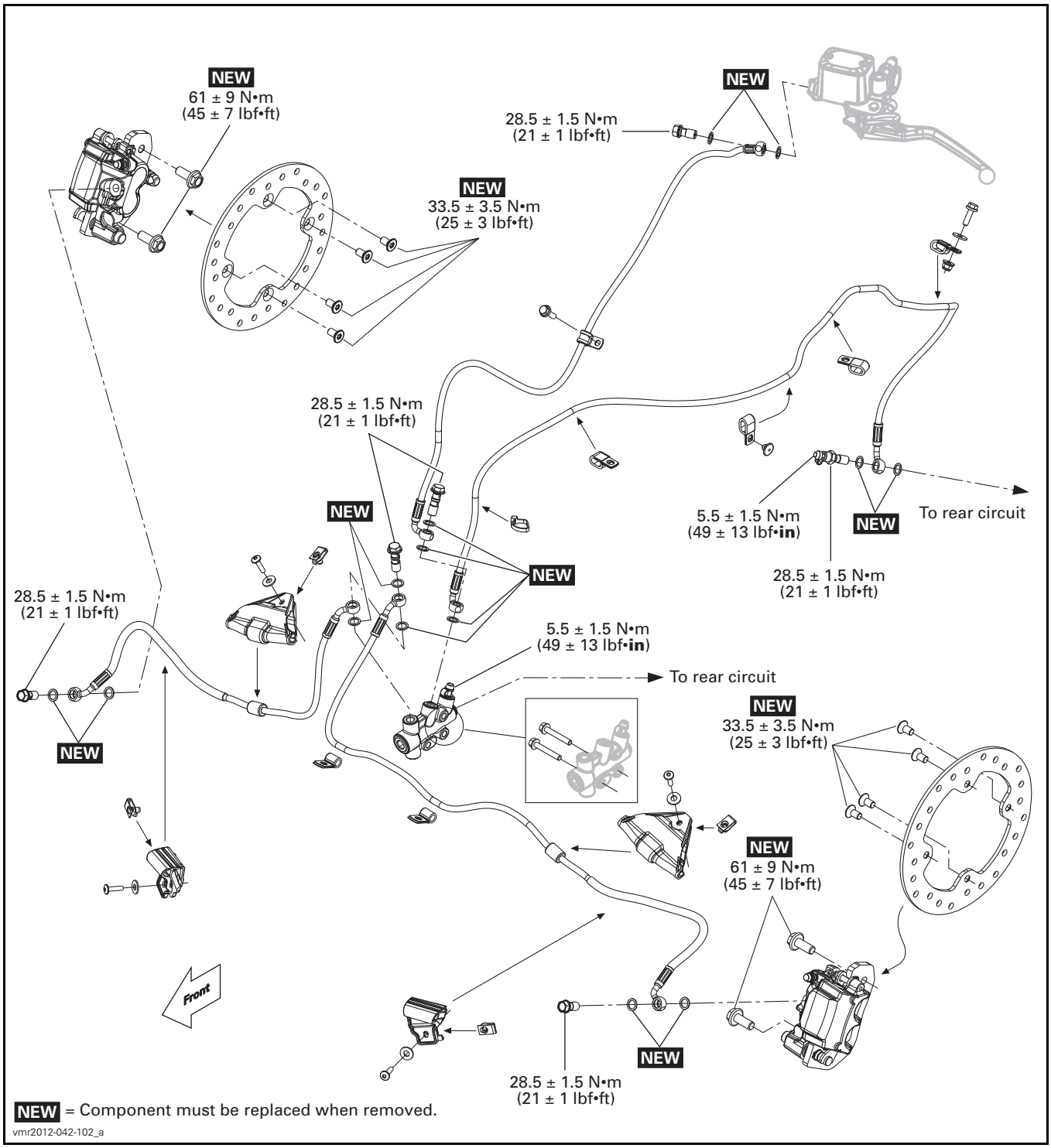
OUTLANDER (REAR CIRCUIT)

All Except CE Models



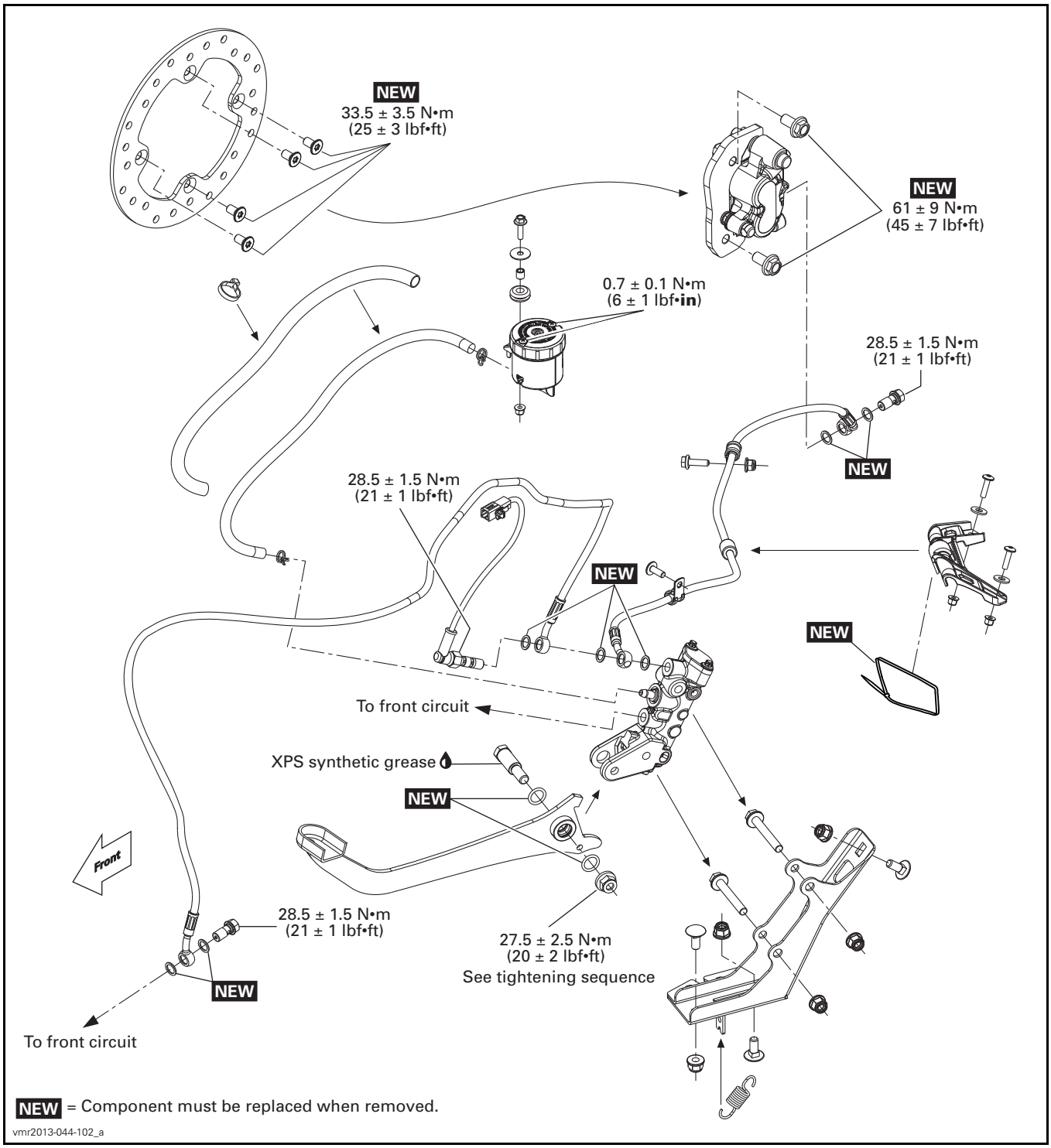
OUTLANDER (FRONT CIRCUIT)

CE Models



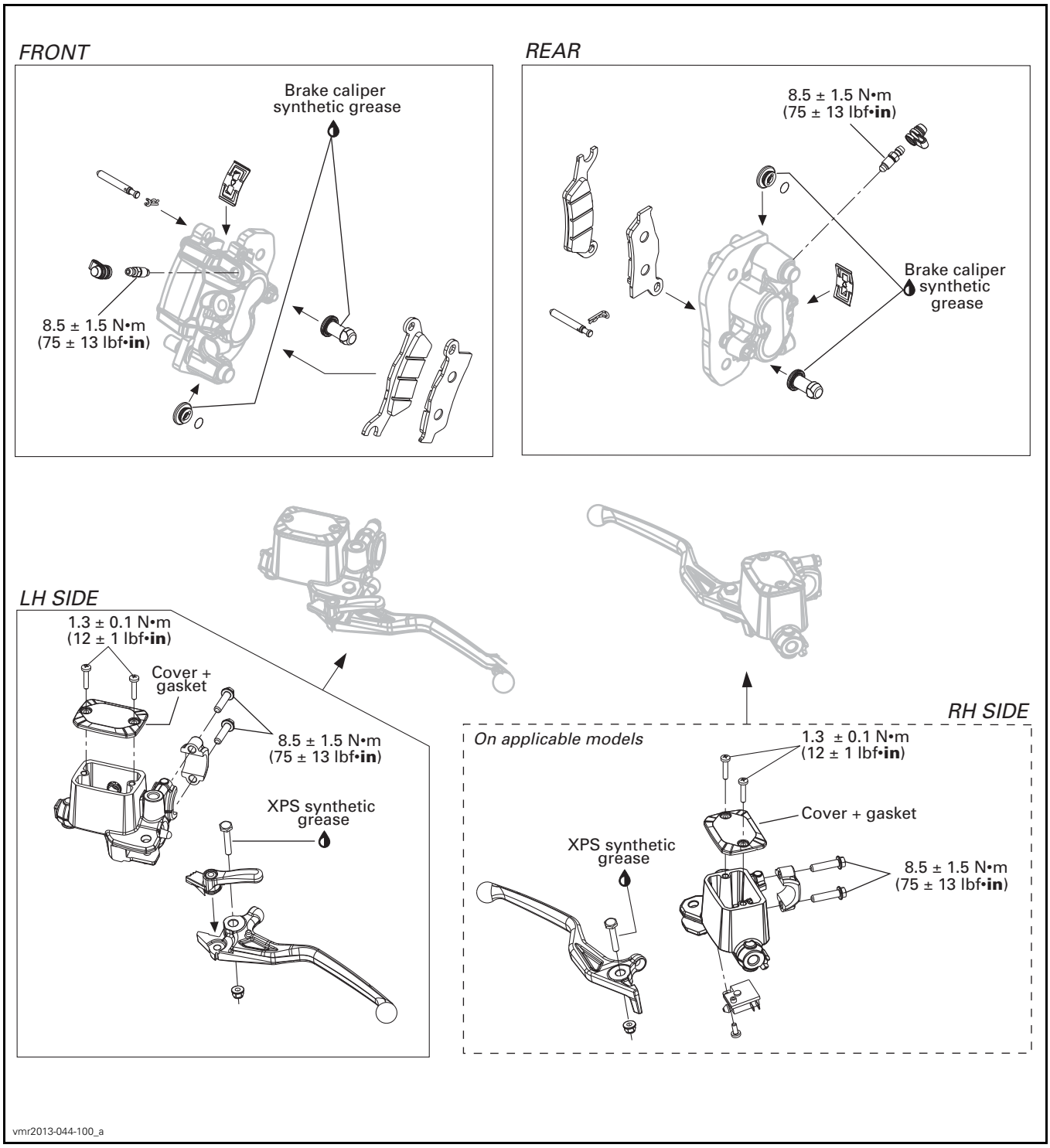
OUTLANDER (REAR CIRCUIT)

CE Models



CALIPERS AND BRAKE LEVERS

All Models



GENERAL

⚠ WARNING

Always check brake system operation after removing or servicing a brake component.

NOTICE Avoid spilling brake fluid on plastic, rubber or painted parts. Protect these parts with a rag when servicing brake system.

NOTICE Sealing washers must be discarded and replaced with new ones every time a Banjo bolt is unscrewed.

NOTICE Always clean the area around a brake component before servicing.

SYSTEM DESCRIPTION

A disc brake system with twin-piston sliding calipers is used.

Disc Brake Configurations

OUTLANDER		
MODELS	NUMBER OF DISC BRAKES	
	FRONT	REAR
All models	2	1

Brake Controls and Circuit Configurations

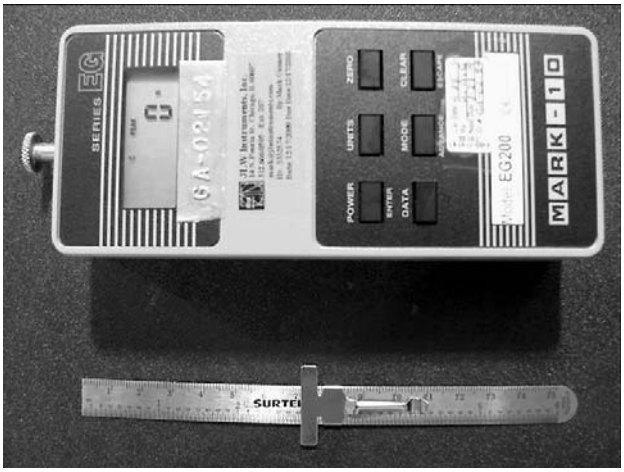
OUTLANDER		
MODELS	LH BRAKE LEVER	BRAKE PEDAL
All except CE models	Controls front and rear brakes	Controls rear brakes
CE models	Controls front and rear brakes	Controls front and rear brakes

INSPECTION

BRAKE SYSTEM PRESSURE VALIDATION

Required Tools

Use an appropriate compression force gauge such as *MARK-10 EG-200* and a ruler.



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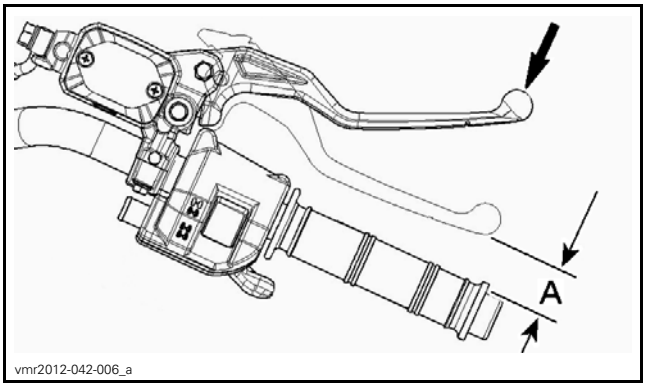
TYPICAL

Brake Lever Verification

NOTE: Do not pump up the brakes repeatedly before doing the validation.

1. Position force gauge perpendicularly on brake lever edge.
2. Position a ruler perpendicularly to handlebar grip.
3. Push brake lever at distance A from handlebar grip using force gauge.



vmr2012-042-006_a

A. Distance from handlebar (refer to table)

4. Read load recorded by the force gauge.
5. Load reading must be as per the following table.

BRAKE LEVER VERIFICATION		
LEVER	DISTANCE **A**	MINIMUM LOAD
LH side lever	25 mm (1 in)	150 N (34 lbf)
RH side lever (if applicable)	25 mm (1 in)	130 N (29 lbf)

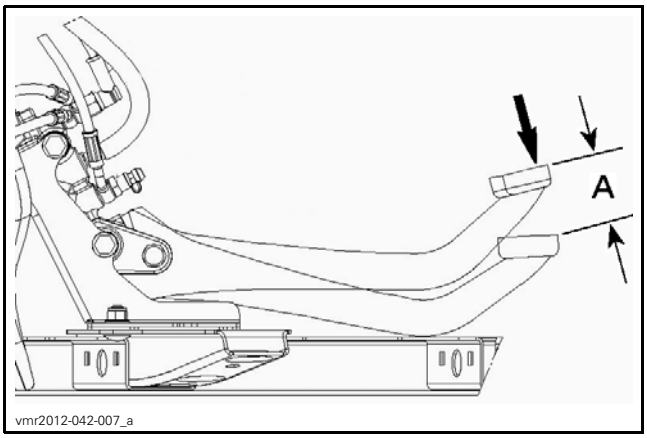
6. If load reading is not in accordance with the specification:
   6.1 Perform a brake system inspection and cleaning.
   6.2 Bleed brake system.

   NOTE: Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

Brake Pedal Verification

NOTE: Do not pump up the brakes repeatedly before doing the validation.

1. Position force gauge perpendicularly on brake pedal edge.
2. Position a ruler perpendicularly to brake pedal.
3. Push brake pedal from distance A using force gauge.



A. Distance to push (refer to table)

4. Read load recorded by the force gauge.
5. Load reading must be as per the following table.

BRAKE PEDAL VERIFICATION		
MODELS	DISTANCE **A**	MINIMUM LOAD
All Outlander except CE	35 mm (1-3/8 in)	180 N (40 lbf)
Outlander CE	55 mm (2-5/32 in)	180 N (40 lbf)

6. If load reading is not in accordance with the specification:
   6.1 Perform a brake system inspection and cleaning.
   6.2 Bleed brake system.

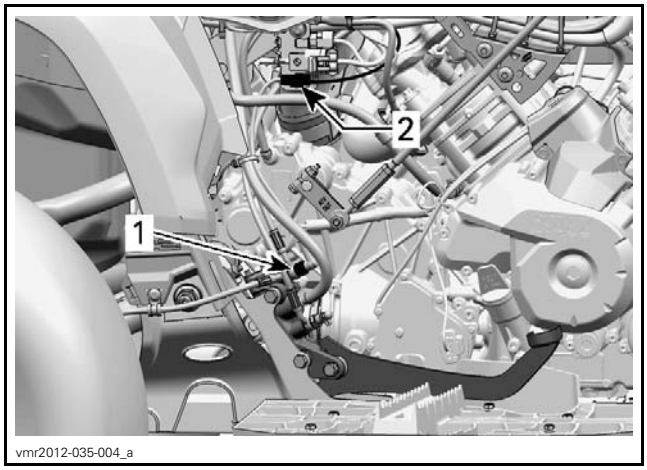
   NOTE: Refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

PROCEDURES

BRAKE LIGHT SWITCHES

Brake Light Switch Location

MODELS	BRAKE SWITCH LOCATION
All Outlander	Brake pedal master cylinder



BRAKE PEDAL MASTER CYLINDER
1. Brake light switch
2. Brake light switch connector

Brake Light Switch Resistance Test

1. Disconnect brake light switch connector.
2. Check switch operation as follows.

BRAKE LIGHT SWITCH POSITION	PIN		RESISTANCE
Firmly pushed	1	2	Close to 0 Ω
Released			Infinite (OL)

If switch is defective, replace with a new one.

If the switch tests good, verify wire continuity between harness connector and ECM connector. Refer to *BRAKE SYSTEMS WIRING DIAGRAM*.

REQUIRED TOOL
ECM ADAPTER TOOL (P/N 529 036 166)

529036166

Brake Light Switch Replacement

Brake Light Switch Located on Brake Lever

1. Disconnect brake light switch connector.
2. Replace brake light switch by a new one.
3. Connect brake light switch connector.

Brake Light Switch Located on Master Cylinder or Manifold

1. Disconnect brake light switch connector.
2. Drain brake line.
3. Remove brake light switch.

NOTE: Use shop rags to catch any spilled brake fluid.

4. Install NEW sealing washers.
5. Install brake light switch.

TORQUE	
Brake light switch	28.5 N•m ± 1.5 N•m (21 lbf•ft ± 1 lbf•ft)

6. Connect brake light switch connector.
7. Refill and bleed brake system, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

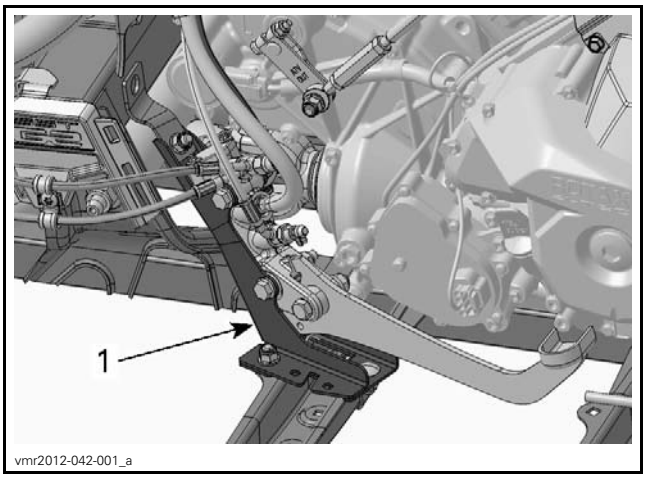
BRAKE PEDAL

Brake Pedal Removal

1. Drain brake system, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.
2. Remove RH footrest panel. Refer to *BODY* subsection.

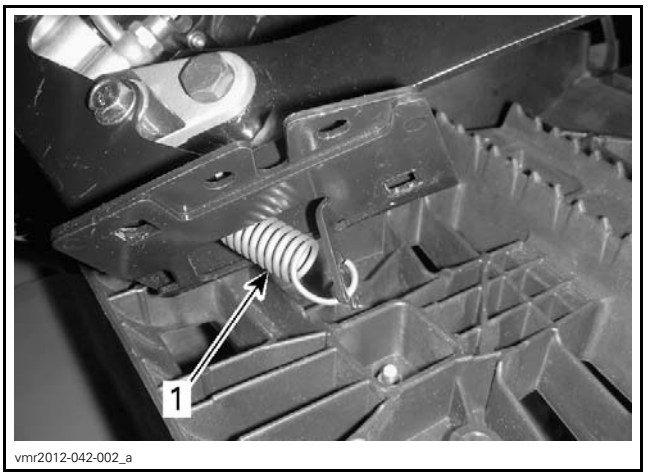
NOTE: Loosen brake pedal bolt before removing support from frame.

3. Remove master cylinder support from frame.



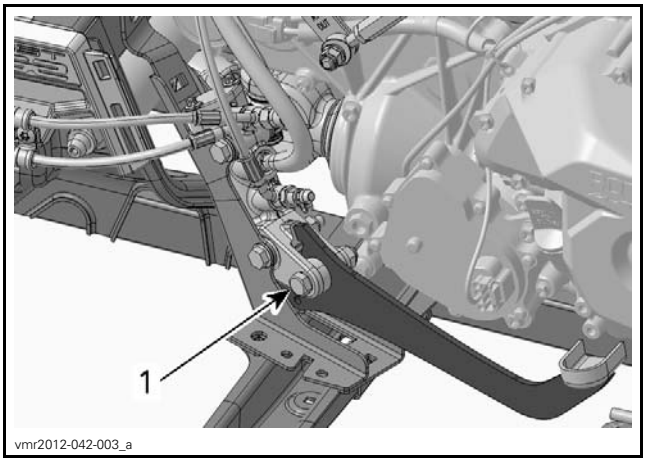
TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Master cylinder support

4. Remove brake pedal spring.



1. Brake pedal spring

5. Remove brake pedal.



1. Brake pedal pivot bolt

Brake Pedal Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

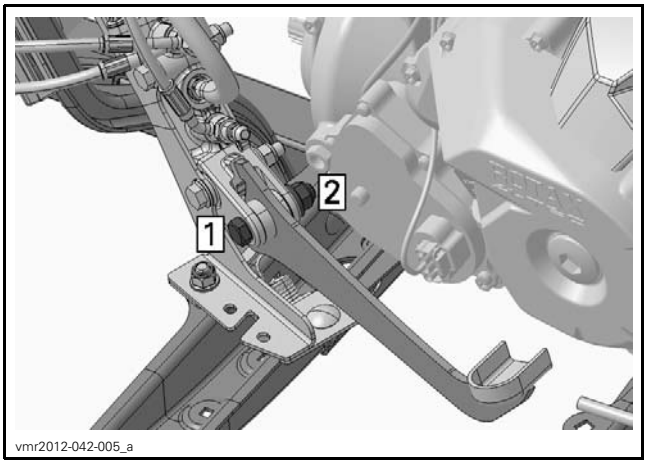
Install NEW brake pedal O-ring.

Lubricate brake pedal pivot.

LUBRICATION	
Brake pedal pivot	XPS SYNTHETIC GREASE (P/N 293 550 010)

Tighten brake pedal nut as per the following sequence.

TIGHTENING SEQUENCE		
STEP 1	Brake pedal bolt (pivot)	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)
STEP 2	Brake pedal nut	27.5 N•m ± 2.5 N•m (20 lbf•ft ± 2 lbf•ft)



TIGHTENING SEQUENCE
Step 1: Tighten bolt
Step 2: Hold bolt then tighten nut

MASTER CYLINDER

Master Cylinder Removal

1. Remove *BRAKE PEDAL*. See procedure in this subsection.
2. Remove master cylinder from support.

1. Master cylinder

3. Remove hoses and bleeder from master cylinder.

Master Cylinder Inspection

Check boot for crack.

Check rod for wear and scratch.

Check master cylinder housing for leak or damage.

Master Cylinder Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Tighten brake hoses and bleeder to specification.

TORQUE	
Brake hose screw (banjo fitting)	28.5 N•m ± 1.5 N•m (21 lbf•ft ± 1 lbf•ft)
Bleeder	8.5 N•m ± 1.5 N•m (75 lbf•**in** ± 13 lbf•**in**)

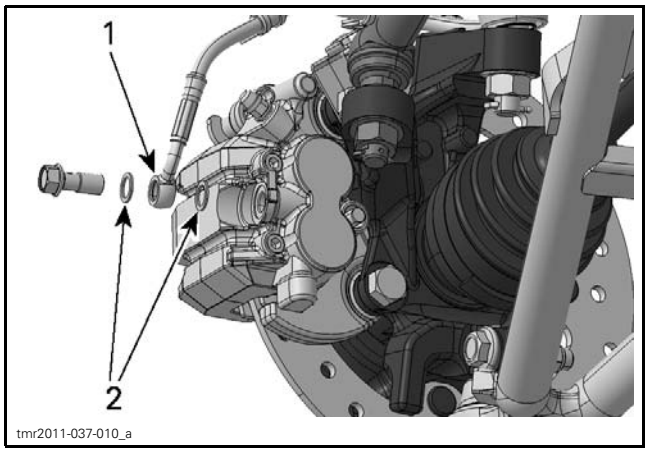
Install NEW sealing washers.

Refill and bleed brake system, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.

CALIPER

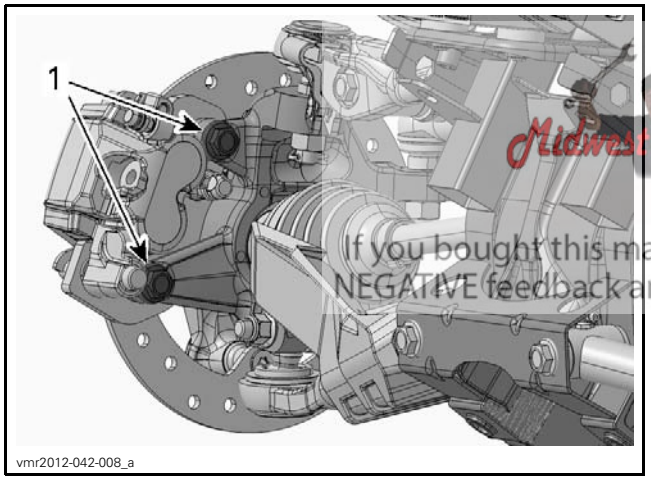
Caliper Removal

1. Safely lift and support the vehicle.
2. Remove wheel, refer to *WHEELS AND TIRES* subsection.
3. If caliper is removed from vehicle for replacement:
   - 3.1 Drain brake system, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.
   - 3.2 Unscrew brake hose from caliper.



TYPICAL
1. Brake hose
2. Sealing washers

4. Remove fasteners retaining brake hose.
5. Remove screws securing caliper support.



TYPICAL
1. Caliper screws

6. Place caliper assembly onto a support.

NOTICE **Do not let caliper hangs by the hose and do not stretch or twist hose.**

Caliper Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

If caliper was removed for replacement:

– Refill and bleed brake system, refer to *PERIODIC MAINTENANCE PROCEDURES* subsection.
– Install NEW sealing washers.

Install NEW caliper retaining screws.

Tighten caliper retaining screws to specification.

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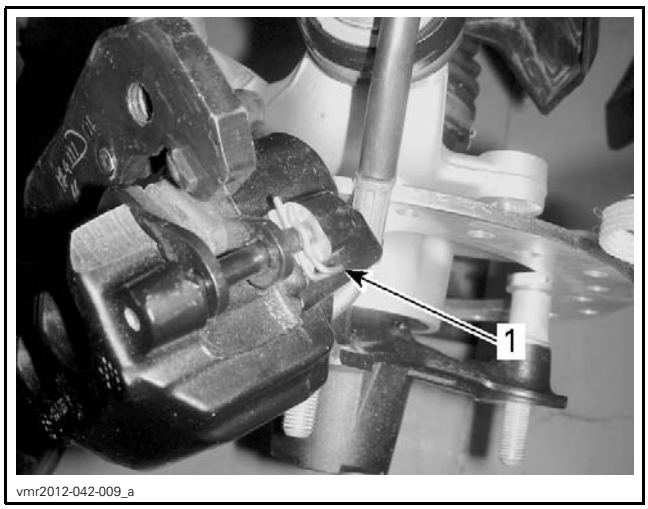
TORQUE	
Caliper retaining screws	61 N•m ± 9 N•m (45 lbf•ft ± 7 lbf•ft)

BRAKE PADS

Brake Pads Replacement

1. Remove caliper, refer to *CALIPER REMOVAL* in this subsection.
2. Remove pin retainer securing brake pad pin.



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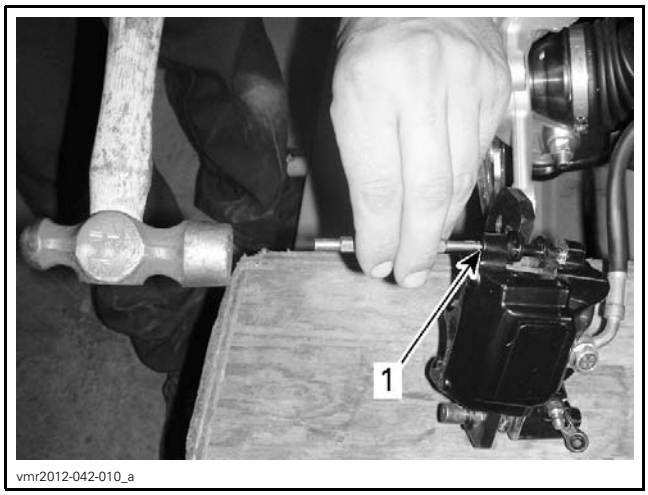
1. Pin retainer

3. Remove brake pad pin from caliper.



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TYPICAL
1. Brake pad pin

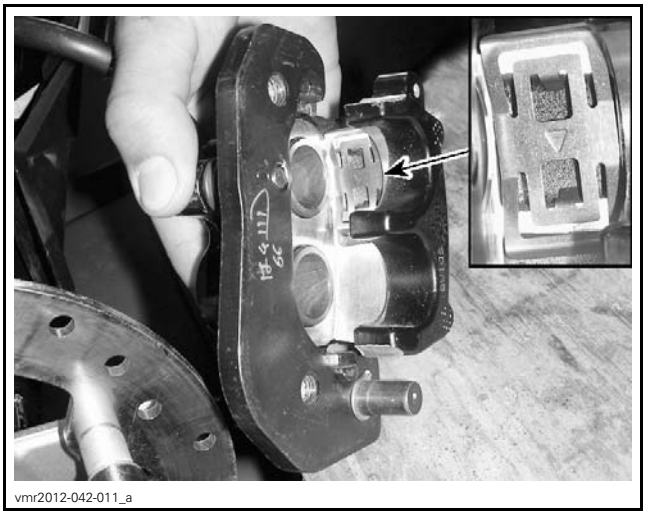
4. Carefully remove brake pads.
5. Clean pistons end using the following product or and equivalent.

REQUIRED SERVICE PRODUCT	
USA	XPS BRAKES AND PARTS CLEANER (USA) (P/N 219 701 705)
For all other countries	XPS BRAKES AND PARTS CLEANER (P/N 219 701 776)

6. Push caliper pistons inward.

NOTE: To avoid damaging pistons, use an old pad to push it into the caliper using a C-clamp.

7. Ensure brake pad spring is properly positioned onto caliper and not damaged.



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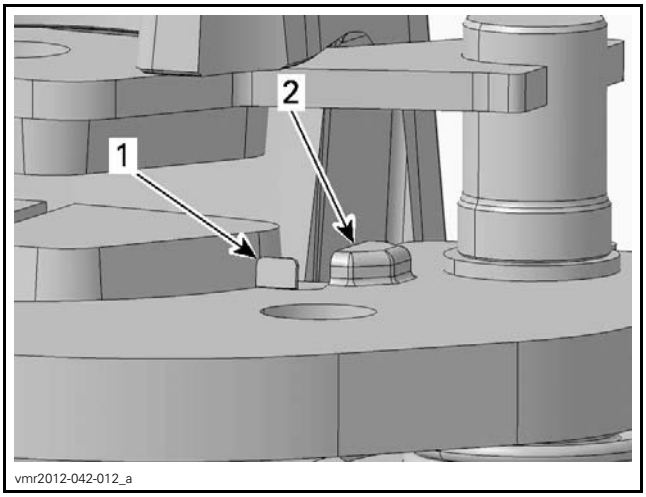
BRAKE PAD SPRING

8. Ensure pad stopper is properly aligned with caliper support protrusion.



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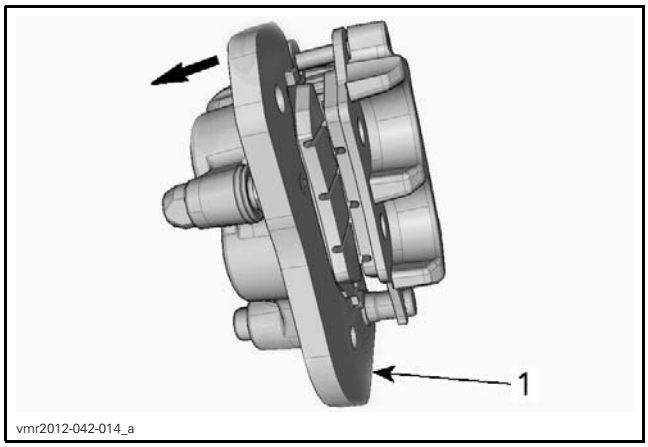
1. Pad stopper
2. Caliper support protrusion

NOTICE **Prior to installing brake pads, pad stopper must be properly positioned and not damaged.**

9. Install NEW brake pads.

10. Clean and install brake pad pin on caliper.
11. Install pin retainer to secure brake pad pin.
12. Slide caliper support completely into caliper.



1. Caliper support

13. Install caliper, refer to *CALIPER INSTALLATION* in this subsection.

BRAKE DISC

Brake Disc Inspection

1. Check disc surfaces for scratches or grooves on both sides.
2. Measure thickness of the disc.

DISC MINIMUM THICKNESS	
FRONT	4.0 mm (.157 in)
REAR	4.0 mm (.157 in)

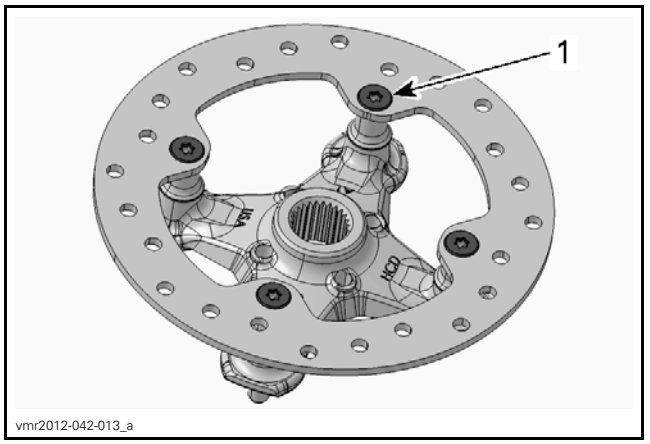
NOTICE Brake discs must never be machined.

3. Check warpage of the disc.

MAXIMUM DISC WARPAGE	
FRONT	0.2 mm (.01 in)
REAR	

Brake Disc Replacement

1. Remove caliper, refer to *CALIPER REMOVAL* in this subsection.
2. Remove wheel hub, refer to *FRONT DRIVE* or *REAR DRIVE* subsection.
3. Remove screws securing brake disc to wheel hub.



1. Brake disc screw

4. Replace brake disc.
5. Install NEW brake disc screws.
6. Tighten brake disc screws to specification.

TORQUE	
Brake disc screws	33.5 N•m ± 3.5 N•m (25 lbf•ft ± 3 lbf•ft)

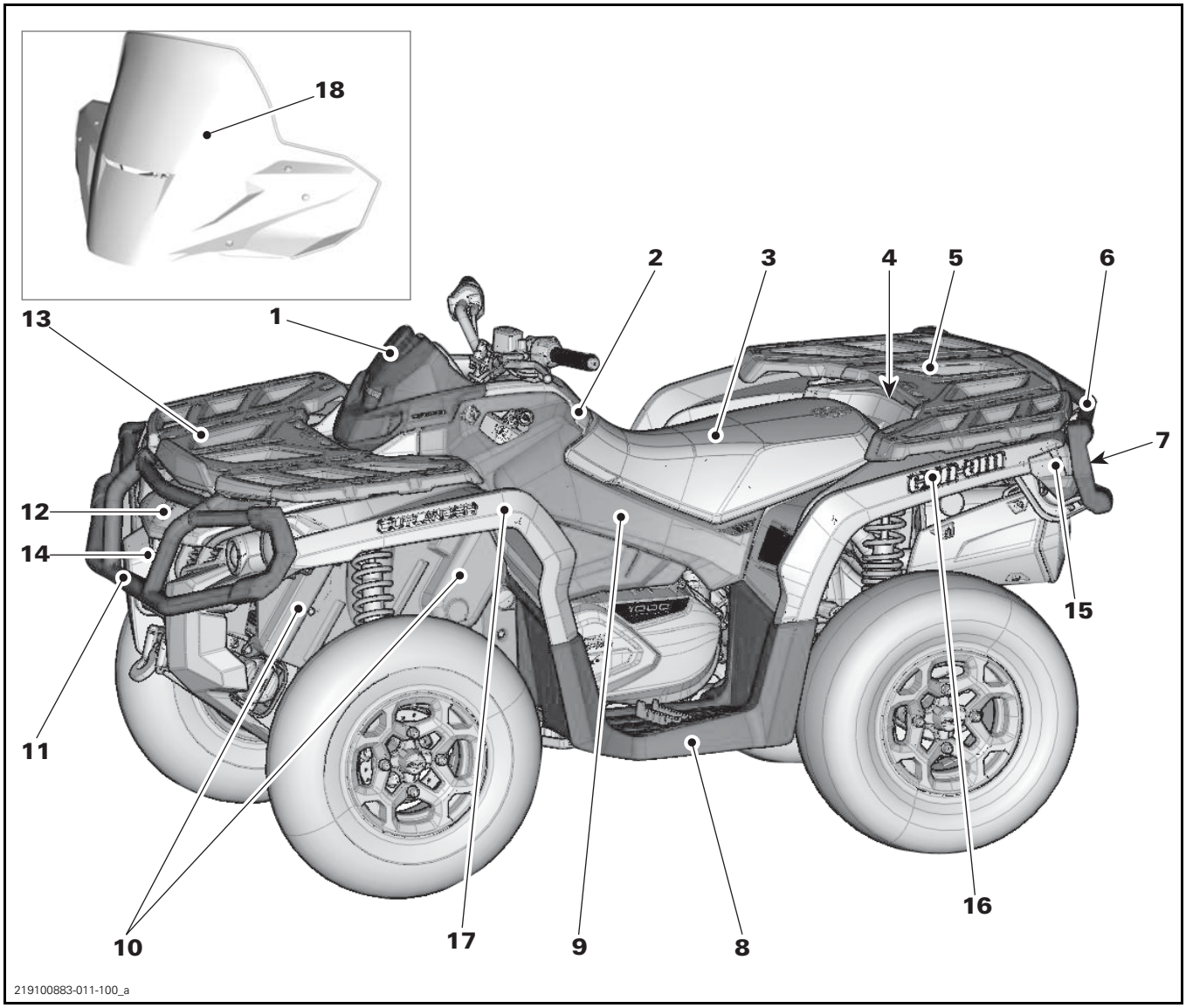
7. Install wheel hub then caliper.
8. Install NEW cotter pin to secure wheel hub nut.

BODY

SERVICE TOOLS

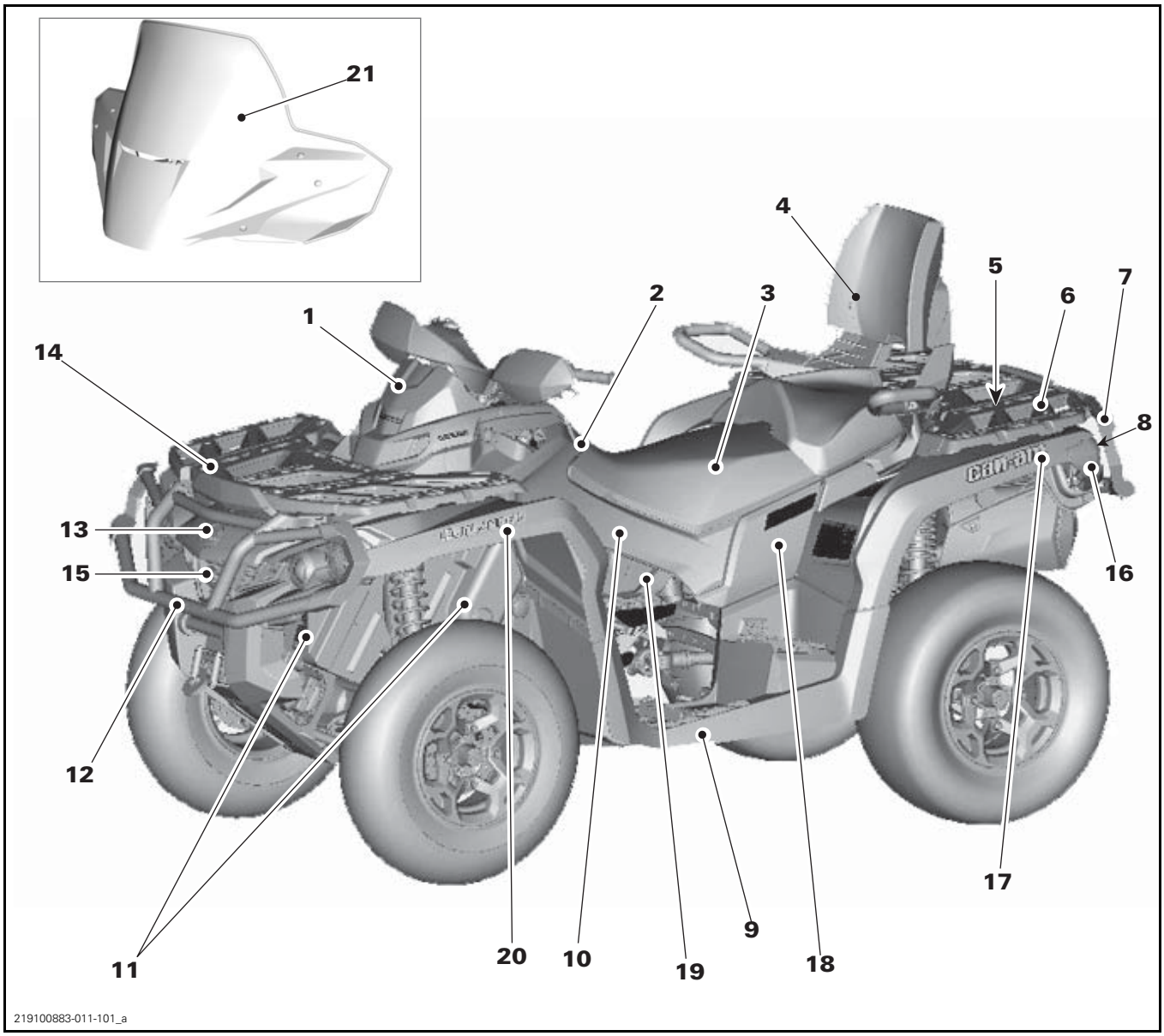
Description	Part Number	Page
OETIKER PLIER	295 000 070	12

BODY PARTS NOMENCLATURE (SHORT MODEL)



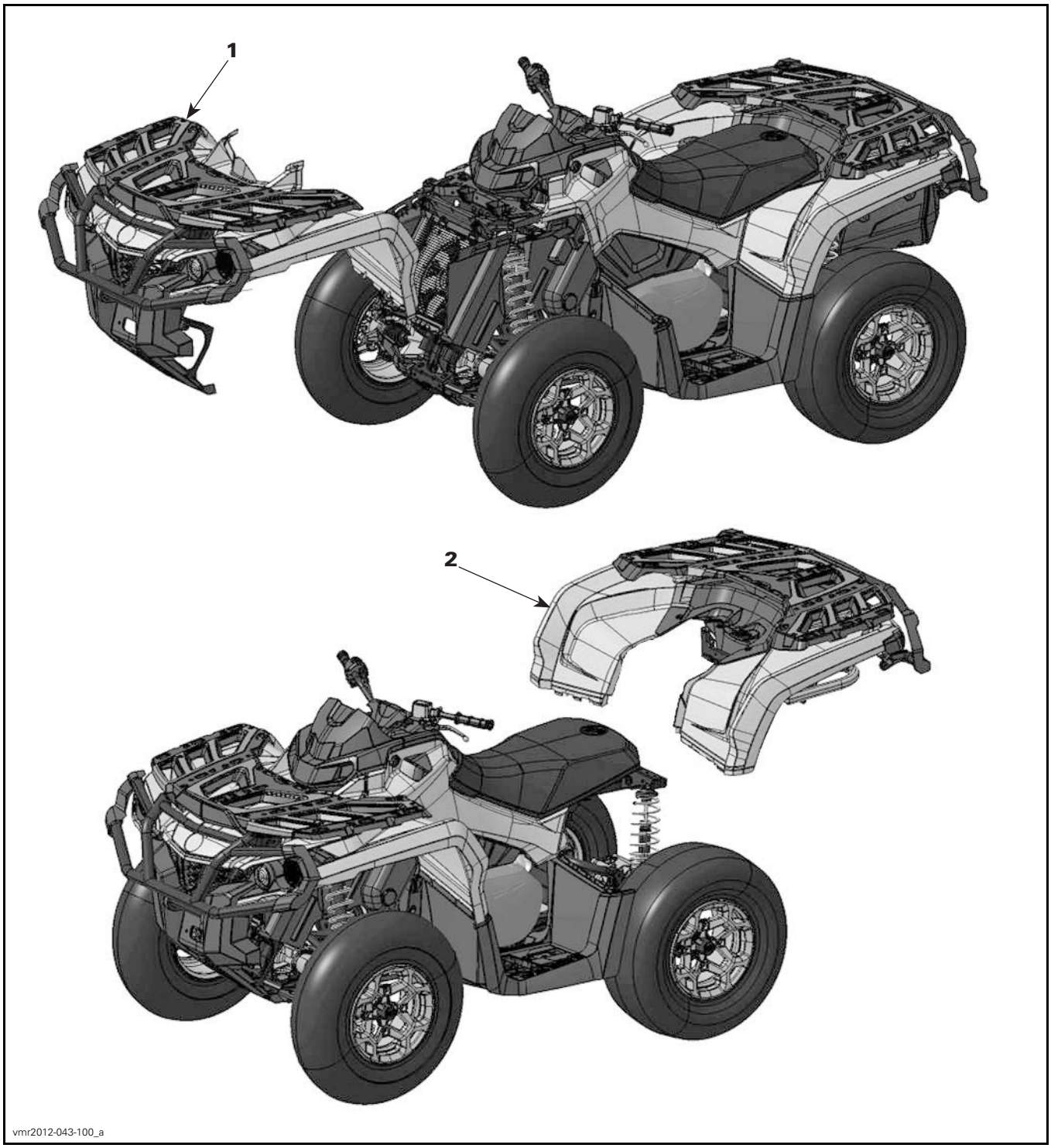
1. Gauge support
2. Console
3. Seat
4. Rear top panel (under rear rack)
5. Rear rack
6. Rear bumper
7. Rear storage compartment
8. Footrest panel
9. Side panel
10. Inner fender panels
11. Front bumper
12. Hood
13. Front rack
14. Front fascia
15. Rear fascia
16. Rear fender
17. Front fender
18. Windshield (If equipped)

BODY PARTS NOMENCLATURE (MAX MODEL)



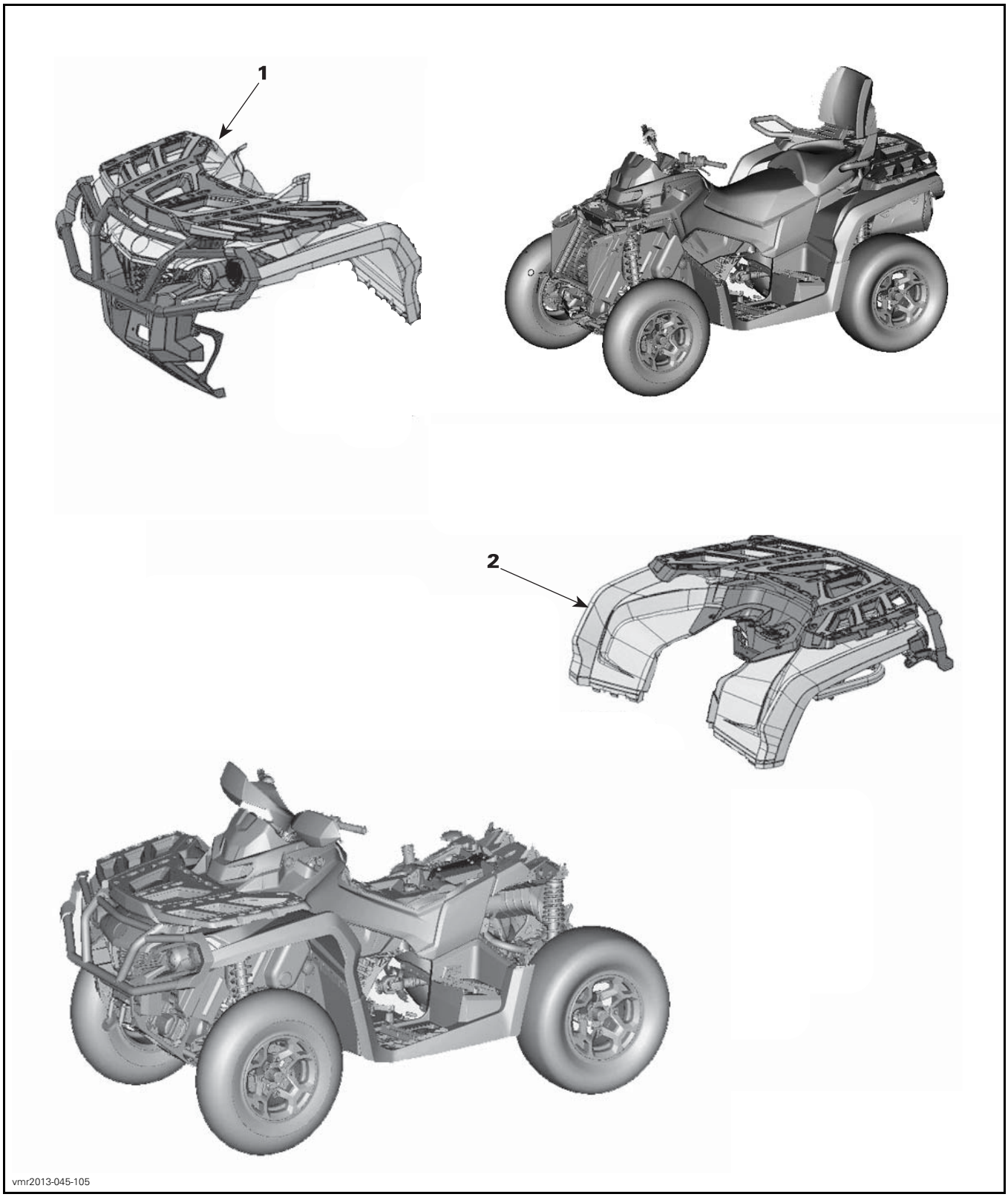
1. *Gauge support*
2. *Console*
3. *Seat*
4. *Passenger seat*
5. *Rear top panel (under rear rack)*
6. *Rear rack*
7. *Rear bumper*
8. *Rear storage compartment*
9. *Footrest panel*
10. *Side panel*
11. *Inner fender panels*
12. *Front bumper*
13. *Hood*
14. *Front rack*
15. *Front fascia*
16. *Rear fascia*
17. *Rear Fender*
18. *Rear side panel extension*
19. *Panel extension*
20. *Front fender*
21. *Windshield (If equipped)*

FRONT AND REAR BODY MODULES (SHORT MODEL)



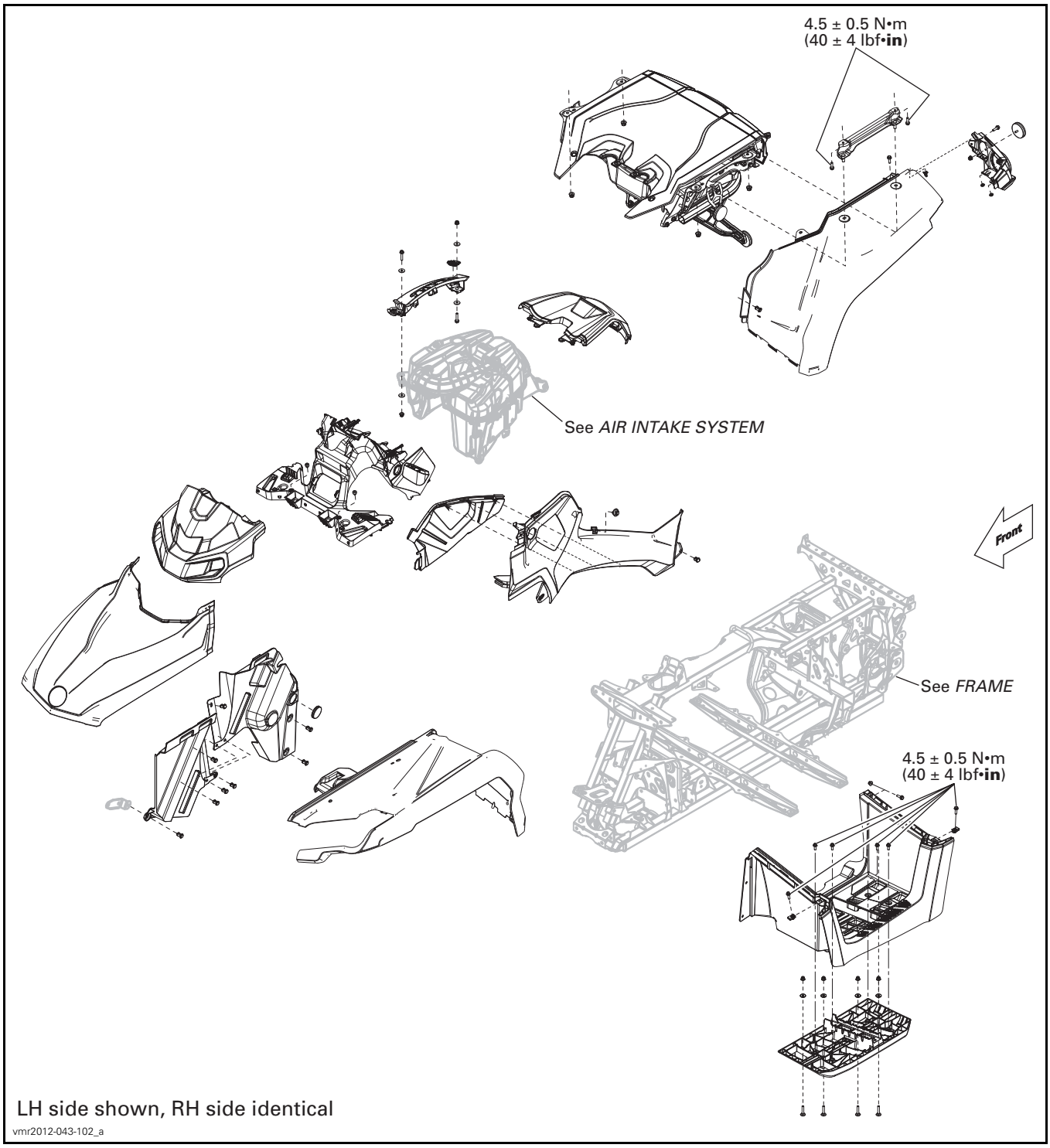
1. Front body module (TYPICAL)
2. Rear body module (TYPICAL)

FRONT AND REAR BODY MODULES (MAX MODEL)

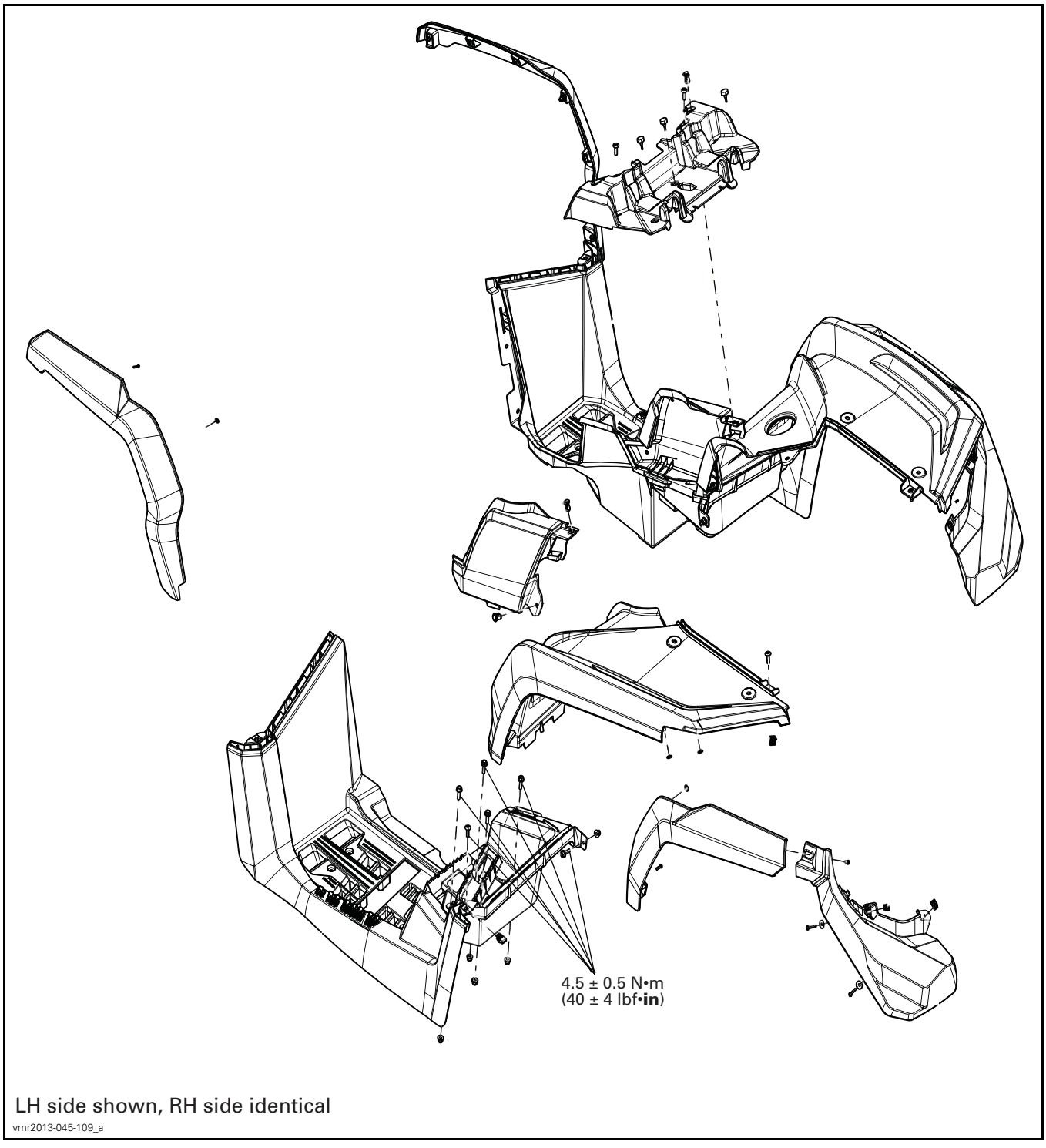


1. *Front body module (TYPICAL)*
2. *Rear body module (TYPICAL)*

BODY PARTS (SHORT MODEL)



BODY PARTS (MAX MODEL)



LH side shown, RH side identical

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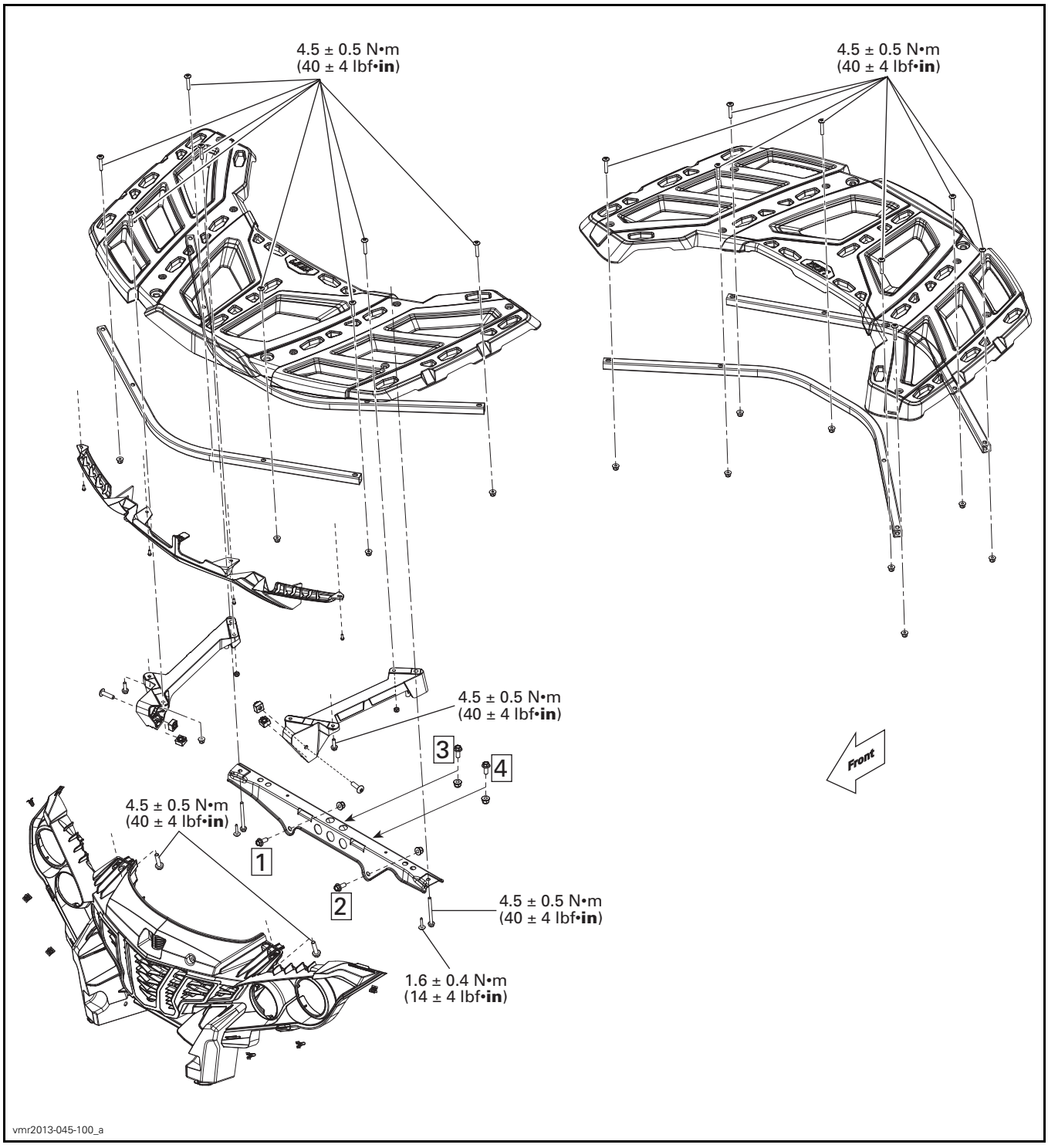
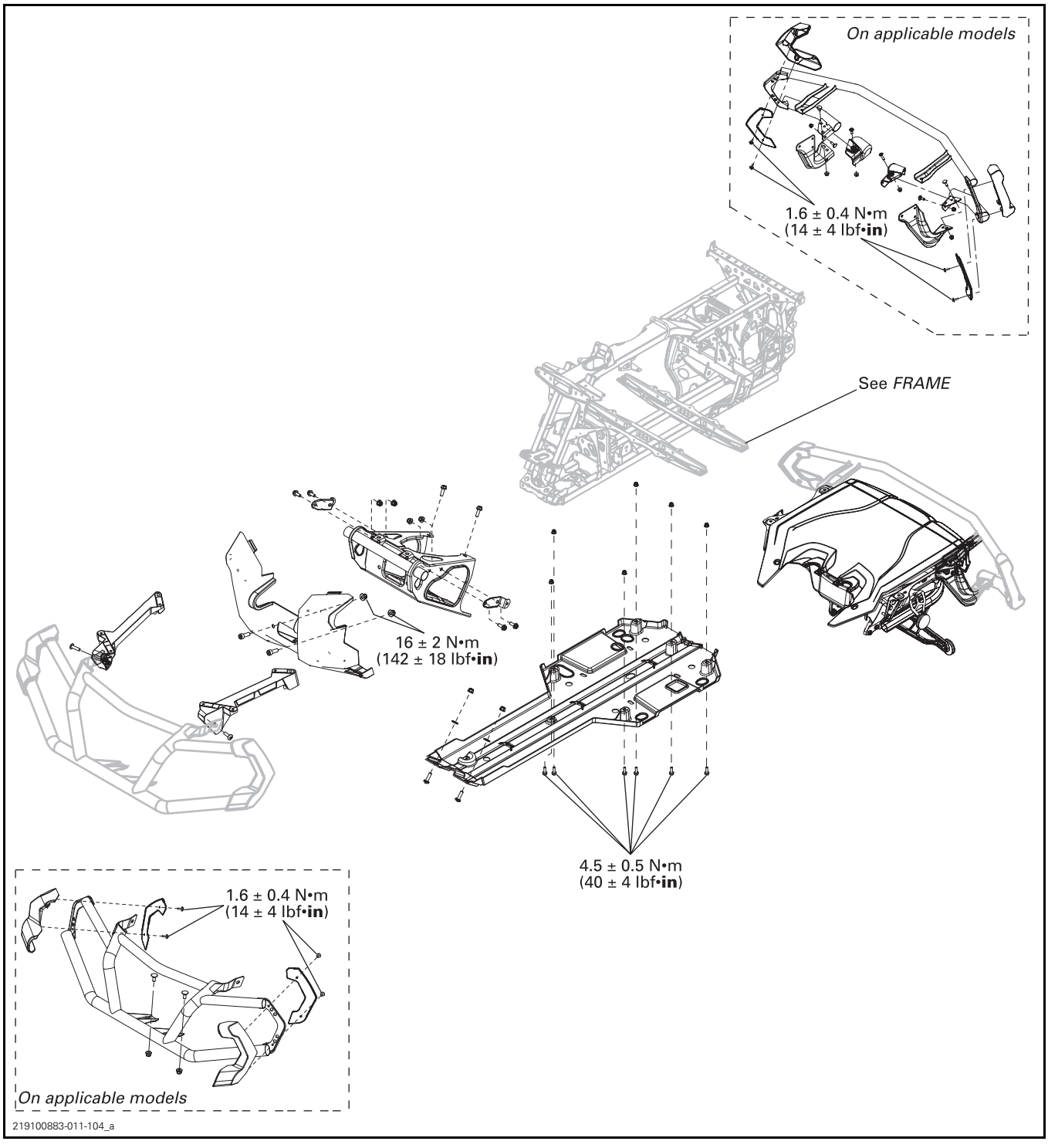
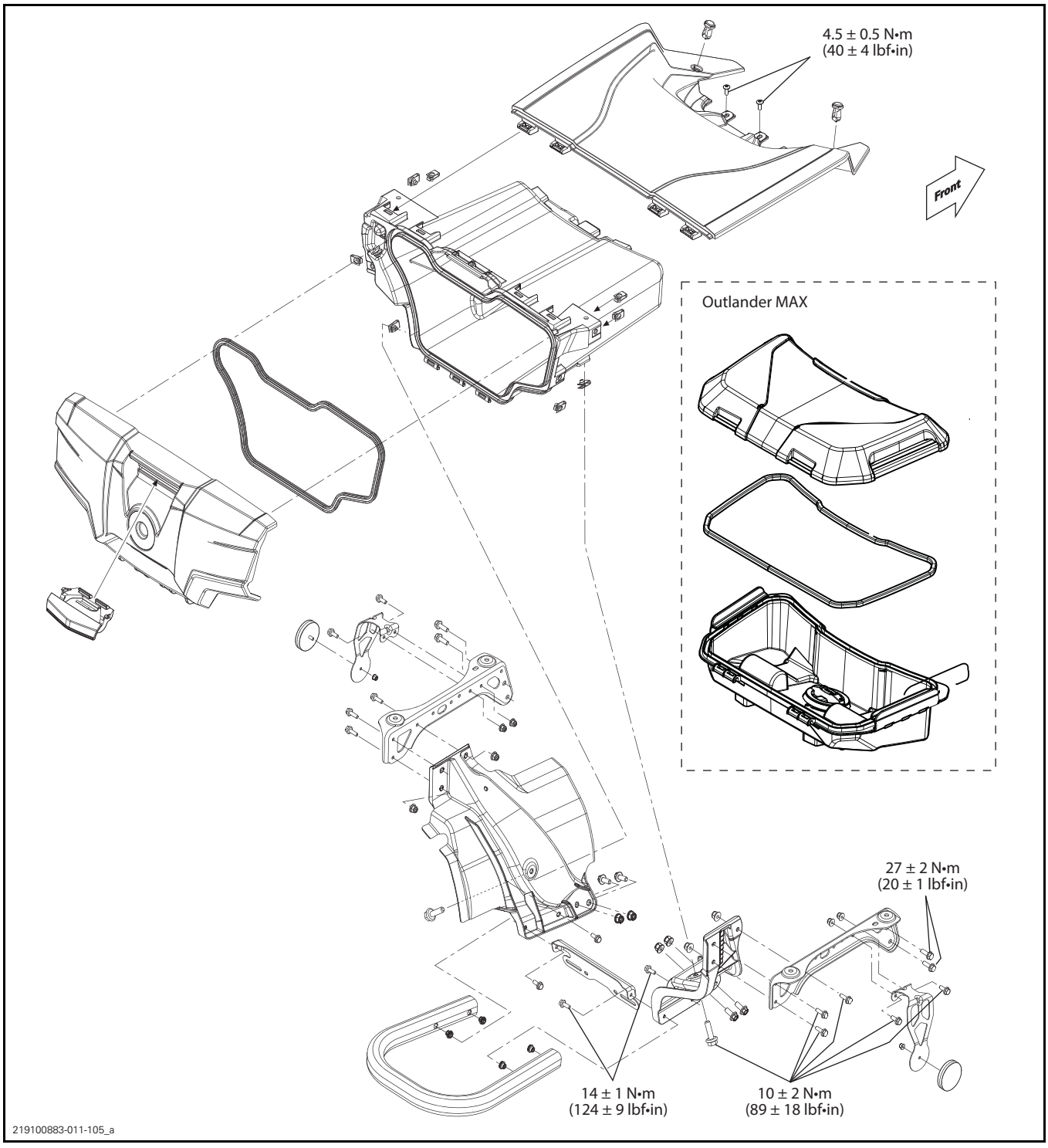
RACKS AND BODY PARTS



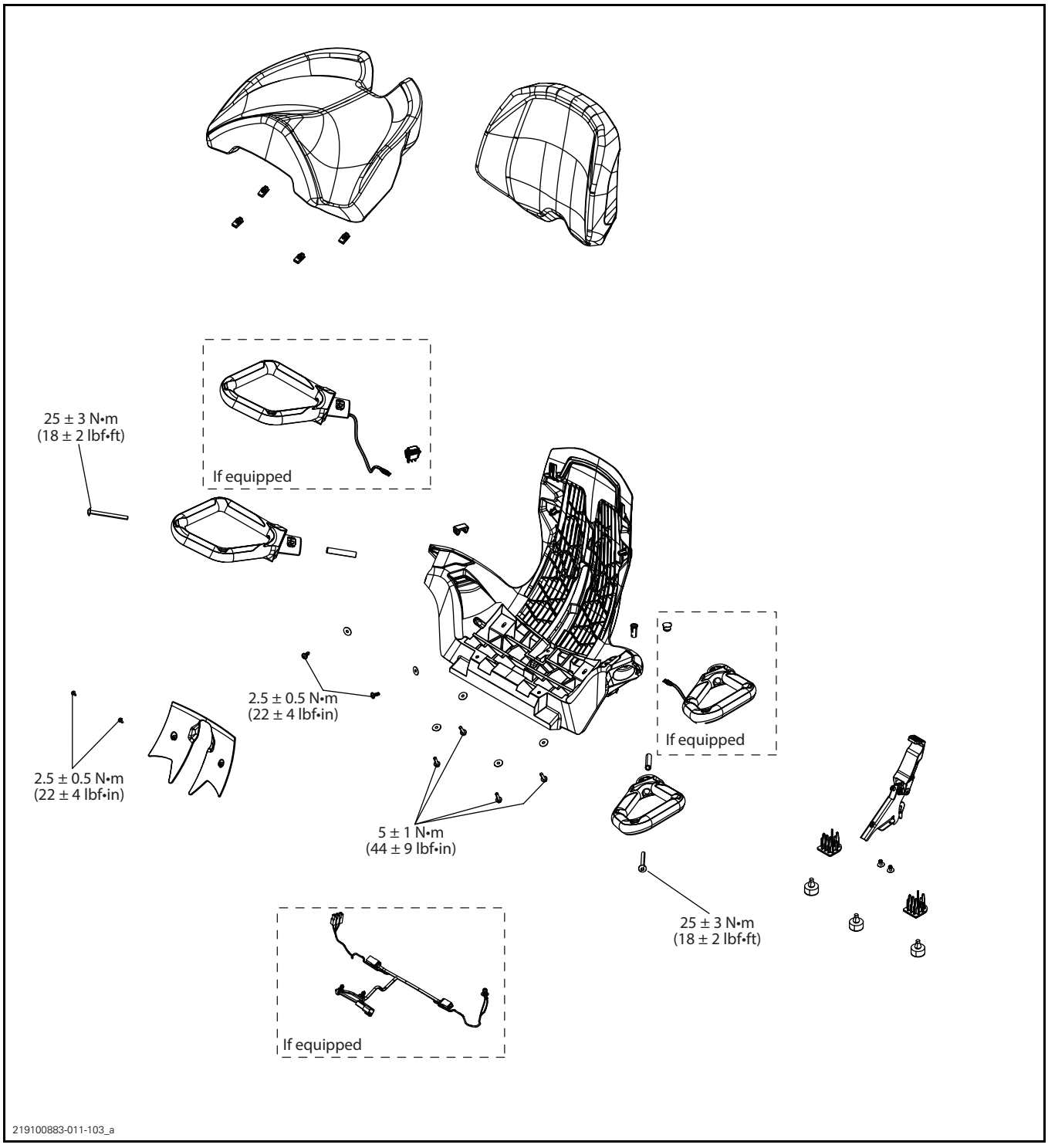
BUMPERS AND BODY PARTS



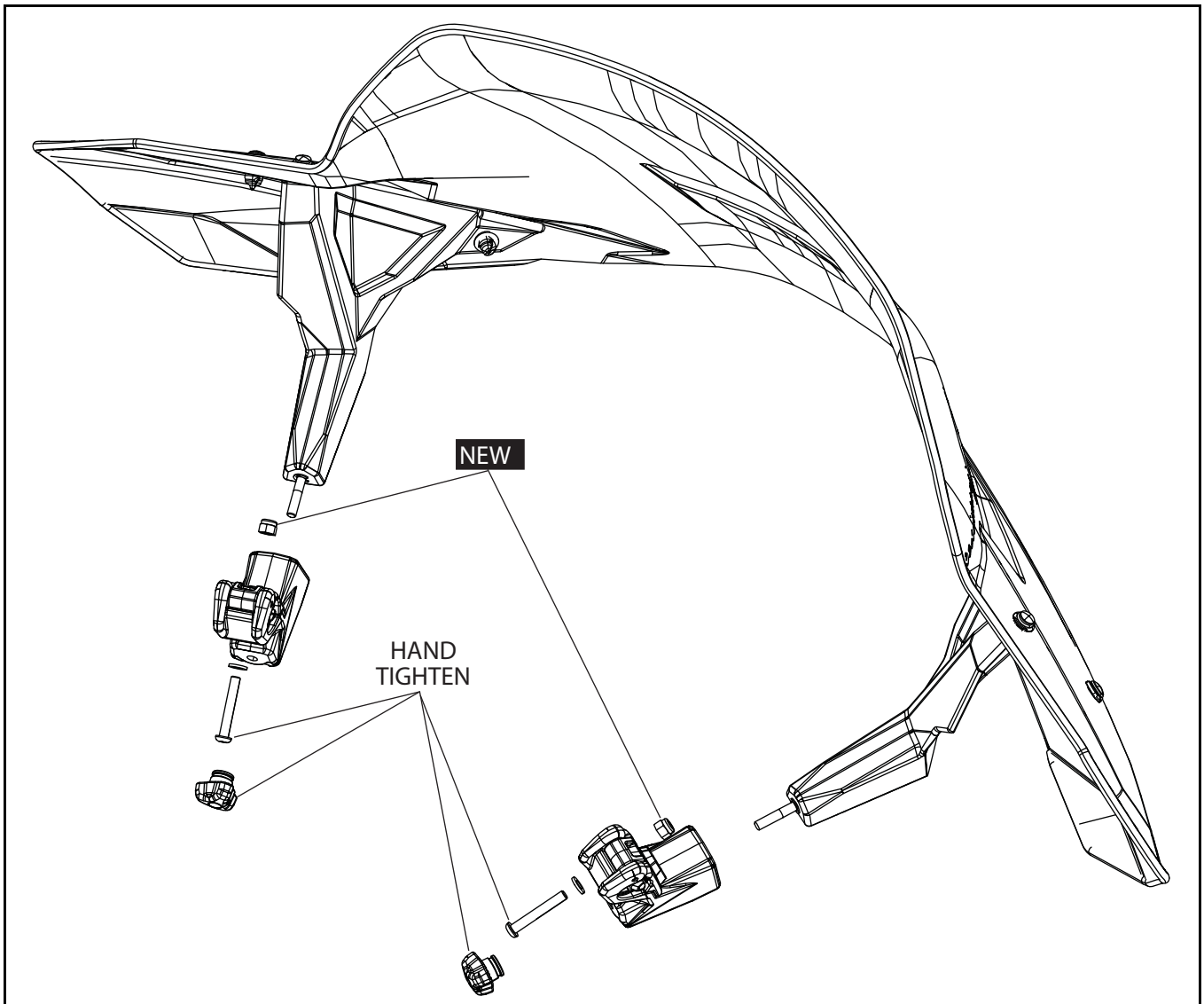
REAR STORAGE COMPARTMENT



PASSENGER SEAT



WINDSHIELD



NEW = Component must be replaced when removed.

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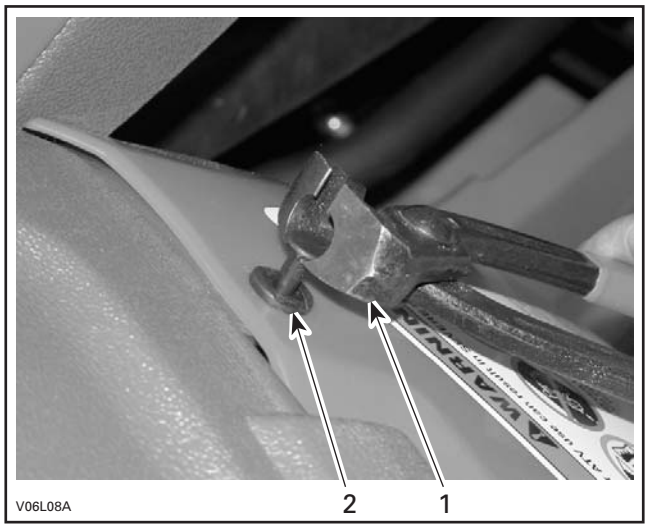
PROCEDURES

PLASTIC RIVET

Plastic rivets are used in the riveting of the various body parts. Plastic rivets can be reused many times. Use the OETIKER PLIER (P/N 295 000 070) to remove them.



TYPICAL
1. *Pliers*
2. *Plastic rivet*

DECALS

Decal Removal

Using a heat gun warm up one end of decal for a few seconds until decal can roll off when rubbing with your finger.

Pull decal slowly and when necessary apply more heat to ease removal on the area that has to be peeled off.

If decal tears while pulling off, it has to be heated for a few seconds longer. If decal tends to stretch while pulling off, stop heating and wait a few seconds to let it cool, then peel it off.

Decal Installation

Using isopropyl alcohol, clean the surface and dry thoroughly.

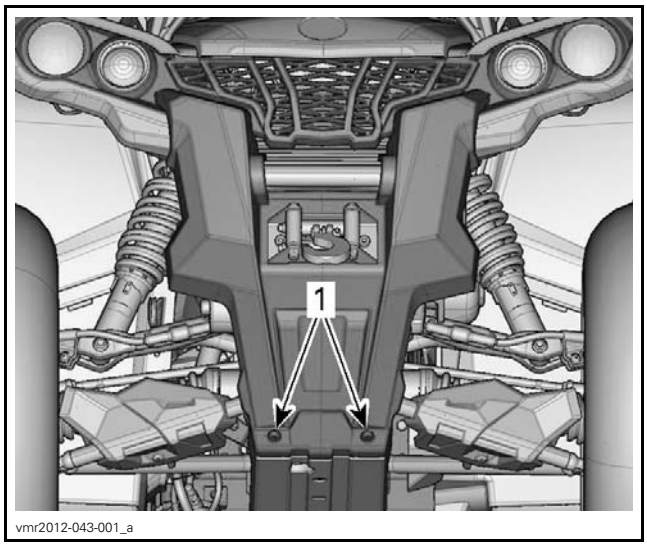
Apply liquid soap to new decal and carefully position it. Using a sponge or a squeegee, remove the air bubbles and surplus water working from the center toward the edges. Allow to air dry.

NOTICE **Do not apply isopropyl alcohol or solvent directly on decals. Use these products in a well ventilated area.**

FRONT BODY MODULE

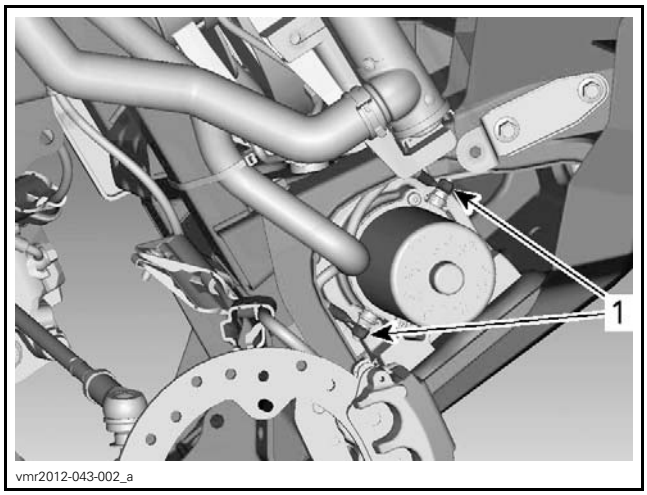
Front Body Module Removal

1. Disconnect battery negative (-) cable.
2. Remove the following panels, see procedure in this subsection.
   – *SIDE PANELS*
   – *INNER FENDER PANELS*.
3. Remove front skid plate retaining screws.



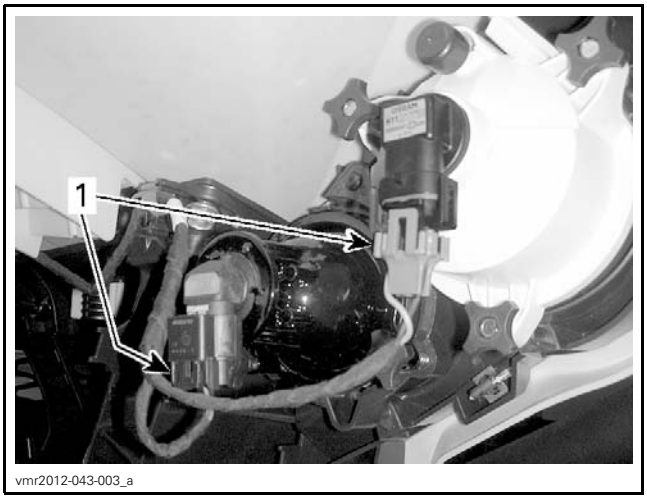
1. Front skid plate retaining screws

4. On applicable models, disconnect winch connectors.



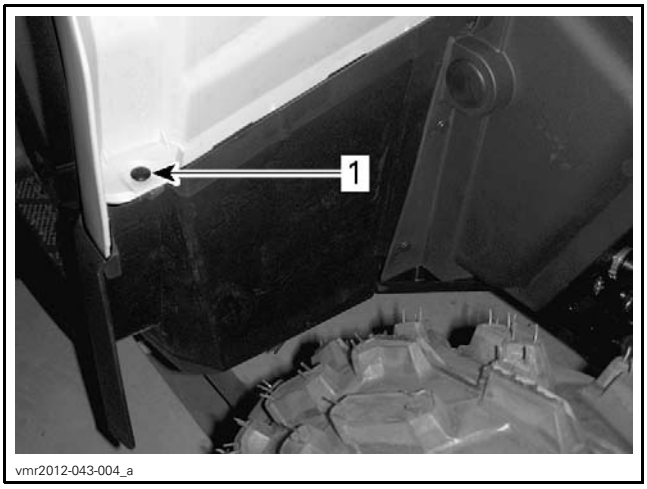
SOME PARTS REMOVED FOR CLARITY
1. Winch connectors

5. Disconnect headlights connectors.



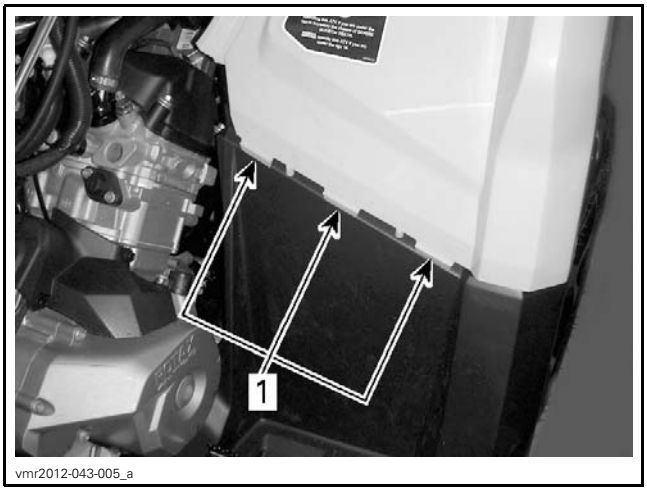
RH SIDE SHOWN
1. *Headlight connectors*

6. Remove screw securing front fender to footrest panel (on both sides).



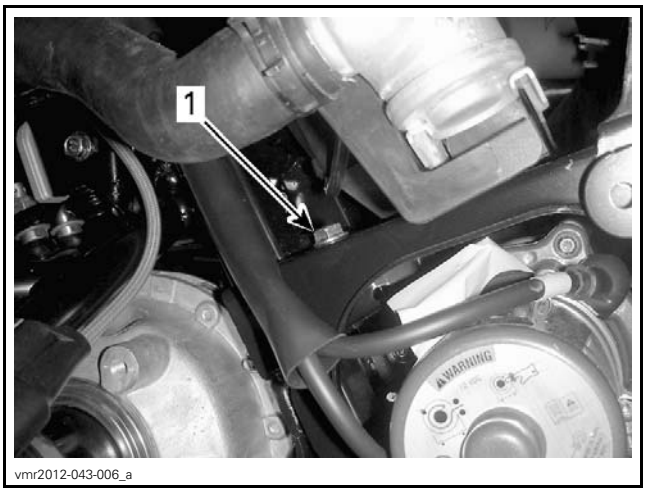
TYPICAL
1. *Screw securing front fender*

7. Detach front fender from footrest panel by releasing retaining tabs (on both sides).

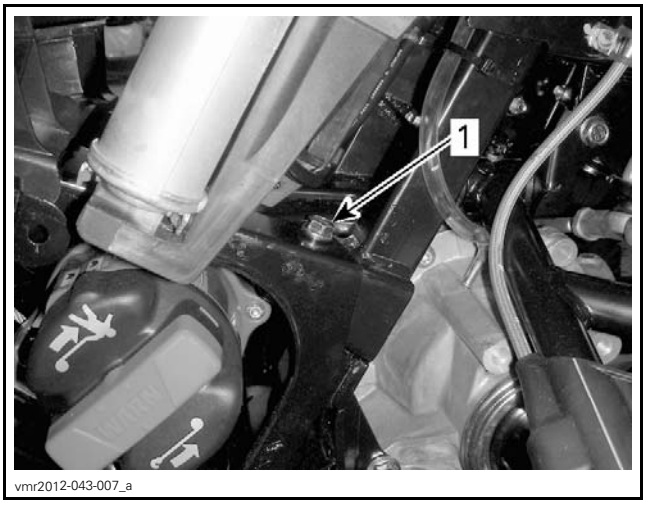


1. *Front fender retaining tabs*

8. Remove screws securing front body module to frame.



RH SIDE
1. *Front body module retaining screw*



LH SIDE
1. *Front body module retaining screw*

9. Remove screws securing front fenders to frame.

TYPICAL - RH SIDE SHOWN
1. *Screw securing front fender*

10. With the assistance of a person, pull front body module forward.
11. Install front body module on a stable and clean support.

Front Body Module Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

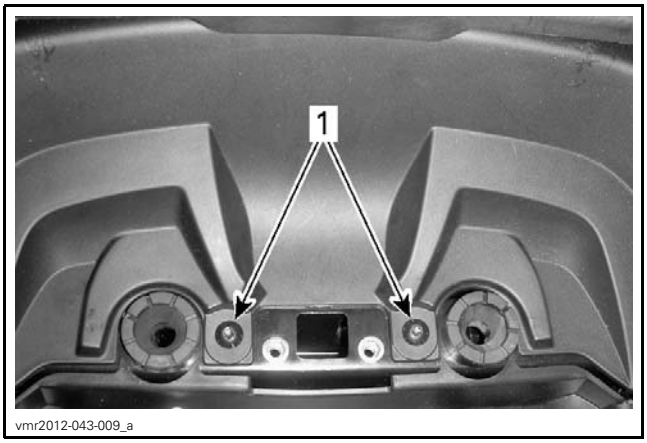
Tighten front fender screws to specification.

TIGHTENING TORQUE	
Screws securing footrest panels to front fenders	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)
Screws securing front fenders to frame	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)

REAR BODY MODULE

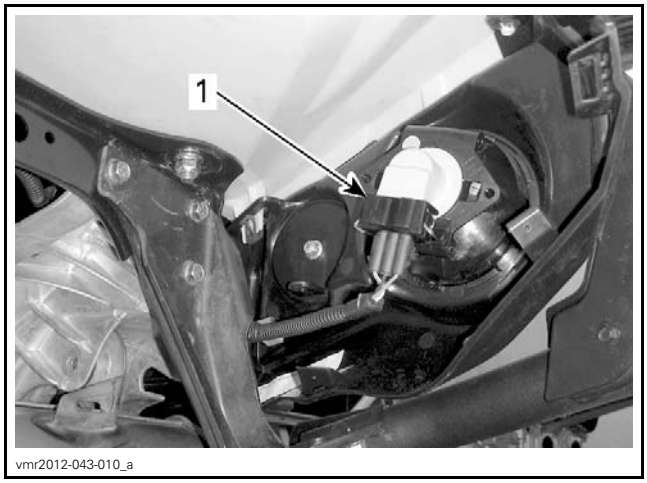
Rear Body Module Removal

1. Remove seat.
2. Remove the following panels, see procedure in this section.
   – *LUGGAGE TRAY* ***(MAX MODELS)***
   – *SIDE PANEL*.
3. On **Short Models**, remove rear top panel retaining screws.



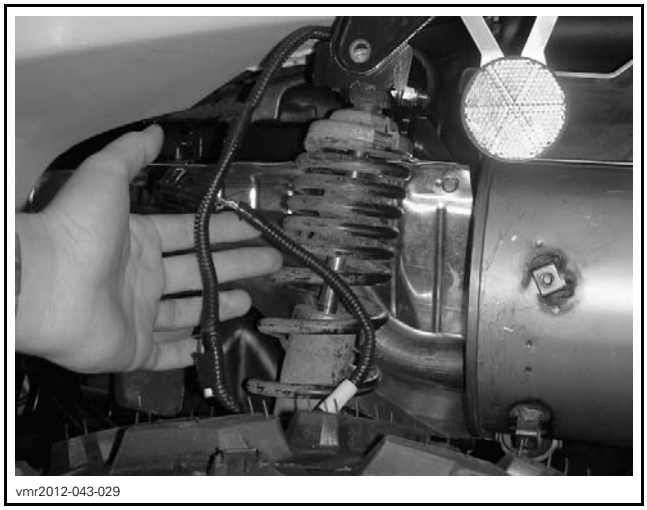
TYPICAL
1. Rear top panel retaining screws

4. Remove both rivets located in the crescent near previously removed retaining screws.
5. Disconnect taillights connectors.



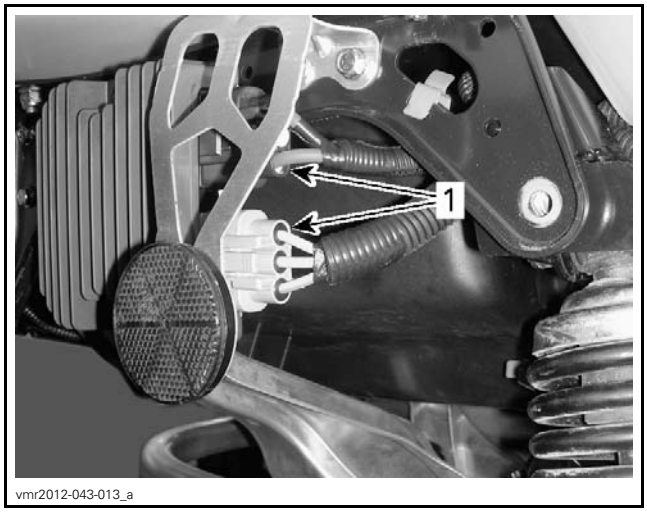
LH SIDE SHOWN
1. Taillight connector

6. Move aside taillight harness from rear body module (on both sides).



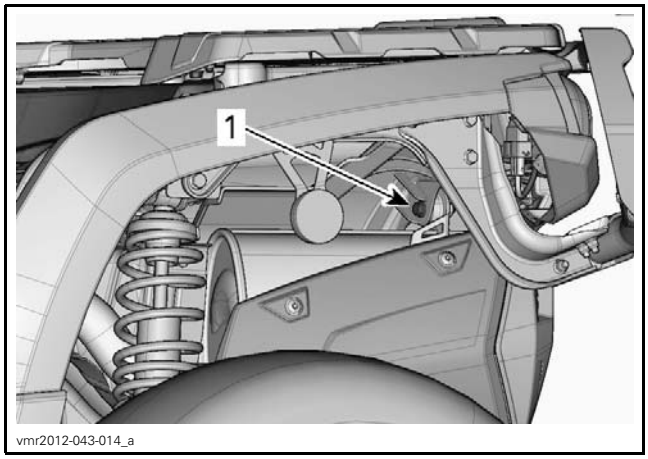
TYPICAL - LH SIDE TAILLIGHT HARNESS

7. Disconnect connectors from voltage regulator rectifier.



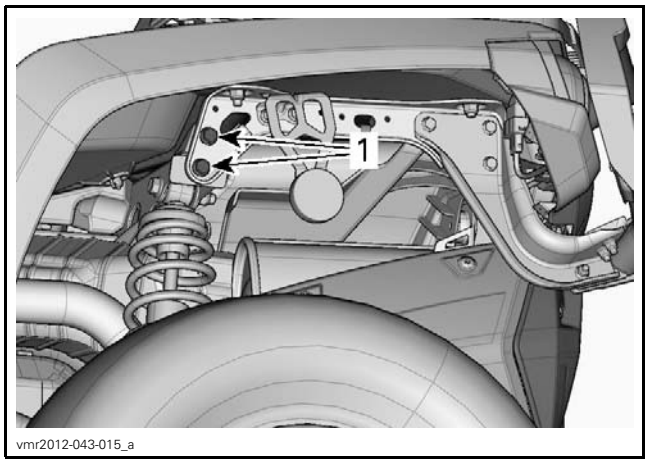
1. Voltage regulator rectifier connectors

8. Remove muffler upper retaining bolt.



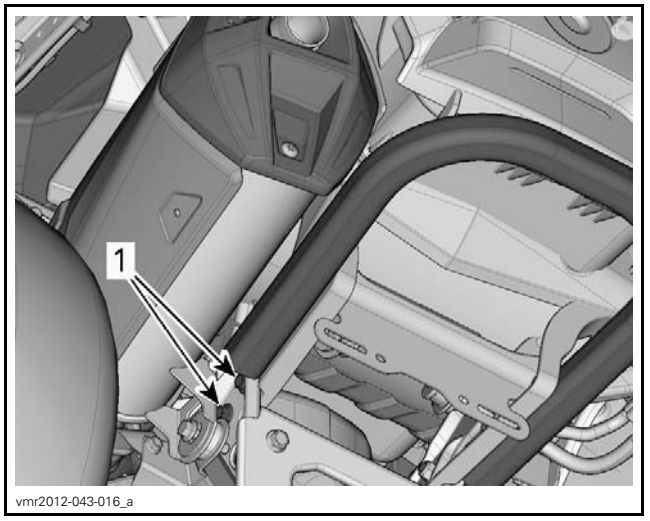
1. Muffler upper retaining bolt

9. Remove rear body module upper retaining bolts.

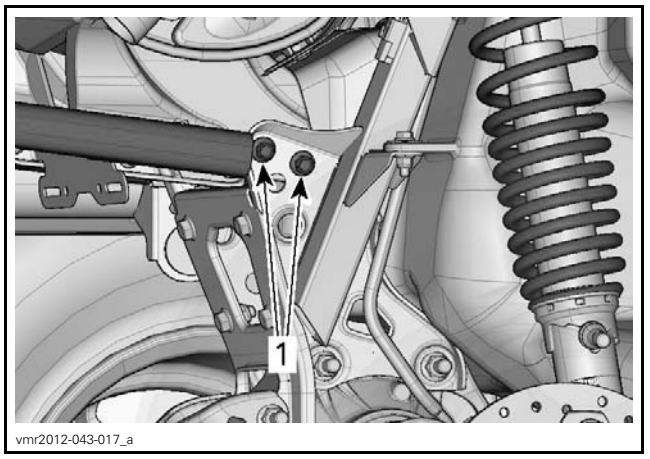


TYPICAL - LH SIDE SHOWN
1. Rear body module upper retaining bolts

10. Remove rear body module lower retaining bolts.



LH SIDE
1. Rear body module lower retaining bolts

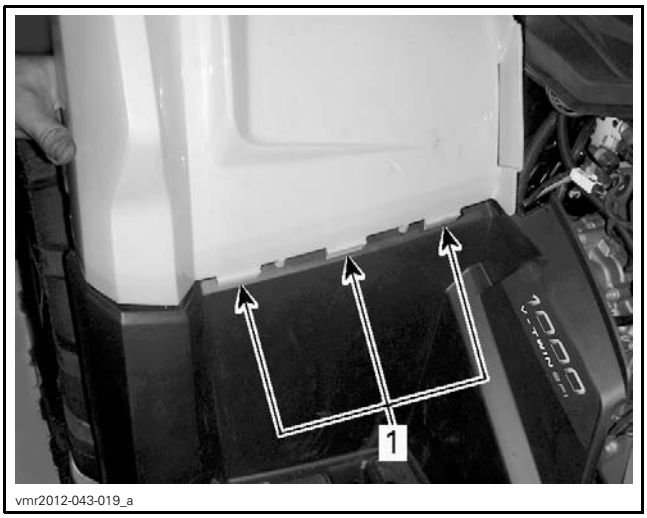


RH SIDE - SOME PARTS REMOVED FOR CLARITY
1. Rear body module lower retaining bolts

11. Remove screw securing rear fender to footrest panel (on both sides).

TYPICAL
1. Screw securing rear fender

12. Detach rear fender from footrest panel by releasing retaining tabs (on both sides).



TYPICAL
1. Rear fender retaining tabs

13. Remove fuel tank cap.
14. Place a **clean** rag into fuel tank filler tube.
15. With the assistance of a person, pull rear body module rearward.
16. Install rear body module on a stable and clean support.
17. Remove rag and reinstall fuel tank cap.

⚠ WARNING

Fuel vapors are flammable and explosive under certain conditions. Unless otherwise noted, the fuel tank cap must always be installed on vehicle.

Rear Body Module Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Tighten rear body module retaining bolts to specification.

TIGHTENING TORQUE	
Rear body module **upper** bolts	27 N•m ± 2 N•m (20 lbf•ft ± 1 lbf•ft)
Rear body module **lower** bolts	24.5 N•m ± 3.5 N•m (18 lbf•ft ± 3 lbf•ft)

Tighten rear fender screws to specification.

TIGHTENING TORQUE	
Screws securing footrest panels to rear fenders	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)

Tighten rear top panel screws to specification.

TIGHTENING TORQUE	
Rear top panel screws	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)

CONSOLE

Console Removal

1. Remove seat.
2. Lift rear portion of console upwards.

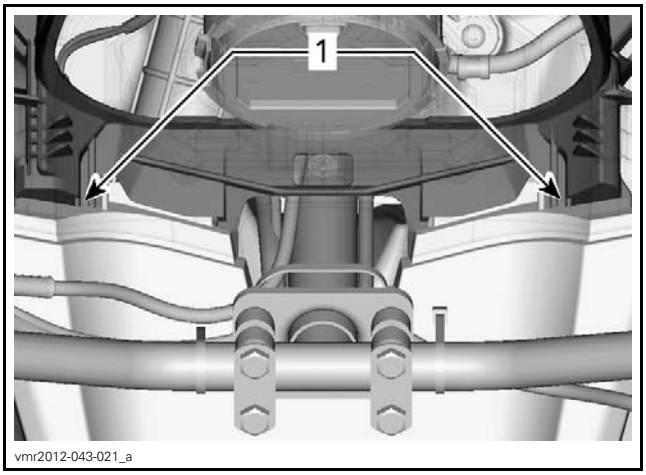
LIFT REAR PORTION

3. Pull console rearwards.

Console Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Align console front tabs with slots, then push console forward.



SOME PARTS REMOVED FOR CLARITY
1. Console front tabs

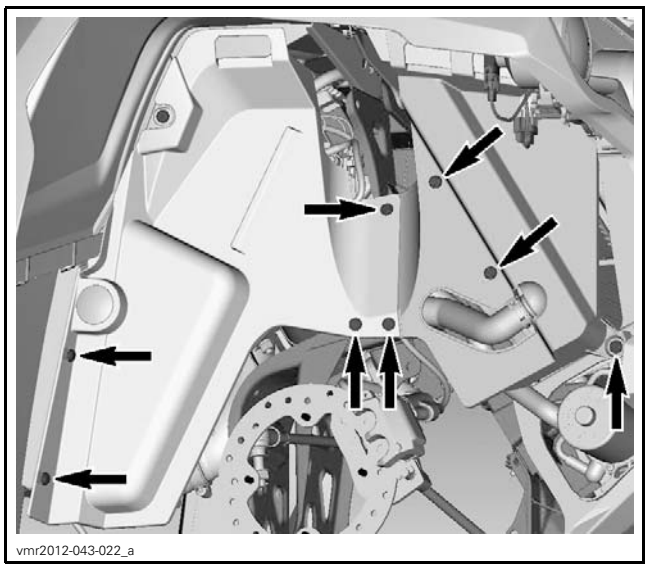
GAUGE SUPPORT

Refer to *GAUGE* subsection.

INNER FENDER PANELS

Inner Fender Removal and Installation

Remove the following plastic rivets from inner fender panels.


vmr2012-043-022_a

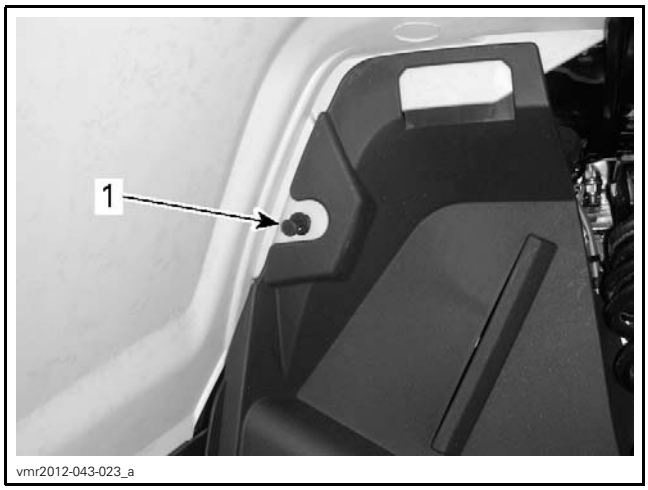
SOME PARTS REMOVED FOR CLARITY

The installation is the reverse of the removal procedure.

SIDE PANELS

Side Panel Removal

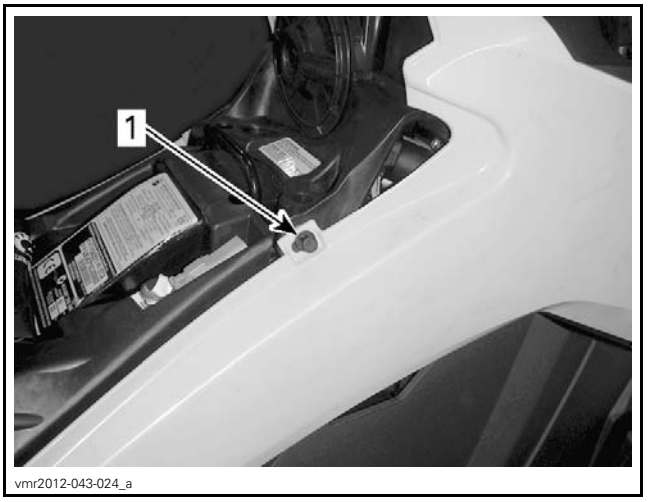
1. Remove *CONSOLE*. See procedure in this subsection.
2. Remove plastic rivet securing side panel to inner fender panel.



vmr2012-043-023_a

1. Plastic rivet securing side panel

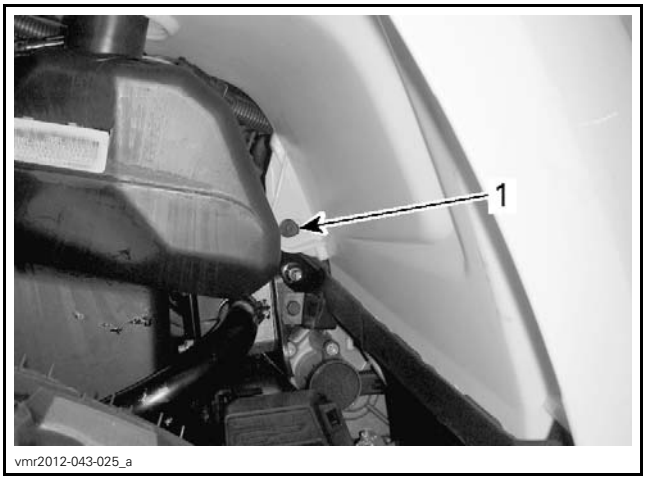
3. Remove plastic rivet securing side panel to air filter housing.



vmr2012-043-024_a

1. Plastic rivet securing side panel

4. Remove plastic rivet securing side panel **(Short Models)** or rear side panel extension **(Max Models)** to rear fender.



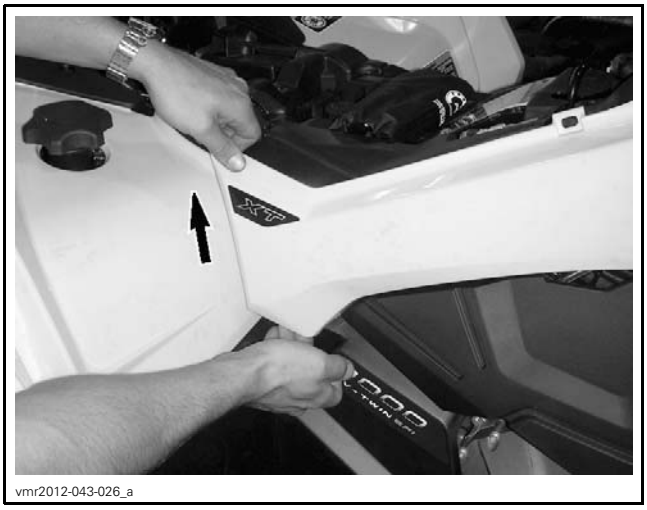
vmr2012-043-025_a

1. Plastic rivet securing side panel

5. Remove luggage tray. Refer to *LUGGAGE TRAY*.
6. Lift rear portion of side panel assembly then pull it towards outside.

NOTE: For **Short Models**, side panel assembly includes side panel and panel extension.

NOTE: For **Max Models**, side panel assembly includes side panel, panel extension and rear side panel extension.


vmr2012-043-026_a

LIFT REAR PORTION

Side Panel Installation

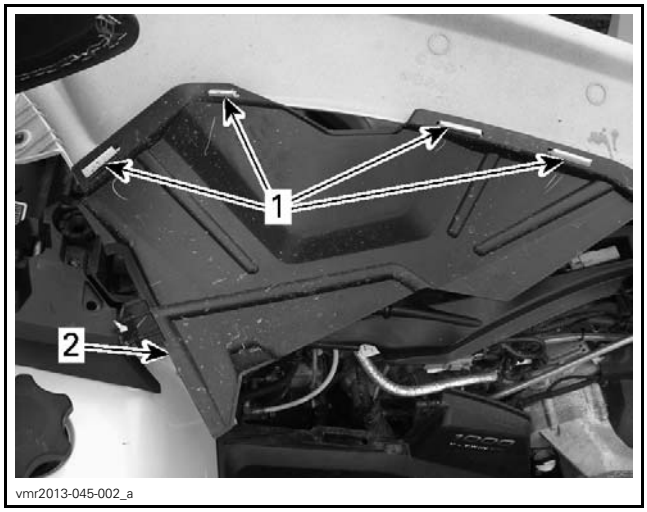
The installation is the reverse of the removal procedure. However, pay attention to the following.

Align side panel front tab with slot, then push side panel forward.

PANEL EXTENSIONS

Panel Extension Removal

1. Remove seat.
2. Remove console. Refer to *CONSOLE REMOVAL*.
3. Remove rear luggage tray. Refer to *LUGGAGE TRAY*.
4. Remove side panel assembly including side panel, panel extension and rear side panel extension. Refer to *SIDE PANEL REMOVAL*.
5. Undo tabs securing panel extension to side panel.



vmr2013-045-002_a

1. Tabs securing panel extension to side panel
2. Side panel extension

6. Remove panel extension.

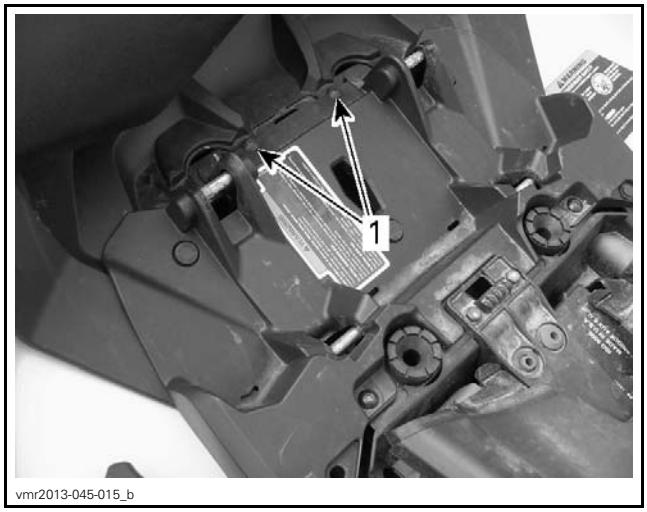
Panel Extension Installation

Installation is the reverse of removal.

LUGGAGE TRAY (MAX MODELS)

Luggage Tray Removal

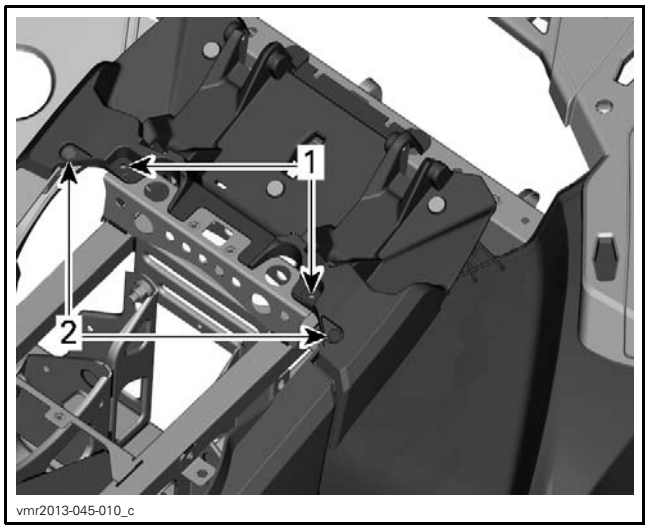
1. Remove seat.
2. Remove retaining screws securing luggage tray and rear top panel to frame.



vmr2013-045-015_b

1. Retaining screws securing luggage tray and rear top panel to frame

3. Remove retaining screws securing luggage tray to frame.
4. Remove rivets securing luggage tray to side panels.



1. Retaining screws securing luggage tray to frame
2. Rivets securing luggage tray to rear side panel extension

Luggage Tray Installation

Installation is the reverse of removal. However pay attention to the following:

TIGHTENING TORQUE	
Luggage tray retaining screws	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)

REAR SIDE PANEL EXTENSIONS (MAX MODEL)

Rear Side Panel Extension Removal

1. Remove seat.
2. Refer to the appropriate sections and remove the following:
   – *LUGGAGE TRAY*
   – *SIDE PANEL*.
3. Remove side panel assembly including side panel, panel extension and rear side panel extension. Refer to *SIDE PANEL REMOVAL*.
4. Unclip retaining tabs securing rear side panel extension to side panel.

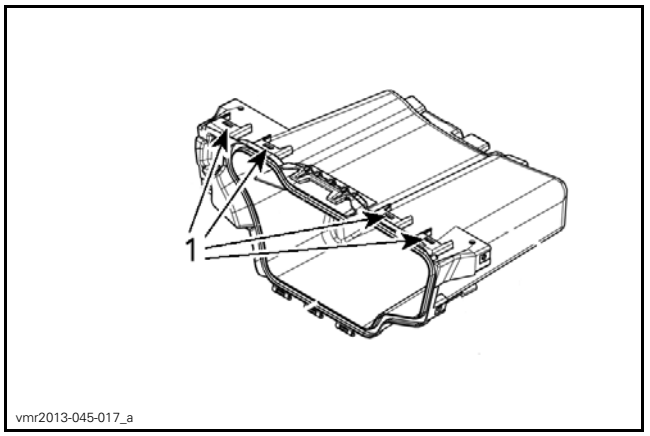
Rear Side Panel Extension Installation

Installation is the reverse of removal.

REAR TOP PANEL

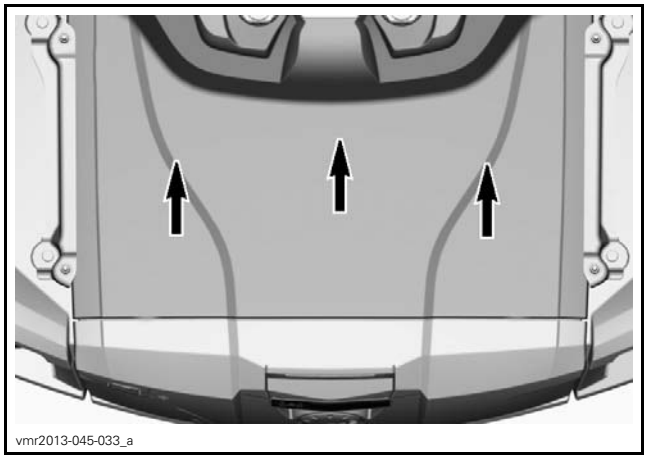
Rear Top Panel Removal

1. Remove seat.
2. Remove rear body module. Refer to *REAR BODY MODULE*.
3. Remove rear rack. Refer to *REAR RACK REMOVAL*.
4. Using a screwdriver, unclip retaining tabs securing rear top panel to rear storage compartment.



PARTS REMOVED FOR CLARITY
1. Retaining tab locations

5. Slide rear top panel forward to free it from rear storage compartment retaining tab.



TYPICAL - SLIDING REAR TOP PANEL TOWARDS FRONT

Rear Top Panel Installation

Installation is the reverse of removal. However pay attention to the following:

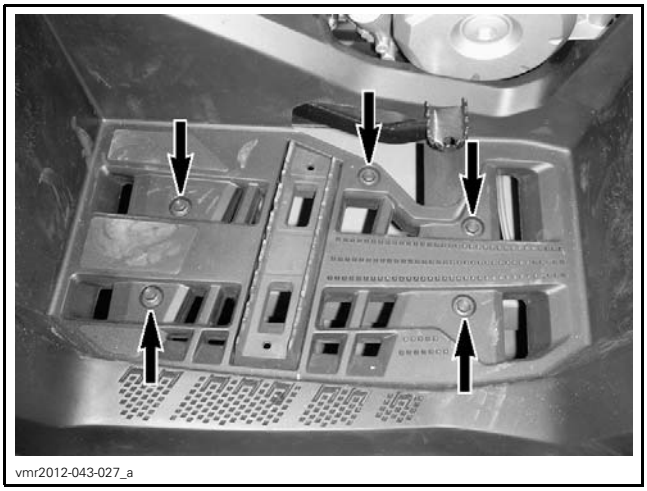
TIGHTENING TORQUE	
Rear top panel screws	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)

FOOTREST PANELS

Footrest Panel Removal

Short Models

1. Remove footrest panel retaining screws.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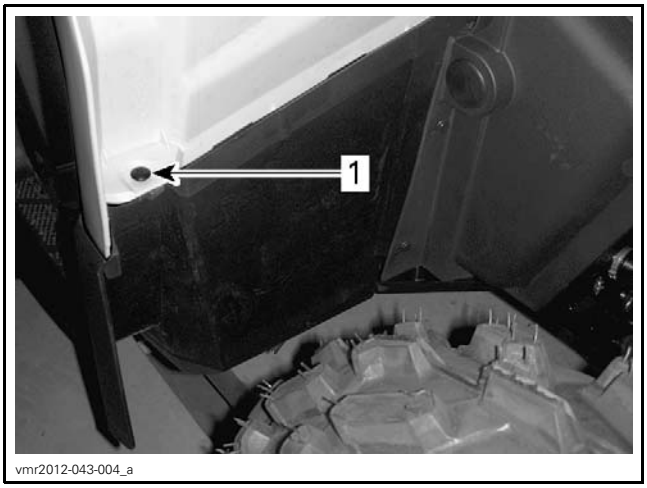
TYPICAL - FOOTREST PANEL RETAINING SCREWS

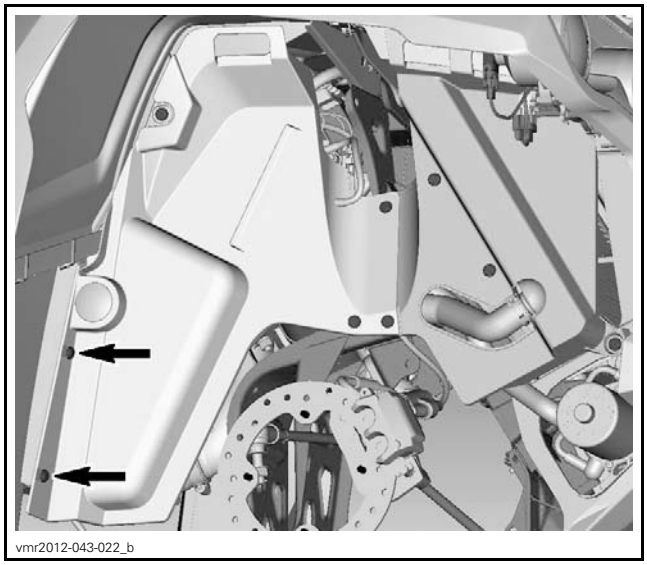
2. Remove screw securing front fender to footrest panel.



vmr2012-043-004_a

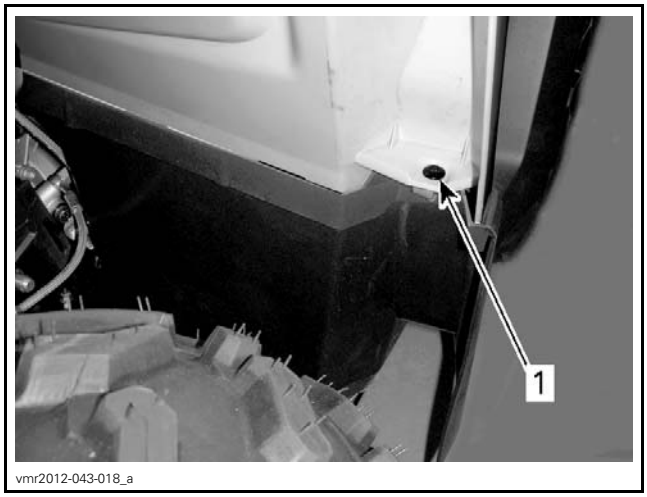
TYPICAL
1. Screw securing front fender

3. Remove both plastic rivet securing inner fender panel to footrest panel.


vmr2012-043-022_b

SOME PARTS REMOVED FOR CLARITY

4. Remove screw securing rear fender to footrest panel.



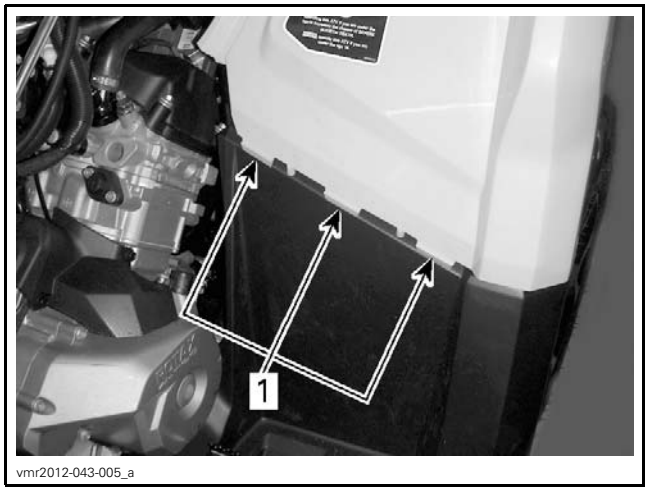
vmr2012-043-018_a

TYPICAL
1. Screw securing rear fender

5. Remove screw securing footrest panel to frame.

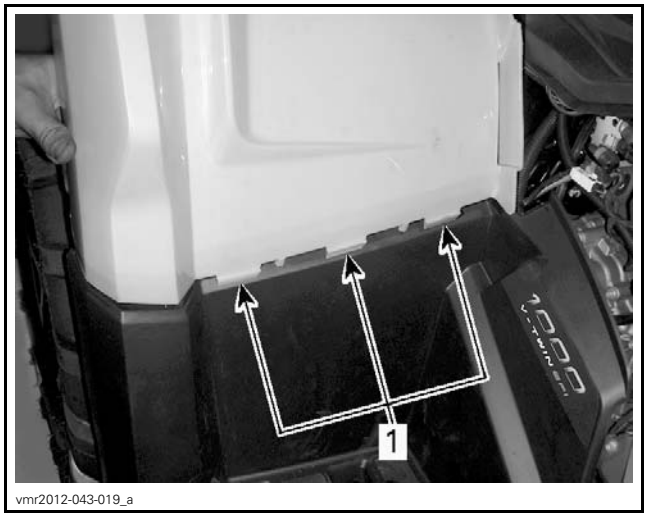
TYPICAL
1. Screw securing footrest panel

6. Detach front fender from footrest panel by releasing retaining tabs.



TYPICAL
1. Front fender retaining tabs

7. Detach rear fender from footrest panel by releasing retaining tabs.

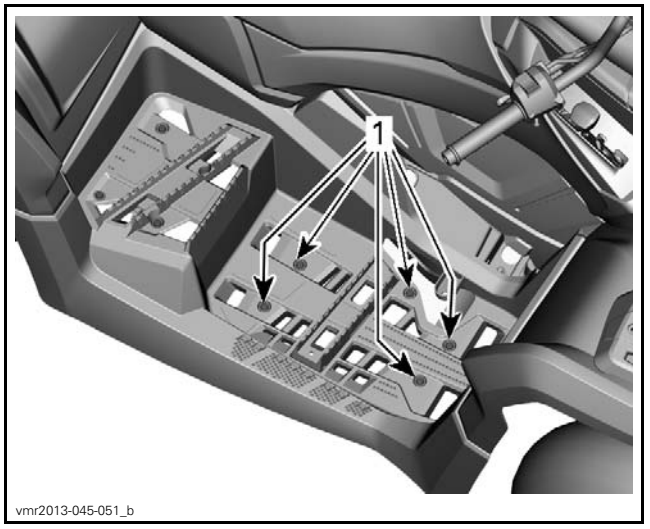


TYPICAL
1. Rear fender retaining tabs

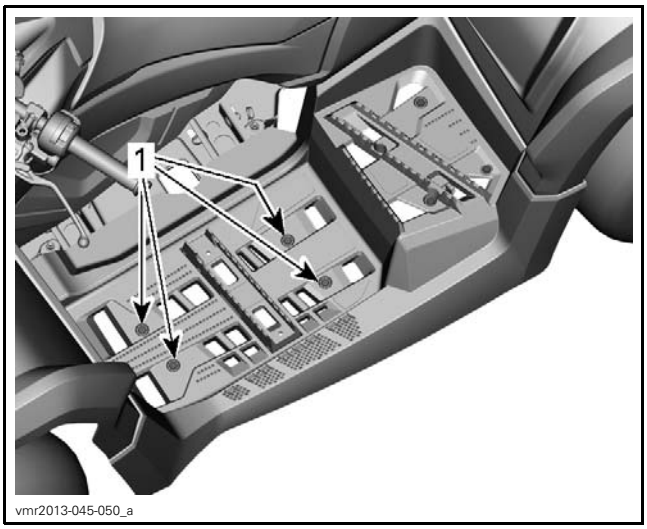
8. Remove footrest panel from vehicle.

Max Models

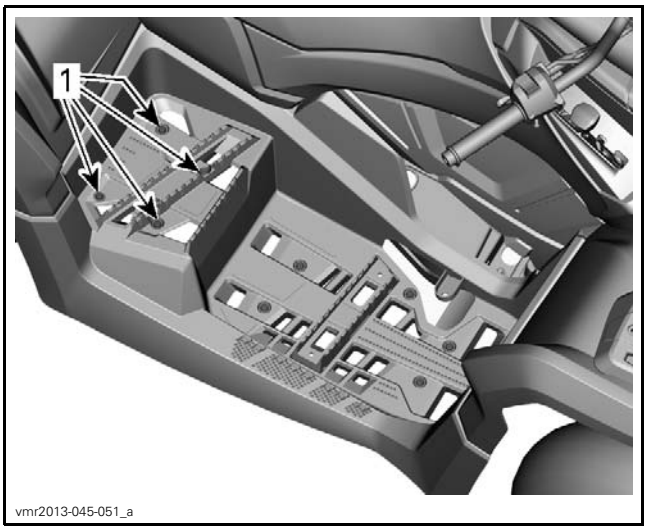
1. Remove footrest panel retaining screws.



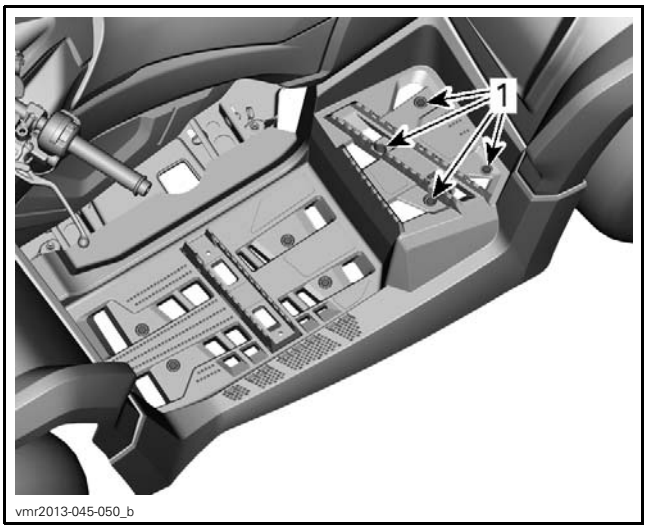
TYPICAL - RH SIDE DOWN
1. Footrest panel retaining screws



TYPICAL - RH SIDE DOWN
1. *Footrest panel retaining screws*

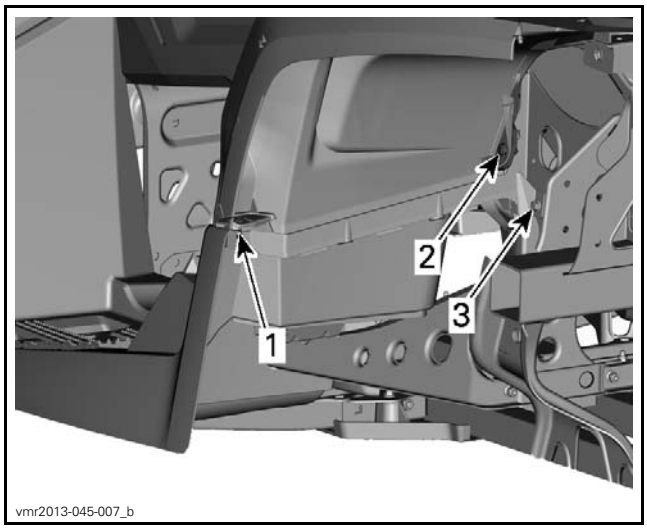


TYPICAL - LH SIDE SHOWN
1. *Footrest panel retaining screws*



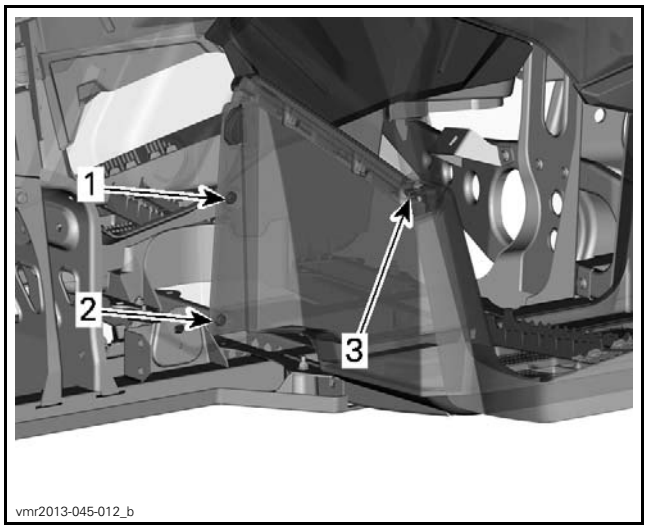
TYPICAL - LH SIDE SHOWN
1. *Footrest panel retaining screws*

2. Remove screw securing rear fender to footrest panel.
3. Remove plastic rivet securing footrest panel to rear side panel extension.
4. Remove plastic rivet securing footrest panel to frame.



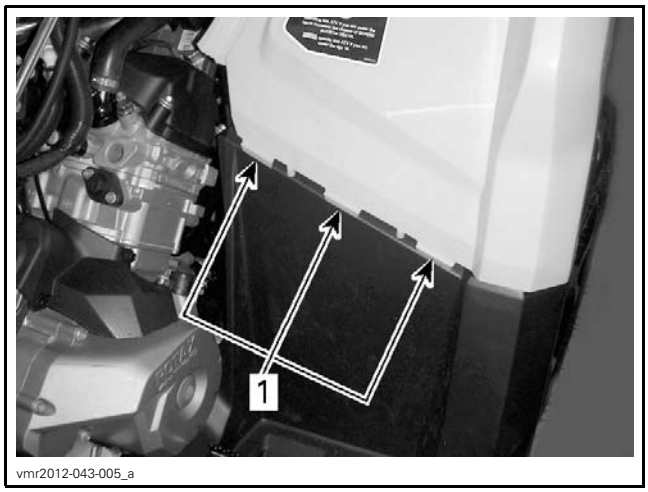
TYPICAL - PARTS REMOVED FOR CLARITY
1. *Plastic rivet securing footrest panel to inner fender*
2. *Plastic rivet securing footrest panel to rear side panel extension*
3. *Retaining screw securing footrest panel to frame*

5. Remove plastic rivet securing footrest panel to panel extension.
6. Remove plastic rivet securing footrest panel to frame.
7. Remove screw securing front fender to footrest panel.



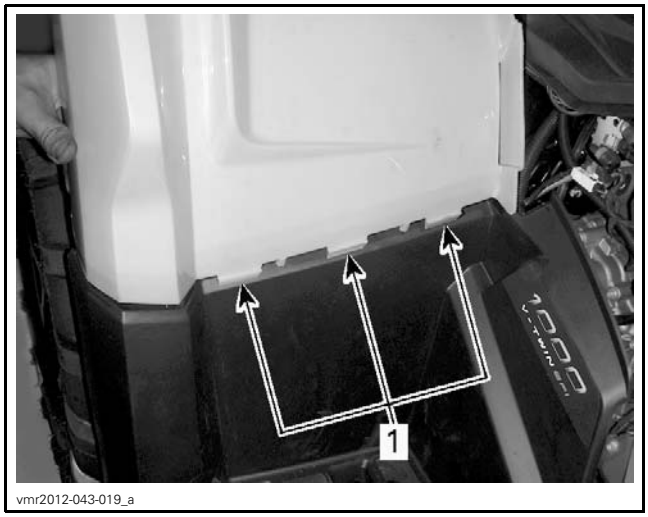
TYPICAL - PARTS REMOVED FOR CLARITY
1. *Plastic rivet securing footrest panel to panel extension*
2. *Plastic rivet securing footrest panel to frame*
3. *Retaining screw securing footrest panel to front fender*

8. Detach front fender from footrest panel by releasing retaining tabs.



TYPICAL
1. Front fender retaining tabs

9. Detach rear fender from footrest panel by releasing retaining tabs.



TYPICAL
1. Rear fender retaining tabs

10. Remove footrest panel from vehicle.

Footrest Panel Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

Tighten footrest panel screws to specification.

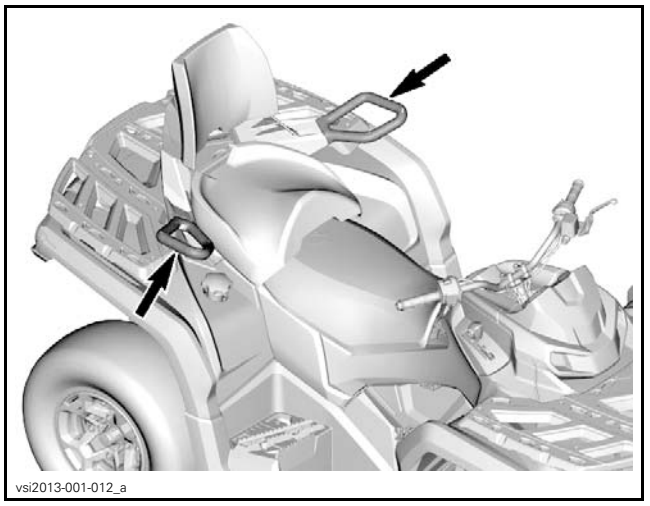
TIGHTENING TORQUE	
Footrest panel retaining screws	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)
Screws securing footrest panel to fenders	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)

PASSENGER GRIPS

Passenger Grips Removal

For models with heated passenger grips, refer to *ACCESSORIES* for procedures.

1. Remove retaining screw securing passenger grips and remove passenger grips.



REAR GRIP SCREWS.

Passenger Grips Installation

Installation is the reverse of removal. However pay attention to the following:

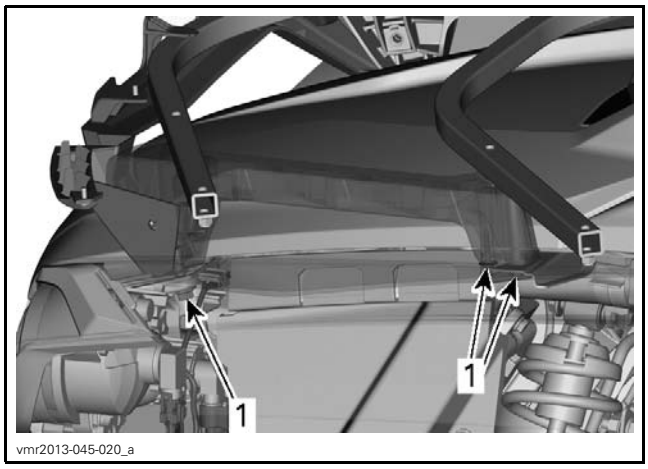
TIGHTENING TORQUE	
Passenger grips retaining screw	25 N•m ± 3 N•m (18 lbf•ft ± 2 lbf•ft)

RACK (FRONT AND REAR)

Front Rack Removal

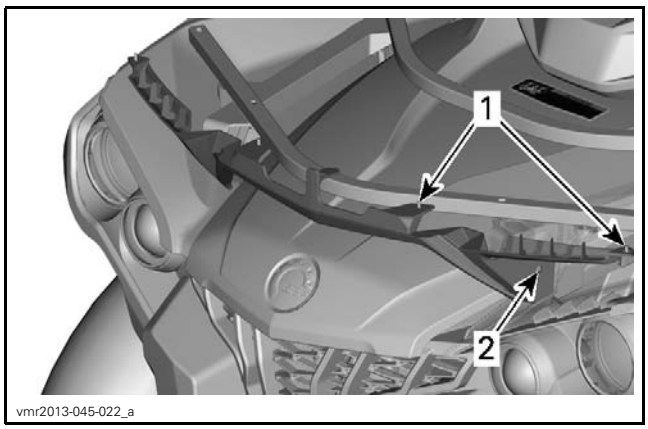
1. Remove retaining bolts securing rack assembly to frame.

NOTE: A small wrench will be needed to remove the retaining screw located between the rack support and fender.



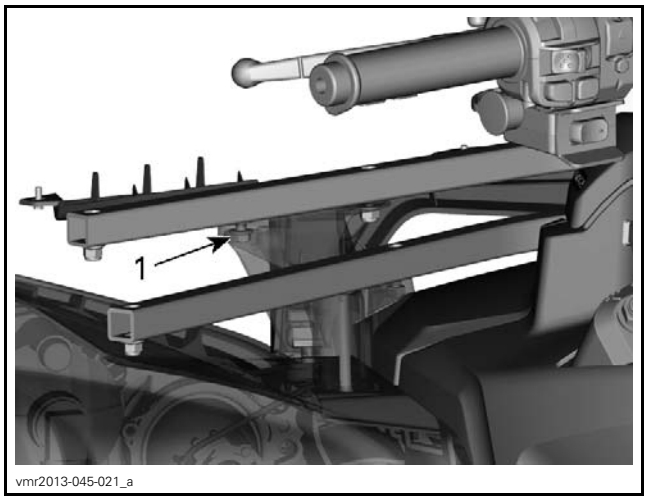
TYPICAL - PARTS REMOVED FOR CLARITY
1. Retaining bolts locations

2. Remove rack assembly from vehicle.
3. Remove the 4 retaining screws securing rack moulding to rack assembly.
4. Remove both retaining screws securing rack moulding to rack supports.



TYPICAL - LH SIDE OF ASSEMBLY SHOWN ON VEHICLE FOR CLARITY
1. LH side retaining screws securing rack moulding to rack assembly
2. LH side retaining screw securing rack moulding to rack support

5. Remove both retaining bolts securing rack supports to rails.



TYPICAL - LH SIDE OF ASSEMBLY SHOWN ON VEHICLE FOR CLARITY
1. Retaining bolt securing rack support to rail

6. Remove retaining screws securing rack to rails.

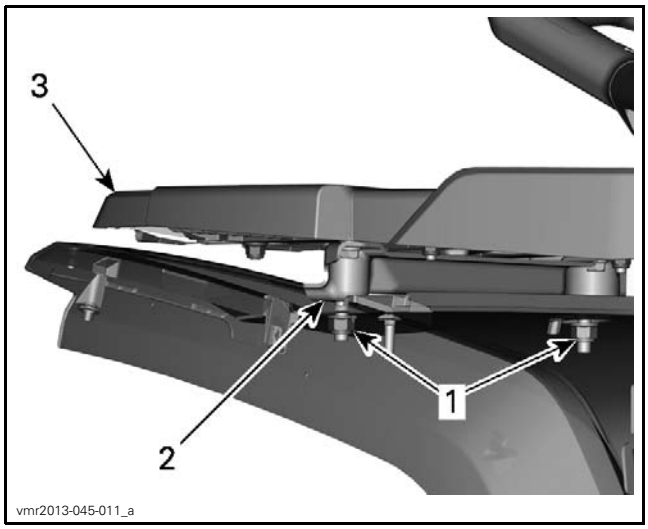
Front Rack Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

TIGHTENING TORQUE	
Screws and nuts securing front rack to rail	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)
Bolts securing front rack assembly to frame	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)
Retaining screws securing fender to front rack assembly	1.6 N•m ± 0.4 N•m (14 lbf•**in** ± 4 lbf•**in**)
Screws securing rack moulding to rack assembly	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)

Rear Rack Removal

1. Remove retaining bolts and nuts securing rack assembly to frame.



1. Retaining nuts and bolts securing rack to frame
2. Frame
3. Rack assembly

2. Remove rack from vehicle.
3. Remove retaining screws securing rack to rail.

Rear Rack Installation

The installation is the reverse of the removal procedure. However, pay attention to the following.

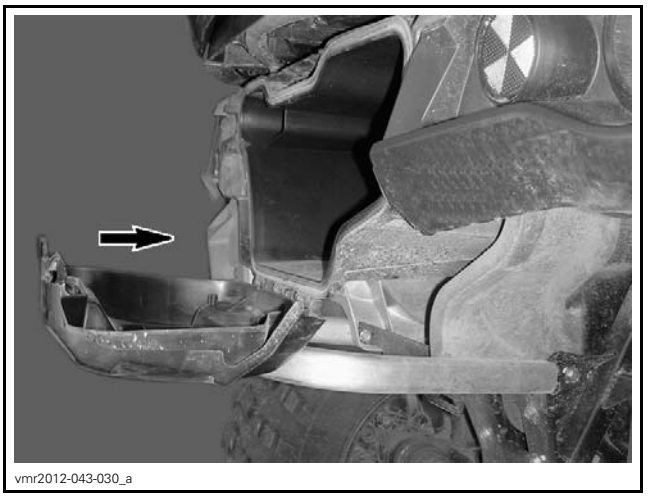
TIGHTENING TORQUE	
Screws and nuts securing rear rack to rail	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)
Screws an nuts securing rear rack assembly to frame	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)

REAR STORAGE COMPARTMENT

REAR STORAGE COMPARTMENT COVER

Rear Storage Compartment Cover Replacement

1. Open rear storage compartment cover.
2. Push rear storage compartment cover forward to release it from hinges.



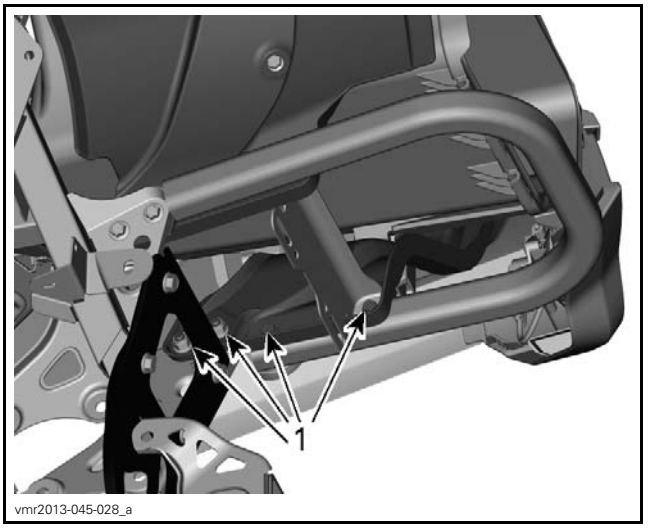
TYPICAL

3. Install a new rear storage compartment cover as the reverse of removal.

Rear Storage Compartment

Rear storage Compartment Removal

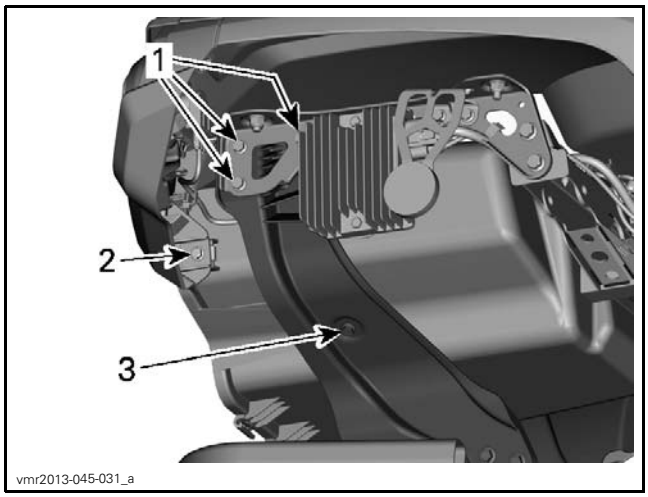
1. Remove rear body module. Refer to *REAR BODY MODULE*.
2. Remove rear rack. Refer to *REAR RACK REMOVAL*.
3. Remove rear storage compartment cover. Refer to *REAR STORAGE COMPARTMENT COVER*.
4. Remove retaining screws securing bottom of RH rear storage compartment support.



1. Retaining screws securing bottom of RH rear storage compartment support

5. Remove retaining screws securing RH rear storage compartment support to RH support.
6. Remove retaining screw securing RH fender to rear storage compartment.

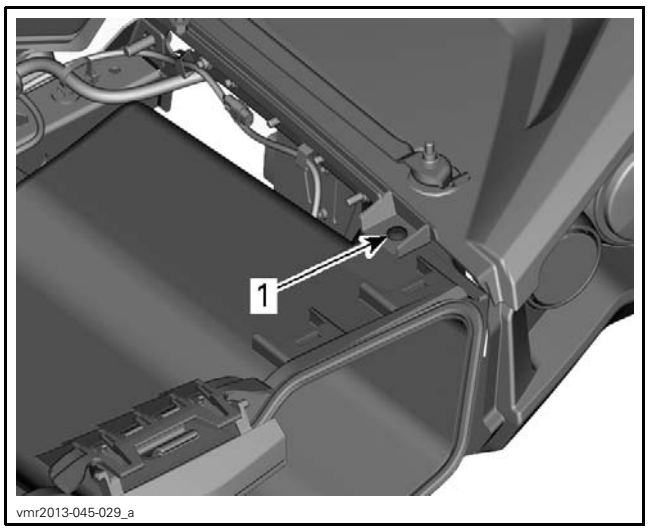
7. Remove retaining screw securing RH rear storage compartment support to rear storage compartment.



vmr2013-045-031_a

1. *Retaining screws securing RH rear storage compartment support to RH support*
2. *Retaining screw securing RH fender to rear storage compartment*
3. *Retaining screw securing RH rear storage compartment support to rear storage compartment*

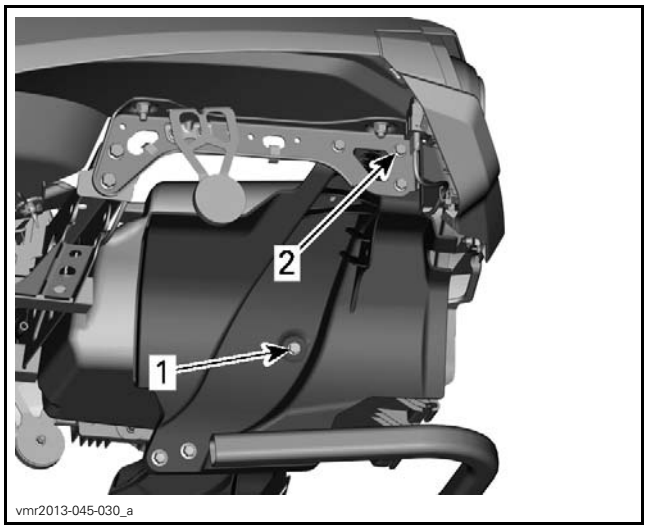
8. Remove RH rear storage compartment support.
9. Remove retaining screw securing top of RH fender to top of rear storage compartment.



vmr2013-045-029_a

1. *Retaining screw securing top of RH fender to top of rear storage compartment*

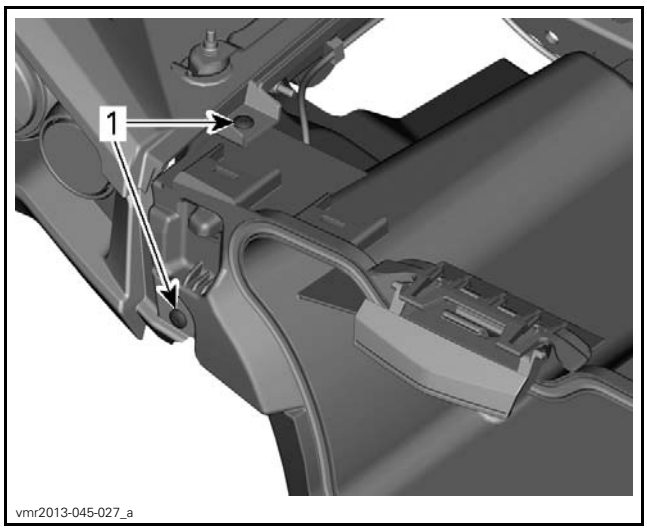
10. Remove retaining screw securing LH rear storage compartment support to rear storage compartment.
11. Remove retaining screw securing LH support and LH rear storage compartment support to rear storage compartment.



vmr2013-045-030_a

1. *Retaining screw securing LH rear storage compartment support to rear storage compartment*
2. *Retaining screw securing LH support and LH rear storage compartment support to rear storage compartment*

12. Remove both retaining screws securing LH fender to rear storage compartment.



vmr2013-045-027_a

1. *Retaining screws securing LH fender to rear storage compartment*

13. Remove rear storage compartment.

Rear Storage Compartment Installation

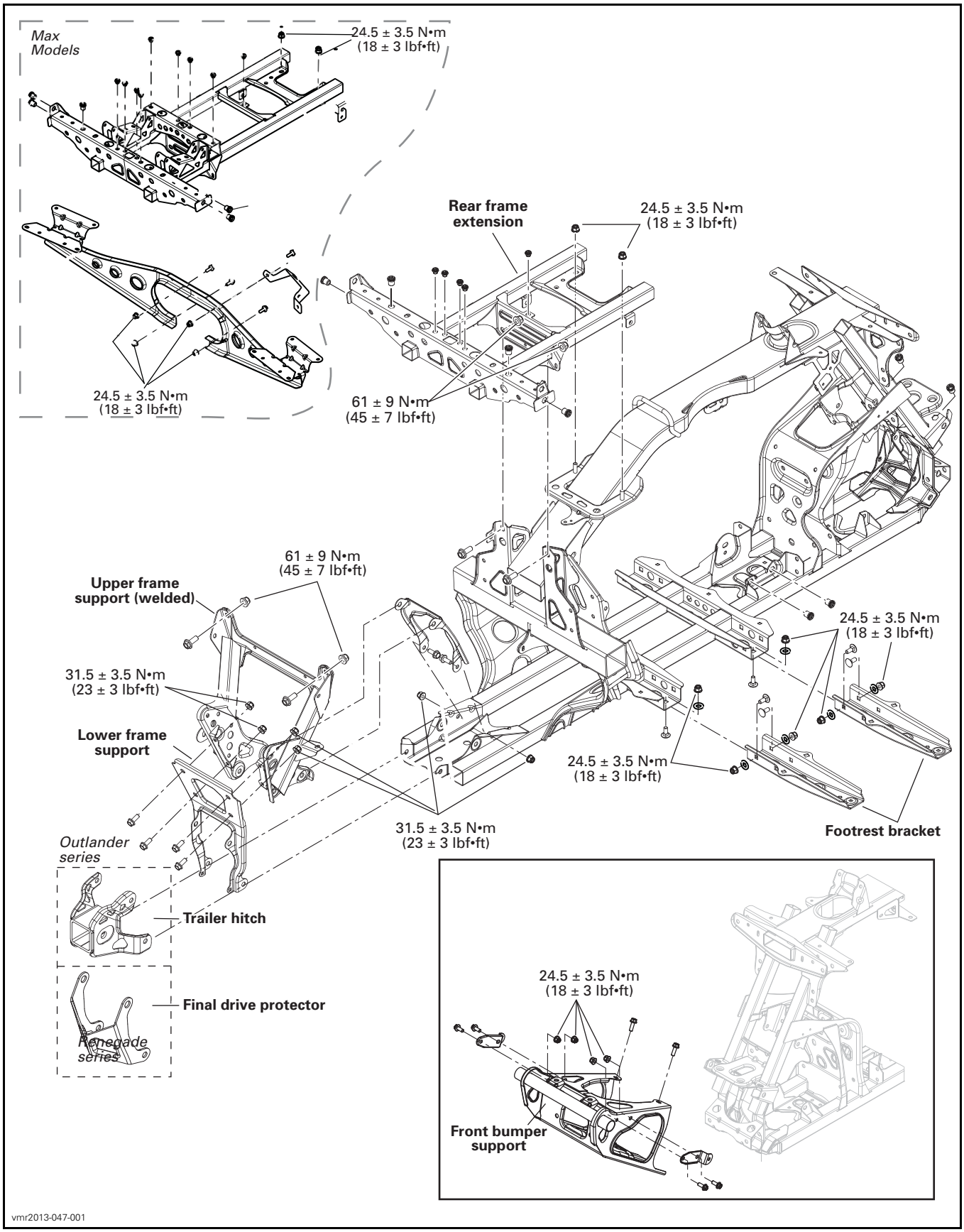
Installation is the reverse of removal. However pay attention to the following:

TIGHTENING TORQUE	
Rear top panel screws	4.5 N•m ± 0.5 N•m (40 lbf•**in** ± 4 lbf•**in**)
Rear storage compartment retaining screws	10 N•m ± 2 N•m (89 lbf•**in** ± 18 lbf•**in**)

FRAME

SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
BLIND THREADED INSERT INSTALLER	model 9600	3


Max Models
24.5 ± 3.5 N•m (18 ± 3 lbf•ft)
24.5 ± 3.5 N•m (18 ± 3 lbf•ft)
Rear frame extension
24.5 ± 3.5 N•m (18 ± 3 lbf•ft)
61 ± 9 N•m (45 ± 7 lbf•ft)
61 ± 9 N•m (45 ± 7 lbf•ft)
Upper frame support (welded)
31.5 ± 3.5 N•m (23 ± 3 lbf•ft)
Lower frame support
24.5 ± 3.5 N•m (18 ± 3 lbf•ft)
24.5 ± 3.5 N•m (18 ± 3 lbf•ft)
31.5 ± 3.5 N•m (23 ± 3 lbf•ft)
Footrest bracket
Outlander series
Trailer hitch
Final drive protector
Renegade series
24.5 ± 3.5 N•m (18 ± 3 lbf•ft)
Front bumper support
vmr2013-047-001

PROCEDURES

FRAME

Frame Inspection

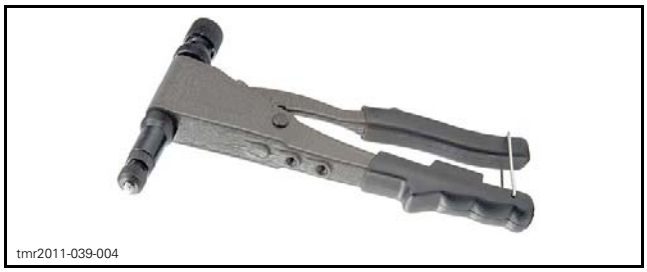
Check frame for bending, cracks, weld damages or any other damage. Replace frame as necessary.

Frame Welding

No welding should be done on frame except if mentioned or required on an approved BRP Bulletin.

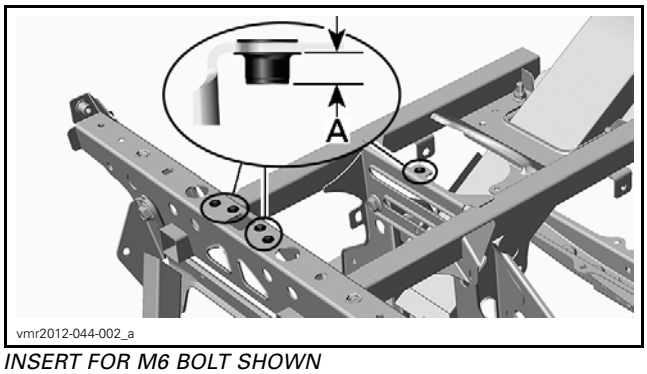
Frame Insert Replacement

To install a new blind threaded insert, use the following tool: BLIND THREADED INSERT INSTALLER (P/N MODEL 9600) from Textron. See their web site at: **www.textronfasteningsystems.com**.


tmr2011-039-004

After insert installation, ensure insert can hold the torque applied to the screw it retains and measure the compressed length of the frame insert. Otherwise, install a new insert.

INSERT	COMPRESSED LENGTH
Insert for M6 bolt	9 mm ± 0.5 mm (.354 in ± .02 in)
Insert for M8 bolt	11.5 mm ± 0.5 mm (.453 in ± .02 in)



vmr2012-044-002_a

INSERT FOR M6 BOLT SHOWN
A. 9 mm ± 0.5 mm (.354 in ± .02 in)

Frame Replacement

Blind threaded inserts are not installed on replacement frames. Make sure to order enough inserts when replacing frame. Refer to *ELECTRONIC PARTS CATALOG*.

ENGINE 570

ENGINE			
Engine type			ROTAX® 570, 4-stroke, 2 cylinders (V-twin), liquid cooled
Valve train			4 valves/cylinder (mechanical adjustment), single over head camshaft (SOHC) with timing chain
Bore			84 mm (3.31 in)
Stroke			51.4 mm (2.02 in)
Displacement			570 cm^3 (34.8 in^3)
Compression ratio			10.6:1
Maximum HP RPM			8000 RPM
Exhaust system			Spark arrestor approved by USDA Forest Service
Air filter			Synthetic paper filter with foam
Intake valve opening			3° BTDC
Intake valve closing			34 ABDC
Exhaust valve opening			39° BBDC
Exhaust valve closing			2° BTDC
Valve clearance		Intake	0.06 mm to 0.14 mm (.0024 in to .0055 in)
		Exhaust	0.11 mm to 0.19 mm (.0043 in to .0075 in)
Valve stem diameter	Intake	New	4.966 mm to 4.980 mm (.1955 in to .1961 in)
		Service limit	4.930 mm (.1941 in)
	Exhaust	New	4.956 mm to 4.970 mm (.1951 in to .1957 in)
		Service limit	4.930 mm (.1941 in)
Valve out of round	Intake and exhaust	New	0.005 mm (.0002 in)
		Service limit	0.06 mm (.0024 in)
Valve guide diameter		New	4.998 mm to 5.018 mm (.1968 in to .1976 in)
		Service limit	5.050 mm (.1988 in)
Valve spring free length		New	40.81 mm (1.607 in)
		Service limit	39.00 mm (1.535 in)
Valve seat contact width	Intake	New	1.05 mm to 1.35 mm (.041 in to .053 in)
		Service limit	1.8 mm (.071 in)
	Exhaust	New	1.25 mm to 1.55 mm (.049 in to .061 in)
		Service limit	2 mm (.079 in)

ENGINE			
Rocker arm bore diameter		New	12.036 mm to 12.050 mm (.4739 in to .4744 in)
		Service limit	12.060 mm (.4748 in)
Rocker arm shaft diameter		New	12.000 mm to 12.018 mm (.4724 in to .4731 in)
		Service limit	11.990 mm (.472 in)
Piston diameter		New	83.950 mm to 83.966 mm (3.3051 in to 3.3057 in)
		Service limit	83.850 mm (3.3012 in)
Piston/cylinder clearance		New	0.057 mm to 0.087 mm (.0022 in to .0034 in)
		Service limit	0.130 mm (.0051 in)
Piston ring type		1st	Upper compression ring, rectangular
		2nd	Lower compression ring, tapered face
		3rd	Oil scraper ring
Ring end gap	Rectangular	New	0.10 mm to 0.30 mm (.004 in to .012 in)
		Service limit	0.40 mm (.016 in)
	Tapered face	New	0.35 mm to 0.55 mm (.014 in to .022 in)
		Service limit	0.85 mm (.033 in)
	Oil scraper ring	New	0.20 mm to 0.70 mm (.008 in to .028 in)
		Service limit	1.00 mm (.039 in)
Ring/piston groove clearance	Rectangular	New	0.025 mm to 0.070 mm (.001 in to .0028 in)
		Service limit	0.100 mm (.0039 in)
	Tapered face	New	0.020 mm to 0.060 mm (.0008 in to .0024 in)
		Service limit	0.150 mm (.0059 in)
	Oil scraper ring	New	0.010 mm to 0.180 mm (.0004 in to .0071 in)
		Service limit	0.250 mm (.0098 in)
Cylinder bore		New	84.023 mm to 84.037 mm (3.308 in to 3.3085 in)
Cylinder taper		Maximum new	0.038 mm (.0015 in)
		Service limit	0.090 mm (.0035 in)
Cylinder out of round		Maximum new	0.015 mm (.0006 in)
		Service limit	0.020 mm (.0008 in)

ENGINE				
Camshaft main bearing journal		Timing chain side	New	34.959 mm to 34.975 mm (1.3763 in to 1.377 in)
			Service limit	34.950 mm (1.376 in)
		Spark plug side	New	21.959 mm to 21.980 mm (.8645 in to .8654 in)
			Service limit	21.950 mm (.8642 in)
Camshaft main bearing journal bore		Timing chain side	New	35.000 mm to 35.025 mm (1.378 in to 1.3789 in)
			Service limit	35.040 mm (1.3795 in)
		Spark plug side	New	22.000 mm to 22.021 mm (.8661 in to .867 in)
			Wear limit	22.040 mm (.8677 in)
Camshaft lobe	Intake valve		New	31.830 mm to 32.030 mm (1.2531 in to 1.261 in)
			Service limit	31.810 mm (1.2524 in)
	Exhaust valve		New	31.730 mm to 31.930 mm (1.2492 in to 1.2571 in)
			Service limit	31.710 mm (1.2484 in)
Crankshaft main bearing journal diameter (MAG/PTO side)			New	42.016 mm to 42.040 mm (1.6542 in to 1.6551 in)
			Service limit	42.000 mm (1.6535 in)
Crankshaft radial play (MAG/PTO side)			Service limit	0.07 mm (.0028 in)
Crankshaft bearing journal diameter (in PTO cover)			New	34.004 mm to 34.020 mm (1.3387 in to 1.3394 in)
			Service limit	33.998 mm (1.3385 in)
Crankshaft radial play (PTO cover bearing)			Service limit	0.10 mm (.0039 in)
Crankshaft axial play			New	0.200 mm to 0.500 mm (.0079 in to .0197 in)
			Service limit	0.600 mm (.0236 in)
Crankshaft pin diameter			New	40.001 mm to 40.025 mm (1.5748 in to 1.5758 in)
			Service limit	39.990 mm (1.5744 in)
Crankshaft deflection		MAG/PTO side	New	0.050 mm (.002 in)
Crankcase plain bearing		MAG/PTO side	Service limit	42.100 mm (1.6575 in)
PTO cover plain bearing			Service limit	34.120 mm (1.3433 in)
Connecting rod big end diameter			Service limit	40.100 mm (1.5787 in)
Connecting rod big end radial play			Service limit	0.09 mm (.0035 in)
Connecting rod big end axial play			New	0.200 mm to 0.500 mm (.008 in to .02 in)
			Service limit	0.600 mm (.024 in)

ENGINE			
Connecting rod small end diameter		New	20.010 mm to 20.020 mm (.7878 in to .7882 in)
		Service limit	20.060 mm (.7898 in)
Piston pin diameter		New	19.996 mm to 20.000 mm (.7872 in to .7874 in)
		Service limit	19.980 mm (.7866 in)
Connecting rod/piston pin clearance (radial play)		Service limit	0.080 mm (.0031 in)

LUBRICATION SYSTEM			
Type			Wet sump. Replaceable cartridge oil filter
Oil filter			Replaceable cartridge
Engine oil pressure		Minimum	300 kPa (44 PSI) at 6000 RPM
Engine oil	Capacity (oil change with filter)		2.0 L (2.1 qt (U.S. liq.))
	Recommended		For the summer season, use XPS 4-stroke synth. blend oil (P/N 293 600 121). For the all seasons, use XPS 4-stroke synthetic oil (P/N 293 600 112). If not available, use a 5W40 motor oil that meets the requirements for API service classification SG, SH or SJ

COOLING SYSTEM			
Coolant	Type	Finland, Norway and Sweden	Use Long life antifreeze (P/N 619 590 204)
		All other countries	Use long life antifreeze (P/N 219 702 685)
		Alternative, or if not available	Coolant specifically designed for aluminum engines Ethyl glycol/distilled water mix (50%/50%).
	Capacity		3.4 L (.9 U.S. gal.)
Thermostat		Starts to open	65°C (149°F)
		Fully open	75°C (167°F)

TRANSMISSION			
Type			CVT (Continuously Variable Transmission)
Engagement RPM			1800 RPM
Drive belt width		Service limit	30.00 mm (1.181 in)
Governor cup roller outer diameter		New	13.80 mm to 14.00 mm (.543 in to .551 in)
		Service limit	13.20 mm (.52 in)

TRANSMISSION		
Governor cup roller inner diameter	New	8.025 mm to 8.175 mm (.316 in to .322 in)
	Service limit	9.00 mm (.354 in)
Centrifugal lever pivot bolt diameter	New	6.078 mm to 6.100 mm (.239 in to .24 in)
	Service limit	6.000 mm (.236 in)
Centrifugal lever bore diameter	New	6.035 mm to 6.078 mm (.2376 in to .2393 in)
	Service limit	6.200 mm (.244 in)
Drive pulley sliding half centrifugal lever pivot bolt bore diameter	New	6.113 mm to 6.171 mm (.241 in to .243 in)
	Service limit	6.300 mm (.248 in)
Drive pulley sliding half large bushing	New	55.000 mm to 55.040 mm (2.165 in to 2.167 in)
	Service limit	55.200 mm (2.173 in)
Drive pulley sliding half small bushing	New	32.000 mm to 32.040 mm (1.26 in to 1.261 in)
	Service limit	32.200 mm (1.268 in)
Drive pulley spring free length	Service limit	85 mm (3.35 in)
Drive pulley spring free squareness	Service limit	4 mm (.157 in)
Spring sleeve length	New	9.2 mm to 9.4 mm (.362 in to .37 in)
	Service limit	9.0 mm (.354 in)
Driven pulley sliding half bushing	New	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
	Service limit	30.200 mm (1.189 in)
Driven pulley sliding fixed bushing	New	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
	Service limit	30.200 mm (1.189 in)
Torque gear on driven pulley	Service limit	7.500 mm (.295 in)
Driven pulley spring free length	Service limit	125 mm (4.92 in)
Driven pulley spring free squareness	Service limit	3.8 mm (.15 in)
Cam width in top surface	Service limit	4.50 mm (.177 in)

GEARBOX			
Type			Dual range (HI-LO) with park, neutral and reverse
Gear ratios	PRO	Angle drive sub-transmission	37/15 = 2.467
		Intermediate	45/40 = 1.125
		High	36/27 = 1.33
		Low	46/17 = 2.706
		Reverse	34/12 = 2.833
	All other	Angle drive sub-transmission	32/13 = 2.462
		High	38/28 = 1.357
		Low	46/20 = 2.300
		Reverse	31/14 = 2.214
Overall gear ratio	PRO	High	3.700
		Low	7.509
		Reverse	7.863
	All other	High	3.341
		Low	5.662
		Reverse	5,451
Gearbox oil	Capacity		Approximately 450 ml (15.2 U.S. oz)
	Recommended		XPS synthetic gear oil (75W 140) (P/N 293 600 140) or a 75W140 API GL-5 synthetic gear oil
Output shaft backlash		New	0.10 mm to 0.20 mm (.004 in to .008 in)
		Service limit	0.25 mm (.01 in)
Coupling sleeve groove width		New	5.25 mm to 5.35 mm (.207 in to .211 in)
		Service limit	5.50 mm (.217 in)
Coupling fork claw thickness		New	4.95 mm to 5.05 mm (.195 in to .199 in)
		Service limit	4.80 mm (.189 in)
Shift fork claw thickness (high gear shift fork)		New	4.80 mm to 4.90 mm (.189 in to .193 in)
		Service limit	4.70 mm (.185 in)
Shift fork claw thickness (low and reverse gear shift fork)		New	5.10 mm to 5.20 mm (.201 in to .205 in)
		Service limit	5.0 mm (.197 in)
Shift fork pin diameter		New	6.92 mm to 6.97 mm (.272 in to .274 in)
		Service limit	6.85 mm (.27 in)

GEARBOX			
Width of shift fork engagement groove (low and reverse gear)		New	5.30 mm to 5.40 mm (.209 in to .213 in)
		Service limit	5.50 mm (.217 in)
Width of shift fork engagement groove (high gear)		New	5.00 mm to 5.10 mm (.197 in to .201 in)
		Service limit	5.20 mm (.205 in)
Diameter free pinions		New	29.000 mm to 29.013 mm (1.1417 in to 1.1422 in)
		Service limit	29.015 mm (1.1423 in)
Intermediate gear shaft		New	24.979 mm to 25.000 mm (.9834 in to .9843 in)
		Service limit	24.977 mm (.983 in)
Countershaft	MAG side	New	N.A.
		Service limit	17.990 mm (.7083 in)
	CVT side	New	N.A.
		Service limit	24.970 mm (.9831 in)
	Free pinion bearing	New	N.A.
		Service limit	24.970 mm (.9831 in)
Bevel gear shaft	Free pinion bearing	Service limit	24.984 mm (.9836 in)

ELECTRICAL SYSTEM		
Magneto generator output	Without DPS	400 W @ 6000 RPM
	With DPS	500 W @ 6000 RPM
	CE version	500 W @ 6000 RPM
Stator resistance (20°C (68°F))		0.15 to 0.30 Ω
Ignition system type		IDI (Inductive Discharge Ignition)
Ignition timing		Not adjustable
Spark plug	Quantity	2
	Make and type	NGK DCPR8E
	Gap	0.7 mm to 0.8 mm (.028 in to .031 in)
Engine RPM limiter setting	Forward	8000 RPM
	Reverse	15 km/h (9 MPH) without Override)

FUEL SYSTEM	
Fuel delivery	Electronic Fuel Injection (EFI), 46 mm throttle body, 1 injector per cylinder
Idle speed	1400 ± 50 (not adjustable)

ENGINE 650

ENGINE			
Engine type			ROTAX 660, 4-stroke, 2 cylinders (V-twin), liquid cooled
Valve train			4 valves/cylinder (mechanical adjustment), single over head camshaft (SOHC) with timing chain
Bore			82 mm (3.23 in)
Stroke			61.5 mm (2.42 in)
Displacement			650 cm^3 (39.7 in^3)
Compression ratio			10.3:1
Maximum HP RPM			8000 RPM
Exhaust system			Spark arrestor approved by USDA Forest Service
Air filter			Synthetic paper filter with foam
Intake valve opening			5° BTDC
Intake valve closing			45° ABDC
Exhaust valve opening			50° BBDC
Exhaust valve closing			0° ATDC
Valve clearance	Intake		0.06 mm to 0.14 mm (.0024 in to .0055 in)
	Exhaust		0.11 mm to 0.19 mm (.0043 in to .0075 in)
Valve stem diameter	Intake	New	4.966 mm to 4.980 mm (.1955 in to .1961 in)
		Service limit	4.930 mm (.1941 in)
	Exhaust	New	4.956 mm to 4.970 mm (.1951 in to .1957 in)
		Service limit	4.930 mm (.1941 in)
Valve out of round	Intake and Exhaust	New	0.005 mm (.0002 in)
		Service limit	0.06 mm (.0024 in)
Valve guide diameter	Intake and Exhaust	New	4.998 mm to 5.018 mm (.1968 in to .1976 in)
		Service limit	5.050 mm (.1988 in)
Valve spring free length		New	40.81 mm (1.607 in)
		Service limit	39.00 mm (1.535 in)
Valve seat contact width	Intake	New	1.05 mm to 1.35 mm (.041 in to .053 in)
		Service limit	1.8 mm (.071 in)
	Exhaust	New	1.25 mm to 1.55 mm (.049 in to .061 in)
		Service limit	2 mm (.079 in)
Rocker arm bore diameter		New	12.036 mm to 12.050 mm (.4739 in to .4744 in)
		Service limit	12.060 mm (.4748 in)
Rocker arm shaft diameter		New	12.000 mm to 12.018 mm (.4724 in to .4731 in)
		Service limit	11.990 mm (.472 in)

ENGINE				
Piston diameter			New	81.950 mm to 81.966 mm (3.2264 in to 3.227 in)
			Service limit	81.850 mm (3.2224 in)
Piston/cylinder clearance			New	0.057 mm to 0.087 mm (.0022 in to .0034 in)
			Service limit	0.130 mm (.0051 in)
Piston ring type			1st	Upper compression ring, rectangular
			2nd	Lower compression ring, tapered face
			3rd	Oil scraper ring
Ring end gap	Rectangular		New	0.20 mm to 0.40 mm (.008 in to .016 in)
			Service limit	0.60 mm (.024 in)
	Tapered face		New	0.20 mm to 0.40 mm (.008 in to .016 in)
			Service limit	0.70 mm (.028 in)
	Oil scraper ring		New	0.20 mm to 0.70 mm (.008 in to .028 in)
			Service limit	1.00 mm (.039 in)
Ring/piston groove clearance	Rectangular		New	0.03 mm to 0.07 mm (.0012 in to .0028 in)
			Service limit	0.15 mm (.0059 in)
	Tapered face		New	0.02 mm to 0.06 mm (.0008 in to .0024 in)
			Service limit	0.15 mm (.0059 in)
	Oil scraper ring		New	0.01 mm to 0.18 mm (.0004 in to .0071 in)
			Service limit	0.25 mm (.0098 in)
Cylinder bore			New	82.023 mm to 82.037 mm (3.2293 in to 3.2298 in)
Cylinder taper			Maximum New	0.038 mm (.0015 in)
			Service limit	0.090 mm (.0035 in)
Cylinder out of round			Maximum New	0.015 mm (.0006 in)
			Service limit	0.020 mm (.0008 in)
Camshaft main bearing journal		Timing chain side	New	34.959 mm to 34.975 mm (1.3763 in to 1.377 in)
			Service limit	34.950 mm (1.376 in)
		Spark plug side	New	21.959 mm to 21.980 mm (.8645 in to .8654 in)
			Service limit	21.950 mm (.8642 in)
Camshaft main bearing journal bore		Timing chain side	New	35.000 mm to 35.025 mm (1.378 in to 1.3789 in)
			Service limit	35.040 mm (1.3795 in)
		Spark plug side	New	22.000 mm to 22.021 mm (.8661 in to .867 in)
			Wear limit	22.040 mm (.8677 in)

ENGINE				
Camshaft lobe	Intake valve		New	32.110 mm to 32.310 mm (1.2642 in to 1.272 in)
			Service limit	32.090 mm (1.2634 in)
	Exhaust valve		New	31.940 mm to 32.140 mm (1.257 in to 1.265 in)
			Service limit	31.920 mm (1.2567 in)
Crankshaft main bearing journal diameter (MAG/PTO side)			New	42.016 mm to 42.040 mm (1.6542 in to 1.6551 in)
			Service limit	42.000 mm (1.6535 in)
Crankshaft radial play (MAG/PTO side)			Service limit	0.07 mm (.0028 in)
Crankshaft bearing journal diameter (in PTO cover)			New	34.004 mm to 34.020 mm (1.3387 in to 1.3394 in)
			Service limit	33.998 mm (1.3385 in)
Crankshaft radial play (PTO cover bearing)			Service limit	0.10 mm (.0039 in)
Crankshaft axial play			New	0.200 mm to 0.500 mm (.0079 in to .0197 in)
			Service limit	0.600 mm (.0236 in)
Crankshaft pin diameter			New	40.001 mm to 40.025 mm (1.5748 in to 1.5758 in)
			Service limit	39.990 mm (1.5744 in)
Crankshaft deflection		MAG/PTO side	New	0.050 mm (.002 in)
Crankcase plain bearing		MAG/PTO side	Service limit	42.100 mm (1.6575 in)
PTO cover plain bearing			Service limit	34.120 mm (1.3433 in)
Connecting rod big end diameter			Service limit	40.100 mm (1.5787 in)
Connecting rod big end radial play			Service limit	0.09 mm (.0035 in)
Connecting rod big end axial play			New	0.200 mm to 0.500 mm (.008 in to .02 in)
			Service limit	0.600 mm (.024 in)
Connecting rod small end diameter			New	20.010 mm to 20.020 mm (.7878 in to .7882 in)
			Service limit	20.060 mm (.7898 in)
Piston pin diameter			New	19.996 mm to 20.000 mm (.7872 in to .7874 in)
			Service limit	19.980 mm (.787 in)
Connecting rod/piston pin clearance (radial play)			Service limit	0.080 mm (.0031 in)

LUBRICATION SYSTEM	
Type	Wet sump. Replaceable cartridge oil filter
Oil filter	BRP Rotax paper type, replaceable

LUBRICATION SYSTEM			
Engine oil pressure		Minimum	300 kPa (44 PSI) at 6000 RPM
Engine oil	Capacity (oil change with filter)		2.0 L (2.1 qt (U.S. liq.))
	Recommended		For the summer season, use XPS 4-stroke synth. blend oil (P/N 293 600 121). For the winter season, use XPS 4-stroke synthetic oil (P/N 293 600 112). If not available, use a 5W40 motor oil that meets the requirements for API service classification SG, SH or SJ

COOLING SYSTEM			
Coolant	Type		Ethyl glycol/water mix (50% coolant, 50% water). Use BRP Long life antifreeze or coolant specifically designed for aluminum engines
	Capacity		3.4 L (.9 U.S. gal.)
Thermostat		Starts to open	65°C (149°F)
		Fully open	75°C (167°F)

TRANSMISSION		
Type		CVT (Continuously Variable Transmission), sub-transmission with L/H/N/R/P, standard engine braking
Engagement RPM		1650 ± 100 RPM
Drive belt width	Service limit	30.00 mm (1.181 in)
Governor cup roller outer diameter	New	13.80 mm to 14.00 mm (.543 in to .551 in)
	Service limit	13.20 mm (.52 in)
Governor cup roller inner diameter	New	8.025 mm to 8.175 mm (.316 in to .322 in)
	Service limit	9.000 mm (.354 in)
Centrifugal lever pivot bolt diameter	New	6.078 mm to 6.100 mm (.239 in to .24 in)
	Service limit	6.000 mm (.236 in)
Centrifugal lever bore diameter	New	6.035 mm to 6.078 mm (.2376 in to .2393 in)
	Service limit	6.200 mm (.244 in)
Drive pulley sliding half centrifugal lever pivot bolt bore diameter	New	6.113 mm to 6.171 mm (.241 in to .243 in)
	Service limit	6.300 mm (.248 in)
Drive pulley sliding half large bushing	New	55.000 mm to 55.040 mm (2.165 in to 2.167 in)
	Service limit	55.200 mm (2.173 in)
Drive pulley sliding half small bushing	New	32.000 mm to 32.040 mm (1.26 in to 1.261 in)
	Service limit	32.200 mm (1.268 in)
Drive pulley spring free length	Service limit	85 mm (3.346 in)
Drive pulley spring free squareness	Service limit	4 mm (.157 in)

TRANSMISSION		
Spring sleeve length	New	9.2 mm to 9.4 mm (.362 in to .37 in)
	Service limit	9.0 mm (.354 in)
Driven pulley sliding half bushing	New	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
	Service limit	30.200 mm (1.189 in)
Driven pulley sliding fixed bushing	New	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
	Service limit	30.200 mm (1.189 in)
Torque gear on driven pulley	Service limit	7.500 mm (.295 in)
Cam width on top surface	Service limit	4.5 mm (.177 in)
Driven pulley sliding sheave - wear on cam contact surface	Service limit	1.0 mm (.039 in)
Driven pulley spring free length		125 mm (4.921 in)
Driven pulley spring free squareness	Service limit	3.8 mm (.15 in)

GEARBOX WITH EXTERNAL SWITCHES		
Type		Dual range (HI-LO) with park, neutral and reverse
Gear ratios	Angle drive sub-transmission	32/13 = 2.462
	High	35/28 = 1.250
	Low	46/20 = 2.300
	Reverse	31/14 = 2.214
Overall gear ratios	High	3,078
	Low	5.662
	Reverse	5.451
Gearbox oil	Capacity	400 ml (13.5 U.S. oz)
	Recommended	XPS synthetic gear oil (75W 140) (P/N 293 600 140) or a 75W140 API GL-5 synthetic gear oil
Output shaft backlash	New	0.10 mm to 0.20 mm (.004 in to .008 in)
	Service limit	0.25 mm (.01 in)
Coupling sleeve groove width	New	5.25 mm to 5.35 mm (.207 in to .211 in)
	Service limit	5.50 mm (.217 in)
Coupling fork claw thickness	New	4.95 mm to 5.05 mm (.195 in to .199 in)
	Service limit	4.80 mm (.189 in)
Shift fork claw thickness (high gear shift fork)	New	4.80 mm to 4.90 mm (.189 in to .193 in)
	Service limit	4.70 mm (.185 in)
Shift fork claw thickness (low and reverse gear shift fork)	New	5.10 mm to 5.20 mm (.201 in to .205 in)
	Service limit	5.0 mm (.197 in)
Shift fork pin diameter	New	6.92 mm to 6.97 mm (.272 in to .274 in)
	Service limit	6.85 mm (.27 in)

GEARBOX WITH EXTERNAL SWITCHES			
Width of shift fork engagement groove (low and reverse gear)		New	5.30 mm to 5.40 mm (.209 in to .213 in)
		Service limit	5.50 mm (.217 in)
Width of shift fork engagement groove (high gear)		New	5.00 mm to 5.10 mm (.197 in to .201 in)
		Service limit	5.20 mm (.205 in)
Diameter free pinions		New	29.000 mm to 29.013 mm (1.1417 in to 1.1422 in)
		Service limit	29.015 mm (1.1423 in)
Intermediate gear shaft		New	24.979 mm to 25.000 mm (.9834 in to .9843 in)
		Service limit	24.977 mm (.983 in)
Countershaft	MAG side	New	N.A.
		Service limit	17.990 mm (.7083 in)
	CVT side	New	N.A.
		Service limit	24.970 mm (.9831 in)
	Free pinion bearing	New	N.A.
		Service limit	24.970 mm (.9831 in)
Bevel gear shaft	Free pinion bearing	Service limit	24.984 mm (.9836 in)

GEARBOX WITH GBPS		
Type		Dual range (HI-LO) with park, neutral and reverse
Gear ratios	Angle drive sub-transmission	37/15 = 2.467
	Intermediate	45/40 = 1.125
	High	36/27 = 1.333
	Low	46/17 = 2.706
	Reverse	34/12 = 2.833
Overall gear ratios	High	3.700
	Low	7.510
	Reverse	7.863
Gearbox oil	Capacity	450 ml (15.22 U.S. oz)
	Recommended	XPS synthetic gear oil (75W 140) (P/N 293 600 140) or a 75W140 API GL-5 synthetic gear oil
Coupling sleeve groove width	New	5.25 mm to 5.35 mm (.207 in to .211 in)
	Service limit	5.50 mm (.217 in)
Coupling fork claw thickness	New	4.95 mm to 5.05 mm (.195 in to .199 in)
	Service limit	4.80 mm (.189 in)
Shift fork claw thickness (high gear shift fork)	New	5.10 mm to 5.20 mm (.201 in to .205 in)
	Service limit	5.0 mm (.197 in)

GEARBOX WITH GBPS			
Shift fork claw thickness (low and reverse gear shift fork)		New	5.10 mm to 5.20 mm (.201 in to .205 in)
		Service limit	5.0 mm (.197 in)
Width of shift fork engagement groove (low and reverse gear)		New	5.30 mm to 5.40 mm (.209 in to .213 in)
		Service limit	5.50 mm (.217 in)
Width of shift fork engagement groove (high gear)		New	5.30 mm to 5.40 mm (.209 in to .213 in)
		Service limit	5.50 mm (.217 in)
Diameter free pinions		New	29.000 mm to 29.013 mm (1.1417 in to 1.1422 in)
		Service limit	29.015 mm (1.1423 in)
Intermediate gear shaft		New	24.979 mm to 25.000 mm (.9834 in to .9843 in)
		Service limit	24.977 mm (.983 in)
Countershaft	MAG side	New	19.977 mm to 19.990 mm (.7865 in to .787 in)
		Service limit	19.973 mm (.7863 in)
	CVT side	New	24.977 mm to 24.990 mm (.9833 in to .9839 in)
		Service limit	24.970 mm (.9831 in)
Main shaft	Free pinion bearing	New	24.987 mm to 25.000 mm (.9837 in to .9843 in)
		Service limit	24.984 mm (.9836 in)
	Bearing journal MAG/CVT side	New	16.980 mm to 16.991 mm (.6685 in to .6689 in)
		Service limit	16.976 mm (.6683 in)

ELECTRICAL SYSTEM		
Magneto generator output	Without DPS	400 W @ 6000 RPM
	With DPS	625 W @ 6000 RPM
Stator resistance (20°C (68°F))		0.15 to 0.30 Ω
Ignition system type		IDI (Inductive Discharge Ignition)
Ignition timing		Not adjustable
Spark plug	Quantity	2
	Make and type	NGK DCPR8E
	Gap	0.7 mm to 0.8 mm (.028 in to .031 in)
Engine RPM limiter setting	Forward	8000 RPM
	Reverse	15 km/h (9 MPH) (without override)

FUEL SYSTEM	
Fuel delivery	Electronic Fuel Injection (EFI), 46 mm throttle body, 1 injector per cylinder
Idle speed	1250 RPM ± 50 (not adjustable)

ENGINE 850

ENGINE			
Engine type			ROTAX 850, 4-stroke, 2 cylinders (V-twin), liquid cooled
Valve train			4 valves/cylinder (mechanical adjustment), single over head camshaft (SOHC) with timing chain
Bore			94 mm (3.7 in)
Stroke			61.5 mm (2.42 in)
Displacement			854 cm^3 (52.1 in^3)
Compression ratio			10.5:1
Maximum HP RPM			7000 RPM
Exhaust system			Spark arrestor approved by USDA Forest Service
Air filter			Synthetic paper filter with foam
Intake valve opening			5° BTDC
Intake valve closing			45° ABDC
Exhaust valve opening			55° BBDC
Exhaust valve closing			5° ATDC
Valve clearance		Intake	0.06 mm to 0.14 mm (.0024 in to .0055 in)
		Exhaust	0.11 mm to 0.19 mm (.0043 in to .0075 in)
Valve stem diameter	Intake	New	5.472 mm to 5.486 mm (.2154 in to .216 in)
		Service limit	5.450 mm (.2146 in)
	Exhaust	New	5.461 mm to 5.476 mm (.215 in to .2156 in)
		Service limit	5.440 mm (.2142 in)
Valve out of round	Intake and Exhaust	New	0.005 mm (.0002 in)
		Service limit	0.06 mm (.0024 in)
Valve guide diameter	Intake and Exhaust	New	5.506 mm to 5.518 mm (.2168 in to .2172 in)
		Service limit	5.568 mm (.2192 in)
Valve spring free length		New	40.41 mm (1.591 in)
		Service limit	39.00 mm (1.535 in)
Valve seat contact width	Intake	New	1.05 mm to 1.35 mm (.041 in to .053 in)
		Service limit	1.8 mm (.071 in)
	Exhaust	New	1.25 mm to 1.55 mm (.049 in to .061 in)
		Service limit	2 mm (.079 in)
Rocker arm bore diameter		New	12.036 mm to 12.050 mm (.4739 in to .4744 in)
		Service limit	12.060 mm (.4748 in)
Rocker arm shaft diameter		New	12.000 mm to 12.018 mm (.4724 in to .4731 in)
		Service limit	11.990 mm (.472 in)

ENGINE				
Piston diameter			New	93.950 mm to 93.966 mm (3.6988 in to 3.6994 in)
			Service limit	93.900 mm (3.6969 in)
Piston/cylinder clearance			New	0.027 mm to 0.057 mm (.0011 in to .0022 in)
			Service limit	0.100 mm (.0039 in)
Piston ring type			1st	Upper compression ring, rectangular
			2nd	Lower compression ring, tapered face
			3rd	Oil scraper ring
Ring end gap	Rectangular		New	0.20 mm to 0.35 mm (.008 in to .014 in)
			Service limit	0.60 mm (.024 in)
	Tapered face		New	0.35 mm to 0.55 mm (.014 in to .022 in)
			Service limit	0.85 mm (.033 in)
	Oil scraper ring		New	0.20 mm to 0.70 mm (.008 in to .028 in)
			Service limit	1.00 mm (.039 in)
Ring/piston groove clearance	Rectangular		New	0.03 mm to 0.07 mm (.0012 in to .0028 in)
			Service limit	0.15 mm (.0059 in)
	Tapered face		New	0.02 mm to 0.06 mm (.0008 in to .0024 in)
			Service limit	0.15 mm (.0059 in)
	Oil scraper ring		New	0.01 mm to 0.18 mm (.0004 in to .0071 in)
			Service limit	0.25 mm (.0098 in)
Cylinder bore			New	93.993 mm to 94.007 mm (3.7005 in to 3.7011 in)
Cylinder taper			Maximum New	0.038 mm (.0015 in)
			Service limit	0.090 mm (.0035 in)
Cylinder out of round			Maximum New	0.015 mm (.0006 in)
			Service limit	0.020 mm (.0008 in)
Camshaft main bearing journal		Timing chain side	New	34.959 mm to 34.975 mm (1.3763 in to 1.377 in)
			Service limit	34.950 mm (1.376 in)
		Spark plug side	New	21.959 mm to 21.980 mm (.8645 in to .8654 in)
			Service limit	21.950 mm (.8642 in)
Camshaft main bearing journal bore		Timing chain side	New	35.000 mm to 35.025 mm (1.378 in to 1.3789 in)
			Service limit	35.040 mm (1.3795 in)
		Spark plug side	New	22.000 mm to 22.021 mm (.8661 in to .867 in)
			Wear limit	22.040 mm (.8677 in)

ENGINE				
Camshaft lobe	Intake valve		New	32.890 mm to 33.090 mm (1.2949 in to 1.3028 in)
			Service limit	32.870 mm (1.2941 in)
	Exhaust valve		New	32.950 mm to 33.150 mm (1.2972 in to 1.3051 in)
			Service limit	32.930 mm (1.2965 in)
Crankshaft main bearing journal diameter (MAG/PTO side)			New	42.016 mm to 42.040 mm (1.6542 in to 1.6551 in)
			Service limit	42.000 mm (1.6535 in)
Crankshaft radial play (MAG/PTO side)			Service limit	0.07 mm (.0028 in)
Crankshaft bearing journal diameter (in PTO cover)			New	34.004 mm to 34.020 mm (1.3387 in to 1.3394 in)
			Service limit	33.998 mm (1.3385 in)
Crankshaft radial play (PTO cover bearing)			Service limit	0.10 mm (.0039 in)
Crankshaft axial play			New	0.200 mm to 0.500 mm (.0079 in to .0197 in)
			Service limit	0.600 mm (.0236 in)
Crankshaft pin diameter			New	40.001 mm to 40.025 mm (1.5748 in to 1.5758 in)
			Service limit	39.990 mm (1.5744 in)
Crankshaft deflection		MAG/PTO side	New	0.050 mm (.002 in)
Crankcase plain bearing		MAG/PTO side	Service limit	42.100 mm (1.6575 in)
PTO cover plain bearing			Service limit	34.120 mm (1.3433 in)
Connecting rod big end diameter			Service limit	40.100 mm (1.5787 in)
Connecting rod big end radial play			Service limit	0.09 mm (.0035 in)
Connecting rod big end axial play			New	0.200 mm to 0.500 mm (.008 in to .02 in)
			Service limit	0.600 mm (.024 in)
Connecting rod small end diameter			New	20.010 mm to 20.020 mm (.7878 in to .7882 in)
			Service limit	20.060 mm (.7898 in)
Piston pin diameter			New	19.996 mm to 20.000 mm (.7872 in to .7874 in)
			Service limit	19.980 mm (.787 in)
Connecting rod/piston pin clearance (radial play)			Service limit	0.080 mm (.0031 in)

LUBRICATION SYSTEM	
Type	Wet sump. Replaceable cartridge oil filter
Oil filter	BRP Rotax paper type, replaceable

LUBRICATION SYSTEM			
Engine oil pressure		Minimum	300 kPa (44 PSI) at 6000 RPM
Engine oil	Capacity (oil change with filter)		2.0 L (2.1 qt (U.S. liq.))
	Recommended		For the summer season, use XPS 4-stroke synth. blend oil (P/N 293 600 121). For the winter season, use XPS 4-stroke synthetic oil (P/N 293 600 112). If not available, use a 5W40 motor oil that meets the requirements for API service classification SG, SH or SJ

COOLING SYSTEM			
Coolant	Type		Ethyl glycol/water mix (50% coolant, 50% water). Use BRP Long life antifreeze or coolant specifically designed for aluminum engines
	Capacity		3.4 L (.9 U.S. gal.)
Thermostat		Starts to open	65°C (149°F)
		Fully open	75°C (167°F)
Radiator cap opening pressure			110 kPa (16 PSI)

TRANSMISSION		
Type		CVT (Continuously Variable Transmission), sub-transmission with L/H/N/R/P, standard engine braking
Engagement RPM		1650 ± 100 RPM
Drive belt width	Service limit	30.00 mm (1.181 in)
Governor cup roller outer diameter	New	13.80 mm to 14.00 mm (.543 in to .551 in)
	Service limit	13.20 mm (.52 in)
Governor cup roller inner diameter	New	8.025 mm to 8.175 mm (.316 in to .322 in)
	Service limit	9.000 mm (.354 in)
Centrifugal lever pivot bolt diameter	New	6.078 mm to 6.100 mm (.239 in to .24 in)
	Service limit	6.000 mm (.236 in)
Centrifugal lever bore diameter	New	6.035 mm to 6.078 mm (.2376 in to .2393 in)
	Service limit	6.200 mm (.244 in)
Drive pulley sliding half centrifugal lever pivot bolt bore diameter	New	6.113 mm to 6.171 mm (.241 in to .243 in)
	Service limit	6.300 mm (.248 in)
Drive pulley sliding half large bushing	New	55.000 mm to 55.040 mm (2.165 in to 2.167 in)
	Service limit	55.200 mm (2.173 in)
Drive pulley sliding half small bushing	New	32.000 mm to 32.040 mm (1.26 in to 1.261 in)
	Service limit	32.200 mm (1.268 in)
Drive pulley spring free length	Service limit	95 mm (3.74 in)

TRANSMISSION		
Drive pulley spring free squareness	Service limit	4 mm (.157 in)
Spring sleeve length	New	9.2 mm to 9.4 mm (.362 in to .37 in)
	Service limit	9.0 mm (.354 in)
Driven pulley sliding half bushing	New	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
	Service limit	30.200 mm (1.189 in)
Driven pulley sliding fixed bushing	New	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
	Service limit	30.200 mm (1.189 in)
Torque gear on driven pulley	Service limit	7.500 mm (.295 in)
Cam width on top surface	Service limit	16.0 mm (.63 in)
Driven pulley sliding sheave - wear on cam contact surface	Service limit	1.0 mm (.039 in)
Driven pulley spring free length		125 mm (4.921 in)
Driven pulley spring free squareness	Service limit	3.8 mm (.15 in)

GEARBOX WITH EXTERNAL SWITCHES		
Type		Dual range (HI-LO) with park, neutral and reverse
Gear ratios	Angle drive sub-transmission	32/13 = 2.462
	High	34/29 = 1.173
	Low	46/20 = 2.300
	Reverse	31/14 = 2.214
Overall gear ratios	High	2,886
	Low	5.662
	Reverse	5.451
Gearbox oil	Capacity	400 ml (13.5 U.S. oz)
	Recommended	XPS synthetic gear oil (75W 140) (P/N 293 600 140) or a 75W140 API GL-5 synthetic gear oil
Output shaft backlash	New	0.10 mm to 0.20 mm (.004 in to .008 in)
	Service limit	0.25 mm (.01 in)
Coupling sleeve groove width	New	5.25 mm to 5.35 mm (.207 in to .211 in)
	Service limit	5.50 mm (.217 in)
Coupling fork claw thickness	New	4.95 mm to 5.05 mm (.195 in to .199 in)
	Service limit	4.80 mm (.189 in)
Shift fork claw thickness (high gear shift fork)	New	4.80 mm to 4.90 mm (.189 in to .193 in)
	Service limit	4.70 mm (.185 in)
Shift fork claw thickness (low and reverse gear shift fork)	New	5.10 mm to 5.20 mm (.201 in to .205 in)
	Service limit	5.0 mm (.197 in)

GEARBOX WITH EXTERNAL SWITCHES			
Shift fork pin diameter		New	6.92 mm to 6.97 mm (.272 in to .274 in)
		Service limit	6.85 mm (.27 in)
Width of shift fork engagement groove (low and reverse gear)		New	5.30 mm to 5.40 mm (.209 in to .213 in)
		Service limit	5.50 mm (.217 in)
Width of shift fork engagement groove (high gear)		New	5.00 mm to 5.10 mm (.197 in to .201 in)
		Service limit	5.20 mm (.205 in)
Diameter free pinions		New	29.000 mm to 29.013 mm (1.1417 in to 1.1422 in)
		Service limit	29.015 mm (1.1423 in)
Intermediate gear shaft		New	24.979 mm to 25.000 mm (.9834 in to .9843 in)
		Service limit	24.977 mm (.983 in)
Countershaft	MAG side	New	N.A.
		Service limit	17.990 mm (.7083 in)
	CVT side	New	N.A.
		Service limit	24.970 mm (.9831 in)
	Free pinion bearing	New	N.A.
		Service limit	24.970 mm (.9831 in)
Bevel gear shaft	Free pinion bearing	Service limit	24.984 mm (.9836 in)

GEARBOX WITH GBPS		
Type		Dual range (HI-LO) with park, neutral and reverse
Gear ratios	Angle drive sub-transmission	37/15 = 2.467
	Intermediate	45/40 = 1.125
	High	36/27 = 1.333
	Low	46/17 = 2.706
	Reverse	34/12 = 2.833
Overall gear ratios	High	3.700
	Low	7.510
	Reverse	7.863
Gearbox oil	Capacity	450 ml (15.22 U.S. oz)
	Recommended	XPS synthetic gear oil (75W 140) (P/N 293 600 140) or a 75W140 API GL-5 synthetic gear oil
Coupling sleeve groove width	New	5.25 mm to 5.35 mm (.207 in to .211 in)
	Service limit	5.50 mm (.217 in)
Coupling fork claw thickness	New	4.95 mm to 5.05 mm (.195 in to .199 in)
	Service limit	4.80 mm (.189 in)

GEARBOX WITH GBPS			
Shift fork claw thickness (high gear shift fork)		New	5.10 mm to 5.20 mm (.201 in to .205 in)
		Service limit	5.0 mm (.197 in)
Shift fork claw thickness (low and reverse gear shift fork)		New	5.10 mm to 5.20 mm (.201 in to .205 in)
		Service limit	5.0 mm (.197 in)
Width of shift fork engagement groove (low and reverse gear)		New	5.30 mm to 5.40 mm (.209 in to .213 in)
		Service limit	5.50 mm (.217 in)
Width of shift fork engagement groove (high gear)		New	5.30 mm to 5.40 mm (.209 in to .213 in)
		Service limit	5.50 mm (.217 in)
Diameter free pinions		New	29.000 mm to 29.013 mm (1.1417 in to 1.1422 in)
		Service limit	29.015 mm (1.1423 in)
Intermediate gear shaft		New	24.979 mm to 25.000 mm (.9834 in to .9843 in)
		Service limit	24.977 mm (.983 in)
Countershaft	MAG side	New	19.977 mm to 19.990 mm (.7865 in to .787 in)
		Service limit	19.973 mm (.7863 in)
	CVT side	New	24.977 mm to 24.990 mm (.9833 in to .9839 in)
		Service limit	24.970 mm (.9831 in)
Main shaft	Free pinion bearing	New	24.987 mm to 25.000 mm (.9837 in to .9843 in)
		Service limit	24.984 mm (.9836 in)
	Bearing journal MAG/CVT side	New	16.980 mm to 16.991 mm (.6685 in to .6689 in)
		Service limit	16.976 mm (.6683 in)

ELECTRICAL SYSTEM		
Magneto generator output	Without DPS	400 W @ 6000 RPM
	With DPS	625 W @ 6000 RPM
Stator resistance (20°C (68°F))		0.15 to 0.30 Ω
Ignition system type		IDI (Inductive Discharge Ignition)
Ignition timing		Not adjustable
Spark plug	Quantity	2
	Make and type	NGK LMAR8D-J
	Gap	0.7 mm to 0.9 mm (.028 in to .035 in)
Engine RPM limiter setting	Forward	8000 RPM
	Reverse	15 km/h (9 MPH) (without override)

FUEL SYSTEM	
Fuel delivery	Electronic Fuel Injection (EFI), 54 mm throttle body, 1 injector per cylinder
Idle speed	1400 ± 50 (not adjustable)

ENGINE 1000R

ENGINE			
Engine type			ROTAX 1010HO, 4-stroke, 2 cylinders (V-twin), liquid cooled
Valve train			4 valves/cylinder (mechanical adjustment), single over head camshaft (SOHC) with timing chain
Bore			91 mm (3.58 in)
Stroke			75 mm (2.95 in)
Displacement			976 cm^3 (59.6 in^3)
Compression ratio			10.6:1
Maximum HP RPM			7250 RPM
Exhaust system			Spark arrestor approved by USDA Forest Service
Air filter			Synthetic paper filter with foam
Intake valve opening			8° BTDC
Intake valve closing			57° ABDC
Exhaust valve opening			58° BBDC
Exhaust valve closing			2° ATDC
Valve clearance		Intake	0.06 mm to 0.14 mm (.0024 in to .0055 in)
		Exhaust	0.11 mm to 0.19 mm (.0043 in to .0075 in)
Valve stem diameter	Intake	New	5.472 mm to 5.486 mm (.2154 in to .216 in)
		Service limit	5.450 mm (.2146 in)
	Exhaust	New	5.461 mm to 5.476 mm (.215 in to .2156 in)
		Service limit	5.440 mm (.2142 in)
Valve out of round	Intake and Exhaust	New	0.005 mm (.0002 in)
		Service limit	0.06 mm (.0024 in)
Valve guide diameter	Intake and Exhaust	New	5.506 mm to 5.518 mm (.2168 in to .2172 in)
		Service limit	5.568 mm (.2192 in)
Valve spring free length		New	40.41 mm (1.591 in)
		Service limit	39.00 mm (1.535 in)
Valve seat contact width	Intake	New	1.05 mm to 1.35 mm (.041 in to .053 in)
		Service limit	1.8 mm (.071 in)
	Exhaust	New	1.25 mm to 1.55 mm (.049 in to .061 in)
		Service limit	2 mm (.079 in)
Rocker arm bore diameter		New	12.036 mm to 12.050 mm (.4739 in to .4744 in)
		Service limit	12.060 mm (.4748 in)

ENGINE				
Rocker arm shaft diameter			New	12.000 mm to 12.018 mm (.4724 in to .4731 in)
			Service limit	11.990 mm (.472 in)
Piston diameter			New	90.950 mm to 90.966 mm (3.5807 in to 3.5813 in)
			Service limit	90.900 mm (3.5787 in)
Piston/cylinder clearance			New	0.027 mm to 0.057 mm (.0011 in to .0022 in)
			Service limit	0.100 mm (.0039 in)
Piston ring type			1st	Upper compression ring, rectangular
			2nd	Lower compression ring, tapered face
			3rd	Oil scraper ring
Ring end gap	Rectangular		New	0.20 mm to 0.40 mm (.008 in to .016 in)
			Service limit	0.60 mm (.024 in)
	Tapered face		New	0.20 mm to 0.40 mm (.008 in to .016 in)
			Service limit	0.70 mm (.028 in)
	Oil scraper ring		New	0.20 mm to 0.70 mm (.008 in to .028 in)
			Service limit	1.00 mm (.039 in)
Ring/piston groove clearance	Rectangular		New	0.03 mm to 0.07 mm (.0012 in to .0028 in)
			Service limit	0.15 mm (.0059 in)
	Tapered face		New	0.02 mm to 0.06 mm (.0008 in to .0024 in)
			Service limit	0.15 mm (.0059 in)
	Oil scraper ring		New	0.01 mm to 0.18 mm (.0004 in to .0071 in)
			Service limit	0.25 mm (.0098 in)
Cylinder bore			New	90.993 mm to 91.007 mm (3.5824 in to 3.583 in)
Cylinder taper			Maximum New	0.038 mm (.0015 in)
			Service limit	0.090 mm (.0035 in)
Cylinder out of round			Maximum New	0.015 mm (.0006 in)
			Service limit	0.020 mm (.0008 in)
Camshaft main bearing journal		Timing chain side	New	34.959 mm to 34.975 mm (1.3763 in to 1.377 in)
			Service limit	34.950 mm (1.376 in)
		Spark plug side	New	21.959 mm to 21.980 mm (.8645 in to .8654 in)
			Service limit	21.950 mm (.8642 in)

ENGINE				
Camshaft main bearing journal bore		Timing chain side	New	35.000 mm to 35.025 mm (1.378 in to 1.3789 in)
			Service limit	35.040 mm (1.3795 in)
		Spark plug side	New	22.000 mm to 22.021 mm (.8661 in to .867 in)
			Wear limit	22.040 mm (.8677 in)
Camshaft lobe	Intake valve		New	32.960 mm to 33.160 mm (1.2976 in to 1.3055 in)
			Service limit	32.940 mm (1.2969 in)
	Exhaust valve		New	32.860 mm to 33.060 mm (1.2937 in to 1.3016 in)
			Service limit	32.840 mm (1.2929 in)
Crankshaft main bearing journal diameter (MAG/PTO side)			New	42.016 mm to 42.040 mm (1.6542 in to 1.6551 in)
			Service limit	42.000 mm (1.6535 in)
Crankshaft radial play (MAG/PTO side)			Service limit	0.07 mm (.0028 in)
Crankshaft bearing journal diameter (in PTO cover)			New	34.004 mm to 34.020 mm (1.3387 in to 1.3394 in)
			Service limit	33.998 mm (1.3385 in)
Crankshaft radial play (PTO cover bearing)			Service limit	0.10 mm (.0039 in)
Crankshaft axial play			New	0.200 mm to 0.500 mm (.0079 in to .0197 in)
			Service limit	0.600 mm (.0236 in)
Crankshaft pin diameter			New	41.986 mm to 42.010 mm (1.653 in to 1.6539 in)
			Service limit	41.967 mm (1.6522 in)
Crankshaft deflection		MAG/PTO side	New	0.050 mm (.002 in)
Crankcase plain bearing		MAG/PTO side	Service limit	42.100 mm (1.6575 in)
PTO cover plain bearing			Service limit	34.120 mm (1.3433 in)
Connecting rod big end diameter			Service limit	42.100 mm (1.6575 in)
Connecting rod big end radial play			Service limit	0.09 mm (.0035 in)
Connecting rod big end axial play			New	0.250 mm to 0.550 mm (.0098 in to .0217 in)
			Service limit	0.600 mm (.024 in)
Connecting rod small end diameter			New	22.010 mm to 22.020 mm (.8665 in to .8669 in)
			Service limit	22.050 mm (.8681 in)

ENGINE		
Piston pin diameter	New	21.996 mm to 22.000 mm (.866 in to .866 in)
	Service limit	21.980 mm (.8654 in)
Connecting rod/piston pin clearance (radial play)	Service limit	0.080 mm (.0031 in)

LUBRICATION SYSTEM		
Type		Wet sump. Replaceable cartridge oil filter
Oil filter		BRP Rotax paper type, replaceable
Engine oil pressure	Minimum	300 kPa (44 PSI) at 6000 RPM
Engine oil	Capacity (oil change with filter)	2.0 L (2.1 qt (U.S. liq.))
	Recommended	For the summer season, use XPS 4-stroke synth. blend oil (P/N 293 600 121). For the winter season, use XPS 4-stroke synthetic oil (P/N 293 600 112). If not available, use a 5W40 motor oil that meets the requirements for API service classification SG, SH or SJ

COOLING SYSTEM		
Coolant	Type	Ethyl glycol/water mix (50% coolant, 50% water). Use BRP Long life antifreeze or coolant specifically designed for aluminum engines
	Capacity	3.5 L (.9 U.S. gal.)
Radiator cap opening pressure		110 kPa (16 PSI)

TRANSMISSION		
Type		CVT (Continuously Variable Transmission), sub-transmission with L/H/N/R/P, standard engine braking
Engagement RPM		1650 ± 100 RPM
Drive belt width	Service limit	30.00 mm (1.181 in)
Governor cup roller outer diameter	New	13.80 mm to 14.00 mm (.543 in to .551 in)
	Service limit	13.20 mm (.52 in)
Governor cup roller inner diameter	New	8.025 mm to 8.175 mm (.316 in to .322 in)
	Service limit	9.000 mm (.354 in)
Centrifugal lever pivot bolt diameter	New	6.078 mm to 6.100 mm (.239 in to .24 in)
	Service limit	6.000 mm (.236 in)
Centrifugal lever bore diameter	New	6.035 mm to 6.078 mm (.2376 in to .2393 in)
	Service limit	6.200 mm (.244 in)
Drive pulley sliding half centrifugal lever pivot bolt bore diameter	New	6.113 mm to 6.171 mm (.241 in to .243 in)
	Service limit	6.300 mm (.248 in)

TRANSMISSION		
Drive pulley sliding half large bushing	New	55.000 mm to 55.040 mm (2.165 in to 2.167 in)
	Service limit	55.200 mm (2.173 in)
Drive pulley sliding half small bushing	New	32.000 mm to 32.040 mm (1.26 in to 1.261 in)
	Service limit	32.200 mm (1.268 in)
Drive pulley spring free length	Service limit	85 mm (3.346 in)
Drive pulley spring free squareness	Service limit	4 mm (.157 in)
Spring sleeve length	New	9.2 mm to 9.4 mm (.362 in to .37 in)
	Service limit	9.0 mm (.354 in)
Driven pulley sliding half bushing	New	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
	Service limit	30.200 mm (1.189 in)
Driven pulley sliding fixed bushing	New	30.060 mm to 30.100 mm (1.183 in to 1.185 in)
	Service limit	30.200 mm (1.189 in)
Torque gear on driven pulley	Service limit	7.500 mm (.295 in)
Cam width on top surface	Service limit	9.0 mm (.354 in)
Driven pulley sliding sheave - wear on cam contact surface	Service limit	1.0 mm (.039 in)
Driven pulley spring free length		125 mm (4.921 in)
Driven pulley spring free squareness	Service limit	3.8 mm (.15 in)

GEARBOX WITH EXTERNAL SWITCHES		
Type		Dual range (HI-LO) with park, neutral and reverse
Gear ratios	Angle drive sub-transmission	32/13 = 2.462
	High	34/29 = 1.173
	Low	46/20 = 2.300
	Reverse	31/14 = 2.214
Overall gear ratios	High	2,886
	Low	5.662
	Reverse	5.451
Gearbox oil	Capacity	400 ml (13.5 U.S. oz)
	Recommended	XPS synthetic gear oil (75W 140) (P/N 293 600 140) or a 75W140 API GL-5 synthetic gear oil
Output shaft backlash	New	0.10 mm to 0.20 mm (.004 in to .008 in)
	Service limit	0.25 mm (.01 in)
Coupling sleeve groove width	New	5.25 mm to 5.35 mm (.207 in to .211 in)
	Service limit	5.50 mm (.217 in)

GEARBOX WITH EXTERNAL SWITCHES			
Coupling fork claw thickness		New	4.95 mm to 5.05 mm (.195 in to .199 in)
		Service limit	4.80 mm (.189 in)
Shift fork claw thickness (high gear shift fork)		New	4.80 mm to 4.90 mm (.189 in to .193 in)
		Service limit	4.70 mm (.185 in)
Shift fork claw thickness (low and reverse gear shift fork)		New	5.10 mm to 5.20 mm (.201 in to .205 in)
		Service limit	5.0 mm (.197 in)
Shift fork pin diameter		New	6.92 mm to 6.97 mm (.272 in to .274 in)
		Service limit	6.85 mm (.27 in)
Width of shift fork engagement groove (low and reverse gear)		New	5.30 mm to 5.40 mm (.209 in to .213 in)
		Service limit	5.50 mm (.217 in)
Width of shift fork engagement groove (high gear)		New	5.00 mm to 5.10 mm (.197 in to .201 in)
		Service limit	5.20 mm (.205 in)
Diameter free pinions		New	29.000 mm to 29.013 mm (1.1417 in to 1.1422 in)
		Service limit	29.015 mm (1.1423 in)
Intermediate gear shaft		New	24.979 mm to 25.000 mm (.9834 in to .9843 in)
		Service limit	24.977 mm (.983 in)
Countershaft	MAG side	New	N.A.
		Service limit	17.990 mm (.7083 in)
	CVT side	New	N.A.
		Service limit	24.970 mm (.9831 in)
	Free pinion bearing	New	N.A.
		Service limit	24.970 mm (.9831 in)
Bevel gear shaft	Free pinion bearing	Service limit	24.984 mm (.9836 in)

GEARBOX WITH GBPS		
Type		Dual range (HI-LO) with park, neutral and reverse
Gear ratios	Angle drive sub-transmission	37/15 = 2.467
	Intermediate	45/40 = 1.125
	High	36/27 = 1.333
	Low	46/17 = 2.706
	Reverse	34/12 = 2.833
Overall gear ratios	High	3.700
	Low	7.510
	Reverse	7.863

GEARBOX WITH GBPS			
Gearbox oil		Capacity	450 ml (15.22 U.S. oz)
		Recommended	XPS synthetic gear oil (75W 140) (P/N 293 600 140) or a 75W140 API GL-5 synthetic gear oil
Coupling sleeve groove width		New	5.25 mm to 5.35 mm (.207 in to .211 in)
		Service limit	5.50 mm (.217 in)
Coupling fork claw thickness		New	4.95 mm to 5.05 mm (.195 in to .199 in)
		Service limit	4.80 mm (.189 in)
Shift fork claw thickness (high gear shift fork)		New	5.10 mm to 5.20 mm (.201 in to .205 in)
		Service limit	5.0 mm (.197 in)
Shift fork claw thickness (low and reverse gear shift fork)		New	5.10 mm to 5.20 mm (.201 in to .205 in)
		Service limit	5.0 mm (.197 in)
Width of shift fork engagement groove (low and reverse gear)		New	5.30 mm to 5.40 mm (.209 in to .213 in)
		Service limit	5.50 mm (.217 in)
Width of shift fork engagement groove (high gear)		New	5.30 mm to 5.40 mm (.209 in to .213 in)
		Service limit	5.50 mm (.217 in)
Diameter free pinions		New	29.000 mm to 29.013 mm (1.1417 in to 1.1422 in)
		Service limit	29.015 mm (1.1423 in)
Intermediate gear shaft		New	24.979 mm to 25.000 mm (.9834 in to .9843 in)
		Service limit	24.977 mm (.983 in)
Countershaft	MAG side	New	19.977 mm to 19.990 mm (.7865 in to .787 in)
		Service limit	19.973 mm (.7863 in)
	CVT side	New	24.977 mm to 24.990 mm (.9833 in to .9839 in)
		Service limit	24.970 mm (.9831 in)
Main shaft	Free pinion bearing	New	24.987 mm to 25.000 mm (.9837 in to .9843 in)
		Service limit	24.984 mm (.9836 in)
	Bearing journal MAG/CVT side	New	16.980 mm to 16.991 mm (.6685 in to .6689 in)
		Service limit	16.976 mm (.6683 in)

ELECTRICAL SYSTEM		
Magneto generator output	Without DPS	400 W @ 6000 RPM
	With DPS	625 W @ 6000 RPM
Stator resistance (20°C (68°F))		0.15 to 0.30 Ω
Ignition system type		IDI (Inductive Discharge Ignition)
Ignition timing		Not adjustable

ELECTRICAL SYSTEM		
Spark plug	Quantity	2
	Make and type	NGK LMAR8D-J
	Gap	0.7 mm to 0.9 mm (.028 in to .035 in)
Engine RPM limiter setting	Forward	8000 RPM
	Reverse	15 km/h (9 MPH) (without override)

FUEL SYSTEM	
Fuel delivery	Electronic Fuel Injection (EFI), 46 mm throttle body, 1 injector per cylinder
Idle speed	1400 ± 50 (not adjustable)

OUTLANDER

COOLING SYSTEM			
Coolant	Type		Ethyl glycol and distilled water (50%/50%). Use BRP LONG LIFE ANTIFREEZE (P/N 219 702 685) or (P/N 619 590 204) (Finland, Norway and Sweden) or coolant specifically formulated for aluminum engines
	Quantity	450	2.9 L (.77 U.S. gal.)
		570 650	3.4 L (.9 U.S. gal.)
		850 1000R	3.5 L (.92 U.S. gal.)
Radiator cap opening pressure			110 kPa (16 PSI)

EXHAUST SYSTEM	
Exhaust system	Spark arrestor approved by USDA Forest Service

ELECTRICAL SYSTEM (650 / 850 / 1000R)			
Battery	Type		Maintenance free
	Voltage		12 volts
	Nominal rating		18 A•h
	Power starter output		0.7 KW
Headlight	High		2 x 60 W (HB3)
	Low		2 x 55 W (H1)
Taillight			2 X 5/21 W
Turn signal lights (CE models only)			4 x 10 W
Position lights (CE models only)			2 x 5 W
Licence plate light (CE models only)			1 x 10 W
Fusible links	Main	FL-1	16 gauge
	Fan Main accessories power	FL-2	16 gauge

ELECTRICAL SYSTEM (650 / 850 / 1000R)			
Fuses (fuse box 1)	Accessory relay control Brake lights relay control Communication connector Gauge Brake relay DPS control	F4	5 A
	Ignition coils Fuel injectors Vehicle speed sensor	F5	5 A
	Engine control module power (ECM) Fan relay control	F6	5 A
	Position lights (Europe) Winch control 2W/4W control	F7	5 A
	ECM (wake up signal) Ignition switch	F8	5 A
	Fan motor	F9	25 A
	Clock Hazard lights Hazard/Signal lights/Horn (Europe)	F10	5 A
	Headlights power	F11	30 A
	Connector DC3 12 V power outlet Communication connector (DB6)	F12	15 A
	Connectors DC5 and DC6 Taillights License plate light	F14	15 A
	Fuel pump relay	F15	5 A
Fuse in fuse box 2	DPS / ACS	F3	40 A

ELECTRICAL SYSTEM (450 / 570)			
Battery	Type		Maintenance free
	Voltage		12 volts
	Nominal rating		18 A•h
	Power starter output		0.7 KW
Headlight	High / Low		HS1 35 W
Taillight			5/21 W
Turn signal lights (CE models only)			4 x 10 W
Position lights (CE models only)			2 x 5 W
Licence plate light (CE models only)			1 x 10 W
Fusible links	Main	FL-1	16 gauge
	Fan Main accessories power	FL-2	16 gauge

ELECTRICAL SYSTEM (450 / 570)			
Fuses (fuse box 1)	Gauge Diagnostic connector	F4	10 A
	Injectors/Ignition, ECM, Fuel Pump, VSS F an relay control	F5	10 A
	Key Switch, Engine control module power (ECM), Starter Solenoid, Clock	F8	10 A
	Fan motor	F9	20 A
	DC Outlet/Light/Accessories, Euro Control (CE), 2WD/4WD	F12	20 A
Fuse in fuse box 2	DPS / ACS	F3	40 A

FUEL SYSTEM			
Fuel delivery			Electronic Fuel Injection (EFI)
Fuel pump		Type	Electrical (in fuel tank)
		Operating pressure	350 kPa (51 PSI)
Fuel	Type		Regular unleaded gasoline
	Octane rating	Inside North America	87 (R+M)/2 or higher
		Outside North America	92 RON or higher
Fuel tank capacity			20.5 L (5.4 U.S. gal.)
Fuel remaining when low fuel light turns ON			± 5 L (1.3 U.S. gal.)

DRIVE SYSTEM		
Front drive	Base models	Visco-lok† front differential
	All other models	Visco-lok † QE front differential
Front drive ratio		3.6:1
Rear drive		Straight bevel gear / Shaft driven final drive
Rear drive ratio		3.6:1
Front differential oil	Capacity	500 ml (17 U.S. oz)
	Recommended	XPS synthetic gear oil (P/N 293 600 043) or synthetic gear oil 75W90 API GL-5

DRIVE SYSTEM		
Rear final drive oil	Capacity	250 ml (8.45 U.S. oz)
	Type	XPS synthetic gear oil (75W 140) (P/N 293 600 140) or synthetic gear oil 75W140 API GL-5
CV joint grease		CV joint grease (P/N 293 550 062) or an equivalent
Propeller shaft grease for spline connections		Propeller shaft grease (P/N 293 550 063) or an equivalent

STEERING		
Turning radius	1-UP 450 / 570	212.1 cm (83.5 in)
	X mr 650	256.5 cm (101 in)
	X mr 850	294 cm (115.7 in)
	MAX X mr 1000R	431.8 cm (170 in)
	2-UP 650 / 850 / 1000R Except X mr	233.7 cm (92 in)
	2-UP 450 / 570	239 cm (94 in)
Total toe (vehicle on the ground)		0.1° to 0.5° **toe-in**
Camber angle (vehicle on the ground)		0°
Tie-rod maximum length unengaged threads		348.5 mm (13.72 in)

FRONT SUSPENSION			
Suspension type			Double suspension-arm with dive-control geometry
Suspension travel	X mr 850 MAX X mr 1000R		149 mm (5.9 in)
	X mr 570		137 mm (5.4 in)
	All others		216 mm (8.5 in)
Shock absorber	Qty		2
	Type	XT-P X mr 1000R	HPG shock with piggy back reservoir. QS3† compression and preload adjustments
		X mr 570 X mr 850	HPG
		All other models	Oil

FRONT SUSPENSION			
Spring free length	1-UP	DPS 650 DPS 850 DPS 1000R	340 mm (13.39 in)
		450 570	326 mm (12.83 in)
		X mr 850	322.5 mm (12.7 in)
		X mr 570 X mr 650	370 mm (14.57 in)
		STD 650	350 mm (13.78 in)
		STD 850	340 mm (13.39 in)
		XT	350 mm (13.78 in)
		XT-P	320 mm (12.6 in)
	2-UP	X mr 1000R	322.5 mm (12.7 in)
		DPS 650 DPS 850 DPS 1000R	354 mm (13.94 in)
		STD	354 mm (13.94 in)
		LTD XT 1000R	362 mm (14.25 in)
		XT 650 XT 850	362 mm (14.25 in)
		XT-P	320 mm (12.6 in)
Preload adjustment type	HPG		Variable positions
	Oil		5 positions cam

REAR SUSPENSION			
Suspension type			Torsional Trailing arm Independant (TTI) with external stabilizer bar
Suspension travel	X mr 850 MAX X mr 1000R		180 mm (7.1 in)
	450 570		216 mm (8.5 in)
	650 850 (except X mr) 1000R (except X mr)		227 mm (8.9 in)
Shock absorber	Qty		2
	Type	X mr 570 850 X mr	HPG
		XT-P X mr 1000R	HPG shock with piggy back QS3† compression and preload adjustments
		LTD	ACS
		All other models	Oil

REAR SUSPENSION			
Spring free length	Outlander 1-UP	XT-P	306 mm (12.05 in)
		450 570	315.6 mm (12.43 in)
		570 X mr 650 X mr 850 X mr	366.7 mm (14.44 in)
		All other models	355.9 mm (14.01 in)
	Outlander 2-UP	STD	354 mm (13.94 in)
		DPS XT 1000R	366.4 mm (14.43 in)
		XT Except 1000R X mr 1000R	370 mm (14.57 in)
		XT-P	306 mm (12.05 in)
ACS pneumatic pressure range		LTD	0.35 bar to 6.90 bar (5 PSI to 100 PSI)
Preload adjustment type		LTD	6 Presets
		XT-P	Variable positions
		Oil	5 position cam

BRAKES		
Front brake	Qty	2
	Type	214 mm cross drilled disc brakes with hydraulic twin-piston calipers
Rear brake	Qty	1
	Type	214 mm cross drilled disc brake with hydraulic twin-piston caliper
Brake fluid	Capacity	260 ml (8.8 U.S. oz)
	Type	DOT 4
Caliper		Floating twin pistons (2 x 26 mm)
Brake pad material		Organic
Minimum brake pad thickness		1 mm (.04 in)
Minimum brake disc thickness		4 mm (.157 in)
Maximum brake disc warpage		0.2 mm (.01 in)

TIRES				
Pressure	Front	1-UP	UP TO 164 kg (360 lb)	41.4 kPa (6 PSI)
			FROM 164 kg (360 lb) TO 235 kg (517 lb)	48.2 kPa (7 PSI)
		2-UP	UP TO 132 kg (290 lb)	41.4 kPa (6 PSI)
			FROM 132 kg (290 lb) TO 272 kg (600 lb)	48.2 kPa (7 PSI)
	Rear	1-UP	UP TO 164 kg (360 lb)	41.4 kPa (6 PSI)
			FROM 164 kg (360 lb) TO 235 kg (517 lb)	68.9 kPa (10 PSI)
		2-UP	UP TO 132 kg (290 lb)	41.4 kPa (6 PSI)
			FROM 132 kg (290 lb) TO 272 kg (600 lb)	68.9 kPa (10 PSI)
Minimum tire thread depth				3 mm (.118 in)
Size	Front	X mr 1000R		762 x 229 x 355 mm (30 x 9x 14 in)
		X mr 570 X mr 650		711 x 203 x 305 mm (28 x 8 x 12 in)
		450 / 570 Except X mr and Mossy Oak Hunting edition		635 x 203 x 305 mm (25 x 8 x 12 in)
		STD 650 STD 850 STD 1000R All Mossy Oak Hunting edition		660 x 203 x 305 mm (26 x 8 x 12 in)
		All other models		660 x 203 x 356 (26 x 8 x 14)
	Rear	X mr 1000R		762 x 229 x 355 mm (30 x 9x 14 in)
		X mr 570 X mr 650		711 x 254 x 305 mm (28 x 10 x 12 in)
		450 / 570 Except X mr and Mossy Oak Hunting edition		635 x 254 x 305 mm (25 x 10 x 12 in)
		Standard 650 / 850 / 1000R models All Mossy Oak Hunting edition		660 x 254 x 305 mm (26 x 10 x 12 in)
		All other models		660 x 203 x 356 (26 x 10 x 14)

WHEELS			
Type		Standard models	Steel
		XT-P	Aluminium beadlocks
		All other models	Cast aluminum
Rim size	Front	X mr 1000R	355 x 165 mm (14 x 6.5 in)
		Standard models Mossy Oak Hunting edition X mr 570 X mr 650	305 x 152 mm (12 x 6 in)
		XT-P	356 x 165 (14 x 6.5)
		All other models	356 x 152 (14 x 6)
	Rear	X mr 1000R	355 x 165 mm (14 x 6.5 in)
		Standard models Mossy Oak Hunting edition X mr 570 X mr 650	305 x 191 mm (12 x 7.5 in)
		XT-P	356 x 165 (14 x 8)
		All other models	356 x 152 (14 x 8.5)
Wheel nut torque			100 N•m ± 10 N•m (74 lbf•ft ± 7 lbf•ft)

DIMENSION		
Overall length	1-UP 450 / 570	211 cm (83 in)
	1-UP 650 / 850 / 1000R	218.4 cm (86 in)
	2-UP 450 / 570	231 cm (91 in)
	2-UP 650 / 850 / 1000R exept X mr	238.8 cm (94 in)
	X mr 650 X mr 850	224 cm (88 in)
	X mr 1000R	246 cm (97 in)
Overall width	X mr 650	118 cm (46 in)
	X mr 850 X mr 1000R	127 cm (50 in)
	All other models	117 cm (46.1 in)
Overall height	1-UP 450 / 570	124 cm (49 in)
	1-UP 650 / 850 / 1000R Except X mr	126 cm (49.5 in)
	2-UP 450 / 570	133 cm (52.5 in)
	2-UP 650 / 850 / 1000R Except X mr	135 cm (53 in)
	X mr 650	128 cm (50.5 in)
	X mr 850 X mr 1000R	131 cm (51 in)

DIMENSION			
Wheel base		1-UP	129.5 cm (51 in)
		2-UP	149.9 cm (59 in)
Wheel track	Front	X mr 850 X mr1000R	103.5 cm (40.7 in)
		All other models	97.5 cm (38.4 in)
	Rear	X mr 650	94.5 cm (37.2 in)
		X mr 850 X mr 1000R	100 cm (39.4 in)
		650 / 850 / 1000R Except X mr	93 cm (36.6 in)
		450 / 570	92.3 cm (36 in)
Ground clearance		X mr 650	30 cm (11.8 in)
		X mr 850 X mr 1000R	33 cm (13 in)
		650 / 850 / 1000R Except X mr	28 cm (11 in)
		570 Mossy Oak Hunting Edition	29.2 cm (11.5 in)
		450 / 570 Except Mossy Oak Hunting Edition	26.7 cm (10.5 in)

WEIGHT AND LOADING CAPACITY			
Dry weight	1-UP	450	308 kg (678 lb)
		570 except X mr	319 kg (704 lb)
		X mr 570	382 kg (843 lb)
		650 except X mr	329 kg (725 lb)
		850 except X mr	354 kg (780 lb)
		1000R	361 kg (795 lb)
		X mr 650	396 kg (874 lb)
		X mr 850	437 kg (963 lb)
	2-UP	450	324 kg (715 lb)
		570	336 kg (741 lb)
		650	372 kg (820 lb)
		XT 650	361 kg (796 lb)
		850	372 kg (820 lb)
		1000R except X mr	381 kg (840 lb)
		X mr 1000R	449 kg (990 lb)
Front rack		450 570	54 kg (120 lb)
		All other models	45 kg (100 lb)
Rear rack		450 570	109 kg (240 lb)
		All other models	90 kg (200 lb)

WEIGHT AND LOADING CAPACITY		
Rear storage compartment loading capacity	450 570	11 L (2.9 U.S. gal.)or 10 kg (22 lb)
	All other models	21.4 L (5.7 U.S. gal.)
Total vehicle load allowed (including driver, passenger, all other loads and added accessories)	X mr	189 kg (417 lb)
	1-UP except X mr	235 kg (517 lb)
	2-UP except X mr	272 kg (600 lb)
Towing capacity	Except CE version	590 kg (1,300 lb)
	CE version	135 kg (300 lb)
Tongue capacity	Except CE version	23 kg (50 lb)
	CE version	13.5 kg (30 lb)

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WIRING DIAGRAM INFORMATION

GENERAL

WIRING DIAGRAM LOCATION

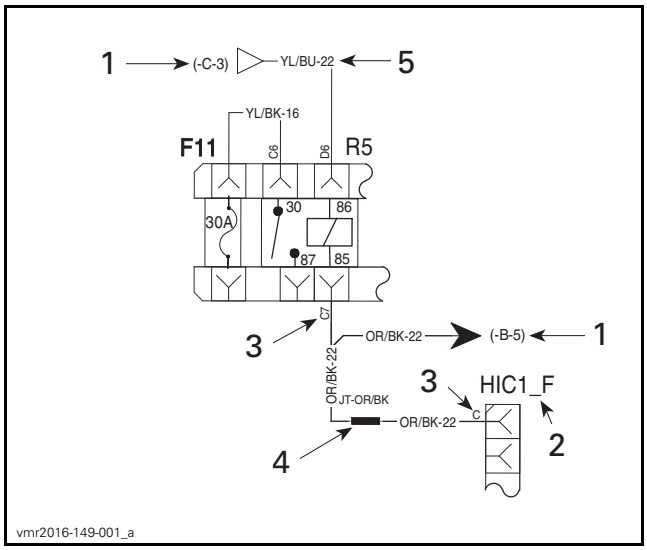
Wiring diagrams are found in the *WIRING DIAGRAM BOOKLET*.

WIRING DIAGRAM WITH COLORED LINES

The wiring diagram on the *KNOWLEDGE CENTER* is in color.

WIRING DIAGRAM CODES

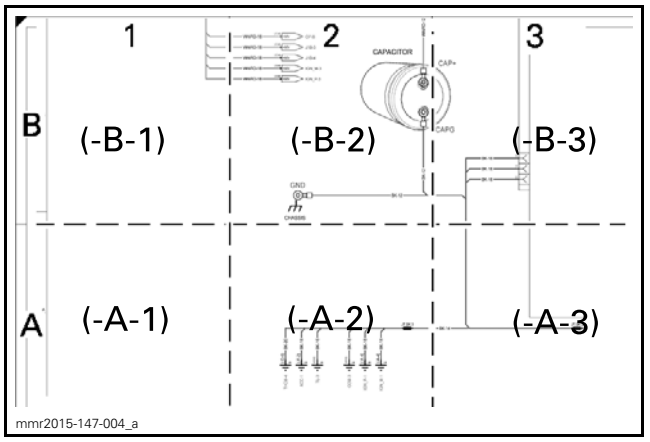
The wiring diagrams use the following codes.



1. *Wiring diagram index*
2. *Connector code*
3. *Connector pin*
4. *Splice*
5. *Color and size*

Wiring Diagram Index

The wiring diagram is separated by rows (letters) and columns (numbers).



WIRING DIAGRAM INDEX

Connector Code

The wire connects to the indicated connector.

Connector Pin

The wire is the indicated pin in the connector.

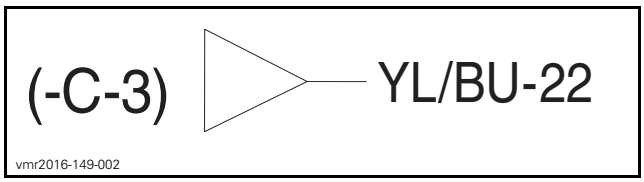
NOTE: Could be identified by either a number or by a letter depending on the type of connector used.

FOLLOWING A CIRCUIT

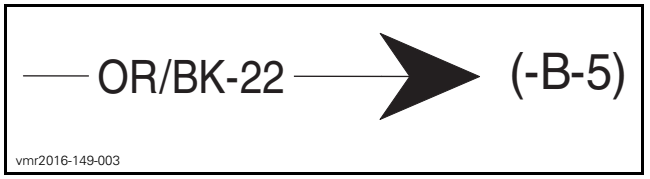
To follow a circuit, search the in section of the wiring diagram shown in the wiring diagram index.

NOTE: The arrow indicates the direction of the power in the circuit.

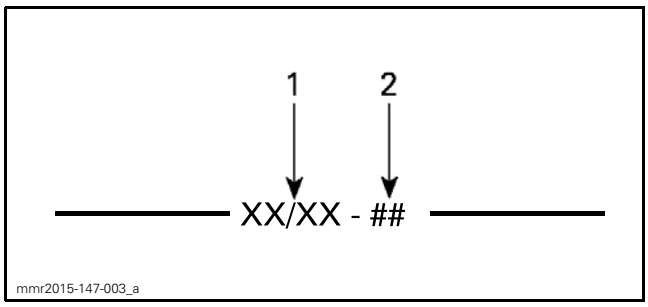
In this example, the power comes **from** section (-C-3).



In following example, the power goes **to** the section (-B-5).



WIRE COLORS AND SIZES



1. Wire color
2. Wire gauge (AWG)

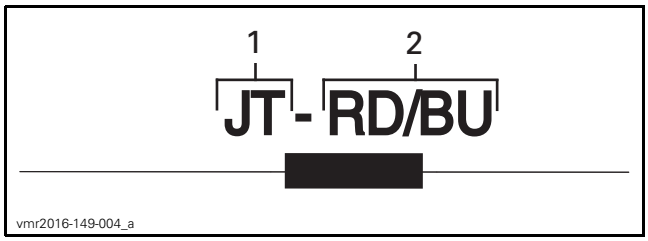
The first color of a wire is the main color, second color is the stripe.

Example: YE/BK is a YELLOW wire with a BLACK stripe.

COLOR CODE					
BG	—	BEIGE	OG	—	ORANGE
BK	—	BLACK	RD	—	RED
BU	—	BLUE	VT	—	VIOLET
BN	—	BROWN	WH	—	WHITE
GN	—	GREEN	YE	—	YELLOW
GY	—	GRAY	PK	—	PINK
LT prefix means a "light" color. E.g: LT GN = Light green.					

SPLICES IN WIRING HARNESS

Splices in wiring harness are indicated on the wiring diagram as follows.



1. JT: Splice indication
2. Spliced wire color

PROCEDURES

This section gives the procedures in order to quickly repair electrical harness splices.

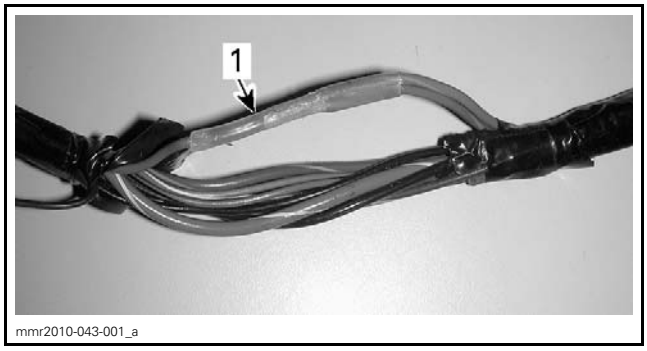
1. Make sure to perform the usual tests described in *ELECTRICAL SYSTEM* sections before investigating the harness splices.
2. If an electrical issue can not be found with the usual tests, locate the main harness splice that is involved in the faulty circuit and repair it as per the *SPLICES REPAIR PROCEDURE*.
3. To repair a splice, we recommend the use of a tin solder meeting the followings requirements or an equivalent.

TIN SOLDER REQUIREMENTS
SN 60
PB 40
DIA 0.062
FLUX RA 2%

SPLICES REPAIR PROCEDURE

CASE 1: Wire Detached from Splice

1. Locate splice. Refer to splices location diagrams.
2. Remove wires from protector tube.
3. Locate the shrink tube protecting the defective splice.

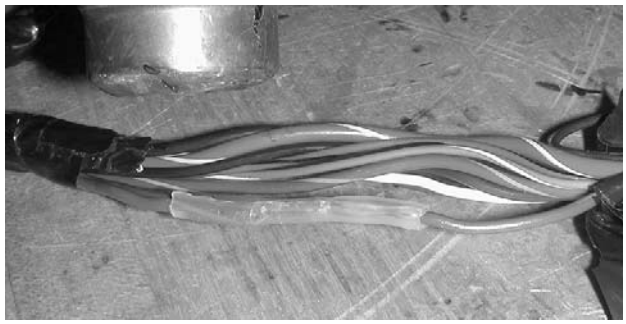


1. Shrink tube

4. Remove the shrink tube.
   4.1 Using a blade, cut the shrink tube.

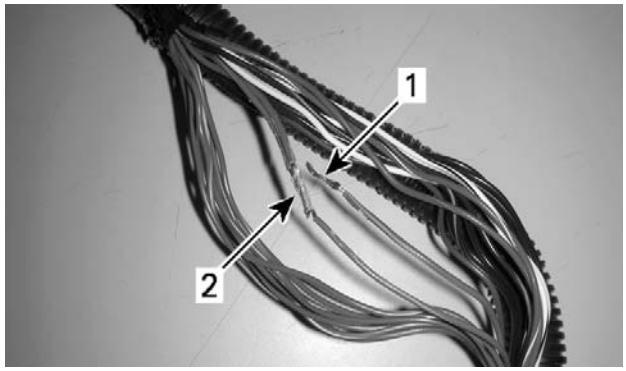
NOTICE **Be careful with the blade to avoid cutting wires insulation.**

   4.2 Slightly heat the shrink tube using a heat gun.


mmr2010-043-003

4.3 Remove the shrink tube with long nose pliers.

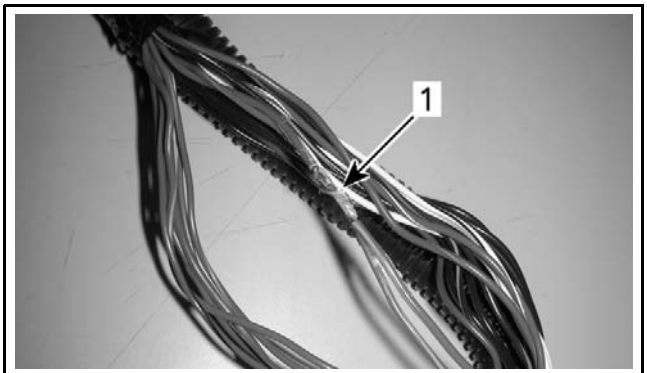
5. Locate detached wire from splice.



mbg2008-021-116_a

1. Detached wire
2. Splice

6. Twist detached wire around splice.



mbg2008-021-117_a

1. Twisted wire

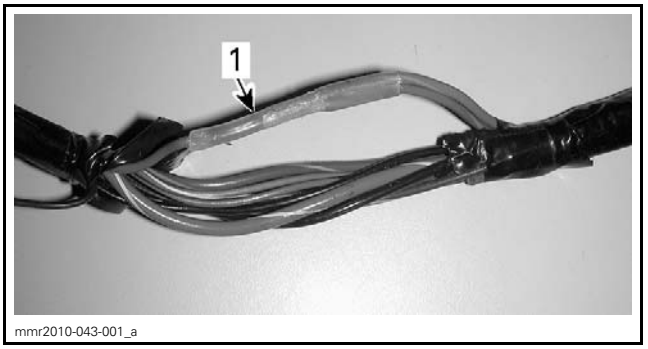
7. Perform a tin solder on twisted wire.
8. Apply electrical tape to cover splice.

NOTE: Make sure tape overlaps on wire insulation, approximately 13 mm (1/2 in) each side.

9. Reinstall wires into protector tube.

CASE 2: Wire Broken from Splice

1. Locate splice. Refer to splices location diagrams.
2. Remove wires from protector tube.
3. Locate the shrink tube protecting the defective splice.



mmr2010-043-001_a

1. Shrink tube

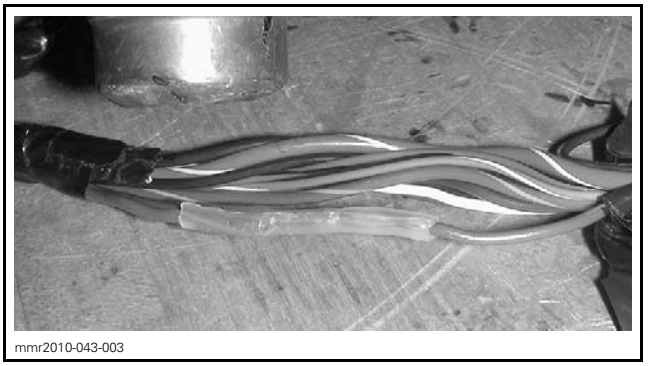
4. Remove the shrink tube.

4.1 Using a blade, cut the shrink tube.

mmr2010-043-002

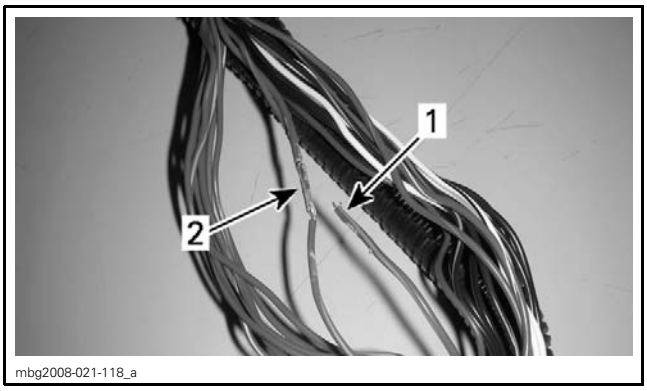
NOTICE Be careful with the blade to avoid cutting wires insulation.

4.2 Slightly heat the shrink tube using a heat gun.


mmr2010-043-003

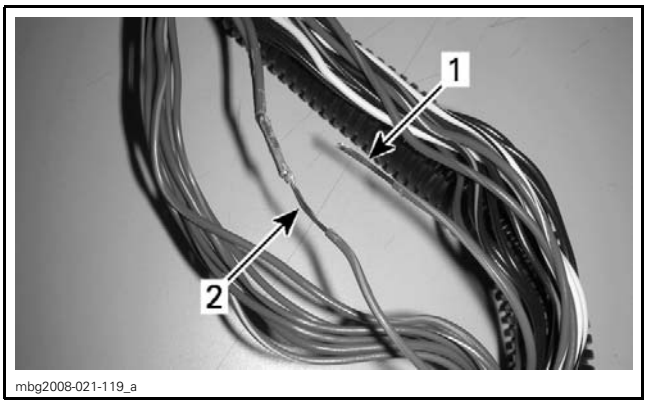
4.3 Remove the shrink tube with long nose pliers.

5. Locate broken wire from splice.



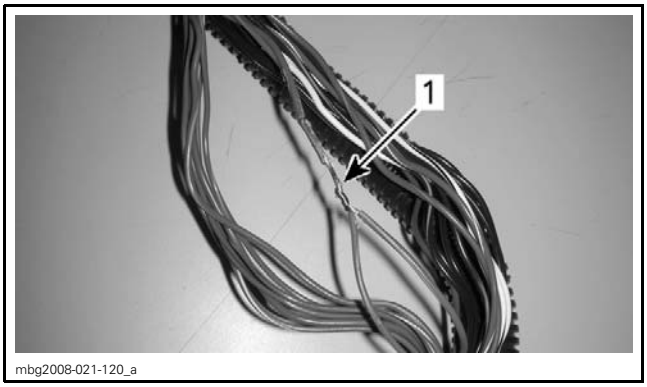
1. Broken wire
2. Splice

6. Strip wire insulation at the end of broken wire.
7. Strip wire insulation below the splice.



1. Broken wire stripped
2. Splice wire stripped

8. Twist wire around stripped wire.



1. Twisted wire

9. Perform a tin solder on twisted wire.
10. Apply electrical tape to cover splice.

NOTE: Make sure tape overlaps on wire insulation, approximately 13 mm (1/2 in) each side.

11. Reinstall wires into protector tube.

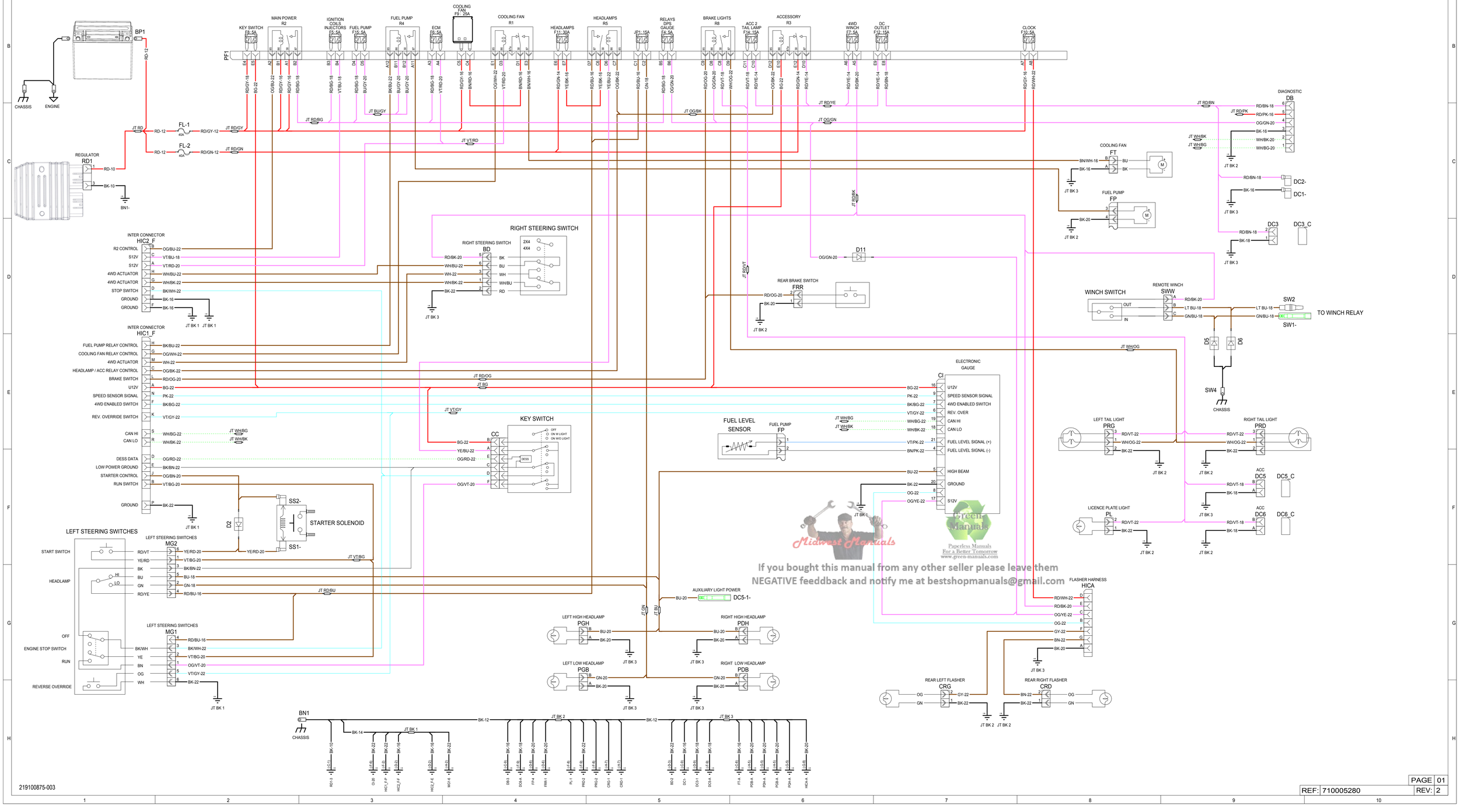
NOTE: Always perform a solder on a bigger wire (lower gage).

2018 OUTLANDER / RENEGADE

With mechanical dess key

LINE TYPES

55 / 60 VOLTS
12 VOLTS SWITCHED
12 VOLTS UNSWITCHED
5 OR 3.3 VOLTS
DIGITAL SIGNAL
POWER CONTROL
ANALOG SIGNAL
COMMUNICATION
A-D GROUND
POWER GROUND
AC VOLTAGE



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2018 *OUTLANDER / RENEGADE*

With RF dess

LINE TYPES

55 / 60 VOLTS	
12 VOLTS SWITCHED	
12 VOLTS UNSWITCHED	
5 OR 3.3 VOLTS	
DIGITAL SIGNAL	
POWER CONTROL	
ANALOG SIGNAL	
COMMUNICATION	
A-D GROUND	
POWER GROUND	
AC VOLTAGE	

BP1 · CHASSIS · ENGINE · RD-12

MAIN POWER R2 · KEY SWITCH F8- 5A · IGNITION COILS INJECTORS F9- 5A · ECM F6- 5A · RELAYS DPS GAUGE F4- 5A · FUEL PUMP F15- 5A · FUEL PUMP R4 · COOLING FAN FD 25A · COOLING FAN R1 · HEADLAMPS F11- 30A · HEADLAMPS R5 · BRAKE LIGHTS R8 · ACCESSORY F14- 15A · ACCESSORY R3 · WINCH F7- 5A · DC OUT F12- 15A

PF1 · RD/OY-18 · BS-22 · OG/BU-22 · RD/GY-18 · A1 · RD/BG-18 · B3 · B4 · A3 · A4 · B5 · B6 · D4 · D5 · A12 · B11 · B12 · A11 · C5 · C4 · E1 · D3 · D1 · E3 · E6 · E7 · D7 · C6 · D6 · C7 · C9 · D8 · D9 · C11 · C10 · D12 · E10 · E12 · D10 · A6 · A5 · E9 · E8

FUEL PUMP FP · BK/RD-18 · BK-20 · JT BK 2

REGULATOR RD1 · RD-10 · BK-10 · BN1-

FL-1 40A · FL-2 40A · RD-12 · RD/GY-12 · RD/GN-12 · JT RD · JT RD/GY · JT RD/GN · JT RD/BG · JT BU/GY · JT OG/GN · JT VT/RD · JT OG/BK · JT RD/BK · JT RD/VT · JT WH/OG · JT BG · JT VT/GY · JT RD/OG · JT WH/BG · JT WH/BK

DIAGNOSTIC DB · FROM F3 (DPS FUSE) · RD/BN-18 · RD/PK-18 · RD/PK-16 · OG/GN-20 · BK-16 · WH/BK-20 · WH/BG-20 · JT BK 2

DC2- · DC1- · JT BK 3 · DC3 · DC3_C

INTER CONNECTOR HIC2_F · R2 CONTROL · S12V · S12V · 4WD ACTUATOR · 4WD ACTUATOR · STOP SWITCH · GROUND · GROUND · VT/BU-18 · VT/RD-20 · WH/BU-22 · WH/BK-22 · BK/WH-22 · BK-16 · BK-16 · JT BK 1

INTER CONNECTOR HIC1_F · FUEL PUMP RELAY CONTROL · COOLING FAN RELAY CONTROL · 4WD ACTUATOR · HEADLAMP / ACC RELAY CONTROL · BRAKE SWITCH · U12V · SPEED SENSOR SIGNAL · 4WD ENABLED SWITCH · REV. OVERRIDE SWITCH · CAN HI · CAN LO · DESS DATA · LOW POWER GROUND · STARTER CONTROL · GROUND · BK/BU-22 · OG/WH-22 · WH-22 · OG/BK-22 · RD/OG-20 · BG-22 · PK-22 · BK/BG-22 · VT/GY-22 · WH/BG-22 · WH/BK-22 · OG/RD-22 · BU/BK-20 · OG/BN-20 · VT/BG-20 · BK-22 · JT BK 1

RIGHT STEERING SWITCHES BD · 2X4 4X4 · RD/BK-20 · WH/BU-22 · WH-22 · WH/BK-22 · BK-22 · BK · BU · WH · WH/BU · RD · JT BK 3

COOLING FAN FT · BN/WH-16 · BK-16 · BU · BK · JT BK 3

REAR BRAKE SWITCH FRR · RD/OG-20 · BK-20 · JT BK 2

REMOTE WINCH SWW · OUT · IN · RD/BK-20 · LT BU-18 · GN/BU-18 · SW2 · SW1- · TO WINCH RELAY · SW4 · D5 · D6 · BK-18

CI ELECTRONIC GAUGE · OG/GN-20 · BG-22 · PK-22 · BK/BG-22 · VT/GY-22 · WH/BG-22 · WH/BK-22 · VT/PK-22 · BN/PK-22 · BU-22 · S12V · U12V · SPEED SENSOR SIGNAL · 4WD ENABLED SWITCH · REV. OVER · CAN HI · CAN LO · HIGH BEAM · GROUND

RFID · RF DESS · VT/RD-22 · OG/RD-22 · BU/BK-20 · OG/VT-22 · S12V · DATA · GROUND · CONTACT · HALL

FUEL PUMP FP · JT BU · JT GN

LEFT HIGH HEADLAMP PGH · RIGHT HIGH HEADLAMP PDH · LEFT LOW HEADLAMP PGB · RIGHT LOW HEADLAMP PDB · BU-20 · BK-20 · GN-20 · DC5-1- · JT BK 3

RIGHT TAIL LIGHT PRD · LEFT TAIL LIGHT PRG · RD/VT-22 · WH/OG-22 · BK-22 · JT BK 2 · JT BK 3

ACC DC5 · DC5_C · ACC DC6 · DC6_C · RD/VT-18 · BK-18

LICENCE PLATE LIGHT PL · RD/VT-22 · BK-22 · JT BK 2

LEFT STEERING SWITCHES MG2 · START SWITCH · HEADLAMP · HI · LO · RD/VT · YE/RD · BK · BU · GN · RD/YE · VT/BG-20 · BG-22 · VT/RD-22 · BU-18 · GN-18 · RD/BU-16 · JT VT/BG

LEFT STEERING SWITCHES MG1 · OFF · ENGINE STOP SWITCH · RUN · REVERSE OVERRIDE · BK/WH · YE · BN · OG · WH · RD/BU-16 · BK/WH-22 · BK/WH-22 · OG/VT-22 · VT/GY-22 · BK-22 · JT RD/BU · JT BK/WH · JT BK 1

WAKE_M · WAKE_F- · D2 · SS2- · SS1- · VT/BG-20 · OG/BN-20

BN1 · BK-12 · BK-14 · JT BK 1 · JT BK 2 · JT BK 3

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2018 ENGINE HARNESS (All Except 450)

LINE TYPES	
55 / 60 VOLTS	
12 VOLTS SWITCHED	
12 VOLTS UNSWITCHED	
5 OR 3.3 VOLTS	
DIGITAL SIGNAL	
POWER CONTROL	
ANALOG SIGNAL	
COMMUNICATION	
A-D GROUND	
POWER GROUND	
AC VOLTAGE	

SPEED SENSOR — VSS — HALL — A VT/BU-18 — B PK-18 — C GN/BN-18

COOLANT TEMPERATURE SENSOR — CTS — 2 GN/BN-18 — 1 BG/OG-18

JT 3

JT 4

ECM — ELECTRONIC CONTROL MODULE

ECM

C3 SGND — GN/BN-18

F4 COOLANT TEMP. SIGNAL — BG/OG-18

IGNITION COILS — BA

1 BN/OG-16 — M1 IGN-A — BN/OG-16

2 VT/BU-16

3 BN/BK-16 — M2 IGN-B — BN/BK-16

FUEL INJECTOR 1 — INJ1

2 VT/BU-18

1 BK/RD-18 — L4 INJ-A — BK/RD-18

FUEL INJECTOR 2 — INJ2

2 VT/BU-18

1 BN/BU-18 — K4 INJ-B — BN/BU-18

CRANKSHAFT POSITION SENSOR — CPS

1 BU/YE-18 — E1 CPS (+)

2 YE/WH-18 — D1 CPS (-)

OIL PRESSURE SWITCH — OPS

LT BU-18 — E2 OIL PRESSURE SWITCH

ENGINE

GEARBOX WITH EXTERNAL SWITCHES

BR — BN/GY-18 — J3 GEAR SWITCH 1

WH — WH/RD-18 — H2 GEAR SWITCH 2

OR — OG/GY-18 — H4 GEAR SWITCH 3

CONTINUITY TEST FOR GEAR POSITIONS

Gear	WH (H2)	BR (J3)	OR (H4)
Low	0	1	1
High	0	0	1
Neutral	1	0	1
Reverse	1	0	0
Park	1	1	0

1 = GND
0 = OPEN

GEARBOX WITH GBPS

GEAR POSITION SENSOR — GPBS — HALL

3 GN/BN-18

2 WH/GY-18 — D2 GEAR POSITION SIGNAL

1 BU/RD-18

TPS PIN POSITIONS

MODEL	X	Y	Z
1000 X mr	3	2	1
ALL OTHER	1	2	3

THROTTLE POSITION SENSOR — TPS

SIGNAL — X — WH/BN-18 — G3 TPS SIGNAL — WH/BN-18

GROUND — Y — BU/BK-18

5V — Z — BU/RD-18

MANIFOLD PRESSURE AND AIR TEMPERATURE SENSOR — MAPTS

5V — 3 — BU/RD-18 — JT 2 — BU/RD-18 — A1 5V

PRESSURE — 4 — GY/BU-18 — F2 PRESSURE SIGNAL

TEMPERATURE — 2 — WH/GY-18 — F3 TEMPERATIRE SIGNAL

GROUND — 1 — BU/BK-18 — JT 1 — BU/BK-18 — G2 LOW POWER GROUND

IDLE AIR CONTROL VALVE — IACV

WINDING 1 — D3 GY/WH-18 — A

WINDING 2 — E4 GY/GN-18 — B

WINDING 2 — C4 GY/BK-18 — C

WINDING 1 — D4 GY/VT-18 — D

POWER RELAY CONTROL — K1 OG/BU-18 — OG/BU-18

S12V POWER — L1 VT/BU-16 — VT/BU-16

STOP SWITCH — K3 BK-18 — BK-18

GROUND — M4 BK-16 — BK-16

GROUND — M3 BK-16 — BK-16

HIC2_M

B POWER RELAY CONTROL — OG/BU-18

C S12V — VT/BU-16

A S12V — VT/BU-16

H 4WD ACTUATOR — WH/BU-18

G 4WD ACTUATOR — WH/BK-18

D STOP SWITCH — BK-18

F GROUND — BK-16

E GROUND — BK-16

4WD ACTUATOR — MD

2 WH/BU-18

1 WH/BK-18

4 WH-18

4WD CONTROL VOLTAGES

MODE	MD 1	MD 2	MD 4
2X4	12V	X	GROUND
4X4	X	GROUND	12 V

FUEL PUMP RELAY CONTROL — J1 BK/BU-18 — BK/BU-18

COOLING FAN RELAY CONTROL — B3 OG/WH-18 — OG/WH-18

HEADLAMP / ACC RELAY CONTROL — K2 OG/BK-18 — OG/BK-18

BRAKE SWITCH — J4 RD/OG-18 — RD/OG-18

U12V — B4 BG-20 — BG-20

4WD_SW-

REV. OVERRIDE SWITCH — F1 VT/GY-18 — VT/GY-18

CAN HI — B1 WH/BG-18 — WH/BG-18

CAN LO — C1 BG/GN-18 — BG/GN-18

DESS DATA — H1 OG/RD-18 — OG/RD-18

STARTER CONTROL — L3 OG/BN-16 — OG/BN-16

RUN SWITCH — A4 VT/BG-18 — VT/BG-18

SELECT_MODE- SW — G1 PK/BK-18 — PK/BK-18

HIC1_M

H FUEL PUMP RELAY CONTROL — BK/BU-18

G COOLING FAN RELAY CONTROL — OG/WH-18

M 4WD ACTUATOR — WH-18

C HEADLAMP / ACC RELAY CONTROL — OG/BK-18

L BRAKE SWITCH — RD/OG-18

A U12V — BG-20

N SPEED SENSOR SIGNAL — PK-18

F 4WD ENABLED SWITCH — BK/BG-18

K REV. OVERRIDE SWITCH — VT/GY-18

S CAN HI — WH/BG-18

R CAN LO — BG/GN-18

D DESS DATA — OG/RD-18

E LOW POWER GROUND — BU/BK-18

J STARTER CONTROL — OG/BN-16

B RUN SWITCH — VT/BG-18

P — PK/BK-18

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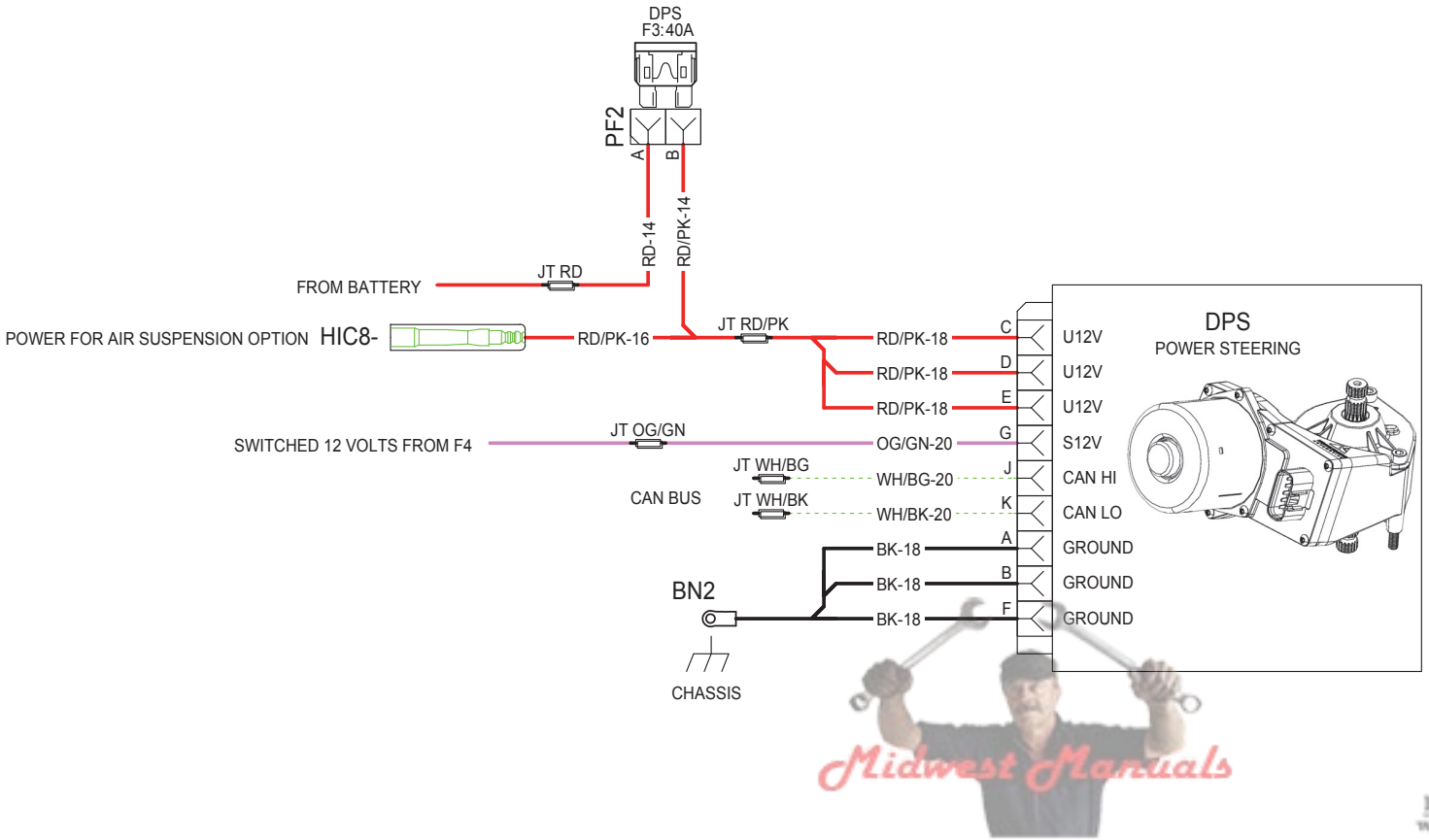
2018 *DPS*

(Part of main harness)



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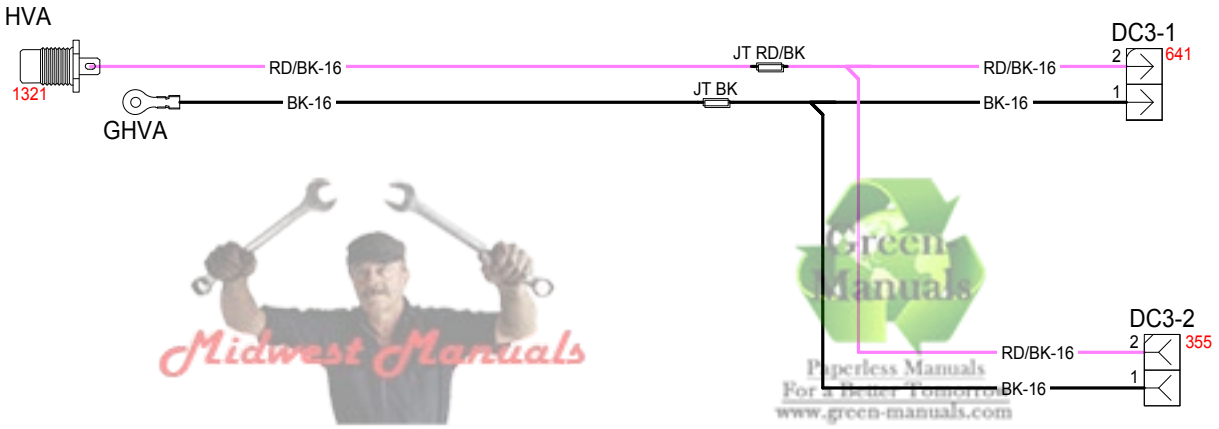
2018 VISOR ADAPTOR



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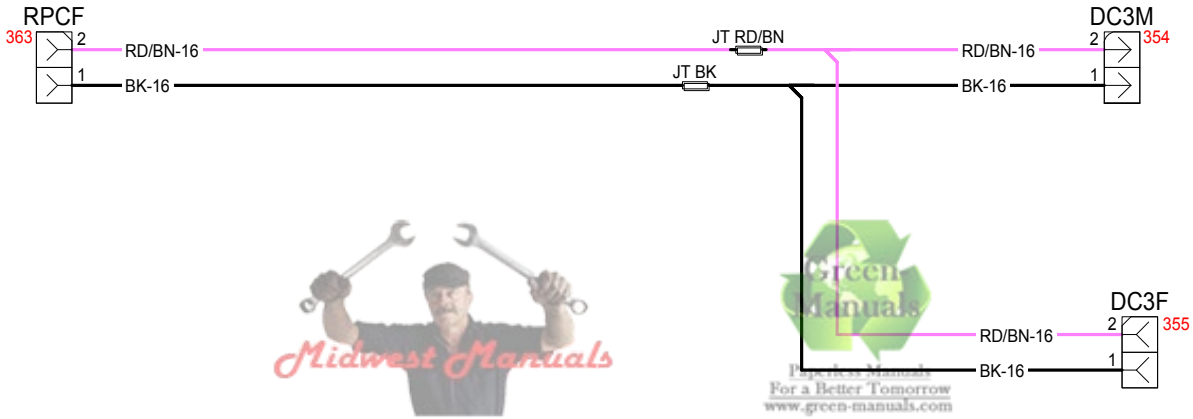
2018 HEATED GRIPS EXTENSION



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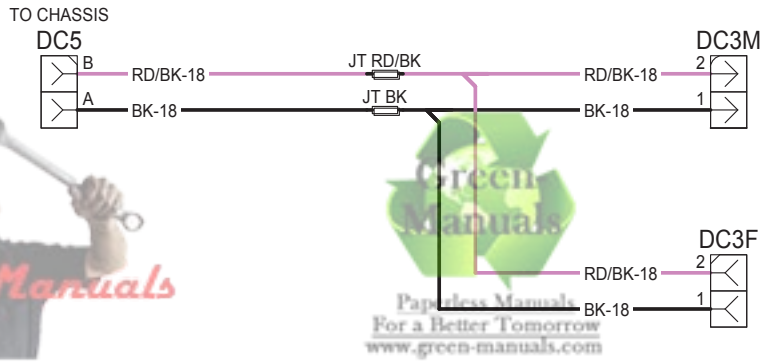
2018 POWER SPLITTER



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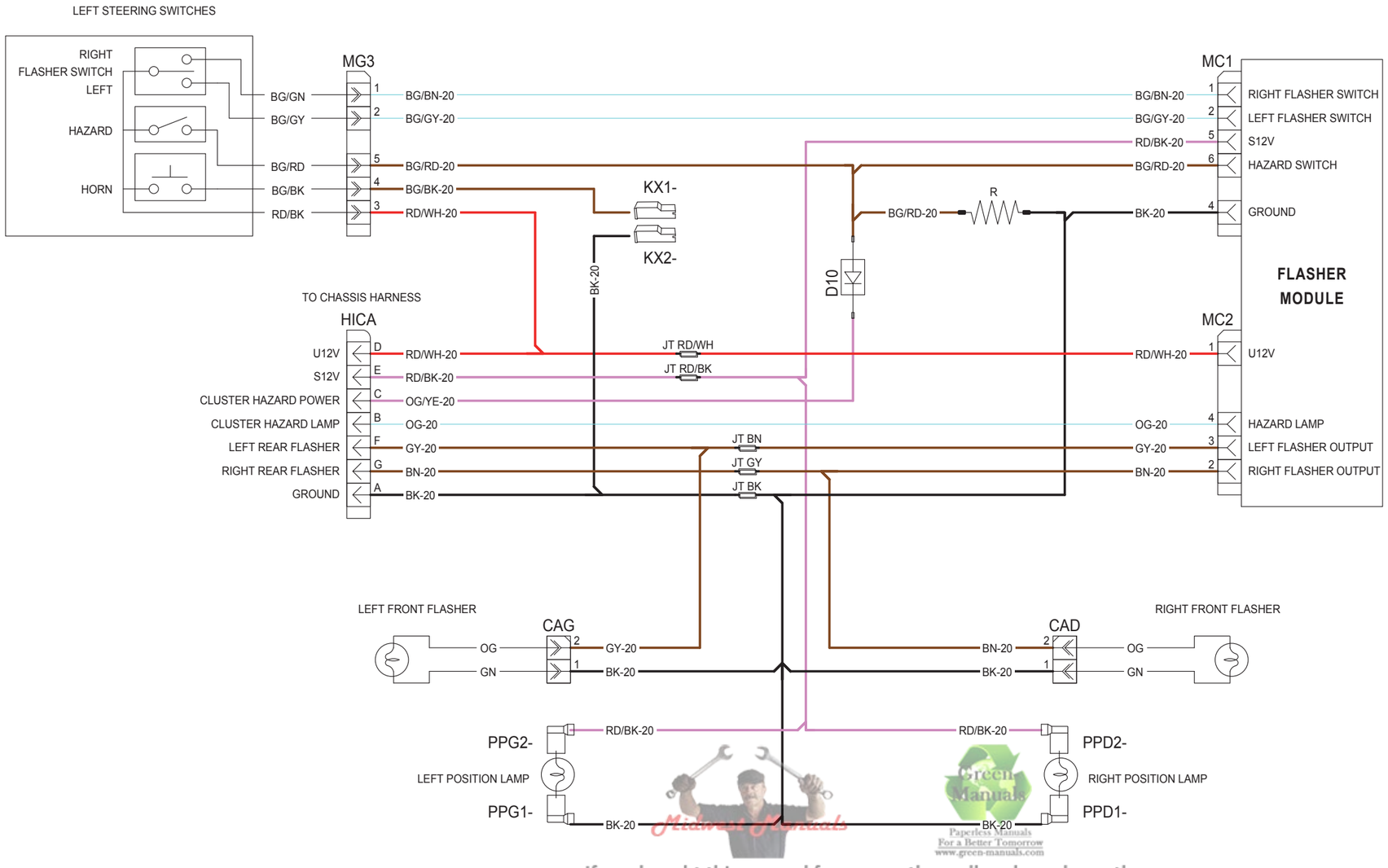
2018 FLASHER HARNESS

LINE TYPES	
55 / 60 VOLTS	
12 VOLTS SWITCHED	
12 VOLTS UNSWITCHED	
5 OR 3.3 VOLTS	
DIGITAL SIGNAL	
POWER CONTROL	
ANALOG SIGNAL	
COMMUNICATION	
A-D GROUND	
POWER GROUND	
AC VOLTAGE	



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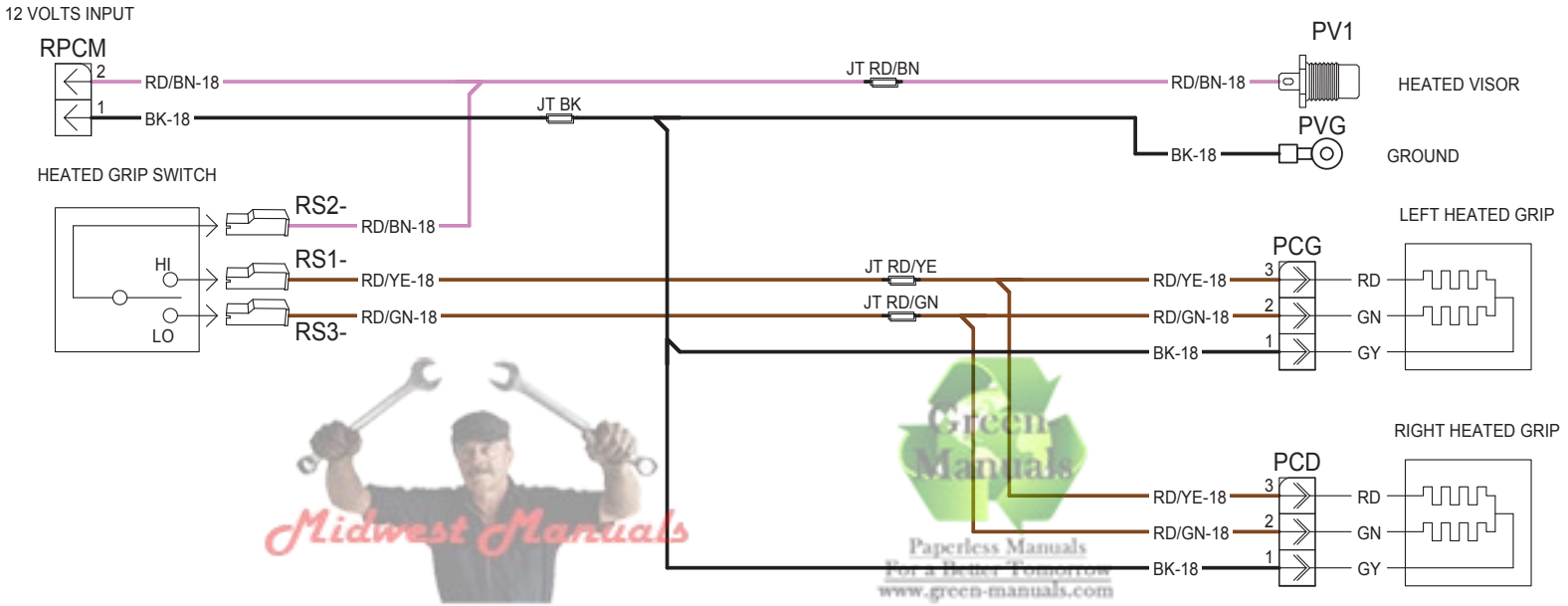
2018 REAR HEATED GRIP HARNESS

LINE TYPES	
55 / 60 VOLTS	
12 VOLTS SWITCHED	
12 VOLTS UNSWITCHED	
5 OR 3.3 VOLTS	
DIGITAL SIGNAL	
POWER CONTROL	
ANALOG SIGNAL	
COMMUNICATION	
A-D GROUND	
POWER GROUND	
AC VOLTAGE	



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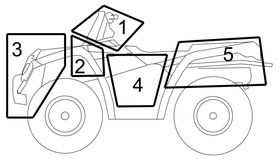
REF: 710005933 REV:

OUTLANDER 2017/2018
ACS SYSTEM



TERMINAL IDENTIFICATION						
	NAME	ZONE-	CONNECTOR NAME-	TERMINAL #/A
EX:	CI	1	-	CI	-	15
EX:	CV	4	-	CV	-	A
EX:	ME	2	-	ME		

AWG	MAX. CURRENT	MAX. FUSE CURRENT	MAX. WATT
# 6	100 amps	125 amps	1450 watts
# 8	65 amps	80 amps	930 watts
# 10	40 amps	50 amps	580 watts
# 12	25 amps	30 amps	365 watts
# 14	16 amps	20 amps	230 watts
# 16	10 amps	15 amps	145 watts
# 18	6 amps	7.5 amps	85 watts
* AT	50°C MAX		

ZONE #	ZONE DESCRIPTION
1	STEERING AREA
2	MODULE AREA
3	FRONT OF VEHICLE
4	ENGINE AREA
5	REAR OF VEHICLE

●	WELDED JOINT
━	SHRINKED JOINT
⊕	CROSSED WIRE
◢	WIRE BUS
—	SIMPLE CONDUCTOR WIRE
⊱	FEMALE TERMINAL
⊰	MALE TERMINAL
⊸	STEEL LINK (FRAME)
⊣	TERMINAL

⏚	FRAME GROUND
⏚	EGINE GROUND
⊕	PHILLIPS SCREW
⬡	NUT CONNECTION
⬢	SPLICE CONNECTION
◬	COMPONENT CONNECTION
⬠	SECTION OF MODULE
⊖	SLOTTED SCREW
– –	OPTIONAL

COLOR CODE	
BE	BEIGE
BK	BLACK
BU	BLUE
BR	BROWN
GN	GREEN
GY	GREY
OR	ORANGE
RD	RED
VI	VIOLET
WH	WHITE
YL	YELLOW
PK	PINK
LT BU	

MAIN HARNESS SIDE

LTD HARNESS SIDE

PF1
DC OUTLETS
FUSE (F12) 15 A

VOIR/SEE DB

DB1
MAIN HARNESS
DIAGNOSTIC
CONNECTOR

HIC 8
MAIN HARNESS
POWER
CONNECTOR

LTD CONFIGURATION

JT RD/GY

RD/PK

JT OR/GN

PF1
RELAYS
SPEEDO
FUSE
(F4)
10 A

CI SPEEDOMETER & PILOT LAMPS

R5

AIR COMPRESSOR

SS
STARTER
SOLENOID

BAT
BATTERY
12 VDC
18 AH

SM
STARTER
MOTOR

RD
RECTIFIER

CA
MAGNETO

PCM
PRESSURE
CONTROL
MODULE

D7

(VENT VALVE)

DB
DIAGNOSTIC
CONNECTOR

JT WH/BK

JT WH/BE

CAN LOW

CAN HI

SEE MAIN HARNESS

JT BK

JT BK1

JT BK2

JT BK3

JT BK4

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219001865-009

2015/04/22

710004328F3

Flat rate times are what the manufacturer pays the authorized dealer for warranty work, the times listed are usually unrealistic for even the most experienced mechanic and will take longer to actually complete.

Because of this dealers will usually charge more than the times posted.

I cannot be held responsible for any errors BRP has made in these service flat rate or parts manuals.

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Thank you for choosing us.

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BRP

Volume 2

2018

Flat Rate Schedule
Barème de temps à taux fixe

OUTLANDER™ / MAX 650/850/1000

OUTLANDER™ X mr 650/850/1000

RENEGADE™ 570/850/1000

RENEGADE™ X mr 570/1000

Effective April 26th, 2017
En vigueur le 26 avril 2017

Subject to review from time to time, without notice or delay.
Sujet à révision sans préavis, ni délais.

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2018 - Volume 2
OUTLANDER/RENEGADE
2018 - Volume 2
OUTLANDER/RENEGADE
2018 - Volume 2
OUTLANDER/RENEGADE
2018 - Volume 2
OUTLANDER/RENEGADE

INTRODUCTION

This publication governs all warranty labor allowances for 2018 BRP ATV.

1. HOW DOES IT WORK

We follow the procedures detailed in the BRP *ATV Shop Manual*. The flat rate time is the maximum time allowed for a repair involving any given part. FLAT RATE TIME IS NOT CUMULATIVE. You must use the flat rate time given for the longest lasting operation.

NOTE: The *Flat Rate Time Schedule* was prepared by skilled mechanics using the hand tool usually found in workshops and all the special tools mentioned in the *Shop Manual*.

2. COMPILATION

The *Flat Rate Time Schedule* is compiled as follows:

The actual required time to perform the repair plus (+) 30% correction factor up to 3.0 hours or (+) 15% over 3.0 hours time to take into account, among others:

- Vehicle handling
- Obtaining the parts
- Diagnosis
- Cleaning
- Special compensation (rusted bolts).

3. HOW TO USE IT

Refer to the system you need, locate part of series of parts replaced. List JOB CODE in the appropriate column on claim.

SYSTEM		PAGE
01	ENGINE	5
02	CARBURETOR AND FUEL SYSTEM	21
03	IGNITION SYSTEM	24
04	STARTER	26
05	TRANSMISSION SYSTEM	27
06	BRAKE SYSTEM	33
07	STEERING SYSTEM AND FRONT SUSPENSION	35
08	REAR SUSPENSION SYSTEM AND TRACK	41
09	BODY	46
10	ELECTRICAL SYSTEM	57

NOTE: Unless otherwise specified, dismantling order is: top to bottom, exterior to interior, front to rear.

All fractions of hours are in tenths:

0.1 = 6 minutes
0.2 = 12 minutes, and so on

LEGEND:

* REQUIRES PRIOR AUTHORIZATION BY DISTRIBUTOR.
** INDICATE LABOUR TIME ON LINE “LABOUR ONLY“ OF CLAIM.
*** INDICATE $$$ AMOUNT ON “SUB-CONTRACTED LABOUR“ OF CLAIM.

IMPORTANT: Always use the longest flat rate time applicable to the repair performed.

4. JOB REQUIREMENTS

All the flat rate times mentioned in the following pages include the required operations such as: engine timing (rotary valve and ignition), connecting rod(s) alignment, cylinder head(s) torque or use of parallel bar, use of ignition tester, piston clearance/ring end gap measurement, crankshaft to crankcase measurement, cylinder honing, engine leak test.

5. ILLUSTRATIONS

The illustrations contained in this manual do not necessarily show every components of a given system as *Parts Catalog* do. Their purpose is to facilitate recognition of parts related to a flat rate time. Item numbers on illustrations correspond to the four digit Job Code.

6. FLAT RATE TIME SUGGESTION

SEND A WARRANTY CASE ON BOSSWeb INFO CENTER

In the case, you must provide the following information:

Section *Subject*:

- Flat rate time suggestion

Section *Your Question*:

- Model year;
- Model description;
- Description job code;
- Job code;
- Present flat rate;
- Suggested flat rate;
- Detailed repair procedure;

To ensure that your case will be promptly and efficiently processed please indicate the step by step repair procedure you performed.

INTRODUCTION

Cette publication détermine le temps de main-d'oeuvre couvert par la garantie pour les VTT BRP 2018.

1. UTILISATION DU MANUEL

En procédant de la façon indiquée dans le *Manuel de réparation VTT* BRP, chaque temps donné représente le maximum permis pour une réparation portant sur cette pièce. LES TEMPS NE SONT PAS CUMULATIFS. On doit inscrire le temps donné pour l'opération qui prend le plus de temps.

REMARQUE: Le *Barème de temps à taux fixe* a été préparé par des mécaniciens compétents utilisant les outils que l'on retrouve normalement dans les ateliers de réparation, en plus de tous les outils spéciaux mentionnés dans le *Manuel de réparation*.

2. COMPILATION

Le *Barème de temps à taux fixe* a été établi en compilant le temps nécessaire pour faire la réparation plus (+) un facteur de correction de 30% lorsqu'un travail dure 3.0 heures et moins, ou (+) 15% lorsqu'un travail dure plus de 3.0 heures. Cette compilation comprend, entre autres, les étapes suivantes:

– Manutention du véhicule
– Nettoyage
– Aller chercher les pièces, essais physiques
– Compensation spéciale (boulons rouillés)
– Diagnostic.

3. UTILISATION DU BARÈME

Se reporter à la section désirée, repérer la pièce ou l'ensemble de pièces remplacées et inscrire le CODE DE TRAVAIL dans la colonne appropriée sur la formule de réclamation.

SYSTÈME		PAGE
01	MOTEUR	5
02	CARBURATEUR ET SYSTÈME D'ALIMENTATION D'ESSENCE	21
03	SYSTÈME D'ALLUMAGE	24
04	DÉMARREUR	26
05	SYSTÈME DE TRANSMISSION	27
06	SYSTÈME DE FREIN	33
07	SYSTÈME DE DIRECTION ET SUSPENSION AVANT	35
08	SYSTÈME DE SUSPENSION ARRIÈRE ET CHENILLE	41
09	CARROSSERIE	46
10	SYSTÈME ÉLECTRIQUE	57

REMARQUE: Sauf indication contraire, le démontage doit s'effectuer de haut en bas, de l'extérieur vers l'intérieur, de l'avant vers l'arrière.

Toutes les fractions d'heures sont exprimées en dixièmes:

0.1 = 6 minutes
0.2 = 12 minutes, et ainsi de suite

LÉGENDE:

* AUTORISATION REQUISE AVANT LE REMPLACEMENT.
** INSCRIRE LE TEMPS À LA LIGNE «MAIN-D'OEUVRE SEULEMENT».
*** INSCRIRE LE MONTANT $$$ À LA LIGNE «OUVRAGE SOUS-CONTRACTÉ».

IMPORTANT: Toujours utiliser le temps donné à l'opération qui nécessite le plus de temps.

4. TRAVAUX REQUIS

Tous les temps mentionnés dans les pages suivantes incluent les opérations telles que: réglage du moteur (valve rotative et allumage), alignement de la ou des bielles, couple de serrage de la ou des culasses ou l'utilisation de barres parallèles, utilisation du vérificateur d'allumage, mesure du jet des pistons/jeu en bout des segments, mesure de l'écart entre le vilebrequin et le carter, rectification du cylindre, vérification de fuite du moteur.

5. ILLUSTRATIONS

Contrairement aux *Catalogues de pièces*, les illustrations de ce manuel ne montrent pas nécessairement chacune des pièces qu'elles représentent, leur raison d'être étant plutôt de faciliter la reconnaissance des pièces reliées à un barème de temps à taux fixe. **Les numéros d'items sur les illustrations correspondent aux quatre derniers chiffres du code de travail.**

6. SUGGESTION DE BARÈME DE TEMPS À TAUX FIXE

ENVOYEZ UNE REQUÊTE GARANTIE BOSSWeb DEPUIS LA SECTION INFO CENTRE

Dans cette requête, vous devez fournir les informations suivantes:

Section *Objet*:

– Suggestion de barème de temps à taux fixe

Section *Votre Question*:

– L'année modèle;
– Description du modèle;
– Description du code de travail;
– Code de travail;
– Temps actuel;
– Temps suggéré;
– Détails de la marche à suivre;

Pour s'assurer que votre demande sera traitée dans les plus brefs délais et efficacement, s.v.p. nous fournir toutes les étapes de réparation dans les détails de la marche à suivre

2018
ATV / VTT

TABLE	DESCRIPTION	MODEL/ MODÈLE	ENGINE TYPE/ TYPE DE MOTEUR	DPS
6	OUTLANDER 650	2NJA/2NJB	650 CVT	N/A
	OUTLANDER DPS 650	2BJA/2BJB		DPS
	OUTLANDER PRO 650	3PJA/3PJB 3PJC		
	OUTLANDER XT 650	2PJA/2PJB 2PJC/2PJD 2PJE/2PJF 2PJG/2PGH		
	OUTLANDER WIN 650	5PJA		
	OUTLANDER DPS 850	2AJA/2AJB	850 CVT	DPS
	OUTLANDER MOS850	4NJA		
	OUTLANDER XT 850	2JJA/2JJB 2JJC/2JJD 2JJE/2JJF		
	OUTLANDER XTP 850	5RJA/5RJB		
	OUTLANDER WIN 850	2HJB		
	OUTLANDER DPS 1000	5LJA/5LJB	1000R CVT	DPS
	OUTLANDER MOS 1000	4MJB/4MJC		
	OUTLANDER XT 1000	5TJA/5TJB 5TJC/5TJD 5TJE		
	OUTLANDER XTP 1000	5XJA/5XJB 5XJC		
	OUTLANDER XXC 1000	1XJA/1XJB		
7	OUTLANDER MAX DPS 650	2DJA/2DJB	650 CVT	DPS
	OUTLANDER MAX XT 650	2SJA/2SJB 2SJC/2SJD 2SJE/2SJF 2SJG/2SJH 2SJJ		
	OUTLANDER MAX XTP 650	3DJB/3DJC		
	OUTLANDER MAX WIN 650	2RJB/2RJC		
	OUTLANDER MAX XT 850	2LJA/2LJB 2LJC/2LJD 2LJE/2LJF 2LJG	850 CVT	DPS
	OUTLANDER MAX XTP 850	5FJA/5FJB 5FJC		
	OUTLANDER MAX WIN 850	5HJB		

7	OUTLANDER MAX PRO 1000	3UHA	1000R CVT	DPS
	OUTLANDER MAX XT 1000	5UJA/5UJB 5UJC/5UJD 5UJE		
	OUTLANDER MAX LTD 1000	5WJA/5WJB 5WJC		
	OUTLANDER MAX XTP 1000	5JJA/5JJB 5JJC		
8	OUTLANDER XMR 650	5EJA/5EJB	650 CVT	DPS
	OUTLANDER XMR 850	4KJA	850 CVT	
	OUTLANDER XMR 1000	5KJA/5KJB 5KJC	1000R CVT	
9	RENEGADE 570	4EJA/4EJB 4EJC	570 CVT	N/A
	RENEGADE 850	4BJA/4BJB	850 CVT	N/A
	RENEGADE XXc 850	4DJA/4DJB 4DJC		DPS
	RENEGADE 1000	4GJA	1000R CVT	N/A
	RENEGADE XXc 1000	5VJA/5VJB 5VJC		DPS
10	RENEGADE XMR 570	4TJA/4TJB	570 CVT	DPS
	RENEGADE XMR 1000	4FJA/4FJB 4FJC	1000R CVT	DPS

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
01	**00**	**NO LABOR INVOLVED AUCUNE MAIN D'OEUVRE**	**0**	**0**	**0**	**0**	**0**
01 *	01	REMOVE AND REPLACE ENGINE (ASS'Y) REMPLACEMENT DU MOTEUR (COMPLET)	4.7	4.7	5.0	4.4	4.4
01	03	OIL PRESSURE SWITCH INTERRUPTEUR DE PRESSION D'HUILE	0.3	0.3	0.3	0.3	0.3
01	04	HEAT SHIELD AND/OR RUBBER MOUNT DÉFLECTEUR DE CHALEUR ET/OU BUTÉE DE CAOUTCHOUC	0.4	0.4	0.4	0.4	0.4
01	08	FAN AND/OR FAN SUPPORT VENTILATEUR ET/OU SUPPORT DE VENTILATEUR	1.3	1.3	0.6	1.1	1.1
01	17	CYLINDERS AND/OR GASKETS (ALL) CYLINDRES ET/OU JOINTS D'ÉTANCHÉITÉ (TOUS)	4.5	4.5	4.5	4.5	4.5
01	18	SENDER TEMPERATURE (ENGINE) CAPTEUR DE TEMPÉRATURE (MOTEUR)	0.9	0.9	0.9	0.9	0.9
01	19	THERMOSTAT THERMOSTAT	0.5	0.5	0.5	0.5	0.5
01	37	RADIATOR INLET HOSE BOYAU D'ENTRÉ DU RADIATEUR	0.5	0.5	0.5	0.5	0.5
01	38	WATER PUMP SHAFT (ALL PARTS) ARBRE DE POMPE À L'EAU (TOUTES LES PIÈCES)	5.5	5.5	5.5	5.2	5.2
01	45	ENGINE DAMPERS (1 OR ALL) TAMPONS ANTI-VIBRATION (1 OU TOUS)	4.0	4.0	4.0	3.8	3.8
01	46	RADIATOR AND/OR GROMMMET RADIATEUR ET/OU PASSE-FILS	1.6	1.6	1.0	1.4	1.4
01	50	CRANKSHAFT AND/OR BEARINGS (FRONT/REAR) VILEBREQUIN ET/OU ROULEMENTS (AVANT/ARRIÈRE)	7.0	7.0	7.3	6.7	6.7
01	56	CRANKCASE COVER GASKET JOINT DE COUVERCLE DE CARTER	1.3	1.3	1.3	1.3	1.3
01	57	PTO CRANKCASE COVER COUVERCLE DE CARTER PDM	1.3	1.3	1.3	1.3	1.3
01	58	INTAKE OR EXHAUST VALVE GUIDE (1) GUIDE DE SOUPAPE D'ADMISSION OU D'ÉCHAPPEMENT (1)	2.8	2.8	2.8	2.8	2.8
01	59	INTAKE OR EXHAUST VALVE GUIDES (2) GUIDES DE SOUPAPE D'ADMISSION OU D'ÉCHAPPEMENT (2)	2.9	2.9	2.9	2.9	2.9
01	70	MUFFLER AND/OR EXHAUST GASKET AND/OR CLAMP SILENCIEUX D'ÉCHAPPEMENT ET/OU JOINT D'ÉCHAPPEMENT ET/OU BRIDE DE SERRAGE	0.3	0.3	0.3	0.3	0.3
01	73	EXHAUST MANIFOLD (REAR) CONNECTEUR D'ÉCHAPPEMENT (ARRIÈRE)	0.5	0.5	0.5	0.5	0.5
01	77	RUBBER ISOLATOR ISOLATEUR DE CAOUTCHOUC	1.0	1.0	1.0	1.0	1.0

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
01	79	COOLANT HOSE (ENGINE TO TANK) BOYAU DU SYSTÈME DE REFROIDISSEMENT (RÉSERVOIR AU MOTEUR)	0.4	0.4	0.4	0.4	0.4
01	83	EXHAUST MANIFOLD (FRONT) CONNECTEUR D'ÉCHAPPEMENT (AVANT)	0.5	0.5	0.5	0.5	0.5
01	84	TUNE PIPE HEAT SHIELD (1) DÉFLECTEUR DE CHALEUR TUYAU D'ÉCHAPPEMENT (1)	0.3	0.3	0.3	0.3	0.3
01	85	TUNE PIPE HEAT SHIELD (2) DÉFLECTEUR DE CHALEUR TUYAU D'ÉCHAPPEMENT (2)	0.4	0.4	0.4	0.4	0.4
01	86	TUNE PIPE HEAT SHIELD (3) DÉFLECTEUR DE CHALEUR TUYAU D'ÉCHAPPEMENT (3)	0.4	0.4	0.4	0.4	0.4
01	88	RUBBER MOUNT (MUFFLER) TAMPON D'ANCRAGE (SILENCIEUX)	0.3	0.3	0.3	0.3	0.3
01	90	ENGINE OIL FILTER FILTRE À HUILE DU MOTEUR	0.3	0.3	0.3	0.3	0.3
01	96	OIL SIEVE AND/OR O-RING AND/OR COLLECTOR AND/OR RUBBER RING AND/OR COVER CRIBLE D'HUILE ET/OU JOINT TORIQUE ET/OU COLLECTEUR ET/OU ANNEAU DE CAOUTCHOUC ET/OU COUVERCLE	6.7	6.7	7.0	6.4	6.4
01	98	COOLING RESERVOIR RÉSERVOIR D'ANTIGEL	1.0	1.0	1.0	1.0	1.0
01	100	RADIATOR OUTLET HOSE BOYAU DE SORTIE DU RADIATEUR	0.4	0.4	0.4	0.4	0.4
01	101	PISTON, PIN, CIRCLIP, RINGS (1) PISTON, GOUPILLE, CIRCLIP, SEGMENTS (1)	3.0	3.0	3.0	3.0	3.0
01	102	PISTONS, PINS, CIRCLIPS, RINGS (2) PISTONS, GOUPILLES, CIRCLIPS, SEGMENTS (2)	4.7	4.7	4.7	4.7	4.7
01	109	VALVE COVER AND/OR GASKET COUVERCLE DE SOUPAPE ET/OU JOINT D'ÉTANCHÉITÉ	0.5	0.5	0.5	0.5	0.5
01	111	TIMING GEAR PIGNON DE DISTRIBUTION	1.2	1.2	1.2	1.2	1.2
01	113	ROCKER ARM AND/OR PUSH ROD AND/OR ROCKER ARM SHAFT CULBUTEUR ET/OU TIGE POUSSOIR ET/OU ARBRE DE CULBUTEUR	1.3	1.3	1.3	1.3	1.3
01	114	CYLINDER HEAD CULASSE	3.5	3.5	3.5	3.5	3.5
01	116	EXHAUST AND/OR INLET VALVE AND/OR SPRING AND/OR SEAL VALVE ADMISSION ET/OU ÉCHAPPEMENT ET/OU RESSORT ET/OU ANNEAU D'ÉTANCHÉITÉ	2.7	2.7	2.7	2.7	2.7
01	117	CYLINDER AND/OR GASKET CYLINDRE ET/OU JOINT D'ÉTANCHÉITÉ	2.8	2.8	2.8	2.8	2.8
01	119	WATER PUMP HOUSING AND/OR IMPELLER CARTER DE LA POMPE À EAU ET/OU ROUE À AILETTES	0.4	0.4	0.4	0.4	0.4
01	132	OIL PUMP GEAR ENGRENAGE DE LA POMPE À HUILE	1.5	1.5	1.5	1.5	1.5

SYSTEM SYSTEME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
01	134	CAMSHAFT ARBRE À CAME	2.3	2.3	2.3	2.3	2.3
01	137	OIL PUMP COVER AND/OR SHAFT AND/OR ROTOR COUVERCLE DE LA POMPE À HUILE ET/OU ARBRE ET/OU ROTOR	1.5	1.5	1.5	1.5	1.5
01	138	CRANKCASE RESEAL OR GASKET RECELLEMENT DU CARTER ET/OU JOINT D'ÉTANCHÉITÉ	6.9	6.9	7.2	6.6	6.6
01	139	CRANKCASE REPLACEMENT REMPLACEMENT DU CARTER	7.2	7.2	7.5	6.9	6.9
01	152	DRIVE SHAFT AND/OR BEARINGS AND/OR SEALS ARBRE D'ENTRAÎNEMENT ET/OU ROULEMENT À BILLES ET/OU ANNEAUX D'ÉTANCHÉITÉ	6.9	6.9	7.2	6.6	6.6
01	154	TIMING CHAIN CHAÎNE D'ENGRENAGE	3.1	3.1	3.1	3.1	3.1
01	179	CHAIN GUIDE GUIDE DE CHAÎNE	1.0	1.0	1.0	1.0	1.0
01	182	OIL RADIATOR AND/OR O-RING RADIATEUR D'HUILE ET/OU JOINT TORIQUE	1.7	1.7	1.7	1.7	1.7
01	191	CHAIN TENSION GUIDE GUIDE DE TENSION DE CHAÎNE	3.1	3.1	3.1	3.1	3.1
01	192	CHAIN TENSIONER (ASS'Y) TENDEUR DE CHAÎNE (COMPLET)	0.3	0.3	0.3	0.3	0.3
01	196	HEAT SHIELD (RH OR LH) DÉFLECTEUR DE CHALEUR (DR OU GA)		0.5	0.5		
01	200	WATER PUMP GEAR ENGRENAGE DE LA POMPE À EAU	1.6	1.6	1.6	1.6	1.6
01	205	REAR OUTPUT SHAFT SEAL ANNEAU D'ÉTANCHÉITÉ DE L'ARBRE DE SORTIE ARRIÈRE	5.2	5.2	5.5	4.9	4.9
01	215	OIL DIPSTICK JAUGE À HUILE	0.3	0.3	0.3	0.3	0.3
01	216	PRESSURE CAP BOUCHON À PRESSION	0.3	0.3	0.3	0.3	0.3
01	217	ENGINE BRACKET AND/OR RUBBER MOUNT ATTACHE MOTEUR ET/OU TAMPON D'ANCRAGE	0.3	0.3	0.3	0.3	0.3
01	220	MAIN DRIVE GEAR AND/OR PIN ROUAGE D'ENTRAÎNEMENT PRINCIPALE ET/OU GOUPILLE	1.6	1.6	1.6	1.6	1.6
01	221	INTERMEDIATE GEAR AND/OR PIN AND/OR THRUST WASHER ROUAGE INTERMEDIAIRE ET/OU GOUPILLE ET/OU RONDELLE D'APPUI	1.6	1.6	1.6	1.6	1.6
01	223	FRONT OUTPUT SHAFT SEAL ANNEAU ÉTANCHÉITÉ ARBRE SORTIE AVANT	2.7	2.7	2.7	2.7	2.7
01	245	OUTPUT CRANKSHAFT SEAL (PTO SIDE) ANNEAU ÉTANCHÉITÉ SORTIE VILBREQUIN (CÔTÉ PDM)	0.6	0.6	0.6	0.6	0.6
01	246	WATER PUMP GEAR AND/OR SEAL ARBRE POMPE À EAU ET/OU JOINT ÉTANCHÉITÉ	5.5	5.5	5.8	5.2	5.2

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
01	247	REED VALVE AND/OR STOPPER SOUPAPE À CLAPET ET/OU BUTOIR	1.6	1.6	1.6	1.6	1.6
01	248	BREATHER GEAR AND/OR V-RING RENIFLARD ET/OU ANNEAU ÉTANCHÉITÉ EN «V»	1.6	1.6	1.6	1.6	1.6
01	249	CAMSHAFT POSITION SENSOR CAPTEUR DE POSITION DE L'ARBRE À CAME	0.3	0.3	0.3	0.3	0.3
01	250	CRANKSHAFT POSITION SENSOR (CPS) CAPTEUR DE POSITION DU VILEBREQUIN (CPV)	0.3	0.3	0.3	0.3	0.3
01	255	EXHAUST AND/OR INLET VALVES AND/OR SPRINGS AND/OR SEALS (4) ÉCHAPPEMENT ET/OU VALVES ADMISSION ET/OU RESSORTS ET/OU ANNEAUX D'ÉTANCHÉITÉ (4)	3.3	3.3	3.3	3.3	3.3
01	256	EXHAUST AND/OR INLET VALVES AND/OR SPRINGS AND/OR SEALS (8) ÉCHAPPEMENT ET/OU VALVES ADMISSION ET/OU RESSORTS ET/OU ANNEAUX D'ÉTANCHÉITÉ (8)	6.4	6.4	6.1	6.1	6.1
01	261	TIMING CHAIN (MAG SIDE) CHAÎNE D'ENGRENAGE (CÔTÉ MAG)	2.8	2.8	2.8	2.8	2.8
01	264	LONG BLOCK ENSEMBLE CARTER - CYLINDRE - CULASSE	6.7	6.7	7.0	6.4	6.4
01	301	WATER PUMP DYNAMIC SEAL AND/OR OIL SEAL ANNEAU D'ÉTANCHÉITÉ DYNAMIQUE DE LA POMPE À EAU	2.1	2.1	2.1	2.1	2.1
01	303	TIMING CHAINS (ALL) CHAÎNES D'ENGRENAGE (TOUTES)	5.3	5.3	5.3	5.3	5.3
01	304	CHAINS TENSION GUIDE (ALL) GUIDE DE TENSION DE CHAÎNES (TOUS)	5.3	5.3	5.3	5.3	5.3
01	305	CHAINS GUIDE (ALL) GUIDE DE CHAÎNES (TOUS)	1.8	1.8	1.8	1.8	1.8
01	307	VALVE COVERS AND/OR GASKETS (2) COUVERCLES SOUPAPE ET/OU JOINTS D'ÉTANCHÉITÉ (2)	0.6	0.6	0.6	0.6	0.6
01	308	CYLINDER HEAD GASKET (1) JOINT D'ÉTANCHÉITÉ DE LA CULASSE (1)	1.4	1.4	1.4	1.4	1.4
01	309	CYLINDER HEAD GASKETS (2) JOINTS D'ÉTANCHÉITÉ DE LA CULASSE (2)	2.3	2.3	2.3	2.3	2.3
01	316	MUFFLER END CAP EMBOUT DE SILENCIEUX	0.3	0.3	0.3	0.3	0.3
01	318	RADIATOR SUPPORT SUPPORT DE RADIATEUR			0.4		
01	324	FAN SUPPORT SUPPORT DU VENTILATEUR			0.5		
01	333	RADIATOR COVER COUVERCLE DE RADIATEUR			0.3		
01	334	FILLER NECK AND/OR HOSE GOULOT REMPLISSAGE ET/OU BOYAU			1.1		

SYSTEM SYSTEME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
01	336	COOLANT HOSE (ENGINE INLET) BOYAU DE REFROIDISSEMENT (ENTRÉE DU MOTEUR)	0.4	0.4	0.4	0.4	0.4
01	340	PLUG SCREW BOUCHON FILETÉ	0.5	0.5	0.5	0.5	0.5
01	353	INJECTORS (ALL) INJECTEURS (TOUS)	1.9	1.9	1.9	1.6	1.6

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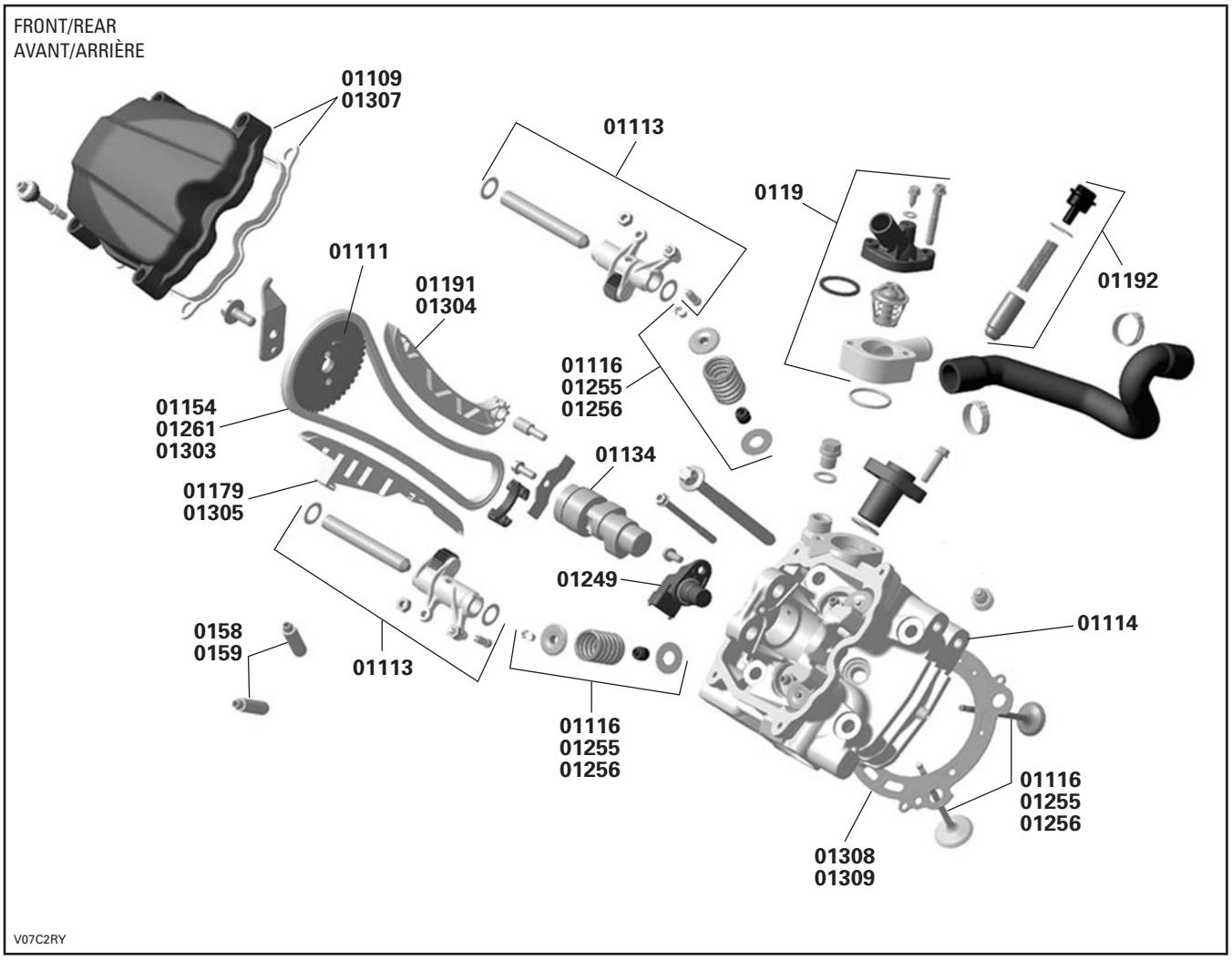
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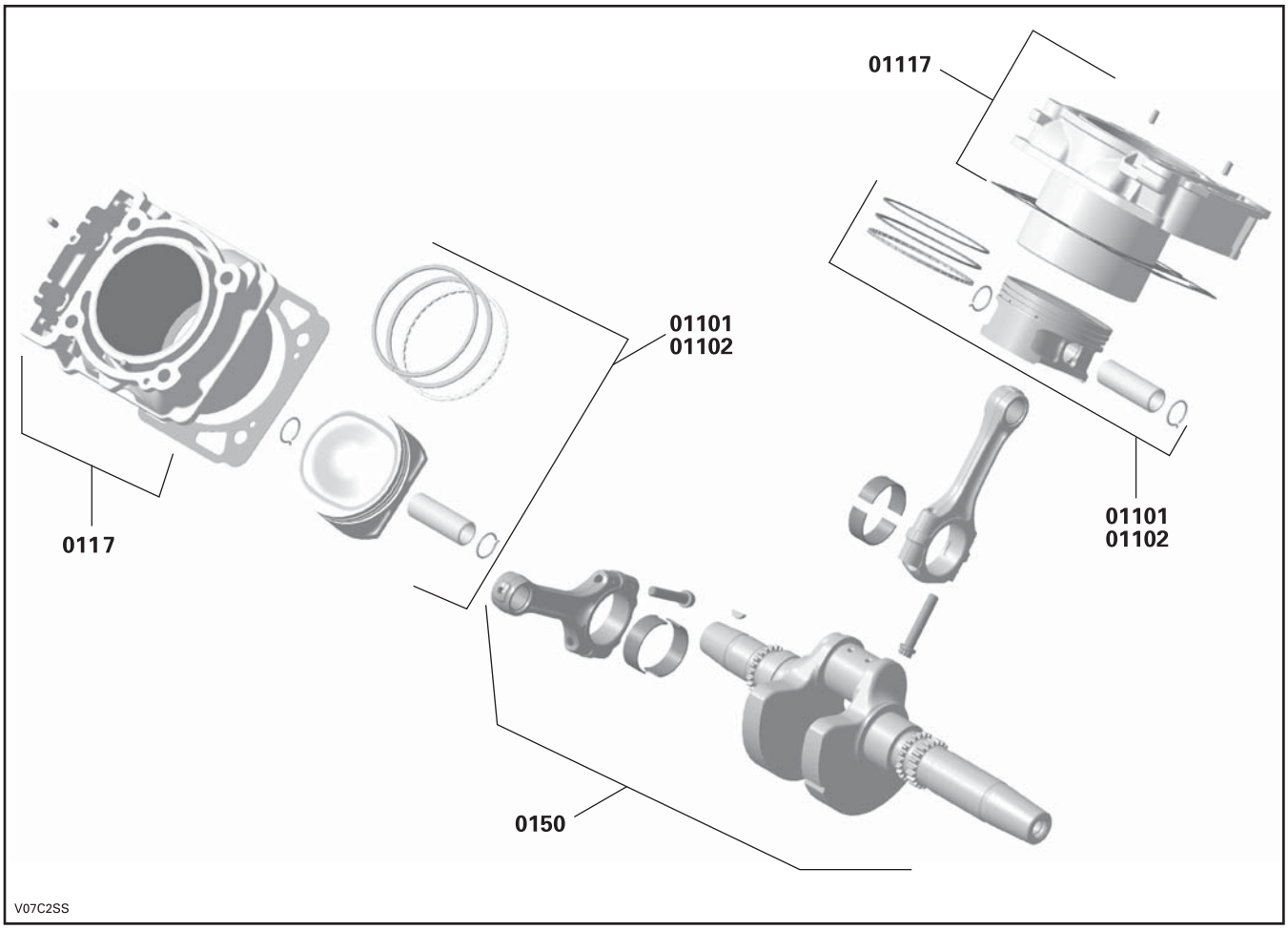
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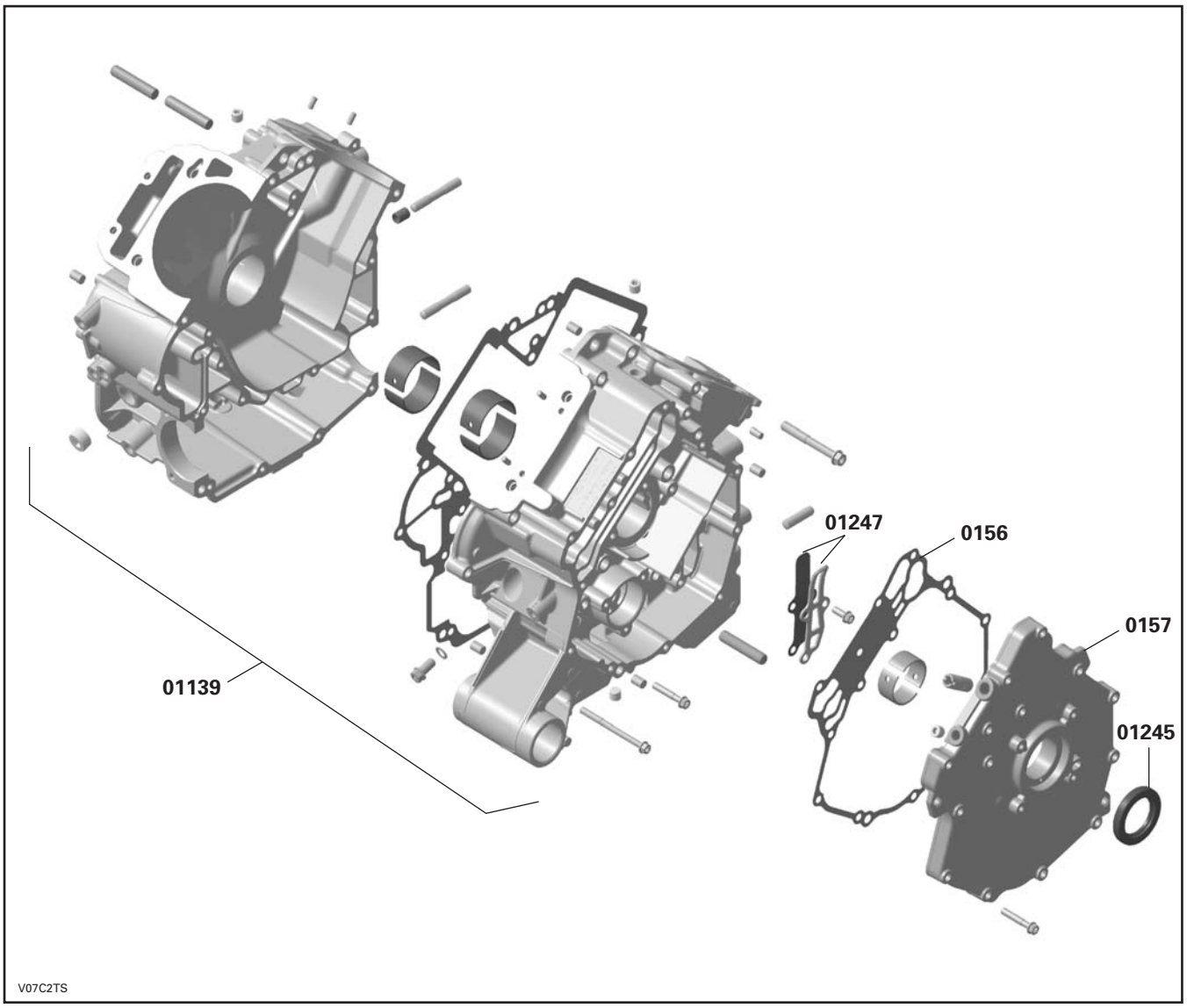
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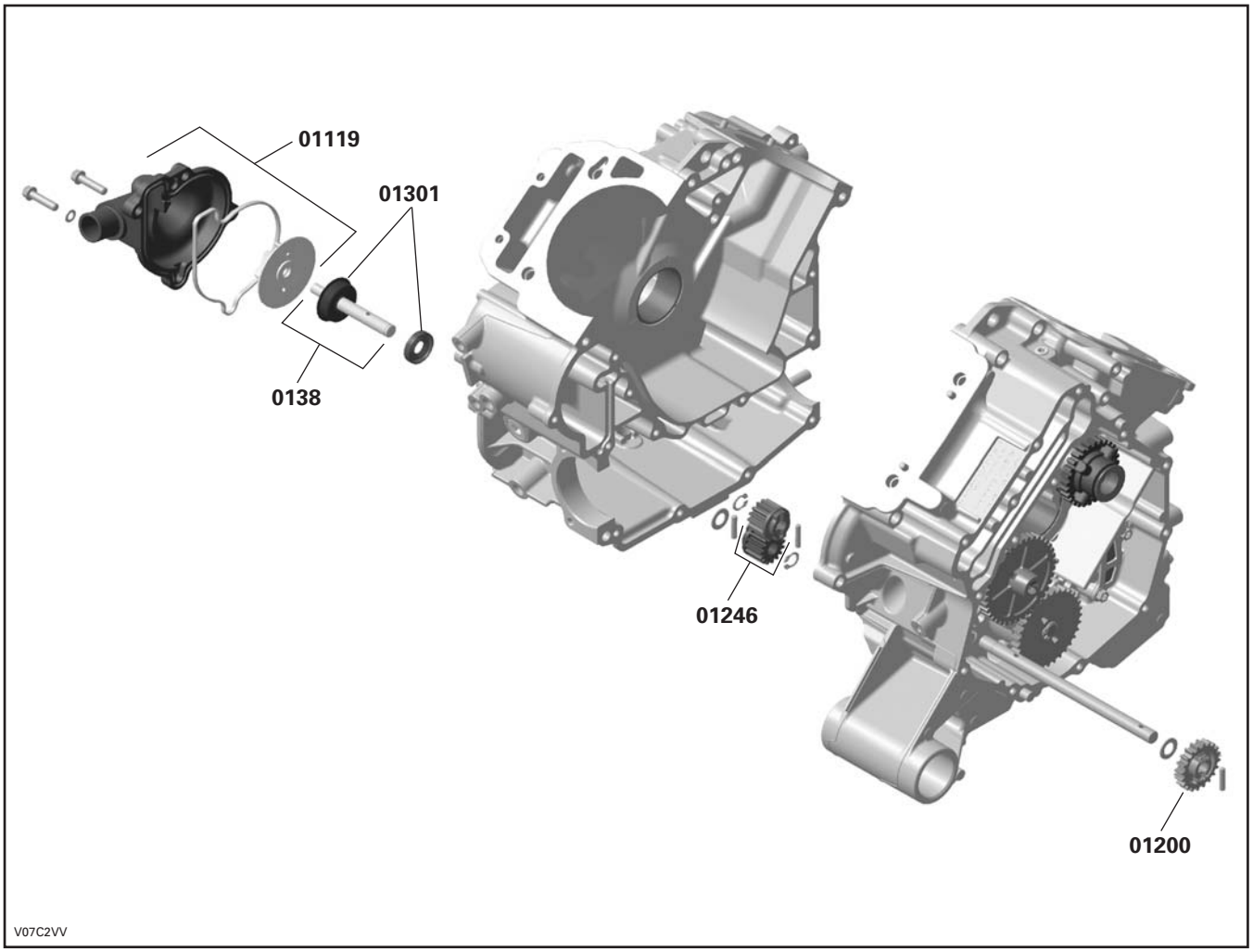
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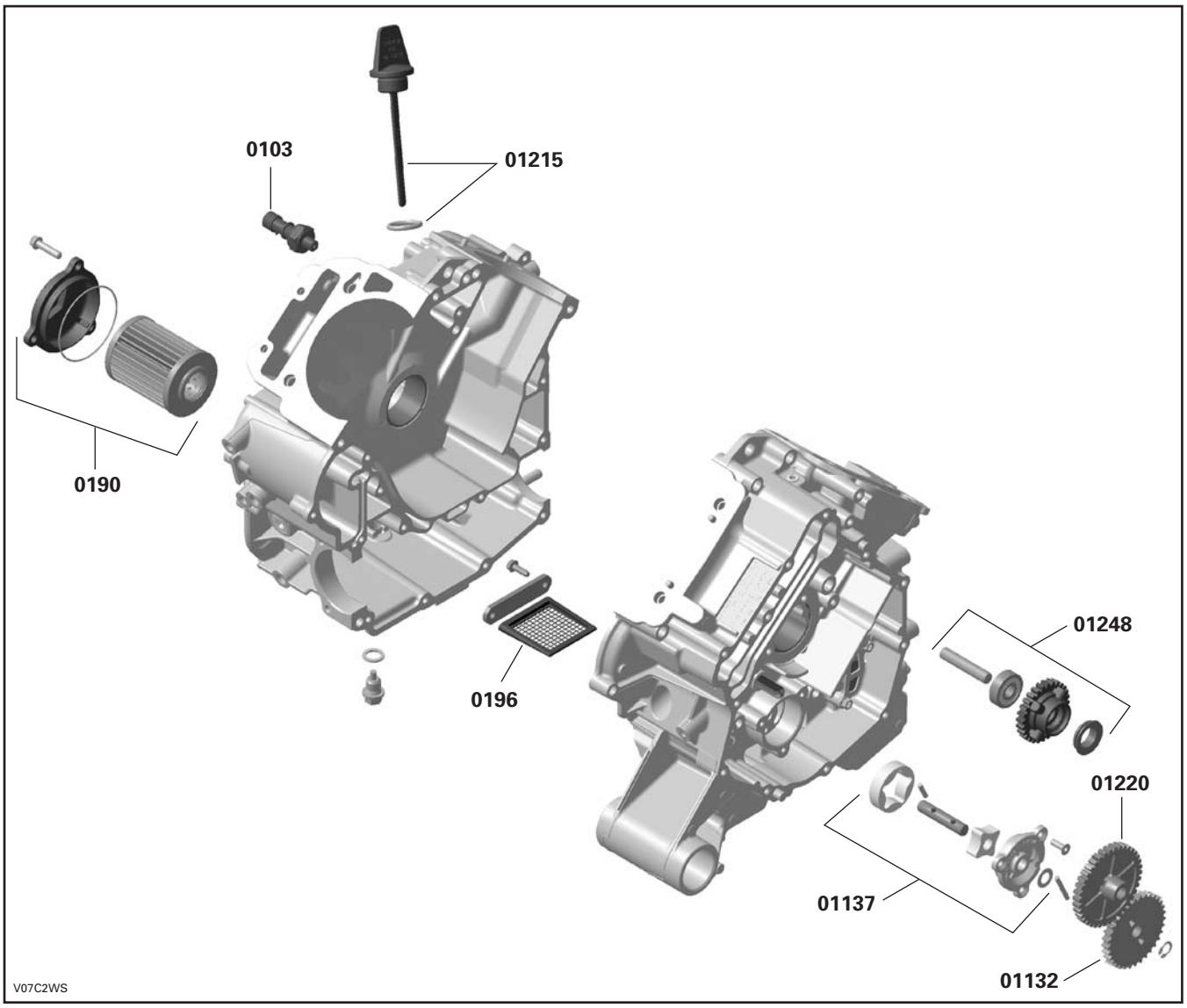
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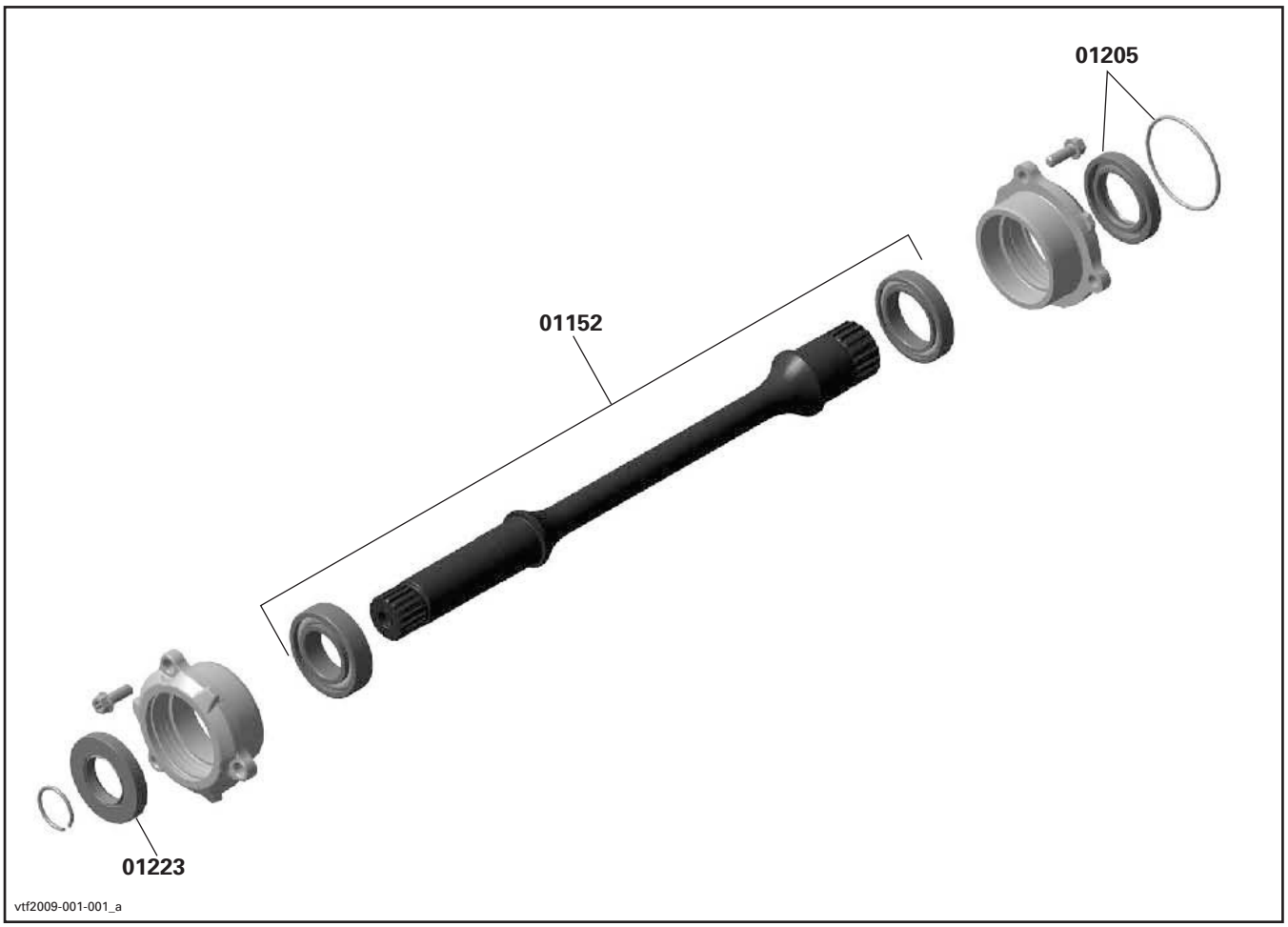
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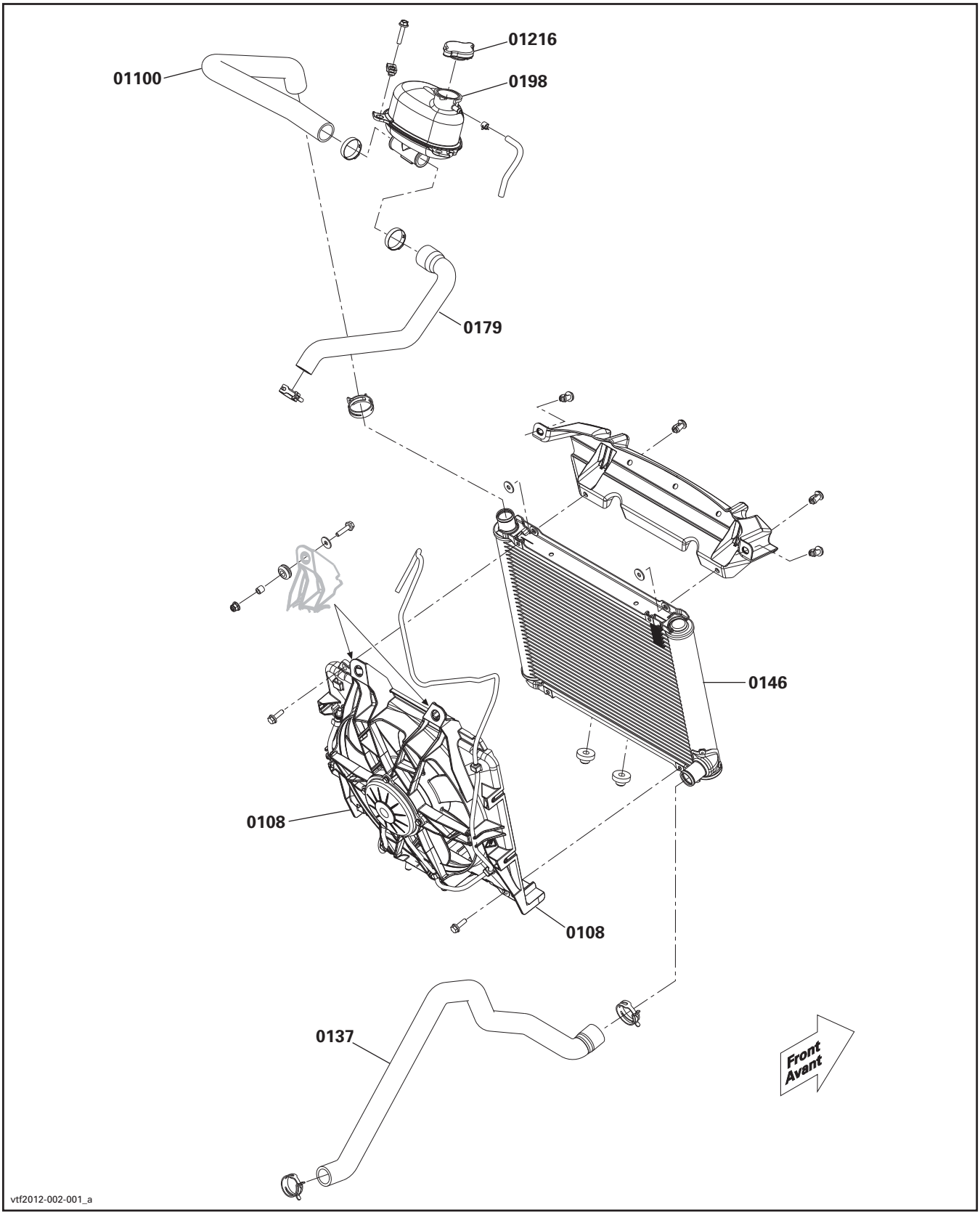
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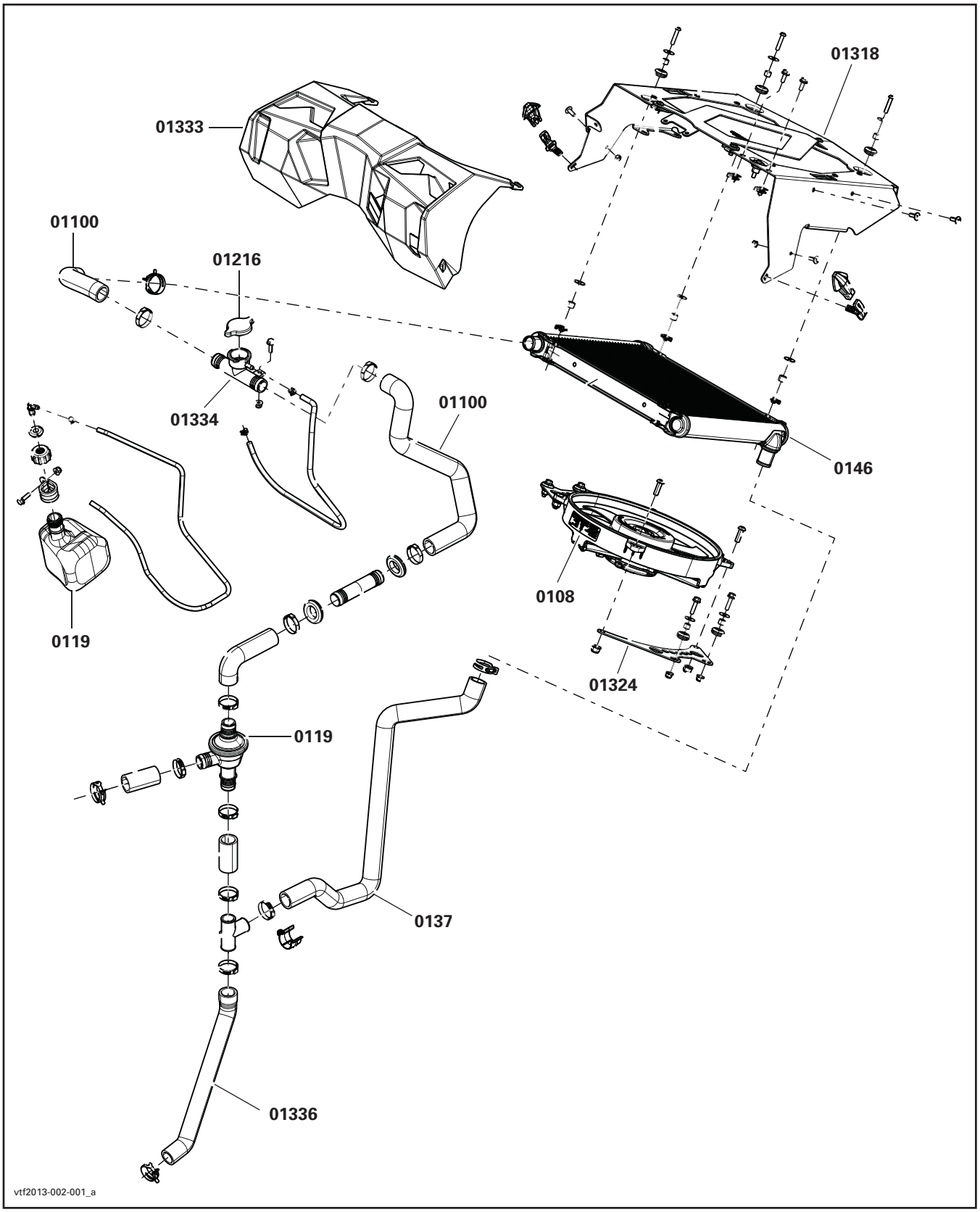
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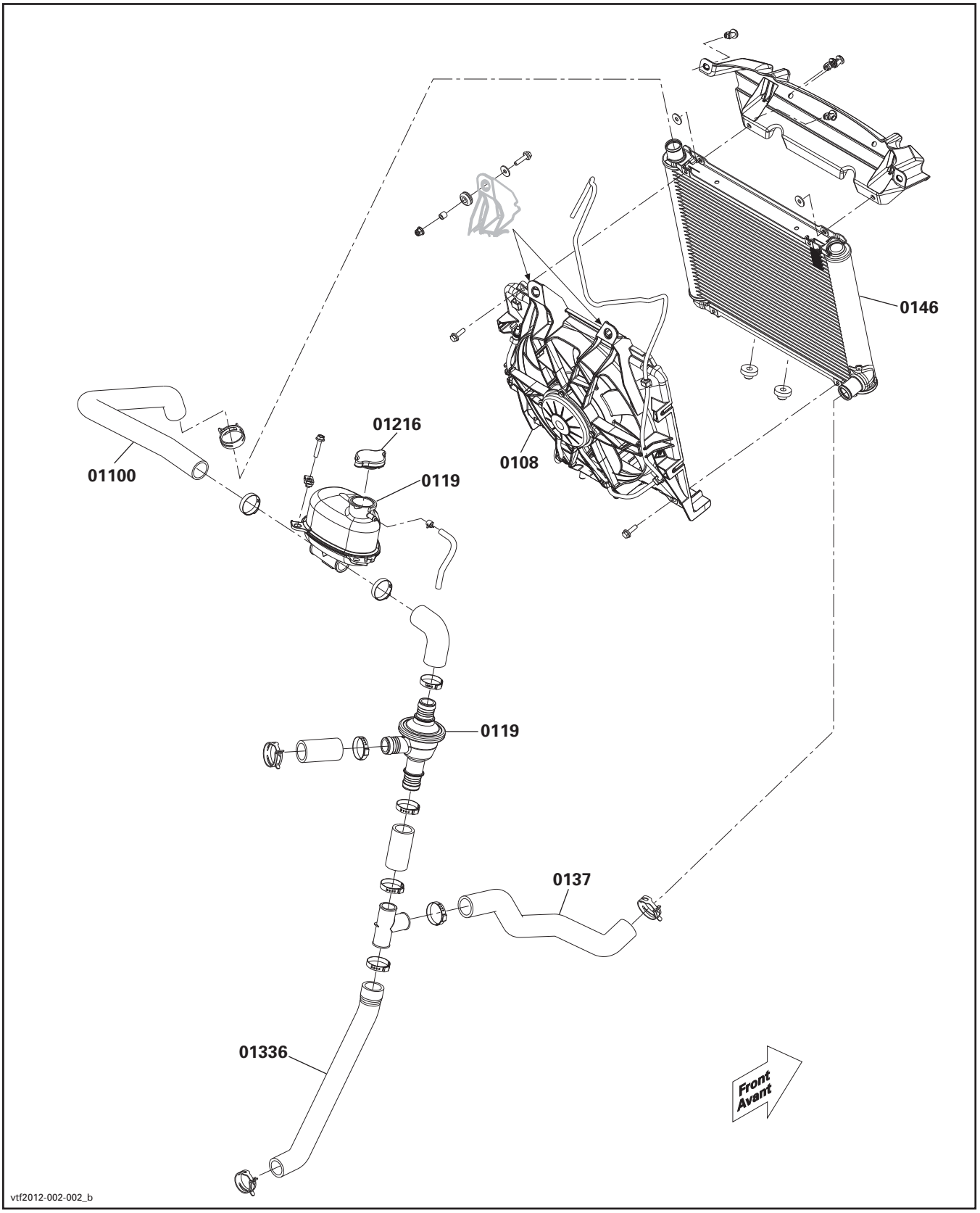
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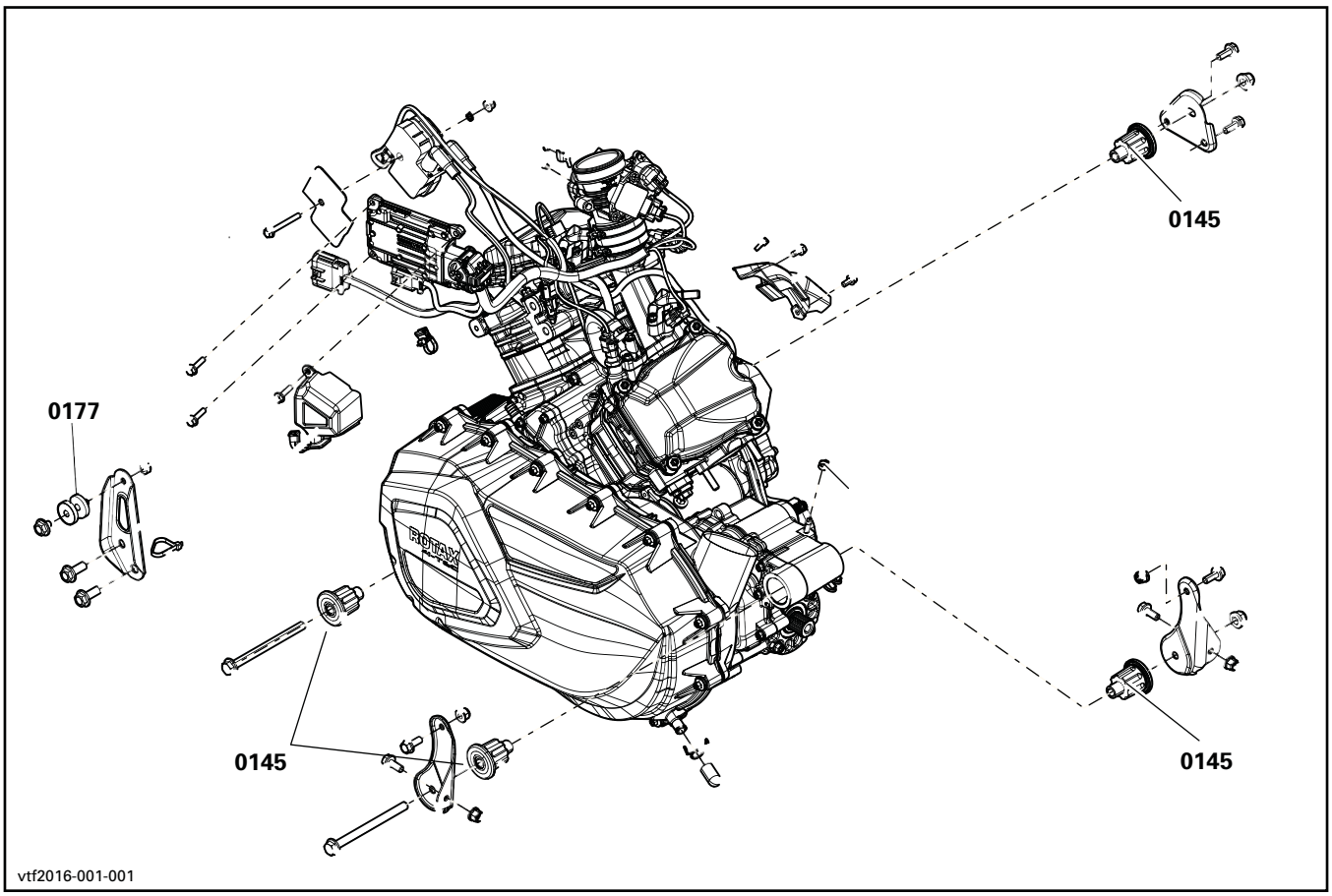
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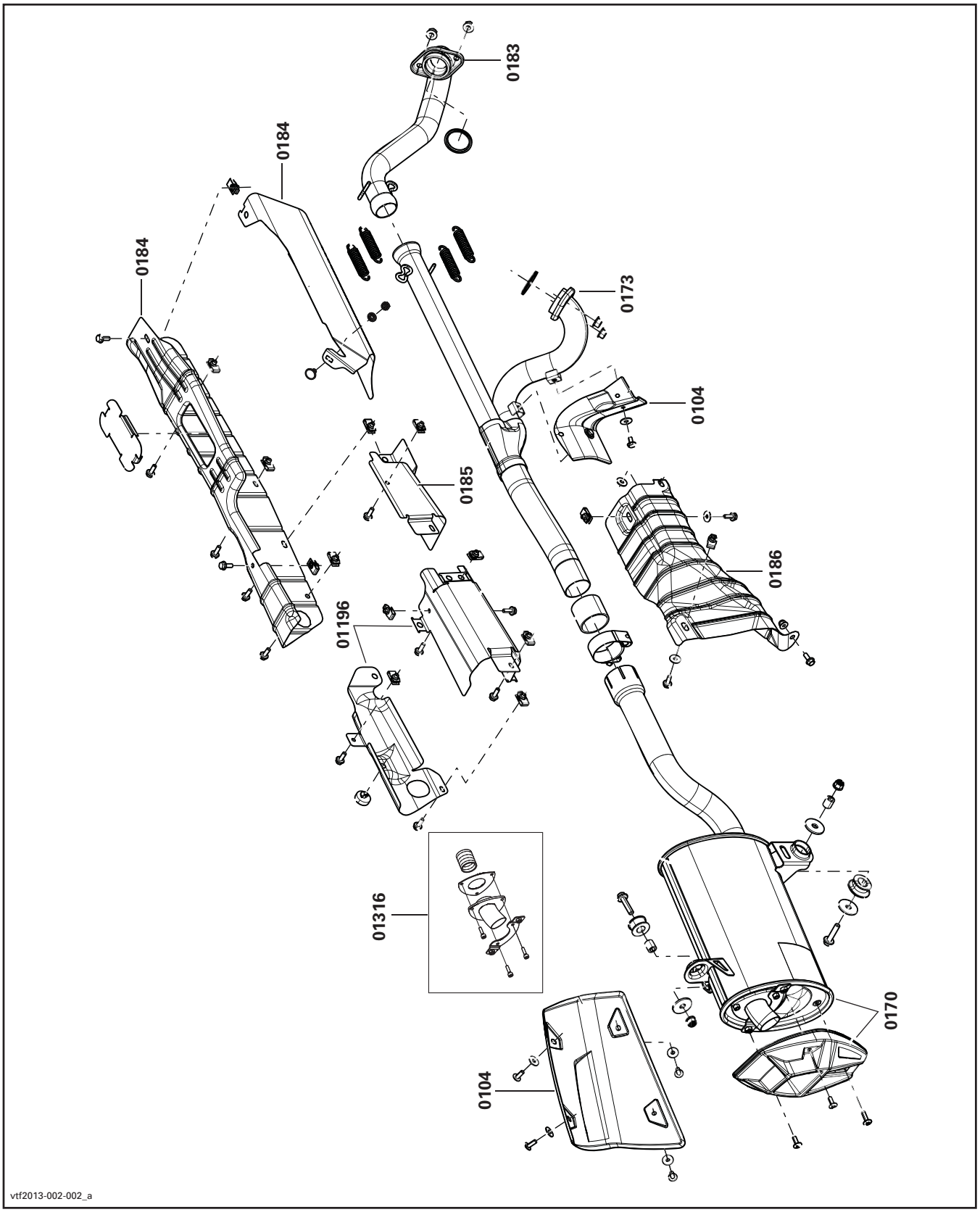
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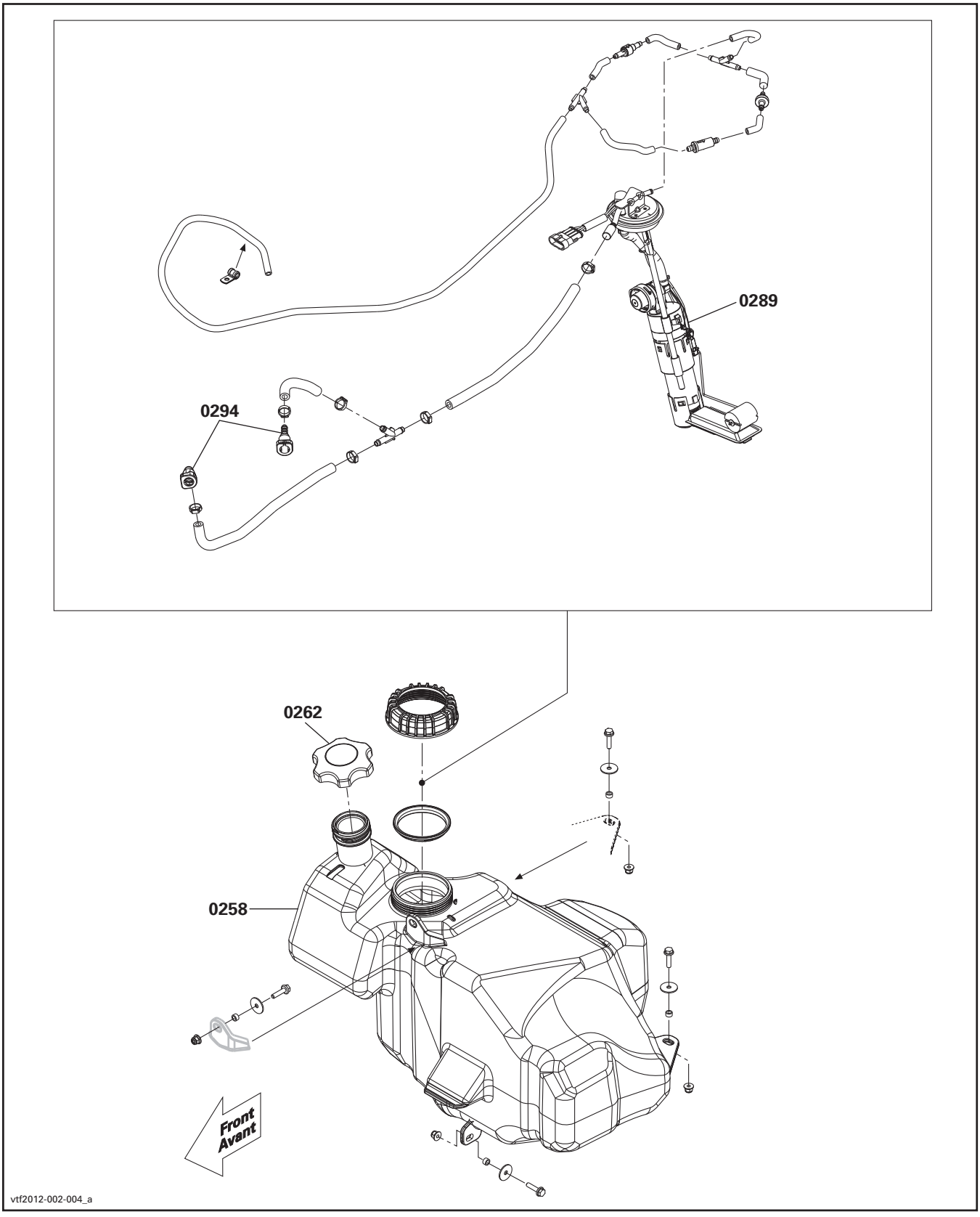
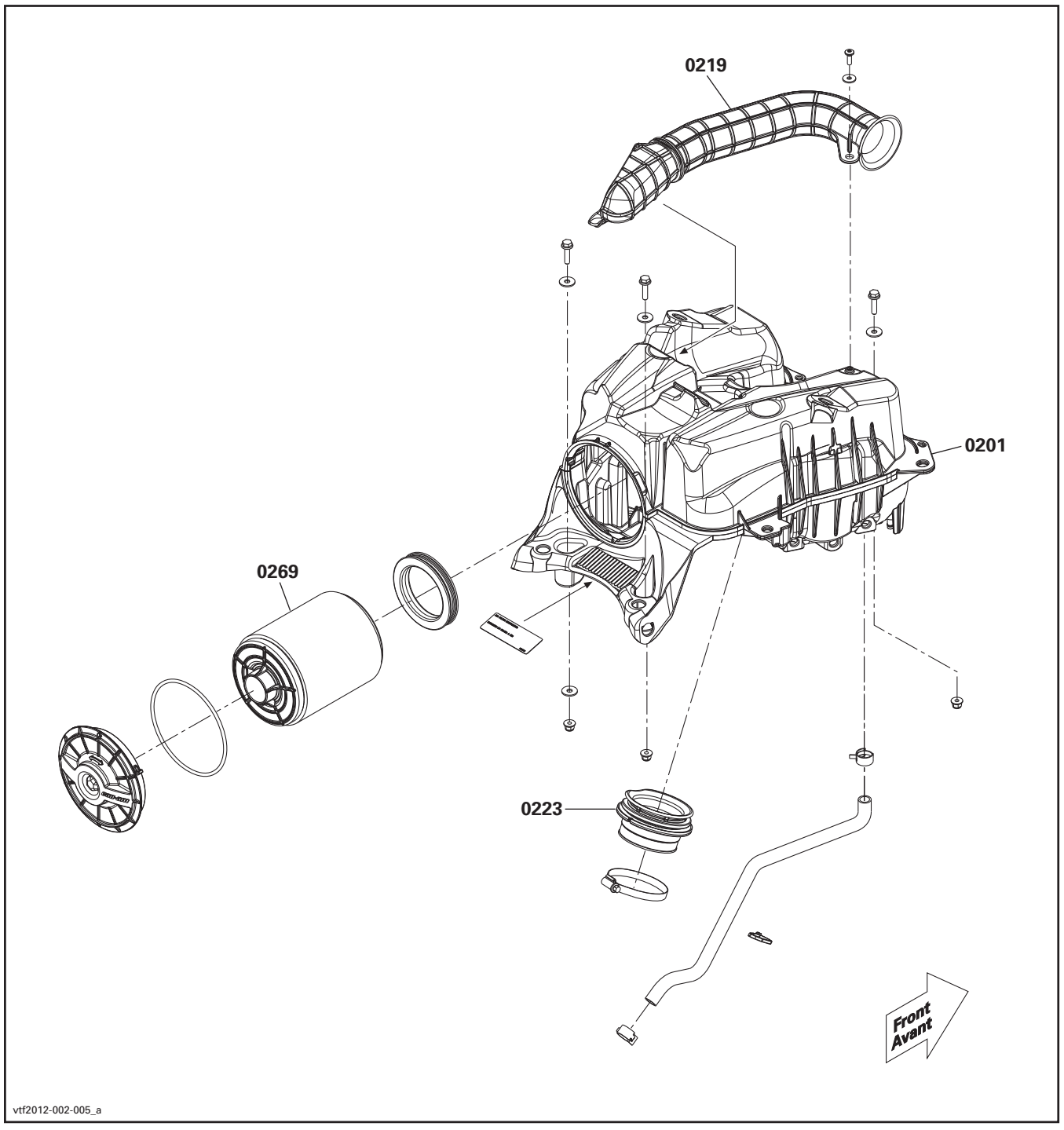
SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
02	**00**	**NO LABOR INVOLVED** **AUCUNE MAIN D'OEUVRE**	**0**	**0**	**0**	**0**	**0**
02	01	AIR INTAKE SILENCER (ASS'Y) SILENCIEUX D'ADMISSION D'AIR (COMPLET)	1.8	1.8	1.8	1.5	1.5
02	06	THROTTLE CABLE CÂBLE D'ACCÉLÉRATEUR	0.6	0.6	0.6	0.6	0.6
02	16	INTAKE ADAPTOR ADAPTATEUR D'ADMISSION	1.0	1.0	1.0	1.0	1.0
02	19	AIR INTAKE TUBE TUYAU D'ADMISSION D'AIR	1.0	1.0	1.3	1.0	1.0
02	23	REAR AIR INTAKE TUBE AND/OR SLEEVE TUYAU D'ADMISSION D'AIR ARRIÈRE ET/OU DOUILLE	1.8	1.8	2.2	1.5	1.5
02	46	AIR TEMPERATURE SENSOR CAPTEUR DE TEMPÉRATURE D'AIR	0.3	0.3	0.3	0.3	0.3
02	57	FUEL FILTER FILTRE À ESSENCE	1.0	1.0	1.0	1.0	1.0
02	58	FUEL TANK RÉSERVOIR D'ESSENCE	1.6	1.6	1.6	1.6	1.6
02	59	INTAKE COVER AND/OR SEAL COUVERCLE D'ADMISSION ET/OU JOINT D'ÉTANCHÉITÉ	0.3	0.3	0.3	0.3	0.3
02	60	FUEL CAP BOUCHON DU RÉSERVOIR À ESSENCE	0.3	0.3	0.3	0.3	0.3
02	69	AIR FILTER FILTRE À AIR	0.3	0.3	0.3	0.3	0.3
02	72	INTAKE MANIFOLD CONNECTEUR D'ADMISSION	1.9	1.9	1.9	1.6	1.6
02	79	FUEL RAIL (1 OR 2) RAMPE D'ESSENCE (1 OU 2)	1.9	1.9	1.9	1.6	1.6
02	81	THROTTLE BODY (ASS'Y) CARTER ACCÉLÉRATEUR (COMPLET)	1.7	1.7	2.0	1.4	1.4
02	82	THROTTLE SENSOR CAPTEUR POSITION D'ACCÉLÉRATEUR	1.5	1.5	1.5	1.2	1.2
02	84	IDLE BY-PASS VALVE VALVE DU RALENTI	1.5	1.5	1.5	1.2	1.2
02	89	FUEL PUMP MODULE MODULE POMPE À ESSENCE	1.0	1.0	1.0	1.0	1.0
02	94	FEMALE QUICK FITTING CONNECTEUR RAPIDE FEMELLE	0.4	0.4	0.4	0.4	0.4
02	99	FUEL INJECTION HOSE (ASS'Y) BOYAU À INJECTION D'ESSENCE (COMPLET)	0.4	0.4	0.4	0.4	0.4

CARBURETOR AND FUEL SYSTEM
CARBURATEUR ET SYSTÈME D'ALIMENTATION D'ESSENCE

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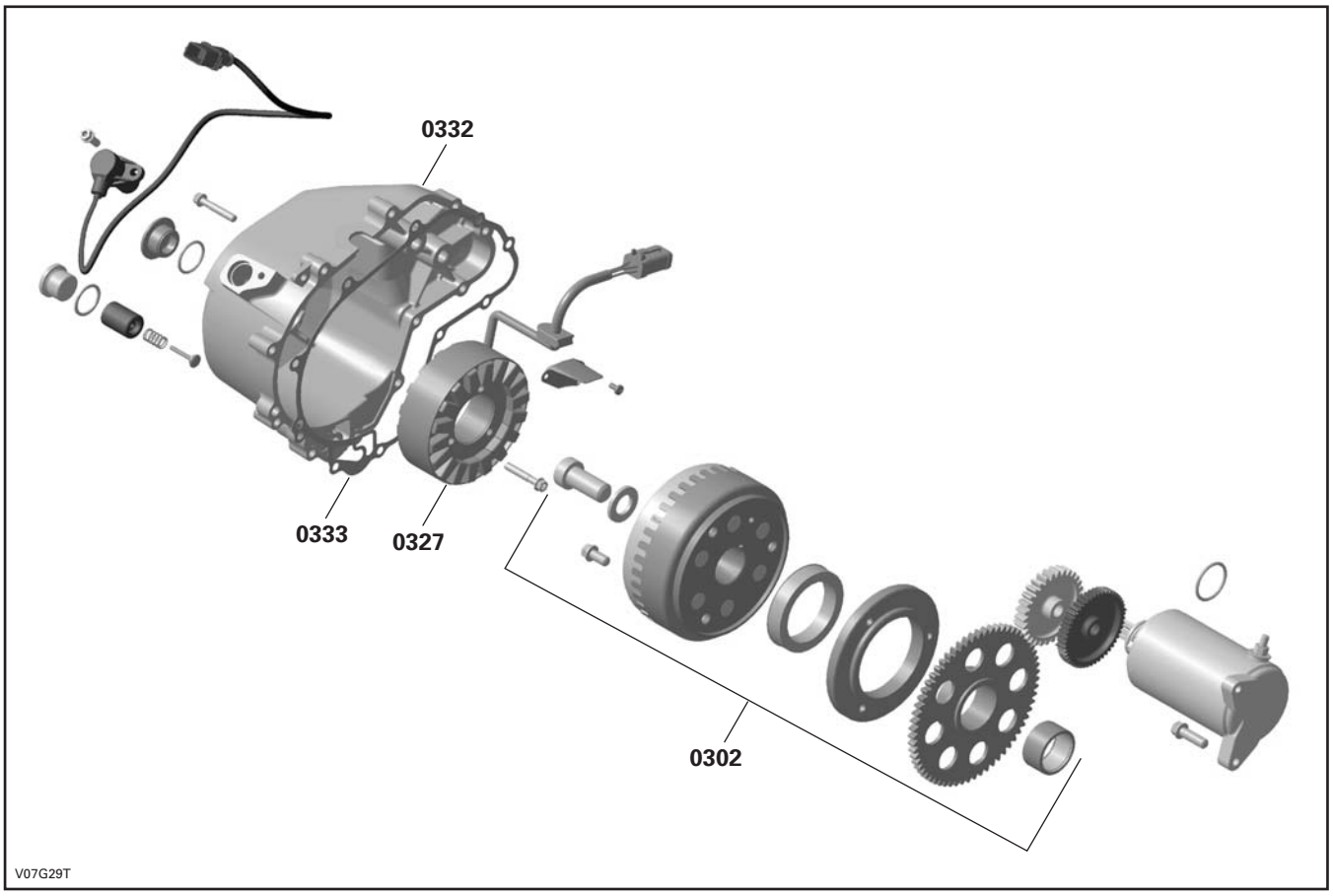
IGNITION SYSTEM
SYSTÈME D'ALLUMAGE

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
03	**00**	**NO LABOR INVOLVED AUCUNE MAIN D'OEUVRE**	**0**	**0**	**0**	**0**	**0**
03	02	MAGNETO (ASS'Y) MAGNÉTO (COMPLET)	2.3	2.3	2.3	2.3	2.3
03	08	IGNITION COIL (EACH) BOBINE D'ALLUMAGE (CHAQUE)	0.5	0.5	0.5	0.5	0.5
03	10	IGNITION CABLE CÂBLE D'ALLUMAGE	0.5	0.5	0.5	0.5	0.5
03	27	STATOR (ASS'Y) STATOR (COMPLET)	2.0	2.0	2.0	2.0	2.0
03	32	MAGNETO COVER COUVERCLE DE MAGNÉTO	2.1	2.1	2.1	2.1	2.1
03	33	MAGNETO COVER GASKET JOINT D'ÉTANCHÉITÉ COUVERCLE DE MAGNÉTO	2.0	2.0	2.0	2.0	2.0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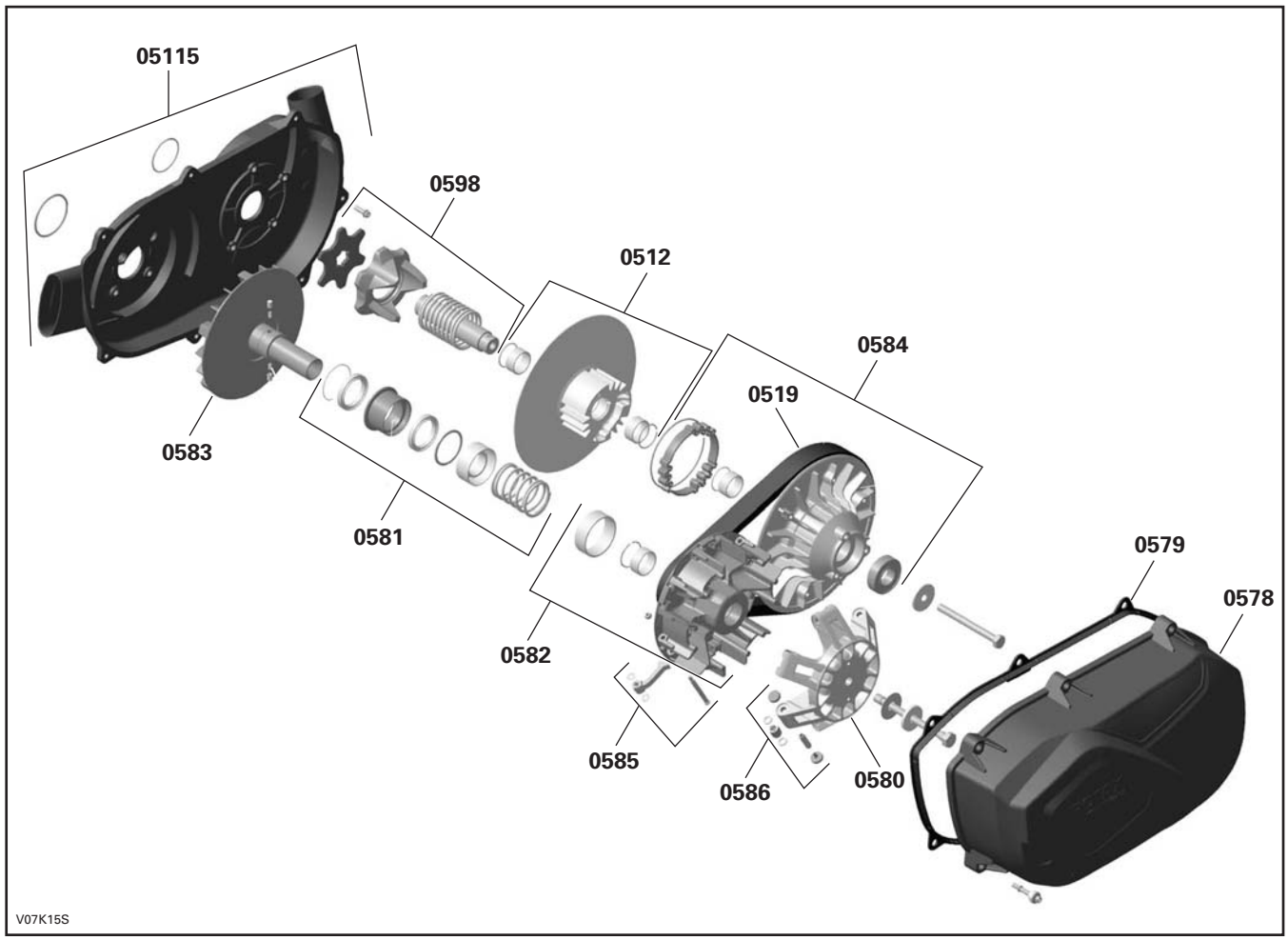
STARTER SYSTEM
SYSTÈME DE DÉMARREUR

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
04	**00**	**NO LABOUR INVOLVED AUCUNE MAIN-D'OEUVRE**	**0**	**0**	**0**	**0**	**0**
04	02	ELECTRIC STARTER (ASS'Y) DÉMARREUR (COMPLET)	1.6	1.6	1.6	1.6	1.6
04	03	STARTER RELAY SOLÉNOÏDE DE DÉMARRAGE	0.3	0.3	0.3	0.3	0.3
04	19	STARTER DRIVE LANCEUR DÉMARREUR	1.9	1.9	1.9	1.9	1.9

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENAGADE XMR
			6	7	8	9	10
05	**00**	**NO LABOR INVOLVED AUCUNE MAIN-D'OEUVRE IMPLIQUÉE**	**0**	**0**	**0**	**0**	**0**
05	12	DRIVEN PULLEY SLIDING HALF DEMI-POULIE MENÉE COULISSANTE	0.5	0.6	0.6	0.5	0.5
05	19	BELT COURROIE	0.4	0.5	0.5	0.4	0.4
05	55	LEVER BUTTON BOUTON DE LEVIER	0.3	0.3	0.3	0.3	0.3
05	56	LEVER (ASS'Y) AND/OR LEVER SPRING LEVIER (COMPLET) ET/OU RESSORT DE LEVIER	0.3	0.3	0.3	0.3	0.3
05	59	SPEED SENSOR CAPTEUR DE VITESSE	0.6	0.6	0.6	0.6	
05	77	LEVER LEVIER	0.7	0.7	0.7	0.7	0.7
05	78	CVT COVER COUVERCLE CVC	0.3	0.4	0.4	0.3	0.3
05	79	GASKET JOINT D'ÉTANCHÉITÉ	0.3	0.4	0.4	0.3	0.3
05	80	GOVERNOR CUP COUPOLE RÉGULATEUR	0.6	0.7	0.7	0.6	0.6
05	81	ONE WAY CLUTCH, FLANGE, RING, SPRING EMBRAYAGE À ROUE LIBRE, FLASQUE, ANNEAU, RESSORT	0.6	0.7	0.7	0.6	0.6
05	82	DRIVE PULLEY (ASS'Y) POULIE MOTRICE (COMPLET)	0.7	0.8	0.8	0.7	0.7
05	83	DRIVE PULLEY FIXED HALF POULIE MOTRICE FIXE	0.7	0.8	0.8	0.7	0.7
05	84	DRIVEN PULLEY OUTER CAM AND/OR SPRING CAME DE POULIE MENÉE EXTERNE ET/OU RESSORT	0.5	0.6	0.6	0.5	0.5
05	85	CENTRIFUGAL LEVER LEVIER CENTRIFUGE	0.8	0.9	0.9	0.8	0.8
05	86	SLIDER SHOES GLISSIÈRES	0.7	0.8	0.8	0.7	0.7
05	87	LEVER SPRING LEVIER À RESSORT	0.3	0.3	0.3	0.3	0.3
05	89	REMOVE AND REPLACE TRANSMISSION (ASS'Y) REMPLACEMENT DE LA TRANSMISSION (COMPLET)	5.1	5.1	5.4	4.8	4.8
05	91	MAIN SHAFT (ASS'Y) ARBRE DE RENVOI (COMPLET)	6.7	6.7	7.0	6.7	6.7
05	95	AIR INTAKE (CVT) ENTRÉE D'AIR (CVT)	0.3	0.3	0.4	0.3	0.3
05	96	AIR OUTLET (CVT) SORTIE D'AIR (CVT)	0.3	0.3	0.4	0.3	0.3

TRANSMISSION AND LINKAGE SYSTEM
SYSTÈME DE TRANSMISSION ET DE TRINGLERIE

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENAGADE XMR
			6	7	8	9	10
05	97	FLEXIBLE ADAPTOR ADAPTATEUR FLEXIBLE	0.3	0.3	0.3	0.3	0.3
05	98	CAM, PLATE, DRIVEN SHAFT, SPRING CAME, PLAQUE, ARBRE POULIE MENÉE, RESSORT	0.5	0.6	0.6	0.5	0.5
05	99	OUTPUT SHAFT ARBRE DE SORTIE	5.9	5.9	6.2	5.6	5.6
05	100	REAR OUTPUT SHAFT SEALS ANNEAUX ÉTANCHÉITÉ DE L'ARBRE DE SORTIE ARRIÈRE	2.2	2.2	2.2	2.2	2.2
05	101	GEARS KIT/MAIN SHAFT ENSEMBLE D'ENGRENAGES/ARBRE PRINCIPAL	6.0	6.0	6.3	5.7	5.7
05	102	SHIFT SHAFT (ASS'Y) ARBRE D'EMBRAYAGE (COMPLET)	6.0	6.0	6.3	5.7	5.7
05	103	SHIFT DRUM TAMBOUR D'EMBRAYAGE	6.0	6.0	6.3	5.7	5.7
05	104	INDEX LEVER (ASS'Y) LEVIER D'INDEXATION (COMPLET)	6.0	6.0	6.3	5.7	5.7
05	105	MAIN SHAFT SEAL JOINT D'ÉTANCHÉITÉ DE L'ARBRE PRINCIPAL	0.9	0.9	0.9	0.9	0.9
05	106	LH HOUSING GEAR AND/OR BEARINGS AND/OR GEAR LOGEMENT DE TRANSMISSION GAUCHE ET/OU ROULEMENT À BILLE ET/OU ENGRENAGE	6.0	6.0	6.3	5.7	5.7
05	107	SPACER AND/OR O-RING ENTRETOISE ET/OU JOINT TORIQUE	0.9	0.9	0.9	0.9	0.9
05	108	ACTUATOR AND/OR FORK AND/OR SEAL ACTUATEUR ET/OU FOURCHETTE ET/OU JOINT D'ÉTANCHÉITÉ	0.5	0.5	0.5	0.5	0.5
05	109	FORK AND/OR PIN FOURCHETTE ET/OU GOUPILLE	0.7	0.7	0.7	0.7	0.7
05	110	CENTER HOUSING GEAR AND/OR BEARING LOGEMENT DE TRANSMISSION CENTRE ET/OU ROULEMENT	6.0	6.0	6.3	5.7	5.7
05	111	RH HOUSING GEAR AND/OR BEARING LOGEMENT DE TRANSMISSION DROIT ET/OU ROULEMENT	5.9	5.9	6.2	5.6	5.6
05	113	SHIFTING SWITCH INTERRUPTEUR D'EMBRAYAGE	0.3	0.3	0.3	0.3	0.3
05	114	SHIFT SHAFT SEAL JOINT D'ÉTANCHÉITÉ D'ARBRE D'EMBRAYAGE	0.7	0.7	0.7	0.7	0.7
05	115	CVT AIR GUIDE AND/OR O-RINGS GUIDE D'AÉRATION ET/OU JOINT D'ÉTANCHÉITÉ	0.8	0.8	0.8	0.8	0.8
05	120	GEARBOX POSITION SENSOR CAPTEUR DE POSITION D'ENGRENAGE	0.4	0.4	0.4	0.4	0.4
05	166	SHIFT ARM BASE BASE DU BRAS D'EMBRAYAGE	0.5	0.5	0.5	0.5	0.5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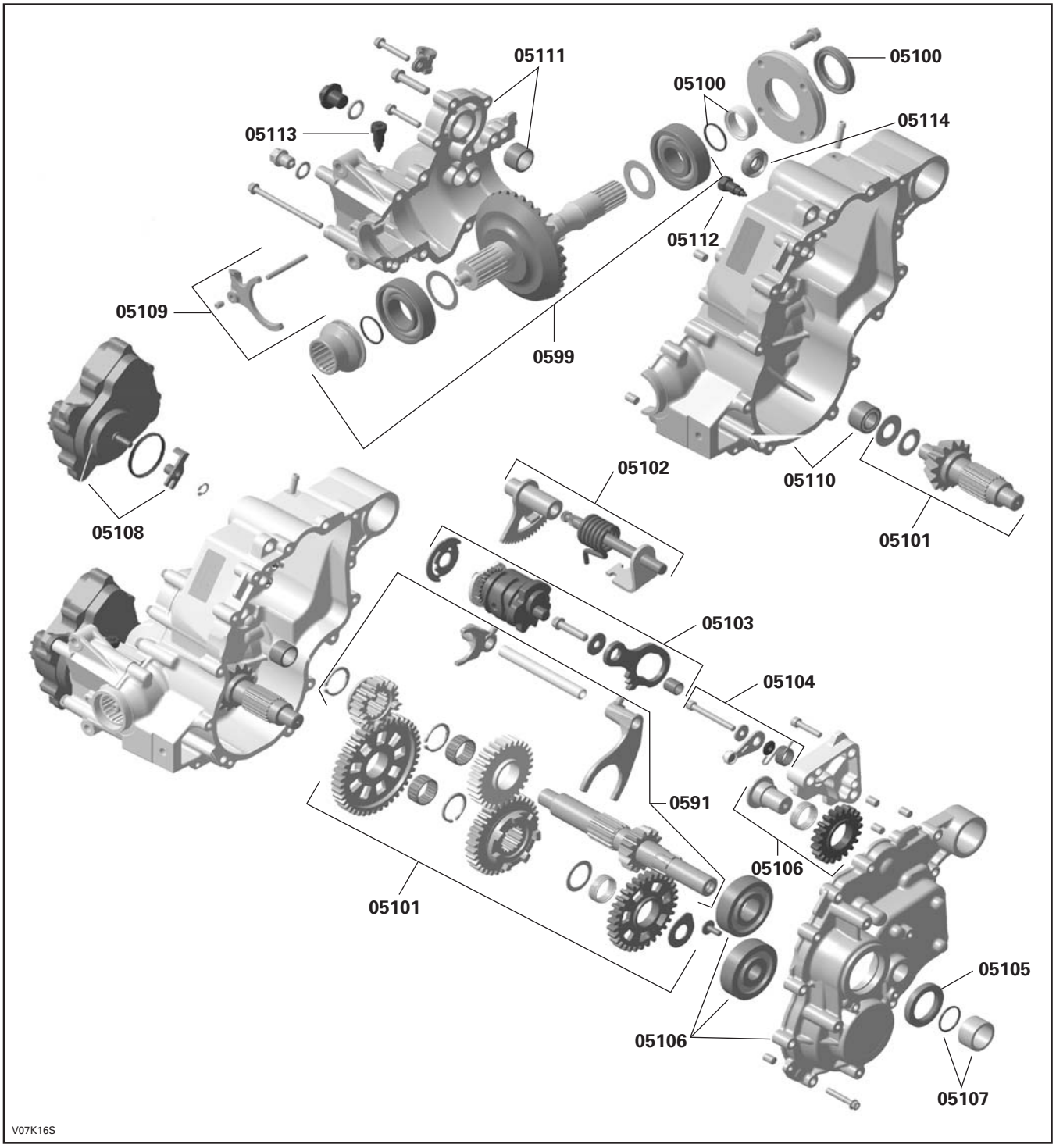
TRANSMISSION AND LINKAGE SYSTEM
SYSTÈME DE TRANSMISSION ET DE TRINGLERIE

V500/650/800



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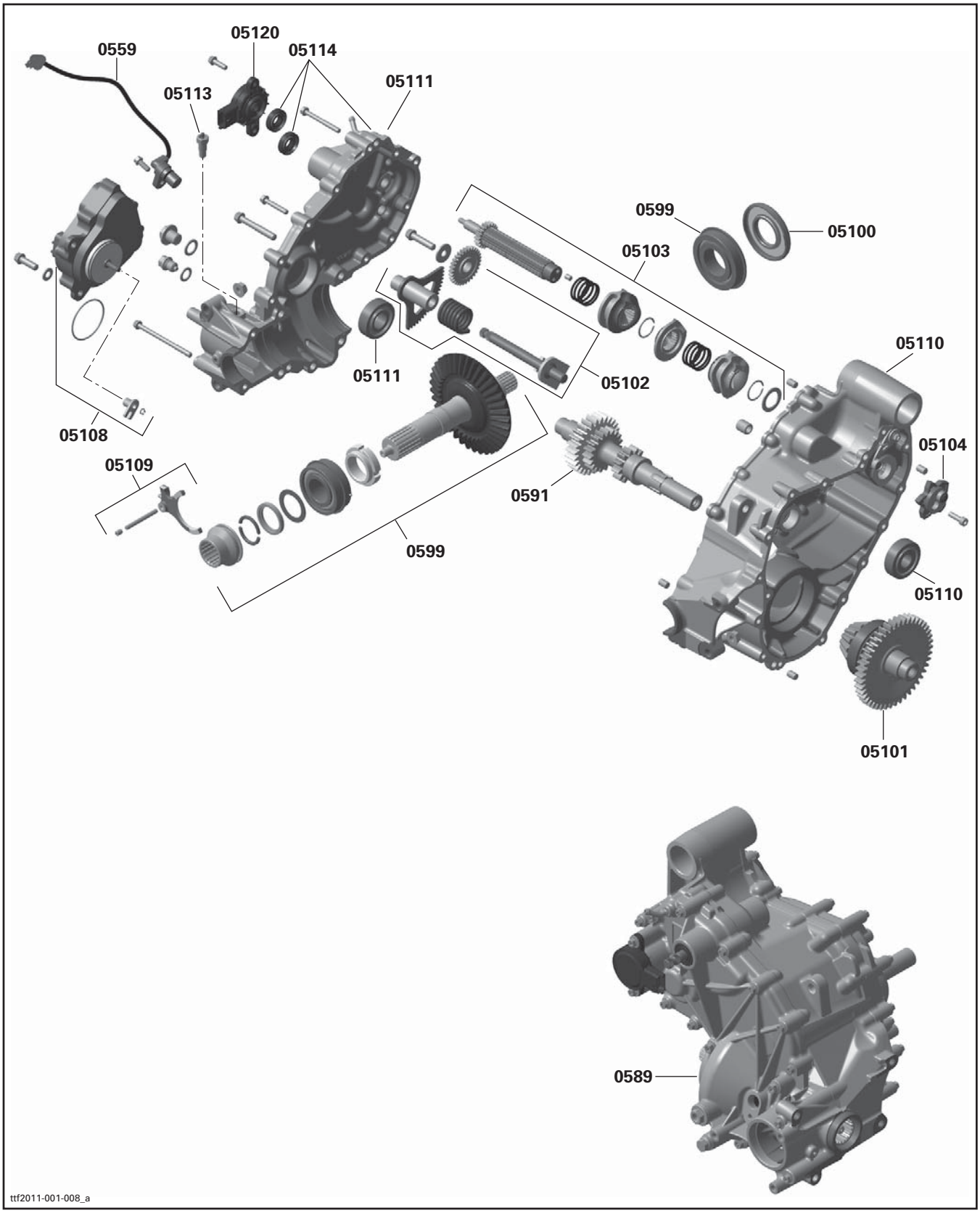
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TRANSMISSION AND LINKAGE SYSTEM
SYSTÈME DE TRANSMISSION ET DE TRINGLERIE

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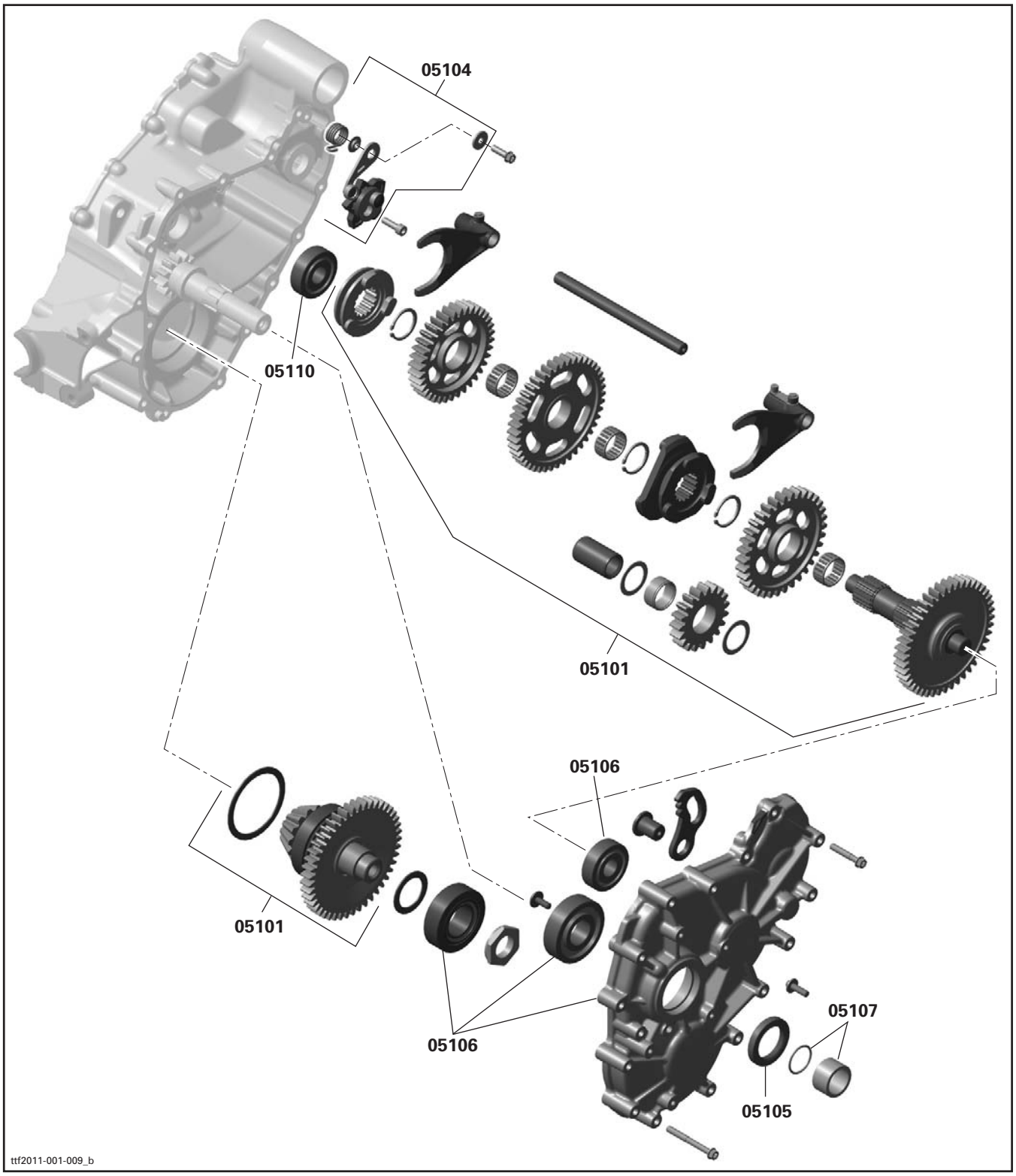
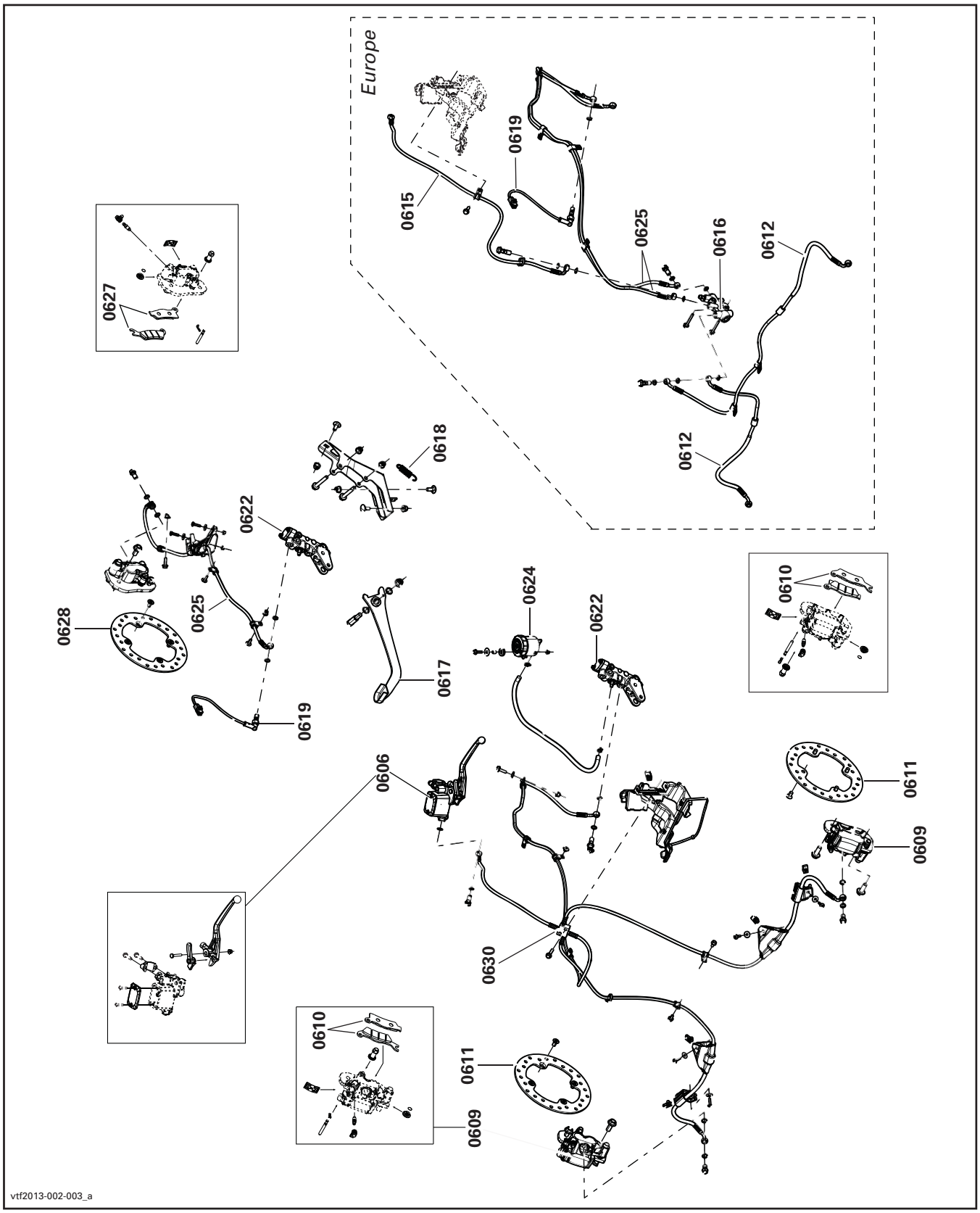


SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENAGADE XMR
			6	7	8	9	10
06	**00**	**NO LABOR INVOLVED AUCUNE MAIN-D'OEUVRE**	**0**	**0**	**0**	**0**	**0**
06	06	MASTER CYLINDRE MAÎTRE-CYLINDRE	0.3	0.3	0.3	0.3	0.3
06	09	FRONT CALIPER (RH OR LH) ÉTRIER AVANT (DROIT OU GAUCHE)	0.4	0.4	0.4	0.4	0.4
06	10	FRONT BRAKE PAD (RH OR LH) PLAQUETTE DE FREIN AVANT (DROIT OU GAUCHE)	0.3	0.3	0.3	0.3	0.3
06	11	FRONT BRAKE DISC (RH OR LH) DISQUE DE FREIN AVANT (DROIT OU GAUCHE)	0.5	0.5	0.5	0.5	0.5
06	12	FRONT FLEXIBLE BRAKE HOSE BOYAU FLEXIBLE DE FREIN AVANT	0.6	0.6	0.6	0.6	0.6
06	15	FRONT BRAKE HANDLE HOSE BOYAU DE FREIN DE LA MANETTE AVANT	0.6	0.6	0.6	0.6	0.6
06	16	FRONT MASTER CYLINDER MAÎTRE-CYLINDRE AVANT	0.8	0.8	0.8	0.8	0.8
06	17	REAR BRAKE PEDAL PÉDALE DE FREIN ARRIÈRE	0.4	0.4	0.4	0.4	0.4
06	18	REAR BRAKE PEDAL SPRING RESSORT DE LA PÉDALE DE FREIN ARRIÈRE	0.3	0.3	0.3	0.3	0.3
06	19	BRAKE SWITCH INTERRUPTEUR DE FREIN	0.5	0.6	0.6	0.5	0.5
06	22	REAR MASTER CYLINDER MAÎTRE-CYLINDRE ARRIÈRE	0.7	0.7	0.7	0.7	0.7
06	23	REAR OIL HOUSING HOSE BOYAU CARTER D'HUILE ARRIÈRE	0.6	0.6	0.6	0.6	0.6
06	24	REAR OIL HOUSING CARTER D'HUILE ARRIÈRE	0.3	0.3	0.3	0.3	0.3
06	25	REAR BRAKE HOSE BOYAU DE FREIN ARRIÈRE	0.6	0.6	0.6	0.6	0.6
06	26	REAR CALIPER ÉTRIER ARRIÈRE	0.4	0.4	0.4	0.4	0.4
06	27	REAR BRAKE PAD PLAQUETTE DE FREIN ARRIÈRE	0.3	0.3	0.3	0.3	0.3
06	28	REAR BRAKE DISC AND/OR HUB DISQUE DE FREIN ARRIÈRE ET/OU MOYEU	0.5	0.5	0.5	0.5	0.5
06	30	BRAKE LINE BOYAU DE FREIN	3.5	3.5	3.8	3.5	3.5

BRAKE SYSTEM
SYSTÈME DE FREIN

Europe



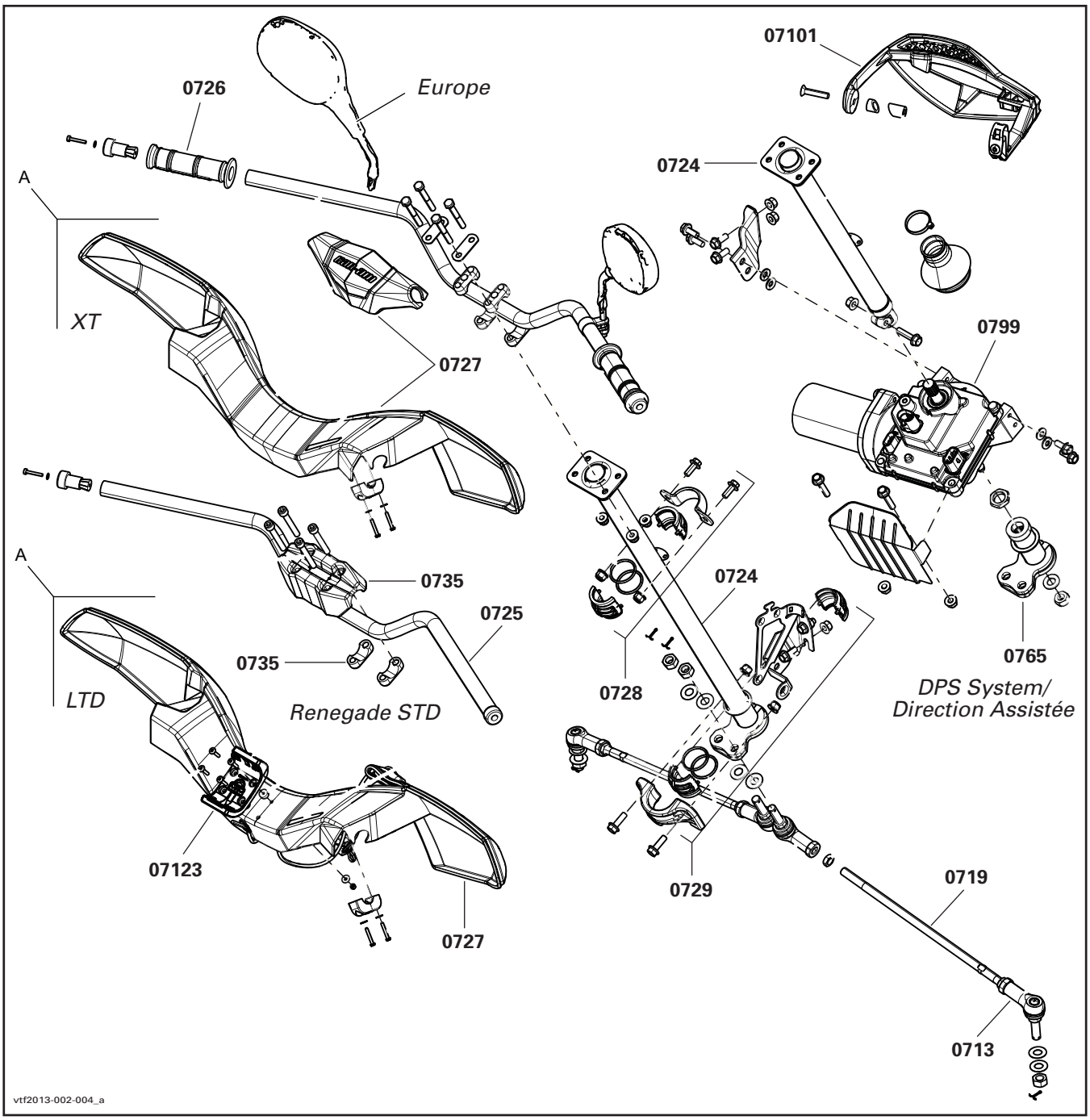
SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENAGADE XMR
			6	7	8	9	10
07	**00**	**NO LABOR INVOLVED AUCUNE MAIN-D'OEUVRE**	**0**	**0**	**0**	**0**	**0**
07	04	ARM PROTECTOR (RH OR LH) PROTECTEUR DE BRAS (DROIT OU GAUCHE)	0.3	0.3	0.3	0.3	0.3
07	05	STEERING CLAMP AND/OR STEERING COVER SUPPORT BRIDE DE DIRECTION ET/OU SUPPORT DU COUVRE-GUIDON	0.4	0.4	0.4	0.4	0.4
07	12	INTERNAL BALL JOINT (RH OR LH) JOINT À ROTULE INTERNE (DROIT AU GAUCHE)	0.9	0.9	0.9	0.9	0.9
07	13	EXTERNAL BALL JOINT (RH OR LH) JOINT À ROTULE EXTERNE (DROIT OU GAUCHE)	0.8	0.8	0.8	0.8	0.8
07	19	TIE ROD (RH OR LH) BARRE D'ACCOUPLEMENT (DROIT OU GAUCHE)	0.9	0.9	0.9	0.9	0.9
07	24	MAIN TUBE TUBE PRINCIPAL	2.6	2.6	3.0	2.6	2.6
07	25	HANDLEBAR GUIDON	1.1	1.1	1.1	1.1	1.1
07	26	HANDLEBAR GRIP KIT (RH AND/OR LH) ENSEMBLE DE GAINE DE GUIDON (DROIT ET/OU GAUCHE)	0.3	0.3	0.3	0.3	0.3
07	27	STEERING COVER COUVRE-GUIDON	0.3	0.3	0.3	0.3	0.3
07	28	HALF HOUSING AND HOUSING BUSHING DEMI-LOGEMENT ET DOUILLE DE LOGEMENT	2.1	2.1	2.4	2.1	2.1
07	29	LOWER STEERING MAIN TUBE BUSHING DOUILLE INFÉRIEURE DE LA COLONNE DE DIRECTION	1.0	1.0	1.0	1.0	1.0
07	32	LOWER ARM AND/OR BALL JOINT (RH OR LH) BRAS INFÉRIEUR ET/OU JOINT À ROTULE (DROIT OU GAUCHE)	0.7	0.7	0.7	0.7	0.7
07	33	UPPER ARM (RH OR LH) BRAS DE SUSPENSION SUPÉRIEUR (DROIT OU GAUCHE)	0.8	0.8	0.8	0.8	0.8
07	35	HANDLE STEERING SUPPORT (ALL) SUPPORT DE GUIDON (TOUS)	0.3	0.3	0.3	0.3	0.3
07	37	FRONT SHOCK AND/OR SPRING AND/OR STOPPER AND/OR PROTECTOR AND/OR SEAT (RH OR LH) AMORTISSEUR AVANT ET/OU RESSORT ET/OU BUTÉE ET/OU SIÈGE ET/OU PROTECTEUR (DROIT OU GAUCHE)	0.7	0.7	0.7	0.7	0.7
07	40	FRONT DIFFERENTIEL (ASS'Y) DIFFÉRENTIEL AVANT (COMPLET)	2.4	2.4	2.4	2.4	2.4
07	42	FRONT PROPELLER SHAFT (ASS'Y) ARBRE DE PROPULSION AVANT (COMPLET)	1.3	1.3	1.3	1.3	1.3
07	45	CV JOINT (RH OR LH) JOINT HOMOCINÉTIQUE (DROIT OU GAUCHE)	0.8	0.8	0.8	0.8	0.8
07	46	FRONT WHEEL HUB (SEAL AND/OR BEARING) (RH OR LH) MOYEU DE ROUE AVANT (JOINT ET/OU ROULEMENT) (DROIT OU GAUCHE)	0.5	0.5	0.5	0.5	0.5
07	47	KNUCKLE (RH OR LH) PORTE-FUSÉE (DROIT OU GAUCHE)	0.8	0.8	0.8	0.8	0.8

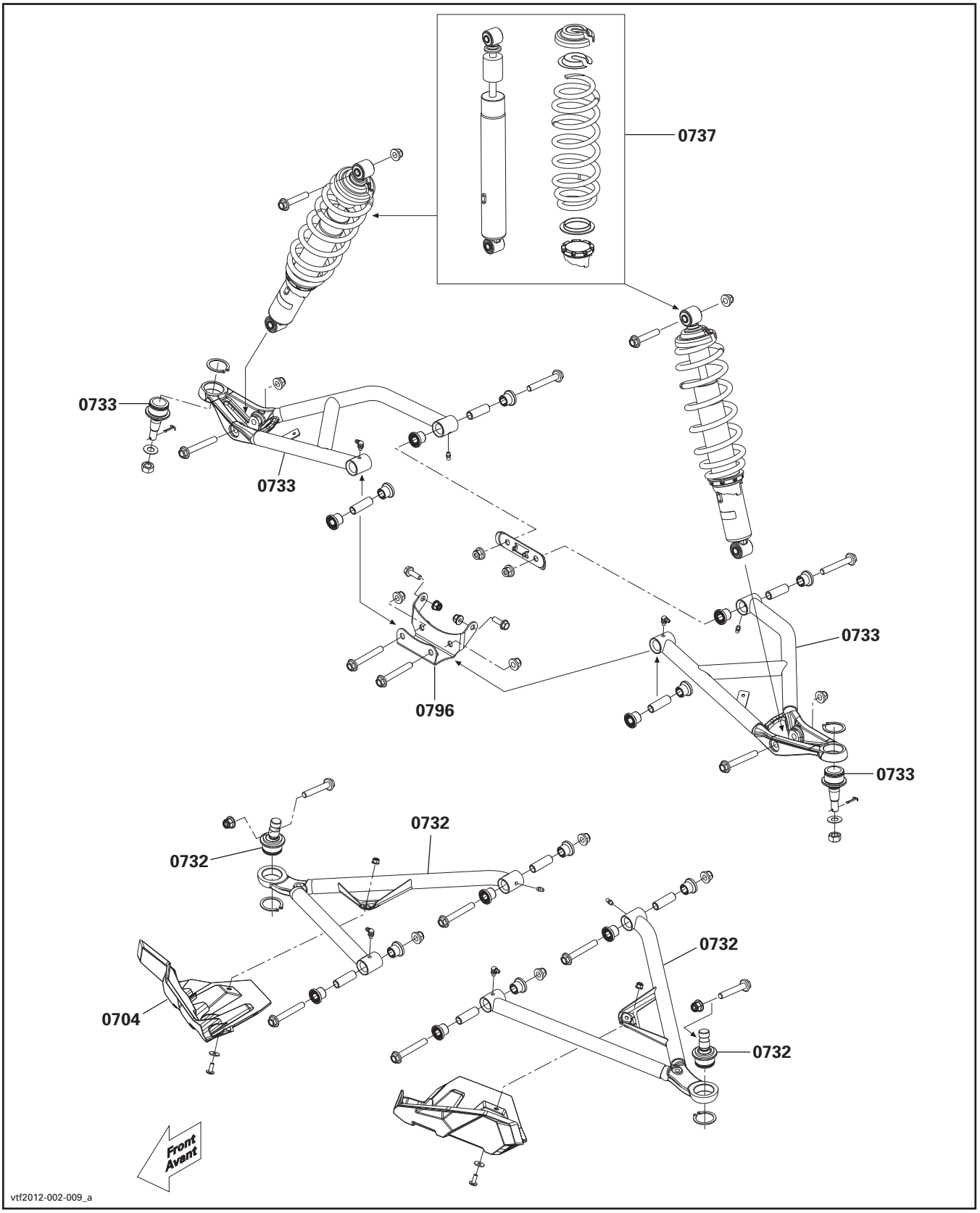
STEERING - FRONT DRIVE SYSTEM AND SUSPENSION
DIRECTION - SYSTÈME D'ENTRAÎNEMENT AVANT ET SUSPENSION

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENAGADE XMR
			6	7	8	9	10
07	50	FRONT RIM AND/OR TIRE JANTE AVANT ET/OU PNEU	0.4	0.4	0.4	0.4	0.4
07	56	THROTTLE HANDLE MANETTE D'ACCÉLÉRATEUR	0.3	0.3	0.3	0.3	0.3
07	65	PITMAN ARM LEVIER DE DIRECTION	2.6	2.6	2.6	2.6	2.6
07	72	INTERNAL BUSHING AND/OR CUSHION (LOWER AND/OR UPPER ARM) (RH OR LH) DOUILLE INTERNE ET/OU COUSSIN (BRAS INFÉRIEUR ET/OU SUPÉRIEUR) (DROIT OU GAUCHE)	0.4	0.4	0.4	0.4	0.4
07	73	BALL JOINTS REPLACEMENT (2) REMPLACEMENT DES JOINTS A ROTULE (2)	1.0	1.0	1.0	1.0	1.0
07	80	FRONT RIM JANTE AVANT	0.4	0.4	0.4	0.4	0.4
07	82	RADIAL BALL BEARINGS ROULEMENTS À BILLE RADIALES	0.8	0.8	0.8	0.8	0.8
07	85	RING GEAR AND/OR CARRIER AND/OR SHIM COURONNE DE LANCEMENT ET/OU SUPPORT ET/OU CALE	3.0	3.0	3.0	3.0	3.0
07	88	RING GEAR DRIVE GEAR AND/OR BEARING AND/OR SHIM PIGNON DE COMMANDE DE LA COURONNE ET/OU ROULEMENT À BILLE ET/OU CALE	2.7	2.7	2.7	2.7	2.7
07	89	COVER AND/OR PINION COVER AND/OR SEAL AND/OR BEARING COUVERCLE ET/OU COUVERCLE DE PIGNON ET/OU JOINT D'ÉTANCHÉITÉ ET/OU ROULEMENT À BILLE	3.0	3.0	3.0	3.0	3.0
07	90	BOOT WHEEL KIT AND/OR CV JOINT (RH OR LH) ENSEMBLE DE SOUFFLET DE ROUE ET/OU JOINT CV (DROIT OU GAUCHE)	0.8	0.8	0.8	0.8	0.8
07	91	BOOT DIFFERENTIAL KIT AND/OR PLUNGING JOINT (RH OR LH) ENSEMBLE DE SOUFFLET DE DIFFÉRENCIEL ET/OU JOINT PLONGEANT (DROIT OU GAUCHE)	0.8	0.8	0.8	0.8	0.8
07	92	SLEEVE AND/OR WEARRING MANCHON ET/OU BAGUE D'USURE	1.3	1.3	1.3	1.3	1.3
07	94	UNIT PACK KIT ENSEMBLE JOINT CARDAN	2.3	2.3	2.3	2.3	2.3
07	96	UPPER ARM BRACKET ATTACHE BRAS SUPÉRIEUR	2.2	2.2	2.2	2.2	2.2
07	99	POWER STEERING SERVODIRECTION	2.6	2.6	2.6	2.6	2.6
07	101	DEFLECTOR (LH OR RH) DÉFLECTEUR (GA OU DR)	0.3	0.3	0.3	0.3	0.3
07	103	DIFFERENTIAL SEAL (1) JOINT D'ÉTANCHÉITÉ DU DIFFÉRENTIEL (1)	0.8	0.8	0.8	0.8	0.8
07	104	DIFFERENTIAL SEALS (2) JOINTS D'ÉTANCHÉITÉ DU DIFFÉRENTIEL (2)	1.5	1.5	1.5	1.5	1.5
07	119	DIFFERENTIAL BELLOW SOUFFLET DU DIFFÉRENTIEL	0.3	0.3	0.3	0.3	0.3

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENAGADE XMR
			6	7	8	9	10
07	120	DIFFERENTIAL OIL SEAL ANNEAU D'ÉTANCHÉITÉ DU DIFFÉRENTIEL	2.6	2.6	2.6	2.6	2.6
07	123	GPS SUPPORT SUPPORT DU GPS		0.3			

STEERING - FRONT DRIVE SYSTEM AND SUSPENSION
DIRECTION - SYSTÈME D'ENTRAÎNEMENT AVANT ET SUSPENSION

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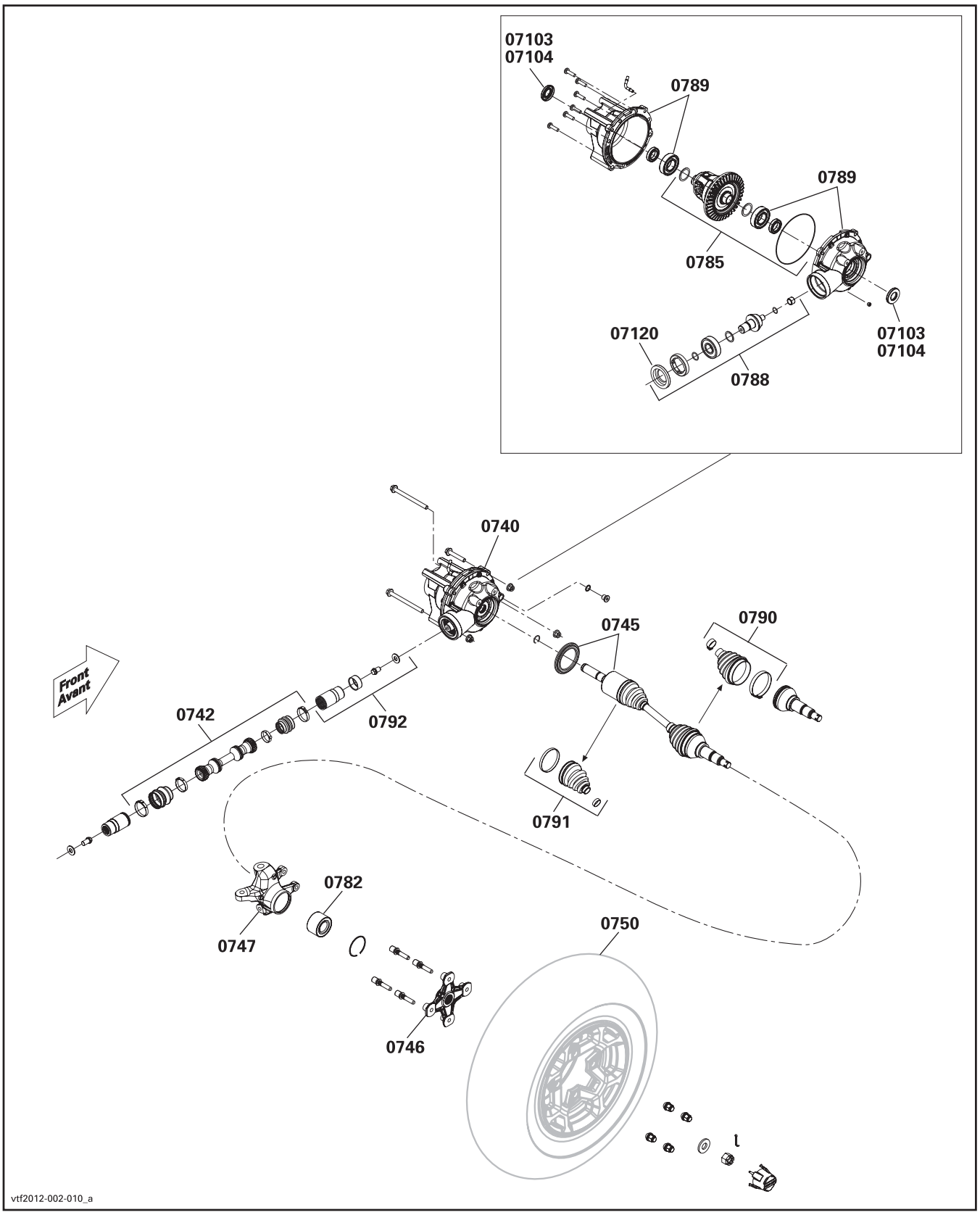
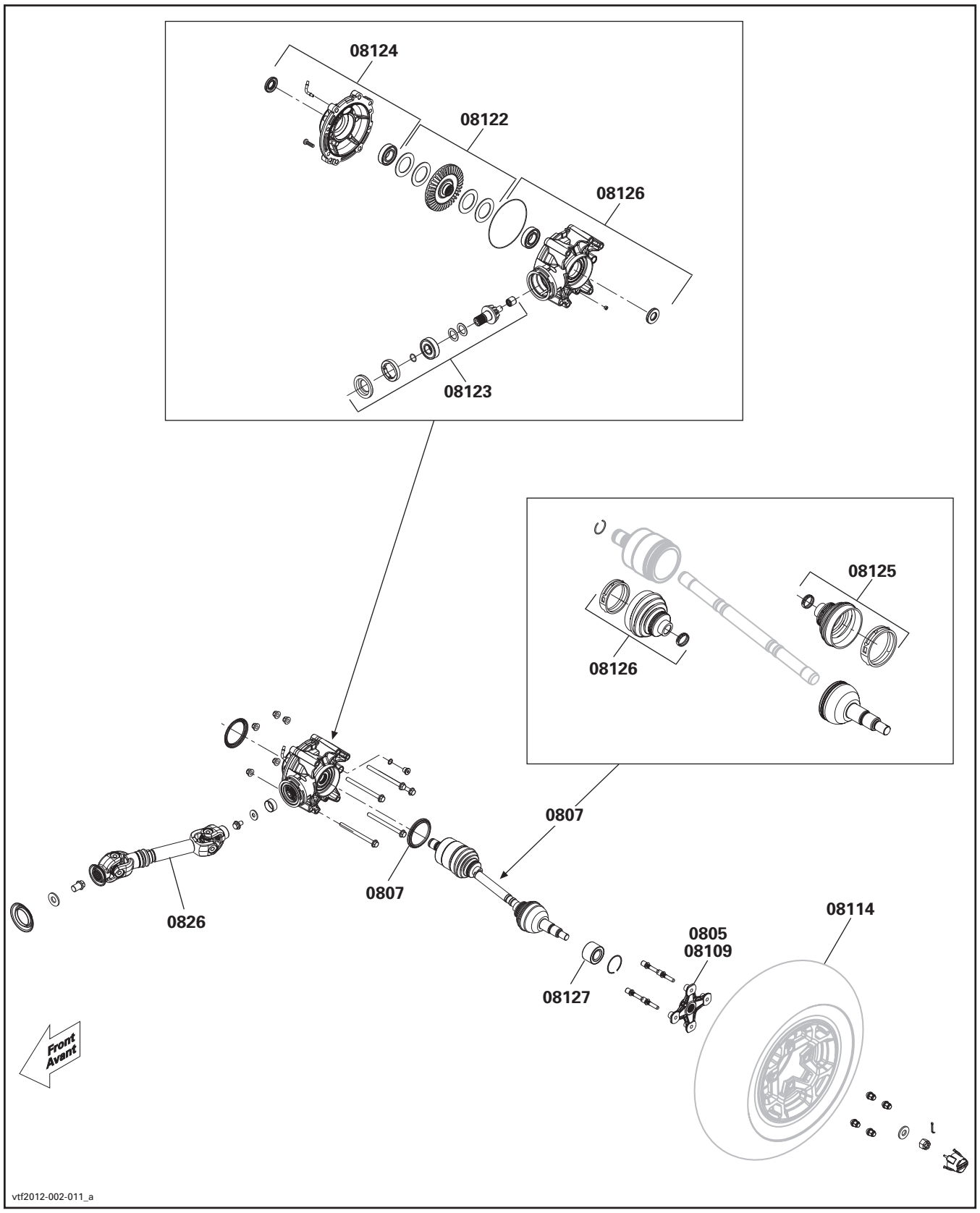
STEERING - FRONT DRIVE SYSTEM AND SUSPENSION
DIRECTION - SYSTÈME D'ENTRAÎNEMENT AVANT ET SUSPENSION



SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
08	**00**	**NO LABOR INVOLVED AUCUNE MAIN D'OEUVRE**	**0**	**0**	**0**	**0**	**0**
08	05	REAR WHEEL HUB (RH) MOYEU DE ROUE ARRIÈRE (DROIT)	0.5	0.5	0.5	0.5	0.5
08	21	COMPRESSOR COMPRESSEUR		1.3			
08	24	PNEUMATIC HOSE BOYAU PNEUMATIQUE		0.5			
08	07	REAR DIFFERENTIAL (ASS'Y) DIFFÉRENTIEL ARRIÈRE (COMPLET)	1.8	1.8	1.8	1.8	1.8
08	26	REAR PROPELLER SHAFT (ASS'Y) ARBRE DE PROPULSION ARRIÈRE (COMPLET)	1.5	1.5	1.5	1.5	1.5
08	62	SWING ARM BRAS OSCILLANT	1.2	1.2	1.2	1.2	1.2
08	101	LH PROTECTOR PROTECTEUR GAUCHE	0.3	0.3	0.3	0.3	0.3
08	102	RH PROTECTOR PROTECTEUR DROIT	0.3	0.3	0.3	0.3	0.3
08	109	REAR WHEEL HUB (LH) MOYEU DE ROUE ARRIÈRE (GAUCHE)	0.3	0.3	0.3	0.5	0.5
08	111	REAR SHOCK (RH OR LH) AMORTISSEUR ARRIÈRE (DROIT OU GAUCHE)	0.4	0.4	0.4	0.4	0.4
08	114	REAR RIM AND/OR TIRE JANTE ARRIÈRE ET/OU PNEU	0.4	0.4	0.4	0.4	0.4
08	120	CV JOINT (RH OR LH) JOINT HOMOCINÉTIQUE (DROIT OU GAUCHE)	0.8	0.8	0.8	0.8	0.8
08	121	STABILIZER BAR BARRE STABILISATRICE	2.3	2.3	2.3	2.3	2.3
08	122	RING GEAR AND/OR SHIM COURONNE DE LANCEMENT ET/OU CALE	3.1	3.1	3.1	3.1	3.1
08	123	RING GEAR DRIVE GEAR AND/OR BEARING AND/OR SHIM PIGNON DE COMMANDE DE LA COURONNE ET/OU ROULEMENT À BILLE ET/OU CALE	3.1	3.1	3.1	3.1	3.1
08	124	COVER AND/OR PINION COVER AND/OR SEAL AND/OR BEARING COUVERCLE ET/OU COUVERCLE DE PIGNON ET/OU JOINT D'ÉTANCHÉITÉ ET/OU ROULEMENT À BILLE	3.3	3.3	3.3	3.3	3.3
08	125	BOOT WHEEL KIT AND/OR CV JOINT (RH OR LH) ENSEMBLE DE SOUFFLET DE ROUE ET/OU JOINT CV (DROIT OU GAUCHE)	0.9	0.9	0.9	0.9	0.9
08	126	BOOT DIFFERENTIAL KIT AND/OR PLUNGING JOINT (RH OR LH) ENSEMBLE DE SOUFFLET DE DIFFÉRENTIEL ET/OU JOINT PLONGENT (DROIT OU GAUCHE)	0.9	0.9	0.9	0.9	0.9
08	127	RADIAL BALL BEARINGS ROULEMENTS À BILLE RADIALES	1.0	1.0	1.0	1.0	1.0

REAR DRIVE SYSTEM AND SUSPENSION
SYSTÈME D'ENTRAÎNEMENT ARRIÈRE ET SUSPENSION

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER 6	OUTLANDER MAX 7	OUTLANDER X MR 8	RENEGADE 9	RENEGADE XMR 10
08	128	UNIT PACK KIT ENSEMBLE DE JOINT CARDAN	1.7	1.7	1.7	1.7	1.7
08	129	UNIT PACK KIT (2) ENSEMBLE DE JOINT CARDAN (2)	1.8	1.8	1.8	1.8	1.8
08	134	DIFFERENTIAL SEAL (1) JOINT D'ÉTANCHÉITÉ DU DIFFÉRENTIEL (1)	0.9	0.9	0.9	0.9	0.9
08	137	PRESSURE COLLECTOR ASS'Y COLLECTEUR DE PRESSION COMPLET		0.6			
08	138	AIR SUSPENSION MODULE MODULE DE SUSPENSION À AIR		0.6			
08	139	AIR SUSPENSION SENSOR CAPTEUR DE LA SUSPENSION À AIR		0.4			
08	140	AUXILIARY FITTING AND SUPPORT RACCORD AUXILIAIRE ET SUPPORT		0.4			
08	135	DIFFERENTIAL SEALS (2) JOINTS D'ÉTANCHÉITÉ DU DIFFÉRENTIEL (2)	1.8	1.8	1.8	1.8	1.8
08	148	DIFFERENTIAL OIL SEAL ANNEAU D'ÉTANCHÉITÉ DU DIFFÉRENTIEL	1.9	1.9	1.9	1.9	1.9
08	149	AXIAL PIVOT AXE DE PIVOT	0.5	0.5	0.5	0.5	0.5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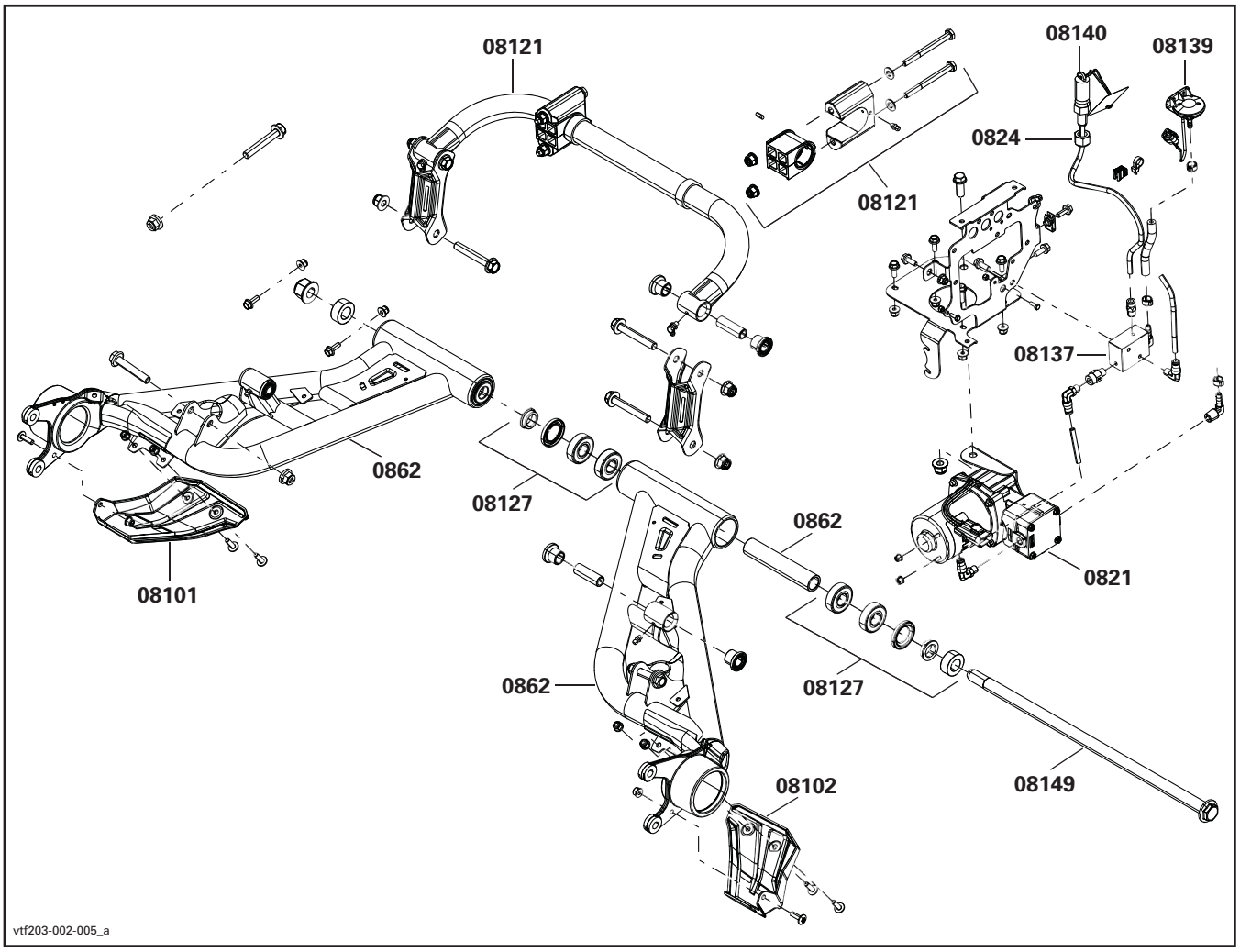
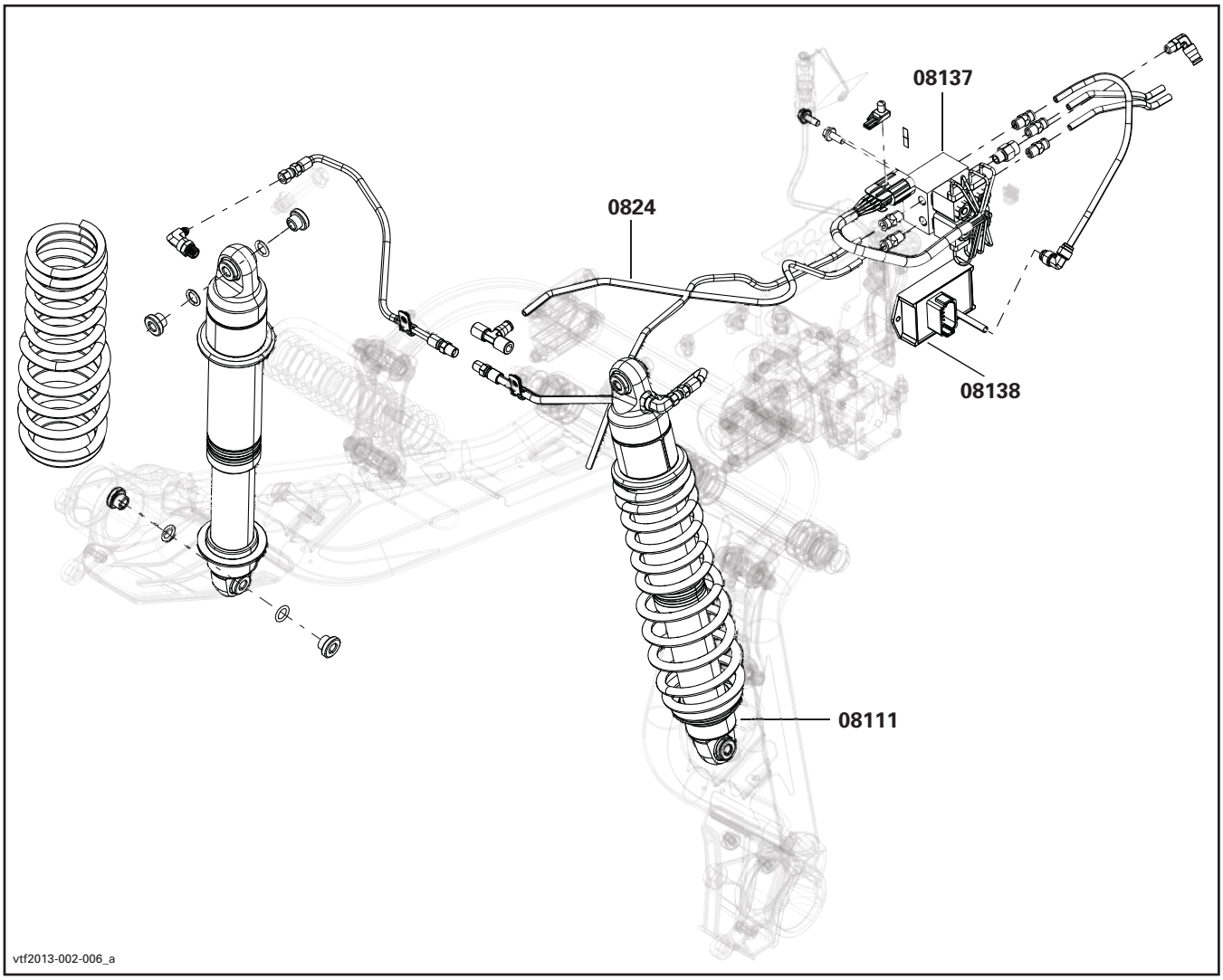
REAR DRIVE SYSTEM AND SUSPENSION
SYSTÈME D'ENTRAÎNEMENT ARRIÈRE ET SUSPENSION

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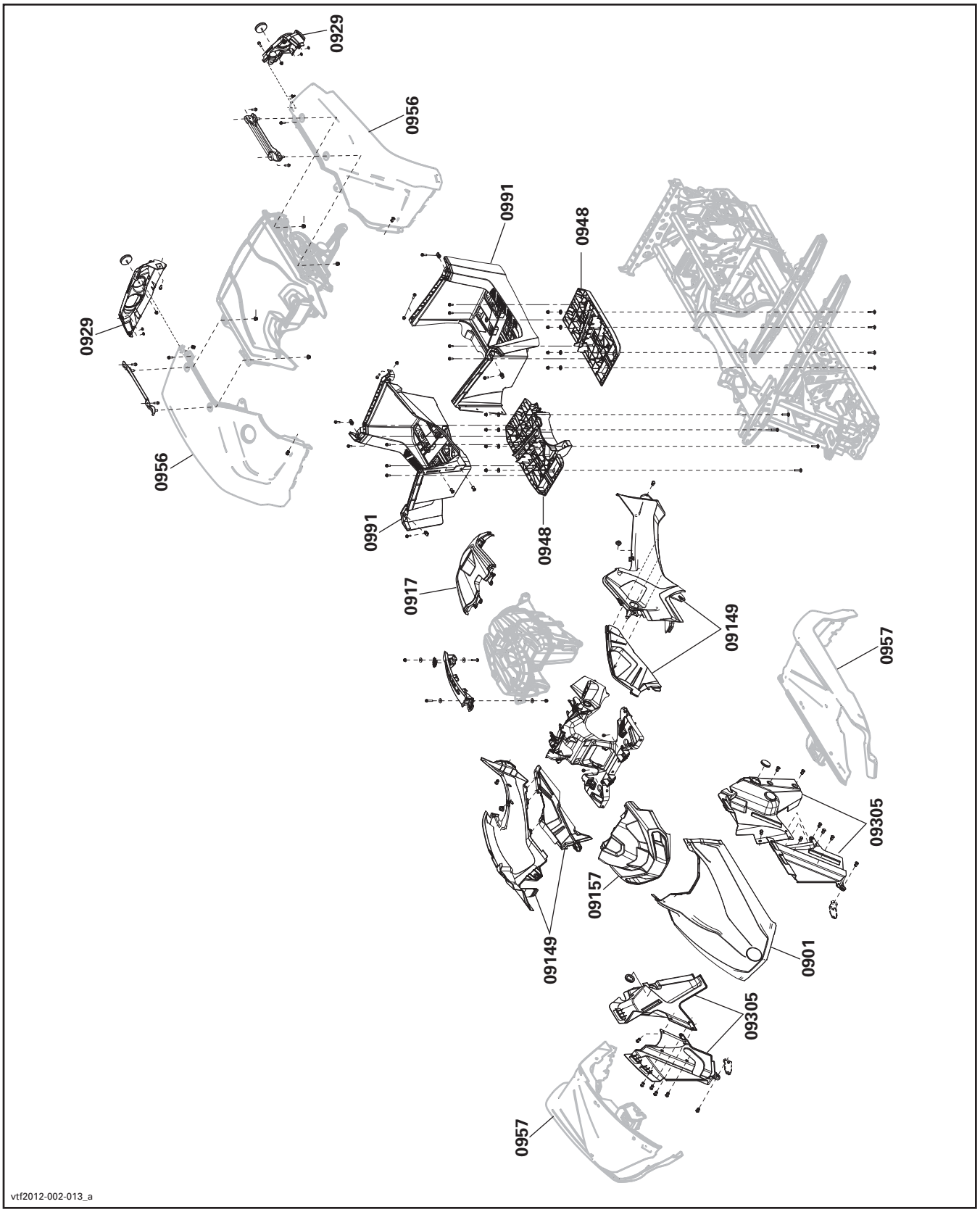
SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER 6	OUTLANDER MAX 7	OUTLANDER X MR 8	RENEGADE 9	RENEGADE XMR 10
09	**00**	**NO LABOR INVOLVED AUCUNE MAIN D'OEUVRE IMPLIQUÉE**	**0**	**0**	**0**	**0**	**0**
09	01	HOOD CAPOT	0.3	0.3	0.3		
09	13	LUGGAGE RACK KIT (FRONT OR REAR) ENSEMBLE DE PORTE-BAGAGES (AVANT OU ARRIÈRE)	0.5	0.5	0.5		
09	17	CONSOLE CONSOLE	0.3	0.3	0.3	0.3	0.3
09	21	SEAT SIÈGE	0.3	0.3	0.3	0.3	0.3
09	22	SEAT COVER HOUSSE DE SIÈGE	1.0	1.0	1.0	1.0	1.0
09	26	FRONT BUMPER PARE-CHOCS AVANT	0.9	0.9	0.9	0.7	0.7
09	27	WINCH LATCH ATTACHE DE TREUIL	0.3	0.3	0.3	0.3	0.3
09	28	FRONT FASCIA FASCIA AVANT	0.9	0.9	0.9	0.7	0.7
09	29	REAR FASCIA FASCIA ARRIÈRE	0.3	0.3	0.3	0.3	0.3
09	34	REAR BUMPER PARE-CHOCS ARRIÈRE	0.3	0.3	0.3	0.4	0.4
09	39	FRONT OR REAR MUDGUARD KIT (RH OR LH) GARDE DE BOUE AVANT/ARRIÈRE (DROIT OU GAUCHE)		0.3	0.3		
09	45	REAR HANDLE (RH OR LH) POIGNÉE ARRIÈRE (GAUCHE OU DROITE)		0.3			
09	48	FOOTREST (RH OR LH) MARCHEPIED (DROIT OU GAUCHE)	0.4	0.5	0.5	0.4	0.4
09 *	49	FRAME CHÂSSIS	13.0	14.0	14.0	12.5	13.0
09	52	SIDE BRACKET (RH OR LH) SUPPORT LATÉRAL (DROIT OU GAUCHE)	0.6	0.6	0.6		
09	56	REAR FENDER AILE ARRIÈRE	0.9	0.9	0.9	0.8	0.8
09	57	FRONT FENDER AND/OR SUPPORT (RH OR LH) AILE AVANT ET/OU SUPPORT (DROIT OU GAUCHE)	1.0	1.0	1.0	1.5	1.5
09	74	FOOTREST SUPPORT (RH OR LH) SUPPORT DE REPOSE PIED (DROIT OU GAUCHE)	0.4	0.5	0.5	0.4	0.4
09	84	AIR INTAKE DEFLECTOR DÉFLECTEUR ADMISSION AIR			0.3		
09	85	STORAGE SUPPORT SUPPORT DU COFFRE	0.7	0.7	0.7		

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
09	91	FOOTWELL (RH OR LH) REPOSE-PIED (DROIT OU GAUCHE)	0.3	0.4	0.4	0.3	0.3
09	93	PROTECTION PLATE PLAQUE DE PROTECTION	0.5	0.5	0.5		
09	95	EACH DECAL (1) CHAQUE AUTOCOLLANT (1)	0.3	0.3	0.3	0.3	0.3
09	108	REAR SEAT ASS'Y SIÈGE ARRIÈRE ASS.		0.4			
09	120	FRONT LIGHT FASCIA FASCIA DE LUMIÈRE AVANT				0.4	0.4
09	138	HAND PROTECTOR PROTÈGE MAIN	0.3	0.3	0.3	0.3	0.3
09	149	ENGINE SIDE PANELS (2) PANNEAUX MOTEUR (2)	0.3	0.3	0.3	0.3	0.3
09	157	UPPER CONSOLE CONSOLE SUPÉRIEURE	0.3	0.3	0.3	0.3	0.3
09	158	FRONT FENDER SUPPORT SUPPORT D'AILE AVANT	1.0	1.0	1.0	1.6	1.6
09	161	REAR BUMPER (XT) PARE-CHOC ARRIÈRE (XT)	0.3	0.3	0.3		
09	162	FRONT BUMPER (XT) PARE-CHOC AVANT (XT)	0.3	0.3	0.3		0.3
09	198	BACKREST PARTS PIÈCES DU DOSSIER		0.4			
09	199	REAR SEAT BASE A/O ALL PARTS BASE SIÈGE ARRIÈRE ET/OU TOUTES LES PIÈCES		1.0			
09	200	REAR FENDER SUPPORT SUPPORT D'AILE ARRIÈRE	1.9	1.9	1.9	1.5	1.5
09	203	REAR SEAT COVER HOUSSE DE SIÈGE ARRIÈRE		1.0			
09	210	FRONT FASCIA (RH OR LH) FASCIA AVANT (DROIT OU GAUCHE)				0.4	0.4
09	244	CONSOLE SUPPORT SUPPORT DE CONSOLE	0.5	0.5	0.8	0.5	0.5
09	283	REAR BOX COFFRE ARRIÈRE	1.1	1.1	1.1		
09	284	BOX DOOR PORTE DE COFFRE	0.3	0.3	0.3		
09	304	REAR SUPPORT SUPPORT ARRIÈRE	1.9	1.9	1.9		
09	305	INNER FENDER (RH OR LH) FAUSSE AILE (DROIT OU GAUCHE)	0.3	0.3	0.3	0.3	0.3

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
09	316	HITCH ATTACHE	0.3	0.3	0.3		
09	336	CENTRAL SKID PLAT PLAQUE DE PROTECTION CENTRALE	0.4	0.4	0.4	0.4	0.4
09	367	LOCK VERROU	0.3	0.3	0.3		
09	389	REAR STORAGE COVER COUVERCLE DU COFFRE ARRIÈRE	0.7	0.7	0.7		
09	390	FOOTREST (RIGHT OR LEFT) APPUI-PIEDS (DROIT OU GAUCHE)			0.3		
09	398	BUMPER (RH OR LH) PARE-CHOC (DROIT OU GAUCHE)			0.4		
09	478	UPPER INLET ENTRÉE D'AIR SUPÉRIEUR					0.4
09	479	UPPER OULET SORTIE D'AIR SUPÉRIEUR					0.4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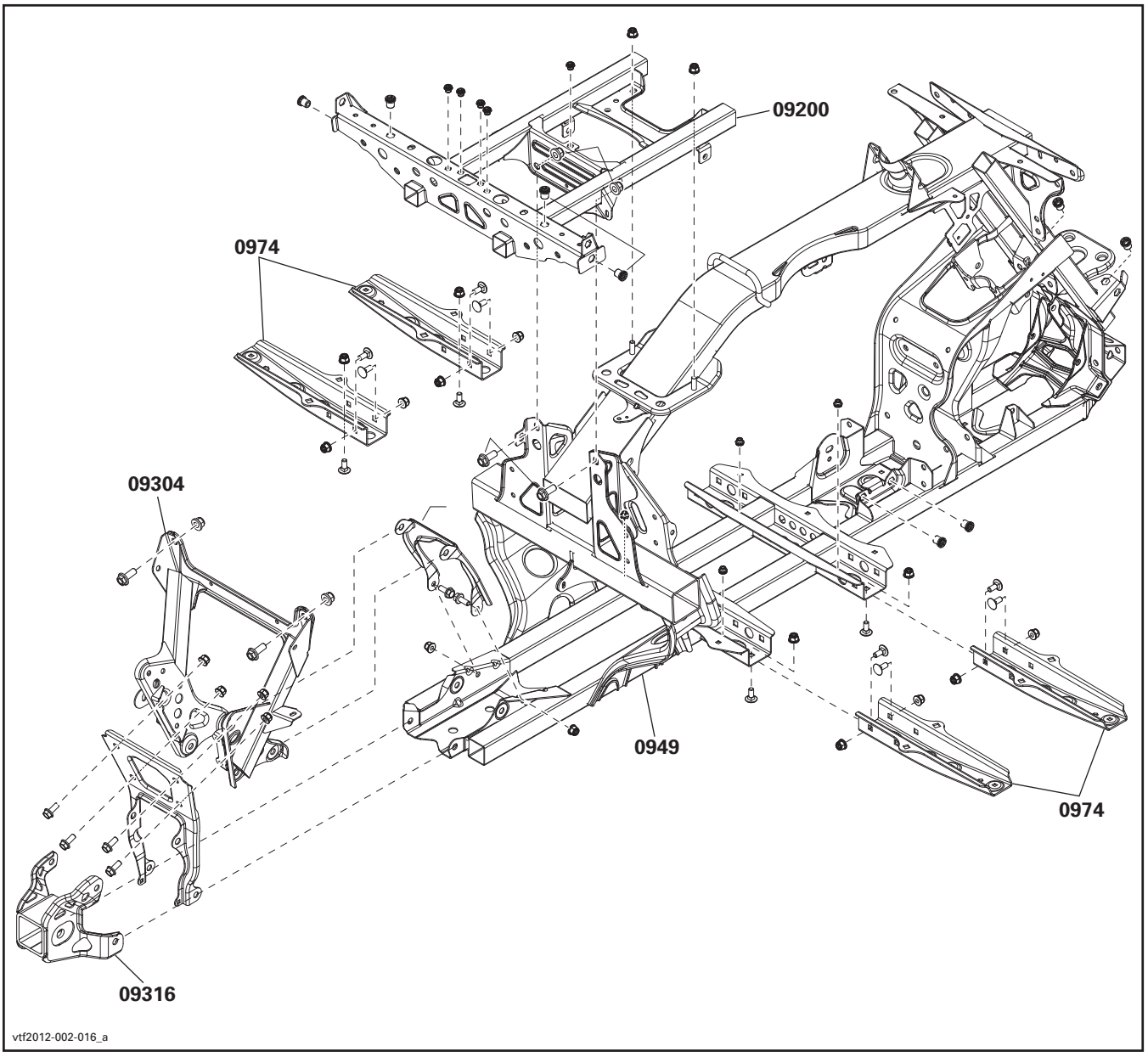
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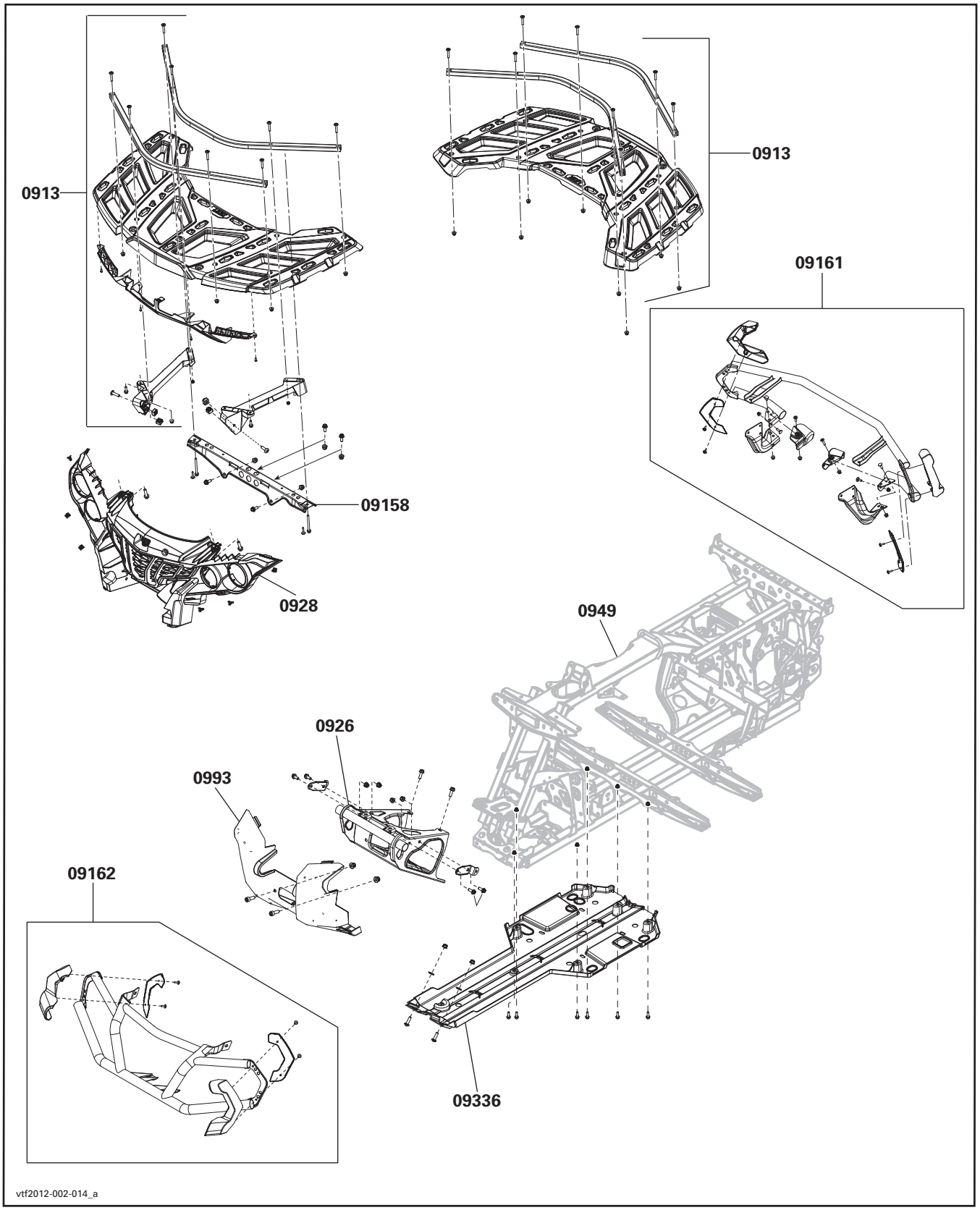
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BODY AND ACCESSORIES
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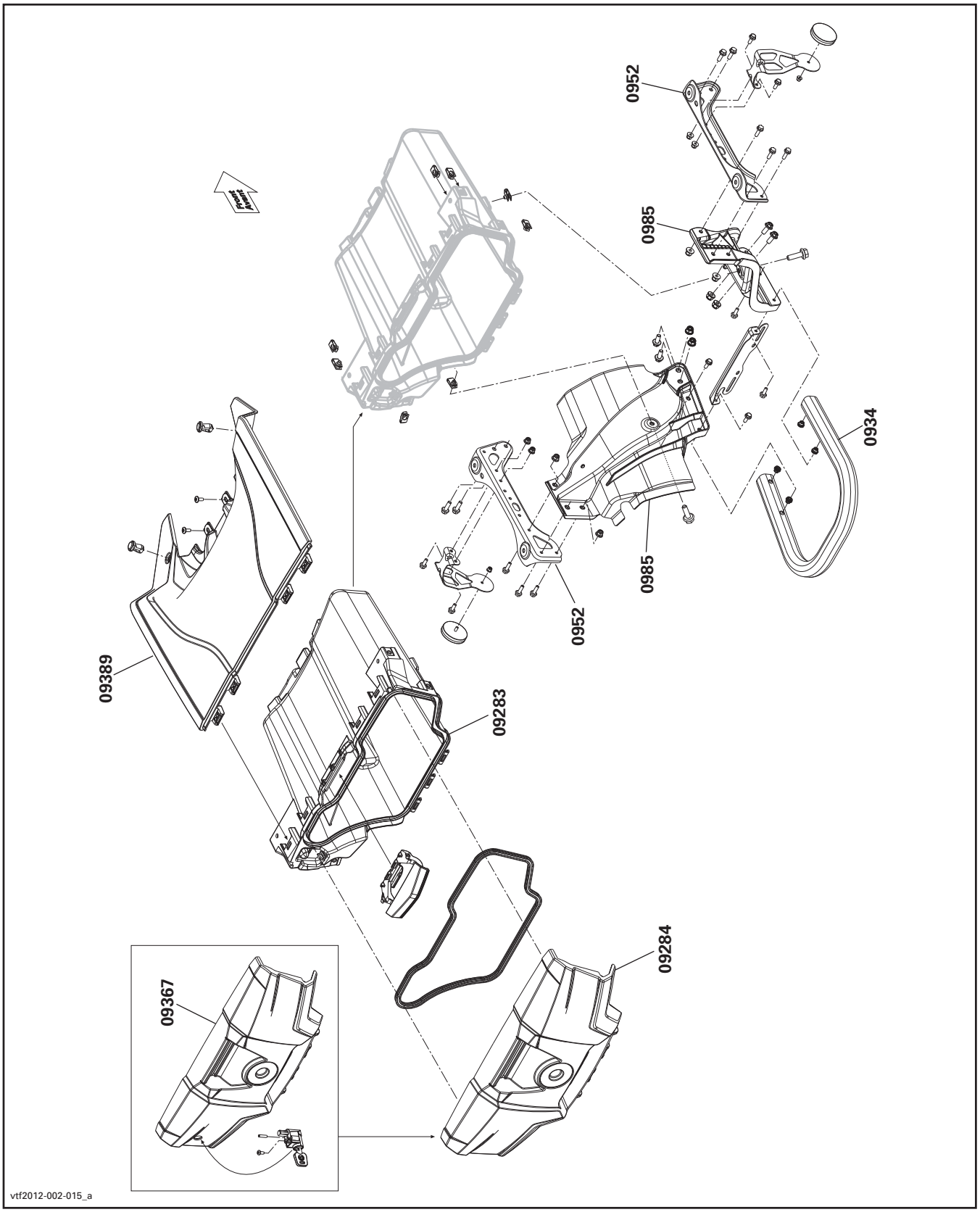

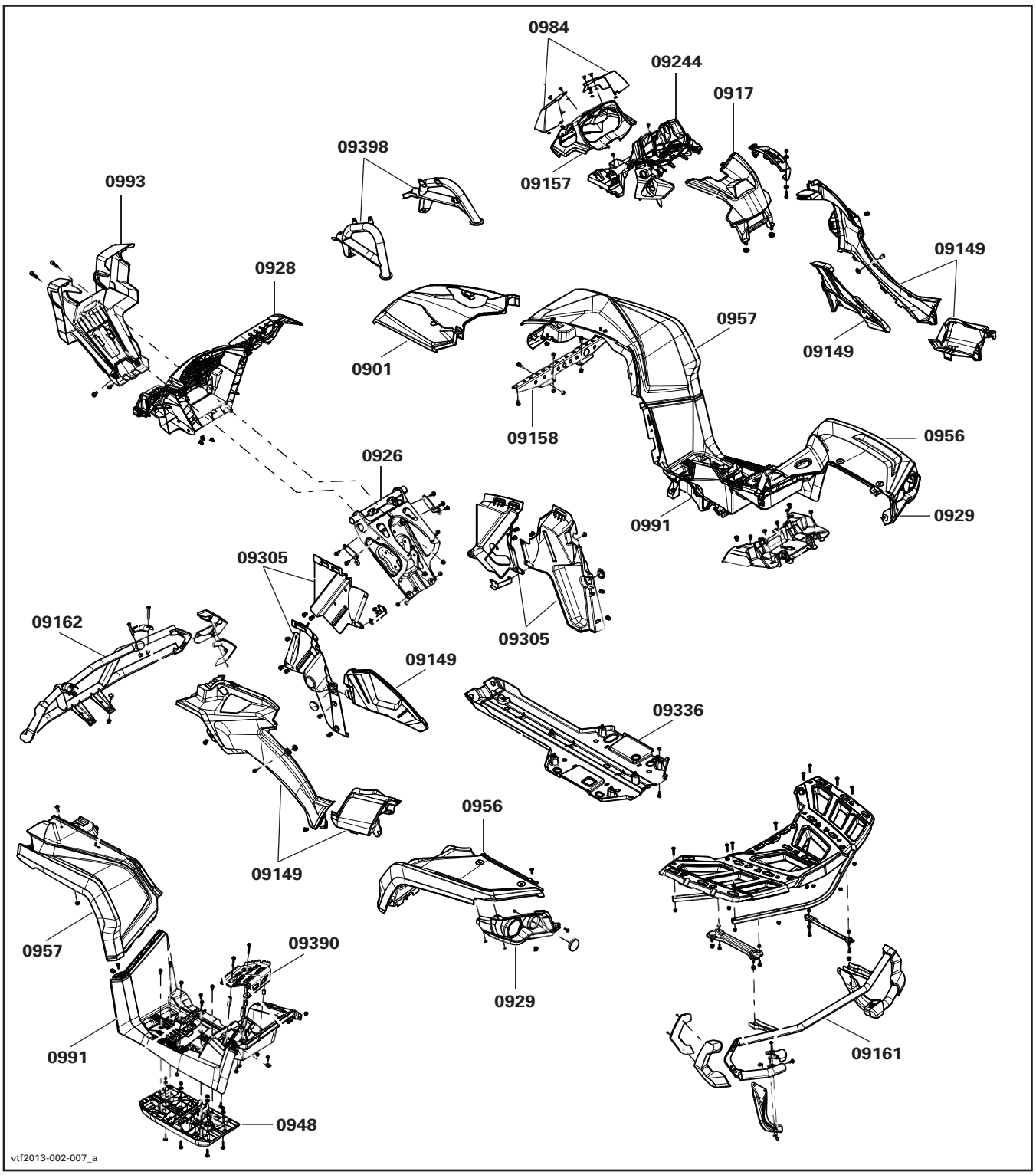
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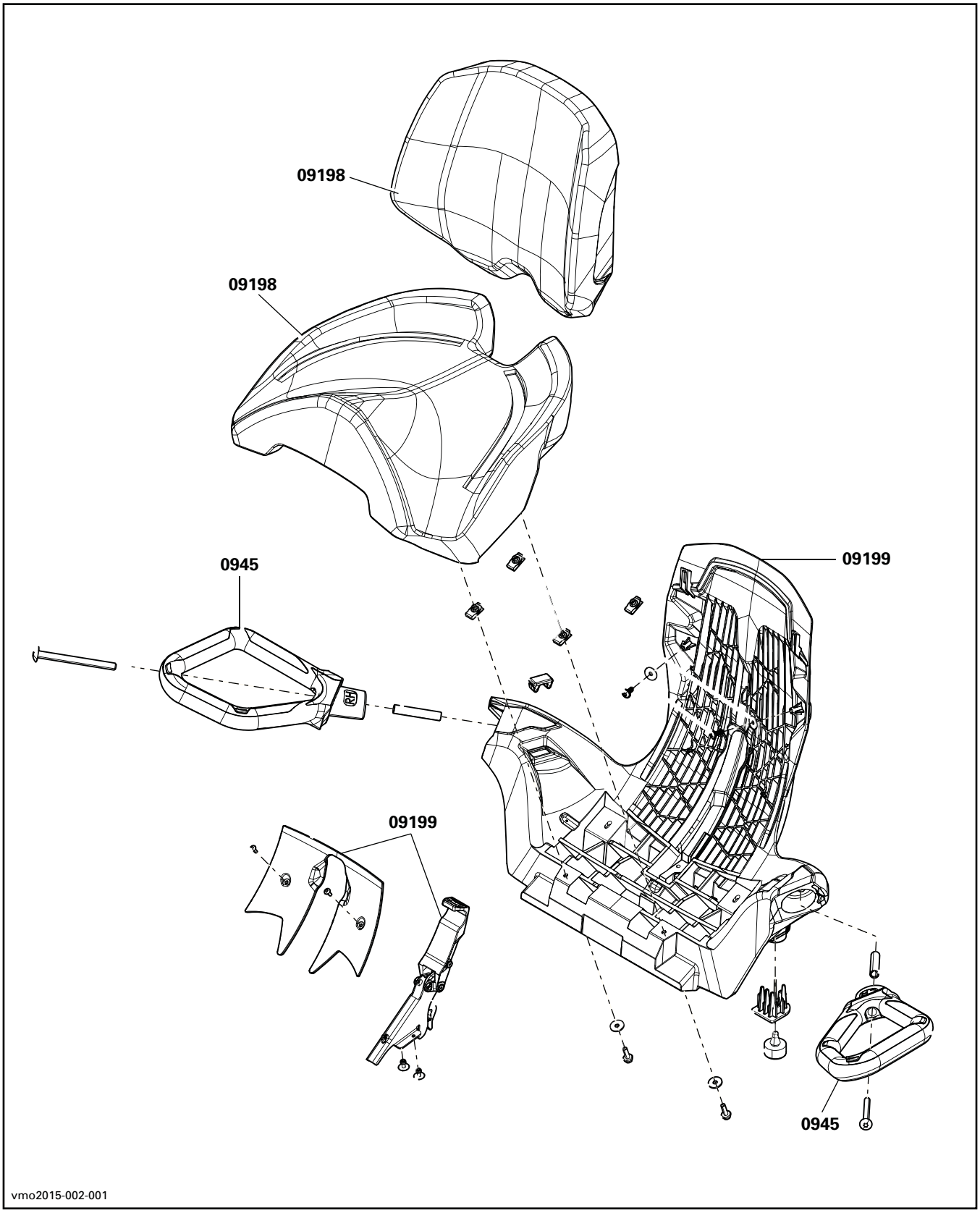
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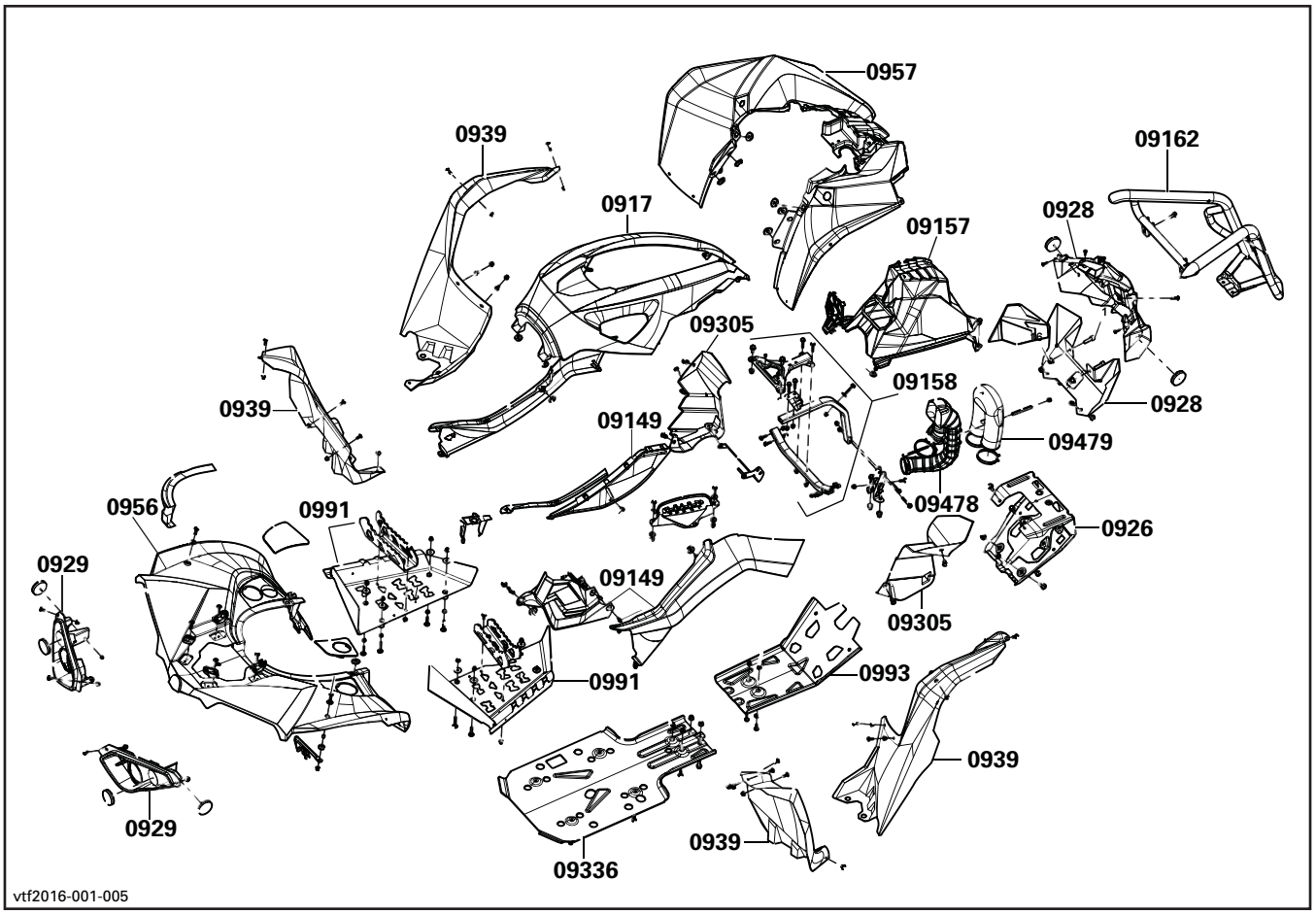
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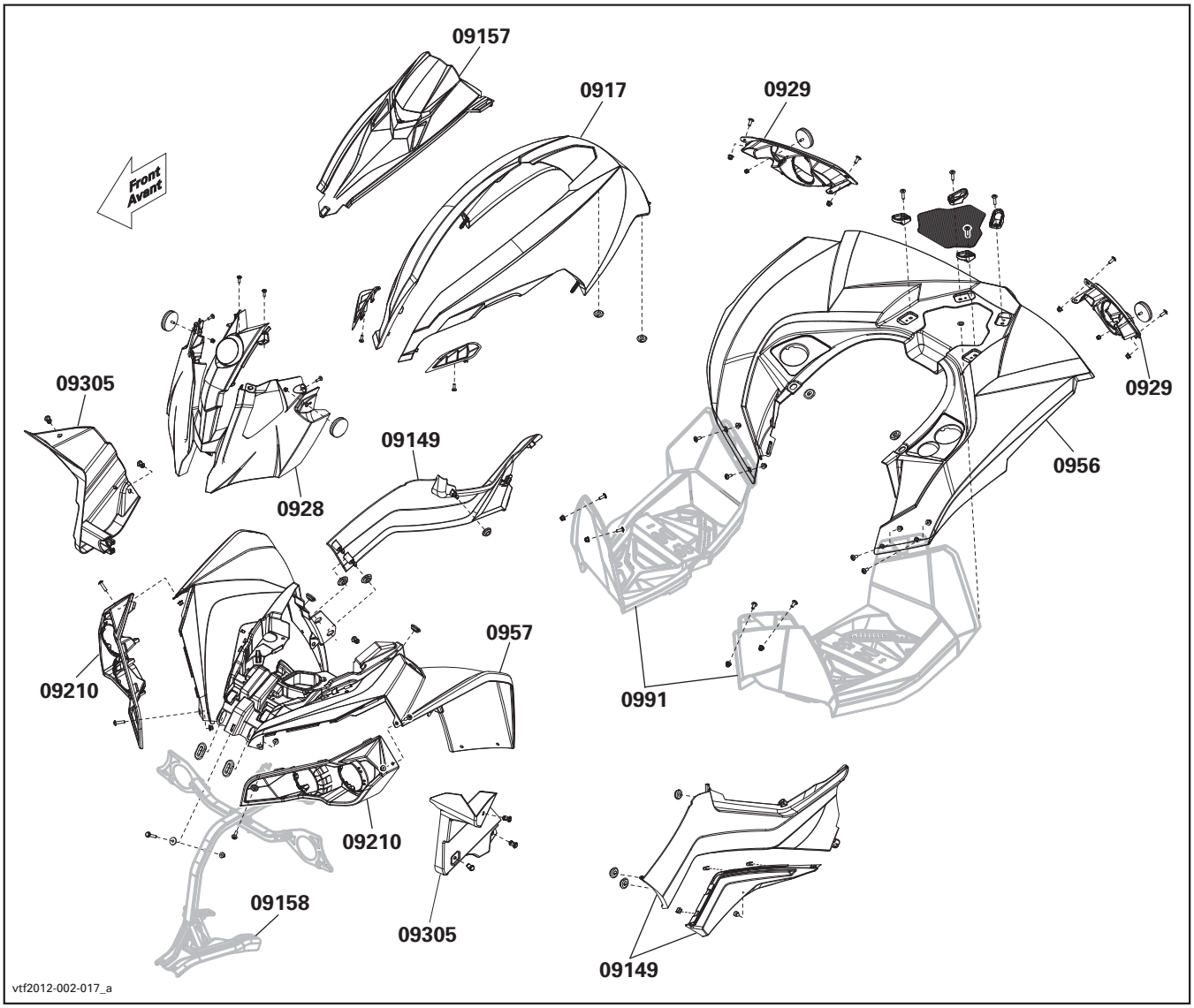
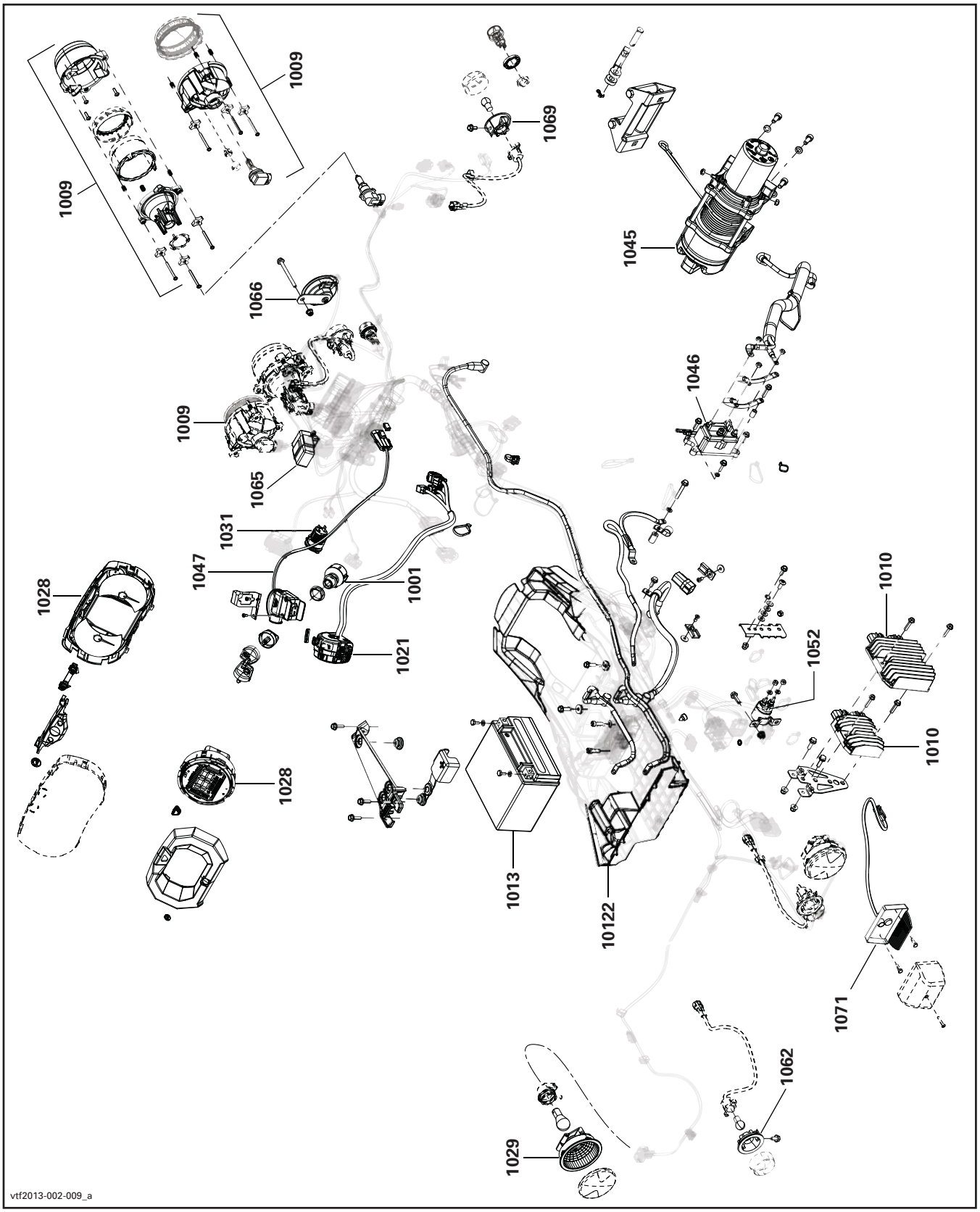
BODY AND ACCESSORIES
CARROSSERIE ET ACCESSOIRES



SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
10	**00**	**NO LABOR INVOLVED AUCUNE MAIN-D'OEUVRE**	**0**	**0**	**0**	**0**	**0**
10	01	IGNITION SWITCH INTERRUPTEUR D'ALLUMAGE	0.3	0.3	0.3	0.3	0.3
10	09	HEADLAMP AND/OR HEADLAMP SUPPORT (ASS'Y) (RH OR LH) PHARE AVANT ET/OU SUPPORT (COMPLET) (DROIT OU GAUCHE)	0.3	0.3	0.3	0.3	0.3
10	10	VOLTAGE REGULATOR RÉGULATEUR DE TENSION	0.3	0.3	0.3	0.3	0.3
10	13	BATTERY BATTERIE	0.3	0.3	0.3	0.3	0.3
10	21	MULTIFUNCTION SWITCH INTERRUPTEUR MULTIFONCTION	0.8	0.8	1.1	0.3	0.3
10	28	SPEEDOMETER/TACHOMETER INDICATEUR DE VITESSE/COMPTE-TOURS	0.3	0.3	0.3	0.3	0.3
10	29	TAIL LAMP HOUSING (ASS'Y) BOÎTIER DE FEU ARRIÈRE (COMPLET)	0.3	0.3	0.3	0.3	0.3
10	31	DC OUTLET PLUG PRISE D'ACCESSOIRE DC	0.3	0.3	0.3	0.3	0.3
10	34	ELECTRONIC MODULE MODULE ÉLECTRONIQUE	0.4	0.4	0.4	0.4	0.4
10	41	ENGINE HARNESS CÂBLAGE DU MOTEUR	1.4	1.4	1.4	1.3	1.3
10	45	WINCH (ASS'Y) (XT) TREUIL (COMPLET) (XT)	0.4	0.4	0.4		0.4
10	46	WINCH SOLENOID (XT) SOLÉNOÏDE DE TREUIL (XT)	0.5	0.5	0.5		0.5
10	47	WINCH SWITCH (XT) INTERRUPTEUR DE TREUIL (XT)	0.4	0.4	0.4		0.4
10	51	MAIN WIRE HARNESS CÂBLAGE PRINCIPAL	2.5	2.7	3.0	2.2	2.2
10	52	STARTING RELAY RELAIS DE DÉMARRAGE	0.3	0.3	0.3	0.3	0.3
10	61	FRONT FLASHERS 1 OR 2 (**CE** ONLY) CLIGNOTANTS AVANT 1 OU 2 (**CE** SEULEMENT)	0.3	0.3		0.3	0.3
10	62	REAR FLASHERS 1 OR 2 (**CE** ONLY) CLIGNOTANTS ARRIÈRE 1 OU 2 (**CE** SEULEMENT)	0.3	0.3		0.3	0.3
10	65	12 VOLT RELAY (CE ONLY) RELAIS 12 VOLT (CE SEULEMENT)	0.3	0.3	0.3	0.3	0.3
10	66	HORN AVERTISSEUR	0.3	0.3	0.3	0.3	0.3
10	67	RELAY RELAIS	0.3	0.3	0.3	0.3	0.3

SYSTEM SYSTÈME	CODE	DESCRIPTION	OUTLANDER	OUTLANDER MAX	OUTLANDER X MR	RENEGADE	RENEGADE XMR
			6	7	8	9	10
10	68	ANY BULBS TOUTES LES AMPOULES	0.6	0.6	0.6	0.6	0.6
10	71	LICENSE LIGHT (ASS'Y) (**CE** ONLY) LUMIÈRE D'IMMATRICULATION (COMPLET) (**CE** SEULEMENT)	0.3	0.3		0.3	0.3
10	101	MULTIFONCTION SWITCH (RH) INTERRUPTEUR MULTIFONCTION (DR)	0.3	0.3	0.3	0.3	0.3
10	113	REMOTE CONTROL COMMENDE À DISTANCE	0.3	0.3	0.3		
10	114	WINCH CONNECTOR CONNECTEUR DE TREUIL	0.4	0.4	0.4		0.4
10	122	BATTERY SUPPORT SUPPORT DE BATTERIE	0.5	0.5	0.5	0.5	0.5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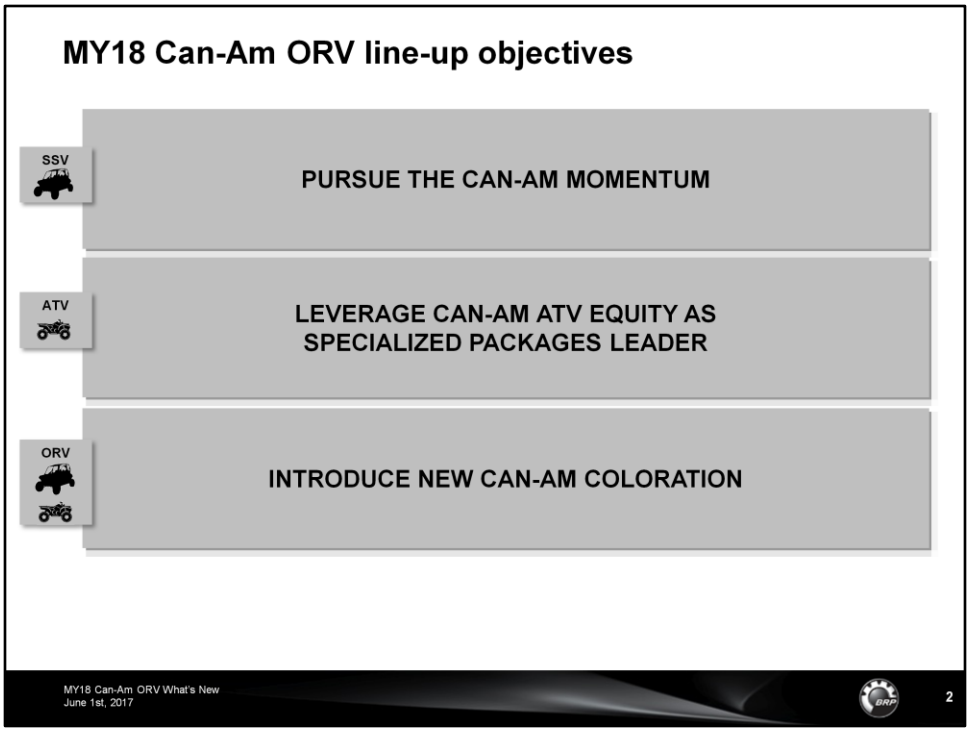
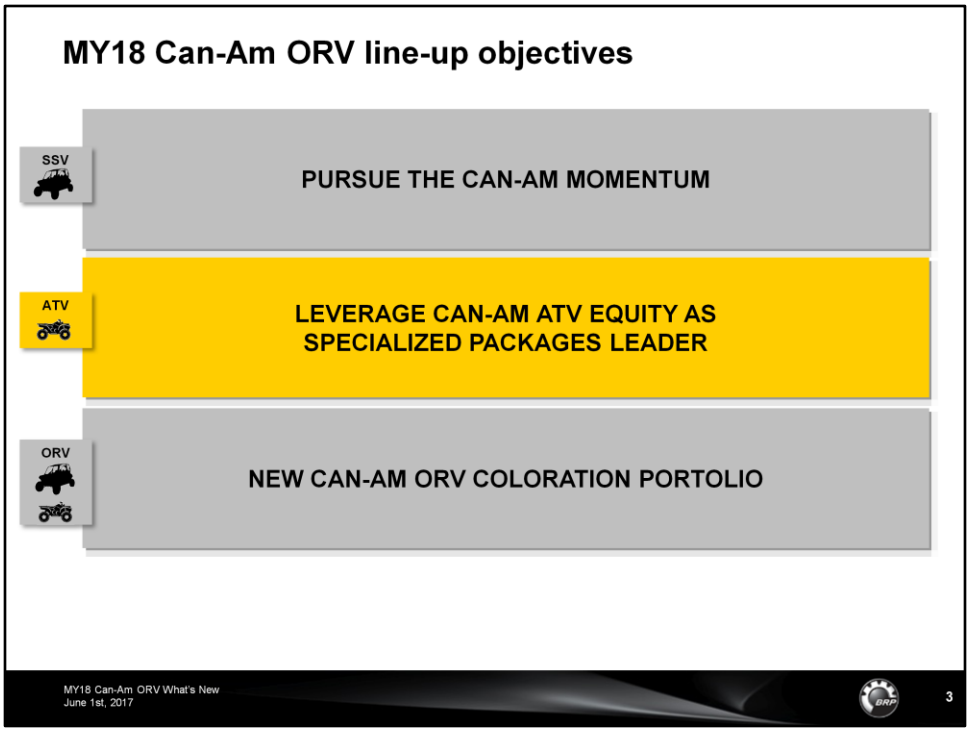
Good day everyone, my name is Eric Fauteux, Can-Am ATV Product Specialist at BRP. We will go over the 2018 ATV what's new presentation illustrating the new package, colors and new features.



Here are the objectives key points that off-road team had



To leverage Can-Am ATV equity as specialized packages leader, Can-Am added new packages to his line up. Let's look at it.

The return of a legend! 2011 was a year where we introduced the Outlander X xc. The Outlander X xc is coming back for MY18.

NEW Outlander X xc 1000R

Includes DPS package features, plus:

- FOX Podium 1.5 RC2 shocks – adjustable in rebound and dual-speed compression
- Sport aluminum front bumper with pre-runner, full underbody skidplate
- 14-in beadlock wheels with ITP Terracross tires
- Individual front and rear brake controls
- Race inspired X package paint and decals

The 2018 Can-Am Outlander X xc 1000R is carrying the heritage of the 2011 model by offering the ultimate performance for a Rec-Ute ATV.

The X xc package will include - the new generation DPS
-The Fox podium 1.5 RC2 shocks
-Sport aluminum front bumper with pre-runner and full underbody skidplate
-14 inches beadlock wheels with ITP Terracross tires
-Individual front and rear brake controls
-And finally the race inspired X package paint and decals

Who else than Can-Am, to develop the ultimate ATV to work and play in cold environment?

Another new great package will be the Outlander North Edition.

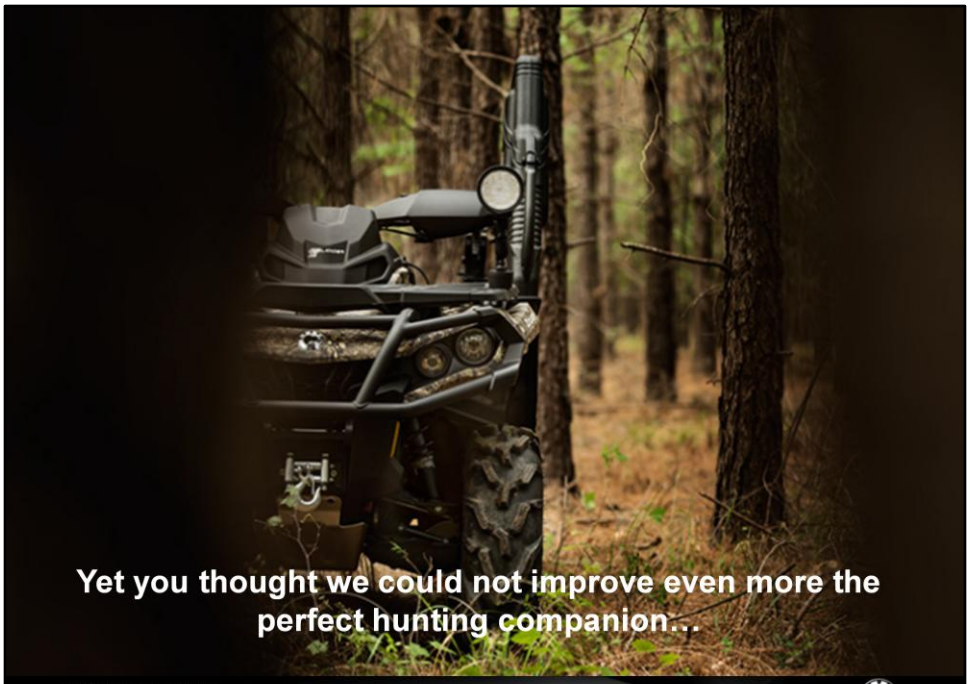
NEW Outlander North Edition

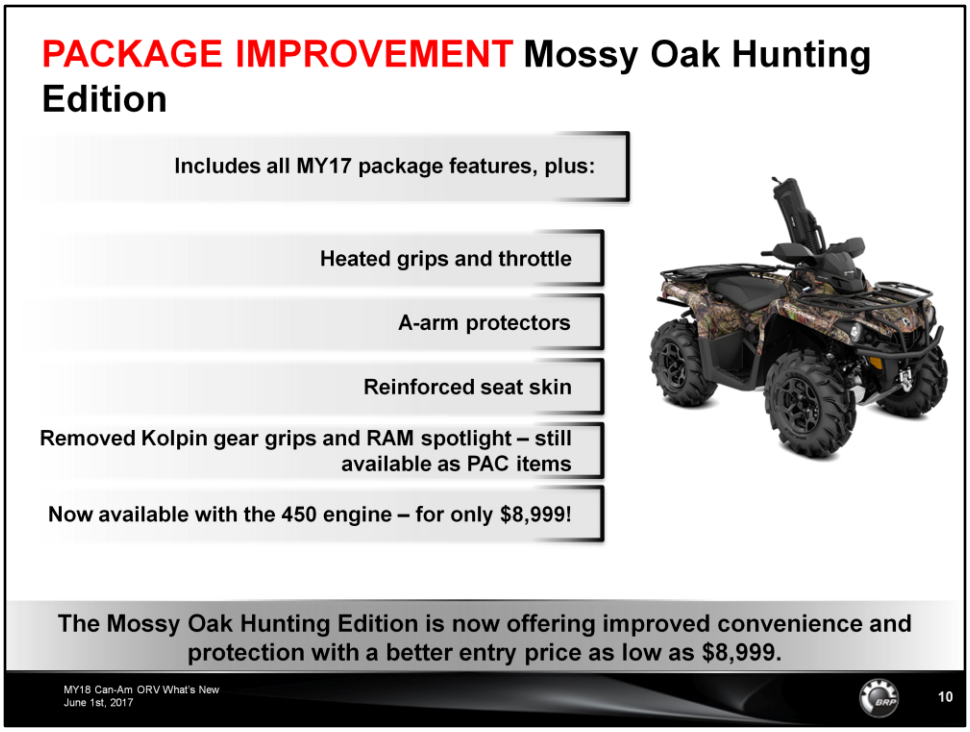
Includes all DPS package features, plus:

- Heated grips, throttle and visor outlet for driver and passenger
- Lower L gear for better control when snow plowing
- 3000-lb WARN winch with roller fairlead
- Windshield, mudguards, foot pegs
- ITP Terracross tires on 14-in aluminum wheels

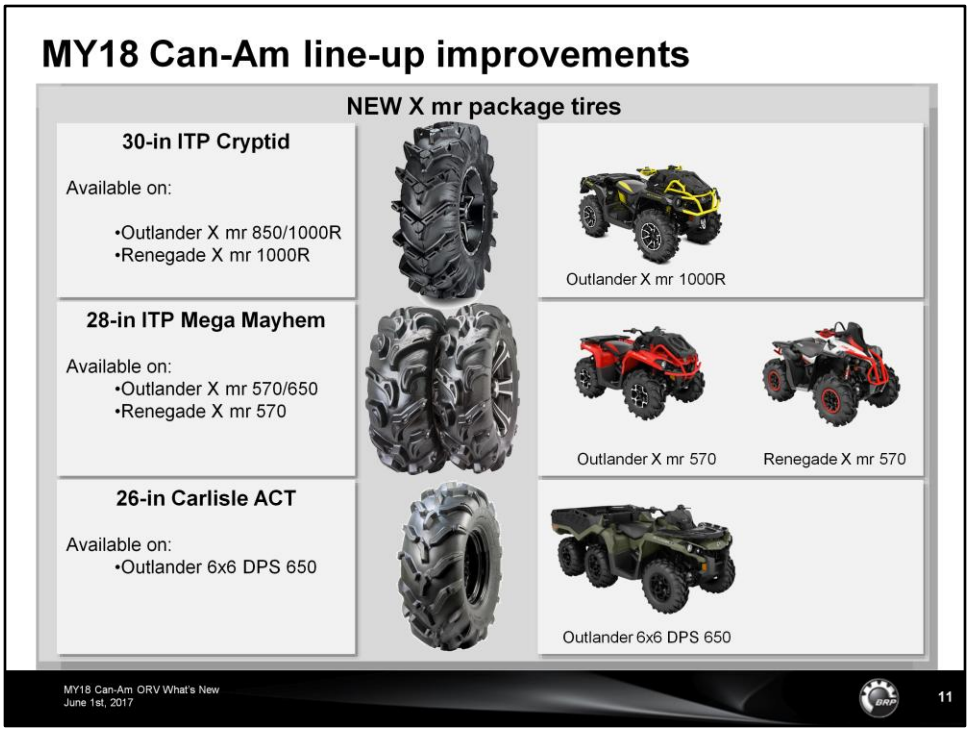
Available in 1-up and MAX configuration, with a choice of 650 or 850 engines, the Outlander North Edition offers extra protection from elements for added comfort

The North Edition will have also the new brushless DPS,
-Heated grips and throttle plus visor outlet for driver and passanger
-Heavy duty gearbox with a lower L gear for better control when snow plowing
-3000-lb WARN winch with roller fairlead
-Windshield, mudgards and footpegs
-14 inches aluminum wheels with ITP Terracross tires
It will come 1-up and Max configuration with a choice of 650 or 850 engines.

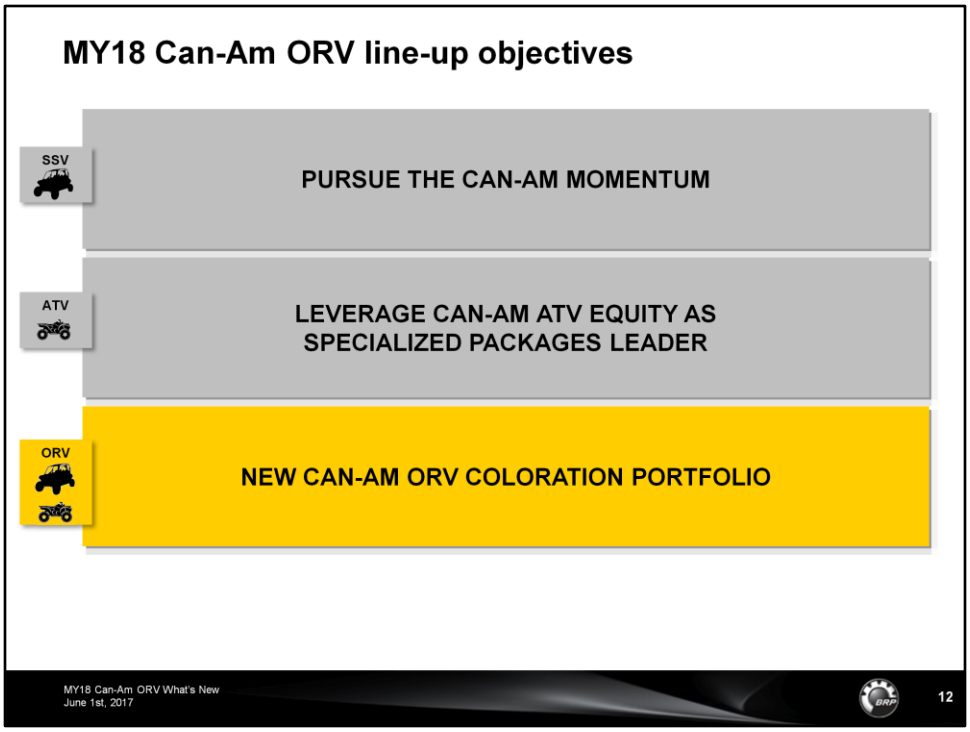

Yet you thought we could not improve even more the perfect hunting companion…



Finally, we improve the Mossy Oak Hunting Edition to be more affordable. It will come with all MY17 package features, plus
-heated grips and throttle
-A-arm protectors
-Reinforced seat skin
-Removed Kolpin gear grips and RAM spotlight – still available as PAC items
-Now available with the 450 engine



For the XMR package, decision driven by performance test (tested 10 different mud tires), the 30 inches ITP Cryptid will replace our old Gorilla Axle Silverback . The latest ITP mud tire (in trend) has longer threads on side and less in the middle.
Better than Gorilla in deep mud and much less vibration on the trail.
For the 28 inches, from Maxxis Mudzila to Mega Mayhem and Carlisle ACT 26 inches will equip our 6x6 DPS 650.



Let's have a look to our new coloration…

NEW Can-Am ORV coloration portfolio

NEW White (color-in)

Available for:

- Outlander/MAX North Edition 650/850

The new white for the North Edition

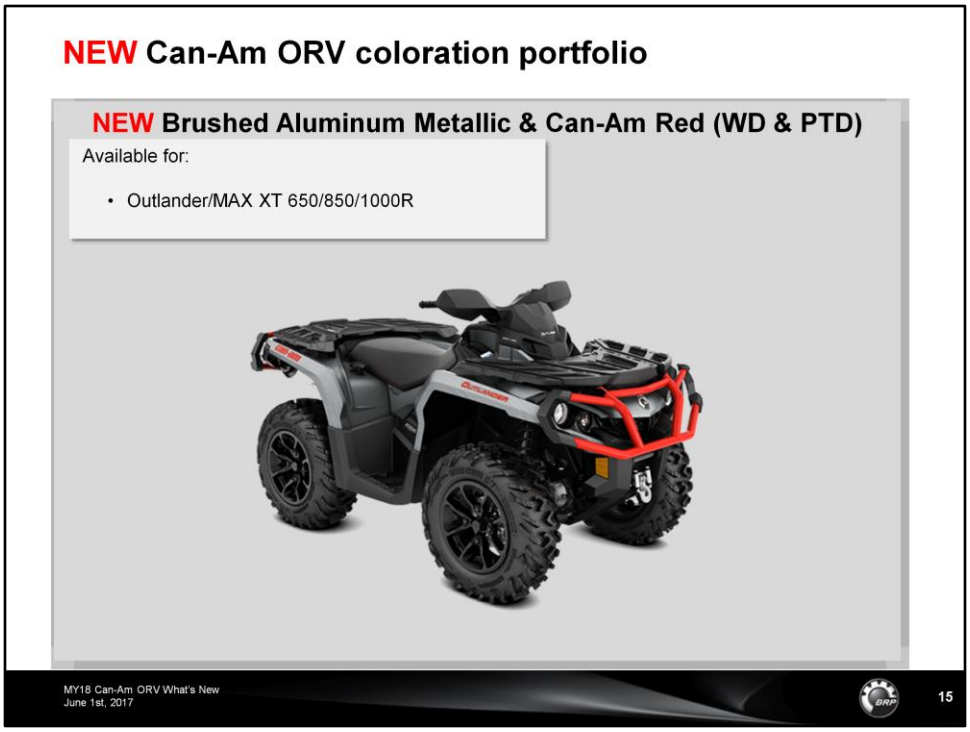
NEW Can-Am ORV coloration portfolio

NEW Green (color-in)

Available for:

- Outlander 6x6 DPS 650

The new green for the 6x6 DPS 650



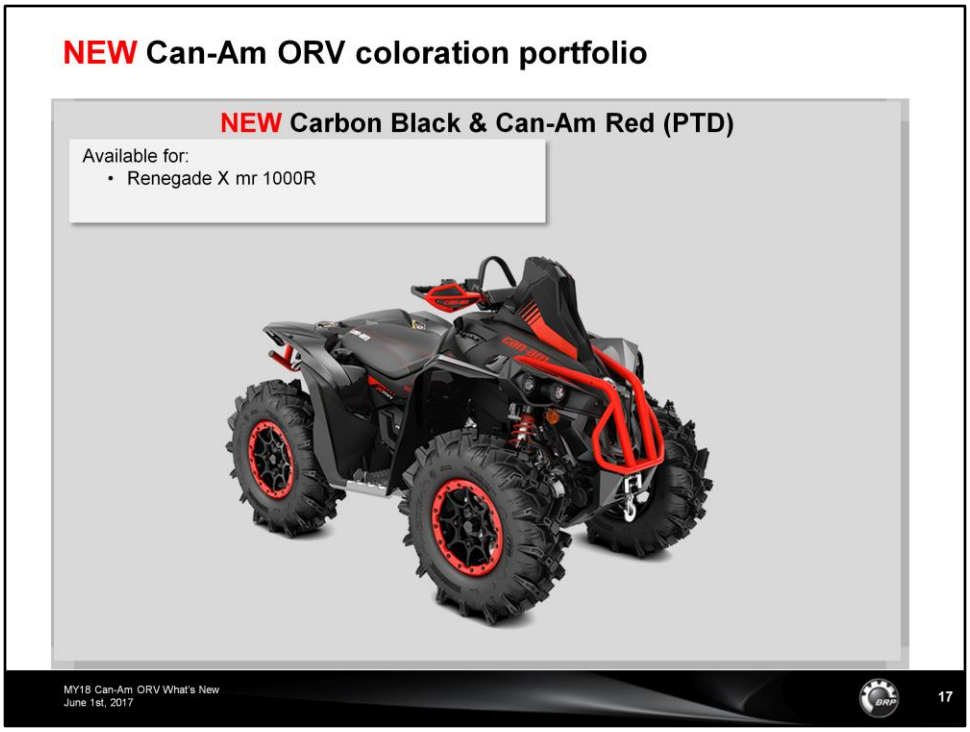
Changing *accent from black to Can-Am red on the XT.*

NEW Can-Am ORV coloration portfolio

NEW Black & Can-Am Red (color-in)

Available for:
- Outlander X mr 570/650/850/1000R

The new black and Can-Am red on the XMR's.



The new Carbon Black & Can-Am Red for the Renegade X mr 1000R.

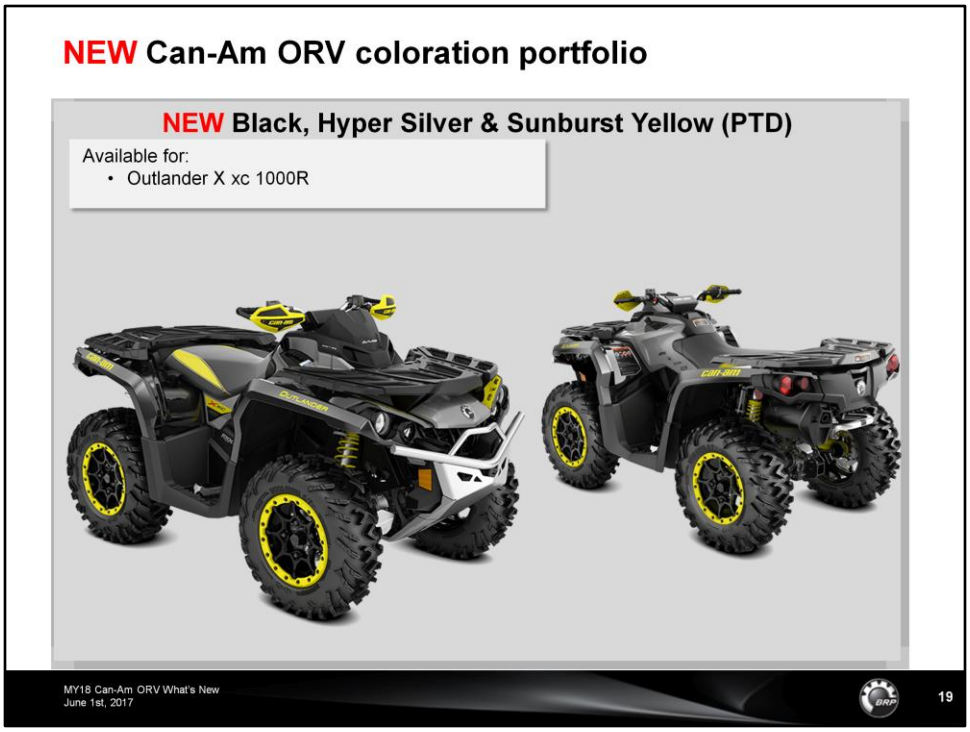
NEW Can-Am ORV coloration portfolio

NEW Carbon Black & Sunburst Yellow (PTD)

Available for:

- Outlander X mr 1000R
- Renegade X mr 1000R

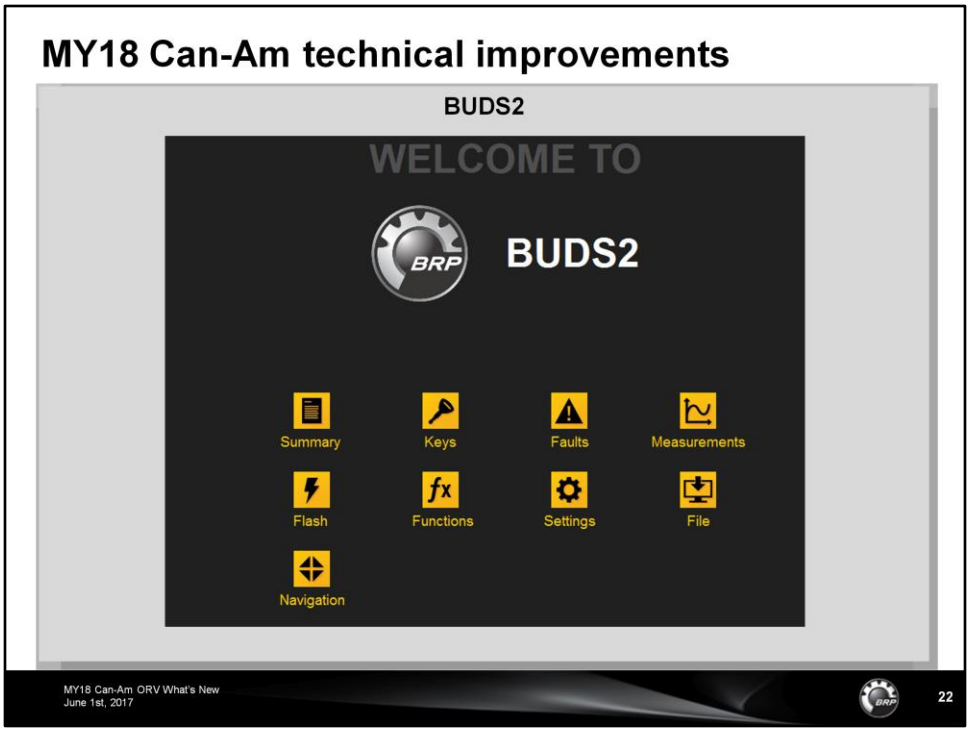
The new Carbon Black & Sunburst Yellow will be offered on the Outlander and Renegade XMR 1000R,



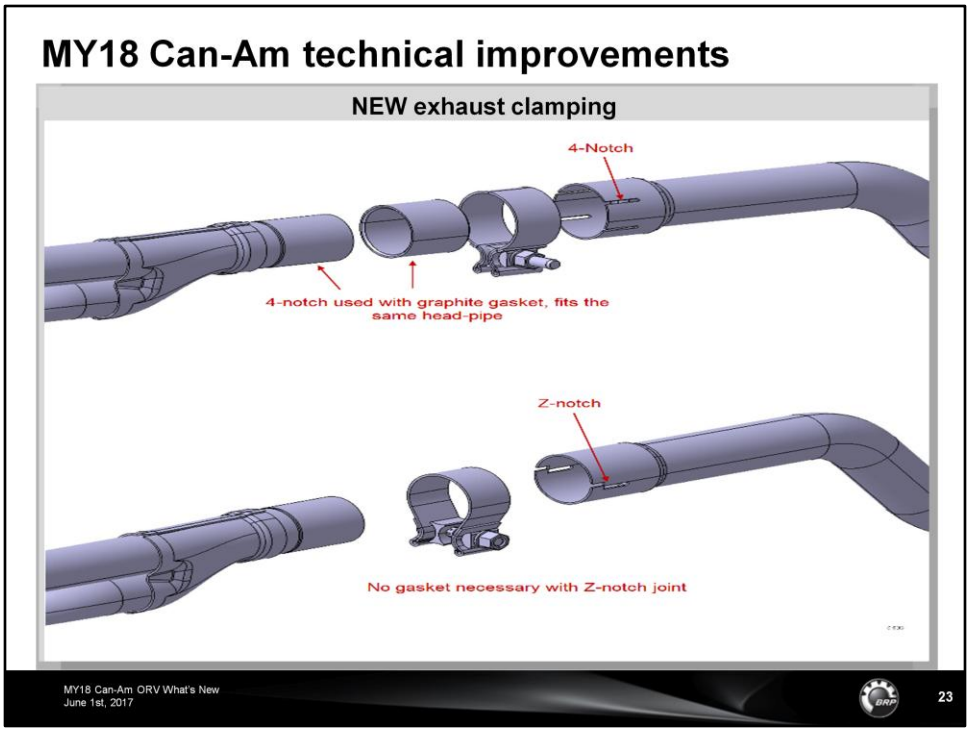
The X xc Outlander will receive the new Black, Hyper Silver & Sunburst Yellow.

And finally the new orange for the Outlander DPS.

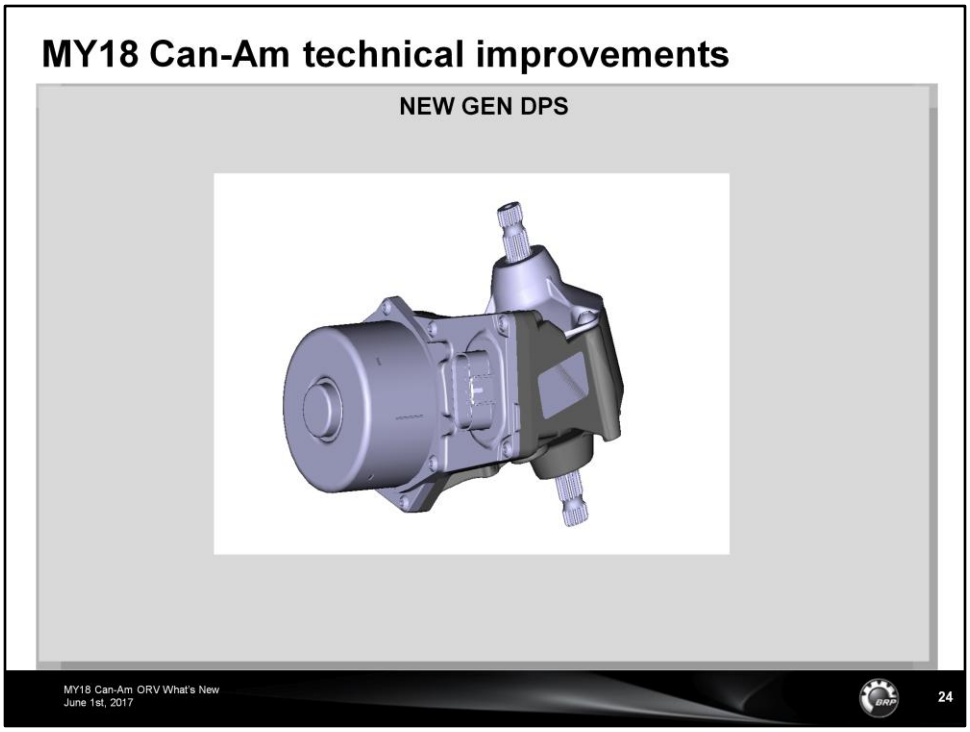
What's new under the panels?



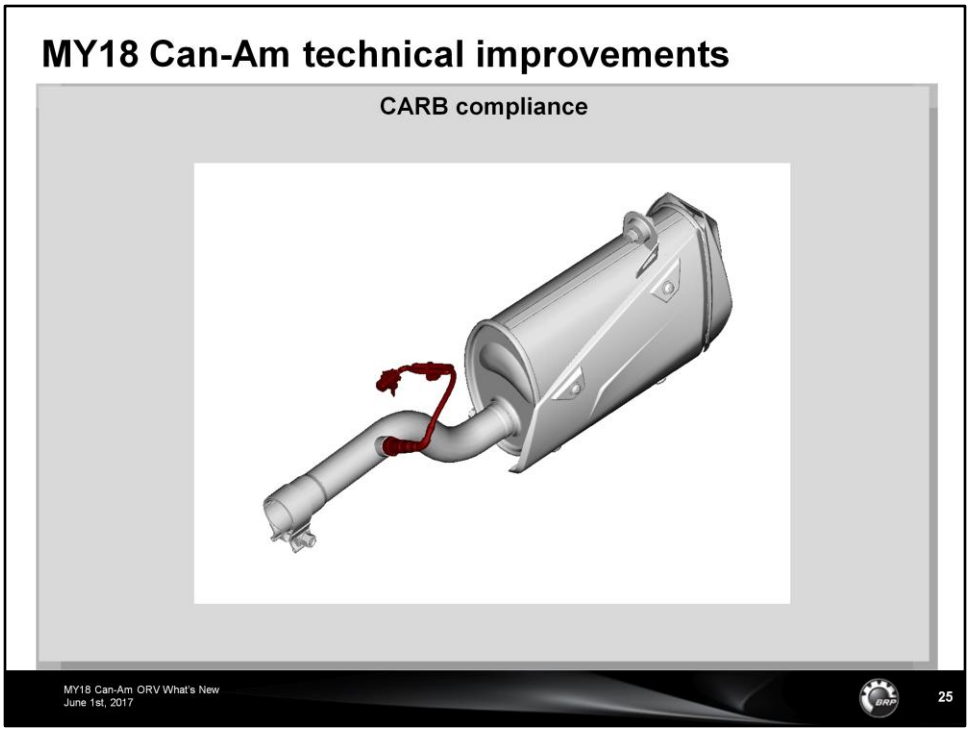
BUDS2 will be introduced on all MY18 ATV LU.



No more graphite gasket. For standardisations, all ATVs will now be equipped with the pipe on pipe Z-notch clamping. Note that G2L already has this type of clamping.



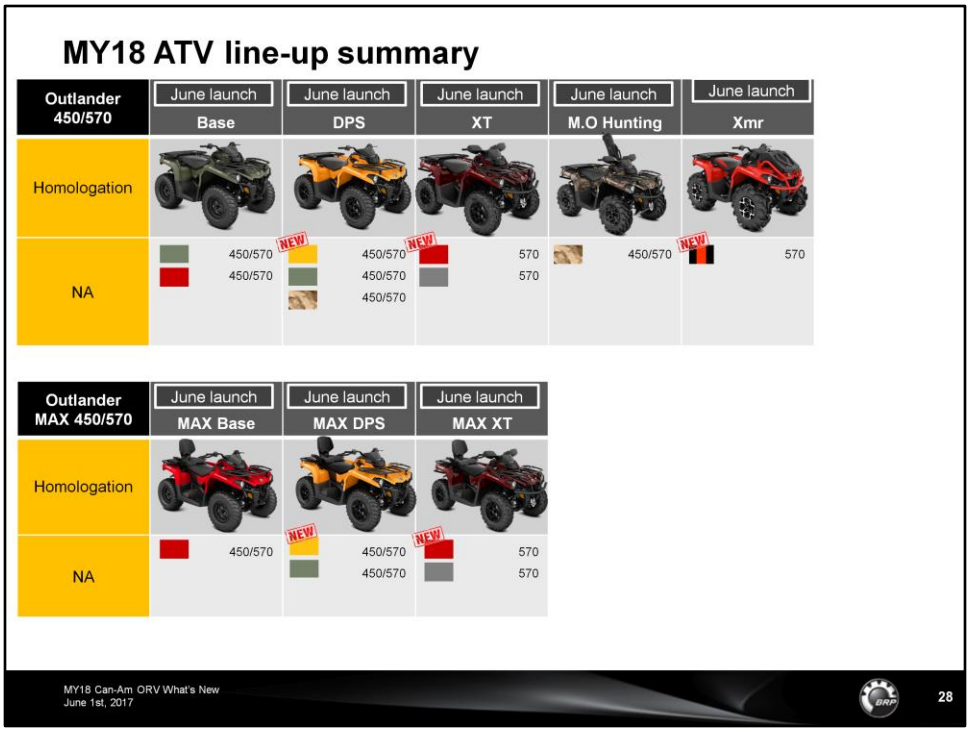
All MY18 ATV's equipped with a DPS will receive the new brushless DPS (1 connector) from Kongsberg introduced last year on the G2L.



The California state will have specific SKU's to be CARB (California Air Resource Board) compliance. The only noticeable difference will be the addition of a lambda sensor on the exhaust as well as a specific ECM calibration. Note that some models won't be available for California (6x6, North edition, Outlander XXC, all XMR's, Renegade 1000R and the minis).

What's new from PAC?

PAC will offer a driver backrest for the Outlanders and BAJA design LED high beam kit for the G2's.



Here is our MY18 ATV line-up

MY18 ATV line-up summary

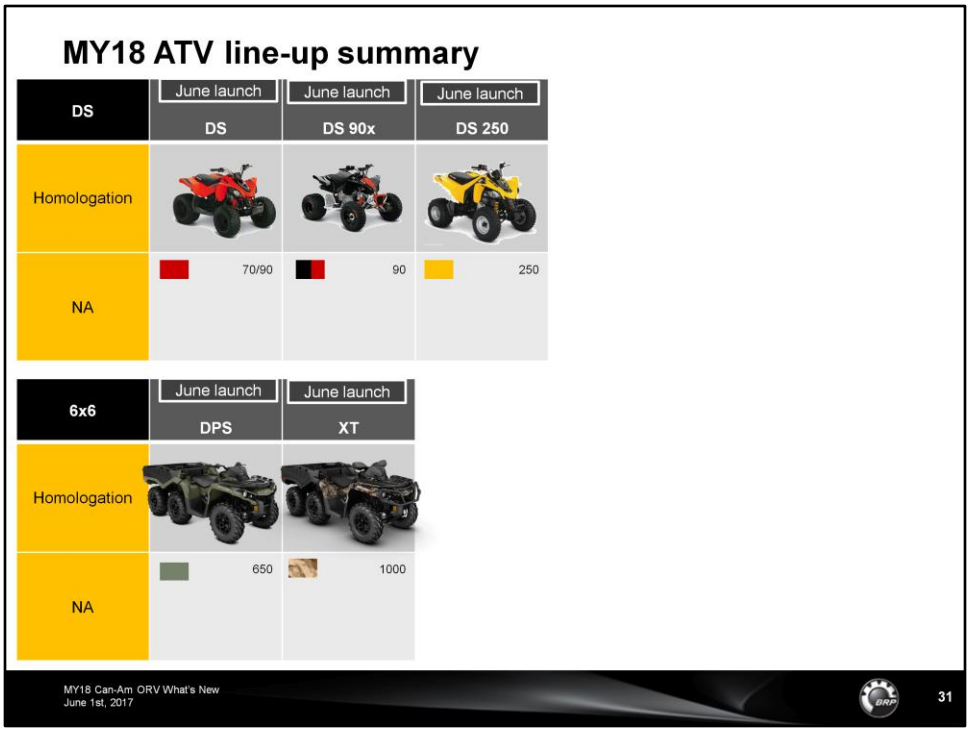
Outlander	June launch Base	June launch DPS	June launch XT	June launch XT-P
Homologation				
NA	650	NEW 650/850/1000R	NEW 650/850/1000R NEW 650/850/1000R 650/850	850/1000R

Outlander	June launch X xc	June launch M.O Hunting	June launch North Edition	June launch Xmr
Homologation				
NA	NEW 1000R	1000R	NEW	NEW 1000R NEW 650/850/1000R

MY18 ATV line-up summary

Outlander MAX	June launch DPS	June launch XT	June launch XT-P	June launch North Edition	June launch Limited
Homologation					
NA	NEW 650	NEW 650/850/1000R NEW 650/850/1000R 650/850	850/1000R	NEW 650/850	1000R

Renegade	June launch Base	June launch Xxc	June launch Xmr
Homologation			
NA	570/850/1000R	1000R 850/1000R	NEW 1000R NEW 1000R 570



Thanks for watching.

Ski-Doo®
Lynx®
Sea-Doo®
Evinrude®
Rotax®
Can-Am®

L'EXPÉRIENCE **ULTIME** EN SPORTS MOTORISÉS

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2018

Operator's Guide

Includes
Safety, Vehicle
and Maintenance Information

T3 4x4 OUTLANDER™/ OUTLANDER™ MAX™ 570/650/1000 Series

⚠ WARNING

Read this guide thoroughly. It contains important safety information.
Minimum recommended age: Operator: 16 years old. Driving tractor requires at least a tractor driving license. Keep this Operator's Guide in the vehicle.

2 1 9 0 0 1 8 7 2

Original Instructions

⚠ WARNING

YOUR VEHICLE CAN BE HAZARDOUS TO OPERATE. A collision or rollover can occur quickly, if you fail to take proper precautions, even during routine maneuvers such as turning and driving on hills or over obstacles.
For your safety, understand and follow all the warnings contained in this Operator's Guide and on the labels on your vehicle. **Failure to follow these warnings can result in SEVERE INJURY OR DEATH!**
Keep this Operator's Guide with the vehicle at all times.

⚠ WARNING

Disregarding any of the safety precautions and instructions contained in this Operator's Guide, *SAFETY VIDEO* and on-product safety labels could result in an injury including the possibility of death!

⚠ WARNING

This vehicle may exceed the performance of other vehicles you may have ridden in the past. Take time to familiarize yourself with your new vehicle.

The following trademarks are the property of Bombardier Recreational Products Inc.:

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Can-Am® D.E.S.S.™ DPS™ Outlander™ Rotax® TTI™ XPS™

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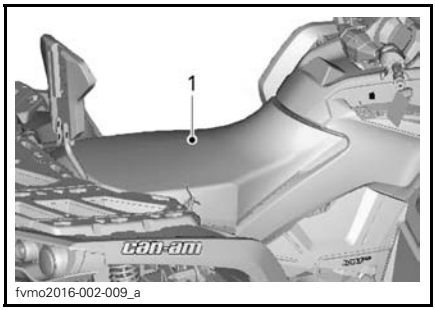
I VEHICLE IDENTIFICATION

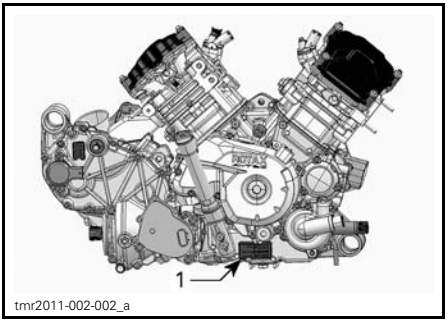
The main components of your vehicle (engine and frame) are identified using different serial numbers. It may sometimes become necessary to locate these numbers for warranty purposes or to trace your vehicle in the event of loss. These numbers are also required by the authorized Can-Am dealer to complete warranty claims properly. No warranty will be allowed by BRP if the engine identification number (EIN) or vehicle identification number (VIN) is removed, mutilated or altered in any way. We strongly recommend that you take note of all the serial numbers on your vehicle and supply them to your insurance company.

1) Vehicle Identification Number



TYPICAL
1. VIN location

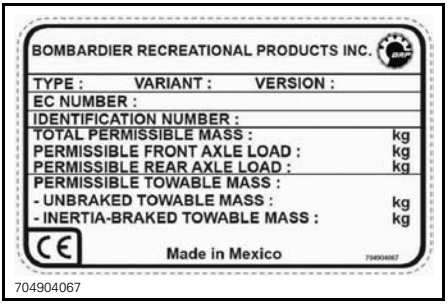
2) Engine Identification Number (EIN)



TYPICAL - RH SIDE OF ENGINE
1. Engine Identification Number (EIN)

3) Compliance Labels

These labels indicate vehicle's compliance.



VEHICLE IDENTIFICATION

T3 MODEL No. _____

VEHICLE
IDENTIFICATION NUMBER (V.I.N.) _____

ENGINE
IDENTIFICATION NUMBER (E.I.N.) _____

Owner: _____
NAME

_____
No. STREET APT

_____
CITY STATE/PROVINCE ZIP/POSTAL CODE

Purchase Date _____ | | | | |
YEAR MONTH DAY

Warranty Expiry Date _____ | | | | |
YEAR MONTH DAY

To be completed by the dealer at the time of the sale.

DEALER IMPRINT AREA

V00A2IL

Please verify with your dealer to ensure your vehicle has been registered with BRP.

4) Intended use

Agricultural tractor that can be used to carry materials. Check the maximum allowable load of the vehicle indicated on the statutory plate and vehicle maximum load label, refer to *IMPORTANT ON-PRODUCT LABELS*. The Can-Am T3 tractor can tow a trailer on the road. Check the maximum allowable load of the trailer. Check the regulations for your area regarding the use of a tractor and trailer on the road. Connect the trailer lights on the vehicle and install a triangle for slow moving vehicles at rear of the trailer.

II FOREWORD

Deutsch	Dieses Handbuch ist möglicherweise in Ihrer Landessprache verfügbar. Bitte wenden Sie sich an Ihren Händler oder besuchen Sie: **www.operatorsguides.brp.com**
English	This guide may be available in your language. Check with your dealer or go to: **www.operatorsguides.brp.com**
Español	Es posible que este manual esté disponible en su idioma. Consulte a su distribuidor o visite: **www.operatorsguides.brp.com**
Français	Ce guide peut être disponible dans votre langue. Vérifier avec votre concessionnaire ou aller à: **www.operatorsguides.brp.com**
中文	本手册可能有您的语种的翻译版本。请向经销商问询，或者登录 www.operatorsguides.brp.com 查询。
日本語	このガイドは、言語によって翻訳版が用意されています。. ディーラーに問い合わせるか、次のアドレスでご確認ください： www.operatorsguides.brp.com
Nederlands	Deze handleiding kan beschikbaar zijn in uw taal. Vraag het aan uw dealer of ga naar: **www.operatorsguides.brp.com**
Norsk	Denne boken kan finnes tilgjengelig på ditt eget språk. Kontakt din forhandler eller gå til: **www.operatorsguides.brp.com**
Português	Este manual pode estar disponível em seu idioma. Fale com sua concessionária ou visite o site: **www.operatorsguides.brp.com**
Suomi	Käyttöohjekirja voi olla saatavissa omalla kielelläsi. Tarkista jälleenmyyjältä tai käy osoitteessa: **www.operatorsguides.brp.com**
Svenska	Denna bok kan finnas tillgänglig på ditt språk. Kontakta din återförsäljare eller gå till: **www.operatorsguides.brp.com**

This operator's guide is regarded as part of the vehicle and should be remain with the vehicle when it is sold.

Congratulations on your purchase of a new Can-Am® ATV. It is backed by the BRP warranty and a network of authorized Can-Am dealers ready to provide the parts, service or accessories you may require.

Your dealer is committed to your satisfaction. He has taken training to perform the initial setup and inspection of your vehicle as well as completed the final adjustment before you took possession. If you need more complete servicing information, please ask your dealer.

At delivery, you were also informed of the warranty coverage and signed the *PREDELIVERY CHECK LIST* to ensure your new vehicle was prepared to your entire satisfaction.

1) Know Before you Go

To learn how to reduce the risk for you or bystanders being injured or killed, read this Operator's Guide before you operate the vehicle.

Also, read all safety labels on your ATV and watch attentively your *SAFETY VIDEO*.

This vehicle is mainly for general recreational use but it may also be used for utility purposes.

Failure to follow the warnings contained in this Operator's Guide can result in SERIOUS INJURY or DEATH.

Age Recommendation

This vehicle is a category G, always follow this age recommendation:

- A person under 16 years old should never operate this vehicle.
- This vehicle is for recreational use by experienced operator's only.
- Passenger on 2-UP models must be capable of keeping his feet on the footrests and his hands on grab handles at all times when seated on this vehicle.

Training Course

Never operate this vehicle without proper instruction. **Take a training course.** All operators should receive training from a certified instructor.

For more information about ATV safety, contact an authorized Can-Am dealer to find out about available training courses nearest you.

2) Safety Messages

The types of safety messages, what they look like and how they are used in this guide are explained as follows:

The safety alert symbol ⚠ indicates a potential injury hazard.

⚠ WARNING

Indicates a potential hazard, if not avoided, could result in serious injury or death.

⚠ CAUTION Indicates a hazard situation which, if not avoided, could result in minor or moderate injury.

NOTICE Indicates an instruction which, if not followed, could severely damage vehicle components or other property.

3) About this Operator's Guide

This Operator's Guide has been prepared to acquaint the owner/operator of a new vehicle with the various vehicle controls, maintenance and safe operating instructions. It is indispensable for the proper use of the product.

After reading, please keep this Operator's Guide with the vehicle. If the vehicle is resold, please give the guide to the new owner for his awareness.

If you have any question regarding any topic whether or not it is covered in this Operator's Guide, refer to *CONTACT US*.

If you need more information, please ask your dealer.

⚠ WARNING

Throughout this Operator's Guide, the term "1-UP" refers to vehicles designed to carry the operator only while the term "2-UP" refers to vehicles designed to carry also a passenger.
Make sure to identify and follow the warnings and instructions that are applicable to your specific model.

Note that this guide is available in several languages. In the event of any discrepancy, the English version shall prevail.

Keep this Operator's Guide in the vehicle as you can refer to it for things such as maintenance, troubleshooting and instructing others.

If you want to view and/or print an extra copy of your Operator's Guide, simply visit the following website **www.operatorsguides.brp.com**.

The information contained in this document are correct at the time of publication. However, BRP maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured. Due to late changes, some differences between the manufactured product and the descriptions and/or specifications in this guide may occur. BRP reserves the right at any time to discontinue or change specifications, designs, features, models or equipment without incurring any obligation upon itself.

This Operator's Guide and the *SAFETY DVD* should remain with the vehicle when it is sold.

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

TABLE OF CONTENTS

I VEHICLE IDENTIFICATION 1
1) Vehicle Identification Number 1
2) Engine Identification Number (EIN) 1
3) Compliance Labels 1
4) Intended use 3
II FOREWORD 4
1) Know Before you Go 4
2) Safety Messages 5
3) About this Operator's Guide 5

A) SAFETY INFORMATION

I GENERAL PRECAUTIONS 12
1) Avoid Carbon Monoxide Poisoning 12
2) Avoid Gasoline Fires and Other Hazards 12
3) Avoid Burns from Hot Parts 12
4) Accessories and Modifications 12
II SPECIAL SAFETY MESSAGES 14
1) European Community 17
III OPERATION WARNINGS 18
IV RIDING THE VEHICLE 46
1) Pre-Ride Inspection 47
2) Riding Gear 49
3) Carrying a Passenger 50
4) Recreational Riding 51
5) Environment 51
6) Design Limitation 52
7) Off-Road Operation 52
8) Riding Techniques 52
V MOVING LOADS AND DOING WORK 64
1) Working with your Vehicle 64
2) Carrying Loads 64
3) Loading the Cargo Racks 65
4) Hauling a Load 65
5) Pulling a Trailer 66
VI IMPORTANT ON-PRODUCT LABELS 68
1) Hang Tag 68
2) Vehicle Safety Labels 70
3) Compliance Labels 76
4) Technical Information Labels 77

B) VEHICLE INFORMATION

I CONTROLS 80
1) Throttle Lever 80

I CONTROLS (cont'd)
2) Brake Lever 81
3) Brake Lock 81
4) Brake Pedal 82
5) Shift Lever 82
6) Ignition Switch 83
7) Multifunction Switch 84
8) 2WD/4WD Selector 87
9) Winch Control Switch (Models with Winch) 88
10) Shift Lever Lock 88

II MULTIFUNCTION GAUGE (LCD) 89
1) Multifunction Gauge Description 89
2) Multifunction Gauge Features 90
3) Multifunction Gauge Set-Up 91

III MULTIFUNCTION GAUGE (ANALOG/DIGITAL) 93
1) Multifunction Gauge Description 93
2) Gauge Setup 95

IV EQUIPMENT 97
1) Operator's Seat 99
2) Passenger's Seat (2-UP Models) 100
3) Grab Handles (2-UP Models) 101
4) Footpegs 102
5) 12-Volt Power Outlet 102
6) Rear Storage Compartment 102
7) Cargo Racks 103
8) Trailer Hitch 104
9) Trailer Connector 104
10) Tool Kit 105
11) Recovery Hooks 105
12) Winch (If equipped) 105
13) License Plate Light 106

V FUEL 107
1) Fuel Requirements 107
2) Recommended Fuel 107
3) Vehicle Fueling Procedure 107

VI BREAK-IN PERIOD 109
Operation During Break-In 109

VII BASIC PROCEDURES 110
1) Starting the Engine 110
2) Changing Gear Selection 110
3) Stopping the Engine and Parking the Vehicle 110

VIII SPECIAL PROCEDURES 111
1) What to Do if Water Entered the CVT 111
2) What to Do if Water Entered the Air Filter Housing 111
3) What to Do if Vehicle is Turned Over 112
4) What to Do if Vehicle is Immersed in Water 112

IX TUNE YOUR RIDE 113
1) Suspension Adjustment 113
2) Dynamic Power Steering (DPS) Assist Level Adjustment 114
X VEHICLE TRANSPORTATION 116

C) MAINTENANCE

I MAINTENANCE SCHEDULE 118
1) SEVERE DUSTY CONDITIONS 118
2) MAINTENANCE SCHEDULE LEGEND 118
3) MAINTENANCE SCHEDULE 118
II MAINTENANCE PROCEDURES 121
1) Air Filter 121
2) Engine Oil 124
3) Oil Filter 126
4) Radiator 127
5) Engine Coolant 127
6) Muffler Spark Arrester 130
7) CVT Air Filter (1000) 131
8) Gearbox Oil 132
9) Throttle Cable 134
10) Spark Plugs 136
11) Battery 137
12) Fuses 137
13) Lights 139
14) Drive Shaft Boot and Protector 140
15) Wheel Bearing 141
16) Wheels and Tires 141
17) Steering 144
18) Suspension 145
19) Brakes 145
III VEHICLE CARE 148
1) Post-Operation Care 148
2) Vehicle Cleaning and Protection 148
IV STORAGE AND PRESEASON PREPARATION 150

D) TECHNICAL INFORMATION

I SPECIFICATIONS 152

E) TROUBLESHOOTING

TROUBLESHOOTING GUIDELINES 164
II MULTIFUNCTION GAUGE MESSAGES 168

F) SPARE PARTS

I CATALOGS 172

G) WARRANTY

I BRP INTERNATIONAL LIMITED WARRANTY: 2018 CAN-AM™ ATV T3 174

II BRP LIMITED WARRANTY FOR THE EUROPEAN ECONOMIC AREA, THE COMMONWEALTH OF THE INDEPENDENT STATES AND TURKEY: 2018 CAN-AM™ ATV T3 178

H) CUSTOMER INFORMATION

I PRIVACY INFORMATION..... 184

II CONTACT US..... 185

North America 185
Europe 185
Oceania 185
South America..... 185
Asia..... 185

III CHANGE OF ADDRESS/OWNERSHIP 186

IV MAINTENANCE RECORDS 189

A) SAFETY INFORMATION

I GENERAL PRECAUTIONS

1) Avoid Carbon Monoxide Poisoning

All engine exhaust contains carbon monoxide, a deadly gas. Breathing carbon monoxide can cause headaches, dizziness, drowsiness, nausea, confusion and eventually death.

Carbon monoxide is a colorless, odorless, tasteless gas that may be present even if you do not see or smell any engine exhaust. Deadly levels of carbon monoxide can collect rapidly, and you can quickly be overcome and unable to save yourself. Also, deadly levels of carbon monoxide can linger for hours or days in enclosed or poorly ventilated areas. If you experience any symptoms of carbon monoxide poisoning, leave the area immediately, get fresh air and seek medical treatment.

To prevent serious injury or death from carbon monoxide:

– Never run the vehicle in poorly ventilated or partially enclosed areas such as garages, carports or barns. Even if you try to ventilate engine exhaust with fans or open windows and doors, carbon monoxide can rapidly reach dangerous levels.
– Never run the vehicle outdoors where engine exhaust can be drawn into a building through openings such as windows and doors.

2) Avoid Gasoline Fires and Other Hazards

Gasoline is extremely flammable and highly explosive. Fuel vapors can spread and be ignited by a spark or flame many feet away from the engine. To reduce the risk of fire or explosion, follow these instructions:

– Use only an approved red gasoline container to store fuel.
– Never fill a gasoline container on the vehicle. An electrical static discharge may ignite the fuel.
– For refueling, strictly adhere to instructions in *FUEL*.
– Never start or operate the engine if the fuel cap is not properly installed.

Gasoline is poisonous and can cause injury or death.

– Never siphon gasoline by mouth.
– If you swallow gasoline, get any in your eye(s), or inhale gasoline vapor, see your doctor immediately.

If gasoline spills on you, wash with soap and water and change your clothes.

3) Avoid Burns from Hot Parts

Certain components become hot during operation. Avoid contact with those parts during and shortly after operation to avoid burns.

4) Accessories and Modifications

Any modifications or addition of accessories may affect the handling of your vehicle. It is important to take the time to get familiar with the vehicle once modifications are made to understand how to adapt your driving behavior accordingly.

Do not temper with unauthorized modifications or install equipment not specifically certified by BRP for the vehicle. These modifications have not been tested by BRP and they may increase the risk of injury or loss of control, or render the vehicle illegal to ride. As an example, tempering with tire specifications may affect the behavior of the vehicle and increase the risk of a loss of control.

Ask your authorized BRP dealer for suitable available accessories for your vehicle.

If no such attachment points are foreseen, the operator' s manual shall prohibit the installation of a frontend loader

This T3 has not attachment points for frontend loader. Do not install front loader.

See your authorized Can-Am dealer for available accessories for your vehicle.

II SPECIAL SAFETY MESSAGES

THIS VEHICLE IS NOT A TOY AND CAN BE HAZARDOUS TO OPERATE.

– This vehicle handles differently from other vehicles including motorcycles and cars. A collision or rollover can occur quickly, if you fail to take proper precautions, even during routine maneuvers such as turning and driving on hills or over obstacles.

SEVERE INJURY OR DEATH can result if you do not comply with the following instructions:

– Read this Operator's Guide and all on-product safety labels carefully and follow the operating procedures described. Watch and pay attention to the *SAFETY VIDEO* before operating the vehicle.

– Always follow this age recommendation: A person under 16 years old should never operate this vehicle.

– Never take place on this vehicle without wearing an approved helmet of the proper size and other required riding gears. Refer to *RIDING GEAR* in *RIDING THE VEHICLE* for detailed information.

– Never carry a passenger on this vehicle unless you are operating a 2-UP model. Passenger(s) affect balance and steering and increase risk of losing control.

– On 1-UP models, do not make any modifications to accommodate a passenger or use racks to carry a passenger.

– Never use this vehicle if you are tired, ill or under with drugs or alcohol. Your reaction time and judgement is greatly affected under these conditions.

– Never attempt wheelies, jumps, or other stunts.

– Never operate at excessive speeds. Always go at a speed that is proper for the terrain, visibility, and operating conditions, and your experience.

– Always go slowly and be extra careful when operating on unfamiliar terrain. Always be alert to changing terrain conditions when operating this vehicle.

– Never operate on excessively rough, slippery or loose terrain until you have learned and practiced the skills necessary to control this vehicle on such terrain. Always be especially cautious on these kinds of terrain.

– Always follow proper procedures for turning. Refer to *RIDING TECHNIQUES* in *RIDING THE VEHICLE*.

– Never operate this vehicle on hills too steep for the vehicle or for your abilities.

– Always follow proper procedures for climbing hills as described in *RIDING TECHNIQUES*. Check the terrain carefully before you start up any hill. Never climb hills with excessively slippery or loose surfaces.

– Always follow proper procedures for going down hills and for braking on hills as described in *RIDING TECHNIQUES*. Check the terrain carefully before you start down any hill.

– Always follow proper procedures for crossing the side of a hill as described in *RIDING TECHNIQUES*. Avoid hills with excessively slippery or loose surfaces.

– Always use proper procedures if you stall or roll backwards when climbing a hill. To avoid stalling, use low gear and maintain a steady speed when climbing a hill. If you stall or roll backwards, follow the driving technique procedures as described in *RIDING TECHNIQUES*.

– Always check for obstacles before operating in a new area. Never attempt to operate over large obstacles, such as large rocks or fallen trees. Always follow proper procedures when operating over obstacles as described in *RIDING TECHNIQUES*.

– Always be careful when skidding or sliding. Learn to safely control skidding or sliding by practicing at low speeds and on level smooth terrain. On extremely slippery surfaces, such as ice, go slowly and be very cautious in order to reduce the chance of skidding out of control. If you are operating a 2-UP model and have a passenger on-board, never attempt skidding or sliding; overturn or passenger ejection may occur.
– Never operate this vehicle through deep or fast flowing water. Water should never exceed footrests. Remember that wet brakes may have reduced stopping ability. Test your brakes after leaving water, mud or snow. If necessary, apply them several times to let friction dry out the pads.
– Always keep in mind that braking distance is readily affected by but not limited to; weather and terrain conditions, braking system and tire conditions, vehicle speed and attitude, and vehicle load including towing. Remember to adjust your driving accordingly.
– Always be sure there are no obstacles or people behind the vehicle when you operate in reverse. When it is safe to proceed in reverse, go slowly. Take into account that on a 2-UP model the passenger can obstruct your view.
– BRP recommends sitting on your ATV when operating in reverse. Avoid standing up. Your weight could shift forward against throttle lever, causing an unexpected acceleration and may lead to a loss of control.
– Never exceed the stated load limits for this vehicle including operator, passenger (2-UP models), all other loads and added accessories. Cargo should be properly distributed and securely attached. Reduce speed and follow instructions in this guide for carrying cargo or pulling a trailer. Allow greater distance for braking.
– Always inspect and confirm the safe operating condition of your vehicle prior to ride. Refer to *PRE-RIDE INSPECTION* in *RIDING THE VEHICLE*. Always follow the maintenance schedules as described in this Operator's Guide. Refer to *MAINTENANCE*.
– Never operate the vehicle if the controls do not function normally.
– Always maintain proper tire pressure. When replacing tires, use only the recommended tire size and type. For tire information, refer to *SPECIFICATIONS*.
– Riding your vehicle too fast for the conditions may result in injury. Apply only enough throttle to proceed safely. Statistics show that mishaps and injury usually result from high speed turns. Always remember that this vehicle is heavy! Its pure weight alone may entrap you should it fall resulting in injury.
– This vehicle is not designed for jumping, nor can it fully absorb the high impact energy generated during manoeuvres such as jumping which, can be passed on to you, the operator. Performing wheelies can cause the vehicle to flip over onto you. Both practices have a high risk for you and your passenger (2-UP models) and should be avoided at all times.

2-UP Models

Driver must:

– Not forget is responsible for the safety of the passenger.
– Inform the passenger concerning the basic rules for a safe ride.
– Instruct the passenger to read the vehicle's safety labels and to watch the *SAFETY VIDEO*.

– Always practice the maneuvers described in this Operator's Guide without and with a passenger. Greater skills are required with a passenger.
– Always remember that the vehicle handling and stability may be affected when riding with a passenger. Safely reduce speed. Use proper judgement. If in doubt, do not attempt and disembark the passenger before executing any maneuver.
– Always remember that the vehicle braking distance may be longer when riding with a passenger. Allow greater distance for braking.
– Never carry passenger on a 2-UP model if the passenger seat is not installed.
– Never carry more than one (1) passenger. Do not allow passenger to sit anywhere else than the designated passenger' seat.
– Never carry a passenger if you judge his ability or judgement insufficient to concentrate on the terrain conditions and adapt accordingly.
– Never carry a passenger who has used drugs or alcohol, or is tired or ill. These slow reaction time and impair judgment.

Passenger must:

– Be capable of resting his feet on the footrests and his hands on grab handles when seated on this vehicle.
– Never take place on this vehicle without wearing an approved helmet (including a chin guard) that fits properly. The passenger should also wear eye protection (goggles or face shield), gloves, boots, long sleeved shirt or jacket, and long pants.
– Be seated on the designated passenger's seat.
– Always keep hands on grab handles and feet on the footrests during operation. Never hold on to the operator.
– Never get up during vehicle operation. An excessive movement could cause loss of control.
– Pay attention to vehicle and operator movements.
– Not wait and tell the driver to slow down or stop if you feel uncomfortable or insecure for any reason.

1) European Community

On Road Use

The followings warnings applies only in the European Countries where on road usage is allowed. **SEVERE INJURY OR DEATH** can result if you do not comply with the following instructions.

⚠ WARNING

- This vehicle is built for OFF-ROAD purposes only. It may be used for short distances on paved surfaces at reduced speed, in order to move the vehicle from an off-road location to another.
- Always refrain from speeding and substantially reduce vehicle speed when turning.
- Always respect the road traffic laws, even on a dirt or gravel road.
- Always use any other equipment as required by traffic law for slow moving vehicle.
- The front winch hook (if applicable) must be removed and stored.

III OPERATION WARNINGS

The following warning and their format have been requested by the United States Consumer Product Safety Commission and are required to be in the Operator's Guide for all ATVs.

NOTE: The following illustrations are general representations only. Your model may differ.

The list is not exhaustive.

⚠ WARNING

POTENTIAL HAZARD

Operating this vehicle without proper instruction.

WHAT CAN HAPPEN

The risk of an accident is greatly increased if the operator does not know how to operate this vehicle properly in different situations and on different types of terrain.

HOW TO AVOID THE HAZARD

Beginners and inexperienced operators should complete a training course. They should then regularly practice the skills learned during the course as well as the operating techniques described in this Operator's Guide.

For more information about a training course, contact an authorized Can-Am dealer.

⚠ WARNING

V00A1AQ

POTENTIAL HAZARD

Failure to follow the age recommendations for this vehicle.

WHAT CAN HAPPEN

A lack of respect for this age recommendation can lead to severe injury or death of the child.

Even though a child may be within the age group for which this vehicle is recommended, he may not have the skills, abilities, or judgment needed to operate this vehicle safely and may be involved in a serious accident.

HOW TO AVOID THE HAZARD

No one under 16 should operate this vehicle.

2-UP Models Only

⚠ WARNING

vmo2014-005-100

POTENTIAL HAZARD

Failure to respect the physical limitations of the passenger on 2-UP models.

WHAT CAN HAPPEN

A passenger that cannot completely lean his feet on footrests can be ejected when riding on uneven terrain.

HOW TO AVOID THE HAZARD

The passenger must be capable of keeping his feet on the footrests and his hands on grab handles at all times when he is seated on the vehicle.

1-UP Models Only

⚠ WARNING

V00A02Q

POTENTIAL HAZARD

Carrying a passenger on this vehicle.

WHAT CAN HAPPEN

Greatly reduces your ability to balance and control this vehicle.

Could cause an accident, resulting in harm to you and/or your passenger.

HOW TO AVOID THE HAZARD

Never carry passenger. Even with a long seat that provides unrestricted operator movement, it is not designed nor intended to carry passenger(s).

2-UP Models Only

⚠ WARNING

V00A1CQ

POTENTIAL HAZARD

Carrying more than one (1) passenger on this vehicle.

WHAT CAN HAPPEN

Carrying more than one (1) passenger reduces your ability to balance and control this vehicle.

Could cause an accident, resulting in harm to you and/or your passengers.

HOW TO AVOID THE HAZARD

Never carry more than one (1) passenger. Even with a long seat that provides unrestricted operator movement, the vehicle is not designed nor intended to carry more than one (1) operator and one (1) passenger. The passenger must use the designated passenger's seat when he is seated on the vehicle with feet firmly planted on footrests and always hold on to the grab handles.

⚠ WARNING

V00A2DQ

POTENTIAL HAZARD

Allowing passenger(s) to sit on front or rear racks on this vehicle.

WHAT CAN HAPPEN

Allowing a passenger could:

– Impair vehicle stability which could lead to a loss of control.
– Result in injury to passenger(s) from impact on hard surfaces.
– Cause an accident, resulting in harm to you and/or your passenger.

HOW TO AVOID THE HAZARD

Never allow any passenger to sit on front or rear racks on this vehicle.

⚠ WARNING

POTENTIAL HAZARD

Operating this vehicle on paved surfaces.

WHAT CAN HAPPEN

Paved surfaces may seriously affect handling and control of the vehicle, and may cause the vehicle to go out of control.

HOW TO AVOID THE HAZARD

If a road usage is allowed in your area, operate your vehicle on paved surfaces only for short distance and for the only purpose of moving the vehicle from an off-road usage to another.

Always operate your vehicle at low speed (never exceed 40 km/h (25 MPH)) and reduce the speed before making a turn.

Always respect all road traffic laws when operating your vehicle on public roads or streets.

⚠ WARNING

POTENTIAL HAZARD

Riding this vehicle without wearing an approved helmet, eye protection and protective gear. On 2-UP models, passenger should also have an approved helmet with a rigid chin guard.

WHAT CAN HAPPEN

- Riding without an approved helmet increases the chances of a severe head injury or death in the event of an accident.
- Riding without eye protection can result in an accident and increases the chances of a severe injury in the event of an accident.
- Riding without protective gear increases the chances of severe injury in the event of an accident.

HOW TO AVOID THE HAZARD

Always wear an approved helmet that fits properly. You should also wear:

- Eye protection (goggles or face shield)
- Rigid chin guard
- Gloves and boots
- Long sleeved shirt or jacket
- Long pants.

⚠ WARNING

V00A07Q

POTENTIAL HAZARD

Using this vehicle with drugs or alcohol.

WHAT CAN HAPPEN

Could cause the passenger to fall off (2-UP models).

Could seriously affect your judgment.

Could cause you to react more slowly.

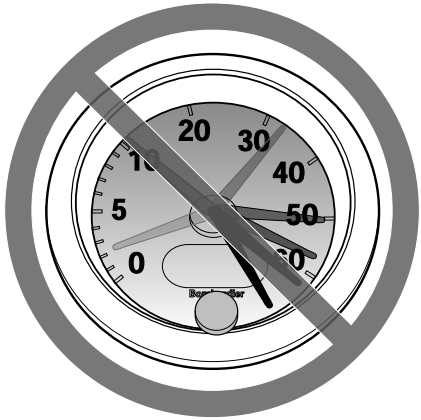
Could affect your balance and perception.

Could result in an accident or death.

HOW TO AVOID THE HAZARD

The operator and the passenger (2-UP models) should never use this vehicle with drugs or alcohol.

⚠ WARNING



V00A08Q

POTENTIAL HAZARD

Operating this vehicle at excessive speeds.

WHAT CAN HAPPEN

Increases your chances of losing control of the vehicle, which can result in an accident.

HOW TO AVOID THE HAZARD

Always travel at a speed which is appropriate for the terrain, visibility and operating conditions, and your experience.

On 2-UP models, the vehicle handling, stability and braking distance may be affected when riding with a passenger. Safely reduce speed when riding with a passenger. Allow greater distance for braking.

⚠ WARNING

POTENTIAL HAZARD

Attempting wheelies, jumps and other stunts.

WHAT CAN HAPPEN

Increases the chance of an accident, for the operator and the passenger (2-UP models), including an overturn.

HOW TO AVOID THE HAZARD

Never attempt stunts, such as wheelies or jumps. Do not try to show off.

⚠ WARNING

POTENTIAL HAZARD

Failure to inspect the vehicle before operating.

Failure to properly maintain the vehicle.

WHAT CAN HAPPEN

Increases the possibility of an accident or equipment damage.

HOW TO AVOID THE HAZARD

Always inspect your vehicle prior to ride to make sure the vehicle is in safe operating condition.

Always follow the maintenance schedule described in this Operator's Guide.

⚠ WARNING

POTENTIAL HAZARD

Riding on frozen waterways.

WHAT CAN HAPPEN

Breaking through the ice can lead to severe injury or death.

HOW TO AVOID THE HAZARD

Never ride this vehicle on a frozen surface before you are sure the ice is thick enough and sound enough to support the vehicle and its load, as well as the force that is created by a moving vehicle.

⚠ WARNING

POTENTIAL HAZARD

Removing hands from handlebars for the opeator and from grab handles for the passenger (2-UP models), or feet from the footrests during operation.

WHAT CAN HAPPEN

Removing even one hand or foot can reduce your ability to control the vehicle or could cause you to lose your balance and fall off the vehicle. If you remove a foot from the footrests, your foot or leg may come into contact with the rear wheels, which could injure you or cause an accident.

HOW TO AVOID THE HAZARD

Operator must always keep both hands on the handlebars and passenger (2-UP models) on grab handles. Both feet (operator and passenger on 2-UP models) must rest on the footrests during vehicle operation.

⚠ WARNING

POTENTIAL HAZARD

Failure to use extra care when operating this vehicle on unfamiliar terrain.

WHAT CAN HAPPEN

You can come upon hidden rocks, bumps, or holes, without enough time to react.

Could result in the vehicle overturning, passenger ejection (2-UP models) or loss of control.

HOW TO AVOID THE HAZARD

Go slowly and be extra careful when operating on unfamiliar terrain.

Always be alert to changing terrain conditions when operating the vehicle.

Do not forget, on 2-UP models, the operator is responsible for the safety of his passenger. Safely reduce speed when riding with a passenger.

⚠ WARNING

POTENTIAL HAZARD

Failure to use extra care when operating on excessively rough, slippery or loose terrain.

WHAT CAN HAPPEN

Could cause loss of traction or vehicle control, which could result in an accident, including an overturn or passenger ejection (2-UP models).

HOW TO AVOID THE HAZARD

Do not operate on excessively rough, slippery or loose terrain until you have learned and practiced the skills necessary to control this vehicle on such terrain.

Always be especially cautious on these kinds of terrain.

Do not forget, on 2-UP models, the operator is responsible for the safety of the passenger. In doubt, disembark him before operating on these terrains.

⚠ WARNING

POTENTIAL HAZARD

Turning improperly.

WHAT CAN HAPPEN

Vehicle could go out of control, causing a collision or an overturn or a passenger ejection (2-UP models).

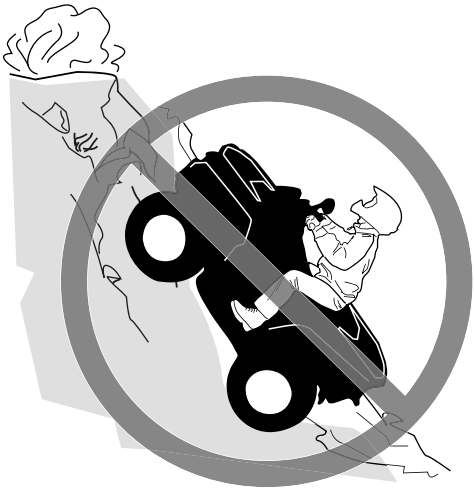
HOW TO AVOID THE HAZARD

Always follow proper procedures for turning as described in this Operator's Guide. Practice turning at low speeds before attempting to turn at faster speeds.

Do not forget, on 2-UP models, the operator is responsible for the safety of the passenger. Never perform this maneuver with a passenger. Always remember that the vehicle handling, stability and braking distance may be affected when riding with a passenger.

Do not turn at excessive speed.

⚠ WARNING



POTENTIAL HAZARD

Operating on excessively steep hills.

WHAT CAN HAPPEN

The vehicle can overturn more easily on extremely steep hills than on level surfaces or small hills.

HOW TO AVOID THE HAZARD

Never operate this vehicle on hills too steep for the vehicle or for your abilities.

Practice, without and with passenger (2-UP models), on smaller hills before attempting larger hills.

Always remember that, on 2-UP models, even if this vehicle can climb some steep hills, it is not recommended to climb such hills with a passenger; always disembark him before attempting this maneuver. Show good judgement.

⚠ WARNING

POTENTIAL HAZARD

Climbing hills improperly.

WHAT CAN HAPPEN

Could cause loss of control, passenger ejection (2-UP models) or cause vehicle to overturn.

HOW TO AVOID THE HAZARD

Always follow proper procedures for climbing hills as described in this Operator's Guide.

Always check the terrain carefully before you start up any hill. Do not forget, on 2-UP models, the operator is responsible for the safety of the passenger. In doubt, disembark him before climbing hill. Always remember that the vehicle handling, stability and braking distance may be affected when riding with a passenger.

Never climb hills with excessively slippery or loose surfaces.

Shift your weight forward (operator and passenger on (2-UP models).

Never open the throttle suddenly or make sudden gear changes. The vehicle could flip over backwards.

Never go over the top of any hill at high speed. An obstacle, a sharp drop, or another vehicle or person could be on the other side of the hill.

⚠ WARNING

POTENTIAL HAZARD

Going down a hill improperly.

WHAT CAN HAPPEN

Could cause loss of control, passenger ejection (2-UP models) or cause vehicle to overturn.

HOW TO AVOID THE HAZARD

Always follow proper procedures for going down hills as described in this Operator's Guide.

NOTE: A special technique is required when braking as you go down a hill.

Always check the terrain carefully before you start down any hill. Do not forget, on 2-UP models, the operator is responsible for the safety of the passenger. In doubt, disembark him before going down hill. Always remember that the vehicle handling, stability and braking distance may be affected when riding with a passenger.

Shift your weight backward (operator and passenger on 2-UP models).

Never go down a hill at high speed.

Avoid going down a hill at an angle which would cause the vehicle to lean sharply to one side. Go straight down the hill where possible.

⚠ WARNING

POTENTIAL HAZARD

Improperly crossing hills or turning on hills.

WHAT CAN HAPPEN

Could cause loss of control, passenger ejection (2-UP models) or cause vehicle to overturn.

HOW TO AVOID THE HAZARD

Never attempt this maneuver on 2-UP models when the passenger is on board. Always disembark him before executing.

Never attempt to turn the vehicle around on any hill until you have mastered the turning technique as described in this Operator's Guide on level ground. Be very careful when turning on any hill.

Avoid crossing the side of a steep hill if possible.

When crossing the side of a hill:

Always follow proper procedures as described further in this Operator's Guide.

Avoid hills with excessively slippery or loose surfaces.

Operator and passenger (2-UP models) must shift weight to the uphill side of the vehicle.

⚠ WARNING

V00A1PQ

POTENTIAL HAZARD

Stalling, rolling backwards or improperly dismounting while climbing a hill.

WHAT CAN HAPPEN

Could result in vehicle overturning.

HOW TO AVOID THE HAZARD

Use low gear and maintain steady speed when climbing a hill.

If you lose all forward speed:

Operator and passenger (2-UP models) must keep their weight uphill. Never open the throttle suddenly or make sudden gear changes. The vehicle could flip over backwards.

Apply the brakes.

Lock brake lock after you have stopped.

Disembark on uphill side, or to a side if pointed straight uphill (passenger first on 2-UP models).

If you begin rolling backwards:

Operator and passenger (2-UP models) must keep their weight uphill. Never open the throttle suddenly or make sudden gear changes. The vehicle could flip over backwards.

Never apply the rear brake while rolling backwards.

Apply the front brake gradually.

When fully stopped, apply rear brake as well and lock brake lock.

Disembark on uphill side, or to a side if pointed straight uphill (passenger first on 2-UP models).

Turn the vehicle around and remount, following the procedure described further in this Operator's Guide.

⚠ WARNING

POTENTIAL HAZARD

Improperly operating over obstacles.

WHAT CAN HAPPEN

Could cause loss of control (passenger ejection on 2-UP models), or a collision.

Could cause the vehicle to overturn.

HOW TO AVOID THE HAZARD

Before operating in a new area, check for obstacles.

Never attempt to ride over large obstacles, such as large rocks or fallen trees.

On 2-UP models, the operator is responsible for the safety of his passenger. In doubt, disembark him before riding over obstacles. Always remember that the vehicle handling and stability may be affected when riding with a passenger.

When you go over obstacles, always follow proper procedures as described in this Operator's Guide.

⚠ WARNING

POTENTIAL HAZARD

Skidding or sliding improperly.

WHAT CAN HAPPEN

You may lose control of this vehicle.

You may also regain traction unexpectedly, which may cause the vehicle to overturn or passenger ejection (2-UP models).

HOW TO AVOID THE HAZARD

Learn to safely control skidding or sliding by practicing at low speeds and on level smooth terrain.

On 2-UP models, never slide or skid with passenger. Always remember that the vehicle handling and stability may be affected when riding with a passenger.

On extremely slippery surfaces, such as ice, go slowly and be very cautious in order to reduce the chance of skidding or sliding out of control.

⚠ WARNING

POTENTIAL HAZARD

Operating this vehicle through deep or fast flowing water.

WHAT CAN HAPPEN

Tires may float, causing loss of traction and loss of control, which could lead to an accident.

HOW TO AVOID THE HAZARD

Never operate this vehicle in fast flowing water or in deep water.

Check water depth and current before you attempt to cross any water. Water should not go above footrests.

Remember that wet brakes may have reduced stopping ability. Test your brakes after leaving water. If necessary, apply them several times to let friction dry out the pads.

⚠ WARNING

POTENTIAL HAZARD

Improperly operating in reverse.

WHAT CAN HAPPEN

You could hit an obstacle or person behind the vehicle, resulting in serious injury.

HOW TO AVOID THE HAZARD

When you select reverse gear, make sure there are no obstacles or people behind the vehicle. When it is safe to proceed, go slowly. On 2-UP models, take account that the passenger can obstruct your view.

⚠ WARNING

POTENTIAL HAZARD

Operating this vehicle with improper tires, or with improper or uneven tire pressure.

WHAT CAN HAPPEN

Use of improper tires on this vehicle, or operation of this vehicle with improper or uneven tire pressure, may cause loss of control, tire blow outs, tire to move around on its rim, and increases the risk of an accident.

HOW TO AVOID THE HAZARD

Always use the size and type of tires specified in this Operator's Guide for this vehicle.

Always maintain proper tire pressure as described in this Operator's Guide.

Always replace wheels or tires that are damaged.

⚠ WARNING

POTENTIAL HAZARD

Operating this vehicle with improper modifications.

WHAT CAN HAPPEN

Improper installation of accessories or modification of this vehicle may cause changes in handling which in some situations could lead to an accident.

HOW TO AVOID THE HAZARD

Never modify this vehicle through improper installation or use of accessories. All parts and accessories added to this vehicle should be approved by BRP and should be installed and used according to instructions. If you have questions, consult an authorized Can-Am dealer.

NEVER install a passenger seat (1-UP models) or use the racks to carry a passenger.

Modification of the vehicle to increase speed and performance may violate the terms and conditions of your vehicle limited warranty. In addition, certain modifications including the removal of engine or exhaust components are illegal under most laws.

⚠ WARNING

POTENTIAL HAZARD

Overloading this vehicle, carrying or towing cargo improperly.

WHAT CAN HAPPEN

Could cause changes in vehicle handling which could lead to an accident.

HOW TO AVOID THE HAZARD

Never exceed the stated load capacity for this vehicle including operator and passenger (2-UP models) as well as other loads and added accessories.

Cargo should be properly distributed and securely attached.

Reduce speed when carrying cargo or pulling a trailer. Allow greater distance for braking.

Always follow the instructions in this Operator's Guide for carrying cargo or pulling a trailer.

⚠ WARNING

V03M01Q

POTENTIAL HAZARD

Transporting flammable or dangerous material can lead to explosions.

WHAT CAN HAPPEN

This can cause serious injury or death.

HOW TO AVOID THE HAZARD

Never transport flammable or dangerous material.

IV RIDING THE VEHICLE

To fully appreciate the pleasures and excitement of riding this vehicle, there are some basic rules and tips that you MUST follow. Some may be new to you while others may be common sense or obvious.

Please take the time to study this Operator's Guide and all on-product safety labels as well as the *SAFETY VIDEO* that came with this vehicle. They more completely describe what you should know about this vehicle before riding it.

Whether you are a new user or an experienced rider, it is important for your personal safety that you know the controls and features of this vehicle. Equally important is knowing how to properly ride.

This is a high performance ATV. Inexperienced riders may overlook risks and be surprised by the specific behavior of this ATV in any terrain condition.

We recommend following the age recommendation indicated on the safety label affixed on the unit. Even though a person may be within the age group for which this vehicle is recommended, he may not have the skills, abilities, or judgment needed to operate this vehicle safely and may be involved in a serious accident.

Individuals with cognitive or physical impairments or who are high risk takers have an increased exposure to overturns or collisions which may result in injury including death.

Not all vehicles are the same. Each has its own unique performance characteristics, controls and features. Each will ride and handle differently.

Become completely familiar with the operational controls and the general operation of the vehicle before venturing into off road conditions. Practice driving in a suitable area free of hazards and feel the response of each control. Drive at low speeds. Higher speeds require greater experience, knowledge and suitable riding conditions.

Riding conditions vary from place to place. Each is subject to weather conditions which may radically change from time to time and from season to season.

Riding on sand is different than riding on snow or through forests or marshes. Each location may require a greater degree of awareness and skill. Show good judgement. Always proceed with caution. Please do not take any unnecessary risks that could leave you stranded or possibly injured.

Never assume that the vehicle will go everywhere safely. Sudden changes in terrain caused by holes, depressions, banks, softer or harder "ground" or other irregularities may cause the vehicle to topple or become unstable. To avoid this, slow down and always observe the terrain ahead. If the vehicle does begin to topple or tip over, the best advice is to immediately get off AWAY from the direction of the tip over!

If a road usage is allowed in your area, operate your vehicle on paved surface only for short distance and for the only purpose of moving the vehicle from an off-road usage to another. Always operate your vehicle at low speed (never exceed 40 km/h (25 MPH)) and reduce the speed before making a turn. This vehicle is not equipped with a rear differential (rear wheels are always turning at the same speed). For this reasons, pavement may seriously affect the handling and control of the vehicle.

Always respect all road traffic laws when operating your vehicle on public roads or streets. If you have to cross a road, the lead driver should get off his vehicle the observe and give direction to the other riders. The last person after crossing then assists the lead driver to cross. Do not travel on sidewalks. They are designated for pedestrian use.

For the users in the European Community, it is mandatory to remove the winch hook (if so equipped) to operate the vehicle on the roadway. Failure to follow this requirement could cause additional injuries including the possibility of death if an accident occurs.

We encourage you to have an Annual Safety Inspection of your vehicle. Please contact an authorized BRP dealer for further details. Though not required, it is recommended that an authorized BRP dealer performs the preseason preparation of your vehicle. Each visit to your authorized BRP dealer is a great opportunity for your dealer to verify if your vehicle is included in any safety campaign. We also urge you to visit your authorized BRP dealer in a timely manner if you become aware of any safety related campaigns.

See an authorized BRP dealer for available accessories you may require.

1) Pre-Ride Inspection

⚠ WARNING

Perform a pre-ride inspection before each ride to detect any potential problem that could occur during operation. The pre-ride inspection can help you monitor component wear and deterioration before they become a problem. Correct any problem that you discover to reduce the risk of a breakdown or crash. See an authorized Can-Am dealer as necessary.

Before using this vehicle, the operator should always perform the following pre-ride inspection check list.

Correct any problem found before riding the vehicle. See an authorized Can-Am dealer if necessary.

Pre-Ride Inspection Check List

What to Do Before Starting the Engine (Key OFF)

ITEMS TO BE INSPECTED	INSPECTION TO PERFORM	✔
Engine oil	Check engine oil level.	
Coolant	Check coolant level.	
Fluids	Check fuel, engine oil and coolant levels	
Brake fluid	Check brake fluid level.	
Leaks	Check for any leaks under vehicle	

ITEMS TO BE INSPECTED	INSPECTION TO PERFORM	✔
Throttle lever	Activate throttle lever several times to ensure it operates freely. It must return to idle position when released	
Brake lock	Apply brake lock and check if it operates properly	
Tires	Check tire pressure and condition. Refer to *SPECIFICATIONS* and adjust according to load.	
Wheels	Check wheels for damage and for abnormal play, and make sure that lug nuts are tightened. Tighten wheel beadlock bolts (if equipped). Refer to *WHEELS AND TIRES* in *MAINTENANCE PROCEDURES* for torque specification.	
Radiator	Check cleanliness of the radiator	
Drive shaft boots	Check drive shaft boots and protectors condition	
Seat(s)	Check if operator seat is in place and properly latched	
	Check if passenger seat is in place and properly latched (2-UP Models)	
	Check the passenger backrest and grab handles condition (2-UP Models)	
Cargo	If you transport a cargo, respect the load capacity. Refer to *LOADING THE CARGO RACKS* Ensure cargo is properly secured to the racks	
	If you are pulling a trailer or another equipment: – Check hitch and trailer ball condition – Respect the tongue capacity and towing capacity as indicated on the label affixed to the hitch or refer to *SPECIFICATIONS* – Ensure trailer is properly secured to hitch.	
Storage compartment	Check if rear storage compartment is properly latched	
Chassis and suspension	Check underneath vehicle for any debris on chassis or suspension and clean them properly	
Engine air filter	Inspect and clean engine air filter	
CVT air filter	Inspect and clean CVT air filter	

What to Do Before Starting the Engine (Key ON)

ITEMS TO BE INSPECTED	INSPECTION TO PERFORM	✔
Multifunction gauge	Check operation of indicator lamps in multifunction gauge (during first few seconds of key ON)	
	Check for messages on multifunction gauge	
Lights	Check operation and cleanliness of headlights and taillight	
	Check operation of low and high beams	
	Check operation of brake light	
	Check operation and cleanliness of turn signal lights	
	Check operation of hazard warning lights	
Horn	Check operation of the horn	
Fuel level	Check the fuel level.	

What to Do After the Engine is Started

ITEMS TO BE INSPECTED	INSPECTION TO PERFORM	✔
Steering	Check if steering operates freely by completely turning it from side to side	
Shift lever	Check operation of shift lever (P, R, N, H and L)	
2WD/4WD selector	Check operation of 2WD/4WD selector	
Brakes	Drive forward slowly a few feet and apply brake lever and brake pedal individually. The brakes must fully apply. Lever and pedal must fully return when released	
Emergency engine stop switch	Check that the emergency engine stop switch is working properly	
Ignition switch	Check if ignition switch is working properly by restarting and stopping the engine	

2) Riding Gear

Actual weather conditions should help you decide how to dress. Dress for the coldest weather expected. Thermal underwear next to the skin also provides a good insulation. It is important that the operator always wears the appropriate protective riding gear and apparel, including an approved helmet, eye protection, boots, gloves, a long sleeved shirt and pants. This type of clothing will provide you protection from some of the minor hazards you may encounter en route. The operator must never wear loose clothing such as a scarf that may get entangled in the vehicle or on tree branches and shrubs. Depending on conditions, anti-fogging

goggles or sunglasses may be required. Different colored lenses available for goggles or sunglasses help you distinguish terrain variations. Sunglasses should only be worn during the daytime.

V00A0RN

Riders with appropriate riding gear

3) Carrying a Passenger

1-UP Models

This vehicle is designed to carry ONE (1) operator only. Do not install passenger seats or use the racks to carry a passenger.

2-UP Models

This vehicle is designed specifically to carry an operator and ONE (1) passenger only. The passenger must be seated on the designated passenger's seat and hold on to the grab handles at all times. NEVER install other passenger's seat other than the one recommended by BRP. Do not use the racks or their location to carry passenger(s). Carrying more than one (1) passenger may affect the stability and your control of the vehicle. When the glove box is installed (in place of rear seat), the vehicle becomes a ONE-RIDER vehicle (1-UP model) and NO PASSENGER must be allowed on it.

4) Recreational Riding

Respect the rights and limitations of others. Stay away from areas designated for other types of off road use. This includes snowmobile trails, equestrian trails, cross country ski trails, mountain bike trails, etc. Never assume there are no other users on the trail. Always stay to the complete right of the trail and do not zigzag to one side of the trail then the other. Be prepared to stop or pull off to the side if another trail user appears in front of you.

Join a local ATV club. It will provide you with a map and advice or inform you where you can ride. If a club does not exist in your area, help to start one. Group riding and club activities provide a pleasurable, social experience.

Always keep a safe distance from other riders. Your judgment of speed, terrain conditions, weather, mechanical condition of your vehicle and the "trust in judgment" you have in others around you will help you make a better choice of appropriate safe distance. This vehicle, like any other motorized vehicle, cannot stop "on a dime". Allow greater distance for braking. On 2-UP models, the vehicle handling, stability and braking distance may be affected when riding with a passenger. Safely reduce speed when riding with a passenger.

Before you ride, tell someone where you are planning to travel and your expected time of return.

Depending on the length of your ride, carry additional tools , drinking water, food and emergency equipment. Find out where you can get additional gasoline and oil. Be prepared for the possible conditions you may encounter.

First aid kit	Adjustable wrench
Mobile phone	Knife
Friction tape	Flashlight
A rope	Colored lens goggles
Spare light bulbs	Trail map
Provided tool kit	Snack

5) Environment

One of the benefits of this vehicle is that it can take you off the beaten path away from most communities. However, you should always respect nature and the rights of others to enjoy it. Do not ride in environmentally sensitive areas. Do not drive over forest crops or shrubs nor cut down trees or take down fencing nor spin your wheels and destroy the terrain. "Tread Lightly".

This vehicle can cause OHV wildfires if debris builds up near the exhaust or other engine hot spots and ignites then falls off into dry grass. Avoid riding in wet areas, through muskeg or tall grass, where debris can build up. Should you ride in those areas, inspect and remove all debris from your engine and hot spots.

Chasing wildlife is in many areas illegal. Wildlife can die of exhaustion after being chased by a motorized vehicle. If you encounter animals on the trail, stop and observe quietly and with caution. It will be one of the better memories of your life.

Observe the rule "what you take in, carry out". Do not litter. Do not start campfires unless you have permission to do so and then only away from dry areas. The hazards you may create on the trail may cause injury to others or yourself, even at a later date.

Respect farm lands. Always obtain the permission of the landowner before riding on private land. Respect crops, farm animals and property lines. If you come to a closed gate, close it again behind you.

Finally, do not pollute streams, lakes or rivers and do not modify the engine or exhaust system, or remove any of its components.

6) Design Limitation

Although the vehicle is exceptionally rugged for its class, it is still a light vehicle by definition and its operation must be restricted to its proper purpose.

The addition of weight to any part of the vehicle changes its gravitational stability and modifies its performance.

7) Off-Road Operation

The very nature of off-road operation is dangerous. Any terrain, which has not been specially prepared to carry vehicles, presents an inherent danger where angularity, terrain substance and exact steepness are unpredictable. The terrain itself presents a continual element of danger, which must be knowingly accepted by anyone venturing over it.

An operator who takes a vehicle off-road should always exercise the utmost care in selecting the safest path and keeping close watch on the terrain ahead of him. On no account should the vehicle be operated by anyone who is not completely familiar with the driving instructions applicable to the vehicle, nor should it be operated on steep or treacherous terrain.

8) Riding Techniques

Information in this guide is limited. Increase your knowledge and improve your skills by following a certified training course.

Care, caution, experience and driving skill are the best precautions against the hazards of vehicle operation.

Respect and follow all posted trail signs. They are there to help you and others.

In off-road operation, power and traction, not speed, are important. Never drive faster than visibility and your own ability to select a safe route permits.

Constantly watch the terrain ahead for sudden changes in slopes or obstacles, such as rocks or stumps, that may cause loss of stability, resulting in tip over or rollover.

It is also wise to know the terrain condition on the other side of a hill or bank. All too often there exists a sharp drop-off that is impossible to negotiate or descend.

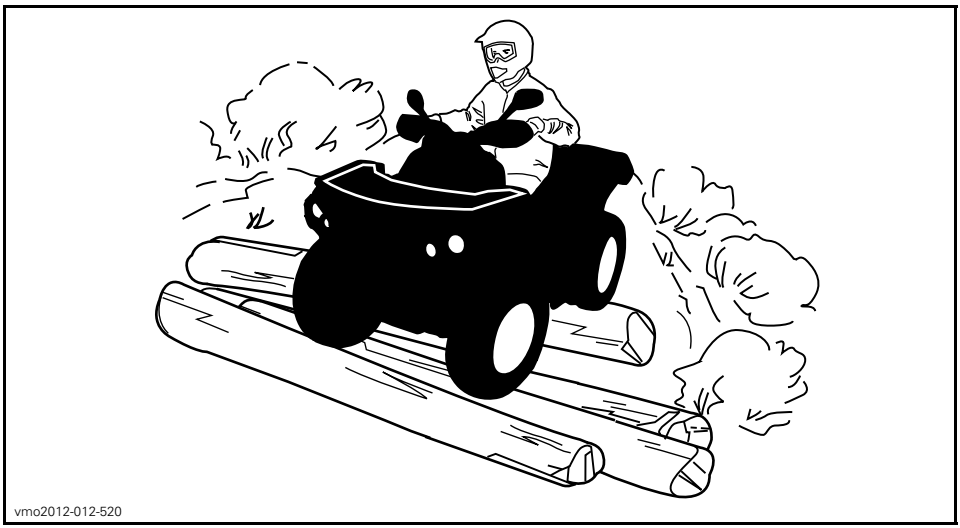
Whenever there is the slightest doubt that the vehicle can safely negotiate an obstacle or a particular piece of terrain, always choose an alternate route.

Always use proper riding techniques to avoid vehicle overturns on hills and rough terrain and in turns.

Body Position

To maintain proper control, it is strongly advised that you keep your hands on the handlebar and within easy reach of all controls. The same holds true for your feet on the foot pegs. To minimize the possibility of a leg or foot injury, keep your feet on the foot pegs at all times. Do not direct your toes outwards nor extend your feet out to assist in turning as they can be hit or be snagged on passing obstacles, or may come into contact with the wheels.

Even though there is a suspension on this vehicle, there are "washboard" or rough terrain conditions that will make you feel uncomfortable and can even cause a back injury. "Posting" or riding in a crouched position will often be required. Slow down and allow your flexed legs to absorb part of the impact energy.



2-UP Models

The passenger must keep his hands on the grab handles and his feet on footrests at all times.

The passenger must synchronize his movements with the operator.

Crossing Roads

If you have to cross a road, the lead driver should get off his vehicle, then observe and give directions to the other riders. The last person after crossing then assists the lead driver to cross. Do not use sidewalks. They are designated for pedestrian use.

If road usage is allowed in your area, operate your vehicle on paved surface only for short distance and for the only purpose of moving the vehicle from an off-road usage to another. Always operate your vehicle at low speed (never exceed 40 km/h) and reduce the speed before making a turn. This vehicle is not equipped with a rear differential (rear wheels are always turning at the same speed). For this reasons, pavement may seriously affect the handling and control of the vehicle.

Riding on Roads

Always respect all road traffic laws when operating your vehicle on public roads or streets. If you have to cross a road, the lead driver should get off his vehicle the observe and give direction to the other riders. The last person after crossing then assists the lead driver to cross. Do not travel on sidewalks. They are designated for pedestrian use.

Turning

Practice turning at low speeds before attempting to turn at faster speeds.

Keep both hands on handlebars and feet on foot pegs.

Maintain a constant speed or a slight acceleration during turn.

To reduce the risk of rollovers:

– Use care when turning.
  - Do not turn the handlebar too far or too fast for your speed and environment. Adjust steering inputs accordingly.
  - Slow down before entering a turn. Avoid hard braking during a turn.
  - Avoid sudden or hard acceleration when turning, even from a stop or low speed.

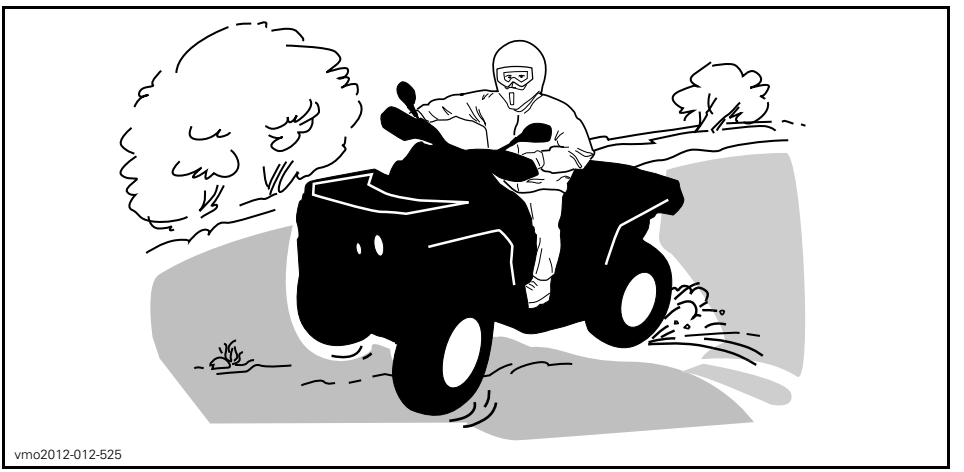
– Never attempt donuts, skids, slides, fishtails, jumps, or other stunts. If vehicle starts to skid or slide, steer in the direction of the skid or slide. Never slam the brakes and lock the wheels.

– Avoid paved surfaces. This vehicle is not designed to operate on paved surfaces and is more likely to roll over. If you must drive on pavement, turn gradually, go slowly, and avoid abrupt acceleration and braking.

Avoid sudden inputs to steering, throttle or brakes while turning.

⚠ WARNING

Do not attempt turns at excessive speed.



If you do get into a slide or skid, it may help to turn the handlebar in the direction of the skid until you regain control. Never jam the brakes and lock the wheels.

Braking

Always keep both hands on handlebars and feet on foot pegs when braking.

Practice braking to get familiar with the brake response.

– Do it at low speed first, then increase the speed.
– Practice braking in straight line at different speeds and different braking force.
– Practice emergency braking; optimal braking is obtained in straight line, with high force applied, without locking the wheels.

Remember, braking distance depends on vehicle speed, load and the type of surface. Also, the tires and brakes conditions play a major role.

NOTE: If going forward the vehicle weight is transferred to the front wheels when braking. To obtain greater stopping efficiency, the brake system distributes more braking force to the front wheels. This will affect vehicle handling and steering control when braking vigorously. Take it into account when braking.

Reverse Operation

When operating in reverse, check that the path behind the vehicle is free of people or obstacles. Proceed slowly and avoid sharp turns.

When riding on a 2-UP model, take into account that the passenger can obstruct your view. Disembark the passenger if necessary.

We recommend sitting on your ATV when operating in reverse. Avoid standing up. Your weight could shift forward against throttle lever, causing an unexpected acceleration.

Obstacles

Obstacles in the "trail" should be traversed with caution. This includes loose rocks, fallen trees, slippery surfaces, fences, posts, and embankments and depressions. You should avoid them whenever possible. Remember that some obstacles are too large or dangerous to cross and should be avoided. Small rocks or fallen trees may be safely crossed approach at a 90° angle. Stand on the footrests while keeping your knees flexed. Adjust speed without losing momentum and do not "gun" the throttle. Hold handlebar (operator) or grab handles (passenger on 2-UP models) firmly. Place body weight rearwards (operator and passenger 2-UP models) and proceed. Do not try to lift the vehicle front wheels off the ground. Be aware that the object may be slippery or may move while crossing.

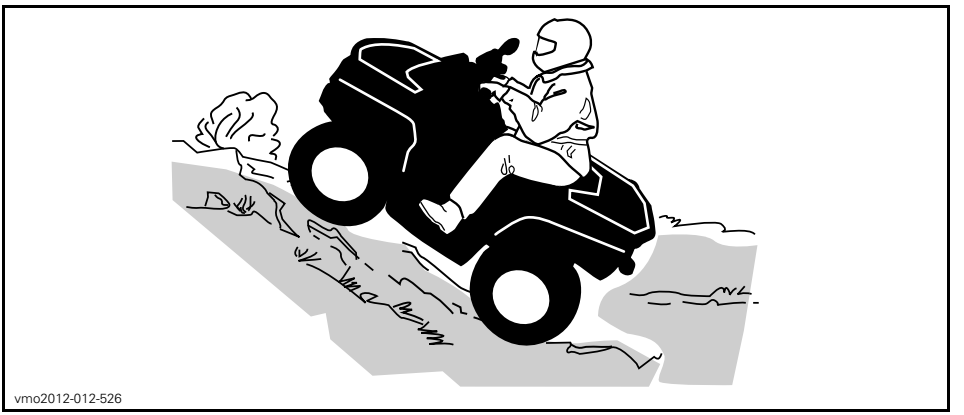
When riding on 2-UP models, the operator is responsible for the safety of the passenger; in doubt, disembark the passenger before proceeding.

Uphill Driving

1-UP Models

Before trying to climb a hill, keep these things in mind. Hill Climbing should only be attempted by experienced operators. Start on shallow slopes. Always drive straight uphill and keep your body weight forward towards the top of the hill. Keep your feet on the footrests, shift your ATV into a lower gear and accelerate

before you start to climb. Try to keep a steady speed and go easy on the throttle to avoid acceleration. Abrupt slope or terrain variation or rolling one wheel over an obstacle could have a big impact on the stability as it will lift the front of the vehicle increasing the risk of tipping over. Some hills are too steep to safely stop or recover from after an unsuccessful climbing attempt. Try to avoid steep inclines. If you're not careful, you could tip over when going up hills. If the hill is too steep and you cannot proceed or the vehicle begins to roll backwards, apply the brake, being careful not to slide. Dismount then use the "K" turn (while walking back, next to the vehicle on the up hill side and with a hand on the brake lever, slowly back the rear of the vehicle toward the top of the hill then drive downhill). Always walk or dismount on the upside of the slope while keeping clear of the vehicle and its rotating wheels. Do not try to hold on to the vehicle if it begins to topple. Stay clear. Do not ride over the crest of the hill at high speed. Obstacles, including sharp drop-offs, may exist.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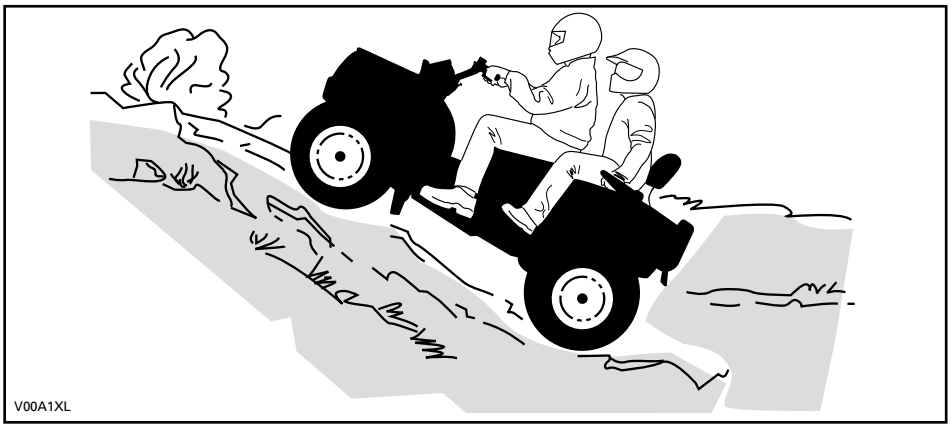
2-UP Models

The passenger must synchronize his movements with the operator. The passenger must remain seated at all times.

Do not forget, the operator is responsible for the safety of the passenger. In doubt, disembark the passenger before climbing a hill.

Before trying to climb a hill, keep these things in mind. Hill Climbing should only be attempted by experienced operators. Start on shallow slopes. Always drive straight uphill. Operator and passenger must keep their body weight forward, towards the top of the hill. Keep feet on the footrests, shift the ATV into a lower gear and accelerate before you start to climb. Try to keep a steady speed and go easy on the throttle to avoid acceleration. Abrupt slope or terrain variation or rolling one wheel over an obstacle could have a big impact on the stability as it will lift the front of the vehicle increasing the risk of tipping over. Some hills are too steep to safely stop or recover from after an unsuccessful climbing attempt. Try to avoid steep inclines. If you're not careful, you could tip over when going up hills. If the hill is too steep and you cannot proceed or the vehicle begins to roll backwards, apply the brake, being careful not to slide. Dismount, passenger first, then use the "K" turn (while walking back, next to the vehicle on the up hill side and with a hand on the brake lever, slowly back the rear of the vehicle toward the top of the hill then drive downhill). Always walk or dismount on the upside of the

slope while keeping clear of the vehicle and its rotating wheels. Do not try to hold on to the vehicle if it begins to topple. Stay clear. Do not ride over the crest of the hill at high speed. Obstacles, including sharp drop-offs, may exist. The passenger should get on the vehicle only when the vehicle has returned to a safe location.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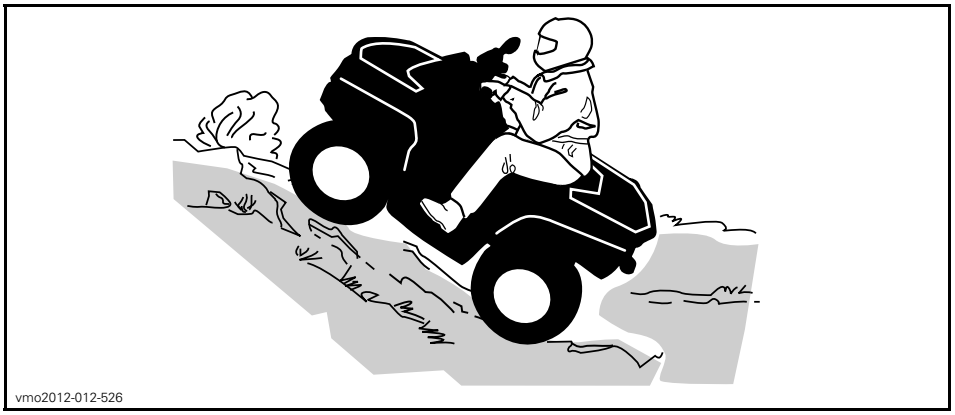
Vehicle Behaviors

Due to configuration, this vehicle has excellent climbing ability, so much so that it is possible to tip over before traction is lost. For example, it is common to encounter terrain situations where the top of the hill has eroded to a point that the hill peak rises very sharply. The vehicle can readily negotiate such a condition, however, in doing so, when the front of the vehicle is driven to a point that the vehicle's balance moves rearward, a tip over can occur.

The same situation may apply if an embedded object causes the front of the vehicle to climb more than desired. If such a situation occurs take an alternate route. Be aware of side hilling dangers when doing so. Refer to *SIDE HILLING* below.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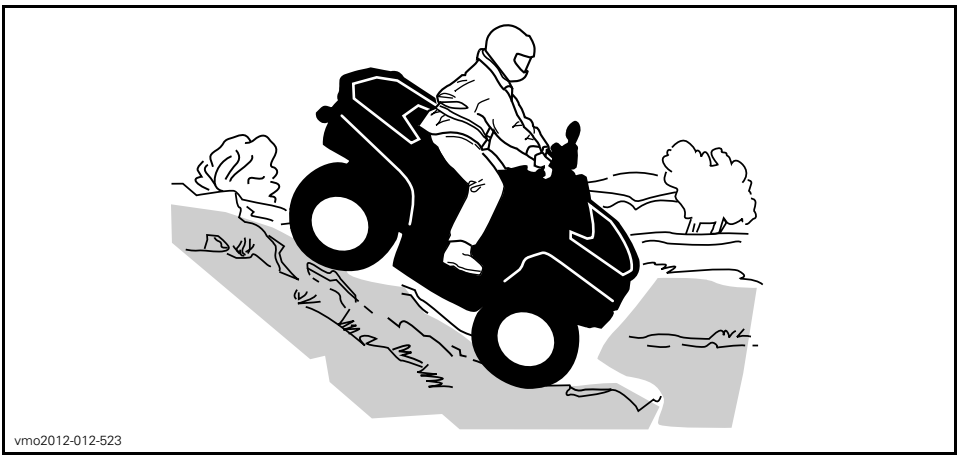
Downhill Driving

1-UP Models

Keep your body weight rearwards. Stay seated. Apply the brake gradually to prevent skidding. Do not "coast" down the slope using solely engine compression or in neutral gear.

Decelerating while negotiating a slippery downhill slope could "toboggan" the vehicle. Maintain steady speed and/or accelerate slightly to regain control. Try to avoid steep inclines. If you're not careful, you could tip over when going down hills.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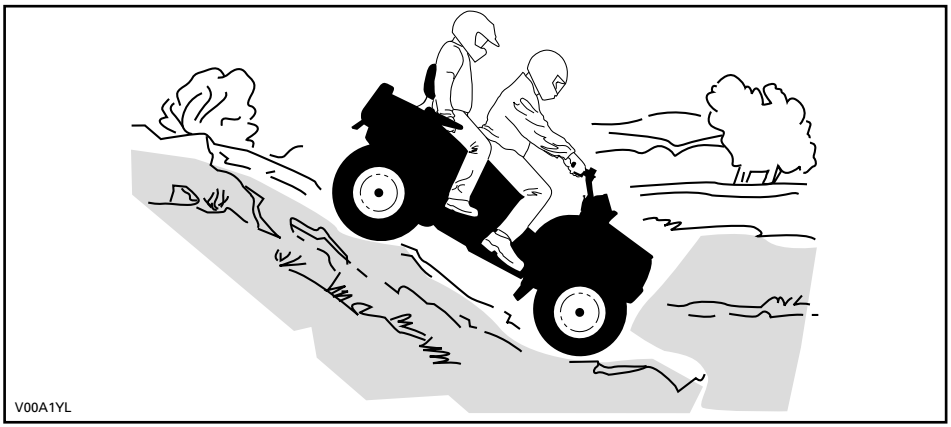
2-UP Models

The operator is responsible for the safety of the passenger; in doubt, disembark the passenger before proceeding.

Always remember that the vehicle handling, stability and braking distance may be affected when riding with a passenger.

The passenger must synchronize his movements with the operator. The passenger must remain seated at all times.

Operator and passenger must keep their body weight rearwards. Apply the brake gradually to prevent skidding. Do not "coast" down the slope using solely engine compression or in neutral gear. Try to avoid steep inclines. If you're not careful, you could tip over when going down hills.



Vehicle Behaviors

This vehicle can climb slopes that are steeper than it can safely descend. Therefore, it is essential to ensure that a safe route exists to descend a slope before you climb it.

Side Hilling

This is one of the **most risky** types of riding since it may drastically change the balance of the vehicle. It should be avoided whenever possible. However, if it is necessary to do so , it is important that you ALWAYS keep your body weight on the upside of the slope and be prepared to dismount on that side should the vehicle begin to topple

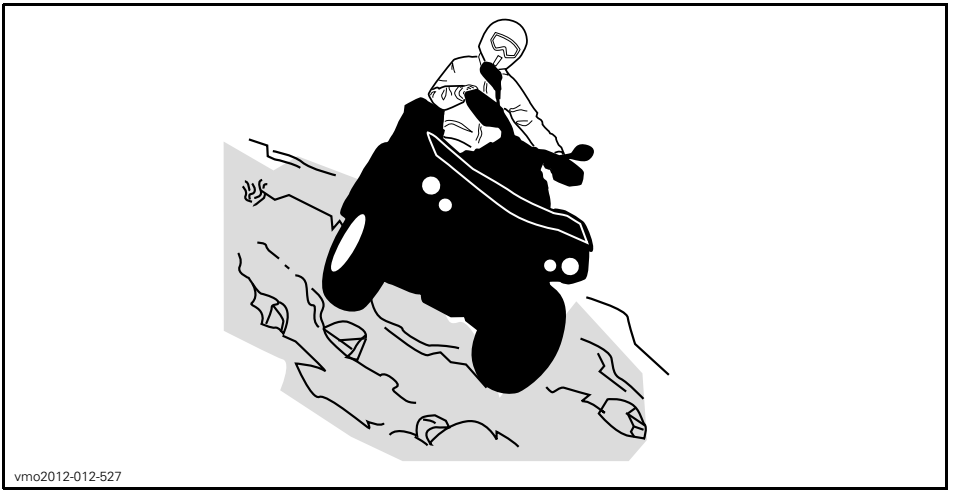
Avoid all objects or depressions that will intensify the raising of one side of the vehicle higher than the other, thus causing rollover.

⚠ WARNING

Do not try to stop or save the vehicle from damage.

⚠ WARNING

Be careful when loading and transporting liquid reservoirs. They can affect vehicle stability when side hilling by pulling downhill and increasing the risk of a roll over.



2-UP Models

The passenger must synchronize his movements with the operator. The passenger must remain seated at all times.

The operator is responsible for the safety of the passenger; in doubt, disembark the passenger before proceeding.

Drop-Offs

This vehicle will "bottom-out" and usually stop if either the front or rear wheels are driven over a drop-off. If the drop is sharp or deep, the vehicle will nose dive and tip over.

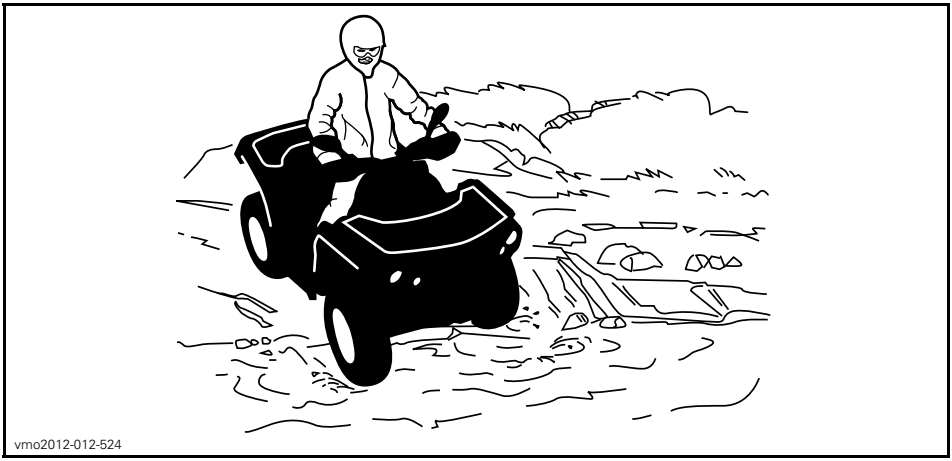
When riding on a 2-UP model, the operator is responsible for the safety of the passenger; in doubt, disembark the passenger before proceeding.

⚠ WARNING

Avoid negotiating drop-offs. Reverse and select an alternate route.

Crossing Water

Water can be a unique hazard. If it is too deep the vehicle may "float" and topple. Check the water depth and current before you attempt to cross any water. Water should not go above the footrest. Be wary of slippery surfaces such as rocks, grass, logs, etc., both in the water and on its banks. A loss of traction may occur. Do not attempt to enter the water at high speed. The water will act as a brake and could throw you off the vehicle, on the ground.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Wet brakes will affect the braking ability of your vehicle. Make sure you dry the brakes by applying them several times after the vehicle leaves the water, mud or snow. Allow greater distance for braking.

Mud or marsh lands may be encountered near water. Be prepared for sudden "holes" or changes in depth. Similarly so, be watchful of hazards such as rocks, logs, etc., partially covered by vegetation.

Riding on Ice

If your route crosses frozen waterways, make sure the ice is thick enough and sound enough to support the total weight of yourself, your passenger (2-UP models), the vehicle and its load. Be ever watchful of open water it is a sure indication that the ice thickness will vary.

On 2-UP models, the operator is responsible for the safety of the passenger; in doubt, do not attempt to cross.

Ice will also affect the control of the vehicle. Slow down and do not "gun" the throttle. This will only result in spinning of the tires and possible tip over of the vehicle or passenger ejection (2-UP models. Avoid rapid braking. This again will possibly result in an uncontrolled slide and tip over of the vehicle. Slush should be avoided at all times since it could block the operation or controls of the vehicle.

Riding on Snow Covered Surfaces

When performing the pre-ride inspection, pay special attention to locations on the vehicle where snow and/or ice accumulations may obstruct visibility of the taillight and reflectors, clog ventilation openings, block the radiator and fan, and interfere with the movement of control levers, switches and brake pedal. Before starting with your ATV check the steering, throttle and brake lever and pedal controls for interference free operation.

Whenever an ATV is ridden on a snow covered drive path the tire grip is generally reduced causing the vehicle to react differently to control inputs from the operator. On low grip surfaces, the steering responses are not as crisp and precise, stopping distances are lengthened and acceleration becomes sluggish. Slow down and do not "gun" the throttle. This will only result in spinning of the tires and possibly in an over steering slide of the vehicle. Avoid hard braking. This will possibly result in a

straight line slide of the vehicle. Again, the best advice is to safely reduce speed in anticipation of a maneuver so to give yourself time and distance to regain total vehicle control before it spins out of your control.

As you drive your ATV over a loose snow covered surface, snow dust will be picked up in the wake turbulence of the moving vehicle and transported to contact and accumulate or melt on some exposed components including rotating parts like brake discs. Water, snow or ice may affect the response time of the brake system of your ATV. Even when not required to reduce vehicle speed apply brakes frequently to prevent ice or snow accumulation and to dry brake pads and discs. While doing so in low risk driving situations you will test for grip level and keep yourself alerted to how the vehicle reacts to your control inputs. Always keep brake pedal, footrests, floor boards, brake and throttle levers free of snow and ice. Frequently wipe snow off seat, hand grips, headlights, taillights and reflectors.

The depth of the snow cover may hide rocks, tree stumps or other objects and if it is wet may totally impede the driveability as the vehicle becomes bogged down or completely looses traction in slushy snow. Look far ahead and always be watchful of any visible clues that might indicate the presence of such obstacles. In doubt steer clear. Avoid driving on any frozen body of water before checking that the ice will safely support the ATV, its riders and its load of cargo. Remember that a given thickness of ice may be sufficient to support a snowmobile but not an ATV of an identical weight because of the smaller load bearing surface of the four tire contact patches as compared to that of a snowmobile track and skis.

To maximize comfort and avoid frostbite, always wear clothing and ATV protective equipment appropriate for the weather conditions you will be exposed to during your ride.

At the end of each ride it is a good practice to clean the vehicle body and all moving components (brakes, steering components, drivelines, controls, radiator fan etc.) from any snow or ice accumulations. Wet snow will turn to ice during the shut down period and become more difficult to remove at the next pre-ride inspection.

Riding in snow may reduce the brakes stopping capability. Safely reduce speed and allow greater distance for braking. Snow projection may cause ice build up or snow accumulation on brake components and controls. Apply brakes frequently to prevent ice or snow accumulation.

Riding on Sand

Riding on sand, sand dunes or on snow is another unique experience, but there are some basic precautions that should be observed. Wet, deep or fine sand/snow may create a loss of traction and cause the vehicle to slide, drop off or become "bogged" down. If this occurs look for a firmer base. Again, the best advice is to slow down and be watchful of the conditions. When you ride with a passenger (2-UP models), slow down even more.

When riding in sand dunes it is advisable to equip the vehicle with an antenna type safety flag. This will help make your location more visible to others over the next sand dune. Proceed carefully should you see another safety flag ahead. Since the antenna type safety flag can snag and rebound on your body if caught, do not use it in areas where there are low hanging branches or obstacles. Always remember when riding on a 2-UP model that the vehicle handling and stability may be affected when riding with a passenger.

Riding on Loose Stones

Riding on loose stones or gravel is very similar to riding on ice. They will affect the steering of vehicle possibly causing it to slide or tip over especially at high speeds (resulting in operator and passenger ejection (2-UP models).

Again, the best advice is to slow down and be watchful of the conditions. When you ride with a passenger (2-UP models), slow down even more.

In addition, braking distance may be affected. Remember that "gunning" the throttle or sliding may cause loose stones to be ejected rearwards into the path of another rider. Never do it deliberately.

1) Working with your Vehicle

Your vehicle can help you perform a number of different LIGHT tasks ranging from snow removal to pulling wood or carrying cargo. A variety of accessories are available from your authorized Can-Am dealer. To prevent possible injury, follow the instructions and warnings that accompany the accessory. Always respect the load limits of the vehicle. Overloading the vehicle can overstress the components and cause failure. Avoid overexerting yourself if you lift or pull heavy loads or manually push the vehicle.

⚠ WARNING

Mounted machinery must be lowered on the ground before leaving the tractor.

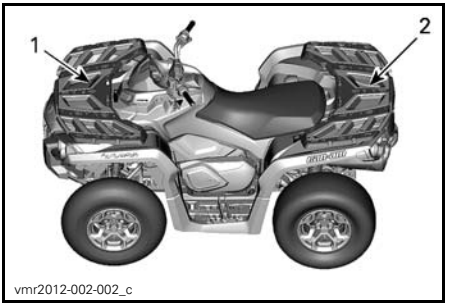
2) Carrying Loads

Any load carried on the vehicle including a passenger (2-UP models) and/or the carrying rack(s) will affect the handling, stability and braking distance of the vehicle. Do not exceed the total load allowed for this vehicle, including the weight of operator and passenger cargo, accessories and trailer tongue weight. Always make sure the load is secured, properly distributed (1/3 of cargo weight in front and 2/3 of cargo weight in back) and cannot interfere with your proper control. Always be aware that the cargo may slide or fall off and create an accident. Avoid cargo that may protrude sideways and get snagged or caught in brush or other obstacles. Avoid covering and obstructing the headlights or taillight with the cargo.

Always be aware that the "load" may slide or fall off and cause an accident.

⚠ WARNING

The vehicle handling, stability and braking distance are affected when driving with loaded cargo racks. Correct loading and weight distribution are therefore important. Never overload, tow or carry cargo improperly. Always ensure the cargo is safely secured and properly distributed on the rack(s) before operating the vehicle. Safely reduce speed according to terrain conditions when carrying cargo or pulling a trailer, and avoid hills and rough terrain. Allow greater distance for braking, especially on inclined surfaces and when a passenger (2-UP models) is on board. Be careful not to skid or slide. Always secure cargo as low as possible on the rack(s) to reduce the effect of a higher center of gravity. Failure to follow the recommendations could cause changes in vehicle handling which could lead to an accident.



1. 1/3 of cargo weight
2. 2/3 of cargo weight

MAXIMUM LOAD TABLE			
TOTAL LOAD ALLOWED	1-UP MODELS	235 kg (517 lb)	Includes weight of operator, cargo, accessories and trailer tongue weight.
	2-UP MODELS	272 kg (600 lb)	Includes weight of operator, passenger, cargo, accessories and trailer tongue weight.
FRONT LOAD		45 kg (100 lb)	Evenly distributed.
REAR LOAD		90 kg (200 lb)	Evenly distributed. Includes rear rack, rear glove box and tongue load.

The following is an example of suitable load distribution:

EXAMPLE OF LOAD DISTRIBUTION (VEHICLE WITH A TOTAL LOAD ALLOWED OF 235 KG (518 LB))				
TOTAL VEHICLE LOAD	OPERATOR AND PASSENGER	CARGO LOAD	ACCESSORIES	TONGUE WEIGHT
235 kg (518 lb)	100 kg (220.5 lb)	105 kg (231.5 lb)	10 kg (22 lb)	20 kg (44 lb)

3) Loading the Cargo Racks

NOTICE When loading or unloading, do not exceed the weight limit of 90 kg (200 lb) for rear load and 45 kg (100 lb) for front load.

Load cargo as low as possible – a higher load can raise the vehicle's center of gravity, which can reduce stability. Position cargo on the rack as evenly distributed as possible.

Secure the load on the cargo rack. Do not secure cargo to other parts of the vehicle. If it is not properly secured, a load may slide or fall off, possibly striking occupants or bystanders; or it may shift during riding, affecting the handling of the vehicle.

Objects that are high may affect visibility for the driver and may act as projectiles in case of an accident. Loads that protrude sideways can get snagged or caught in bush, branches or other obstacles. Avoid covering and obstructing the brake lights with the cargo. Ensure no cargo protrudes outside the cargo rack and that cargo will not interfere with your visibility or control of the vehicle.

NOTICE Do not exceed the cargo racks capacity. Refer to *SPECIFICATIONS*.

Never carry gasoline container(s) or any dangerous liquids on the cargo rack.

4) Hauling a Load

Never pull a load by attaching it to the bumper or luggage racks; this can cause the vehicle to tip over. Use only the trailer hitch (if installed) to pull a load.

In an emergency situation, use the recovery hooks to recover a stuck vehicle. Refer to *RECOVERY HOOKS* in *EQUIPMENT*.

When pulling loads with a chain or cable, ensure that there is no slack before starting and maintain tension while pulling.

When pulling loads with a chain or cable, be sure to brake progressively. The inertia of the load could lead to an impact.

When hauling a load, respect the maximum hauling capacity. See *PULLING A TRAILER* in this section.

⚠ WARNING

A slack in the chain or cable can cause it to break and snap back.

When pulling another vehicle, be sure that someone is controlling the pulled vehicle. They must brake and steer to prevent the vehicle from going out of control.

Reduce your speed when hauling a load and turn gradually. Avoid hills and rough terrain. Never attempt steep hills. Allow more distance for braking, especially on inclined surfaces and when a passenger (2-up models) is on board. Be careful not to skid or slide.

5) Pulling a Trailer

Check the maximum axle loads of the vehicle identification plate (statutory plate). Can-am T3 tractor can tow a trailer on the road. Check the trailer maximum load on its identification plate. Check the regulations for your area regarding the use of a tractor and trailer on the road. Connect the trailer lights and set the slow moving vehicle triangle behind the trailer.

NOTICE **A BRP approved rear hitch must be properly installed on the vehicle for hauling trailers.**

Riding this vehicle with a trailer substantially increases the risk of toppling, especially on inclined slopes. If a trailer is used behind the vehicle make sure that its hitch is compatible with the one on the vehicle. Make sure the trailer is horizontal with the vehicle. (In some instances a special extension may have to be installed on the vehicle hitch). Use security chains or cables to secure the trailer with the vehicle.

Reduce your speed when pulling a trailer and turn gradually. Avoid hills and rough terrain. Never attempt steep hills. Allow more distance for braking, especially on inclined surfaces and when a passenger (2-up models) is on board. Be careful not to skid or slide.

If a trailer is used behind the vehicle make sure that its hitch is compatible with the one on the vehicle. Make sure the trailer is horizontal with the vehicle. (In some instances a special extension may have to be installed on the vehicle hitch). Use security chains or cables to secure the trailer with the vehicle. This vehicle may require additional stopping distance if hauling heavy loads, especially on inclined surfaces and when a passenger (2-UP models) is on board.

Improperly loading a trailer may cause loss of control. Respect the recommended maximum hauling capacity and maximum tongue load (Refer to *MAXIMUM HAULING CAPACITY* table). Make sure there is at least some weight on the tongue.

Always make sure load is evenly distributed and safely secured on the trailer; an evenly balanced trailer is easier to control.

Always put the shift lever to L (low range) for hauling a trailer – in addition to providing more torque, operating in low range helps account for the increased load on the rear tires.

When stopped or parked, block the vehicle and trailer wheels from possible movement.

Use caution when disconnecting a loaded trailer; it or its load may topple on you or others.

Do not exceed the towing capacity and tongue weight. Refer to *SPECIFICATIONS*.

⚠ WARNING

Stay clear from the area between tractor and trailed vehicle.

⚠ WARNING

Strictly follow the instructions outlined in the operator' s manual of the mounted or trailed machinery or trailer, and not to operate the combination tractor - machine or tractor - trailer unless all instructions have been followed.

VI IMPORTANT ON-PRODUCT LABELS

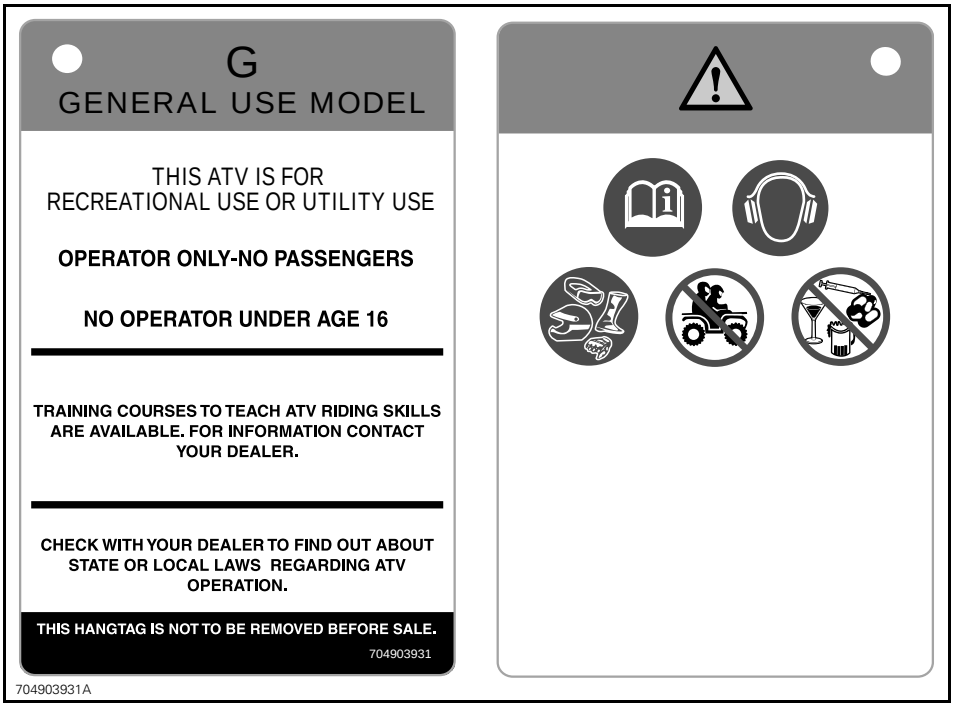
1) Hang Tag

This vehicle comes with a hang tag and labels containing important safety information.

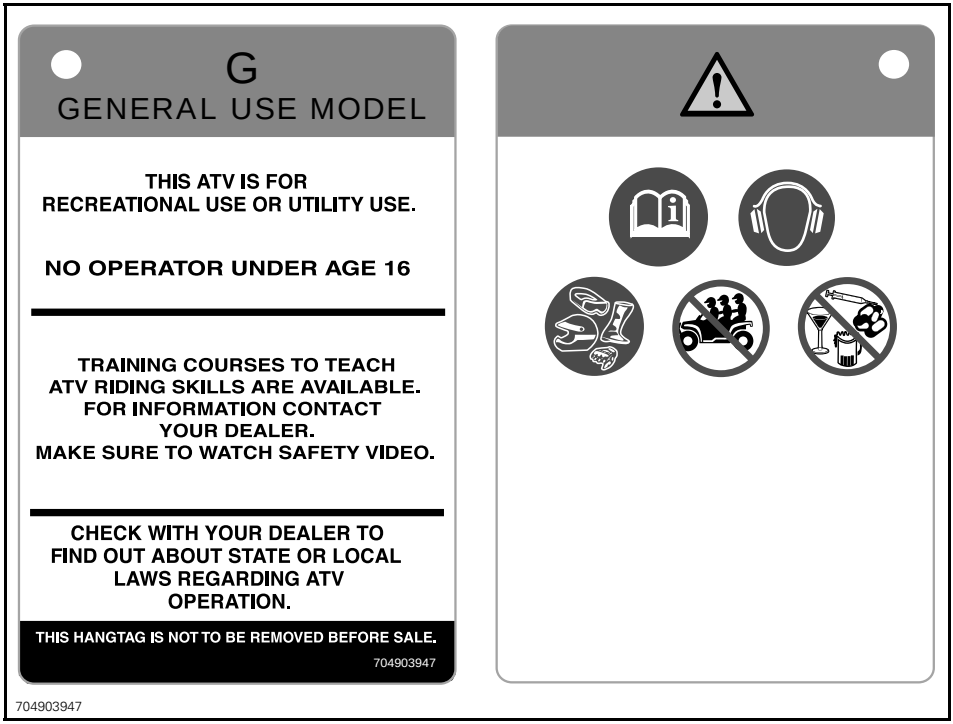
Any person who rides this vehicle should read and understand this information before riding.

⚠ WARNING

- Locate and read operator's guide. Improper ATV use can result in SEVERE INJURY or DEATH. Follow all instructions and warnings.
- Always wear ear protection.
- Always use an approved helmet and protective gear.
- Never carry passengers on 1-up models and NEVER carry more than one passenger on 2-up models.
- Never use with drugs or alcohol.



TYPICAL - 1-UP MODELS



TYPICAL - 2-UP MODELS

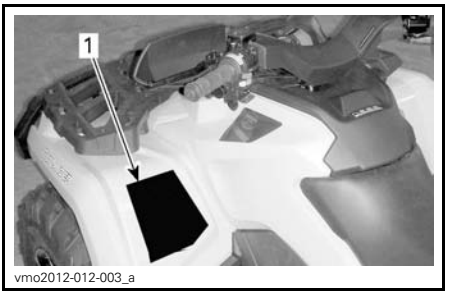
2) Vehicle Safety Labels

Read and understand all the safety labels on your vehicle.

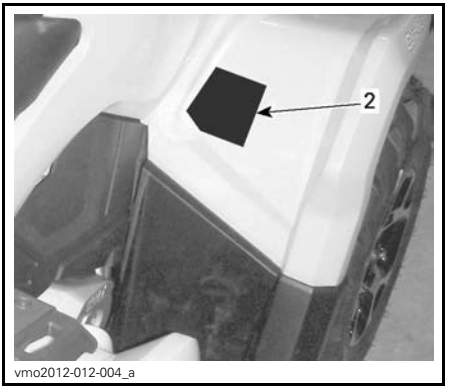
These labels are affixed to the vehicle for the safety of the operator, passenger or bystanders.

The safety labels on your vehicle should be considered permanent parts of the vehicle. If missing or damaged, they can be replaced free of charge. See an authorized Can-Am dealer.

NOTE: In the event of any discrepancy between this guide and the vehicle, the safety labels on the vehicle have precedence over the labels in this guide.



vmo2012-012-003_a



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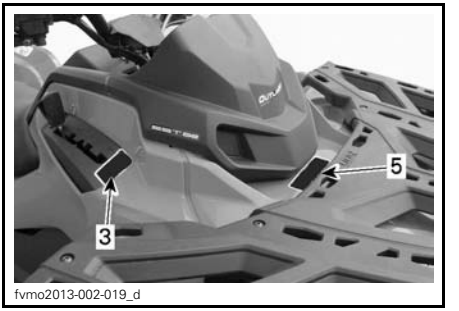

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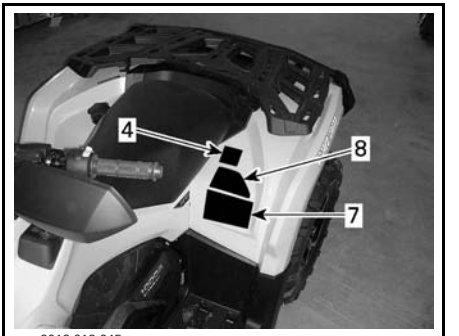

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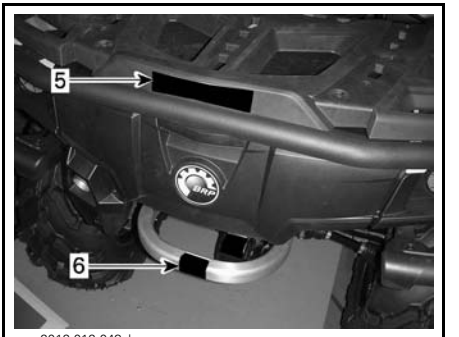

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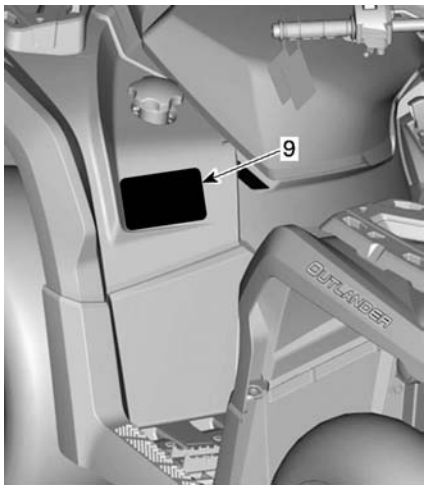

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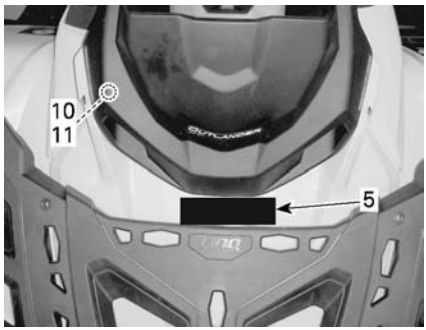

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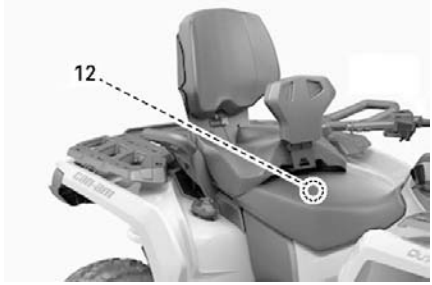


fvmo2015-001-003_a

fvmo2013-002-004_c

Label 1

⚠ WARNING

- Locate and read operator's guide. Improper ATV use can result in SEVERE INJURY or DEATH. Follow all instructions and warnings.
- Always wear ear protection.
- Always use an approved helmet and protective gear.
- Never carry a passenger on 1-up models and NEVER carry more than one passenger on 2-up models.
- Never use with drugs or alcohol.

704903963B

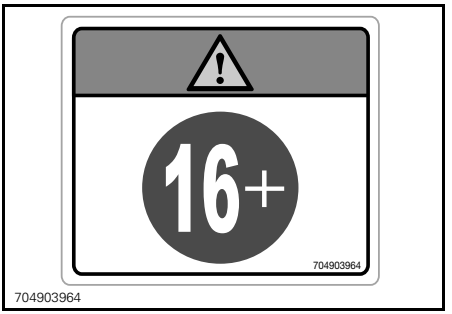
LABEL 1 - 1-UP MODELS

LABEL 1 - 2-UP MODELS

Label 2

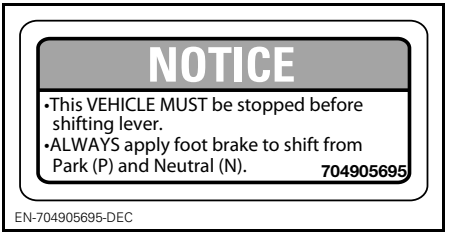
⚠ WARNING

Operating this ATV if you are under the age of 16 increases the chance of SEVERE INJURY or DEATH to the operator, and to both the operator and passenger on 2-up models. NEVER operate this ATV if you are under age 16.



LABEL 2

Label 3

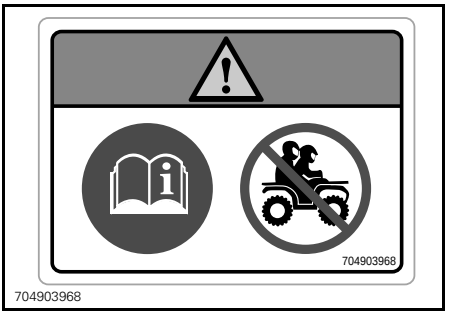


LABEL 3

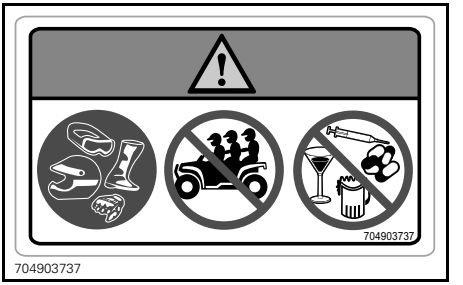
Label 4

⚠ WARNING

- Locate and read operator's guide.
- NEVER carry a passenger on 1-up models and NEVER carry more than 1 passenger on 2-up models.
- Passenger on 2-up models must always use an approved helmet and protective gear.
- Passenger on 2-up models must NEVER ride after using drugs or alcohol.



LABEL 4 - 1-UP MODELS

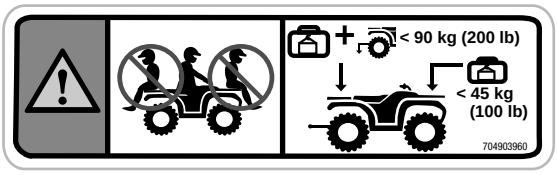


LABEL 4- 2-UP MODELS

Label 5

⚠ WARNING

- NEVER carry a passenger on this carrier.
- MAXIMUM FRONT LOAD: 45 kg (100 lb) evenly distributed.
- MAXIMUM REAR LOAD: 90 kg (200 lb) evenly distributed (including trailer tongue weight if applicable).



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LABEL 5

Label 6

⚠ WARNING

NEVER attach here or on the luggage rack to pull a load This can cause the vehicle to tip over. ALWAYS use the trailer hitch or the recovery hook to pull a load.

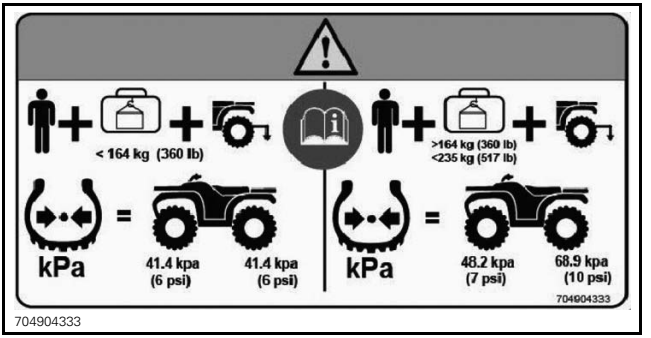
704903955A

LABEL 6

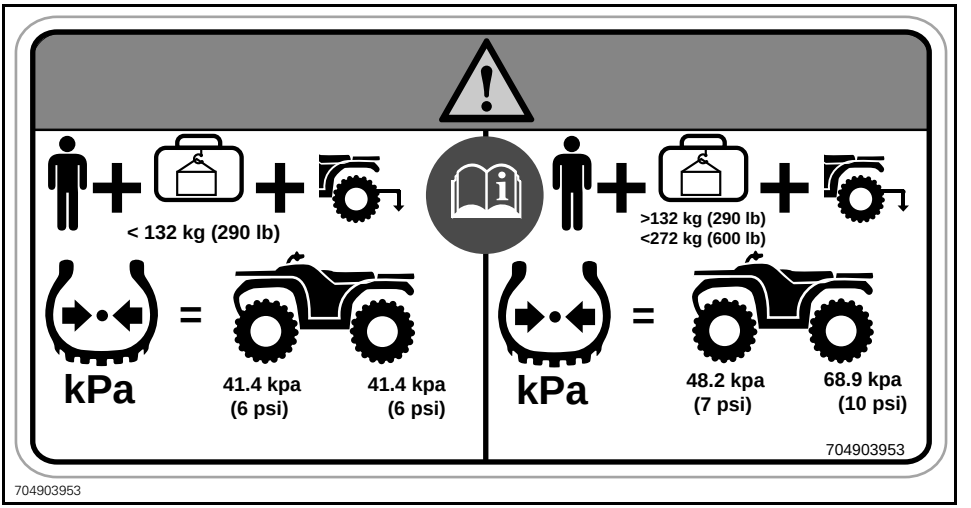
Label 7

⚠ WARNING

- Locate and read operator's guide. Improper tire pressure or overloading can cause loss of control, resulting in SEVERE INJURY or DEATH.
- ALWAYS maintain proper tire pressure as shown.
- On 1-up models, NEVER exceed the load capacity of 235 kg (517 lb) including weight of operator, cargo, accessories, and trailer tongue weight.
- On 2-up models, NEVER exceed the load capacity of 272 kg (600 lb) including weight of operator, cargo, accessories, and trailer tongue weight.
- ALWAYS pull a load using the trailer hitch or recovery hook.

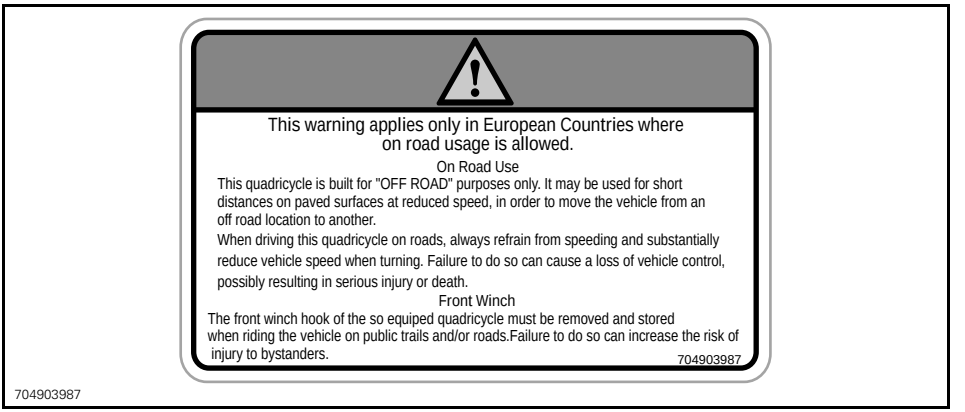


LABEL 7 1-UP MODELS



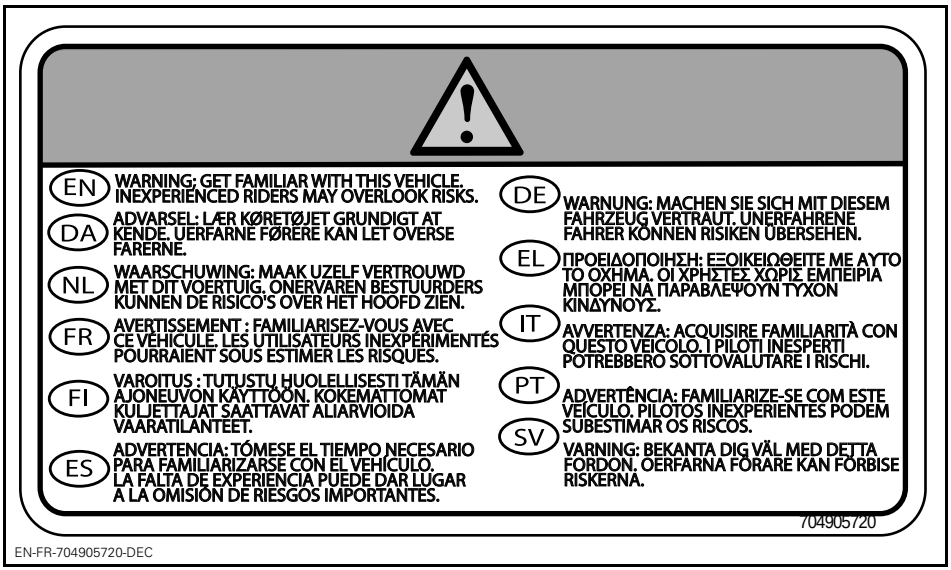
LABEL 7- 2-UP MODELS

Label 8



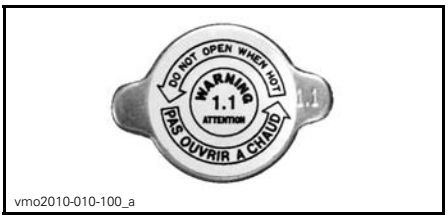
LABEL 8

Label 9



LABEL 9

Label 10



LABEL 10

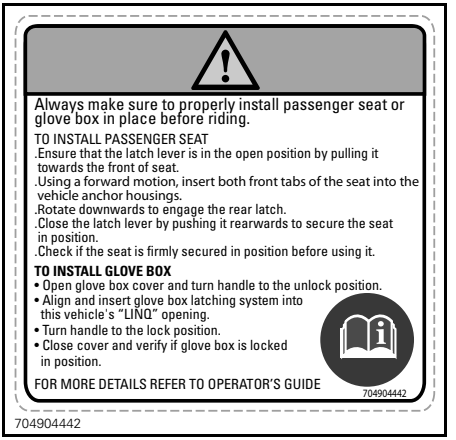
LABEL 11

Label 11

⚠ WARNING

Do not open when hot.

Label 12



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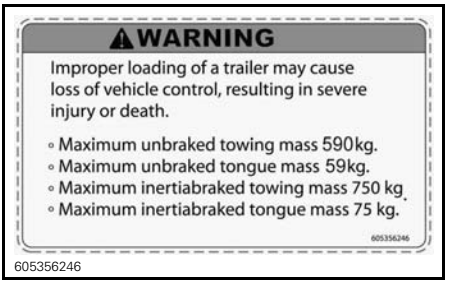
LABEL 12 - 2-UP MODELS - LOCATED UNDER PASSANGER SEAT

Label 13



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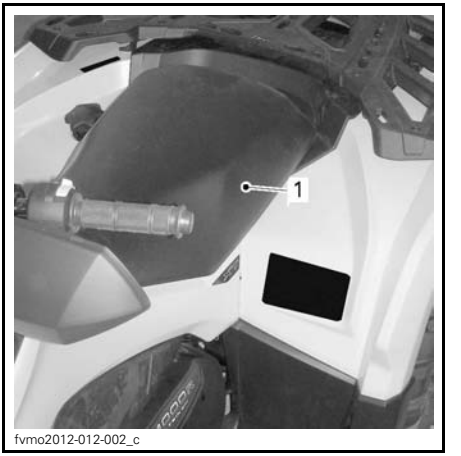
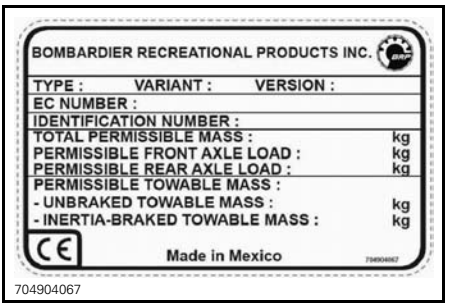
LABEL 13: TOWING INSTRUCTIONS

3) Compliance Labels

These labels indicate vehicle's compliance.



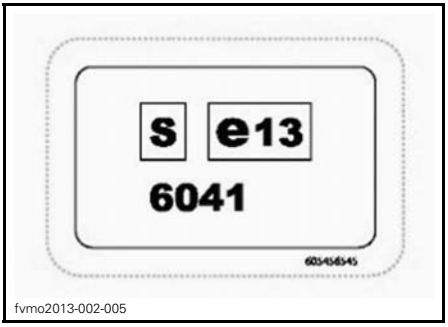


704904067

LOCATION: UNDER SEAT, ON THE UPPER FRAME MEMBER

605456593

LABEL 1 LOCATION: UNDER SEAT



fvmo2013-002-005

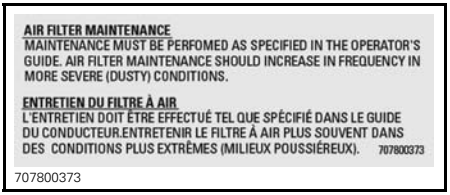
LOCATION: ON TRAILER HITCH

Category 1 - The cab does not offer any protection against substances which are harmful to health.

fvmo2013-001-005

CATEGORY 1

4) Technical Information Labels

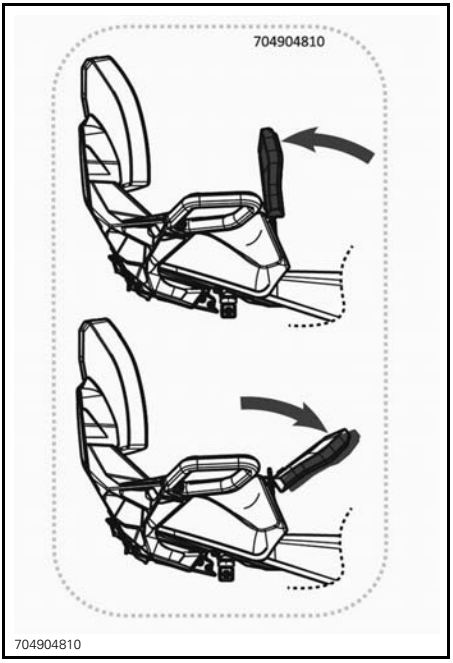


707800373

LOCATION: UNDER SEAT

fvmo2012-001-012

TRANSMISSION PARK POSITION



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LOCATION: BACK OPERATOR'S BACKREST

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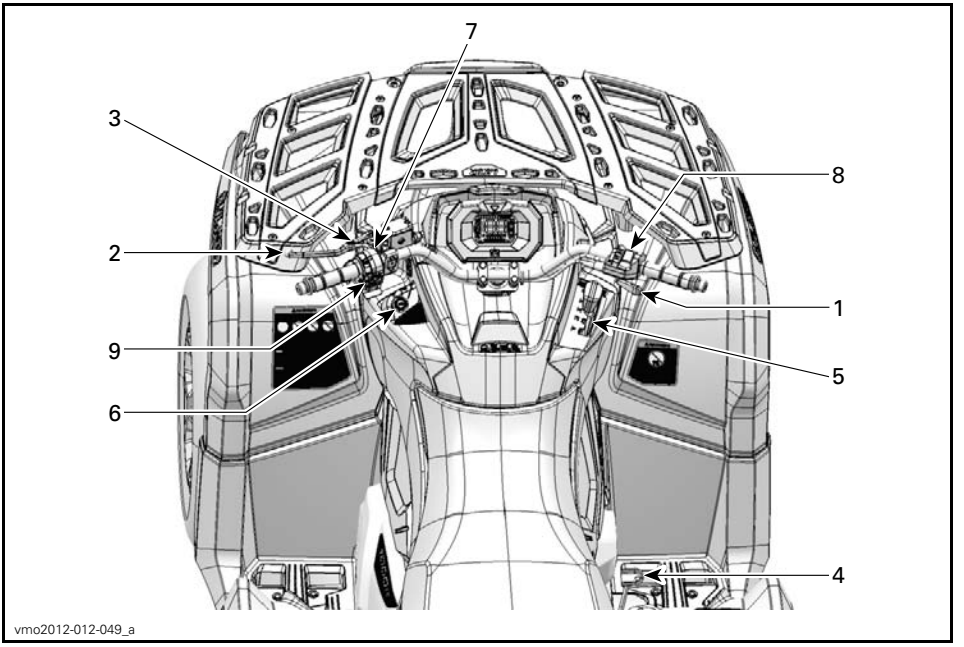
B) VEHICLE INFORMATION



1) Throttle Lever

The throttle lever is located on the RH side of the handlebar.

The throttle lever controls the engine speed.

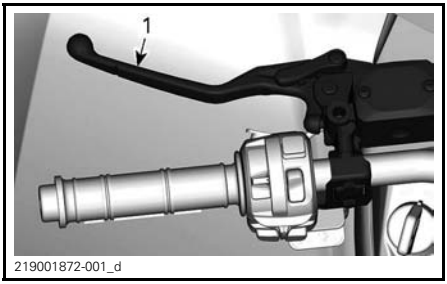
To increase or maintain vehicle speed, press the throttle lever with your right thumb.

To decrease vehicle speed, release the throttle lever.

TYPICAL
1. *Throttle lever*
2. *To accelerate*
3. *To decelerate*

2) Brake Lever

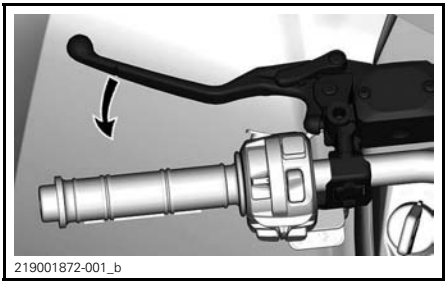
The brake lever is located on the LH side of the handlebar.



1. Brake lever

The brake lever function is to slow down or stop the vehicle.

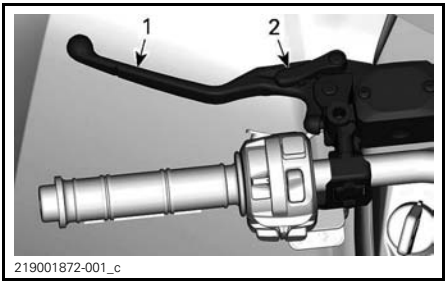
When the brake lever is compressed, the front and rear brakes are applied.



Braking effect is proportional to the force applied on the lever.

3) Brake Lock

The brake lock lever is located on the LH side of the handlebar.



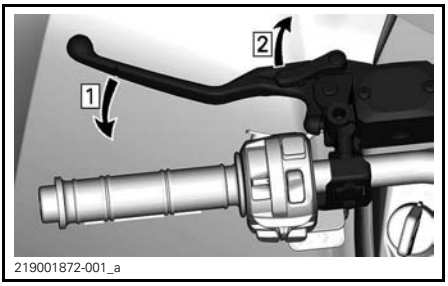
1. Brake lever
2. Lock lever

The brake lock function is to maintain brakes to all wheels to prevent the vehicle from moving when parked.

⚠ WARNING

Always use the brake lock and engage the PARK position on the shift lever when the vehicle is not in operation.

To engage the brake lock proceed as shown:



Step 1: Apply brakes
Step 2: Lock brakes

NOTE: The lock lever can be set to several positions.

NOTICE **Ensure, when the brake lock is applied, that the vehicle stays securely in place.**

To unlock the brakes, simply squeeze the brake lever. It should return to the rest position.

⚠ WARNING

Make sure brake lock is released before operating the vehicle. If brake lock is left ON while riding, it may cause damage to the brake system and cause loss of braking capacity and/or fire.

4) Brake Pedal

The brake pedal is located on the RH side footrest.

When pressed down, the front and rear brakes are applied.

1. Brake pedal

When released, the brake pedal should return to its original position.

Braking effect is proportional to the force applied on the pedal.

NOTE: As on other wheeled vehicles, the vehicle weight is transferred to the front wheels when braking. To obtain greater stopping efficiency, the brake system distributes more braking force to the front wheels. This will affect vehicle handling and steering control when braking vigorously. Take it into account when braking.

Should the brake lever system fail, the rear brake can be used by depressing the brake pedal.

5) Shift Lever

The shift lever is located on the RH side of the console near steering column.

SHIFT LEVER LOCATION

The shift lever is used to change the gearbox position.

The shift lever has 5 positions:

SHIFT LEVER POSITIONS	
POSITION	GEAR
P	Park
R	Reverse
N	Neutral
H	High range (forward)
L	Low range (forward)

SHIFT PATTERN

The vehicle must be stopped and brakes applied prior to selecting any gear.

NOTICE **This gearbox is not designed to shift while vehicle is moving.**

P: Park

The park position locks the gearbox to help prevent vehicle movement.

⚠ WARNING

Always use the PARK (P) position when the vehicle is not in operation. The vehicle can roll if the shift lever is not set to P (PARK).

R: Reverse

The reverse position allows the vehicle to go backwards.

NOTE: In reverse operation, the engine's RPM is limited, thus limiting the vehicle reverse speed.

⚠ WARNING

When driving downhill in reverse, gravity can increase the vehicle speed above the set limited reverse speed.

Neutral

The neutral position disengages the gearbox.

⚠ WARNING

Always use the PARK (P) position when the vehicle is not in operation. The vehicle can roll if the shift lever is set to N (NEUTRAL).

High Range (Forward)

This position selects the high speed range of the gearbox. It is the normal driving speed range. It allows the vehicle to reach its maximum speed.

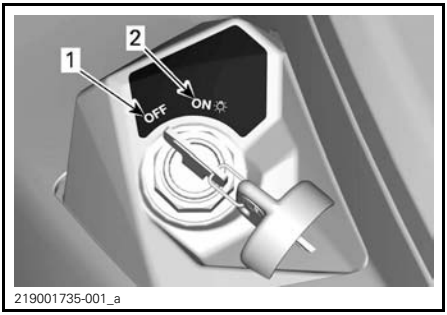
Low Range (Forward)

This position selects the low speed range of the gearbox. It allows the vehicle to move slowly with maximum torque at the wheels.

NOTICE Use the low speed range to pull a trailer, carry heavy cargo, go over obstacles or drive uphill and downhill.

6) Ignition Switch

The ignition switch is located on the LH side of the central panel below the handlebar.



IGNITION SWITCH POSITIONS
1. OFF
2. ON "with light"

OFF

The key can be inserted or removed in this position only.

In OFF position, the electrical system of the vehicle is disabled.

The engine is shut down by turning the ignition switch to OFF position.

NOTE: While the engine can be stopped by turning the ignition key to OFF position, we recommend the engine be stopped by setting the emergency engine stop switch to the STOP position.

NOTE: When turning the key to OFF position, the vehicle electrical system will take a few seconds to shut down.

ON with Lights

When the key is turned in this position, the electrical system of the vehicle is activated.

The gauge should wake-up.

The vehicle lights are turned on.

The engine can be started.

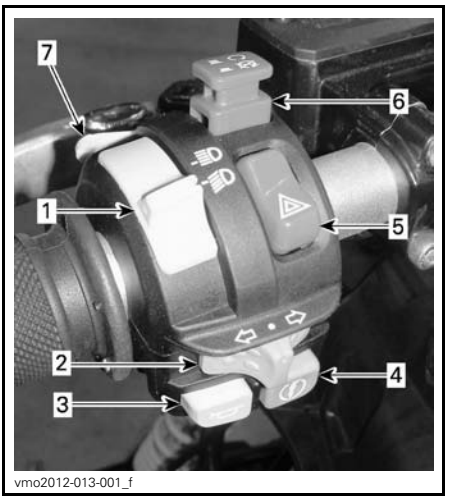
Digitally Encoded Security System (D.E.S.S.)

The ignition keys contain an electronic circuit that gives it a unique electronic serial number.

The D.E.S.S. system reads the key code and allows engine starting for keys it recognizes.

7) Multifunction Switch

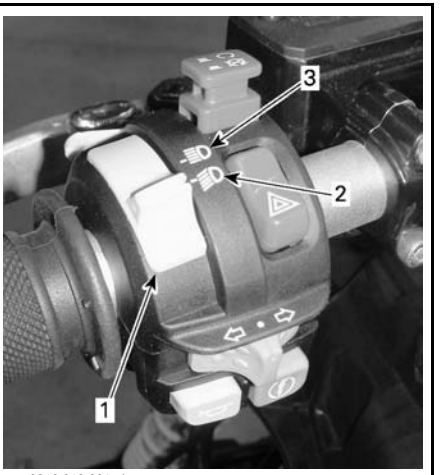
The multifunction switch is located on the LH side of the handlebar.



TYPICAL - MULTIFUNCTION SWITCH
1. *Low/high beam headlight switch*
2. *Turn signal switch*
3. *Horn button*
4. *Engine start button*
5. *Hazard warning button*
6. *Emergency engine stop switch*
7. *Override/DPS button (if applicable)*

Low/High Headlight Switch

This switch is used to select either the headlights low or high beams.



1. *Low/high beam headlight switch*
2. *Low beam*
3. *High beam*

Turn Signal Switch

The turn signal switch is located on the LH side of handlebar.

1. *Turn signal switch*

To activate the turn signals, move the switch button on the right or the left side, depending on which direction you picked. Reposition the switch in the middle when the maneuver is completed.

Horn Button

The horn button is located on the LH side of handlebar.

TYPICAL
1. Horn button

Engine Start Button

TYPICAL
1. Engine start button

When engine start button is pressed and held, it starts the engine.

NOTE: To allow engine starting, the ignition switch must be in the ON or ON with lights position and the emergency engine stop button set to RUN.

Hazard Warning Button

The hazard warning button is located on the LH side of handlebar.

1. Hazard warning button

The hazard warning system operates all the turn signals simultaneously. Used when the vehicle is stationary to indicate that the vehicle is temporarily obstructing traffic.

Press the hazard warning button once to activate the device.

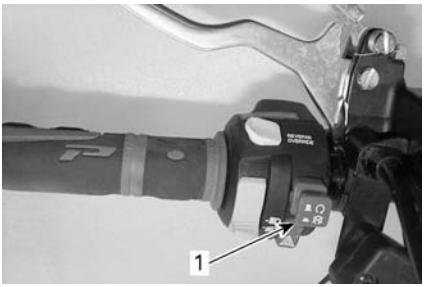
NOTE: Hazard warning lights can be activated even when the vehicle electrical system is shut down.

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

Emergency Engine Stop Switch



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1. Emergency engine stop switch

This switch can be used to stop the engine and as an emergency control.

To stop engine, set the emergency engine stop switch to the STOP position.

NOTE: While the engine can be stopped by turning the ignition key to OFF position, we recommend the engine be stopped by setting the emergency engine stop switch to the STOP position.

Override/DPS Button

Depending on the vehicle model, this button can have 2 functions.

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1. Override/DPS button

Override Function

The override switch main function is to bypass the engine speed limiter in reverse operation by allowing maximum engine torque.

⚠ WARNING

Use the "override" mode only if the vehicle is caught in mud or other soft terrain and the "low range" is not enough. Make sure the area is secure before using the "override" mode. Do not use the "override" mode when driving normally in reverse, this would result in excessive speed.

To engage the override function, proceed as follows:

While the shift lever is set to REVERSE position.

1. Ensure that the vehicle is stopped.
2. Press and hold the override switch then press the throttle lever gradually.

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

NOTE: When using the override function, the gauge will scroll an OVERRIDE message to confirm that the function is activated.

3. To disengage the override function, simply release the override switch.

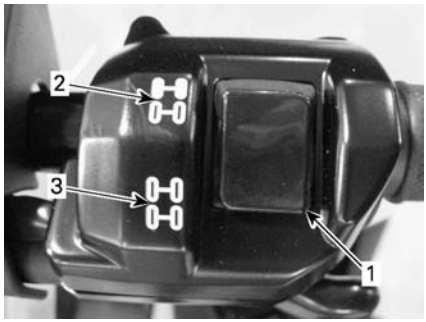
DPS Function (Models with DPS)

This button is also used to change the DPS mode.

To change DPS mode, refer to *TUNE YOUR RIDE*.

8) 2WD/4WD Selector

The 2WD/4WD selector is located on the RH side of the handlebar.



TYPICAL
1. *Selector*
2. *2WD position*
3. *4WD position*

This switch selects 2 wheel drive or 4 wheel drive mode when the vehicle is stopped and the engine is running.

NOTICE The vehicle must be stopped to engage or disengage the 2WD/4WD modes. Mechanical damage may occur if switch is engaged or disengaged while driving.

The 4WD mode is engaged when the switch is pushed downwards.

4WD MODE - TYPICAL

The 2WD mode is engaged when the switch is pushed upwards. The vehicle is then rear wheel drive only.

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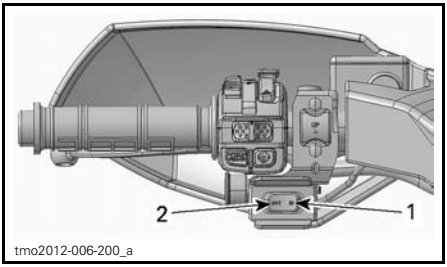
2WD MODE - TYPICAL

9) Winch Control Switch (Models with Winch)

This switch controls the winch operation.

To let out the cable, press the left side of switch.

To reel in the cable, press the right side of switch.



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TYPICAL
1. *In*
2. *Out*

NOTE: Using the winch intensively over a long period of time may discharge the battery.

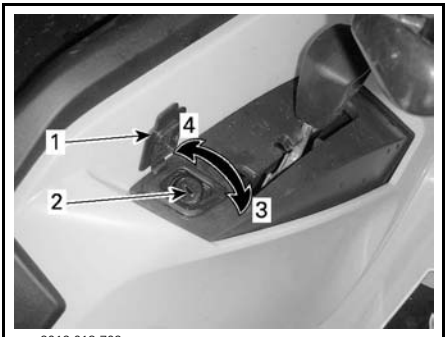
Refer to the winch *GUIDE* provided with the vehicle for proper operating instructions.

10) Shift Lever Lock

The shift lever can be locked when the vehicle is parked and left unattended.

To unlock shift lever, open protective cover, insert key and turn it clockwise.

To lock shift lever, turn key counterclockwise.



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SHIFT LEVER LOCKING MECHANISM
1. *Protective cover*
2. *Key lock*
3. *Turn key clockwise to unlock*
4. *Turn key counterclockwise to lock*

NOTE: The vehicle will not be locked if the shift lever is not placed in park position when the mechanism is engaged.

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

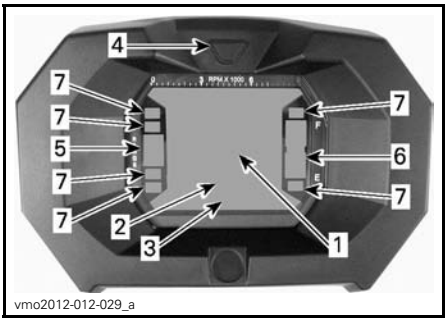
II MULTIFUNCTION GAUGE (LCD)

⚠ WARNING

Reading the multifunction gauge display can distract from the operation of the vehicle, particularly from constantly scanning the environment.

1) Multifunction Gauge Description

The multifunction gauge is located in the middle of the handlebar.



1. *Display 1*
2. *Display 2*
3. *Display 3*
4. *Display selector button*
5. *Gearbox position display*
6. *Fuel level display*
7. *Indicator lamps*

Speedometer

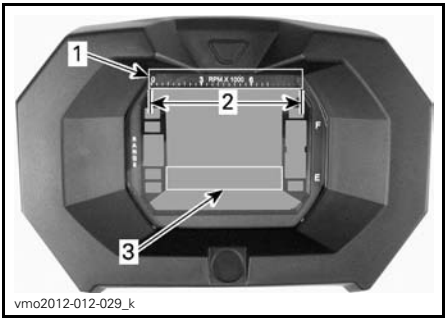
This display will show vehicle speed.

1. *Vehicle speed (Display 1)*

Tachometer

Indicates engine speed in revolutions per minute (RPM). Multiply by 1000 to obtain the actual engine speed.

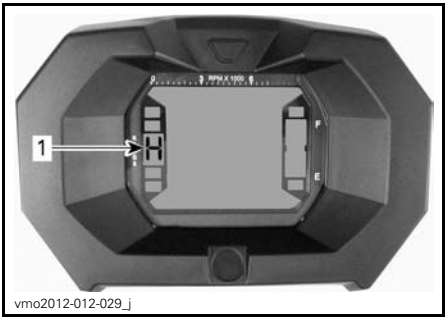
NOTE: RPM can also be displayed via Display 2 (mode) display. Refer to *DISPLAY 2 (MODE)* in this section.



1. *Tachometer*
2. *Operating range*
3. *Tachometer via display 2 (mode)*

Gearbox Position Display

This display will show gearbox position.



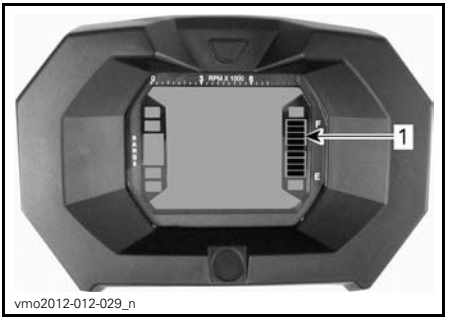
1. *Transmission position*

DISPLAY	FUNCTION
P	Park
R	Reverse
N	Neutral
H	High gear
L	Low gear

NOTE: If the letter "E" is displayed in the gearbox position display, it means that there is a electrical communication error. Contact an authorized Can-Am dealer.

Fuel Level Display

Bar gauge that continuously indicates the fuel level in the fuel tank.



1. Fuel level display

Low Fuel Level Indicator Lamp

When this indicator turns ON, it indicates that there is approximately 5 L (1.32 U.S. gal.) of fuel left in fuel tank.

4WD Indicator Lamp

When this indicator is ON, it indicates the 4WD system is activated.

Brake Lock Indicator Lamp

When this indicator is ON, it indicates the brake is activated for more than 15 seconds (while riding).

High Beam Indicator Lamp

When this indicator is ON, it indicates that high beam is selected.

Check Engine Indicator Lamp

When this indicator is ON, it indicates an engine fault code, look for a message at the LCD display.

Refer to *TROUBLESHOOTING* for more details.

Turn Signal Light Indicator Lamp

When this indicator is ON, it indicates the turn signal lights are in operation.

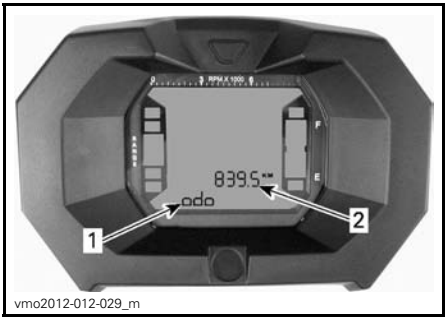
2) Multifunction Gauge Features

⚠ WARNING

Never adjust or set functions on the multifunction gauge while riding the vehicle.

The modes can be displayed by pressing the selector button.

NOTE: An abbreviation of the mode selected will also be displayed in display 3 (see abbreviations in parenthesis).



1. Display 2 (mode)
2. Display 3 (mode/message)

Odometer

Records the total distance travelled.

Clock

Displays current time.

Trip Meter

Records the distance travelled since it has been reset.

Press and HOLD display selection button to reset.

Hour Meter (Trip Time)

Records the vehicle running time when the electrical system is activated since it has been reset.

Press and HOLD display selection button to reset.

Engine Hour Meter

Records engine running time.

Engine RPM

Measures engine revolutions per minute (RPM).

3) Multifunction Gauge Set-Up

⚠ WARNING

Never adjust or set functions on the multifunction gauge while riding the vehicle.

Unit Selection (MPH vs KM/H)

This multifunction gauge is factory preset in Imperial units but it is possible to change it to Metric units, contact an authorized Can-Am dealer for unit settings.

NOTE: All features will have their units changed all together.

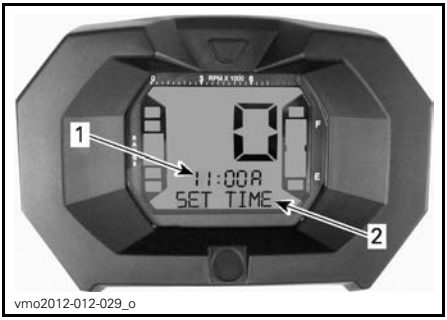
Language Selection

The gauge display language can be changed. Refer to authorized Can-Am dealer for language availability and setup the gauge to your preference.

Clock Setting

To set current time, proceed as follows:

1. Select the clock display.



1. Time (Display 2)
2. Message (Display 3)

2. Press and HOLD button (SET TIME will appear on display 3).
3. Choose the 12-hour (12H) or 24-hour (24H) format by pressing button.
4. If the 12-hour format was selected, choose Am ("A") or Pm ("P") by pressing button.
5. Choose hour first digit by pressing button.
6. Choose hour second digit by pressing button.
7. Choose minutes first digit by pressing button.

8. Choose minutes second digit by pressing button.
9. Press button to enter settings (CLOCK will appear on display 3).

III MULTIFUNCTION GAUGE (ANALOG/DIGITAL)

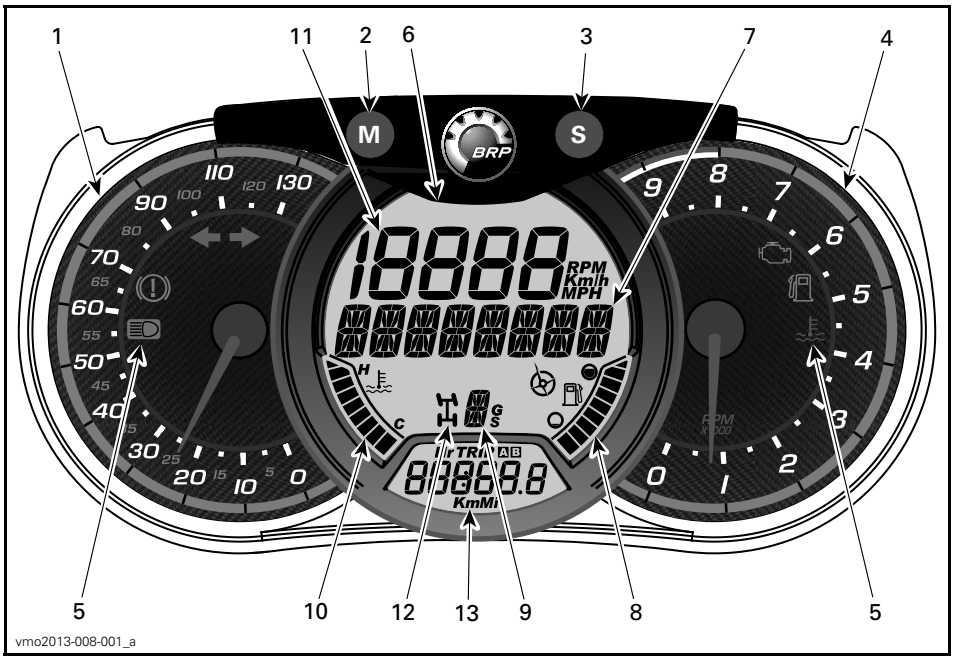
1) Multifunction Gauge Description

The Multifunction Gauge (Analog/digital) is located on the steering column.

The Multifunction Gauge (Analog/digital) is comprised of a digital gauge and two analog gauges (speedometer and tachometer).

The engine temperature and fuel level bar graphs are comprised in the digital gauge.

The indicators lamps are comprised in both analog gauges.



⚠ WARNING

Do not adjust the display while riding. You could lose control.

1) Analog Speedometer

Measures vehicle speed in km/h or mph.

2) MODE (M) Button

Pressing the MODE (M) button will scroll through the functions of the main digital display.

FUNCTION SEQUENCE	OPTIONS
Numerical Display is flashing	Press SET (S) to scroll and select desired function and press MODE (M) to confirm
Multifunction display is flashing	Press SET (S) to scroll and select desired function and press MODE (M) to confirm

3) SET (S) Button

Pressing the SET (S) button will scroll through the functions of the secondary digital display.

FUNCTION SEQUENCE	INFORMATION DISPLAYED
Clock	XX:XX (24:00 time base) XX:XX A or P (12:00 AM/PM time base)
Cumulative distance odometer	XXXXX.X km or mi
Trip distance — odometer A (TRIP A)	XXXXX.X km or mi
Trip distance — odometer B (TRIP B)	XXXXX.X km or mi
Engine time chronometer (Hr)	XXXXX.X
Trip time chronometer (HrTRIP)	XXXXX.X

To reset any trip functions, push and hold the MODE (M) button for three seconds.

4) Analog Tachometer (RPM)

Indicates engine speed in revolutions per minute (RPM). Multiply by 1000 to obtain actual engine speed.

5) Indicator Lamps

Indicator lamps will inform you of various conditions or problems.

An indicator lamp can flash alone or in combination with another lamp.

INDICATOR LAMP(S)		DESCRIPTION
All indicator lamps	On	All indicator lamps are activated when ignition switch is ON and the engine is not started
	On	Low Fuel
	On	Check Engine
	On	High Engine Temperature
	On	Headlights in the HIGH beam position
	On	Turn signal lights are in operation
	On	Brake is pressed for more than 15 seconds while riding

6) Main Digital Display

Displays useful real-time information to the rider.

7) Multifunction Display

The vehicle speed or the engine revolutions (RPM) can be displayed. See *MODE (M) BUTTON* in this section.

Important messages can also be displayed. Refer to table below.

MESSAGE	DESCRIPTION
BRAKE	Message displayed when the brakes are applied continuously for 15 seconds.
OVERRIDE	Override is displayed when the override switch is pressed and the shift lever is set to reverse gear.

If an abnormal engine condition occurs, a message can be combined with a pilot lamp. Refer to *TROUBLESHOOTING* for details.

8) Fuel Level Indicator

Bar graph that continuously indicates the level of fuel left in the fuel tank.

9) Gearbox Position Indicator

Displays the selected gearbox position.

10) Engine Temperature Indicator

Bar graph that continuously indicates the engine coolant temperature.

11) Numerical Display

The vehicle speed or the engine revolutions (RPM) can be displayed. See *MODE (M) BUTTON* in this section.

12) 2WD/4WD Indicator

When this indicator is ON, the 4WD system is activated.

13) Secondary Digital Display

Displays useful real time information to the rider. For display function informations, refer to *SET (S) BUTTON*.

2) Gauge Setup

Setting Metric/Imperial Units

See a Can-Am dealer for adjustments.

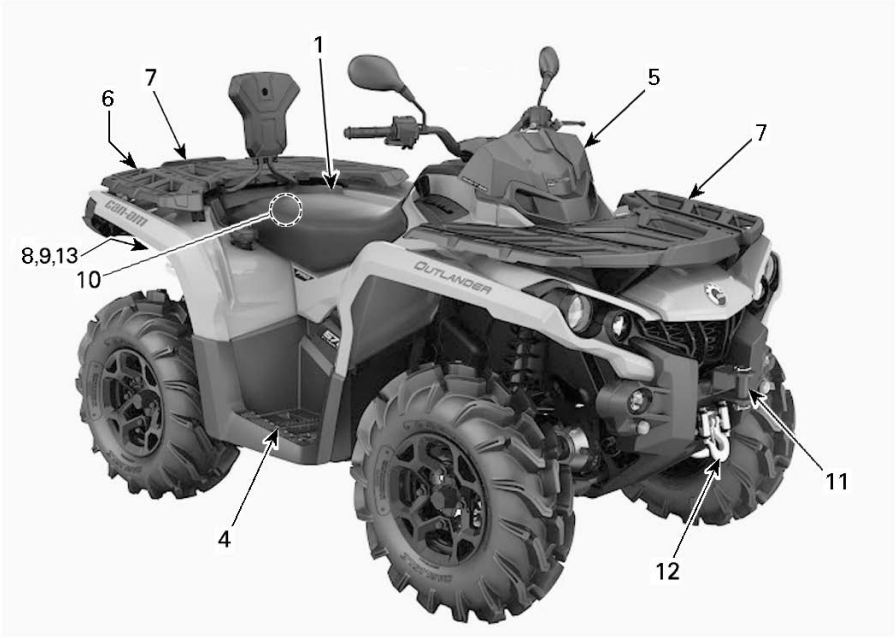
Setting Clock

1. Press SET (S) button to select clock display.
2. Push and hold SET (S) button for three seconds.
3. Press SET (S) button to select 12:00 AM PM or 24:00 time base.
4. If 12:00 AM PM time base is selected, A or P flashes. Press SET (S) button to select A (AM) or P (PM).
5. Choose hour first digit by pressing SET (S) button.

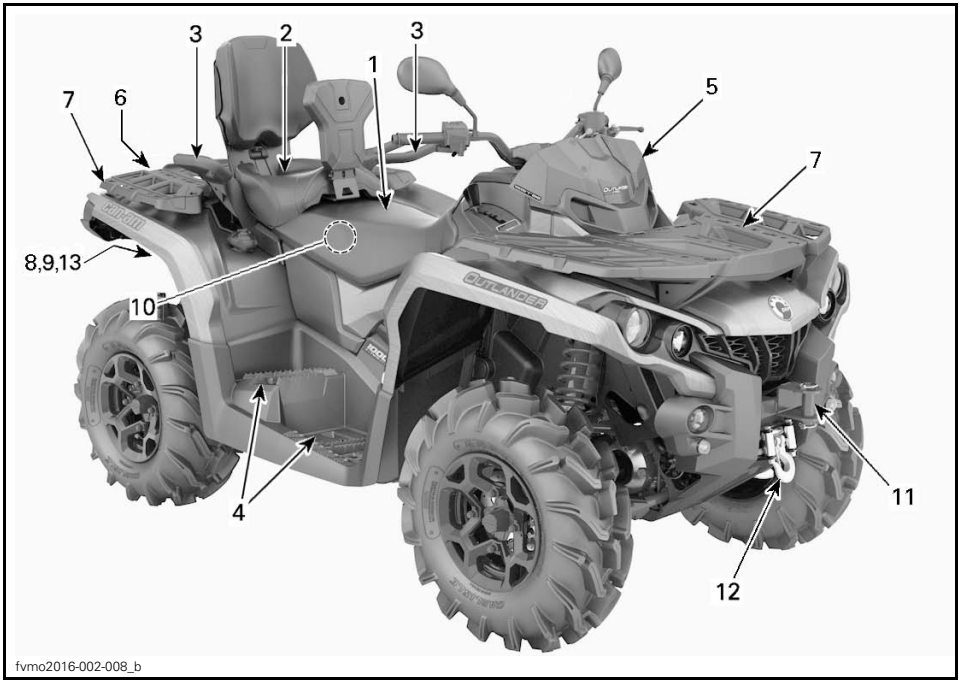
6. Choose hour second digit by pressing SET (S) button.
7. Choose minutes first digit by pressing SET (S) button.
8. Choose minutes second digit by pressing SET (S) button.
9. Press SET (S) button.

Setting Language

The gauge display language can be changed. Refer to an authorized Can-Am dealer for language availability and setup the gauge to your preference.



TYPICAL - 1-UP MODEL



TYPICAL - 2-UP MODEL

1) Operator's Seat

The seat is designed for an operator only.

Seat Removal

To remove the operator's seat, push its latch upward. This latch is located underneath the rear of seat.

1. Seat latch

Pull seat upward then rearward. Continue lifting movement until you can release the front retaining device, then completely remove seat.

Seat Installation

Insert front tabs of seat into steel hooks of frame. When seat rests in its position, firmly push seat down to latch.

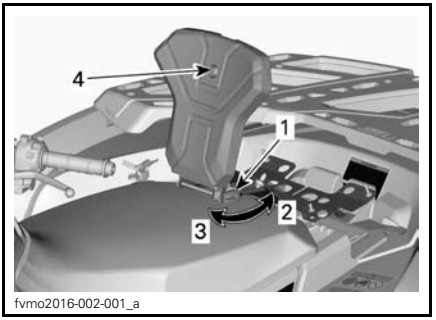
NOTE: A distinctive snap will be felt. Double check that the seat is secure by giving it a tug to confirm proper latching.

⚠ WARNING

Confirm that the operator's seat is properly locked in position by pulling back and up several times.

Seat Backrest

A seat backrest is provided to ease operator's operation.

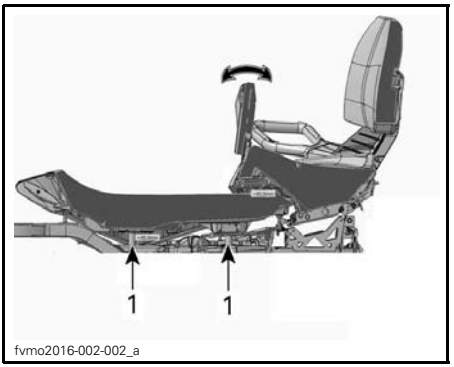


ADJUSTABLE BACK REST
1. *Back rest adjustment lever (60 mm)*
2. *Open*
3. *Close*
4. *Adjustment screw to adjust tilting force*

Secure that adjustment lever locking tab is in adjustment hole.

Seat Riser Installation

Seat can be set higher using a riser block.



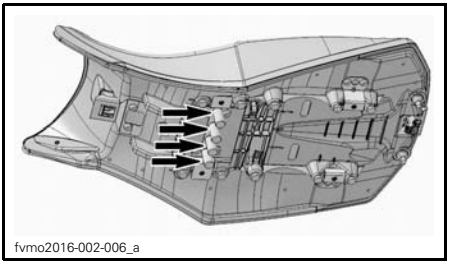
1. Riser Blocks (30 mm)

2-UP Models

1. Remove passenger's seat

All Models

2. Remove operator's seat.
3. Remove the riser blocks from their storage.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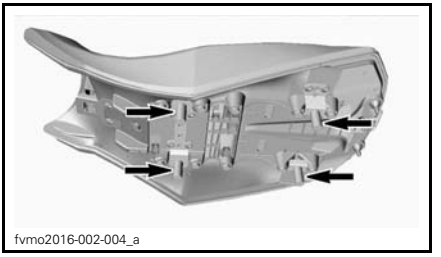
1. Riser Blocks

4. Install the riser blocks to the locations shown.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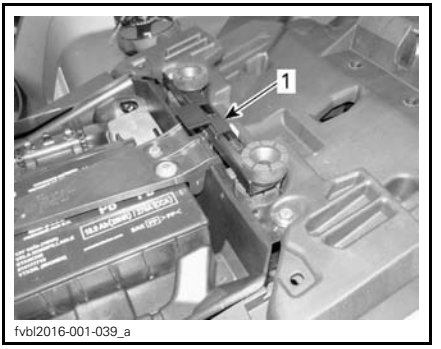
LOCATIONS FOR RISER BLOCKS INSTALLATION

5. Install the locking device.



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1. Lock device

6. Install operator's seat, then push it downwards to latch it properly.

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2-UP Models

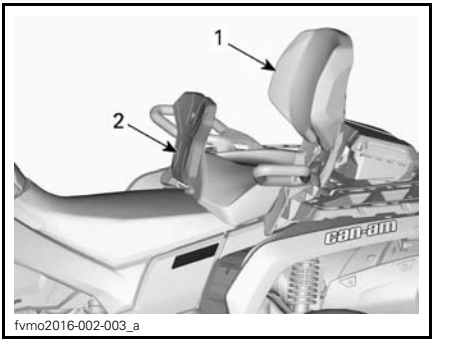
7. Install passenger's seat.

2) Passenger's Seat (2-UP Models)

⚠ WARNING

Never operate the vehicle without passenger's seat.

The passenger's seat is designed for a passenger only. The integrated backrest supports his back during the ride.



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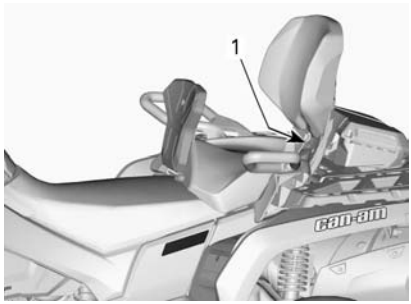
1. Passenger's seat
2. Integrated backrest

Passenger's Seat Removal

1. To unlock latch, pull the passenger's seat latch lever toward the front of the seat.



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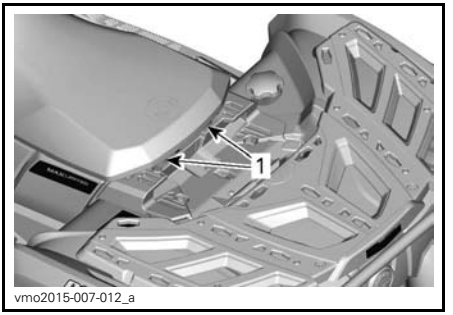
1. Seat handle

2. Apply downwards pressure on the back of latch lever to clear rear latch from pin and turn seat towards front using backrest.
3. While maintaining latch lever pulled towards the front, apply downward pressure on the back of latch lever to clear rear latch from pin and toggle seat towards front using backrest.
4. Pull seat rearward and up out of location to clear the front tabs.

Passenger's Seat Installation

1. Ensure the latch lever is in the open position by pulling it towards the front of seat.
2. Using a forward motion, insert both front tabs of the seat into the vehicle anchor housings.
3. Rotate downwards to engage the rear latch.
4. Close the latch lever by pushing it rearwards to secure seat in position.
5. Check if the seat is firmly secured in position before using it.



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1. Front pins

⚠ WARNING

It is of the upmost importance for the passenger's safety that you confirm that the passenger's seat is properly locked in position by pulling back and up several times.

3) Grab Handles (2-UP Models)

The grab handles are located on the RH and LH side of the passenger's seat.

The grab handles must be used by the passenger to hold on firmly during vehicle operation.

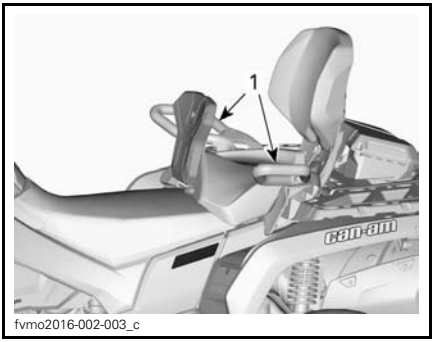
⚠ WARNING

The passenger must always hold on to the passenger grab handles, not the operator. He must also have both feet resting firmly against the footrests.

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.



TYPICAL
1. Grab handles

4) Footpegs

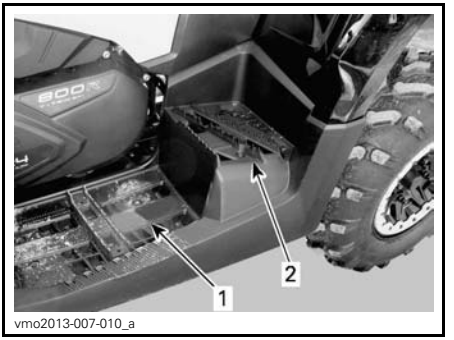
The footpegs are located on the RH and LH footrests.

TYPICAL
1. Operator's LH footpeg

⚠ WARNING

Operator must have both feet on footpegs at all time during vehicle operation.

2-UP Models



TYPICAL
1. Operator's LH footpeg
2. Passenger's LH footpeg

⚠ WARNING

Passenger must have both feet on footpegs at all time during vehicle operation.

5) 12-Volt Power Outlet

Convenient for handheld spotlight or other portable equipment.

1. 12 V power outlet

Remove protective cap to use. Always reinstall it after use to protect against weather.

6) Rear Storage Compartment

Convenient location to carry personal articles.

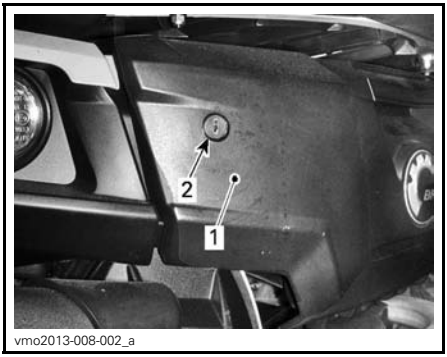
1. Rear storage compartment cover

⚠ WARNING

Always engage the PARK position on the shift lever before opening cover. Never leave any heavy or loose breakable objects in the storage area. Always latch cover before riding.

To Open Rear Storage Compartment

Unlock the cover with the supplied key.



1. Rear storage compartment
2. Keyhole

Unlatch cover and gently lower cover.

1. Rear storage compartment latch

To Close Rear Storage Compartment

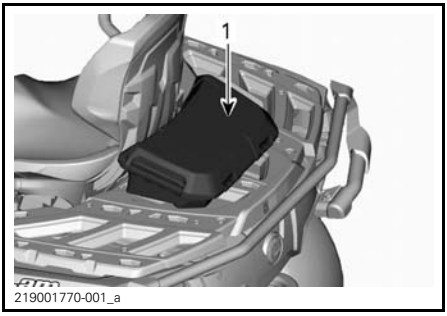
Gently lift and push cover until the latch clicks two times to ensure the seal is compressed.

Lock the compartment with the supplied key.

Storage Box

Convenient location to carry additional personal articles.

To remove storage box, open cover and turn knob counterclockwise to unlock LinQ attachment.



1. Storage box

7) Cargo Racks

Cargo racks are convenient for carrying equipment and various other cargo. They must never be used to carry a passenger.

vmo2012-012-022

FRONT CARGO RACK

vmo2012-012-021

REAR CARGO RACK

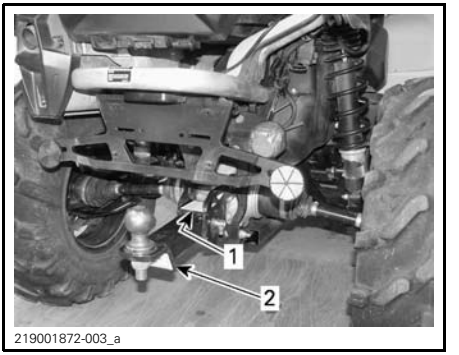
⚠ WARNING

- Never carry a passenger on a cargo rack.
- Cargo must never interfere with the drivers line of sight or affect his ability to properly steer the vehicle.
- Do not overload the vehicle.
- Always ensure all cargo is properly secured and does not extend out pass the racks.

Refer to *SPECIFICATIONS* for cargo racks capacity.

8) Trailer Hitch

Convenient hitch to install a ball to tow a trailer or other equipment. Install the proper ball size as per trailer manufacturer recommendations. Refer to *SPECIFICATIONS* or the safety label for tongue weight and towing capacity.



219001872-003_a

1. Safety label
2. Trailer Hitch

⚠ WARNING

Ensure to install the proper ball size that matches the equipment you will tow.

NOTE: Follow manufacturer's instructions for proper attachment.

9) Trailer Connector

Trailer connector to be used if trailer is equipped with lights.

For towing refer to towing instructions label located at trailer hitch.

219001872-003_b

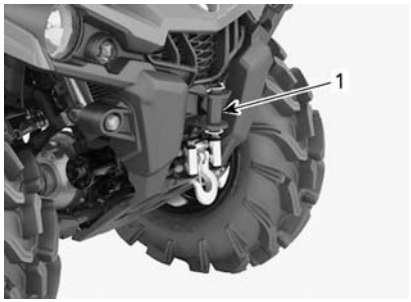
1. Trailer connector

10) Tool Kit

The tool kit is located under the operator's seat. It contains tools for basic maintenance.

11) Recovery Hooks

Convenient hook that can be use to recover a stuck ATV.

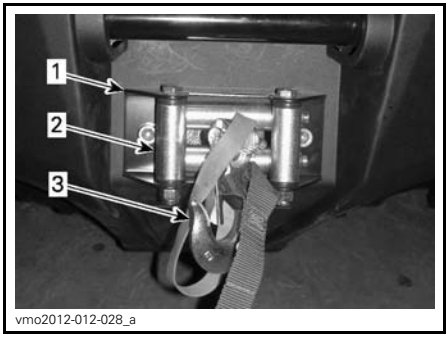


1. Front recovery hook

1. Recovery hook

12) Winch (If equipped)

The winch can be actuated using the winch control switch or with the remote control (sold separately).



1. Winch
2. Roller fairlead
3. Winch hook

NOTE: Using the winch intensively over a long period of time may discharge the battery.

The following tips will help to reduce the risk of discharging the battery:

Unreel manually: Unlock the cable using the handle then pull on the hook strap to unreel.

Let the engine run while winching. Do not stop engine immediately after winching to let battery recharge.

Also, when winching for more than 30 seconds, it is recommended to increase engine speed in the range of 3000 RPM to increase charging power to the battery.

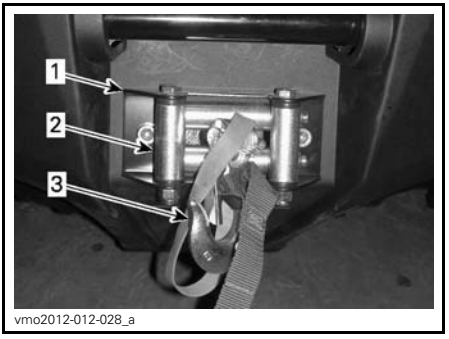
NOTE: Make sure vehicle is in NEUTRAL (N) before increasing engine speed.

Refer to the winch *GUIDE* provided with the vehicle for more information about the winch.

Roller Fairlead (Models with Winch)

The roller fairlead is used to prevent damages to the vehicle and guide the cable into the winch.

TYPICAL
1. Front hitch



1. Winch
2. Roller fairlead
3. Winch hook

13) License Plate Light

Convenient lighting for the license plate.

V FUEL

1) Fuel Requirements

NOTICE Always use fresh gasoline. Gasoline will oxidize; the result is loss of octane, volatile compounds, and the production of gum and varnish deposits which can damage the fuel system.

Alcohol fuel blending varies by country and region. Your vehicle has been designed to operate using the recommended fuels, however, be aware of the following:

- Use of fuel containing alcohol above the percentage specified by government regulations is not recommended and can result in the following problems in the fuel system components:
  - Starting and operating difficulties.
  - Deterioration of rubber or plastic parts.
  - Corrosion of metal parts.
  - Damage to internal engine parts.
- Inspect frequently for the presence of fuel leaks or other fuel system abnormalities if you suspect the presence of alcohol in gasoline exceeds the current government regulations.
- Alcohol blended fuels attract and hold moisture which may lead to fuel phase separation and can result in engine performance problems or engine damage.

2) Recommended Fuel

Use regular unleaded gasoline containing MAXIMUM 10% ethanol . The gasoline must have the following minimum octane requirements.

MINIMUM OCTANE RATING	
Outside North America	95 E10 RON

NOTICE Never experiment with other fuels. Engine or fuel system damages may occur with the use of an inadequate fuel.

3) Vehicle Fueling Procedure

⚠ WARNING

- Fuel is flammable and explosive under certain conditions.
- Never use an open flame to check fuel level.
- Never smoke or allow flame or spark in vicinity.
- Always work in a well-ventilated area.

1. Stop engine.

⚠ WARNING

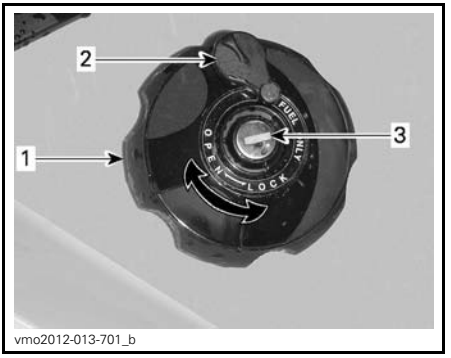
Always stop engine before refueling.

2. Have operator get off vehicle.

⚠ WARNING

Do not allow anyone to remain on the vehicle while fueling. If there is a fire or explosion during fueling, a vehicle occupant could be unable to quickly leave the area.

3. Slide protective cover away from fuel tank cap lock.
4. Insert key in fuel tank cap lock.
5. Turn key counterclockwise to unlock fuel tank cap.
6. Unscrew slowly the fuel reservoir cap counterclockwise to remove it.



RH REAR FENDER
1. *Fuel tank cap*
2. *Protective cover*
3. *Fuel tank cap lock*

⚠ WARNING

If a differential pressure condition is noticed (whistling sound heard when loosening fuel reservoir cap) have vehicle inspected and/or repaired before further operation.

7. Insert the spout into the filler neck.
8. Pour fuel slowly so that air can escape from the tank and prevent fuel flow back. Be careful not to spill fuel.
9. Stop filling when the fuel reaches the bottom of filler neck. Do not overfill.

⚠ WARNING

Never top up the fuel tank before placing the vehicle in a warm area. As temperature increases, fuel expands and may overflow.

10. Fully tighten fuel reservoir cap clockwise.
11. Lock fuel tank cap by turning key clockwise.

⚠ WARNING

Always wipe off any fuel spillage from the vehicle.

VI BREAK-IN PERIOD

Operation During Break-In

A break-in period of 300 km (200 mi) or 10 operating hours is required for the vehicle.

Engine

During the break-in period:

- Avoid full throttle operation.
- Maximum throttle should not exceed 3/4.
- Avoid sustained accelerations.
- Avoid prolonged cruising speeds.
- Avoid engine overheating.

However, brief accelerations and speed variations contribute to a good break-in.

NOTE: It is normal that the engine will not operate at its maximum efficiency until the break-in period is completed.

Brakes

⚠ WARNING

New brakes will not operate at their maximum efficiency until their break-in is completed. Use extra caution.

Drive Belt

A new drive belt requires a break in period of 50 km (30 mi).

During the break-in period:

- Avoid strong acceleration and deceleration.
- Avoid pulling a load.
- Avoid high speed cruising.

VII BASIC PROCEDURES

1) Starting the Engine

The shift lever must be set to PARK or NEUTRAL.

NOTE: For your convenience, an override mode allows the engine to be started with the shift lever in any position. Press and hold the brake lever or the brake pedal while pressing the engine start button.

Insert key in ignition switch and turn to ON position.

Set the emergency engine stop switch to RUN.

Press the engine start button and hold until the engine starts.

Release the engine start button immediately when the engine has started.

NOTICE **If engine does not start after a few seconds, do not hold the engine start button more than 10 seconds. Refer to *TROUBLESHOOTING*.**

2) Changing Gear Selection

Apply brakes and immobilize vehicle, then select the desired shift lever position.

Release brakes.

NOTICE **When changing gear selection, always completely stop the vehicle and apply the brakes prior to moving the shift lever. Otherwise, damage to the gearbox may occur.**

Gradually press the throttle lever to increase engine speed and thus engaging the continuously variable transmission (CVT).

At the opposite, when the throttle lever is released, the engine speed decreases.

3) Stopping the Engine and Parking the Vehicle

⚠ WARNING

Avoid parking on steep slope as the vehicle may roll away.

⚠ WARNING

Always put the vehicle in PARK when stopped or parked to prevent rolling.

⚠ WARNING

Avoid parking in places where hot parts can start a fire.

When stopped or parked always bring shift lever to park position. This is especially important when parking on a slope. On very steep inclines or if the vehicle is carrying a cargo, the wheels should be blocked using rocks or bricks.

Select the flattest terrain available for parking.

Release throttle and use brakes to completely stop the vehicle.

Set shift lever in PARK position.

Turn key in ignition switch to OFF position.

Remove key from ignition switch.

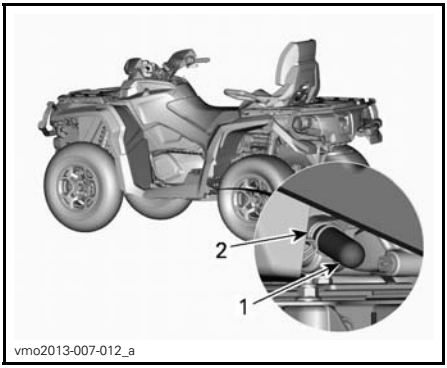
If you must park on a steep incline or if the vehicle is carrying cargo, block the wheels using rocks or bricks.

VIII SPECIAL PROCEDURES

1) What to Do if Water Entered the CVT

The CVT drain plug is located on the rear portion of the CVT cover. It is accessible from the rear LH fender.

Inspect the CVT drain plug to validate if water is present.



1. Drain plug
2. Spring clamp

NOTICE If water is present in the CVT, it could result in belt slippage. The engine will accelerate but the vehicle will remain still.

If water is present, remove CVT drain plug to expel water.

NOTICE See an authorized Can-Am dealer to have the CVT inspected and cleaned.

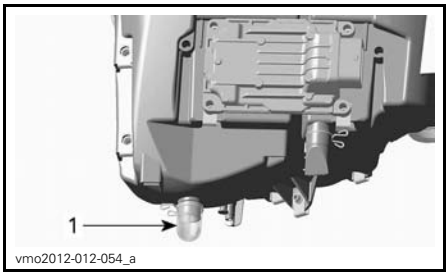
Reinstall the drain plug and secure it using the spring clamp.

NOTE: Make sure hose is properly inserted on CVT cover nipple.

2) What to Do if Water Entered the Air Filter Housing

Remove the LH side panel.

Inspect the underneath the air filter housing to validate if water is present.



TYPICAL
1. Air filter housing

If water is present, press clamp and remove reservoir to drain water from air filter housing.

If one of the following conditions is met, bring the vehicle to your nearest authorized Can-Am dealer to have the vehicle serviced:

– If more than 50 ml (2 U.S. oz) of water (approximately 5 drain reservoirs) is found in the air filter housing.
– If any deposits are present in the drain reservoir.

In such a case, the vehicle must be serviced for:

– Vents
– CVT air filter cleaning
– CVT cleaning
– Fuel tank breather replacement
– Lubricant inspection and replacement as required (engine, gearbox and rear final drive).

NOTICE Failure to have vehicle serviced may lead to permanent damage to the following components but not limited to:

– Engine and gearbox
– Fuel pump
– CVT
– Front differential
– Rear final drive.

3) What to Do if Vehicle is Turned Over

When vehicle is turned over or stays tilted on the side, put the vehicle back on its wheel. Inspect vehicle for damages.

⚠ WARNING

Never operate the vehicle if damaged. Refer to an authorized Can-Am dealer.

If vehicle has no damage, refer to *MAINTENANCE PROCEDURES* and inspect the following.

- Inspect air filter housing for oil accumulation, if any oil is found, clean air filter and air filter housing.
- Check engine oil level and refill if necessary.
- Check engine coolant level and refill if necessary.
- Check gearbox oil level and refill if necessary.
- Check rear final drive oil level and refill if necessary.
- Start engine. If the oil pressure light stays on, stop engine immediately. See an authorized Can-Am dealer.

Whenever the vehicle is turned over, it should be inspected by an authorized Can-Am dealer.

4) What to Do if Vehicle is Immersed in Water

Should the vehicle become immersed, immediately stop the engine. Do not use:

- Any electrical equipments
- Winch (if equipped)

It will be necessary to take the vehicle to an authorized Can-Am dealer as soon as possible. NEVER ATTEMPT TO START THE ENGINE!

NOTICE **Immersion of the vehicle can cause serious damage if the correct restart procedure is not followed.**

As soon as vehicle is pulled out of water, carry out the following:

- Drain CVT. See procedure in *WHAT TO DO IF WATER ENTERED THE CVT*.
- Drain air filter housing. Refer to *WHAT TO DO IF WATER ENTERED THE AIR FILTER HOUSING* in this section.

NOTICE **The vehicle should be serviced as soon as possible by an authorized Can-Am dealer.**

⚠ WARNING

Suspension adjustment could affect vehicle handling. Always take time to familiarize yourself with the vehicle's behavior after any suspension adjustment have been made.

1) Suspension Adjustment

Suspension adjustment and loading can have an effect on your vehicle handling and comfort.

Choice of suspension adjustments vary with driver's weight, personal preference, riding speed and field condition.

Spring Preload Adjustment

⚠ WARNING

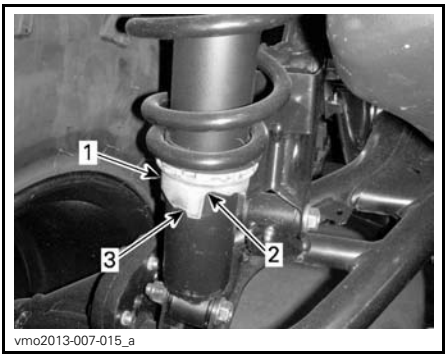
The left and right shock adjustment on front or rear suspension must always be set to the same position. Never adjust one only. Uneven adjustment can cause poor handling and loss of stability, which could lead to an accident.

Shorten the springs for a firmer ride and rough conditions.

Lengthen the springs for a softer ride and smooth conditions.

All Models Except XT-P

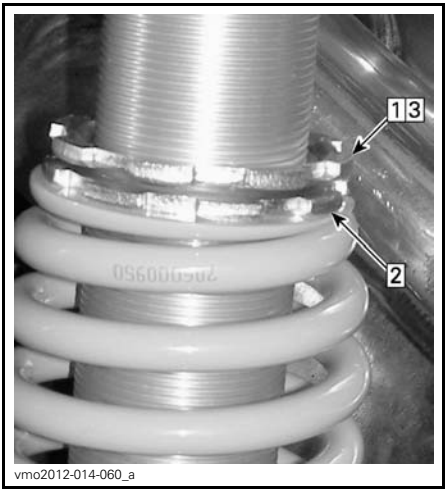
Adjust spring preload by turning adjustment cam.



TYPICAL
1. *Adjustment cam*
2. *Softer adjustment*
3. *Firmer adjustment*

XT-P Model

Adjust by turning adjustment cam accordingly. Use tool from vehicle tool kit.

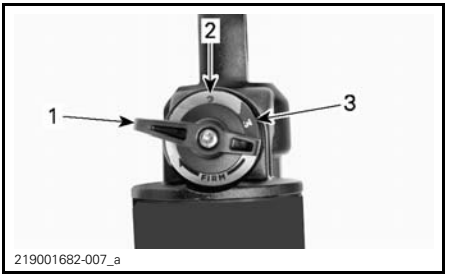


TYPICAL
Step 1: Loosen top locking ring
Step 2: Turn adjusting ring accordingly
Step 3: Tighten top locking ring

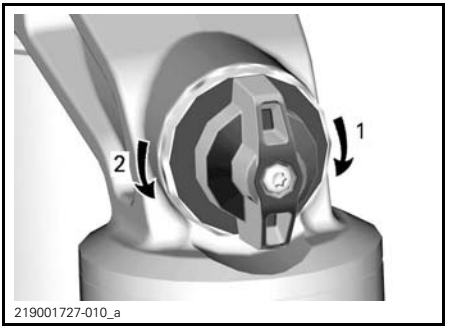
Shock Damping Adjustments (XT-P Model)

Compression damping controls how the shock absorber reacts when riding.

POSITION	SETTING	RESULT ON BIG BUMPS
1	Soft	Softer compression damping
2	Medium (Factory)	Medium compression damping
3	Hard	Firmer compression damping



1. *Position 1*
2. *Position 2*
3. *Position 3*



COMPRESSION DAMPING
1. **Increases** *damping (stiffer)*
2. **Decreases** *damping (softer)*

Turn adjuster clockwise to **increase** shock damping action (stiffer).

Turn adjuster counterclockwise to **decrease** shock damping action (softer).

ACTION	RESULT
Increasing compression damping force	Firmer compression damping
Decreasing compression damping force	Softer compression damping

⚠ WARNING

Make sure compression damping setting is the same on both sides.

2) Dynamic Power Steering (DPS) Assist Level Adjustment

The Tri-Mode Dynamic Power Steering (DPS) offers easy steering assistance to the rider. The level of assistance will automatically adapt according to the vehicle's speed and rider's demand, in order to provide maximum steering power at lower speed where the demand is normally higher. As speed increases, the assistance is progressively reduced to keep maximum steering feel and precision to the rider.

It is possible to choose between three modes of assistance: Minimum, Medium and Maximum. Each mode will continue to automatically adapt to the vehicle's speed and rider's demand, so it does not require to be changed when riding. These modes are used to set the level of assistance to match each rider's preferences.

The following DPS modes are preset in the vehicle.

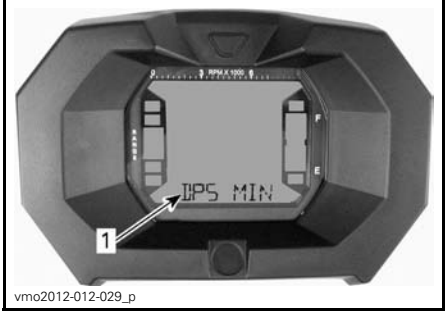
DPS MODE	
DPS MAX.	Maximum steering assist
DPS MED.	Medium steering assist
DPS MIN.	Minimum steering assist

To show the active DPS mode, proceed as follows:

1. Press and release **Override/DPS** button.

TYPICAL
1. Override/DPS button

2. Check the multifunction gauge to confirm the active DPS mode.



LCD GAUGE
1. DPS mode (Display 3)

ANALOG/DIGITAL GAUGE

1. DPS mode display

To change the DPS mode, proceed as follows:

1. Press and hold **Override/DPS** button for 2 seconds to go to the next setting.
2. Release **Override/DPS** button.
3. Repeat until desired setting is selected.

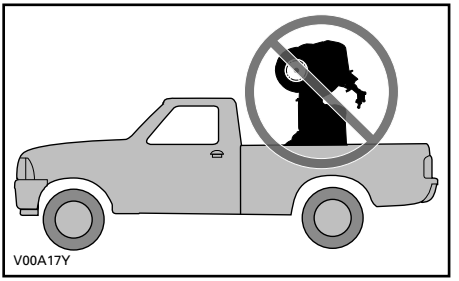
NOTE: The DPS adjustment will not be possible if the vehicle transmission is set to **REVERSE**.

X VEHICLE TRANSPORTATION

When transporting this vehicle, secure it to a trailer or in pickup box with suitable tie-downs. Use of ordinary ropes is not recommended.

⚠ WARNING

Do not tow this vehicle behind a car or other vehicle. Use a trailer. Never tip this vehicle on end for transporting. The vehicle must be in its normal operating position (on all four wheels).



Remember to:

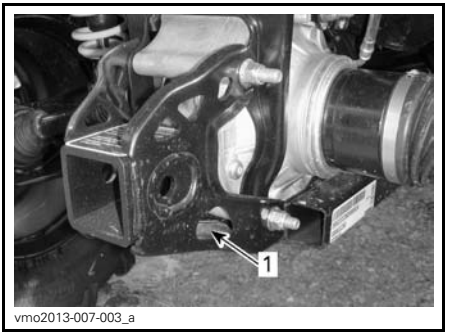
– Unload vehicle racks before transportation.
– Set shift lever to PARK position.
– Set the brake lock.
– Secure the vehicle by the front and rear tie-down points.

1. Front tie-down point location

⚠ WARNING

Front hitch is only for pulling, do not lift.

1. Front tie-down point location
2. Front hitch



TYPICAL - REAR TIE-DOWN POINT LOCATION

1. Rear tie-down point location

NOTICE Securing vehicle at other locations may damage the vehicle.

C) MAINTENANCE

I MAINTENANCE SCHEDULE

Maintenance is very important for keeping your vehicle in safe operating condition. Proper maintenance is the owner's responsibility. The vehicle should be serviced as per the maintenance schedule.

The maintenance schedule does not exempt the pre-ride inspection.

⚠ WARNING

Failure to properly maintain the vehicle according to the maintenance schedule and procedures can make it unsafe to operate.

1) SEVERE DUSTY CONDITIONS

Engine Air Filter Maintenance Guideline

Air filter maintenance should be adjusted according to riding conditions.

Air filter maintenance must be increased in frequency in the following dusty conditions:

– Riding on dry sand
– Riding on dry dirt covered surfaces
– Riding on dry gravel roads or similar conditions.

NOTE: Riding in a group in these conditions would increase even more the air filter maintenance.

2) MAINTENANCE SCHEDULE LEGEND

Operation in trail riding conditions
Operation in severe riding conditions (dusty or muddy) or carrying heavy loads condition

3) MAINTENANCE SCHEDULE

Make sure to perform proper maintenance at recommended intervals as indicated in the tables. Some items of the maintenance schedule must be performed in function of the calendar, regardless of the distance or time of operation.

EVERY 1 500 KM (1,000 MI) OR 50 HOURS (whichever comes first)
EVERY 750 KM (500 MI) OR 25 HOURS (whichever comes first)
Verify and clean engine air filter. Replace as needed
Verify battery connections
Lubricate front and rear propeller shaft joints
Inspect tie rod ends and ball joints for play and boots condition
Lubricate front suspension arm bushings
Lubricate rear stabilizer bar bushings
Inspect the drive shaft boots and protectors
Inspect brake pads. Replace as needed

EVERY 1 500 KM (1,000 MI) OR 50 HOURS (whichever comes first)
EVERY 750 KM (500 MI) OR 25 HOURS (whichever comes first)
Inspect wheel bearings for abnormal play
Inspect and clean CVT air filter. Replace as needed. (If equipped)
Tighten wheel beadlock bolts (If equipped)
Lubricate lower shock absorber spherical bearings (Outlander XT-P)

EVERY 3 000 KM (2,000 MI) OR 100 HOURS (whichever comes first)
EVERY 1 500 KM (1,000 MI) OR 50 HOURS (whichever comes first)
Adjust valve clearance
Clean muffler spark arrester
Verify and clean throttle body
Replace fuel vent breather filter
Verify CVT drive belt and clean CVT pulleys
Lubricate the one way bearing of the drive pulley
The following must be performed at least once a year:
Change engine oil and filter
Lubricate throttle cable
Inspect and clean brake system
Inspect battery condition
Verify steering system for abnormal play
Verify front differential and rear final drive oil level and look for contamination
Verify gearbox oil level and look for contamination

PERFORM AT THE FIRST 3 000 KM (2,000 MI) AND AT 6 000 KM (4,000 MI) THEN FOLLOW THE REGULAR SCHEDULE
PERFORM AT THE FIRST 1 500 KM (1,000 MI) AND AT 3 000 KM (2,000 MI) THEN FOLLOW THE REGULAR SCHEDULE
Replace gearbox oil
Clean the vehicle speed sensor (VSS)

EVERY 6 000 KM (4,000 MI) OR 200 HOURS (whichever comes first)
EVERY 3 000 KM (2,000 MI) OR 100 HOURS (whichever comes first)
Verify the cooling system
Test engine coolant strength
Verify fuel system for leaks
Verify fuel pump pressure
Replace spark plugs
Replace front differential oil
Replace rear final drive oil
Replace gearbox oil
Inspect input and output shaft seals (gearbox, differential and final drive)
Clean vehicle speed sensor
Clean and lubricate lower and upper steering column half bushings
The following must be performed every 2 years:
Replace the brake fluid

EVERY 12 000 KM (8,000 MI) OR 5 YEARS (whichever comes first)
EVERY 6 000 KM (4,000 MI) OR 5 YEARS (whichever comes first)
Replace engine coolant

II MAINTENANCE PROCEDURES

This section includes instructions for basic maintenance procedures. If you have the necessary mechanical skills and the required tools, you can perform these procedures. If not, see your authorized Can-Am dealer.

Other important items in the maintenance schedule that are more difficult and require in-depth technical knowledge or special tools are best performed by your authorized Can-Am dealer.

⚠ WARNING

Unless otherwise indicated, always turn ignition switch to OFF position and remove key before performing any maintenance.

⚠ WARNING

Should removal of a locking device be required (e.g. lock tab, self-locking fastener, etc.), always replace it with a new one.

1) Air Filter

Air Filter Maintenance Guideline

As with any ATV, air filter maintenance is critical to ensure proper engine performance and life span.

Air filter maintenance should be adjusted according to riding conditions.

Air filter maintenance must be increased in frequency and oil must be added to the foam filter for the following dusty conditions:

– Riding on dry sand.
– Riding on dry dirt covered surfaces.
– Riding on dry gravel trails or similar conditions.

NOTE: Riding in a group in these conditions would increase even more the air filter maintenance. Refer to *AIR FILTER CLEANING AND OILING* in this section for maintenance procedure.

NOTE: An accessory pre-filter for "dusty conditions" may be used. Contact an authorized Can-Am dealer for details.

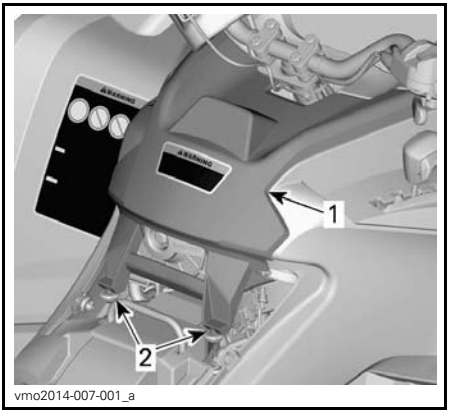
Air Filter Removal

NOTICE **Never remove or modify any component in the air filter housing. Otherwise, engine performance degradation or damage can occur. The engine is calibrated to operate specifically with these components.**

Remove seat.

Remove console.

Lift rear portion of console upwards until the studs are released from the grommets.



TYPICAL
1. *Console*
2. *Studs and grommets*

Pull console rearwards.

Rotate air filter cover counterclockwise to remove.

NOTE: A socket wrench may be used to ease removal.

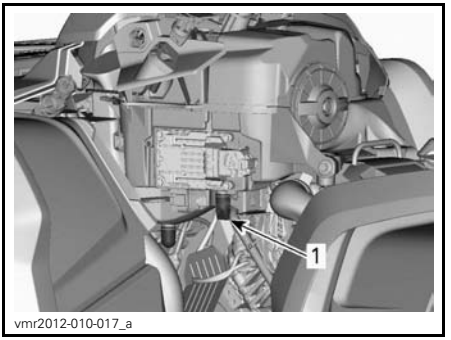
1. Air filter cover

Remove air filter.

AIR FILTER REMOVAL

Engine Air Filter Housing Inspection and Draining

1. Remove LH side panel.
2. Drain air filter housing inlet drain tube.

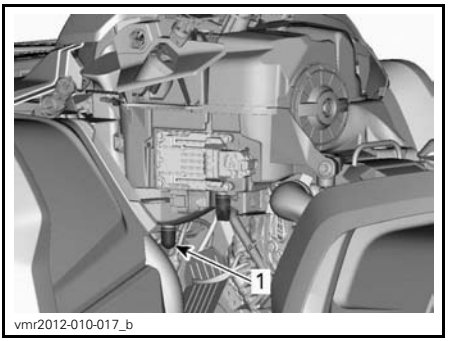


TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Air filter housing inlet drain tube

3. Check air filter dirty chamber for cleanliness.
   – If any debris or water are found, clean air filter chamber using a vacuum cleaner.

NOTICE Do not blow compressed air into air filter chamber.

4. Check air filter drain tube (clean chamber).
   – If any debris or water are found, refer to *SPECIAL PROCEDURES*.
   – Investigate for contamination source.



TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Air filter drain tube

Air Filter Cleaning and Oiling

⚠ CAUTION Always wear appropriate skin and eye protection. Chemicals can cause a skin rash and eye injury.

Paper Filter Cleaning

1. Ensure that the foam filter is removed from paper filter.
2. Tap out heavy dust from the paper filter.

This will allow dirt and dust to get out of the paper filter.

NOTE: Paper filter have a limited life span; replace filter if too dirty or clogged.

NOTICE It is not recommended to blow compressed air on the paper filter; this could damage the paper fibers and reduce its filtration ability when used in dusty environments.

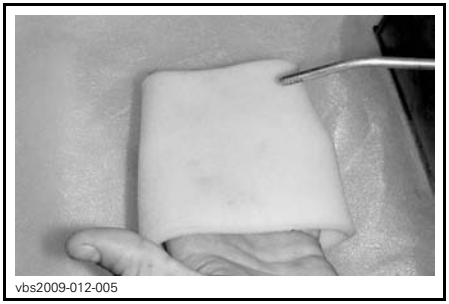
NOTICE Do not wash the paper filter with any cleaning solution.

Foam Filter Cleaning

1. Spray the foam filter inside and out with a good air filter cleaner and follow manufacturer's instructions.

TYPICAL - SPRAY THE FOAM FILTER

2. Dry the foam filter completely.



TYPICAL - DRY

NOTE: A second application may be necessary for heavily soiled elements.

Foam Filter Oiling

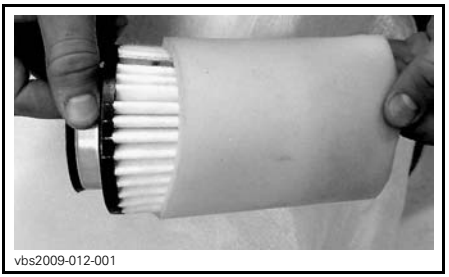
1. Make sure filter is clean. Refer to *FOAM FILTER CLEANING*.
2. Spray AIR FILTER OIL (P/N 219 700 340) on the foam filter previously dried.

AIR FILTER OIL (P/N 219 700 340)

TYPICAL - OIL THE FOAM FILTER

3. Let stand for 3 to 5 minutes.

4. Remove any excess of oil that could transfer to the paper filter by wrapping the foam filter into an absorbent cloth and squeezing gently. This will also ensure a full oil coverage on foam filter.
5. Reinstall the foam filter over the paper filter.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TYPICAL

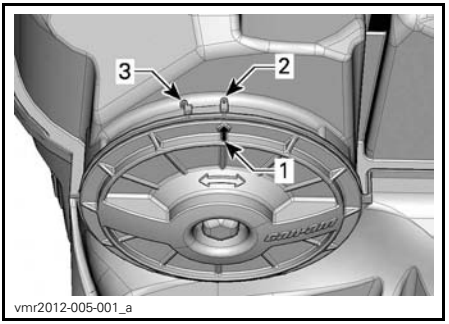
6. Slightly grease plastic body of filter for ease of installation and future removal.

Air Filter Installation

Slightly grease O-ring seal and plastic body of air filter.

Install air filter as the reverse of removal.

Ensure air filter cover is properly locked onto the air filter housing. See indications on filter cover and housing.



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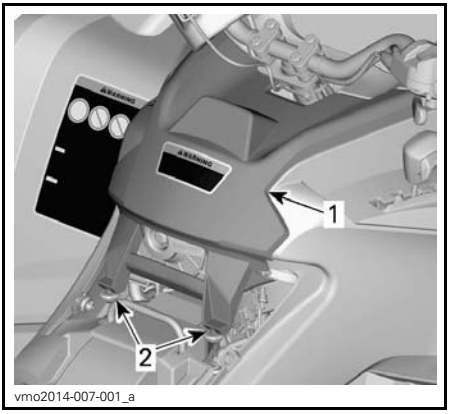
1. *Cover position arrow*
2. *Locked*
3. *Unlocked*

Install console as the reverse of removal. However, pay attention to the following.

Align console front tabs with slots, then push console forward.

Then align and insert studs with grommets on rear portion of console until studs engage with grommets.



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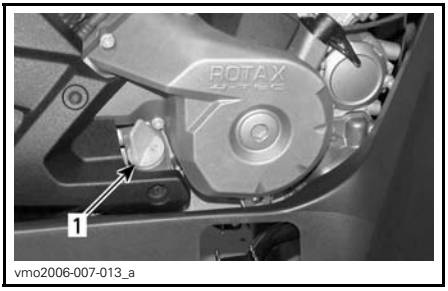
TYPICAL
1. *Console*
2. *Studs and grommets*

2) Engine Oil

Engine Oil Level

NOTICE Check level frequently and refill if necessary. **Do not overfill.** Operating the engine/gearbox with an improper level may severely damage engine/gearbox. Wipe off any spillage.

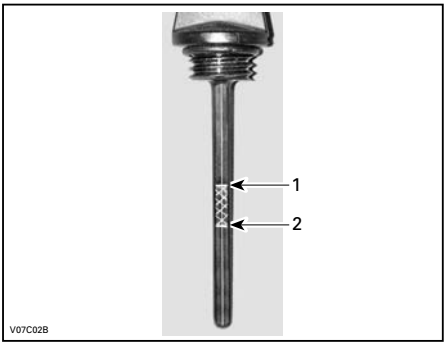
NOTE: While checking the oil level, visually inspect engine area for leaks.



TYPICAL - RH SIDE OF ENGINE
1. Dipstick

With vehicle on a level surface and engine cold, not running, check the oil level as follows:

1. Unscrew dipstick then remove it and wipe clean.
2. Reinstall dipstick, screw in it completely.
3. Remove and check oil level. It should be near or equal to the upper mark.



TYPICAL
1. Full
2. Add

To add oil, remove dipstick. Place a funnel into the dipstick tube to avoid spillage.

Add a small amount of recommended oil and recheck oil level.

Repeat the above procedures until oil level reaches the dipstick's upper mark. **Do not overfill.**

Properly tighten dipstick.

Recommended Engine Oil

RECOMMENDED ENGINE OIL (SUMMER)	
Finland, Norway and Sweden	XPS 4-STROKE SYNTH. BLEND OIL (F) (P/N 619 590 109)
All other countries	XPS 4-STROKE SYNTH. BLEND OIL (P/N 293 600 121)

RECOMMENDED ENGINE OIL (ALL SEASON)	
Finland, Norway and Sweden	XPS 4-STROKE SYNTHETIC OIL (F) (P/N 619 590 114)
All other countries	XPS 4-STROKE SYNTHETIC OIL (P/N 293 600 112)

NOTE: The XPS oil is specially formulated and tested for the severe requirements of this engine.

If not available, use 4-stroke SAE 5W40 engine oil that meets or exceeds the requirements for API service classification SJ, SL, SM or SN. Always check the API service label certification on the oil container it must contain at least one of the above standards.

Engine Oil Change

Start and warm-up engine. Stop engine.

Ensure vehicle is on a level surface.

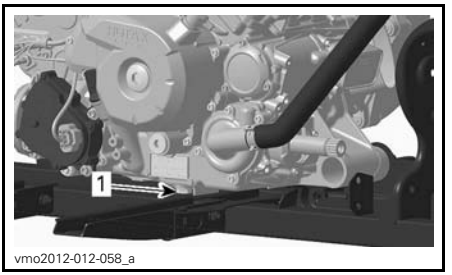
Remove dipstick.

Clean the oil drain plug area.

Place a drain pan under the oil drain plug area.

Unscrew oil drain plug.

CAUTION The engine oil can be very hot. In order to avoid potential burns, do not remove the engine drain plug if the engine is hot. Wait until engine oil is warm.



1. Drain plug

Allow enough time for oil to flow out of oil filter.

Replace the oil filter. Refer to *OIL FILTER* in this section.

Change gasket on oil drain plug.

Clean gasket area on engine and oil drain plug then reinstall plug.

Refill engine at the proper level with the recommended oil.

Refer to *SPECIFICATIONS* for oil capacity.

Start engine and let idle for a few minutes.

Ensure oil filter area and oil drain plug areas are not leaking.

Stop engine.

Wait a while to allow oil to flow down to crankcase then check oil level.

Refill as necessary.

Dispose of oil as per your local environmental regulations.

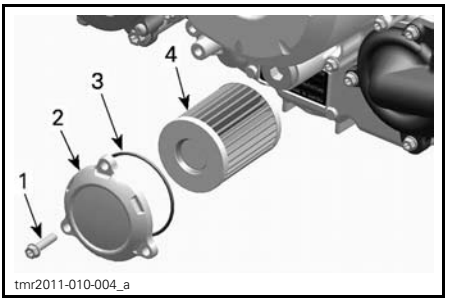
3) Oil Filter

Oil Filter Removal

To reach oil filter, remove the following parts:

– Seat
– Console
– RH side panel
– RH footrest panel.

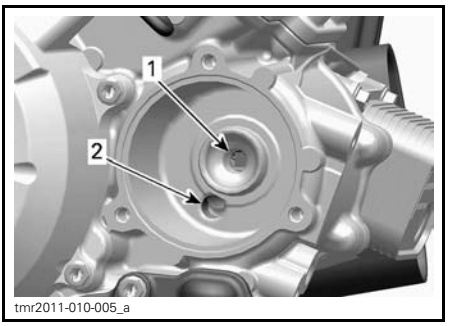
1. Clean oil filter area.
2. Remove oil filter cover screws.
3. Remove oil filter cover.
4. Remove oil filter.



1. Oil filter screw
2. Oil filter cover
3. O-ring
4. Oil filter

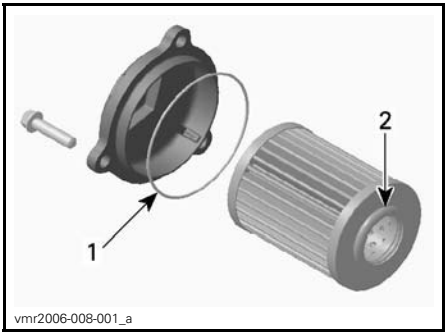
Oil Filter Installation

1. Check and clean the oil filter inlet and outlet area of dirt and other contaminations.



1. Outlet bore to the engine oil providing system
2. Inlet bore from the oil pump to the oil filter

2. Install a NEW O-ring on oil filter cover.
3. Install the filter into the cover.
4. Apply engine oil on O-ring and on end of filter.



1. Slightly oil
2. Slightly oil

5. Install the cover on the engine.
6. Tighten oil filter cover screws to recommended specification.

TIGHTENING TORQUE	
Oil filter cover screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

7. Reinstall remaining parts if applicable.

4) Radiator

Radiator Inspection

Periodically check the radiator area for cleanliness.

TYPICAL - PARTS REMOVED FOR CLARITY

Inspect radiator and hoses for leaks or any damage.

Inspect radiating fins. They must be clean, free of mud, dirt, leaves and any other deposit that would prevent the radiator to cool properly.

Remove as much deposits as you can with your hands. If water is available in proximity, try rinsing the radiating fins.

NOTE: Inner fenders can be removed to ease cleaning.

If available, use a garden hose to rinse the radiating fins.

⚠ CAUTION Never clean radiator with your hands when it is hot. Let the radiator cool down before cleaning.

NOTICE Be careful not to damage the radiating fins when cleaning. Do not use any object/tool that could damage the fins. The fins are purposely thin parts to allow efficient cooling. WHEN RINSING, USE LOW PRESSURE ONLY, NEVER USE A HIGH PRESSURE WASHER.

See an authorized Can-Am dealer to check the performance of the cooling system.

5) Engine Coolant

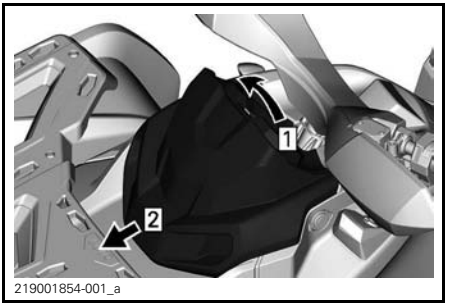
Engine Coolant Level Verification

⚠ WARNING

Check coolant level with engine cold. Never add coolant in cooling system when engine is hot.

Place vehicle on a level surface.

Remove the gauge support.



Step 1: Pull up
Step 2: Slide

Remove the coolant reservoir cap.

⚠ WARNING

Warning: Do not remove the coolant reservoir cap if engine is hot.

With vehicle on a level surface, liquid should be between MIN. and MAX. level marks of coolant reservoir.

1. Engine coolant reservoir

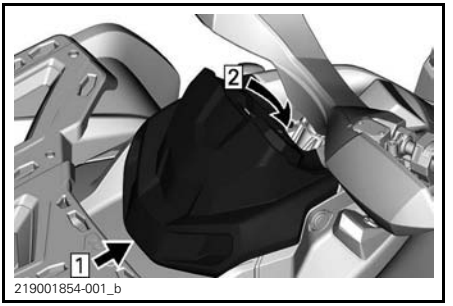
NOTE: When checking level at temperature lower than 20°C (68°F), it may be slightly lower than MIN. mark.

Add coolant if required.

Use a funnel to avoid spillage. **Do not overfill.**

Properly reinstall and tighten reservoir cap.

Reinstall gauge support.



Step 1: Hook
Step 2: Engage retaining tab

NOTE: A cooling system that frequently requires coolant is the indication of leaks or engine problems. See an authorized Can-Am dealer.

NOTICE **Do not store any objects under the gauge support.**

Recommended Engine Coolant

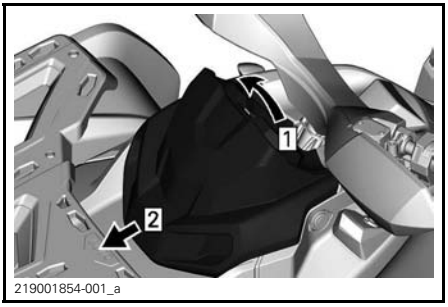
COUNTRY	RECOMMENDED COOLANT
Finland, Norway and Sweden	LONG LIFE ANTIFREEZE(F) (P/N 619 590 204)
All other countries	LONG LIFE ANTIFREEZE (P/N 219 702 685)
Alternative, or if not available	Distilled water and antifreeze solution (50% distilled water, 50% antifreeze)

NOTICE **Always use ethylene-glycol antifreeze containing corrosion inhibitors specifically for internal combustion aluminum engines.**

Engine Coolant Replacement

Cooling System Draining

Remove the gauge support.



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Step 1: Pull up
Step 2: Slide

Remove the coolant reservoir cap.

⚠ WARNING

To avoid potential burns, do not remove the pressure cap if the engine is hot.

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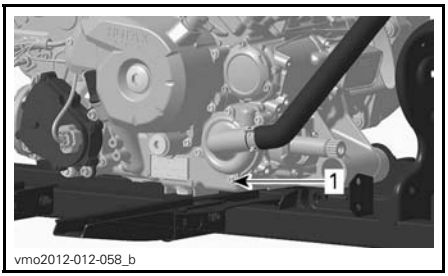
1. Engine coolant reservoir cap

Unscrew the coolant drain plug and drain the coolant into a suitable container.



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1. Coolant drain plug

NOTE: Do not unscrew the coolant drain plug completely.

570/650 Models

Disconnect the lower radiator hose and drain the remaining coolant into a suitable container.

NOTE: Take note of hose clamp position on the lower radiator hose.

Reinstall lower radiator hose.

Position the radiator hose clamp as noted during removal.

Tighten radiator hose clamp to specification.

All Models

Reinstall cooling system drain plug with a new sealing ring.

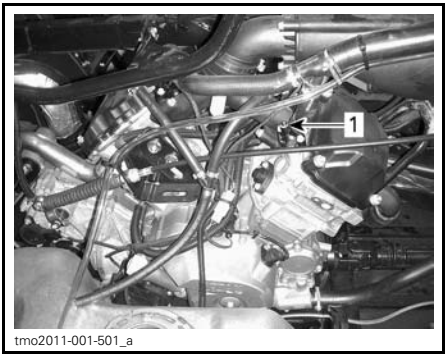
Tighten the coolant drain plug to specification.

TIGHTENING TORQUE	
Cooling drain plug	9 N•m to 11 N•m (80 lbf•**in** to 97 lbf•**in**)

Bleed cooling system, refer to *COOLING SYSTEM FILLING AND BLEEDING*.

Cooling System Filling and Bleeding

1. Unscrew bleed screws on both front and rear cylinders.



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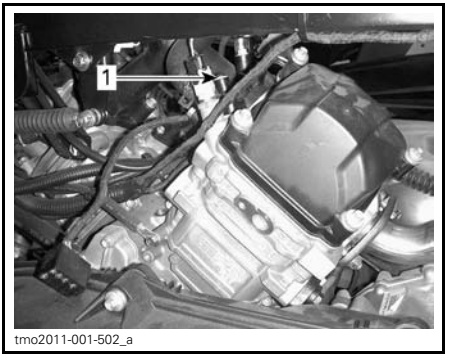
TYPICAL
1. Front cylinder bleed screw



TYPICAL
1. Rear cylinder bleed screw

2. Fill the cooling system until coolant comes out of the bleed screw(s).

570/650

3. Squeeze the top of the coolant hose between the radiator and coolant pump several times until all air is bled from the highest point of the hose.

All Models

4. Install the bleed screws using NEW gasket rings and tighten to specification.

TIGHTENING TORQUE	
Bleed screws	5.0 N•m ± 0.6 N•m (44 lbf•**in** ± 5 lbf•**in**)

5. Add coolant until system is full up to the pressure cap seat.
6. Refill coolant tank up to MAX level mark.
7. Start engine.

NOTE: Do not install pressure cap.

8. Run engine at idle until coolant fan turns ON.

NOTE: Monitor coolant level during engine warm-up and add coolant as required.

9. Depress the throttle lever two or three times; check coolant level.
10. Stop the engine and let it cool down.
11. Inspect cooling system for leaks.
12. Check coolant level in the reservoir. Add coolant as required.
13. Install pressure cap.

6) Muffler Spark Arrester

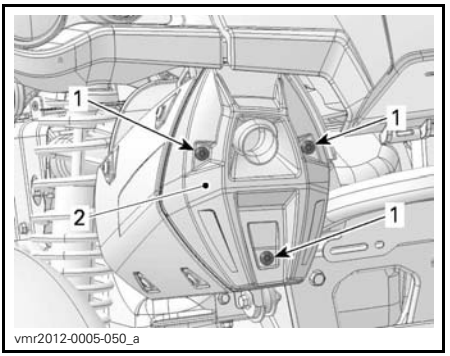
Muffler Spark Arrester Cleaning and Inspection

NOTE: Spark arrester screen replacement is required only when damaged.

⚠ CAUTION Let exhaust system cool down before proceeding with cleaning and inspection.

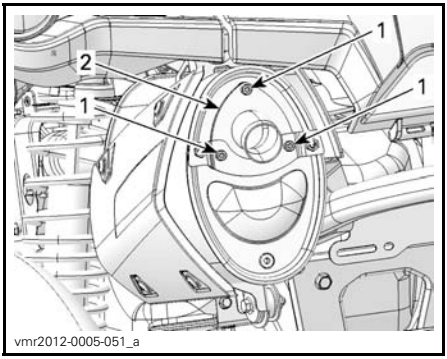
Remove the muffler cover. Discard retaining screws.

NOTICE Do not use impact tool for any screw removal.



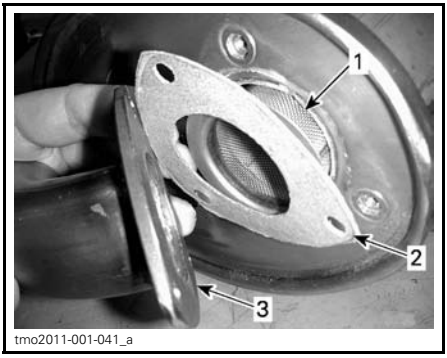
TYPICAL
1. Screws
2. Cover

Remove and discard the tail pipe retaining screws.



TYPICAL
1. *Screws*
2. *Tail pipe*

Remove exhaust tail pipe, gasket (discard) and spark arrester.

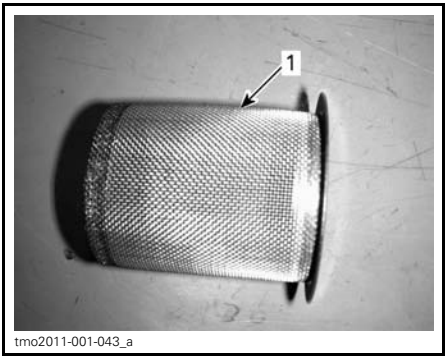


TYPICAL
1. *Spark arrester*
2. *Gasket*
3. *Exhaust tail pipe*

Remove carbon deposits from the spark arrester using a brush.

NOTICE Use a soft brush and be careful to avoid damaging spark arrester mesh.

⚠ CAUTION Wear eye protection and gloves.



1. *Clean spark arrester*

Inspect mesh of spark arrester for any damage. Replace as required.

NOTE: Spark arrester screen replacement is required only when damaged.

Inspect spark arrester chamber in muffler.

Clean any debris as required.

Install new gasket, tail pipe and new retaining screws.

Reinstall muffler cover with new retaining screws. Tighten to specification.

TIGHTENING TORQUE	
Tail pipe screws	11 N•m ± 1 N•m (97 lbf•**in** ± 9 lbf•**in**)
Cover screws	

7) CVT Air Filter (1000)

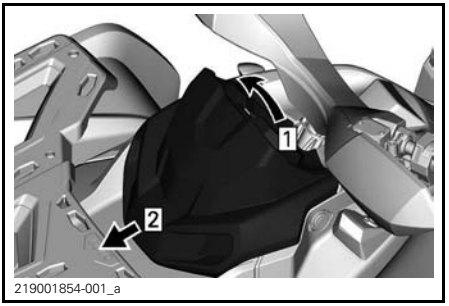
CVT Air Filter Removal

1. Remove the gauge support.

While reading this Operator's Guide, remember that:

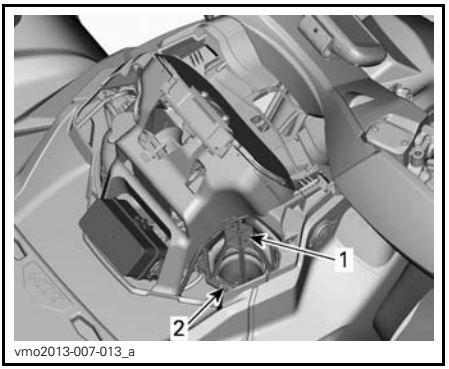
⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.



Step 1: Pull up
Step 2: Slide

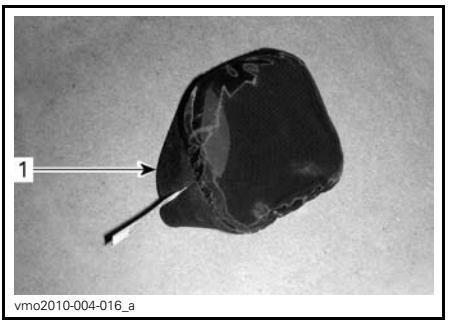
2. Push on three tabs and remove air filter.



1. CVT air filter
2. Tab

CVT Air Filter Cleaning

1. Spray filter inside and out with a good air filter cleaner and follow manufacturer's instructions.
2. Dry filter completely.



1. CVT air filter (slip-on type)

1. CVT air filter (clip-on type)

3. Clean inside the CVT air inlet end.

CVT Air Filter Installation

Models with Slip-On Air Filter

Install air filter on CVT inlet by stretching its sides.

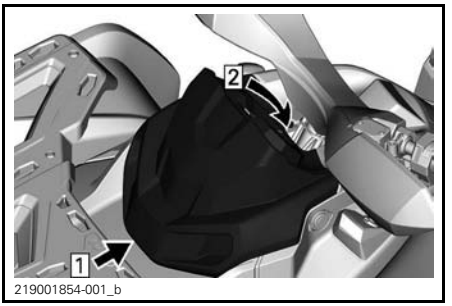
Reinstall gauge support.

Models with Clip-On Air Filter

Install air filter on CVT by inserting tabs in their slots and push on air filter until it clicks.

All Models

Install the gauge support.



Step 1: Hook
Step 2: Engage retaining tab

8) Gearbox Oil

Gearbox Oil Level Verification

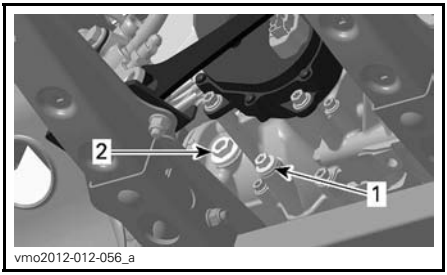
NOTICE Check level and refill if necessary. **Do not overfill.** Operating the gearbox with an improper level may severely damage gearbox. Wipe off any spillage.

Place the vehicle on a level surface.

Select NEUTRAL position.

Apply brake lock.

Check the gearbox oil level when engine cold, not running, by removing the gearbox oil level plug.



TYPICAL
1. *Drain plug*
2. *Oil level plug*

The oil should be level with the bottom of the oil level hole.

Refill as required until gearbox oil level flows through oil level hole.

Recommended Gearbox Oil

ENGINE	RECOMMENDED PRODUCT	QUANTITY
570 650	XPS SYNTHETIC GEAR OIL (75W 140)(F) (P/N 619 590 182)	Approximately 450 ml (15.22 U.S. oz)
1000		

If the recommended oil is not available, use a 75W140 gearbox oil that meets the API GL-5 specification.

NOTICE **Do not use another types of oil when servicing. Do not mix with other types of oil.**

Gearbox Oil Change

NOTE: When replacing the gearbox oil, it is recommended to clean the vehicle speed sensor (VSS) at the same time.

Place the vehicle on a level surface.

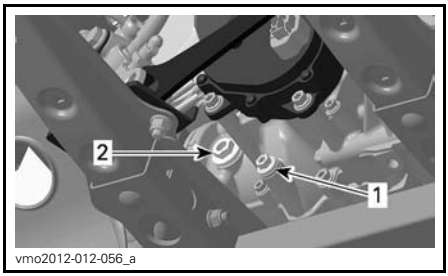
Clean drain plug area.

Clean the oil level plug area.

Under the vehicle, place a drain pan underneath the oil drain plug area.

Remove the oil level plug.

Remove the gearbox drain plug.



TYPICAL
1. *Drain plug*
2. *Oil level plug*

Let oil completely drain from gearbox.

Install the drain plug with a NEW sealing ring and tighten to specification.

TIGHTENING TORQUE	
Drain plug	20 N•m ± 2 N•m (15 lbf•ft ± 1 lbf•ft)

NOTE: Clean drain plug from any metallic particles prior to installation.

Refill gearbox.

NOTICE **Use ONLY the recommended type of oil.**

The oil should be level with the bottom of the oil level orifice.

NOTICE **Do not overfill.**

Reinstall oil level plug. Tighten plug to specification.

TIGHTENING TORQUE	
Oil level plug	5 N•m ± 0.6 N•m (44 lbf•**in** ± 5 lbf•**in**)

Wipe off any spillage.

9) Throttle Cable

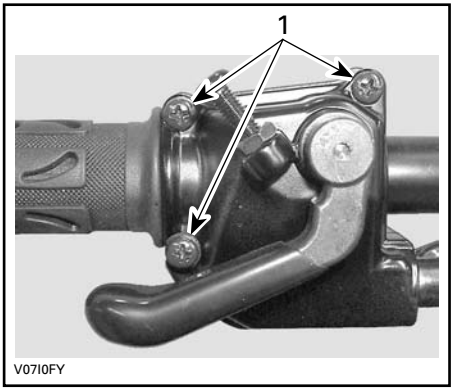
Throttle Cable Lubrication

The throttle cable must be lubricated with a silicone based lubricant or an equivalent.

⚠ WARNING

Always use a silicone-based lubricant. Using another lubricant (like a water-based lubricant) could cause the throttle lever/cable to become sticky and stiff.

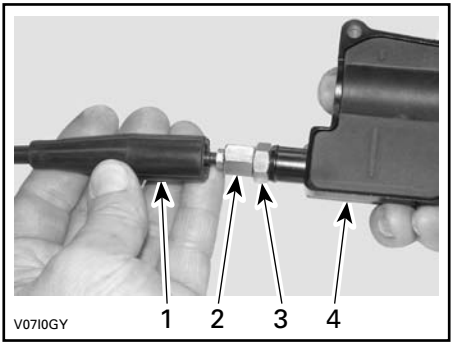
Open the throttle lever housing.



1. Remove these screws

Separate the housing.

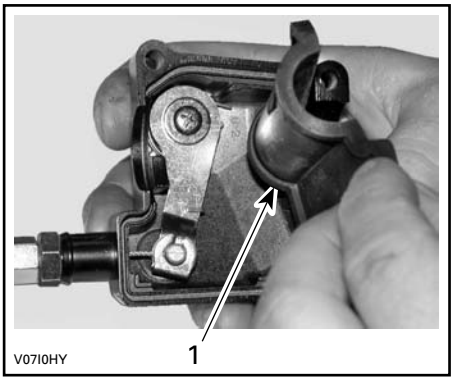
Slide rubber protector back to expose throttle cable adjuster.



1. Cable protector
2. Throttle cable adjuster
3. Lock nut
4. Throttle lever housing

Screw in the throttle cable adjuster.

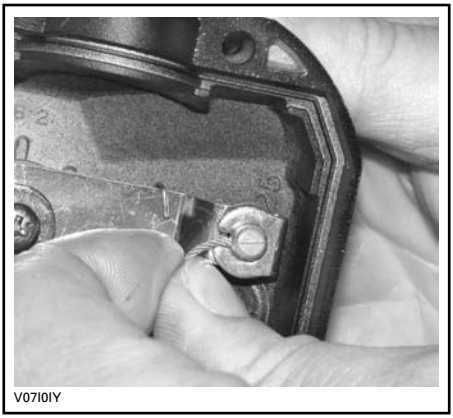
Remove inner housing protector.



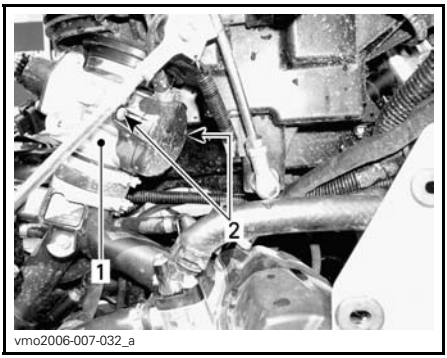
1. Inner housing protector

Remove the cable from the throttle lever housing.

NOTE: Slide cable in clip slot and remove the end of cable from clip.


V07I0IY

Remove the throttle body side cover.



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1. *Throttle body*
2. *Side cover screws*

Insert the needle of the lubricant can in the end of throttle cable adjuster.

⚠ CAUTION Always wear appropriate skin and eye protection. Chemicals can cause a skin rash and eye injury.

V07I0JY

TYPICAL

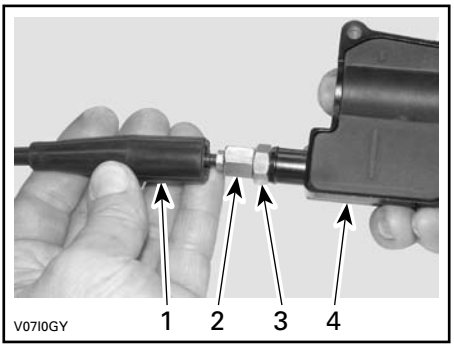
NOTE: Place a rag around the throttle cable adjuster to prevent the lubricant from splashing.

Add lubricant until it runs out at throttle body end of the throttle cable.

Reinstall and adjust the cable.

Throttle Cable Adjustment

Slide rubber protector back to expose throttle cable adjuster.

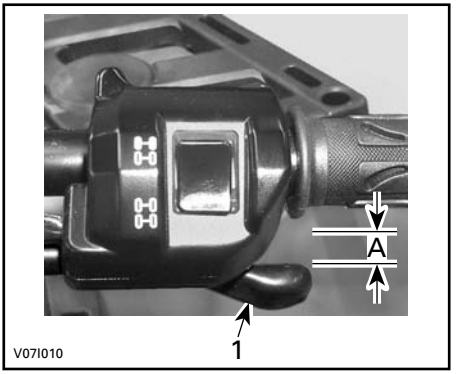


V07I0GY

1. *Cable protector*
2. *Throttle cable adjuster*
3. *Lock nut*
4. *Throttle lever housing*

Loosen lock nut then turn the adjuster to obtain correct throttle lever free play.

Measure throttle free play at the tip of throttle lever.



1. Throttle lever
A. 2 mm (.079 in)

Tighten lock nut and reinstall protector.

With the shift lever on PARK position, start the engine.

Check if the throttle cable is adjusted correctly by turning handlebar fully to the right then fully to the left. If the engine RPM increases, readjust the throttle lever free play.

10) Spark Plugs

Spark Plug Access

Remove side panels.

Unplug spark plug cables.

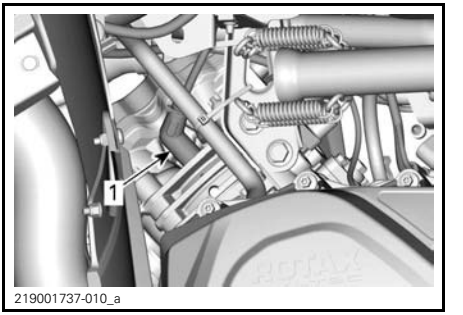
Spark Plug Removal

Unscrew spark plugs one turn.

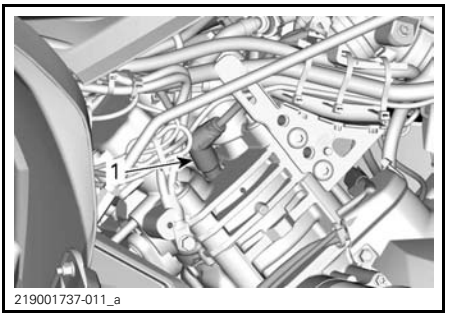
⚠ CAUTION Always wear safety goggles when using pressurized air.

Clean spark plugs and cylinder heads with pressurized air if possible.

Unscrew spark plugs completely using a spark plug socket, then remove them.



RH SIDE — REAR CYLINDER
1. Spark plug



LH SIDE — FRONT CYLINDER
1. Spark plug

Spark Plug Installation

Prior to installation, make sure that contact surfaces of cylinder heads and spark plugs are free of grime.

Using a feeler gauge, set the spark plug gap.

SPARK PLUG GAP	
570 650 1000	0.7 mm to 0.8 mm (.028 in to .031 in)

Apply a copper-based anti-seize lubricant over spark plug threads to prevent a possible seizure.

Screw spark plugs into cylinder heads by hand and tighten with a torque wrench and a proper socket.

⚠ CAUTION Do not overtighten spark plugs, engine damage can occur.

TIGHTENING TORQUE	
Spark plug	20 N•m ± 2.4 N•m (15 lbf•ft ± 2 lbf•ft)

11) Battery

⚠ CAUTION Never charge a battery while installed in vehicle.

These vehicles are equipped with a VRLA battery (Valve Regulated Lead Acid). It is a maintenance-free type battery, there is no need to add water to adjust electrolyte level.

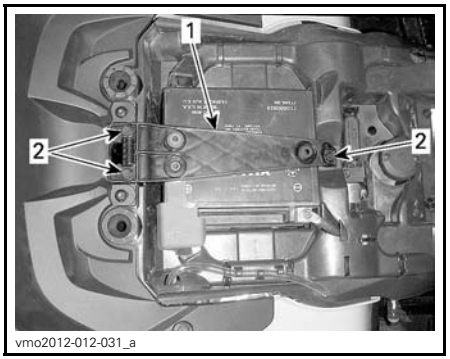
NOTICE Never remove the battery sealing cap.

Battery Removal

Disconnect BLACK (-) cable first then RED (+) cable.

NOTICE Always disconnect BLACK (-) battery cable first.

Remove retaining screws, battery holder then pull the battery out of frame.



1. Battery holder
2. Retaining screws

Battery Cleaning

Clean battery, battery casing and battery posts using a solution of baking soda and water.

Remove corrosion from battery cable terminals and battery posts using a firm wire brush.

Battery Installation

Battery installation is the reverse of the removal procedure.

NOTICE Always connect RED (+) battery cable first.

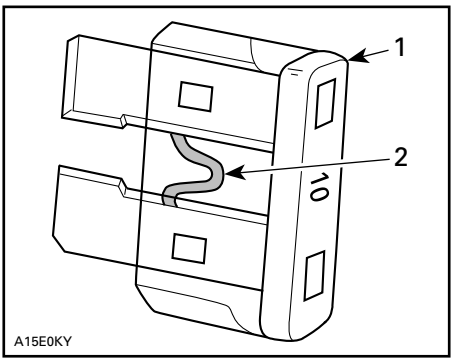
12) Fuses

⚠ CAUTION Always turn the ignition switch to OFF position before replacing a defective fuse.

Fuse Inspection

Check if filament is melted.

If filament is melted, replace damaged fuse, refer to *FRONT FUSE BOX* or *REAR FUSE HOLDER AND FUSIBLE LINKS* below for proper rating.

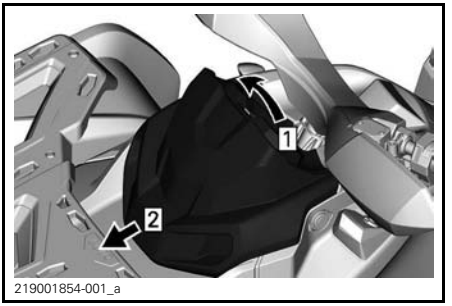


TYPICAL
1. Fuse
2. Check if melted

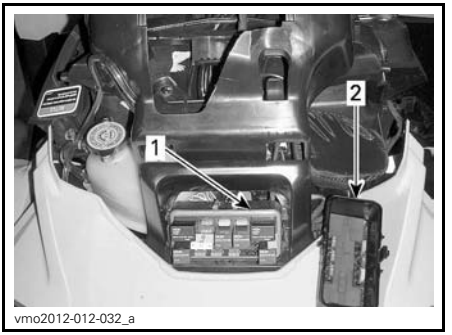
NOTICE Do not use a higher rated fuse as this can cause severe damage.

Front Fuse Box

Remove the gauge support.



Step 1: Pull up
Step 2: Slide



1. Front fuse box
2. Front fuse box cover

NOTE: Check inside fuse box cover to know fuses location.

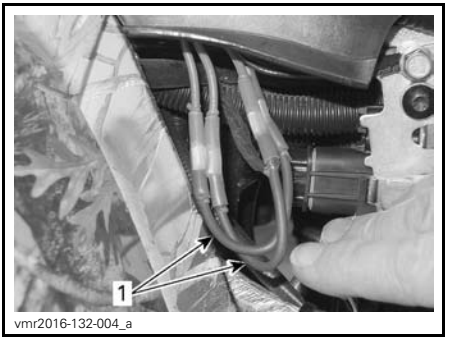
NOTICE Do not store any objects in the front service compartment.

Front Fuse Box Description

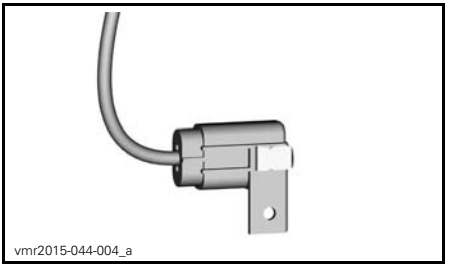
FRONT FUSE BOX		
NO.	DESCRIPTION	RATING
R1	Fan Relay	-
R2	Main Relay	-
R3	Accessories Relay	-
R4	Fuel Pump Relay	-
R5	Lights Relay	-
R8	Brake Relay	-
F4	Gauge (Speedo)	5 A
F5	Injectors/Ignition	5 A

FRONT FUSE BOX		
NO.	DESCRIPTION	RATING
F6	ECM	5 A
F7	2WD/4WD, Winch (if equipped)	5 A
F8	Key Switch, Starter Solenoid	5 A
F9	Cooling Fan	25 A
F10	Euro Control (CE Models)	5 A
F11	Lights	30 A
F12	DC Outlet	15 A
F14	Accessories 2	15 A
F15	Fuel Pump	5 A

Rear Fuse Holder and Fusible Links



1. Fuse links



FUSE BOX 2

Rear Fuse Holder Identification

FUSE LINK IDENTIFICATION			
Fusible links	1	Main	16 awg
	2	Fan/accessories	16 awg
FUSE IN FUSE BOX 2 IDENTIFICATION			
Fuse	3	DPS (dynamic power steering)	40 A

13) Lights

Always check light operation after replacement.

Headlight Bulb Replacement

NOTICE Never touch glass portion of a halogen bulb with bare fingers, it shortens its operating life. If glass is touched, clean it with isopropyl alcohol which will not leave a film on the bulb.

Unplug connector from bulb.

Rotate light bulb counterclockwise to release it from light housing.

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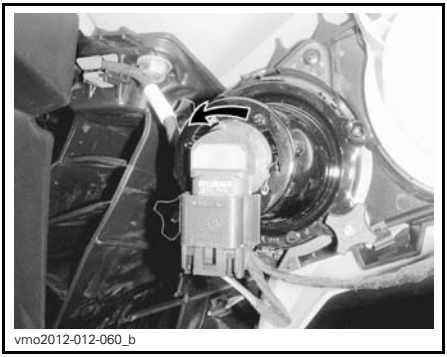
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Pull out bulb.

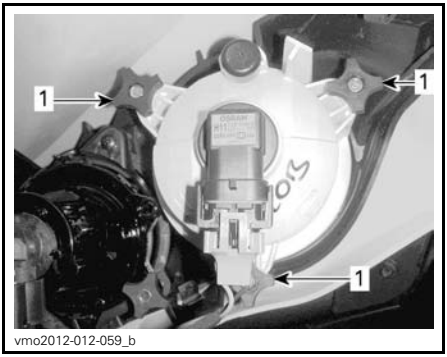
Properly reinstall removed parts in the reverse order of their removal.

Validate headlights operation.

Headlight Beam Aiming

Turn adjustment knobs to adjust beam height to your convenience.

NOTE: Adjust headlights evenly.



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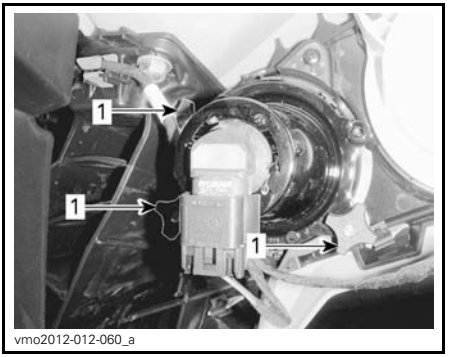
LOW BEAM ADJUSTMENT
1. Adjustment knobs



HIGH BEAM ADJUSTMENT
1. Adjustment knobs

Taillight Bulbs Replacement

Rotate taillight counterclockwise to remove it from taillight housing.

Pull tail light out of its location.

Unplug connector from bulb.

Rotate light bulb counterclockwise to remove it from taillight.

Remove bulb socket from taillight.

Installation is the reverse of the removal procedure.

14) Drive Shaft Boot and Protector

Drive Shaft Boot and Protector Inspection

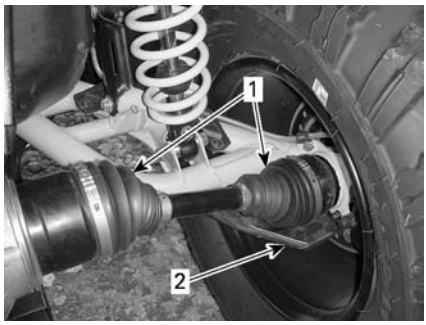
Visually inspect drive shaft protectors and boots conditions.

Check protectors for damage or rubbing against shafts.

Check boots for cracks, tears, leaking grease etc.

Repair or replace damaged parts as necessary.

TYPICAL — FRONT OF VEHICLE
1. Drive shaft boots
2. Drive shaft protector



TYPICAL — REAR OF VEHICLE
1. *Drive shaft boots*
2. *Drive shaft protector*

15) Wheel Bearing

Wheel Bearing Inspection

Place vehicle on a level surface.

Apply brake lock.

Lift and support vehicle.

Secure vehicle on jack stands.

Push and pull the wheels from the upper edge to feel the play.

See an authorized Can-Am dealer if there is any play.

TYPICAL

16) Wheels and Tires

Tire Pressure

⚠ WARNING

Tire pressure greatly affects vehicle handling and stability. Insufficient pressure may cause tire to deflate and rotate on wheel. Overpressure may burst the tire. Always follow recommended pressure. NEVER set tire pressure below minimum. It could cause the tire to dislodge from the rim. Since tires are low-pressure types, a manual pump should be used.

Check pressure when tires are **cold** before using the vehicle. Tire pressure changes with temperature and altitude. Recheck pressure if one of these conditions has changed.

For your convenience, a pressure gauge is supplied in tool kit.

Although the tires are specifically designed for off-road use, a flat may still occur. Therefore, it is recommended to carry a tire pump and a repair kit.

Refer to *SPECIFICATIONS* for recommended pressure.

Tire Inspection

Check tire for damage and wear. Replace if necessary.

Do not rotate tires. The front and rear tires have a different size. The tires are directional and their rotation must be kept in a specific direction for proper operation.

Tire Replacement

Tires replacement should be performed by an authorized Can-Am dealer.

⚠ WARNING

- Replace tires only with the same type and size as original tires.
- For unidirectional tread pattern, ensure that the tires are installed in the correct direction of rotation.
- Tires should be replaced, by an experienced person, in accordance with tire industry standards and tools.

Wheel Removal

Place vehicle on a level surface.

Apply brake lock.

Loosen lug nuts then lift vehicle.

Secure vehicle on jack stands.

Remove lug nuts then remove wheel.

Wheel Installation

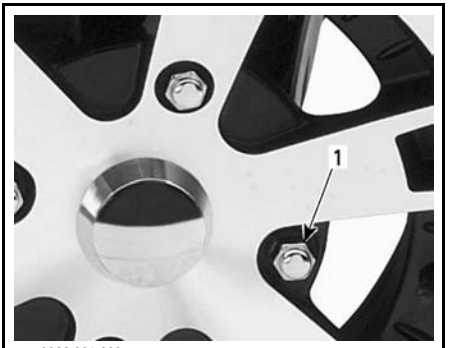
At installation, it is recommended to apply anti-seize lubricant on threads.

If tires are unidirectional, make sure to install wheel according to tire rotation.

Carefully tighten lug nuts in a criss-cross sequence then apply final torque.

TIGHTENING TORQUE	
Wheel lug nuts	100 N•m ± 10 N•m (74 lbf•ft ± 7 lbf•ft)

NOTICE Always use the recommended wheel nuts according to the type of wheel. Using a different lug nut could cause damage to the rim or studs.



TYPICAL — ALUMINUM WHEEL
1. Wheel lug nut (closed end type)

Wheel Beadlock Inspection (If equipped)

Wheel Beadlock Retightening

NOTICE Do not use an impact wrench for tightening beadlock screws in order to avoid to damage them.

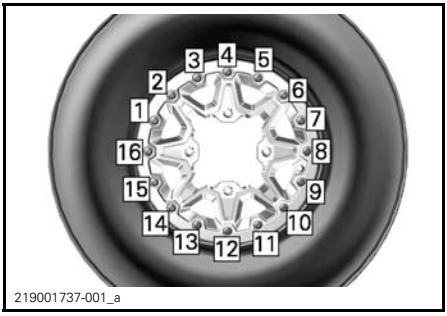
1. Retighten all screws to specification and according to the following tightening sequence.

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

TIGHTENING TORQUE	
Beadlock screws	11 N•m ± 1 N•m (97 lbf•**in** ± 9 lbf•**in**)



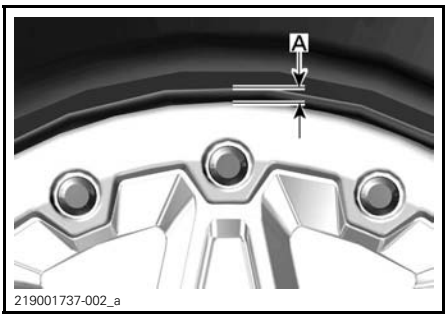
TYPICAL - FINAL TIGHTENING SEQUENCE

2. Tighten screws **a few turns at a time** to ensure even pressure on the beadlock clamp ring.

NOTE: It is normal that the beadlock clamp ring flexes slightly to match the tire bead.

Wheel Beadlock Gap Verification

1. Verify the gap between tire and beadlock clamp ring, it should be practically equal all around the ring.



TYPICAL
A. Gap between tire and ring

If the gap is not acceptable, see an authorized Can-Am dealer.

Instructions for Vehicle Lifting

1. Engage the 4WD mode.

4WD MODE

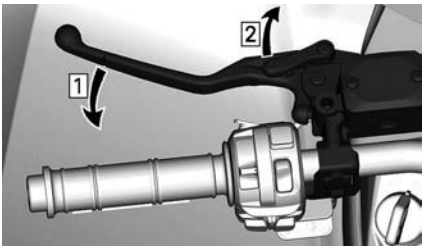
NOTE: 4WD mode is engaged when engine is running and vehicle has moved about one meter.

2. Place the shift lever in PARK.

NOTE: Make sure the gearbox is engaged in PARK.

SHIFT PATTERN

3. Lock the brakes.

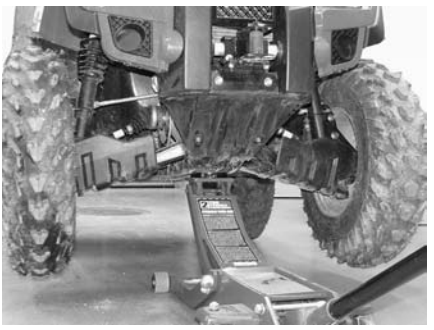


Step 1: Apply brakes
Step 2: Lock brakes

4. Lift the front or rear of the vehicle using a suitable lifting device.

⚠ WARNING

Ensure all wheels are locked before lifting the vehicle. Do not exceed the lifting device capacity. Use only a device approved for lifting this type of vehicle. Do not move the vehicle using a lifting device. Refer to the manufacturer warnings and instructions prior to use.



TYPICAL — FRONT LIFTING POINT

NOTE: Ensure that 4 WD is engaged and brake is locked.

TYPICAL — REAR LIFTING POINT

17) Steering

Steering Inspection

⚠ WARNING

The steering components inspection and repair should be performed by an authorized Can-Am dealer.

Tie-Rods

Visually inspect tie-rods.

The tie-rods must be replaced if warpage or any other damage is detected.

⚠ WARNING

The tie-rod must be replaced if damaged.

Tie-Rod Ends

Place vehicle on a level surface.

Apply parking brake.

Lift vehicle.

Secure vehicle on jack stands.

Inspect inner and outer tie-rod boots for cracks.

Push and pull the wheels from the front or rear edge to feel the play.

The tie-rod ends must be replaced if there is an abnormal play or a boot is cracked.

⚠ WARNING

The tie-rod end must be replaced if the boot is cracked or shows an abnormal play.

18) Suspension

Front Suspension Lubrication

Lubricate front suspension arms at grease fittings.

SUSPENSION GREASE	
BRP recommended product	SUSPENSION GREASE (P/N 293 550 033)

Rear Suspension Lubrication

Lubricate rear stabilizer bar links and pivot bushing at grease fittings.

SUSPENSION GREASE	
BRP recommended product	SUSPENSION GREASE (P/N 293 550 033)

Suspension Inspection

Shock Absorbers

Inspect shock absorber for oil leaks or other damage.

Check tightness of fasteners.

See an authorized Can-Am dealer as necessary.

Ball Joints

Place vehicle on a level surface.

Apply parking brake.

Lift vehicle.

Secure vehicle on jack stands.

Inspect ball joint boots for cracks.

Push and pull the wheels from the upper and lower edge to feel the play.

See an authorized Can-Am dealer if there is an abnormal play or the boot is cracked.

The ball joints must be replaced if there is an abnormal play or a boot is cracked.

TYPICAL

⚠ WARNING

The ball joint must be replaced if the boot is cracked or shows an abnormal play.

Front Suspension Arms

Check suspension arms for cracks, bending or other damage.

See an authorized Can-Am dealer as necessary or it shows an abnormal play.

Rear Trailing Arms

Check trailing arms for distortion, cracks or bending.

See an authorized Can-Am dealer if any problem is detected.

19) Brakes

Brake Fluid Reservoir Level Verification

With vehicle on a level surface, check brake fluid in reservoirs for proper level.

NOTE: A low level may indicate leaks or worn brake pads.

Front Brake Reservoir Level Verification

Turn steering in the straight-ahead position to ensure reservoir is level.

Check the brake fluid level, the reservoir is full when the fluid reaches of the top of window.

Visually inspect lever boot condition.

Check for cracks, tears, etc. Replace if damaged.

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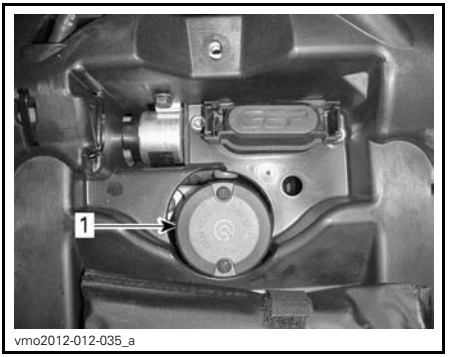
TYPICAL

Rear Brake Reservoir Level Verification

Remove the seat.

With vehicle on a level surface, liquid should be between MIN. and MAX. level marks of brake pedal fluid reservoir.



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1. Rear brake fluid reservoir

Adding Brake FLuid

Clean filler cap.

⚠ WARNING

Clean filler cap before removing.

Remove screws retaining the reservoir cap.

Remove reservoir cap.

Add fluid as required using a clean funnel. **Do not overfill.**

NOTICE **Brake fluid can damage plastic and painted surface. Wipe off and clean any spillage.**

Reinstall reservoir cap and tighten screws.

NOTE: Ensure filler cap diaphragm is pushed inside the cap before closing the brake fluid reservoir.

Recommended Brake Fluid

Always use brake fluid meeting the specification DOT 4 only from a sealed container.

⚠ WARNING

To avoid damage to the braking system, do not use other brake fluid types.

Brake Inspection

⚠ CAUTION **The brakes can be very hot after prolonged use of the vehicle and can cause burns. Wait for the brakes to cool down.**

The brake inspection, maintenance and repair should be performed by an authorized Can-Am dealer.

However, verify the following between visits to your dealer:

- Brake fluid level
- Brake system for fluid leaks
- Brake cleanliness.

⚠ WARNING

The brake fluid replacement or brake system maintenance and repairs should be performed by an authorized Can-Am dealer.

1) Post-Operation Care

When vehicle is used in salt-water environment (beach area, launching and loading boats etc.), rinsing the vehicle with fresh water is necessary to preserve vehicle and its components. Metallic parts lubrication is highly recommended. Use XPS LUBE (P/N 293 600 016) or an equivalent. This must be performed at the end of each operating day.

When vehicle is operated in muddy conditions, rinsing the vehicle is recommended to preserve vehicle and its components and to keep lights clean.

2) Vehicle Cleaning and Protection

NOTICE Never use a high pressure washer to clean the vehicle. USE LOW PRESSURE ONLY (like a garden hose).

Pay attention to certain areas where mud or debris can accumulate and potentially cause wear, interferences or promote corrosion.

Wash the vehicle with a soapy water solution.

NOTICE Never clean polypropylene body parts with any petroleum base cleaning products, as it will alter the glossy finish.

Non Compatible Cleaning Products

MATERIAL TYPE	NON-COMPATIBLE CLEANING PRODUCTS
Polypropylene	ANY PETROLEUM BASE CLEANING PRODUCTS
	XP-S ATV Finishing Spray (P/N 219 701 704)
	XP-S ATV Cleaning Kit (P/N 219 701 713) (it contains the above XP-S ATV Finishing Spray)

vbs2012-006-002_a

DO NOT USE ON POLYPROPYLENE

Compatible Cleaning Products

MATERIAL TYPE	COMPATIBLE CLEANING PRODUCT
Polypropylene	XPS ATV Wash (P/N 219 701 702)
	Soapy water

vbs2012-006-001

SAFE FOR POLYPROPYLENE

IV STORAGE AND PRESEASON PREPARATION

When a vehicle is not in use for more than 4 months, proper storage is a necessity.

When using your vehicle after storage, a preparation is required.

See an authorized Can-Am dealer to have your vehicle prepared for either storage or the preseason.

D) TECHNICAL INFORMATION

I SPECIFICATIONS

MODEL		570	650	1000
ENGINE				
Engine type		ROTAX® 570	ROTAX ® 650	ROTAX® 1000
		4-stroke, Single Over Head Camshaft (SOHC), liquid cooled		
Number of cylinders		2		
Number of valves		4 valves / cylinder (mechanical adjustment), single over head camshaft (SOHC) with timing chain		
Valve clearance	Intake	0.06 mm to 0.14 mm (.0024 in to .0055 in)		
	Exhaust	0.11 mm to 0.19 mm (.0043 in to .0075 in)		
Bore		84 mm (3.31 in)	82 mm (3.23 in)	91 mm (3.58 in)
Stroke		51.4 mm (2.02 in)	61.5 mm (2.42 in)	75 mm (2.95 in)
Displacement		570 cm^3 (34.8 in^3)	650 cm^3 (39.7 in^3)	976 cm^3 (59.56 in^3)
Exhaust system		Spark arrestor approved by USDA Forest Service		
Engine air filter		Synthetic paper filter with foam		
LUBRICATION SYSTEM				
Type		Wet sump. Replaceable cartridge oil filter		
Oil filter		BRP Rotax paper type, replaceable		
Engine oil	Capacity	2.0 L (2.1 qt (U.S. liq.))		
	Recommended	Use XPS 4-stroke synth. blend oil (summer) XPS 4-STROKE SYNTH. BLEND OIL (F) (P/N 619 590 109). or XPS 4-stroke synthetic oil (All climate) XPS 4-STROKE SYNTHETIC OIL (F) (P/N 619 590 114). If not available, use a 5W40 motor oil that meets the requirements for API service classification SJ, SL, SM or SN		
COOLING SYSTEM				
Coolant	Type	Ethyl glycol/water mix (50% coolant, 50% water). Use the Long life antifreeze (P/N 219 702 685) or (P/N 619 590 204) (Finland, Norway and Sweden) or coolant specifically designed for aluminum engines		
	Capacity	3.4 L (.9 U.S. gal.)		3.5 L (.9 U.S. gal.)

MODEL			570	650	1000
CVT TRANSMISSION					
Type			CVT (Continuously Variable Transmission), sub-transmission with L/H/N/R/P, standard engine braking		
Engagement RPM			1800 RPM ± 100 RPM		
GEARBOX					
Type			Dual range (HI-LO) with PARK, neutral and reverse		
Overall gear ratio	High		3.705		
	Low		7.509		
	Reverse		7.88		
Gearbox oil	Capacity		450 ml (15.22 U.S. oz)		
	Recommended oil		XPS SYNTHETIC GEAR OIL (75W 140)(F) (P/N 619 590 182) or a 75W140 API GL-5 synthetic gear oil		
ELECTRICAL SYSTEM					
Magneto generator output		Without DPS	400 W @ 6000 RPM		
		With DPS	650 W @ 6000 RPM		
Ignition system type			IDI (Inductive Discharge Ignition)		
Ignition timing			Variable		
Spark plug	Quantity		2		
	Make and type		NGK DCPR8E		
	Gap		0.7 mm to 0.8 mm (.028 in to .031 in)		
Engine RPM limiter setting	Forward		8000 RPM		
	Reverse		15 km/h (9 MPH) (without override)		
Battery	Type		Maintenance free		
	Voltage		12 volts		
	Nominal rating		18 A•h		
	Power starter output		0.7 KW		

MODEL			570	650	1000
ELECTRICAL SYSTEM (cont'd)					
Headlights		High	2 x 60 W		
		Low	2 x 55 W		
Taillights			2 x 5/21 W		
Turn signal lights			4 x 10 W		
Position lights			2 x 5 W		
Licence plate light			1 x 10 W		
Fuses			Refer to *FUSES* in *MAINTENANCE*		
FUEL SYSTEM					
Fuel delivery	Type		Electronic fuel injection (EFI), 46 mm throttle body, 1 injector per cylinder		
Throttle body			46 mm		
Fuel pump	Type		Electric (in fuel tank)		
Idle speed			1250 ± 100 RPM (not adjustable)		
Fuel	Type		Regular unleaded gasoline		
	Minimum octane		95 (E10) RON or higher- Refer to *FUEL REQUIREMENTS*		
Fuel tank capacity			20.5 L (5.4 U.S. gal.)		
Fuel remaining when low fuel light turns ON			± 5 L (1.3 U.S. gal.)		
DRIVE SYSTEM					
Drive system type			Selectable 2WD/4WD		
Front differential oil/ rear final drive oil	Capacity	Front	500 ml (17 U.S. oz)		
		Rear	250 ml (8.5 U.S. oz)		
	Type	Front	(P/N 619 590 097) or synthetic oil 75W90 API GL5 (LS)		
		Rear	XPS SYNTHETIC GEAR OIL (75W 140)(F) (P/N 619 590 182) or a 75W140 API GL-5 synthetic gear oil		
Front drive		Base	Visco-lok† auto-locking front differential		
		All except Base	Visco-lok† QE auto-locking front differential		

MODEL			570	650	1000
DRIVE SYSTEM (cont'd)					
Front drive ratio			3.6:1		
Rear drive			Straight bevel gear / final drive		
Rear drive ratio			3.6:1		
CV joint grease			CV joint grease (P/N 293 550 062)		
Propeller shaft grease			Propeller shaft grease (P/N 293 550 063)		
STEERING					
Turning radius		1-UP	2 057 mm (81 in)	-	-
		2-UP	2 336.8 mm (92 in)		
FRONT SUSPENSION					
Suspension type			Double suspension arm with dive-control geometry		
Suspension travel			229 mm (9 in)		
Shock absorber	Qty		2		
	Type	All Except XT-P	Oil		
		XT-P	-	-	HPG shocks with piggyback reservoir. QS3† compression and preload adjustments
Preload adjustment type		All Except XT-P	5 position cam		
		XT-P	-	-	Threaded
REAR SUSPENSION					
Suspension type			Torsional Trailing arm Independent (TTI) with external stabilizer bar		
Suspension travel			236 mm (9.3 in)		

MODEL			570	650	1000
REAR SUSPENSION (cont'd)					
Shock absorber	Qty		2		
	Type	DPS, XT, PRO	Oil		
		XT-P	-	-	HPG shocks with piggyback reservoir. QS3† compression and preload adjustments
Preload adjustment		DPS, XT, PRO	5 position cam		
		XT-P	-	-	Threaded
BRAKES					
Front brake	Type		Dual 214 mm cross drilled disc brakes with hydraulic twin-piston calipers		
Rear brake	Type		Single 214 mm cross drilled disc brake with hydraulic twin-piston caliper		
Brake fluid	Capacity		260 ml (8.8 U.S. oz)		
	Type		DOT 4		
Caliper			Floating twin pistons (2 x 26 mm)		
Brake pad material			Organic		
Minimum brake pad thickness			1 mm (.039 in)		
Minimum brake disc thickness			4.0 mm (.157 in)		
Maximum brake disc warpage			0.2 mm (.008 in)		

MODEL				570	650	1000
TIRES						
Pressure	Front	1-UP	Loaded up to 164 kg (360 lb)	41.4 kPa (6 PSI)	-	-
			Loaded from 164 kg (360 lb) TO 235 kg (517 lb)	48.2 kPa (7 PSI)	-	-
		2-UP	Loaded up to 132 kg (290 lb)	41.4 kPa (6 PSI)		
			Loaded from 132 kg (290 lb) TO 272 kg (600 lb)	48.2 kPa (7 PSI)		
	Rear	1-UP	Loaded up to 164 kg (360 lb)	41.4 kPa (6 PSI)	-	-
			Loaded from 164 kg (360 lb) TO 235 kg (517 lb)	68.9 kPa (10 PSI)	-	-
		2-UP	Loaded up to 132 kg (290 lb)	41.4 kPa (6 PSI)		
			Loaded from 132 kg (290 lb) TO 272 kg (600 lb)	68.9 kPa (10 PSI)		

MODEL			570	650	1000
WHEELS					
Type	DPS XT PRO		Steel Cast Aluminum	Cast Aluminum	
	XT-P		Aluminium beadlocks		
Rim size	Front		305 x 152 mm (12 x 6 (in))		
	Rear		305 x 191 (12 x 7.5 (in))		
Wheel nuts torque			100 N•m ± 10 N•m (74 lbf•ft ± 7 lbf•ft)		
DIMENSIONS					
Overall length		1-UP	218.4 cm (86 in)	-	-
		2-UP	238.7 cm (94 in)		
Overall width			116.8 cm (46 in)		
Overall height		1-UP	126 cm (49.606 in)	-	-
		2-UP	135 cm (53.15 in)		
Wheelbase		1-UP	129.5 cm (51 in)	-	-
		2-UP	149.9 cm (59 in)		
Wheel track	Front		96.5 cm (38 in)		
	Rear		91.4 cm (36 in)		
Ground clearance			27.9 cm (11 in)		

MODEL		570	650	1000
LOADING CAPACITY AND WEIGHT				
Curb weight	1-UP	410 kg (903 lb)	412 kg (908 lb)	414 kg (912 lb)
	2-UP	430 kg (948 lb)	435 kg (959 lb)	445 kg (981 lb)
Weight distribution	Front/Rear	42 %	58 %	
Front rack capacity		45 kg (100 lb)		
Rear rack capacity		90 kg (200 lb)		
Rear storage compartment loading capacity		10 kg (22 lb)		
Total vehicle load allowed (including driver, all other loads and added accessories)	1-UP	235 kg (518 lb) - -		
	2-UP	272 kg (600 lb)		
Towing capacity	Trailer without brakes	590 kg (1,301 lb)		
	Trailer with brakes	750 kg (1,653 lb)		
Tongue weight	Trailer without brakes	59 kg (130 lb)		
	Trailer with brakes	75 kg (165 lb)		

MODEL			ALL
TIRES			
Minimum tire thread depth			3 mm (.118 in)
Tire size		Front	660 x 203 x 305 mm (AT26 x 8 x 12 (in))
		Rear	660 x 254 x 305 mm (AT26 x 10 x 12 (in))
Axle No	Tires (dimensions)	Technically permissible maximum mass per axle	Technically permissible maximum mass per tire
1 - Front	AT26x8-12	350 kg (771.6 lb)	175 kg (385.8 lb)
2 - Rear	AT26x10-12	410 kg (903.9 lb)	205 kg (451.9 lb)
SEAT the vibration level measured according to Directive 78/764/EEC			
Light driver a_{ws}		1-UP	0.69
		2-UP	0.77
Heavy driver a_{ws}		1-UP	0.62
		2-UP	0.65

MODEL			ALL
NOISE AND VIBRATION DECLARATION (570 model)			
Exterior sound level:	according to Annex VI to Directive 2009/63/EC	13.1 stationary:	81 dB(A)
		13.2 .moving:	78 dB(A)
Driver-perceived sound level:	according to Directive 2009/76/EC		90 dB(A)
NOISE AND VIBRATION DECLARATION (650 model)			
Exterior sound level:	according to Annex VI to Directive 2009/63/EC	13.1 stationary:	81dB(A)
		13.2 moving:	75dB(A)
Driver-perceived sound level:	according to Directive 2009/76/EC		90 dB(A)
NOISE AND VIBRATION DECLARATION (1000 model)			
Exterior sound level:	according to Annex VI to Directive 2009/63/EC	13.1 stationary:	84 dB(A)
		13.2 moving:	82 dB(A)
Driver-perceived sound level:	according to Directive 2009/76/EC		90 dB(A)

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E) TROUBLESHOOTING

TROUBLESHOOTING GUIDELINES

ENGINE DOES NOT TURN

1. Ignition switch is in the OFF position.
   – *Place switch to the ON position.*
2. Emergency engine stop switch.
   – *Make sure that emergency engine stop switch is in ON position.*
3. Transmission is not set on PARK or NEUTRAL.
   – *Set transmission either in PARK or in NEUTRAL or press the brake lever.*
4. Burnt fuse.
   – *Check main fuse condition.*
5. Weak battery or loose connections.
   – *Check charging system fuse.*
   – *Check connections and terminals condition.*
   – *Have the battery checked.*
   – *Contact an authorized Can-Am dealer.*
6. Wrong ignition key, multifunction gauge display shows INVALID KEY.
   – *Use the proper key for this vehicle.*
7. Weak starter or loose connections.
   – *Check starter connections.*
   – *Check starter relay.*

ENGINE TURNS OVER BUT FAILS TO START

1. Flooded engine (spark plug wet when removed).
   – *(Drowned mode) If the engine does not start and it is fuel-flooded, this special mode can be activated to prevent fuel injection and to cut ignition while cranking. Proceed as follows:*
   • Insert key in ignition switch and turn to ON position.
   • Move shift lever in park position.
   • Press completely and HOLD throttle lever.
   • Press the engine START button.
   The engine should be cranked for 20 seconds. Release engine START button.
   Release throttle lever and start/crank engine again to allow starting.
   If it does not work:
   • Clean the spark plug caps area then remove them.
   • Remove the spark plugs.
   • Unplug injector electrical connector.
   • Crank engine several times.
   • Install new spark plugs if possible or clean and dry spark plugs.
   • Start engine as explained above.
   If engine continues to flood, see an authorized Can-Am dealer.
   NOTE: *Make sure to verify that there is no fuel in engine oil, if so, replace engine oil.*

ENGINE TURNS OVER BUT FAILS TO START (cont'd)

2. No fuel to the engine (spark plug dry when removed).
   – *Check fuel tank level.*
   – *A failure of the fuel pump may have occurred.*
   – *Check fuel pump fuse and relay.*
   – *Contact an authorized Can-Am dealer.*
3. Spark plug/ignition (no spark).
   – *Check main fuse condition.*
   – *Remove spark plug then reconnect to ignition coil.*
   – *Check that ignition switch and/or emergency engine stop switch is/are at the ON position.*
   – *Start engine with spark plug grounded to the engine away from spark plug hole. If no spark appears, replace spark plug.*
   – *If trouble persists, contact an authorized Can-Am dealer*
4. Multifunction gauge CHECK ENGINE indicator lamp is on and display shows CHECK ENGINE.
   – *Contact an authorized Can-Am dealer.*
5. Engine is under a protection (limp home) mode.
   – *Multifunction gauge CHECK ENGINE indicator lamp is on and display shows CHECK ENGINE, contact an authorized Can-Am dealer.*

ENGINE LACKS ACCELERATION OR POWER

1. Fouled or defective spark plug.
   – *Refer to ENGINE TURNS OVER BUT FAILS TO START.*
2. Lack of fuel to engine.
   – *Refer to ENGINE TURNS OVER BUT FAILS TO START.*
3. Engine is overheating. (CHECK ENGINE indicator light will turn on and HI TEMP will appear in the multifunction display.)
   – *Refer to ENGINE OVERHEATS.*
4. Air filter/housing clogged or dirty.
   – *Check air filter and clean if necessary.*
   – *Check deposits in air filter housing drain.*
   – *Check the position of the air intake tube.*
5. CVT dirty or worn-out.
   – *Contact an authorized Can-Am dealer.*
6. Engine is under a protection (limp home) mode.
   – *Check multifunction gauge display for messages.*
   – *Multifunction gauge CHECK ENGINE indicator lamp is on and display shows CHECK ENGINE or LIMP HOME, contact an authorized Can-Am dealer.*

ENGINE OVERHEATS

1. Low coolant in cooling system.
   – *Check engine coolant, refer to ENGINE COOLANT in MAINTENANCE PROCEDURES.*

ENGINE OVERHEATS (cont'd)

2. Dirty radiator fins.
   – *Clean radiator fins, refer to RADIATOR in MAINTENANCE PROCEDURES.*
3. Cooling fan inoperative.
   – *Check cooling fan fuse or relay, refer to FUSES in MAINTENANCE PROCEDURES. If the fuse is good, contact an authorized Can-Am dealer.*

ENGINE BACKFIRE

1. Exhaust system leakage.
   – *Contact an authorized Can-Am dealer.*
2. Engine is running too hot.
   – *Refer to ENGINE LACKS ACCELERATION OR POWER.*
3. Ignition timing is incorrect or there is an ignition system failure.
   – *Contact an authorized Can-Am dealer.*

ENGINE MISFIRE

1. Fouled/defective/worn spark plug.
   – *Clean/verify spark plug and heat range. Replace as required.*
2. Water in fuel.
   – *Drain fuel system and refill with fresh fuel.*

VEHICLE CANNOT REACH FULL SPEED

1. Engine.
   – *Refer to ENGINE LACKS ACCELERATION OR POWER.*
2. Brake lock.
   – *Ensure brake lock is completely removed.*
3. Air filter/housing plugged or dirty.
   – *Check air filter and clean if necessary.*
   – *Check deposits in air filter housing drain.*
   – *Check the position of the air intake tube.*
4. CVT dirty or worn-out.
   – *Contact an authorized Can-Am dealer.*
5. Engine is under a protection (limp home) mode.
   – *Check multifunction gauge display for messages.*
   – *Multifunction gauge CHECK ENGINE indicator lamp is on and display shows CHECK ENGINE or LIMP HOME, contact an authorized Can-Am dealer.*

SHIFT LEVER IS HARD TO MOVE

1. Transmission gears are in a position that prevents the shift lever to work.
   – *Rock the vehicle back and forth to move the gears in the transmission and allow the shift lever to be set.*
2. CVT dirty or worn-out.
   – *Contact an authorized Can-Am dealer.*

THE RPM INCREASES BUT THE VEHICLE DOES NOT MOVE

1. The transmission is on PARK or NEUTRAL position.
   – *Select the R, HI or LO position.*
2. CVT dirty or worn-out.
   – *Contact an authorized Can-Am dealer.*
3. Water in the CVT housing.
   – *Contact an authorized Can-Am dealer.*

REDUCED POWER STEERING ASSIST

1. When DPS is subjected to sustained severe steering conditions, the assistance provided by the DPS motor may be reduced to protect the system.
   – *Once the load is reduced, the normal steering assistance will return.*
2. CHECK ENGINE INDICATOR LAMP is ON and display shows CHECK DPS
   – *Seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement.*

II MULTIFUNCTION GAUGE MESSAGES

MESSAGE	PILOT LAMP(S) ON	DESCRIPTION
DESS KEY NOT RECOGNIZED	Check engine	Indicates that you have used the wrong ignition key, use the proper key for this vehicle. It is also possible that the ignition key has a bad contact, remove and clean key.
PARK BRAKE	Brake lock	Displayed when brake is applied for more than 15 seconds (while riding).
LO BATT VOLT	Check engine	Low battery voltage, check battery voltage and charging system.
HIGH BATT VOLT	Check engine	High battery voltage, check battery voltage and charging system.
LOW OIL (1)	Check engine	Engine low oil pressure, stop engine immediately.
HI TEMP	Check engine	Engine is overheating, refer to *ENGINE OVERHEATS* in *TROUBLESHOOTING*.
LIMP HOME	Check engine	Serious fault on the engine that can change the normal operation of the engine, CHECK ENGINE indicator lamp will also blink, refer to *TROUBLESHOOTING*.
CHECK ENGINE	Check engine	Engine fault, CHECK ENGINE indicator lamp will also be ON, refer to *TROUBLESHOOTING*.
ECM NOT RECOGNIZED	Check engine	Communication error between speedometer and engine control module (ECM), contact an authorized Can-Am dealer.
CHECK DPS (models with DPS)	Check engine	Indicates that the DPS (Dynamic Power Steering) does not work properly. See an authorized Can-Am dealer.
DPS OVERTORQUE (models with DPS)	None	Indicates that DPS module is lowering its assist level to protect itself against extreme torque level.
DPS OVERHEAT (models with DPS)	None	Indicates that DPS module is lowering its assist level to protect itself against extreme temperature.

MESSAGE	PILOT LAMP(S) ON	DESCRIPTION
MAINTENANCE REQUIRED (2)	None	Displayed in gauge when vehicle is due for a maintenance
TPS FAULT PRESS OVERRIDE BUTTON TO LIMP HOME	Check engine	Throttle position sensor does not work properly. See an authorized Can-Am dealer.

NOTICE (1) If the message and the check engine light stay on after engine starting, stop engine. Check engine oil level. Refill if necessary. If the oil level is good, see an authorized Can-Am dealer. Do not use the vehicle until repaired.

(2) To erase the MAINTENANCE REQUIRED message, proceed as follows:

1. From main display (vehicle speed), press SET and HOLD.
2. Alternate between LOW beam and HIGH beam 3 times.

NOTE: Step 2 must be completed within 2 seconds.

3. Release SET button.

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F) SPARE PARTS

I CATALOGS

You will find your Can-Am ATV spare parts on our website at **www.epc.brp.com**.

G) WARRANTY

I BRP INTERNATIONAL LIMITED WARRANTY: 2018 CAN-AM™ ATV T3

1) SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. ("BRP")* warrants its 2018 Can-Am ATV sold by Can-Am ATV distributors or dealers authorized by BRP to distribute Can-Am ATVs ("Can-Am ATV Distributor/Dealer") outside of the fifty United States, Canada and states that are members of the European Economic Area ("EEA") (which is comprised of the states members of the European Union plus Norway, Iceland and Liechtenstein), Turkey, and states members of the Commonwealth of the Independent States ("CIS") (which is comprised of the Russian Federation and ex-members states of the USSR), from defects in material or workmanship for the period and under the conditions described below.

Non-factory installed parts and accessories are not covered under this limited warranty. Please refer to the applicable parts and accessories limited warranty text.

This limited warranty will become null and void if: (1) The ATV was used for racing or any other competitive activity, at any point, even by a previous owner; or (2) the ATV has been altered or modified in such a way so as to adversely affect its operation, performance or durability, or has been altered or modified to change its intended use.

2) LIMITATIONS OF LIABILITY

TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY IS EXPRESSLY GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME JURISDICTIONS DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH MAY VARY FROM COUNTRY TO COUNTRY. (FOR PRODUCTS PURCHASED IN AUSTRALIA SEE CLAUSE 4 BELOW).

Neither the Can-Am ATV Distributor/Dealer nor any other person has been authorized to make any affirmation, representation or warranty regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against BRP.

BRP reserves the right to modify this limited warranty at any time, being understood that such modification will not alter the warranty conditions applicable to the products sold while this warranty is in effect.

3) EXCLUSIONS – ARE NOT WARRANTED

The following are not warranted under this limited warranty under any circumstances:

- Normal wear and tear;
- Routine maintenance items, tune ups, adjustments;
- Damage caused by negligence or failure to provide proper maintenance and/or storage, as described in the Operator's Guide;

– Damage resulting from removal of parts, improper repairs, service, maintenance, modifications or use of parts or accessories not manufactured or approved by BRP which in its reasonable judgement are either incompatible with the product or adversely affect its operation, performance and durability, or resulting from repairs done by a person that is not an authorized servicing Can-Am ATV Distributor/Dealer;
– Damage caused by abuse, abnormal use, neglect, racing or operation of the product in a manner inconsistent with the recommended operation described in the Operator's Guide;
– Damage resulting from accident, submersion, fire, snow or water ingestion, theft, vandalism or any act of God;
– Operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operator's Guide);
– Damage resulting from rust, corrosion or exposure to the elements;
– Incidental or consequential damages, or damages of any kind including without limitation towing, storage, transportation expenses, telephone, rental, taxi, inconvenience, insurance coverage, loan payments, loss of time, loss of income; or time missed for downtime experience due to service work.

4) WARRANTY COVERAGE PERIOD

This limited warranty will be in effect from (1) the date of delivery to the first retail consumer or (2) the date the product is first put into use, whichever occurs first and for a period of:

SIX (6) CONSECUTIVE MONTHS for private use or commercial use.

The repair or replacement of parts or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date.

Note that the duration and any other modalities of the warranty coverage are subject to the applicable national or local legislation in the customer's country.

FOR PRODUCTS SOLD IN AUSTRALIA ONLY

Nothing in these Warranty terms and conditions should be taken to exclude, restrict or modify the application of any condition, warranty, guarantee, right or remedy conferred or implied under the Competition and Consumer Act 2010 (Cth), including the Australian Consumer Law or any other law, where to do so would contravene that law, or cause any part of these terms and conditions to be void. The benefits given to you under this limited warranty are in addition to other rights and remedies that you have under Australian law.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

5) CONDITIONS TO HAVE WARRANTY COVERAGE

This warranty coverage is available **only** if **each** of the following conditions has been fulfilled:

- The 2018 Can-Am ATV must be purchased as new and unused by its first owner from a Can-Am ATV Distributor/Dealer authorized to distribute Can-Am ATVs in the country in which the sale occurred;
- The BRP specified pre-delivery inspection process must be completed and documented;
- The product must have undergone proper registration by an authorized Can-Am ATV Distributor/Dealer;
- The 2018 Can-Am ATV must be purchased in the country or union of countries in which the purchaser resides; and
- Routine maintenance outlined in the Operator's Guide must be timely performed in order to maintain warranty coverage. BRP reserves the right to make warranty coverage contingent upon proof of proper maintenance.

BRP will not honour this limited warranty to any private use owner or commercial use owner if one of the preceding conditions has not been met. Such limitations are necessary in order to allow BRP to preserve both the safety of its products, and also that of its consumers and the general public.

6) WHAT TO DO TO OBTAIN WARRANTY COVERAGE

The customer must cease using the ATV upon the appearance of an anomaly. The customer must notify a servicing Can-Am ATV Distributor/Dealer within two (2) days of the appearance of a defect, and provide it with reasonable access to the product and reasonable opportunity to repair it. The customer must also present to the authorized Can-Am ATV Distributor/Dealer proof of purchase of the product and must sign the repair/work order prior to starting the repair in order to validate the warranty repair. All parts replaced under this limited warranty become the property of BRP.

Note that the notification period is subject to the applicable national or local legislation in customer's country.

7) WHAT BRP WILL DO

To the extent permitted by law, BRP's obligations under this warranty are limited to, at its sole discretion, repairing parts found defective under normal use, maintenance and service, or replacing such parts with new genuine Can-Am ATV parts without charge for parts and labour, at any authorized Can-Am ATV Distributor/Dealer during the warranty coverage period under the conditions described herein. BRP's responsibility is limited to making the required repairs or replacements of parts. No claim of breach of warranty shall be cause for cancellation or rescission of the sale of the Can-Am ATV to the owner. You may have other legal rights which may vary from country to country.

In the event that service is required outside of the country of original sale, the owner will bear responsibility for any additional charges due to local practices and conditions, such as, but not limited to, freight, insurance, taxes, license fees, import duties, and any and all other financial charges, including those levied by governments, states, territories and their respective agencies.

BRP reserves the right to improve or modify products from time to time without assuming any obligation to modify products previously manufactured.

8) TRANSFER

If the ownership of a product is transferred during the warranty coverage period, this warranty shall also be transferred and be valid for the remaining coverage period provided BRP or an authorized Can-Am ATV Distributor/Dealer receives a proof that the former owner agreed to the transfer of ownership, in addition to the co-ordinates of the new owner.

9) CONSUMER ASSISTANCE

In the event of a controversy or a dispute in connection with this limited warranty, BRP suggests that you try to resolve the issue at the dealership level. We recommend discussing the issue with the authorized dealer's service manager or owner.

If the matter still remains unresolved, contact BRP by filling out the customer contact form at www.brp.com or contact BRP by mail at one of the addresses listed under the *CONTACT US* section of this guide.

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II BRP LIMITED WARRANTY FOR THE EUROPEAN ECONOMIC AREA, THE COMMONWEALTH OF THE INDEPENDENT STATES AND TURKEY: 2018 CAN-AM™ ATV T3

1) SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. ("BRP")* warrants its 2018 Can-Am ATVs sold by distributors or dealers authorized by BRP to distribute Can-Am ATVs ("Can-Am ATV Distributor/Dealer") in member states of the European Economic Area (which is comprised of the member states of the European Union plus Norway, Iceland and Liechtenstein) ("EEA"), in member states of the Commonwealth of the Independent States (including Ukraine and Turkmenistan) ("CIS") and Turkey from defects in material or workmanship for the period and under the conditions described below.

Non-factory installed parts and accessories are not covered under this limited warranty. Please refer to the applicable parts and accessories limited warranty text.

This limited warranty will become null and void if: (1) The ATV was used for racing or any other competitive activity, at any point, even by a previous owner; or (2) the ATV has been altered or modified in such a way so as to adversely affect its operation, performance or durability, or has been altered or modified to change its intended use.

2) LIMITATIONS OF LIABILITY

TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY IS EXPRESSLY GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME JURISDICTIONS DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH MAY VARY FROM COUNTRY TO COUNTRY.

Neither the Can-Am ATV Distributor/Dealer nor any other person has been authorized to make any affirmation, representation or warranty regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against BRP.

BRP reserves the right to modify this warranty at any time, being understood that such modification will not alter the warranty conditions applicable to the products sold while this warranty is in effect.

3) EXCLUSIONS – ARE NOT WARRANTED

The following are not warranted under this limited warranty under any circumstances:

– Normal wear and tear;
– Routine maintenance items, tune ups, adjustments;

– Damage caused by negligence or failure to provide proper maintenance and/or storage, as described in the Operator's Guide;
– Damage resulting from removal of parts, improper repairs, service, maintenance, modifications or use of parts or accessories not manufactured or approved by BRP which in its reasonable judgement are either incompatible with the product or adversely affect its operation, performance and durability, or resulting from repairs done by a person that is not an authorized servicing Can-Am ATV Distributor/Dealer;
– Damage caused by abuse, abnormal use, neglect, racing or operation of the product in a manner inconsistent with the recommended operation described in the Operator's Guide;
– Damage resulting from accident, submersion, fire, snow or water ingestion, theft, vandalism or any act of God;
– Operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operator's Guide);
– Damage resulting from rust, corrosion or exposure to the elements;
– Incidental or consequential damages, or damages of any kind including without limitation towing, transportation expenses, storage, telephone, rental, taxi, inconvenience, insurance coverage, loan payments, loss of time, loss of income or time missed for downtime experience due to service work.

4) WARRANTY COVERAGE PERIOD

This warranty will be in effect from (1) the date of delivery to the first retail consumer or (2) the date the product is first put into use, whichever occurs first and for a period of:

TWENTY-FOUR (24) CONSECUTIVE MONTHS for private use.

SIX (6) CONSECUTIVE MONTHS for commercial use or rental use.

TWENTY-FOUR (24) CONSECUTIVE MONTHS for commercial use provided that the product is purchased in Finland, Norway or Sweden.

The product is used commercially when it is used in connection with any work or employment that generates income during any part of the warranty period. The product is also used commercially when, at any point during the warranty period, it is licensed for commercial use.

The repair or replacement of parts or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date.

Note that the duration and any other modalities of the warranty coverage are subject to the applicable national or local legislation in the customer's country.

5) CONDITIONS TO HAVE WARRANTY COVERAGE

This warranty coverage is available **only** if **each** of the following conditions has been fulfilled:

– The 2018 Can-Am ATV must be purchased as new and unused by its first owner from a Can-Am ATV Distributor/Dealer authorized to distribute Can-Am ATVs in the country in which the sale occurred;
– The BRP specified pre-delivery inspection process must be completed and documented;

– The product must have undergone proper registration by an authorized Can-Am ATV Distributor/Dealer;
– The 2018 Can-Am ATV must be purchased within the EEA by an EEA resident, in the CIS for residents of the countries comprised in such area and in Turkey for residents of Turkey; and
– Routine maintenance outlined in the Operator's Guide must be timely performed in order to maintain warranty coverage. BRP reserves the right to make warranty coverage contingent upon proof of proper maintenance.

BRP will not honour this limited warranty to any private use owner or commercial use owner if one of the preceding conditions has not been met. Such limitations are necessary in order to allow BRP to preserve both the safety of its products, and also that of its consumers and the general public.

6) WHAT TO DO TO OBTAIN WARRANTY COVERAGE

The customer must cease using the ATV upon the appearance of an anomaly. The customer must notify a servicing Can-Am ATV Distributor/Dealer within two (2) months of the appearance of a defect and provide it with reasonable access to the product and reasonable opportunity to repair it. The customer must also present to the authorized Can-Am ATV Distributor/Dealer, proof of purchase of the product and must sign the repair/work order prior to starting the repair in order to validate the warranty repair. All parts replaced under this limited warranty become the property of BRP.

Note that the notification period is subject to the applicable national or local legislation in customer's country.

7) WHAT BRP WILL DO

To the extent permitted by law, BRP's obligations under this warranty are limited to, at its sole discretion, repairing parts found defective under normal use, maintenance and service, or replacing such parts with new genuine Can-Am ATV parts without charge for parts and labour, at any authorized Can-Am ATV Distributor/Dealer during the warranty coverage period under the conditions described herein. BRP's responsibility is limited to making the required repairs or replacements of parts. No claim of breach of warranty shall be cause for cancellation or rescission of the sale of the Can-Am ATV to the owner. You may have other legal rights which may vary from country to country.

In the event that service is required outside of the EEA, CIS or Turkey, the owner will bear responsibility for any additional charges due to local practices and conditions, such as, but not limited to, freight, insurance, taxes, license fees, import duties, and any and all other financial charges, including those levied by governments, states, territories and their respective agencies.

BRP reserves the right to improve or modify products from time to time without assuming any obligation to modify products previously manufactured.

8) TRANSFER

If the ownership of a product is transferred during the warranty coverage period, this warranty shall also be transferred and be valid for the remaining coverage period provided BRP or an authorized Can-Am ATV Distributor/Dealer receives a proof that the former owner agreed to the transfer of ownership, in addition to the co-ordinates of the new owner.

9) CONSUMER ASSISTANCE

In the event of a controversy or a dispute in connection with this limited warranty, BRP suggests that you try to resolve the issue at the Can-Am ATV Distributor/Dealer level. We recommend discussing the issue with the authorized Can-Am ATV Distributor/Dealer's service manager or owner.

If the matter still remains unresolved, contact BRP by filling out the customer contact form at www.brp.com or contact BRP by mail at one of the addresses listed under the *CONTACT US* section of this guide.

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H) CUSTOMER INFORMATION

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IV MAINTENANCE RECORDS

Send photocopy of maintenance record to BRP if needed.

PREDELIVERY	
Serial number: _____ Mileage / km: _____ Hours: _____ Date: _____ Dealer no: _____ Notes: _____	Signature/Print:
Refer to vehicle Pre-Delivery Bulletin for detailed installation procedures	

FIRST INSPECTION	
Serial number:	Signature/Print:
Mileage / km:	
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

SERVICE	
Serial number:	Signature/Print:
Mileage / km:	
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

SERVICE	
Serial number:	Signature/Print:
Mileage / km:	
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

SERVICE	
Serial number:	Signature/Print:
Mileage / km:	
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

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Serial number:	Signature/Print:
Mileage / km:	
Hours:	
Date:	
Dealer no:	
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For maintenance schedule refer to Maintenance Information section of this operator's guide	

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Mileage / km:	
Hours:	
Date:	
Dealer no:	
Notes:	
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Mileage / km:	
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SERVICE	
Serial number:	Signature/Print:
Mileage / km:	
Hours:	
Date:	
Dealer no:	
Notes:	
For maintenance schedule refer to Maintenance Information section of this operator's guide	

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

⚠ WARNING

THIS VEHICLE CAN BE HAZARDOUS TO OPERATE. A collision or rollover can occur quickly, even during routine maneuvers such as turning and driving on hills or over obstacles, if you fail to take proper precautions.

SEVERE INJURY OR DEATH can result if you do not follow these instructions:

- **BEFORE YOU OPERATE THIS VEHICLE, READ THIS OPERATOR'S GUIDE, ALL ON PRODUCT SAFETY LABELS AND WATCH THE SAFETY VIDEO.**
- **NEVER OPERATE THIS VEHICLE WITHOUT PROPER INSTRUCTIONS.** Complete a certified training course.
- **FOR MAX MODELS, NEVER CARRY MORE THAN ONE PASSENGER.** You increase your risk of losing control if you carry more than one passenger.
- **FOR 1UP MODELS, NEVER CARRY A PASSENGER.** You increase your risk of losing control if you carry a passenger.
- **NEVER OPERATE THIS VEHICLE ON A PAVED SURFACE** unless it is for short distances, at reduced speed and in order to move the vehicule from an off-road location to another.
- **ALWAYS RESPECT THE ROAD TRAFFIC LAWS** when you operate the vehicule on the roadway, even a dirt or gravel road.
- **OPERATOR AND PASSENGER (MAX models) SHOULD ALWAYS WEAR AN APPROVED HELMET,** eye protection, and protective clothing.
- **NEVER USE WITH DRUGS OR ALCOHOL.** They slow reaction time and impair judgment.
- **NEVER OPERATE THIS VEHICLE AT EXCESSIVE SPEEDS.** You increase your risk of losing control if you operate this vehicle at speeds too fast for the terrain, visibility conditions, or your experience.
- **NEVER ATTEMPT WHEELIES, JUMPS, OR OTHER STUNTS.**

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OPERATOR'S GUIDE T3 4x4 OUTLANDER / MAX Series / ENGLISH
GUIDE DU COND. Séries T3 4x4 OUTLANDER / MAX / ANGLAIS

CE

can-am

2018

Operator's Guide

Includes
Safety, Vehicle
and Maintenance Information

OUTLANDER™ Series/ OUTLANDER™ MAX™ Series

⚠ WARNING

Read this guide thoroughly. It contains important safety information.
Minimum recommended age: Operator: 16 years old. Keep this Operator's Guide in the vehicle.

2 1 9 0 0 1 8 5 6

Original Instructions

⚠ WARNING

YOUR VEHICLE CAN BE HAZARDOUS TO OPERATE. A collision or rollover can occur quickly, if you fail to take proper precautions, even during routine maneuvers such as turning and driving on hills or over obstacles.
For your safety, understand and follow all the warnings contained in this Operator's Guide and on the labels on your vehicle. **Failure to follow these warnings can result in SEVERE INJURY OR DEATH!**
Keep this Operator's Guide with the vehicle at all times.

⚠ WARNING

Disregarding any of the safety precautions and instructions contained in this Operator's Guide, *SAFETY VIDEO* and on-product safety labels could result in an injury including the possibility of death!

⚠ WARNING

This vehicle may exceed the performance of other vehicles you may have ridden in the past. Take time to familiarize yourself with your new vehicle.

CALIFORNIA PROPOSITION 65 WARNING

⚠ **WARNING:** Operating, servicing and maintaining an off-road vehicle can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your vehicle. For more information go to www.p65warnings.ca.gov/products/passenger-vehicle.

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FOREWORD

Deutsch	Dieses Handbuch ist möglicherweise in Ihrer Landessprache verfügbar. Bitte wenden Sie sich an Ihren Händler oder besuchen Sie: **www.operatorsguides.brp.com**
English	This guide may be available in your language. Check with your dealer or go to: **www.operatorsguides.brp.com**
Español	Es posible que este manual esté disponible en su idioma. Consulte a su distribuidor o visite: **www.operatorsguides.brp.com**
Français	Ce guide peut être disponible dans votre langue. Vérifier avec votre concessionnaire ou aller à: **www.operatorsguides.brp.com**
中文	本手册可能有您的语种的翻译版本。请向经销商问询，或者登录 www.operatorsguides.brp.com 查询。
日本語	このガイドは、言語によって翻訳版が用意されています。. ディーラーに問い合わせるか、次のアドレスでご確認ください： www.operatorsguides.brp.com
Nederlands	Deze handleiding kan beschikbaar zijn in uw taal. Vraag het aan uw dealer of ga naar: **www.operatorsguides.brp.com**
Norsk	Denne boken kan finnes tilgjengelig på ditt eget språk. Kontakt din forhandler eller gå til: **www.operatorsguides.brp.com**
Português	Este manual pode estar disponível em seu idioma. Fale com sua concessionária ou visite o site: **www.operatorsguides.brp.com**
Suomi	Käyttöohjekirja voi olla saatavissa omalla kielelläsi. Tarkista jälleenmyyjältä tai käy osoitteessa: **www.operatorsguides.brp.com**
Svenska	Denna bok kan finnas tillgänglig på ditt språk. Kontakta din återförsäljare eller gå till: **www.operatorsguides.brp.com**

Congratulations on your purchase of a new Can-Am® ATV. It is backed by the BRP warranty and a network of authorized Can-Am dealers ready to provide the parts, service or accessories you may require.

Your dealer is committed to your satisfaction. He has taken training to perform the initial setup and inspection of your vehicle as well as completed the final adjustment before you took possession. If you need more complete servicing information, please ask your dealer.

At delivery, you were also informed of the warranty coverage and signed the *PREDELIVERY CHECK LIST* to ensure your new vehicle was prepared to your entire satisfaction.

Know Before you Go

To learn how to reduce the risk for you or bystanders being injured or killed, read this Operator's Guide before you operate the vehicle.

Also, read all safety labels on your ATV and watch attentively your *SAFETY VIDEO*.

This vehicle is for off road use only. It is mainly for general recreational use but it may also be used for utility purposes.

Failure to follow the warnings contained in this Operator's Guide can result in SERIOUS INJURY or DEATH.

Age Recommendation

This vehicle is a category G, always follow this age recommendation:

– A person under 16 years old should never operate this vehicle.
– Passenger on 2-UP models must be capable of keeping his feet on the footrests and his hands on grab handles at all times when seated on this vehicle.

Training Course

Never operate this vehicle without proper instruction. **Take a training course.** All operators should receive training from a certified instructor.

For more information about ATV safety, contact an authorized Can-Am dealer to find out about available training courses nearest you.

In the United States, call the Specialty Vehicle Institute of America (SVIA) at 1 800 887–2887 or in Canada, the Canada Safety Council (CSC) at 1 613 739–1535.

Safety Messages

The types of safety messages, what they look like and how they are used in this guide are explained as follows:

The safety alert symbol ⚠ indicates a potential injury hazard.

⚠ WARNING

Indicates a potential hazard, if not avoided, could result in serious injury or death.

⚠ CAUTION Indicates a hazard situation which, if not avoided, could result in minor or moderate injury.

NOTICE Indicates an instruction which, if not followed, could severely damage vehicle components or other property.

About this Operator's Guide

This Operator's Guide has been prepared to acquaint the owner/operator of a new vehicle with the various vehicle controls, maintenance and safe operating instructions. It is indispensable for the proper use of the product.

⚠ WARNING

Throughout this Operator's Guide, the term "1-UP" refers to vehicles designed to carry the operator only while the term "2-UP" refers to vehicles designed to carry also a passenger.
Make sure to identify and follow the warnings and instructions that are applicable to your specific model.

Note that this guide is available in several languages. In the event of any discrepancy, the English version shall prevail.

Keep this Operator's Guide in the vehicle as you can refer to it for things such as maintenance, troubleshooting and instructing others.

If you want to view and/or print an extra copy of your Operator's Guide, simply visit the following website **www.operatorsguides.brp.com**.

The information contained in this document are correct at the time of publication. However, BRP maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured. Due to late changes, some differences between the manufactured product and the descriptions and/or specifications in this guide may occur. BRP reserves

the right at any time to discontinue or change specifications, designs, features, models or equipment without incurring any obligation upon itself.

This Operator's Guide and the *SAFETY DVD* should remain with the vehicle when it is sold.

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

TABLE OF CONTENTS

FOREWORD 1
Know Before you Go 1
Safety Messages 2
About this Operator's Guide 2

SAFETY INFORMATION

GENERAL PRECAUTIONS 10
Avoid Carbon Monoxide Poisoning 10
Avoid Gasoline Fires and Other Hazards 10
Avoid Burns from Hot Parts 10
Accessories and Modifications 10
SPECIAL SAFETY MESSAGES 11
OPERATION WARNINGS 14
PRE-RIDE INSPECTION 42
Pre-Ride Inspection Check List 42
RIDING THE VEHICLE 45
Riding Gear 46
Carrying a Passenger 46
Recreational Riding 47
Environment 47
Design Limitation 48
Off-Road Operation 48
Riding Techniques 48
MOVING LOADS AND DOING WORK 60
Working with your Vehicle 60
Carrying Loads 60
Loading the Cargo Racks 61
Hauling a Load (if Equipped with Hitch) 61
Pulling a Trailer (if Equipped with Hitch) 62
IMPORTANT ON-PRODUCT LABELS(CANADA/UNITED STATES) 63
Hang Tag 63
Vehicle Safety Labels 65
Compliance Labels 69
Technical Information Labels 70
IMPORTANT ON-PRODUCT LABELS (ALL COUNTRIES EXCEPT CANADA/UNITED STATES) 71
Hang Tag 71
Vehicle Safety Labels 73
Compliance Labels 79
Technical Information Labels 79

VEHICLE INFORMATION

CONTROLS **82**
1) Throttle Lever 82
2) Brake Lever 83
3) Parking Brake Lever 83
4) Brake Pedal 83
5) Shift Lever 84
6) Ignition Switch and Keys 85
7) Multifunction Switch 86
8) 2WD/4WD Selector 88
MULTIFUNCTION GAUGE (LCD) **90**
Multifunction Gauge Description 90
Multifunction Gauge Modes 91
Navigating in the LCD Gauge 92
Gauge Setup 93
EQUIPMENT **95**
1) Operator's Seat 97
2) Passenger's Seat (2-UP Models) 97
3) Footpegs 98
4) Grab Handles (2-UP Models) 99
5) 12-Volt Power Outlet 99
6) Rear Storage Compartment 99
7) Cargo Racks 100
8) Trailer Hitch 100
9) Tool Kit 100
10) Recovery Hooks 100
ADDITIONAL ACCESSORIES **102**
1) Full Underbody Aluminum Skid Plate 102
2) Portable Light 102
3) Gun Boot 103
4) Gear Grips 104
5) Winch 105
6) Roller Fairlead 105
FUEL **106**
Fuel Requirements 106
Vehicle Fueling Procedure 106
BREAK-IN PERIOD **108**
Operation During Break-In 108
BASIC PROCEDURES **109**
Starting the Engine 109
Operating the Shift Lever 109
Stopping the Engine and Parking the Vehicle 109
SPECIAL PROCEDURES **110**
What to Do if Water Entered the CVT 110
What to Do if Water Entered the Air Filter Housing 110

SPECIAL PROCEDURES (cont'd)
What to Do if Vehicle is Turned Over 111
What to Do if Vehicle is Immersed in Water 111
TUNE YOUR RIDE 112
Suspension Adjustment 112
Dynamic Power Steering (DPS) Assist Level Adjustment 112
VEHICLE TRANSPORTATION 114

MAINTENANCE

MAINTENANCE SCHEDULE 116
SEVERE DUSTY CONDITIONS 116
MAINTENANCE SCHEDULE LEGEND 116
MAINTENANCE SCHEDULE 117
MAINTENANCE PROCEDURES 119
Air Filter 119
Engine Oil 122
Oil Filter 124
Radiator 125
Engine Coolant 125
Muffler Spark Arrester 128
Gearbox Oil (570 Models) 128
Throttle Cable 130
Spark Plugs 132
Battery 133
Fuses 133
Lights 135
Drive Shaft Boot and Protector 136
Wheel Bearing 136
Wheels and Tires 137
Steering 138
Suspension 138
Brakes 139
VEHICLE CARE 141
Post-Operation Care 141
Vehicle Cleaning and Protection 141
STORAGE AND PRESEASON PREPARATION 143

TECHNICAL INFORMATION

VEHICLE IDENTIFICATION 146
Vehicle Identification Number 146
Engine Identification Number (EIN) 146

NOISE EMISSION CONTROL SYSTEM REGULATION (CANADA/UNITED STATES) **147**
NOISE EMISSION AND VIBRATION VALUES (ALL COUNTRIES EXCEPT CANADA/UNITED STATES) **148**
EC-DECLARATION OF CONFORMITY **149**
SPECIFICATIONS **150**

TROUBLESHOOTING

TROUBLESHOOTING GUIDELINES **164**
MULTIFUNCTION GAUGE MESSAGES **168**

WARRANTY

BRP LIMITED WARRANTY USA AND CANADA: 2018 CAN-AM® ATV **170**
US EPA EMISSION-RELATED WARRANTY **173**
BRP INTERNATIONAL LIMITED WARRANTY: 2018 CAN-AM® ATV **176**
BRP LIMITED WARRANTY FOR THE EUROPEAN ECONOMIC AREA, THE COMMONWEALTH OF THE INDEPENDENT STATES AND TURKEY: 2018 CAN-AM® ATV **180**

CUSTOMER INFORMATION

PRIVACY INFORMATION **186**
CONTACT US **187**
North America 187
Europe 187
Oceania 187
South America 187
Asia 187
CHANGE OF ADDRESS/OWNERSHIP **188**

SAFETY INFORMATION

Avoid Carbon Monoxide Poisoning

All engine exhaust contains carbon monoxide, a deadly gas. Breathing carbon monoxide can cause headaches, dizziness, drowsiness, nausea, confusion and eventually death.

Carbon monoxide is a colorless, odorless, tasteless gas that may be present even if you do not see or smell any engine exhaust. Deadly levels of carbon monoxide can collect rapidly, and you can quickly be overcome and unable to save yourself. Also, deadly levels of carbon monoxide can linger for hours or days in enclosed or poorly ventilated areas. If you experience any symptoms of carbon monoxide poisoning, leave the area immediately, get fresh air and seek medical treatment.

To prevent serious injury or death from carbon monoxide:

– Never run the vehicle in poorly ventilated or partially enclosed areas such as garages, carports or barns. Even if you try to ventilate engine exhaust with fans or open windows and doors, carbon monoxide can rapidly reach dangerous levels.
– Never run the vehicle outdoors where engine exhaust can be drawn into a building through openings such as windows and doors.

Avoid Gasoline Fires and Other Hazards

Gasoline is extremely flammable and highly explosive. Fuel vapors can spread and be ignited by a spark or flame many feet away from the engine. To reduce the risk of fire or explosion, follow these instructions:

– Use only an approved red gasoline container to store fuel.
– - Never fill a gasoline container on the vehicle. An electrical static discharge may ignite the fuel.
– For refueling, strictly adhere to instructions in *FUEL*.
– Never start or operate the engine if the fuel cap is not properly installed.

Gasoline is poisonous and can cause injury or death.

– Never siphon gasoline by mouth.
– If you swallow gasoline, get any in your eye(s), or inhale gasoline vapor, see your doctor immediately.

If gasoline spills on you, wash with soap and water and change your clothes.

Avoid Burns from Hot Parts

Certain components become hot during operation. Avoid contact with those parts during and shortly after operation to avoid burns.

Accessories and Modifications

Any modifications or addition of accessories may affect the handling of your vehicle. It is important to take the time to get familiar with the vehicle once modifications are made to understand how to adapt your driving behavior accordingly.

Do not temper with unauthorized modifications or install equipment not specifically certified by BRP for the vehicle. These modifications have not been tested by BRP and they may increase the risk of injury or loss of control, or render the vehicle illegal to ride. As an example, tempering with tire specifications may affect the behavior of the vehicle and increase the risk of a loss of control.

Ask your authorized BRP dealer for suitable available accessories for your vehicle.

SPECIAL SAFETY MESSAGES

THIS VEHICLE IS NOT A TOY AND CAN BE HAZARDOUS TO OPERATE.

– This vehicle handles differently from other vehicles including motorcycles and cars. A collision or rollover can occur quickly, if you fail to take proper precautions, even during routine maneuvers such as turning and driving on hills or over obstacles.

SEVERE INJURY OR DEATH can result if you do not comply with the following instructions:

– Read this Operator's Guide and all on-product safety labels carefully and follow the operating procedures described. Watch and pay attention to the *SAFETY VIDEO* before operating the vehicle.
– Always follow this age recommendation: A person under 16 years old should never operate this vehicle.
– Never take place on this vehicle without wearing an approved helmet of the proper size and other required riding gears. Refer to *RIDING GEAR* in *RIDING THE VEHICLE* for detailed information.
– Never carry a passenger on this vehicle unless you are operating a 2-UP model. Passenger(s) affect balance and steering and increase risk of losing control.
– On 1-UP models, do not make any modifications to accommodate a passenger or use racks to carry a passenger.
– This vehicle is not designed to ride on paved surfaces; if you must shortly use the vehicle on such surfaces, avoid abrupt inputs to steering, accelerator and brakes. Reduce your speed.
– This vehicle is not designed for riding on roads or highways (in most places it is an illegal practice). Riding your vehicle on roads or highways could cause a collision with another vehicle.
– Never use this vehicle if you are tired, ill or with drugs or alcohol. Your reaction time and judgement is greatly affected under these conditions.
– Never attempt wheelies, jumps, or other stunts.
– Never operate at excessive speeds. Always go at a speed that is proper for the terrain, visibility, operating conditions, and your experience.
– Always go slowly and be extra careful when operating on unfamiliar terrain. Always be alert to changing terrain conditions when operating this vehicle.
– Never operate on excessively rough, slippery or loose terrain until you have learned and practiced the skills necessary to control this vehicle on such terrain. Always be especially cautious on these kinds of terrain.
– Always follow proper procedures for turning as described in *RIDING TECHNIQUES*.
– Never operate this vehicle on hills too steep for the vehicle or for your abilities.
– Always follow proper procedures for climbing hills as described in *RIDING TECHNIQUES*. Check the terrain carefully before you start up any hill. Never climb hills with excessively slippery or loose surfaces.
– Always follow proper procedures for going down hills and for braking on hills as described in *RIDING TECHNIQUES*. Check the terrain carefully before you start down any hill.
– Always follow proper procedures for crossing the side of a hill as described in *RIDING TECHNIQUES*. Avoid hills with excessively slippery or loose surfaces.

- Always use proper procedures if you stall or roll backwards when climbing a hill. To avoid stalling, use low gear and maintain a steady speed when climbing a hill. If you stall or roll backwards, follow the driving technique procedures as described in *RIDING TECHNIQUES*.
- Always check for obstacles before operating in a new area. Never attempt to operate over large obstacles, such as large rocks or fallen trees. Always follow proper procedures when operating over obstacles as described in *RIDING TECHNIQUES*.
- Always be careful when skidding or sliding. Learn to safely control skidding or sliding by practicing at low speeds and on level smooth terrain. On extremely slippery surfaces, such as ice, go slowly and be very cautious in order to reduce the chance of skidding out of control. If you are operating a 2-UP model and have a passenger on-board, never attempt skidding or sliding; overturn or passenger ejection may occur.
- Never operate this vehicle through deep or fast flowing water. Water should never exceed footrests. Remember that wet brakes may have reduced stopping ability. Test your brakes after leaving water, mud or snow. If necessary, apply them several times to let friction dry out the pads.
- Always keep in mind that braking distance is readily affected by but not limited to; weather and terrain conditions, braking system and tire conditions, vehicle speed and attitude, and vehicle load including towing. Remember to adjust your driving accordingly.
- Always be sure there are no obstacles or people behind the vehicle when you operate in reverse. When it is safe to proceed in reverse, go slowly. Take into account that on a 2-UP model the passenger can obstruct your view.
- BRP recommends sitting on your ATV when operating in reverse. Avoid standing up. Your weight could shift forward against throttle lever, causing an unexpected acceleration and may lead to a loss of control.
- Never exceed the stated load limits for this vehicle including operator, passenger (2-UP models), all other loads and added accessories. Cargo should be properly distributed and securely attached. Reduce speed and follow instructions in this guide for carrying cargo or pulling a trailer. Allow greater distance for braking.
- Always inspect and confirm the safe operating condition of your vehicle prior to ride. Refer to *PRE-RIDE INSPECTION*. Always follow the maintenance schedules as described in this Operator's Guide. Refer to *MAINTENANCE* section.
- Never operate the vehicle if the controls do not function normally.
- Always maintain proper tire pressure. When replacing tires, use only the recommended tire size and type. For tire information, refer to *SPECIFICATIONS*.
- Riding your vehicle too fast for your skills or the conditions may result in injury. Apply only enough throttle to proceed safely. Statistics show that mishaps and injury usually result from high speed turns. Always remember that this vehicle is heavy! Its pure weight alone may entrap you should it fall, resulting in injury.
- This vehicle is not designed for jumping, nor can it fully absorb the high impact energy generated during manoeuvres such as jumping which, can be passed on to you, the operator. Performing wheelies can cause the vehicle to flip over onto you. Both practices have a high risk for you and your passenger (2-UP models) and should be avoided at all times.
- The tires of this vehicle are not suited for paved road use.

2-UP Models

Driver must:

- Not forget he is responsible for the safety of the passenger.
- Inform the passenger concerning the basic rules for a safe ride.
- Instruct the passenger to read the vehicle's safety labels and to watch the *SAFETY VIDEO*.
- Always practice the maneuvers described in this Operator's Guide without and with a passenger. Greater skills are required with a passenger.
- Always remember that the vehicle handling and stability may be affected when riding with a passenger. Safely reduce speed. Use proper judgement. If in doubt, do not attempt and disembark the passenger before executing any maneuver.
- Always remember that the vehicle braking distance may be longer when riding with a passenger. Allow greater distance for braking.
- Never carry passenger on a 2-UP model if the passenger seat is not properly installed.
- Never carry more than one (1) passenger. Do not allow passenger to sit anywhere else than the designated passenger seat.
- Never carry a passenger if you judge his ability or judgement insufficient to concentrate on the terrain conditions and adapt accordingly.
- Never carry a passenger who has used drugs or alcohol, or is tired or ill. These slow reaction time and impair judgment.

Passenger must:

- Be capable of resting his feet on the footrests and his hands on grab handles when seated on this vehicle.
- Never take place on this vehicle without wearing an approved helmet (including a chin guard) that fits properly. The passenger should also wear eye protection (goggles or face shield), gloves, boots, long sleeved shirt or jacket, and long pants.
- Be seated on the designated passenger's seat.
- Always keep hands on grab handles and feet on the footrests during operation. Never hold on to the operator.
- Never get up during vehicle operation. An excessive movement could cause loss of control.
- Pay attention to vehicle and operator movements.
- Not wait and tell the driver to slow down or stop if you feel uncomfortable or insecure for any reason.

OPERATION WARNINGS

The following warning and their format have been requested by the United States Consumer Product Safety Commission and are required to be in the Operator's Guide for all ATVs.

NOTE: The following illustrations are general representations only. Your model may differ.

⚠ WARNING

POTENTIAL HAZARD

Operating this vehicle without proper instruction.

WHAT CAN HAPPEN

The risk of an accident is greatly increased if the operator does not know how to operate this vehicle properly in different situations and on different types of terrain.

HOW TO AVOID THE HAZARD

Beginners and inexperienced operators should complete a training course. They should then regularly practice the skills learned during the course as well as the operating techniques described in this Operator's Guide.

For more information about a training course, contact an authorized Can-Am dealer.

⚠ WARNING

V00A1AQ

POTENTIAL HAZARD

Failure to follow the age recommendations for this vehicle.

WHAT CAN HAPPEN

A lack of respect for this age recommendation can lead to severe injury or death of the child.

Even though a child may be within the age group for which this vehicle is recommended, he may not have the skills, abilities, or judgment needed to operate this vehicle safely and may be involved in a serious accident.

HOW TO AVOID THE HAZARD

No one under 16 should operate this vehicle.

2-UP Models Only

⚠ WARNING

vmo2014-005-100

POTENTIAL HAZARD

Failure to respect the physical limitations of the passenger on 2-UP models.

WHAT CAN HAPPEN

A passenger that cannot completely lean his feet on footrests can be ejected when riding on uneven terrain.

HOW TO AVOID THE HAZARD

The passenger must be capable of keeping his feet on the footrests and his hands on grab handles at all times when he is seated on the vehicle.

1-UP Models Only

⚠ WARNING

V00A02Q

POTENTIAL HAZARD

Carrying a passenger on this vehicle.

WHAT CAN HAPPEN

Greatly reduces your ability to balance and control this vehicle.

Could cause an accident, resulting in harm to you and/or your passenger.

HOW TO AVOID THE HAZARD

Never carry passenger. Even with a long seat that provides unrestricted operator movement, it is not designed nor intended to carry passenger(s).

2-UP Models Only

⚠ WARNING

V00A1CQ

POTENTIAL HAZARD

Carrying more than one (1) passenger on this vehicle.

WHAT CAN HAPPEN

Carrying more than one (1) passenger reduces your ability to balance and control this vehicle.

Could cause an accident, resulting in harm to you and/or your passengers.

HOW TO AVOID THE HAZARD

Never carry more than one (1) passenger. Even with a long seat that provides unrestricted operator movement, the vehicle is not designed nor intended to carry more than one (1) operator and one (1) passenger. The passenger must use the designated passenger's seat when he is seated on the vehicle with feet firmly planted on footrests and always hold on to the grab handles.

⚠ WARNING

V00A2DQ

POTENTIAL HAZARD

Allowing passenger(s) to sit on front or rear racks on this vehicle.

WHAT CAN HAPPEN

Allowing a passenger could:

– Impair vehicle stability which could lead to a loss of control.
– Result in injury to passenger(s) from impact on hard surfaces.
– Cause an accident, resulting in harm to you and/or your passenger(s).

HOW TO AVOID THE HAZARD

Never allow any passenger to sit on front or rear racks on this vehicle.

⚠ WARNING

POTENTIAL HAZARD

Operating this vehicle on public streets, roads or highways.

WHAT CAN HAPPEN

You can collide with another vehicle.

HOW TO AVOID THE HAZARD

Never operate this vehicle on any public street, road or highway, even a dirt or gravel one. In many states it is illegal to operate this vehicle on public streets, roads and highways.

⚠ WARNING

POTENTIAL HAZARD

Riding this vehicle without wearing an approved helmet, eye protection and protective gear. On 2-UP models, passenger should also have an approved helmet with a rigid chin guard.

WHAT CAN HAPPEN

– Riding without an approved helmet increases the chances of a severe head injury or death in the event of an accident.
– Riding without eye protection can result in an accident and increases the chances of a severe injury in the event of an accident.
– Riding without protective gear increases the chances of severe injury in the event of an accident.

HOW TO AVOID THE HAZARD

Always wear an approved helmet that fits properly. You should also wear:

– Eye protection (goggles or face shield)
– Rigid chin guard
– Gloves and boots
– Long sleeved shirt or jacket
– Long pants.

⚠ WARNING

V00A07Q

POTENTIAL HAZARD

Using this vehicle with drugs or alcohol.

WHAT CAN HAPPEN

Could cause the passenger to fall off (2-UP models).

Could seriously affect your judgment.

Could cause you to react more slowly.

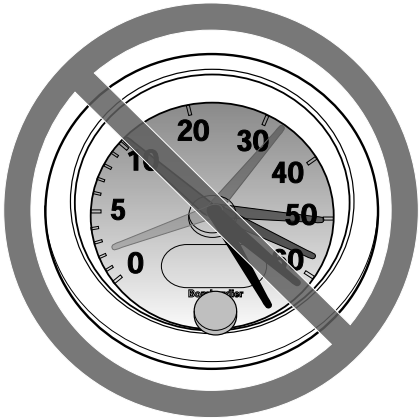
Could affect your balance and perception.

Could result in an accident or death.

HOW TO AVOID THE HAZARD

The operator and the passenger (2-UP models) should never use this vehicle with drugs or alcohol.

⚠ WARNING



V00A08Q

POTENTIAL HAZARD

Operating this vehicle at excessive speeds.

WHAT CAN HAPPEN

Increases your chances of losing control of the vehicle, which can result in an accident.

HOW TO AVOID THE HAZARD

Always travel at a speed which is appropriate for the terrain, visibility and operating conditions, and your experience.

On 2-UP models, the vehicle handling, stability and braking distance may be affected when riding with a passenger. Safely reduce speed when riding with a passenger. Allow greater distance for braking.

⚠ WARNING

POTENTIAL HAZARD

Attempting wheelies, jumps and other stunts.

WHAT CAN HAPPEN

Increases the chance of an accident, for the operator and the passenger (2-UP models), including an overturn.

HOW TO AVOID THE HAZARD

Never attempt stunts, such as wheelies or jumps. Do not try to show off.

⚠ WARNING

POTENTIAL HAZARD

Failure to inspect the vehicle before operating.

Failure to properly maintain the vehicle.

WHAT CAN HAPPEN

Increases the possibility of an accident or equipment damage.

HOW TO AVOID THE HAZARD

Always inspect your vehicle prior to ride to make sure the vehicle is in safe operating condition.

Always follow the maintenance schedule described in this Operator's Guide.

⚠ WARNING

POTENTIAL HAZARD

Riding on frozen waterways.

WHAT CAN HAPPEN

Breaking through the ice can lead to severe injury or death.

HOW TO AVOID THE HAZARD

Never ride this vehicle on a frozen surface before you are sure the ice is thick enough and sound enough to support the vehicle and its load, as well as the force that is created by a moving vehicle.

⚠ WARNING

POTENTIAL HAZARD

Removing hands from handlebars for the operator and from grab handles for the passenger (2-UP models), or feet from the footrests during operation.

WHAT CAN HAPPEN

Removing even one hand or foot can reduce your ability to control the vehicle or could cause you to lose your balance and fall off the vehicle. If you remove a foot from the footrests, your foot or leg may come into contact with the rear wheels, which could injure you or cause an accident.

HOW TO AVOID THE HAZARD

Operator must always keep both hands on the handlebars and passenger (2-UP models) on grab handles..Both feet (operator and passenger on 2-UP models) must rest on the footrests during vehicle operation.

⚠ WARNING

POTENTIAL HAZARD

Failure to use extra care when operating this vehicle on unfamiliar terrain.

WHAT CAN HAPPEN

You can come upon hidden rocks, bumps, or holes, without enough time to react.

Could result in the vehicle overturning, passenger ejection (2-UP models) or loss of control.

HOW TO AVOID THE HAZARD

Go slowly and be extra careful when operating on unfamiliar terrain.

Always be alert to changing terrain conditions when operating the vehicle.

Do not forget, on 2-UP models, the operator is responsible for the safety of his passenger. Safely reduce speed when riding with a passenger.

⚠ WARNING

POTENTIAL HAZARD

Failure to use extra care when operating on excessively rough, slippery or loose terrain.

WHAT CAN HAPPEN

Could cause loss of traction or vehicle control, which could result in an accident, including an overturn or passenger ejection (2-UP models).

HOW TO AVOID THE HAZARD

Do not operate on excessively rough, slippery or loose terrain until you have learned and practiced the skills necessary to control this vehicle on such terrain.

Always be especially cautious on these kinds of terrain.

Do not forget, on 2-UP models, the operator is responsible for the safety of the passenger. In doubt, disembark him before operating on these terrains.

⚠ WARNING

POTENTIAL HAZARD

Turning improperly.

WHAT CAN HAPPEN

Vehicle could go out of control, causing a collision or an overturn or a passenger ejection (2-UP models).

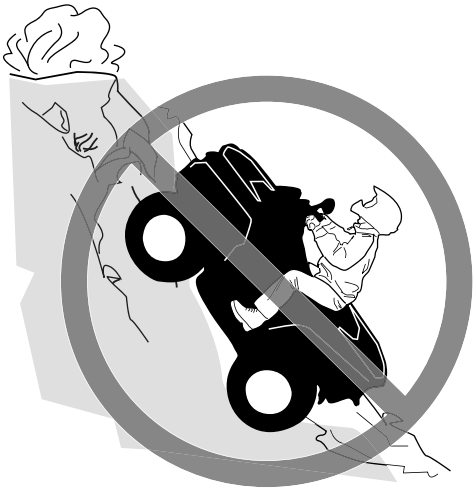
HOW TO AVOID THE HAZARD

Always follow proper procedures for turning as described in this Operator's Guide. Practice turning at low speeds before attempting to turn at faster speeds.

Do not forget, on 2-UP models, the operator is responsible for the safety of the passenger. Never perform this maneuver with a passenger. Always remember that the vehicle handling, stability and braking distance may be affected when riding with a passenger.

Do not turn at excessive speed.

⚠ WARNING



POTENTIAL HAZARD

Operating on excessively steep hills.

WHAT CAN HAPPEN

The vehicle can overturn more easily on extremely steep hills than on level surfaces or small hills.

HOW TO AVOID THE HAZARD

Never operate this vehicle on hills too steep for the vehicle or for your abilities.

Practice, without and with passenger (2-UP models), on smaller hills before attempting larger hills.

Always remember that, on 2-UP models, even if this vehicle can climb some steep hills, it is not recommended to climb such hills with a passenger; always disembark him before attempting this maneuver. Show good judgement.

⚠ WARNING

POTENTIAL HAZARD

Climbing hills improperly.

WHAT CAN HAPPEN

Could cause loss of control, passenger ejection (2-UP models) or cause vehicle to overturn.

HOW TO AVOID THE HAZARD

Always follow proper procedures for climbing hills as described in this Operator's Guide.

Always check the terrain carefully before you start up any hill. Do not forget, on 2-UP models, the operator is responsible for the safety of the passenger. In doubt, disembark him before climbing hill. Always remember that the vehicle handling, stability and braking distance may be affected when riding with a passenger.

Never climb hills with excessively slippery or loose surfaces.

Shift your weight forward (operator and passenger on 2-UP models).

Never open the throttle suddenly or make sudden gear changes. The vehicle could flip over backwards.

Never go over the top of any hill at high speed. An obstacle, a sharp drop, or another vehicle or person could be on the other side of the hill.

⚠ WARNING

POTENTIAL HAZARD

Going down a hill improperly.

WHAT CAN HAPPEN

Could cause loss of control, passenger ejection (2-UP models) or cause vehicle to overturn.

HOW TO AVOID THE HAZARD

Always follow proper procedures for going down hills as described in this Operator's Guide.

NOTE: A special technique is required when braking as you go down a hill.

Always check the terrain carefully before you start down any hill. Do not forget, on 2-UP models, the operator is responsible for the safety of the passenger. In doubt, disembark him before going down hill. Always remember that the vehicle handling, stability and braking distance may be affected when riding with a passenger.

Shift your weight backward (operator and passenger on 2-UP models).

Never go down a hill at high speed.

Avoid going down a hill at an angle which would cause the vehicle to lean sharply to one side. Go straight down the hill where possible.

⚠ WARNING

POTENTIAL HAZARD

Improperly crossing hills or turning on hills.

WHAT CAN HAPPEN

Could cause loss of control, passenger ejection (2-UP models) or cause vehicle to overturn.

HOW TO AVOID THE HAZARD

Never attempt this maneuver on 2-UP models when the passenger is on board. Always disembark him before executing.

Never attempt to turn the vehicle around on any hill until you have mastered the turning technique as described in this Operator's Guide on level ground. Be very careful when turning on any hill.

Avoid crossing the side of a steep hill if possible.

When crossing the side of a hill:

Always follow proper procedures as described further in this Operator's Guide.

Avoid hills with excessively slippery or loose surfaces.

Operator and passenger (2-UP models) must shift weight to the uphill side of the vehicle.

⚠ WARNING

V00A1PQ

POTENTIAL HAZARD

Stalling, rolling backwards or improperly dismounting while climbing a hill.

WHAT CAN HAPPEN

Could result in vehicle overturning.

HOW TO AVOID THE HAZARD

Use low gear and maintain steady speed when climbing a hill.

If you lose all forward speed:

Operator and passenger (2-UP models) must keep their weight uphill. Never open the throttle suddenly or make sudden gear changes. The vehicle could flip over backwards.

Apply the brakes.

Lock parking brake after you have stopped.

Disembark on uphill side, or to a side if pointed straight uphill (passenger first on 2-UP models).

If you begin rolling backwards:

Operator and passenger (2-UP models) must keep their weight uphill. Never open the throttle suddenly or make sudden gear changes. The vehicle could flip over backwards.

Never apply the rear brake while rolling backwards.

Apply the front brake gradually.

When fully stopped, apply rear brake as well and lock parking brake.

Disembark on uphill side, or to a side if pointed straight uphill (passenger first on 2-UP models).

Turn the vehicle around and remount, following the procedure described further in this Operator's Guide.

⚠ WARNING

POTENTIAL HAZARD

Improperly operating over obstacles.

WHAT CAN HAPPEN

Could cause loss of control (passenger ejection on 2-UP models), or a collision.

Could cause the vehicle to overturn.

HOW TO AVOID THE HAZARD

Before operating in a new area, check for obstacles.

Never attempt to ride over large obstacles, such as large rocks or fallen trees.

On 2-UP models, the operator is responsible for the safety of his passenger. In doubt, disembark him before riding over obstacles. Always remember that the vehicle handling and stability may be affected when riding with a passenger.

When you go over obstacles, always follow proper procedures as described in this Operator's Guide.

⚠ WARNING

POTENTIAL HAZARD

Skidding or sliding improperly.

WHAT CAN HAPPEN

You may lose control of this vehicle.

You may also regain traction unexpectedly, which may cause the vehicle to overturn or passenger ejection (2-UP models).

HOW TO AVOID THE HAZARD

Learn to safely control skidding or sliding by practicing at low speeds and on level smooth terrain.

On 2-UP models, never slide or skid with passenger. Always remember that the vehicle handling and stability may be affected when riding with a passenger.

On extremely slippery surfaces, such as ice, go slowly and be very cautious in order to reduce the chance of skidding or sliding out of control.

⚠ WARNING

POTENTIAL HAZARD

Operating this vehicle through deep or fast flowing water.

WHAT CAN HAPPEN

Tires may float, causing loss of traction and loss of control, which could lead to an accident.

HOW TO AVOID THE HAZARD

Never operate this vehicle in fast flowing water or in deep water.

Check water depth and current before you attempt to cross any water. Water should not go above footrests.

Remember that wet brakes may have reduced stopping ability. Test your brakes after leaving water. If necessary, apply them several times to let friction dry out the pads.

⚠ WARNING

POTENTIAL HAZARD

Improperly operating in reverse.

WHAT CAN HAPPEN

You could hit an obstacle or person behind the vehicle, resulting in serious injury.

HOW TO AVOID THE HAZARD

When you select reverse gear, make sure there are no obstacles or people behind the vehicle. When it is safe to proceed, go slowly. On 2-UP models, take account that the passenger can obstruct your view.

⚠ WARNING

POTENTIAL HAZARD

Operating this vehicle with improper tires, or with improper or uneven tire pressure.

WHAT CAN HAPPEN

Use of improper tires on this vehicle, or operation of this vehicle with improper or uneven tire pressure, may cause loss of control, tire blow outs, tire to move around on its rim, and increases the risk of an accident.

HOW TO AVOID THE HAZARD

Always use the size and type of tires specified in this Operator's Guide for this vehicle.

Always maintain proper tire pressure as described in this Operator's Guide.

Always replace wheels or tires that are damaged.

⚠ WARNING

POTENTIAL HAZARD

Operating this vehicle with improper modifications.

WHAT CAN HAPPEN

Improper installation of accessories or modification of this vehicle may cause changes in handling which in some situations could lead to an accident.

HOW TO AVOID THE HAZARD

Never modify this vehicle through improper installation or use of accessories. All parts and accessories added to this vehicle should be approved by BRP and should be installed and used according to instructions. If you have questions, consult an authorized Can-Am dealer.

NEVER install a passenger seat (1-UP models) or use the racks to carry a passenger.

Modification of the vehicle to increase speed and performance may violate the terms and conditions of your vehicle limited warranty. In addition, certain modifications including the removal of engine or exhaust components are illegal under most laws.

⚠ WARNING

POTENTIAL HAZARD

Overloading this vehicle, carrying or towing cargo improperly.

WHAT CAN HAPPEN

Could cause changes in vehicle handling which could lead to an accident.

HOW TO AVOID THE HAZARD

Never exceed the stated load capacity for this vehicle including operator and passenger (2-UP models) as well as other loads and added accessories.

Cargo should be properly distributed and securely attached.

Reduce speed when carrying cargo or pulling a trailer. Allow greater distance for braking.

Always follow the instructions in this Operator's Guide for carrying cargo or pulling a trailer.

⚠ WARNING

V03M01Q

POTENTIAL HAZARD

Transporting flammable or dangerous material can lead to explosions.

WHAT CAN HAPPEN

This can cause serious injury or death.

HOW TO AVOID THE HAZARD

Never transport flammable or dangerous material.

PRE-RIDE INSPECTION

⚠ WARNING

Perform a pre-ride inspection before each ride to detect any potential problem that could occur during operation. The pre-ride inspection can help you monitor component wear and deterioration before they become a problem. Correct any problem that you discover to reduce the risk of a breakdown or crash.

Before using this vehicle, the operator should always perform the following pre-ride inspection check list.

Pre-Ride Inspection Check List

What to Do Before Starting the Engine (Key OFF)

ITEMS TO BE INSPECTED	INSPECTION TO PERFORM	✔
Engine oil	Check engine oil level.	
Coolant	Check coolant level.	
Brake fluid	Check brake fluid level	
Leaks	Check for any leaks under vehicle	
Throttle lever	Activate throttle lever several times to ensure it operates freely. It must return to idle position when released	
Parking brake	Apply parking brake and check if it operates properly	
Tires	Check tire pressure and condition. Refer to *SPECIFICATIONS* and adjust according to load.	
Wheels	Check wheels for damage and for abnormal play, and Make sure that lug nuts are tightened. Refer to *WHEELS AND TIRES* in *MAINTENANCE PROCEDURES* for torque specification.	
Radiator	Check cleanliness of the radiator	
Drive shaft boots	Check drive shaft boots and protectors condition	
Seat(s)	Check if operator seat is in place and properly latched	
	Check if passenger seat is in place and properly latched (2-UP Models)	
	Check the passenger backrest and grab handles condition (2-UP Models)	

ITEMS TO BE INSPECTED	INSPECTION TO PERFORM	✔
Cargo	If you transport a cargo, respect the load capacity. Refer to *LOADING THE CARGO RACKS* Ensure cargo is properly secured to the racks	
	If you are pulling a trailer or another equipment: – Check hitch and trailer ball condition – Respect the tongue capacity and towing capacity as indicated on the label affixed to the hitch or refer to *SPECIFICATIONS* – Ensure trailer is properly secured to hitch	
Storage compartment	Check if rear storage compartment is properly latched	
Chassis and suspension	Check underneath vehicle for any debris on chassis or suspension and clean them properly	

What to Do Before Starting the Engine (Key ON)

ITEMS TO BE INSPECTED	INSPECTION TO PERFORM	✔
Multifunction gauge	Check operation of indicator lamps in multifunction gauge (during first few seconds of key ON)	
	Check for messages on multifunction gauge	
Lights	Check operation and cleanliness of headlights and taillight	
	Check operation of low and high beams	
	Check operation of brake light	
Fuel level	Check the fuel level.	

What to Do After the Engine is Started

ITEMS TO BE INSPECTED	INSPECTION TO PERFORM	✔
Steering	Check if steering operates freely by completely turning it from side to side	
Shift lever	Check operation of shift lever (P, R, N, H and L)	
2WD/4WD selector	Check operation of 2WD/4WD selector	

ITEMS TO BE INSPECTED	INSPECTION TO PERFORM	✔
Brakes	Drive forward slowly a few feet and apply brake lever and brake pedal individually. The brakes must fully apply. Lever and pedal must fully return when released	
Emergency engine stop switch	Check that the emergency engine stop switch is working properly	
Ignition switch	Check if ignition switch is working properly by restarting and stopping the engine	

RIDING THE VEHICLE

To fully appreciate the pleasures and excitement of riding this vehicle, there are some basic rules and tips that you MUST follow. Some may be new to you while others may be common sense or obvious.

Please take the time to study this Operator's Guide and all on-product safety labels as well as the *SAFETY VIDEO* that came with this vehicle. They more completely describe what you should know about this vehicle before riding it.

Whether you are a new user or an experienced rider, it is important for your personal safety that you know the controls and features of this vehicle. Equally important is knowing how to properly ride.

This is a high performance ATV for off-road use only. Inexperienced riders may overlook risks and be surprised by the specific behavior of this ATV in any terrain condition.

We recommend following the age recommendation indicated on the safety label affixed on the unit. Even though a person may be within the age group for which this vehicle is recommended, he may not have the skills, abilities, or judgment needed to operate this vehicle safely and may be involved in a serious accident.

Individuals with cognitive or physical impairments or who are high risk takers have an increased exposure to overturns or collisions which may result in injury including death.

Not all vehicles are the same. Each has its own unique performance characteristics, controls and features. Each will ride and handle differently.

Become completely familiar with the operational controls and the general operation of the vehicle before venturing into off road conditions. Practice driving in a suitable area free of hazards and feel the response of each control. Drive at low speeds. Higher speeds require greater experience, knowledge and suitable riding conditions.

Riding conditions vary from place to place. Each is subject to weather conditions which may radically change from time to time and from season to season.

Riding on sand is different than riding on snow or through forests or marshes. Each location may require a greater degree of awareness and skill. Show good judgement. Always proceed with caution. Please do not take any unnecessary risks that could leave you stranded or possibly injured.

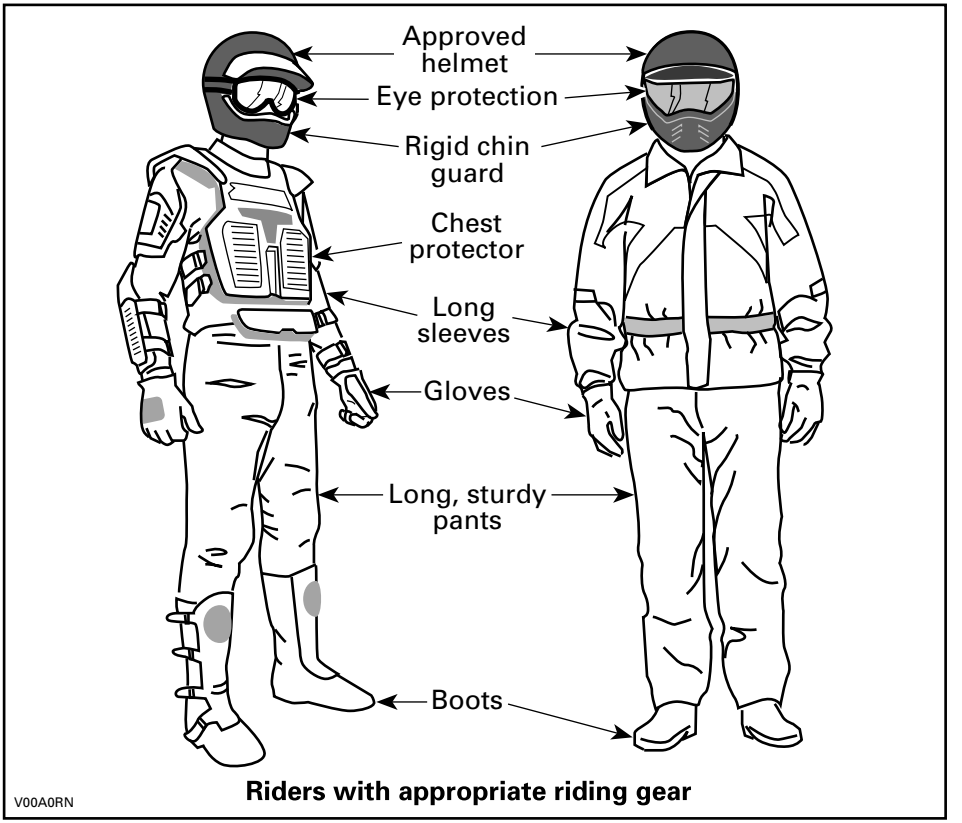
Never assume that the vehicle will go everywhere safely. Sudden changes in terrain caused by holes, depressions, banks, softer or harder "ground" or other irregularities may cause the vehicle to topple or become unstable. To avoid this, slow down and always observe the terrain ahead. If the vehicle does begin to topple or tip over, the best advice is to immediately get off AWAY from the direction of the tip over!

We encourage you to have an Annual Safety Inspection of your vehicle. Please contact an authorized BRP dealer for further details. Though not required, it is recommended that an authorized BRP dealer performs the preseason preparation of your vehicle. Each visit to your authorized BRP dealer is a great opportunity for your dealer to verify if your vehicle is included in any safety campaign. We also urge you to visit your authorized BRP dealer in a timely manner if you become aware of any safety related campaigns.

See an authorized BRP dealer for available accessories you may require.

Riding Gear

Actual weather conditions should help you decide how to dress. Dress for the coldest weather expected. Thermal underwear next to the skin also provides a good insulation. It is important that the operator always wears the appropriate protective riding gear and apparel, including an approved helmet, eye protection, boots, gloves, a long sleeved shirt and pants. This type of clothing will provide you protection from some of the minor hazards you may encounter en route. The operator must never wear loose clothing such as a scarf that may get entangled in the vehicle or on tree branches and shrubs. Depending on conditions, anti-fogging goggles or sunglasses may be required. Different colored lenses available for goggles or sunglasses help you distinguish terrain variations. Sunglasses should only be worn during the daytime.



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Riders with appropriate riding gear

Carrying a Passenger

1-UP Models

This vehicle is designed to carry ONE (1) operator only. Do not install passenger seat or use the racks to carry a passenger.

2-UP Models

This vehicle is designed specifically to carry an operator and ONE (1) passenger only. The passenger must be seated on the designated passenger's seat and hold on to the grab handles at all times. NEVER install other passenger's seat other than the one recommended by BRP. Do not use the racks or their location to carry passenger(s). Carrying more than one (1) passenger may affect the stability and your control of the vehicle. When the passenger seat is not installed,, the vehicle becomes a ONE-RIDER vehicle (1-UP model) and NO PASSENGER must be allowed on it.

Recreational Riding

Respect the rights and limitations of others. Stay away from areas designated for other types of off road use. This includes snowmobile trails, equestrian trails, cross country ski trails, mountain bike trails, etc. Never assume there are no other users on the trail. Always stay to the complete right of the trail and do not zigzag to one side of the trail then the other. Be prepared to stop or pull off to the side if another trail user appears in front of you.

Join a local ATV club. It will provide you with a map and advice or inform you where you can ride. If a club does not exist in your area, help to start one. Group riding and club activities provide a pleasurable, social experience.

Always keep a safe distance from other riders. Your judgment of speed, terrain conditions, weather, mechanical condition of your vehicle and the "trust in judgment" you have in others around you will help you make a better choice of appropriate safe distance. This vehicle, like any other motorized vehicle, cannot stop "on a dime". Allow greater distance for braking. On 2-UP models, the vehicle handling, stability and braking distance may be affected when riding with a passenger. Safely reduce speed when riding with a passenger.

Before you ride, tell someone where you are planning to travel and your expected time of return.

Depending on the length of your ride, carry additional tools , drinking water, food and emergency equipment. Find out where you can get additional gasoline and oil. Be prepared for the possible conditions you may encounter.

First aid kit	Adjustable wrench
Mobile phone	Knife
Friction tape	Flashlight
A rope	Colored lens goggles
Spare light bulbs	Trail map
Provided tool kit	Snack

Environment

One of the benefits of this vehicle is that it can take you off the beaten path away from most communities. However, you should always respect nature and the rights of others to enjoy it. Do not ride in environmentally sensitive areas. Do not drive over forest crops or shrubs nor cut down trees or take down fencing nor spin your wheels and destroy the terrain. "Tread Lightly".

This vehicle can cause OHV wildfires if debris builds up near the exhaust or other engine hot spots and ignites then falls off into dry grass. Avoid riding in wet areas, through muskeg or tall grass, where debris can build up. Should you ride in those areas, inspect and remove all debris from your engine and hot spots.

Chasing wildlife is in many areas illegal. Wildlife can die of exhaustion after being chased by a motorized vehicle. If you encounter animals on the trail, stop and observe quietly and with caution. It will be one of the better memories of your life.

Observe the rule "what you take in, carry out". Do not litter. Do not start campfires unless you have permission to do so and then only away from dry areas. The hazards you may create on the trail may cause injury to others or yourself, even at a later date.

Respect farm lands. Always obtain the permission of the landowner before riding on private land. Respect crops, farm animals and property lines. If you come to a closed gate, close it again behind you.

Finally, do not pollute streams, lakes or rivers and do not modify the engine or exhaust system, or remove any of its components.

Design Limitation

Although the vehicle is exceptionally rugged for its class, it is still a light vehicle by definition and its operation must be restricted to its proper purpose.

The addition of weight to any part of the vehicle changes its gravitational stability and modifies its performance.

Off-Road Operation

The very nature of off-road operation is dangerous. Any terrain, which has not been specially prepared to carry vehicles, presents an inherent danger where angularity, terrain substance and exact steepness are unpredictable. The terrain itself presents a continual element of danger, which must be knowingly accepted by anyone venturing over it.

An operator who takes a vehicle off-road should always exercise the utmost care in selecting the safest path and keeping close watch on the terrain ahead of him. On no account should the vehicle be operated by anyone who is not completely familiar with the driving instructions applicable to the vehicle, nor should it be operated on steep or treacherous terrain.

Riding Techniques

Information in this guide is limited. Increase your knowledge and improve your skills by following a certified training course.

Care, caution, experience and driving skill are the best precautions against the hazards of vehicle operation.

Respect and follow all posted trail signs. They are there to help you and others.

In off-road operation, power and traction, not speed, are important. Never drive faster than visibility and your own ability to select a safe route permits.

Constantly watch the terrain ahead for sudden changes in slopes or obstacles, such as rocks or stumps, that may cause loss of stability, resulting in tip over or rollover.

It is also wise to know the terrain condition on the other side of a hill or bank. All too often there exists a sharp drop-off that is impossible to negotiate or descend.

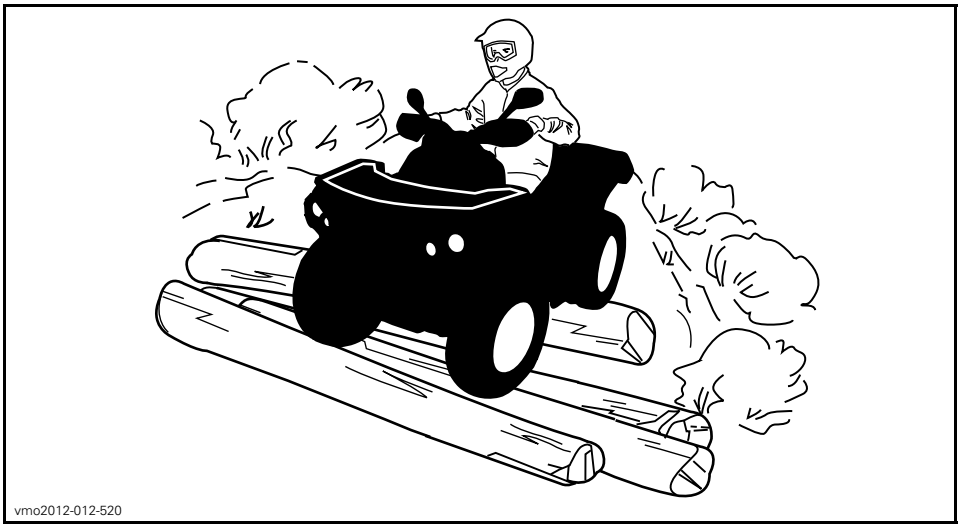
Whenever there is the slightest doubt that the vehicle can safely negotiate an obstacle or a particular piece of terrain, always choose an alternate route.

Always use proper riding techniques to avoid vehicle overturns on hills and rough terrain and in turns.

Body Position

To maintain proper control, it is strongly advised that you keep your hands on the handlebar and within easy reach of all controls. The same holds true for your feet on the footpegs. To minimize the possibility of a leg or foot injury, keep your feet on the footpegs at all times. Do not direct your toes outwards nor extend your feet out to assist in turning as they can be hit or be snagged on passing obstacles, or may come into contact with the wheels.

Even though there is a suspension on this vehicle, there are "washboard" or rough terrain conditions that will make you feel uncomfortable and can even cause a back injury. "Posting" or riding in a crouched position will often be required. Slow down and allow your flexed legs to absorb part of the impact energy.



2-UP Models

The passenger must keep his hands on the grab handles and his feet on footrests at all times.

The passenger must synchronize his movements with the operator.

Crossing Roads

If you have to cross a road, the lead driver should get off his vehicle, then observe and give directions to the other riders. The last person after crossing then assists the lead driver to cross. Do not travel on sidewalks. They are designated for pedestrian use.

Turning

Practice turning at low speeds before attempting to turn at faster speeds.

Keep both hands on handlebars and feet on footpegs.

Maintain a constant speed or a slight acceleration during turn.

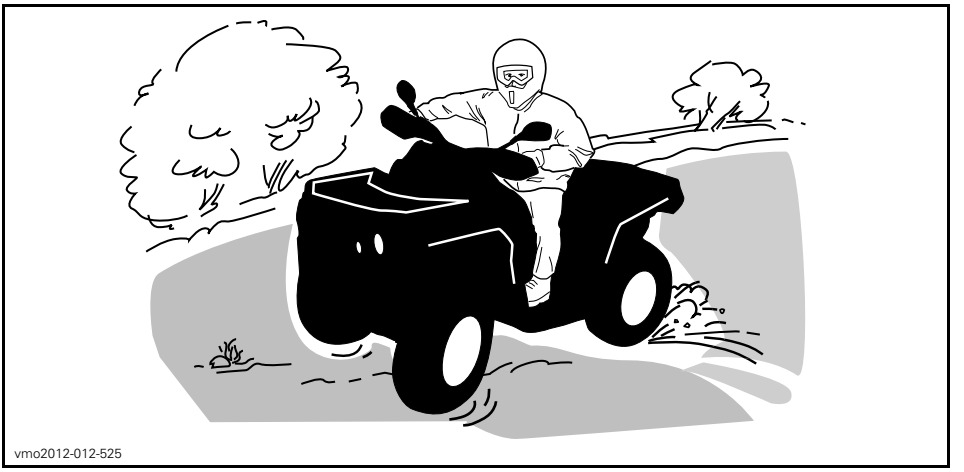
To reduce the risk of rollovers:

– Use care when turning.
  - Do not turn the handlebar too far or too fast for your speed and environment. Adjust steering inputs accordingly.
  - Slow down before entering a turn. Avoid hard braking during a turn.
  - Avoid sudden or hard acceleration when turning, even from a stop or low speed.
– Never attempt donuts, skids, slides, fishtails, jumps, or other stunts. If vehicle starts to skid or slide, steer in the direction of the skid or slide. Never slam the brakes and lock the wheels.
– Avoid paved surfaces. This vehicle is not designed to operate on paved surfaces and is more likely to roll over. If you must drive on pavement, turn gradually, go slowly, and avoid abrupt acceleration and braking.

Avoid sudden inputs to steering, throttle or brakes while turning.

⚠ WARNING

Do not attempt turns at excessive speed.



If you do get into a slide or skid, it may help to turn the handlebar in the direction of the skid until you regain control. Never jam the brakes and lock the wheels.

⚠ WARNING

The tires of this vehicle are not suited for paved road use. Also this vehicle is not equipped with a rear differential (rear wheels are always turning at the same speed). For these reasons, pavement may seriously affect the handling and control of the vehicle.

Braking

Always keep both hands on handlebars and feet on footpegs when braking.

Practice braking to get familiar with the brake response.

- Do it at low speed first, then increase the speed.
- Practice braking in straight line at different speeds and different braking force.
- Practice emergency braking; optimal braking is obtained in straight line, with high force applied, without locking the wheels.

Remember, braking distance depends on vehicle speed, load and the type of surface. Also, the tires and brakes conditions play a major role.

NOTE: If going forward the vehicle weight is transferred to the front wheels when braking. To obtain greater stopping efficiency, the brake system distributes more braking force to the front wheels. This will affect vehicle handling and steering control when braking vigorously. Take it into account when braking.

Reverse Operation

When operating in reverse, check that the path behind the vehicle is free of people or obstacles. Proceed slowly and avoid sharp turns.

When riding on a 2-UP model, take into account that the passenger can obstruct your view. Disembark the passenger if necessary.

We recommend sitting on your ATV when operating in reverse. Avoid standing up. Your weight could shift forward against throttle lever, causing an unexpected acceleration.

Obstacles

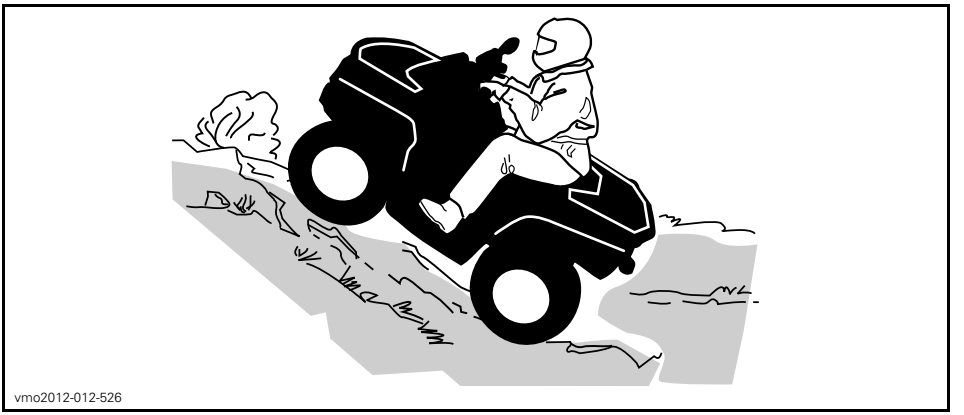
Obstacles in the "trail" should be traversed with caution. This includes loose rocks, fallen trees, slippery surfaces, fences, posts, and embankments and depressions. You should avoid them whenever possible. Remember that some obstacles are too large or dangerous to cross and should be avoided. Small rocks or fallen trees may be safely crossed approach at a 90° angle. Stand on the footrests while keeping your knees flexed. Adjust speed without losing momentum and do not "gun" the throttle. Hold handlebar (operator) or grab handles (passenger on 2-UP models) firmly. Place body weight rearwards (operator and passenger 2-UP models) and proceed. Do not try to lift the vehicle front wheels off the ground. Be aware that the object may be slippery or may move while crossing.

When riding on 2-UP models, the operator is responsible for the safety of the passenger; in doubt, disembark the passenger before proceeding.

Uphill Driving

1-UP Models

Before trying to climb a hill, keep these things in mind. Hill Climbing should only be attempted by experienced operators. Start on shallow slopes. Always drive straight uphill and keep your body weight forward towards the top of the hill. Keep your feet on the footrests, shift your ATV into a lower gear and accelerate before you start to climb. Try to keep a steady speed and go easy on the throttle to avoid acceleration. Abrupt slope or terrain variation or rolling one wheel over an obstacle could have a big impact on the stability as it will lift the front of the vehicle increasing the risk of tipping over. Some hills are too steep to safely stop or recover from after an unsuccessful climbing attempt. Try to avoid steep inclines. If you're not careful, you could tip over when going up hills. If the hill is too steep and you cannot proceed or the vehicle begins to roll backwards, apply the brake, being careful not to slide. Dismount then use the "K" turn (while walking back, next to the vehicle on the up hill side and with a hand on the brake lever, slowly back the rear of the vehicle toward the top of the hill then drive downhill). Always walk or dismount on the upside of the slope while keeping clear of the vehicle and its rotating wheels. Do not try to hold on to the vehicle if it begins to topple. Stay clear. Do not ride over the crest of the hill at high speed. Obstacles, including sharp drop-offs, may exist.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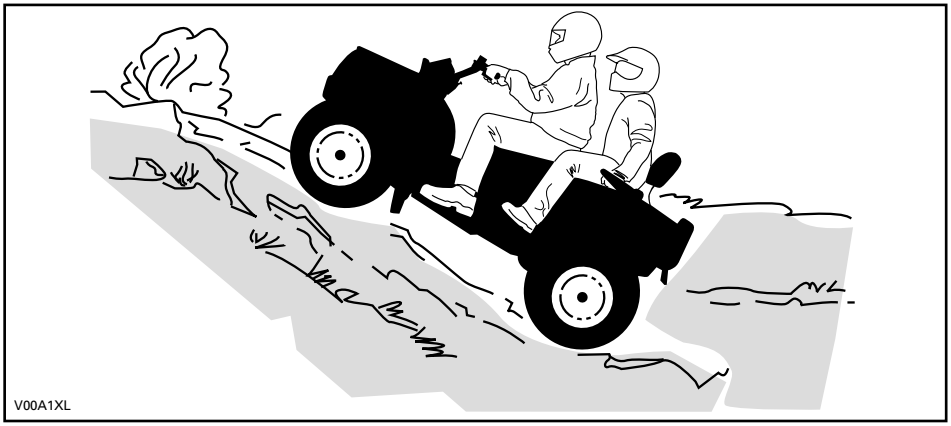
2-UP Models

The passenger must synchronize his movements with the operator. The passenger must remain seated at all times.

Do not forget, the operator is responsible for the safety of the passenger. In doubt, disembark the passenger before climbing a hill.

Before trying to climb a hill, keep these things in mind. Hill Climbing should only be attempted by experienced operators. Start on shallow slopes. Always drive straight uphill. Operator and passenger must keep their body weight forward, towards the top of the hill. Keep feet on the footrests, shift the ATV into a lower gear and accelerate before you start to climb. Try to keep a steady speed and go easy on the throttle to avoid acceleration. Abrupt slope or terrain variation or rolling one wheel over an obstacle could have a big impact on the stability as it will lift the front of the vehicle increasing the risk of tipping over. Some hills are

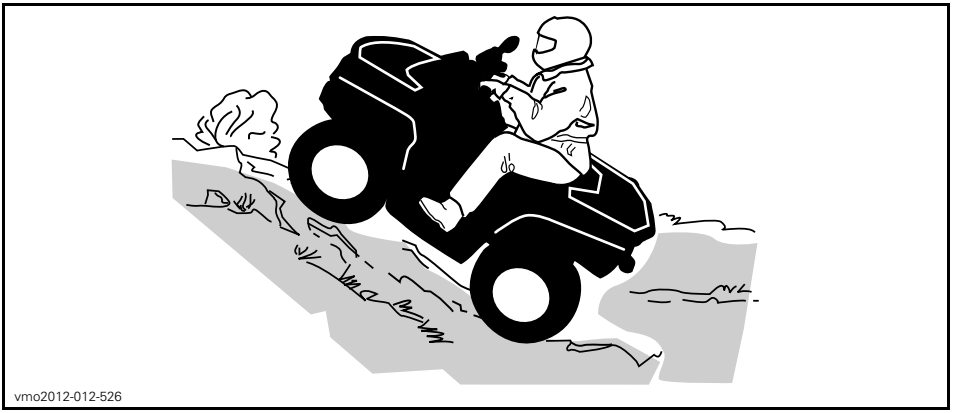
too steep to safely stop or recover from after an unsuccessful climbing attempt. Try to avoid steep inclines. If you're not careful, you could tip over when going up hills. If the hill is too steep and you cannot proceed or the vehicle begins to roll backwards, apply the brake, being careful not to slide. Dismount, passenger first, then use the "K" turn (while walking back, next to the vehicle on the up hill side and with a hand on the brake lever, slowly back the rear of the vehicle toward the top of the hill then drive downhill). Always walk or dismount on the upside of the slope while keeping clear of the vehicle and its rotating wheels. Do not try to hold on to the vehicle if it begins to topple. Stay clear. Do not ride over the crest of the hill at high speed. Obstacles, including sharp drop-offs, may exist. The passenger should get on the vehicle only when the vehicle has returned to a safe location.



Vehicle Behaviors

Due to configuration, this vehicle has excellent climbing ability, so much so that it is possible to tip over before traction is lost. For example, it is common to encounter terrain situations where the top of the hill has eroded to a point that the hill peak rises very sharply. The vehicle can readily negotiate such a condition, however, in doing so, when the front of the vehicle is driven to a point that the vehicle's balance moves rearward, a tip over can occur.

The same situation may apply if an embedded object causes the front of the vehicle to climb more than desired. If such a situation occurs take an alternate route. Be aware of side hilling dangers when doing so. Refer to *SIDE HILLING*.

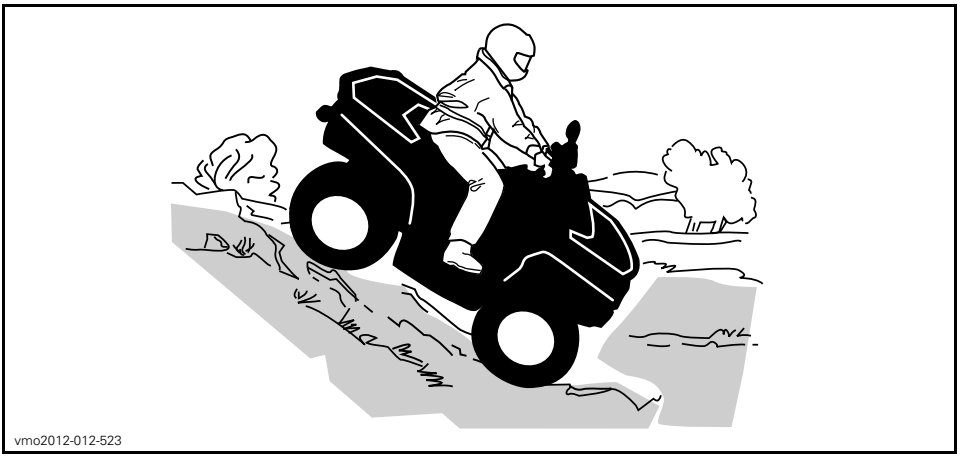


Downhill Driving

1-UP Models

Keep your body weight rearwards. Stay seated. Apply the brake gradually to prevent skidding. Do not "coast" down the slope using solely engine compression or in neutral gear.

Decelerating while negotiating a slippery downhill slope could "toboggan" the vehicle. Maintain steady speed and/or accelerate slightly to regain control. Try to avoid steep inclines. If you're not careful, you could tip over when going down hills.



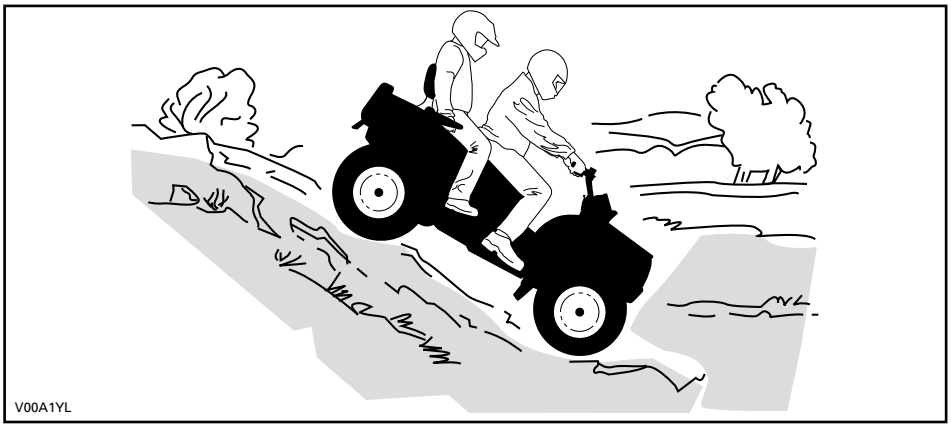
2-UP Models

The operator is responsible for the safety of the passenger; in doubt, disembark the passenger before proceeding.

Always remember that the vehicle handling, stability and braking distance may be affected when riding with a passenger.

The passenger must synchronize his movements with the operator. The passenger must remain seated at all times.

Operator and passenger must keep their body weight rearwards. Apply the brake gradually to prevent skidding. Do not "coast" down the slope using solely engine compression or in neutral gear. Try to avoid steep inclines. If you're not careful, you could tip over when going down hills.



Vehicle Behaviors

This vehicle can climb slopes that are steeper than it can safely descend. Therefore, it is essential to ensure that a safe route exists to descend a slope before you climb it.

Side Hilling

This is one of the most risky types of riding since it may drastically change the balance of the vehicle. It should be avoided whenever possible. However, if it is necessary to do so , it is important that you ALWAYS keep your body weight on the upside of the slope and be prepared to dismount on that side should the vehicle begin to topple.

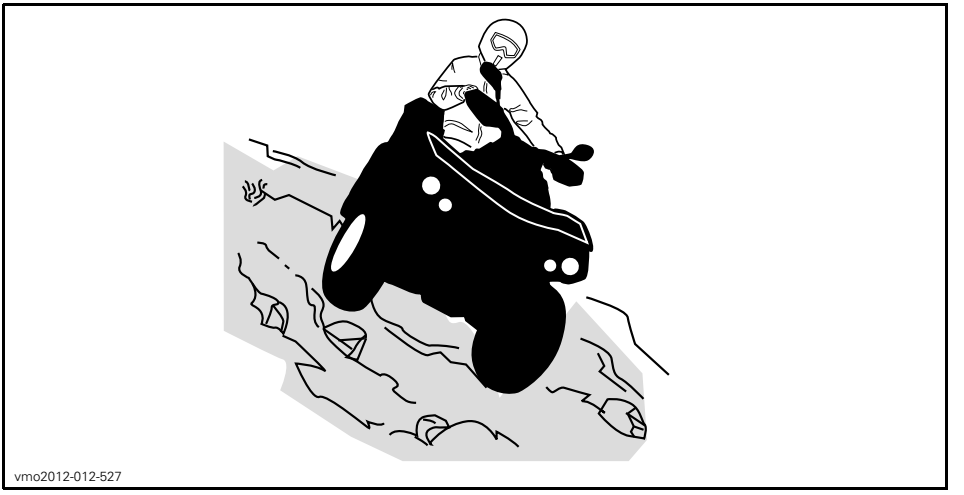
Avoid all objects or depressions that will intensify the raising of one side of the vehicle higher than the other, thus causing rollover.

⚠ WARNING

Do not try to stop or save the vehicle from damage.

⚠ WARNING

Be careful when loading and transporting liquid reservoirs. They can affect vehicle stability when side hilling by pulling downhill and increasing the risk of a roll over.



2-UP Models

The passenger must synchronize his movements with the operator. The passenger must remain seated at all times.

The operator is responsible for the safety of the passenger; in doubt, disembark the passenger before proceeding.

Drop-Offs

This vehicle will "bottom-out" and usually stop if either the front or rear wheels are driven over a drop-off. If the drop is sharp or deep, the vehicle will nose dive and tip over.

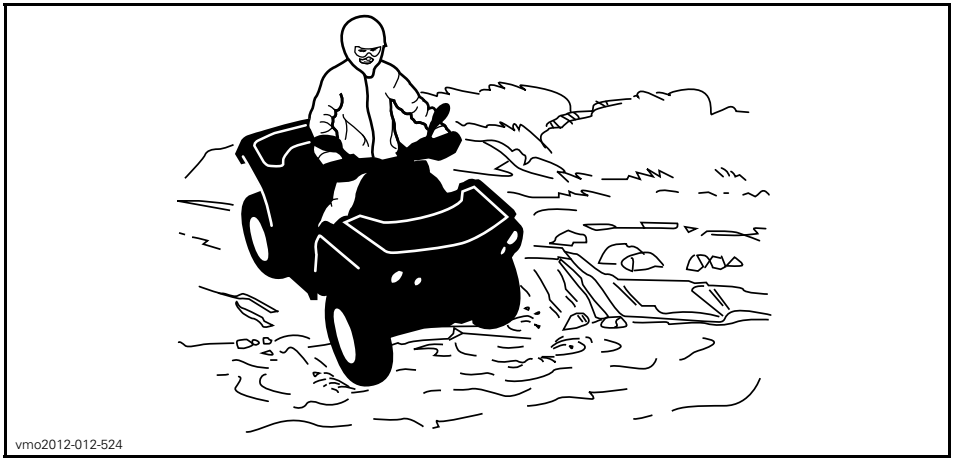
When riding on a 2-UP model, the operator is responsible for the safety of the passenger; in doubt, disembark the passenger before proceeding.

⚠ WARNING

Avoid negotiating drop-offs. Reverse and select an alternate route.

Crossing Water

Water can be a unique hazard. If it is too deep the vehicle may "float" and topple. Check the water depth and current before you attempt to cross any water. Water should not go above the footrest. Be wary of slippery surfaces such as rocks, grass, logs, etc., both in the water and on its banks. A loss of traction may occur. Do not attempt to enter the water at high speed. The water will act as a brake and could throw you off the vehicle, on the ground.



Wet brakes will affect the braking ability of your vehicle. Make sure you dry the brakes by applying them several times after the vehicle leaves the water, mud or snow. Allow greater distance for braking.

Mud or marsh lands may be encountered near water. Be prepared for sudden "holes" or changes in depth. Similarly so, be watchful of hazards such as rocks, logs, etc., partially covered by vegetation.

Riding on Ice

If your route crosses frozen waterways, make sure the ice is thick enough and sound enough to support the total weight of yourself, your passenger (2-UP models), the vehicle and its load. Be ever watchful of open water it is a sure indication that the ice thickness will vary.

On 2-UP models, the operator is responsible for the safety of the passenger; in doubt, do not attempt to cross.

Ice will also affect the control of the vehicle. Slow down and do not "gun" the throttle. This will only result in spinning of the tires and possible tip over of the vehicle or passenger ejection (2-UP models). Avoid rapid braking. This again will possibly result in an uncontrolled slide and tip over of the vehicle or passenger ejection (2-UP models). Slush should be avoided at all times since it could block the operation or controls of the vehicle.

Riding on Snow Covered Surfaces

When performing the pre-ride inspection, pay special attention to locations on the vehicle where snow and/or ice accumulations may obstruct visibility of the taillight and reflectors, clog ventilation openings, block the radiator and fan, and interfere with the movement of control levers, switches and brake pedal. Before starting with your ATV check the steering, throttle and brake lever and pedal controls for interference free operation.

Whenever an ATV is ridden on a snow covered drive path the tire grip is generally reduced causing the vehicle to react differently to control inputs from the operator. On low grip surfaces, the steering responses are not as crisp and precise, stopping distances are lengthened and acceleration becomes sluggish. Slow down and do not "gun" the throttle. This will only result in spinning of the tires and possibly in an

over steering slide of the vehicle. Avoid hard braking. This will possibly result in a straight line slide of the vehicle. Again, the best advice is to safely reduce speed in anticipation of a maneuver so to give yourself time and distance to regain total vehicle control before it spins out of your control.

As you drive your ATV over a loose snow covered surface, snow dust will be picked up in the wake turbulence of the moving vehicle and transported to contact and accumulate or melt on some exposed components including rotating parts like brake discs. Water, snow or ice may affect the response time of the brake system of your ATV. Even when not required to reduce vehicle speed apply brakes frequently to prevent ice or snow accumulation and to dry brake pads and discs. While doing so in low risk driving situations you will test for grip level and keep yourself alerted to how the vehicle reacts to your control inputs. Always keep brake pedal, footrests, floor boards, brake and throttle levers free of snow and ice. Frequently wipe snow off seat, hand grips, headlights, taillights and reflectors.

The depth of the snow cover may hide rocks, tree stumps or other objects and if it is wet may totally impede the driveability as the vehicle becomes bogged down or completely looses traction in slushy snow. Look far ahead and always be watchful of any visible clues that might indicate the presence of such obstacles. In doubt steer clear. Avoid driving on any frozen body of water before checking that the ice will safely support the ATV, its riders and its load of cargo. Remember that a given thickness of ice may be sufficient to support a snowmobile but not an ATV of an identical weight because of the smaller load bearing surface of the four tire contact patches as compared to that of a snowmobile track and skis.

To maximize comfort and avoid frostbite, always wear clothing and ATV protective equipment appropriate for the weather conditions you will be exposed to during your ride.

At the end of each ride it is a good practice to clean the vehicle body and all moving components (brakes, steering components, drivelines, controls, radiator fan etc.) from any snow or ice accumulations. Wet snow will turn to ice during the shut down period and become more difficult to remove at the next pre-ride inspection.

Riding in snow may reduce the brakes stopping capability. Safely reduce speed and allow greater distance for braking. Snow projection may cause ice build up or snow accumulation on brake components and controls. Apply brakes frequently to prevent ice or snow accumulation.

Riding on Sand

Riding on sand, sand dunes or on snow is another unique experience, but there are some basic precautions that should be observed. Wet, deep or fine sand/snow may create a loss of traction and cause the vehicle to slide, drop off or become "bogged" down. If this occurs look for a firmer base. Again, the best advice is to slow down and be watchful of the conditions. When you ride with a passenger (2-UP models), slow down even more.

When riding in sand dunes it is advisable to equip the vehicle with an antenna type safety flag. This will help make your location more visible to others over the next sand dune. Proceed carefully should you see another safety flag ahead. Since the antenna type safety flag can snag and rebound on your body if caught, do not use it in areas where there are low hanging branches or obstacles. Always remember when riding on a 2-UP model that the vehicle handling and stability may be affected when riding with a passenger.

Riding on Loose Stones

Riding on loose stones or gravel is very similar to riding on ice. They will affect the steering of vehicle possibly causing it to slide or tip over especially at high speeds (resulting in operator and passenger ejection (2-UP models).

Again, the best advice is to slow down and be watchful of the conditions. When you ride with a passenger (2-UP models), slow down even more.

In addition, braking distance may be affected. Remember that "gunning" the throttle or sliding may cause loose stones to be ejected rearwards into the path of another rider. Never do it deliberately.

Working with your Vehicle

Your vehicle can help you perform a number of different LIGHT tasks ranging from snow removal to pulling wood or carrying cargo. A variety of accessories are available from your authorized Can-Am dealer. To prevent possible injury, follow the instructions and warnings that accompany the accessory. Always respect the load limits of the vehicle. Overloading the vehicle can overstress the components and cause failure. Avoid overexerting yourself if you lift or pull heavy loads or manually push the vehicle.

Carrying Loads

⚠ WARNING

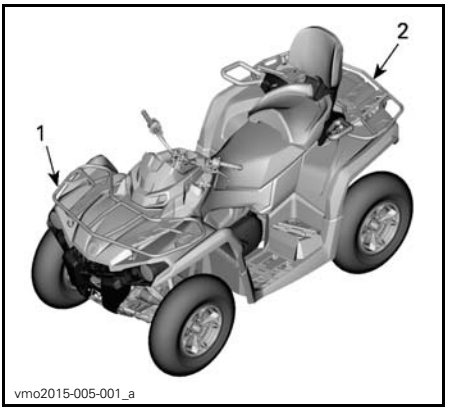
- On 1-UP models, NEVER exceed 90 km/h (55 MPH) if total load is more than 164 kg (360 lb).
- On 2-UP models, NEVER exceed 90 km/h (55 MPH) if total load is more than 132 kg (290 lb).
- On 2-UP models, NEVER exceed 90 km/h with a passenger.

Any load carried on the vehicle including a passenger (2-UP models) and/or the carrying rack(s) will affect the handling, stability and braking distance of the vehicle. Do not exceed the total load allowed for this vehicle, including the weight of operator and passenger cargo, accessories and trailer tongue weight. Refer to *SPECIFICATIONS*. Always make sure the cargo is secured, properly distributed (1/3 of cargo weight in front and 2/3 of cargo weight in back) and cannot interfere with your proper control. Always be aware that the "cargo" may slide or fall off and cause an accident. Avoid cargo that may protrude sideways and get snagged or caught in bushes or other obstacles. Avoid covering and obstructing the headlights or taillight with the cargo.

Always be aware that the "load" may slide or fall off and cause an accident.

⚠ WARNING

The vehicle handling, stability and braking distance are affected when loading racks and using the vehicle. Correct loading and weight distribution are therefore important. Never overload, tow or carry cargo improperly. Always ensure the cargo is safely secured and properly distributed on the rack(s) before operating the vehicle. Safely reduce speed according to terrain conditions when carrying cargo or pulling a trailer, and avoid hills and rough terrain. Allow greater distance for braking, especially on inclined surfaces and when a passenger (2-UP models) is on board. Be careful not to skid or slide. Always secure cargo as low as possible on the rack(s) to reduce the effect of a higher center of gravity. Failure to follow the recommendations here could cause changes in vehicle handling which could lead to an accident.



1. *1/3 of cargo weight*
2. *2/3 of cargo weight*

MAXIMUM LOAD TABLE			
TOTAL LOAD ALLOWED	1-UP MODELS	235 kg (518 lb)	Includes weight of operator, passenger, cargo, accessories and trailer tongue weight.
	2-UP MODELS Mossy Oak	272 kg (600 lb)	
FRONT LOAD		54 kg (120 lb)	Evenly distributed.
REAR LOAD		109 kg (240 lb)	Evenly distributed. Includes rear rack, rear glove box and tongue load.

EXAMPLE OF SUITABLE VEHICLE TOTAL LOADS (MODELS WITH235 KG (518 LB) TOTAL LOAD)				
OPERATOR AND PASSENGER	FRONT RACK	REAR RACK	TONGUE WEIGHT	TOTAL VEHICLE LOAD
92 kg (203 lb)	40 kg (88 lb)	80 kg (176 lb)	23 kg (51 lb)	235 kg (518 lb)

Loading the Cargo Racks

NOTICE When loading or unloading, do not exceed the weight limit of 109 kg (240 lb) for rear load and 54 kg (120 lb) for front load.

Load cargo as low as possible – a higher load can raise the vehicle's center of gravity, which can reduce stability. Position cargo on the rack as evenly distributed as possible.

Secure the load on the cargo rack. Do not secure cargo to other parts of the vehicle. If it is not properly secured, a load may slide or fall off, possibly striking occupants or bystanders; or it may shift during riding, affecting the handling of the vehicle.

Objects that are high may affect visibility for the driver and may act as projectiles in case of an accident. Loads that protrude sideways can get snagged or caught in bush, branches or other obstacles. Avoid covering and obstructing the brake lights with the cargo. Ensure no cargo protrudes outside the cargo rack and that cargo will not interfere with your visibility or control of the vehicle.

Do not overload cargo rack.

Never carry gasoline container(s) or any dangerous liquids on the cargo rack.

Hauling a Load (if Equipped with Hitch)

Never pull a load by attaching it to the bumper or luggage racks; this can cause the vehicle to tip over. Use only the trailer hitch (if installed) to pull a load.

In an emergency situation, use the recovery hook to recover a stuck vehicle. Refer to *RECOVERY HOOKS* in *EQUIPMENT*.

When pulling loads with a chain or cable, ensure that there is no slack before starting and maintain tension while pulling.

When pulling loads with a chain or cable, be sure to brake progressively. The inertia of the load could lead to an impact.

When hauling a load, respect the maximum hauling capacity. See *PULLING A TRAILER*.

⚠ WARNING

A slack in the chain or cable can cause it to break and snap back.

When pulling another vehicle, be sure that someone is controlling the pulled vehicle. They must brake and steer to prevent the vehicle from going out of control.

Reduce your speed when hauling a load and turn gradually. Avoid hills and rough terrain. Never attempt steep hills. Allow more distance for braking, especially on inclined surfaces and when a passenger (2-up models) is on board. Be careful not to skid or slide.

Pulling a Trailer (if Equipped with Hitch)

NOTICE **A BRP approved rear hitch must be properly installed on the vehicle for hauling trailers.**

Riding this vehicle with a trailer substantially increases the risk of toppling, especially on inclined slopes. If a trailer is used behind the vehicle make sure that its hitch is compatible with the one on the vehicle. Make sure the trailer is horizontal with the vehicle. (In some instances a special extension may have to be installed on the vehicle hitch). Use security chains or cables to secure the trailer with the vehicle.

Reduce your speed when pulling a trailer and turn gradually. Avoid hills and rough terrain. Never attempt steep hills. Allow more distance for braking, especially on inclined surfaces and when a passenger (2-up models) is on board. Be careful not to skid or slide.

Improperly loading a trailer may cause a loss of control. Make sure there is at least some weight on the tongue.

Always make sure load is evenly distributed and safely secured on the trailer; an evenly balanced trailer is easier to control.

Always put the shift lever to L (low range) for hauling a trailer – in addition to providing more torque, operating in low range helps account for the increased load on the rear tires.

When stopped or parked, block the vehicle and trailer wheels from possible movement.

Use caution when disconnecting a loaded trailer; it or its load may topple on you or others.

When hauling a trailer, respect the maximum hauling capacity indicated on the label on the hitch and mentioned in *SPECIFICATION*.

Make sure there is at least some weight on the tongue.

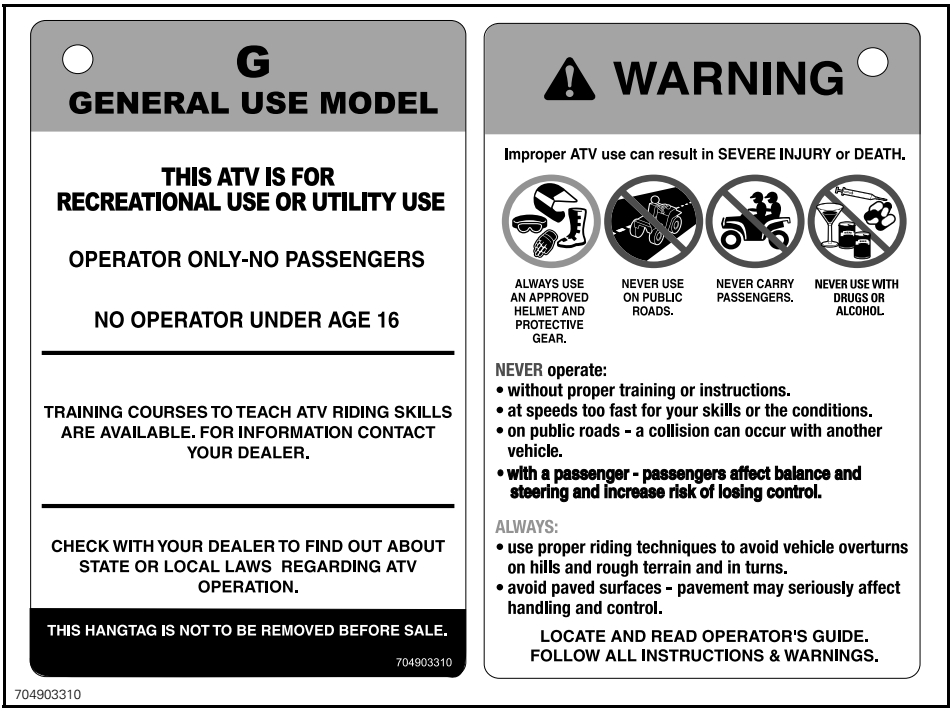
IMPORTANT ON-PRODUCT LABELS (CANADA/UNITED STATES)

Canada/United States

Hang Tag

This vehicle comes with a hang tag and labels containing important safety information.

Any person who rides this vehicle should read and understand this information before riding.



TYPICAL - 1-UP MODELS

G
GENERAL USE MODEL

THIS ATV IS FOR RECREATIONAL USE OR UTILITY USE.

NO OPERATOR UNDER AGE 16

TRAINING COURSES TO TEACH ATV RIDING SKILLS ARE AVAILABLE. FOR INFORMATION CONTACT YOUR DEALER. MAKE SURE TO WATCH SAFETY VIDEO.

CHECK WITH YOUR DEALER TO FIND OUT ABOUT STATE OR LOCAL LAWS REGARDING ATV OPERATION.

This hangtag is not to be removed before sale.

⚠ WARNING

Improper use can result in SEVERE INJURY or DEATH

ALWAYS USE AN APPROVED HELMET AND PROTECTIVE GEAR FOR DRIVER AND PASSENGER.

NEVER USE ON PUBLIC ROADS.

NEVER CARRY MORE THAN 1 PASSENGER.

NEVER USE WITH DRUGS OR ALCOHOL.

NEVER operate:

- without proper ATV training or instructions.
- at speeds too fast for your skills or the conditions.
- on public roads - a collision can occur with another vehicle.
- with a passenger unless passenger seat is securely in place.

THE OPERATOR MUST ALWAYS:

- use proper riding techniques to avoid overturns on hills and rough terrain and in turns.
- avoid paved surfaces - pavement may seriously affect handling and control.
- reduce speed and use extra caution at all times when carrying a passenger - dismount passenger when conditions require.
- make sure passenger reads and understands this label and passenger safety label.

LOCATE AND READ OPERATOR'S GUIDE. FOLLOW ALL INSTRUCTIONS & WARNINGS.

This hangtag is not to be removed before sale. 704903314

704903314

TYPICAL - 2-UP MODELS

⚠WARNING. Operating, servicing and maintaining an off-road vehicle can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm.
To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your vehicle.

For more information go to www.P65Warnings.ca.gov/products/passenger-vehicle

704906872

EN-704906872-DEC

VEHICLE ENGINE DESCRIPTION:

XXXXX

EPA CERTIFIED

NER (NORMALIZED EMISSION RATE) = X

ON A 0 TO 10 SCALE, 0 BEING THE CLEANEST

***NOT TO BE REMOVED PRIOR TO SALE**

704901107

vmo2006-005-009_en

TYPICAL

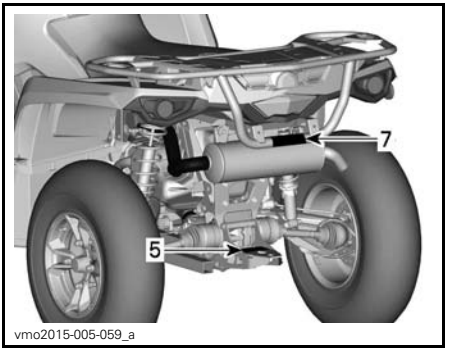
Vehicle Safety Labels

Read and understand all the safety labels on your vehicle.

These labels are affixed to the vehicle for the safety of the operator, passenger (2-UP) or bystanders.

The safety labels on your vehicle should be considered permanent parts of the vehicle. If missing or damaged, they can be replaced free of charge. See an authorized Can-Am dealer.

NOTE: In the event of any discrepancy between this guide and the vehicle, the safety labels on the vehicle have precedence over the labels in this guide.



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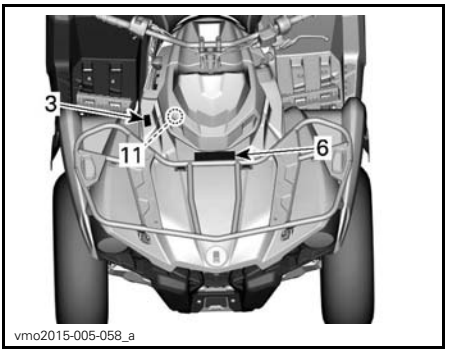

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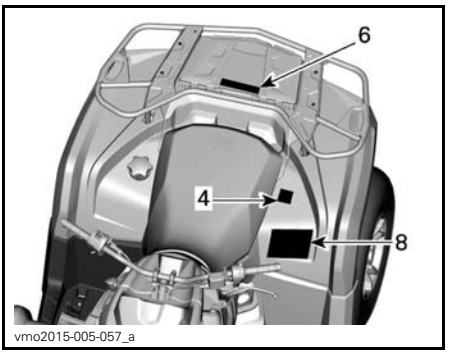

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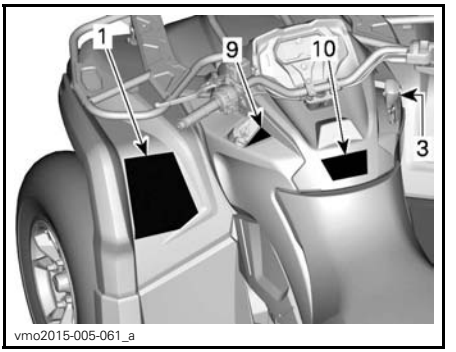

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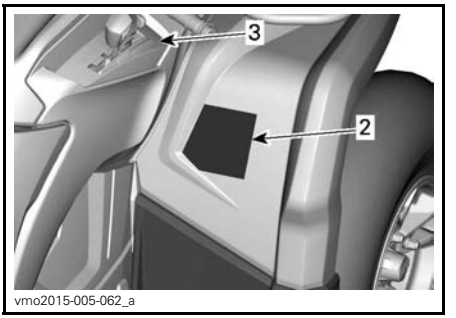

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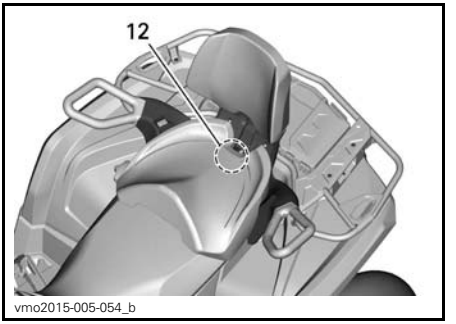

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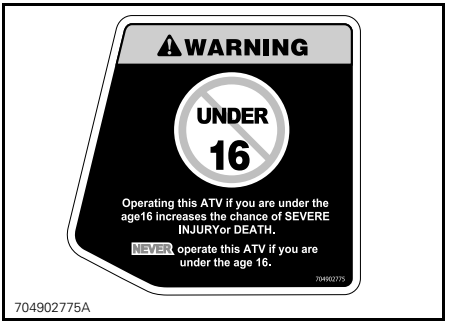
MAX MODELS ONLY

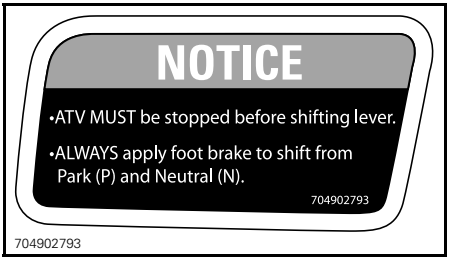
LABEL 1 - 1-UP MODELS

LABEL 1 - 2-UP MODELS

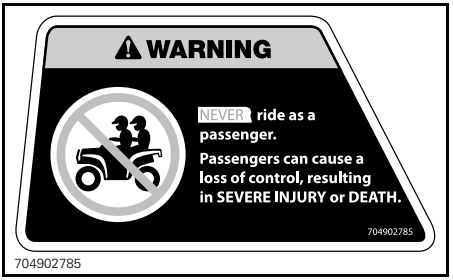


LABEL 2 - 1-UP MODELS

LABEL 2 - 2-UP MODELS



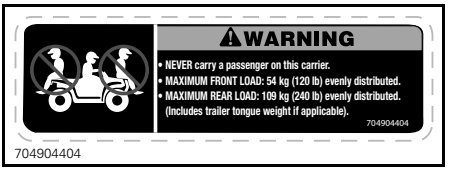
LABEL 3



LABEL 4 - 1-UP MODELS

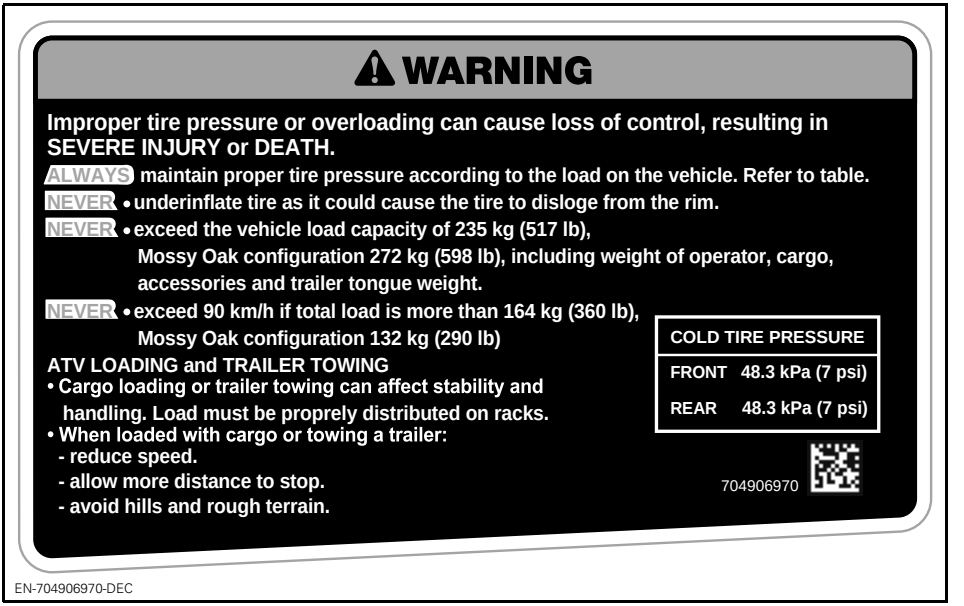
LABEL 4 - 2-UP MODELS

LABEL 5

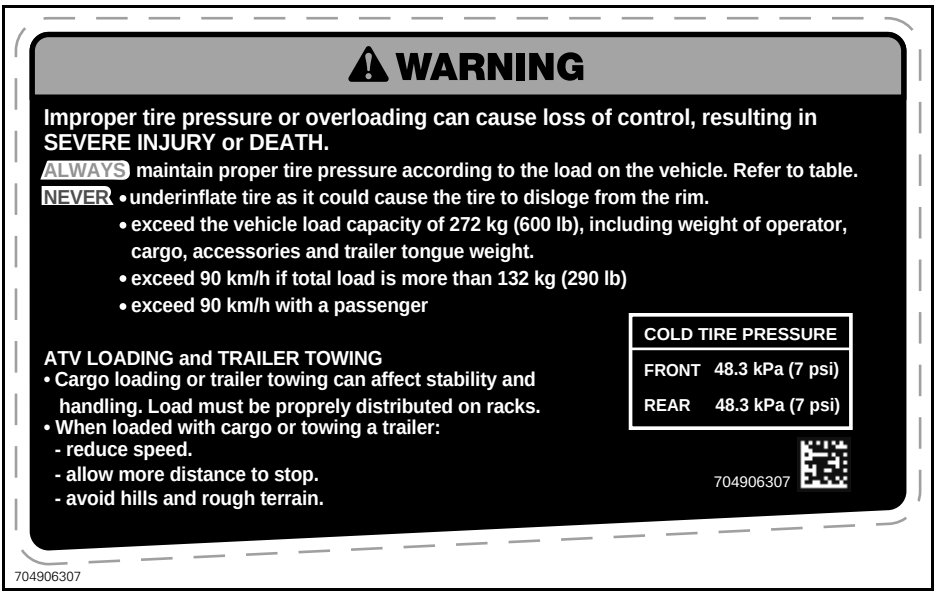


LABEL 6

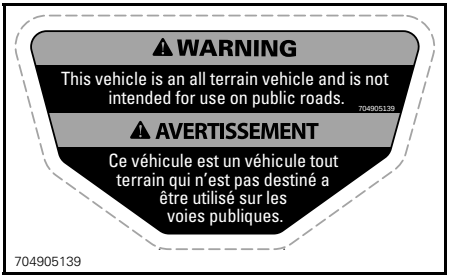
LABEL 7



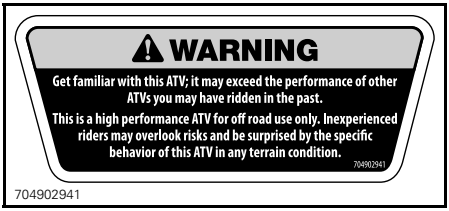
LABEL 8 - 1-UP MODELS



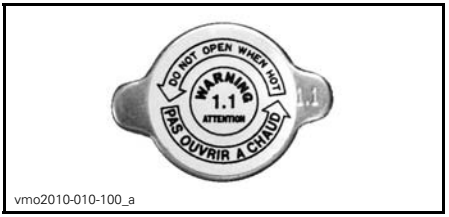
LABEL 8 - 2-UP MODELS



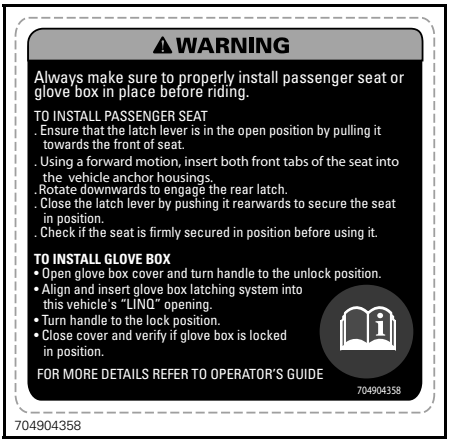
LABEL 9



LABEL 10



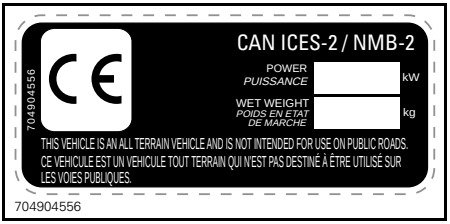
LABEL 11



LABEL 12 - 2-UP MODELS

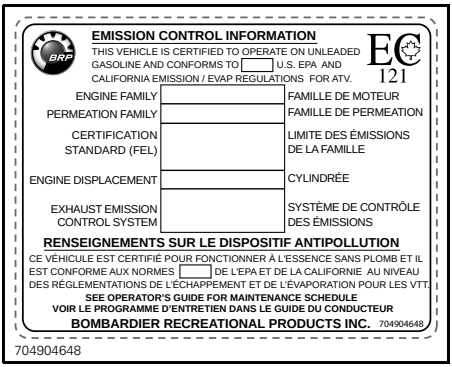
Compliance Labels

These labels indicate vehicle's compliance.



LOCATION: UNDER SEAT, ON THE UPPER FRAME MEMBER

TYPICAL: ALL MODELS IN CANADA AND UNITED STATES EXCLUDING CALIFORNIA



TYPICAL: CALIFORNIA MODELS

TYPICAL - LOCATION: UNDER SEAT, ON THE UPPER FRAME MEMBER

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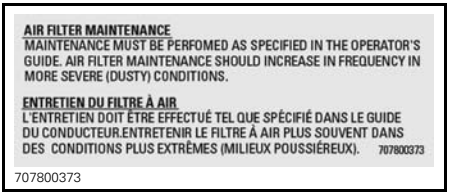
LOCATION: REAR FENDER

Technical Information Labels



707800373

LOCATION: UNDER SEAT, ON THE UPPER FRAME MEMBER

IMPORTANT ON-PRODUCT LABELS (ALL COUNTRIES EXCEPT CANADA/UNITED STATES)

All Countries Except Canada/United States

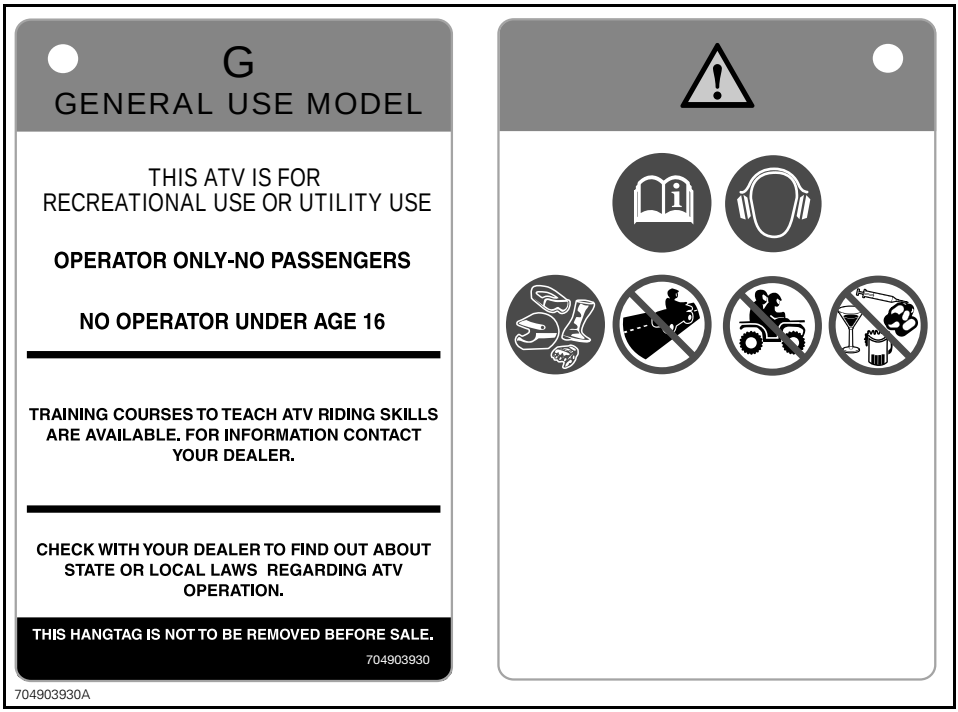
Hang Tag

This vehicle comes with a hang tag and labels containing important safety information.

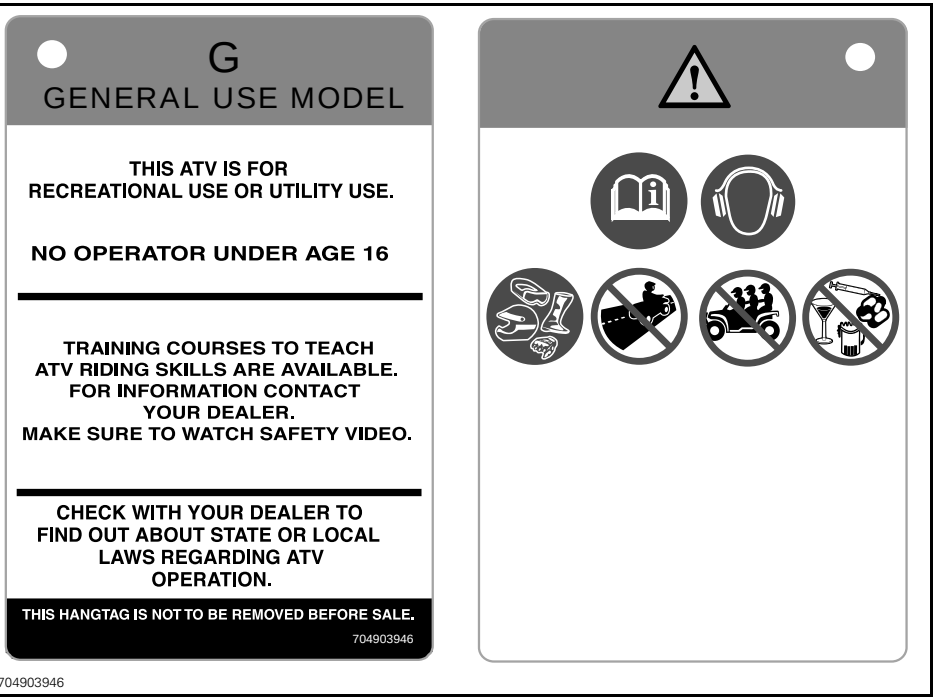
Any person who rides this vehicle should read and understand this information before riding.

⚠ WARNING

- Locate and read operator's guide. Improper ATV use can result in SEVERE INJURY or DEATH. Follow all instructions and warnings.
- Always wear ear protection.
- Always use an approved helmet and protective gear.
- Never use on public roads.
- Never carry passengers on 1-up models and NEVER carry more than one passenger on 2-up models.
- Never use with drugs or alcohol.



TYPICAL - 1-UP MODELS



TYPICAL - 2-UP MODELS

TYPICAL: APPLICABLE WHEN EQUIVALENT TO A MODEL CERTIFIED TO US EPA STANDARDS

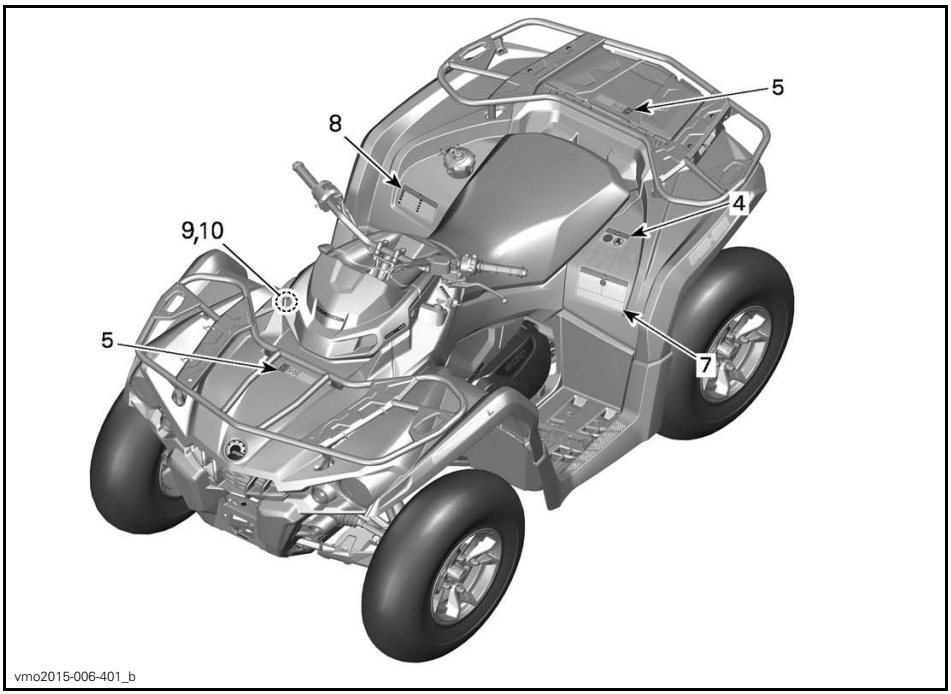
Vehicle Safety Labels

Read and understand all the safety labels on your vehicle.

These labels are affixed to the vehicle for the safety of the operator, passenger (2-UP) or bystanders.

The safety labels on your vehicle should be considered permanent parts of the vehicle. If missing or damaged, they can be replaced free of charge. See an authorized Can-Am dealer.

NOTE: In the event of any discrepancy between this guide and the vehicle, the safety labels on the vehicle have precedence over the labels in this guide.



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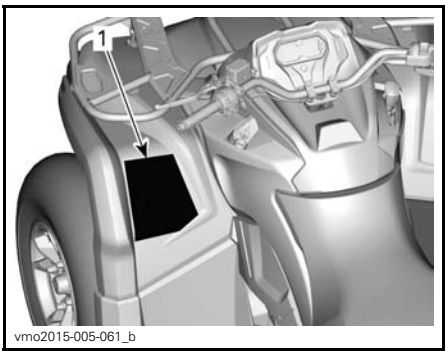

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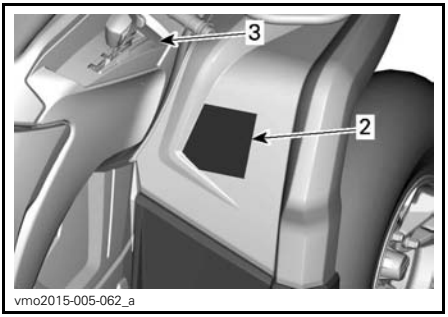
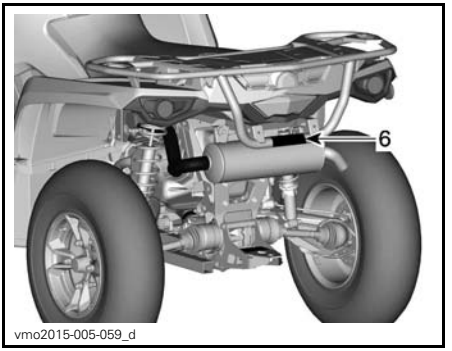
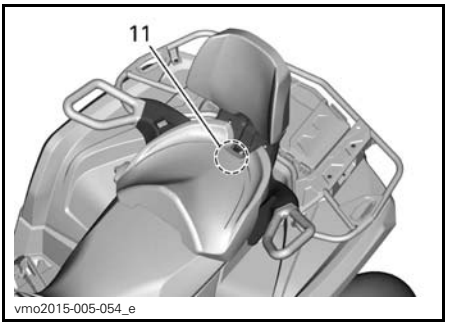
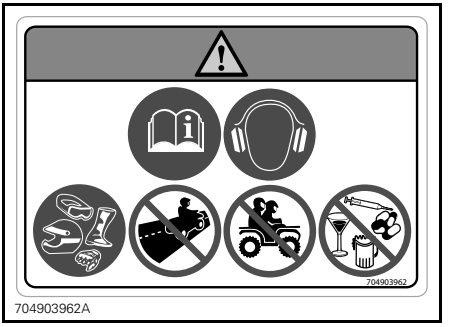


vmo2015-005-062_a





MAX MODELS ONLY



LABEL 1 - 1-UP MODELS

LABEL 1 - 2-UP MODELS

Label 1

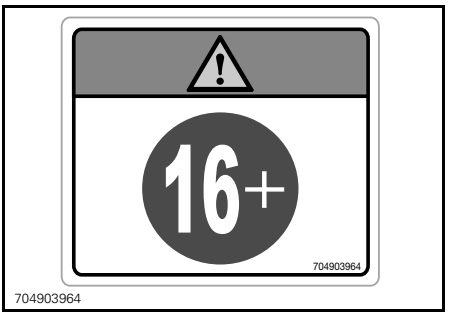
⚠ WARNING

- Locate and read operator's guide. Improper ATV use can result in SEVERE INJURY or DEATH. Follow all instructions and warnings.
- Always wear ear protection.
- Always use an approved helmet and protective gear.
- Never use on public roads.
- Never carry a passenger on 1-up models and NEVER carry more than one passenger on 2-up models.
- Never use with drugs or alcohol.

Label 2

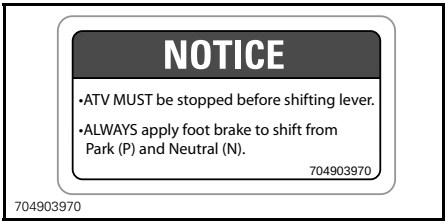
⚠ WARNING

Operating this ATV if you are under the age of 16 increases the chance of SEVERE INJURY or DEATH to the operator, and to both the operator and passenger on 2-up models. NEVER operate this ATV if you are under age 16.



LABEL 2

Label 3

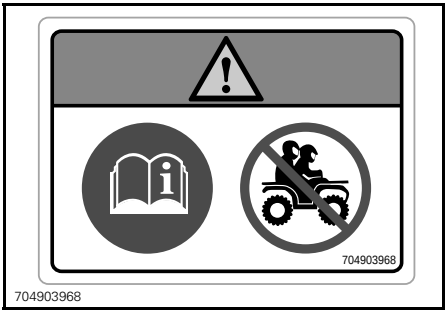


LABEL 3

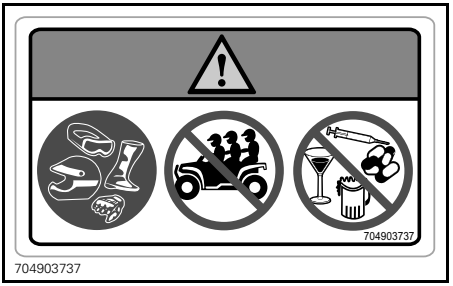
Label 4

⚠ WARNING

- Locate and read operator's guide.
- NEVER carry a passenger on 1-up models and NEVER carry more than 1 passenger on 2-up models.
- Passenger on 2-up models must always use an approved helmet and protective gear.
- Passenger on 2-up models must NEVER ride after using drugs or alcohol.



LABEL 4 - 1-UP MODELS

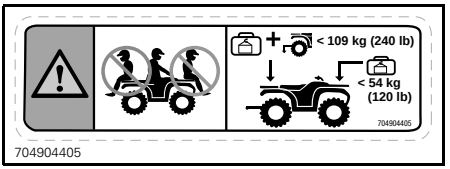


LABEL 4 - 2-UP MODELS

Label 5

⚠ WARNING

- NEVER carry a passenger on this carrier.
- MAXIMUM FRONT LOAD: 54 kg (120 lb) evenly distributed.
- MAXIMUM REAR LOAD: 109 kg (240 lb) evenly distributed (including trailer tongue weight if applicable).

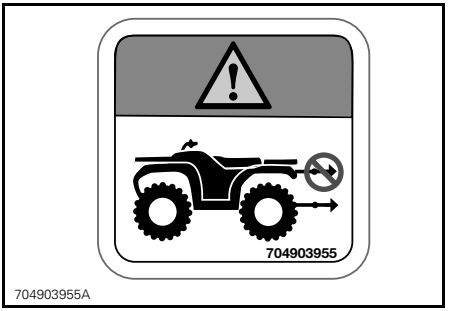


LABEL 5

Label 6

⚠ WARNING

NEVER attach here or on the luggage rack to pull a load This can cause the vehicle to tip over. ALWAYS use the trailer hitch or the recovery hook to pull a load.

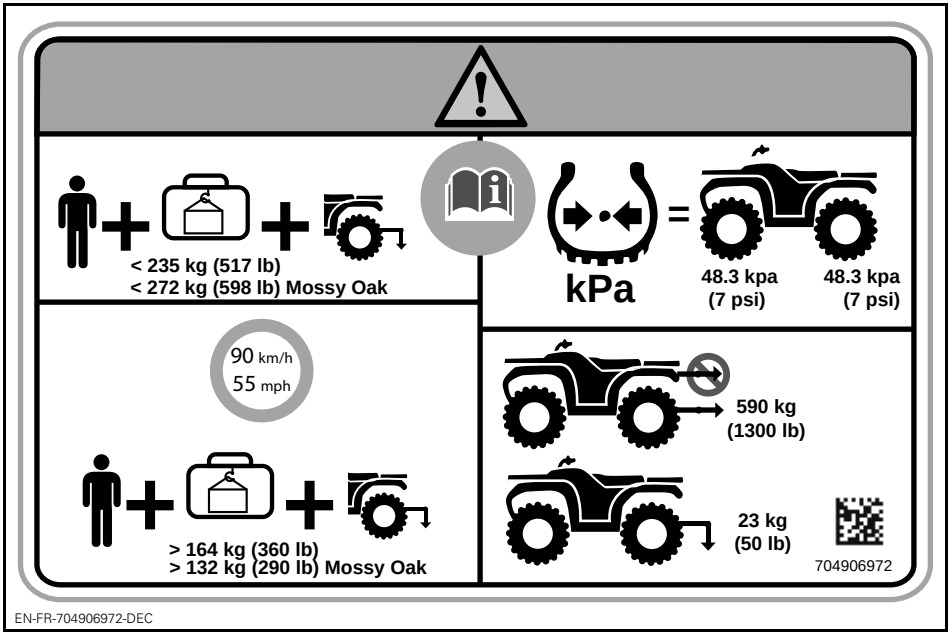


LABEL 6

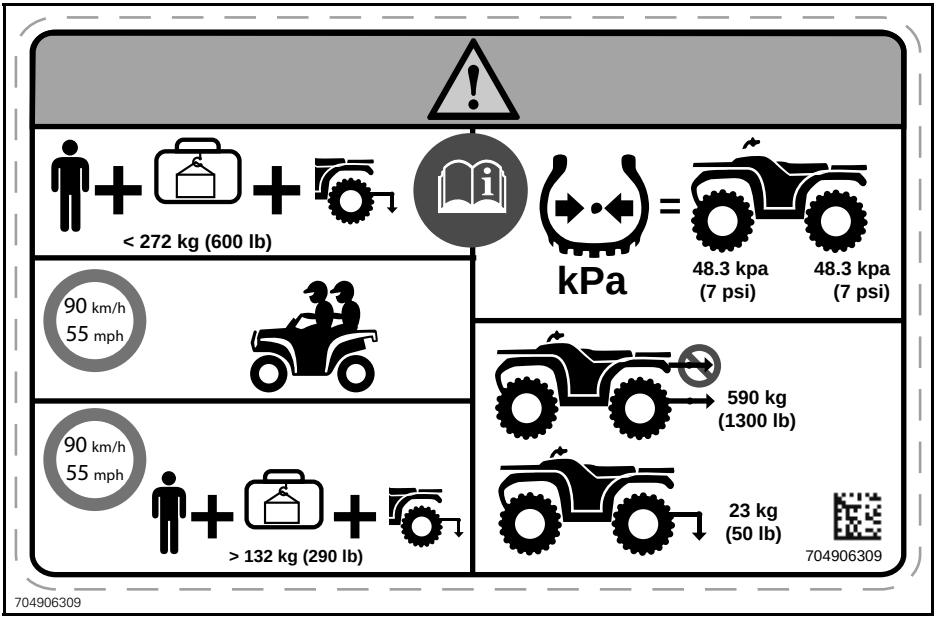
Label 7

⚠ WARNING

- Locate and read operator's guide. Improper tire pressure or overloading can cause loss of control, resulting in SEVERE INJURY or DEATH.
- ALWAYS maintain proper tire pressure as shown.
- On 1-up models, NEVER exceed the load capacity of 235 kg (517 lb) including weight of operator, cargo, accessories, and trailer tongue weight.
- On 2-up models, NEVER exceed the load capacity of 272 kg (600 lb) including weight of operator, cargo, accessories, and trailer tongue weight.
- ALWAYS pull a load using the trailer hitch or recovery hook.
- NEVER exceed the maximum towing weight of 590 kg (1,300 lb).
- NEVER exceed the maximum tongue weight of 23 kg (50 lb).
- On 1-up models, NEVER exceed 90 km/h (55 MPH) if total load is more than 164 kg (360 lb).
- On 2-up models, NEVER exceed 90 km/h (55 MPH) if total load is more than 132 kg (290 lb).
- On 2-up models, NEVER exceed 90 km/h with a passenger.

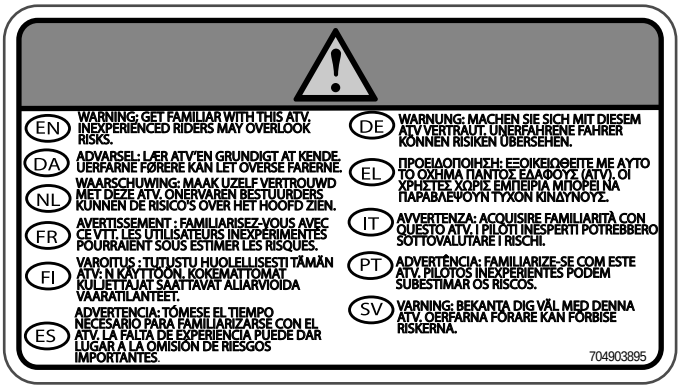


LABEL 7 - 1-UP MODELS



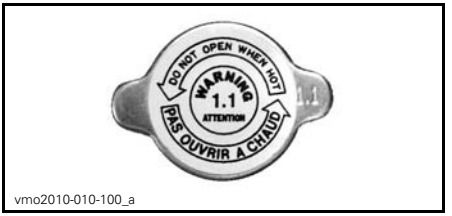
LABEL 7 - 2-UP MODELS

Label 8



LABEL 8

Label 9



LABEL 9

Label 10

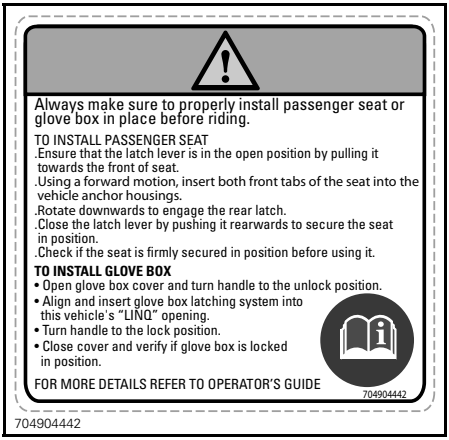
⚠ WARNING

Do not open when hot.

704903688

LABEL 10

Label 11

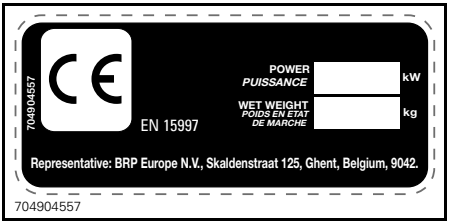


704904442

LABEL 11 - 2-UP MODELS

Compliance Labels

These labels indicate vehicle's compliance.



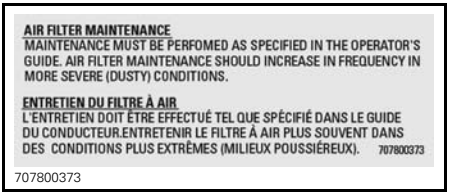
704904557

LOCATION: UNDER SEAT, ON THE UPPER FRAME MEMBER

704906388

TYPICAL : APPLICABLE WHEN EQUIVALENT TO A MODEL CERTIFIED TO US EPA STANDARDS - LOCATION: UNDER SEAT, ON THE UPPER FRAME MEMBER

Technical Information Labels



707800373

LOCATION: UNDER SEAT, ON THE UPPER FRAME MEMBER

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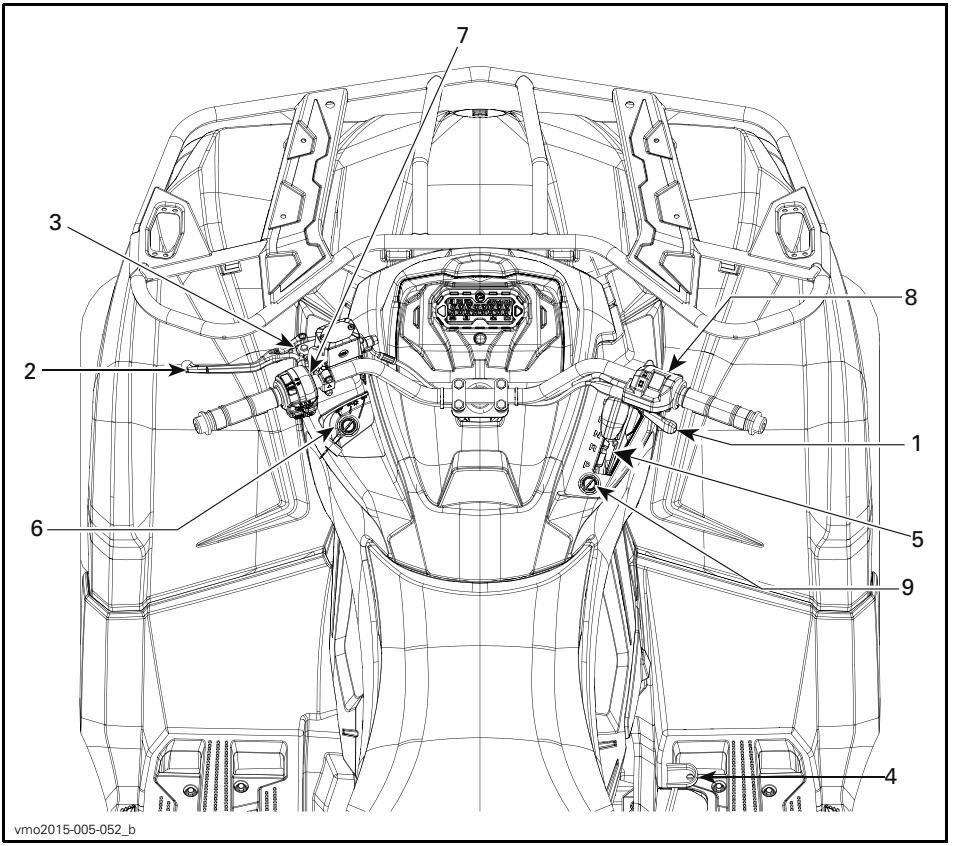
VEHICLE INFORMATION

CONTROLS

NOTE: Some vehicle safety labels are not shown on illustrations. For information on vehicle safety labels, refer to *IMPORTANT ON-PRODUCT LABELS*.



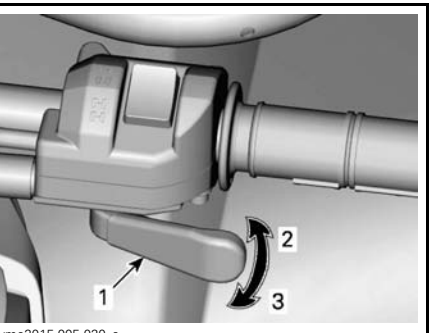
1) Throttle Lever

The throttle lever is located on the RH side of the handlebar.

The throttle lever controls the engine speed.

To increase or maintain vehicle speed, press the throttle lever with your right thumb.

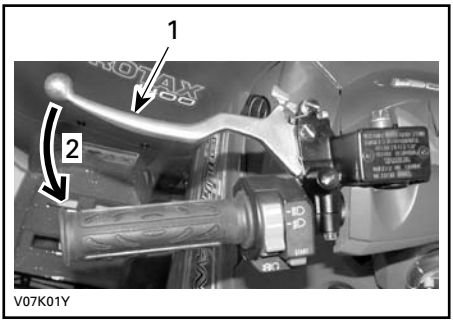
To decrease vehicle speed, release the throttle lever.



TYPICAL
1. *Throttle lever*
2. *To accelerate*
3. *To decelerate*

2) Brake Lever

The LH brake lever is located on the LH side of the handlebar.



TYPICAL
1. *Brake lever*
2. *To apply brakes*

The brake lever function is to slow down or stop the vehicle.

When the brake lever is compressed, the front and rear brakes are applied.

Braking effect is proportional to the force applied on the lever.

3) Parking Brake Lever

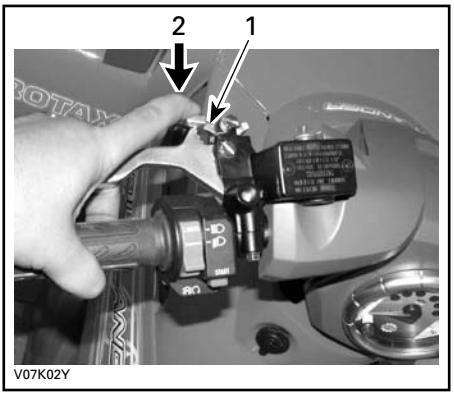
The parking brake lever is located on the LH side of the handlebar.

The parking brake function is to apply brake to all wheels to prevent vehicle from moving when parked.

⚠ WARNING

Always use the parking brake **and** engage the PARK position on the shift lever when the vehicle is not in operation.

To engage parking brake: Squeeze brake lever and maintain while moving lever lock. Brake lever is now compressed and applying all brakes.



TYPICAL
1. *Brake lever lock*
2. *Press to apply parking brakes*

NOTE: Locking lever can be adjusted in several positions.

NOTE: The parking brake lever can be set to several positions.

NOTICE **When the parking brake is applied, make sure the vehicle stays securely in place.**

To release the parking brake, simply squeeze the brake lever. It should return to the rest position.

⚠ WARNING

Make sure parking brake is released before operating the vehicle. If parking brake is left ON while riding, it may cause damage to the brake system and cause loss of braking capacity and/or fire.

4) Brake Pedal

The brake pedal is located on the RH side of the vehicle near engine.

1. Brake pedal

The brake pedal function is to slow down or stop the vehicle.

When the brake pedal is pressed down, the rear brake is applied.

When released, the brake pedal should return to its original position.

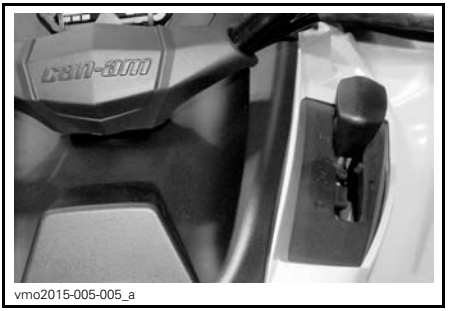
Braking effect is proportional to the force applied on the pedal.

NOTE: The brake will have also an effect on front wheels through the drive train when 4WD is engaged.

Should the brake lever system fail, the rear brake can be used by depressing the brake pedal.

5) Shift Lever

The shift lever is located on the RH side of the vehicle near steering column.



SHIFT LEVER LOCATION

The shift lever is used to change the gearbox position.

The shift lever has 5 positions:

SHIFT LEVER POSITIONS	
POSITION	GEAR
P	Park
R	Reverse
N	Neutral
H	High range (forward)
L	Low range (forward)

TYPICAL - SHIFT PATTERN

The vehicle must be stopped and brakes applied prior to selecting any gear.

NOTICE **This gearbox is not designed to shift while vehicle is moving.**

P: Park

The park position locks the gearbox to help prevent vehicle movement.

⚠ WARNING

Always use the PARK (P) position when the vehicle is not in operation. The vehicle can roll if the shift lever is not set to P (PARK).

R: Reverse

The reverse position allows the vehicle to go backwards.

NOTE: In reverse operation, the engine's RPM is limited, thus limiting the vehicle reverse speed.

⚠ WARNING

When driving downhill in reverse, gravity can increase the vehicle speed above the set limited reverse speed.

Neutral

The neutral position disengages the gearbox.

⚠ WARNING

Always use the PARK (P) position when the vehicle is not in operation. The vehicle can roll if the shift lever is set to N (NEUTRAL).

High Range (Forward)

This position selects the high speed range of the gearbox. It is the normal driving speed range. It allows the vehicle to reach its maximum speed.

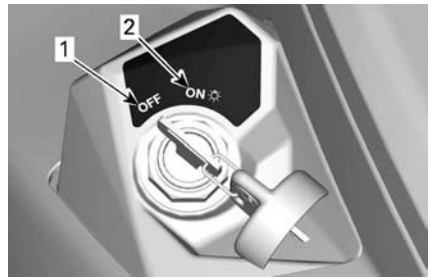
Low Range (Forward)

This position selects the low speed range of the gearbox. It allows the vehicle to move slowly with maximum torque at the wheels.

NOTICE Use the low speed range to pull a trailer, carry heavy cargo, go over obstacles or drive uphill and downhill.

6) Ignition Switch and Keys

The ignition switch is located on the LH side of the central panel below the handlebar.



IGNITION SWITCH POSITIONS
1. *OFF*
2. *ON "with light"*

OFF

The key can be inserted or removed in this position only.

In OFF position, the electrical system of the vehicle is disabled.

The engine is shut down by turning the ignition switch to OFF position.

NOTE: While the engine can be stopped by turning the ignition key to OFF position, we recommend the engine be stopped by setting the emergency engine stop switch to the STOP position.

NOTE: When turning the key to OFF position, the vehicle electrical system will take a few seconds to shut down.

ON with Lights

When the key is turned in this position, the electrical system of the vehicle is activated.

The gauge should wake-up.

The vehicle lights are turned on.

The engine can be started.

Keys

Basic Key (All Models Except Pro Models)

The vehicle is delivered with a basic ignition key.

Digitally Encoded Security System (D.E.S.S.) (Pro Models)

The ignition keys contain an electronic circuit that gives it a unique electronic serial number.

The D.E.S.S. system reads the key code and allows engine starting for keys it recognizes.

Types of Keys

This vehicle can be operated using 2 different types of keys:

– Normal key (grey)
– Performance key (black)

The key type is differentiated by its color.

⚠ WARNING

Rollovers, tipovers, collisions and loss of control resulting in serious injury or death are possible with the performance or normal. Using the normal key is not a substitute for the operator being prepared, qualified, and operating with care.

Normal Key

The vehicle is delivered with a normal key.

The normal key limits the vehicle speed to 70 km/h (44 MPH).

⚠ WARNING

On steep downhills, the engine speed limiter may not prevent the vehicle from accelerating beyond this speed.

This key may be useful for riders who prefer more gradual acceleration, or for riding in environments where full speed and high acceleration are not desirable. For example, in narrow, winding trails, operators may prefer the normal key.

Performance Key

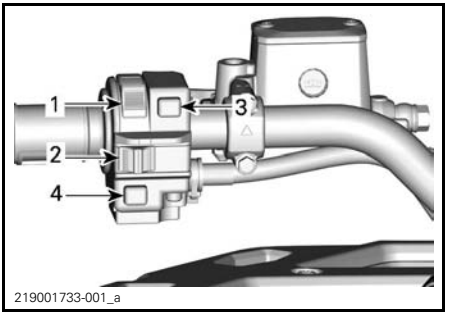
The vehicle is delivered with a performance key, which allows the user to access the full torque of the engine as well as the top speed of the vehicle.

This may be useful for riders who prefer crisper throttle response, and for environments where higher speeds and greater acceleration are appropriate. For example, in wide-open straight trails, operators may prefer the performance key.

7) Multifunction Switch

The multifunction switch is located on the LH side of the handlebar.

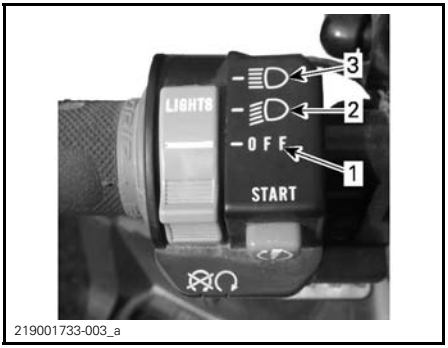
The controls located on this multifunction switch are:



TYPICAL — MULTIFUNCTION SWITCH
1. *Headlight switch*
2. *Emergency engine stop switch*
3. *Engine start button*
4. *Override/DPS button (if applicable)*

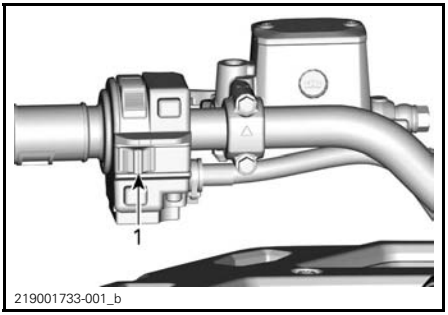
Low/High/OFF Headlight Switch

This switch is used to select either the headlights low or high beams or to turn them OFF.



HEADLIGHT SWITCH FUNCTIONS
1. *Lights OFF*
2. *Low beam and taillight*
3. *High beam and taillight*

Emergency Engine Stop Switch



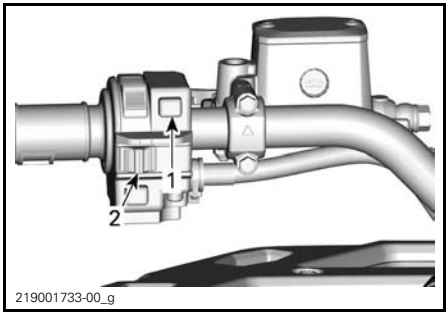
TYPICAL
1. *Emergency engine stop switch*

This switch can be used to stop the engine and as an emergency control.

To stop engine, set the emergency engine stop switch to the STOP position.

NOTE: While the engine can be stopped by turning the ignition key to OFF position, we recommend the engine be stopped by setting the emergency engine stop switch to the STOP position.

Engine Start Button



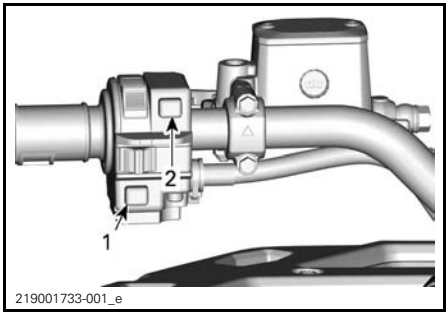
TYPICAL
1. *Engine start button*
2. *Emergency engine stop switch*

When engine start button is pressed and held, it starts the engine.

NOTE: To allow engine starting, the ignition switch must be in the ON position and the emergency engine stop button set to RUN.

Override/DPS Button

Depending on the vehicle model, this button has up to 2 functions.



TYPICAL
1. *Override/DPS button*
2. *Engine start button*

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

Override Function

The override switch main function is to bypass the engine speed limiter in reverse operation by allowing maximum engine torque.

⚠ WARNING

Only use the override to help get the vehicle unstuck from mud or other soft terrain. Do not use the override for normal operation in reverse. This would allow driving in reverse at excessive speeds and can increase the risk of losing control.

To engage the override function, proceed as follows:

While the shift lever is set to REVERSE position.

1. Ensure that the vehicle is stopped.
2. Press and hold the override switch then press the throttle lever gradually.

NOTE: When using the override function, the gauge will scroll an OVERRIDE message to confirm that the function is activated.

3. To disengage the override function, simply release the override switch.

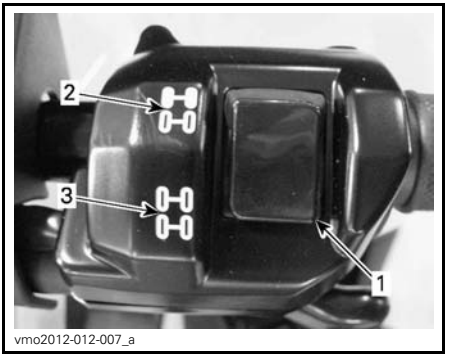
DPS Function (Models with DPS)

This button is also used to change the Dynamic Power Steering (DPS) mode.

To change DPS mode, refer to *TUNE YOUR RIDE*.

8) 2WD/4WD Selector

The 2WD/4WD selector is located on the RH side of the handlebar.



TYPICAL
1. *Selector*
2. *2WD position*
3. *4WD position*

This switch selects 2 wheel drive or 4 wheel drive mode when the vehicle is stopped and the engine is running.

NOTICE **The vehicle must be stopped to engage or disengage 2WD/4WD switch. Mechanical damage may occur if switch is engaged or disengaged while driving.**

The 4WD mode is engaged when the switch is pushed downwards.

4WD MODE - TYPICAL

The 2WD mode is engaged when the switch is pushed upwards. The vehicle is then rear wheel drive only.

V07I0EY

2WD MODE - TYPICAL

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

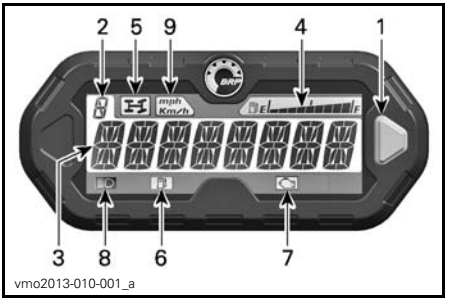
MULTIFUNCTION GAUGE (LCD)

The multifunction gauge is located in the gauge support.

⚠ WARNING

Reading the multifunction gauge display can distract from the operation of the vehicle, particularly from constantly scanning the environment.

Multifunction Gauge Description



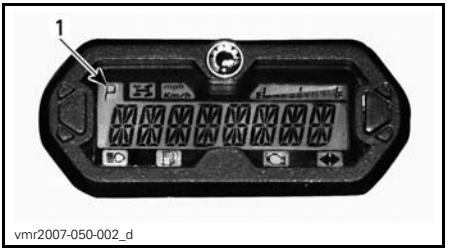
1. *Selector button*
2. *Gearbox position display*
3. *Main screen*
4. *Fuel level display*
5. *4WD indicator lamp*
6. *Low fuel level indicator lamp*
7. *Check engine indicator lamp*
8. *High beam indicator lamp*
9. *MPH, Km/h indicator lamp*

1) Selector Button

The selector button is used to navigate or change settings in the multifunction gauge.

2) Gearbox Position Display

This display will show gearbox position.



1. *Gearbox position*

DISPLAY	FUNCTION
P	Park
R	Reverse
N	Neutral
H	High range
L	Low range

3) Main Screen

The main screen is used to display numerous functions of the multifunction gauge.

Refer to *MULTIFUNCTION GAUGE MODES* for the different available modes:

4) Fuel Level Display

Bar gauge continuously indicates the level of fuel in the fuel tank while riding.

1. *Fuel level display*

5) 4WD Indicator Lamp

When this indicator is ON, it indicates the 4WD mode is selected.

6) Low Fuel Level Indicator Lamp

When this indicator is ON, it indicates that there is approximately 5 L (1.3 U.S. gal.) of fuel left in fuel tank.

7) Check Engine Indicator Lamp

When this indicator is ON, it indicates an engine fault code, look for a message at the LCD display.

When this indicator blinks, it indicates that the LIMP HOME mode is activated.

Refer to *TROUBLESHOOTING* section for more details.

8) High Beam Indicator Lamp

When this indicator is ON, it indicates that high beam is selected on the headlights and that ignition key is in ON with lights position.

9) KM/H or MPH Indicator Lamp

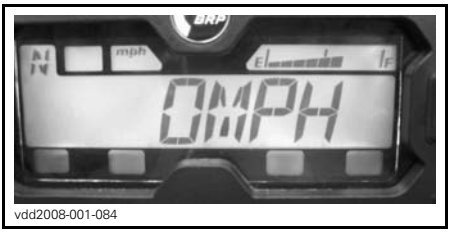
mph
Km/h

The proper lamp turns on to indicate the unit the speedometer uses.

Multifunction Gauge Modes

Speed Mode

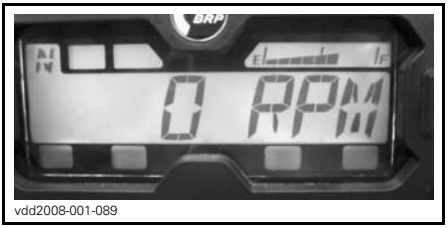
In this mode, the main screen shows the speed of the vehicle either in km/h or in mph.



vdd2008-001-084

RPM Mode

In this mode, the main screen shows the engine RPM.



vdd2008-001-089

Combined Mode

In this mode, the main screen shows the speed of the vehicle and the engine RPM.

vdd2008-001-085_a

1. *Vehicle speed*
2. *Engine RPM*

Odometer (OD)

Odometer records the total distance travelled either in miles or kilometers.

vsi2009-018-030

Clock

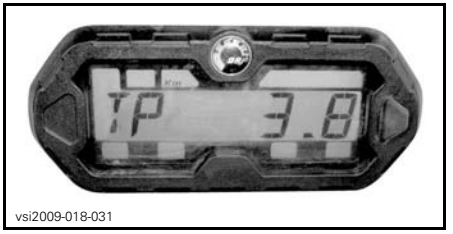
Displays current time.

vmo2011-008-001

Refer to *GAUGE SETUP* to set current time.

Trip Meter (TP)

The trip meter records the travelled distance since it has been reset. Distance travelled is displayed either in kilometers or miles.



vsi2009-018-031

Press and HOLD the selector button for 2 seconds to reset the trip meter.

Trip Hour Meter (TH)

The trip hour meter records vehicle running time when the electrical system is activated. It can be used to establish traveling time between 2 places.

vsi2009-018-032

Press and HOLD the selector button for 2 seconds to reset the hour meter.

Engine Hour Meter (EH)

The engine hour meter records engine running time.

vsi2009-018-033

Message Display Mode

If an abnormal engine condition occurs, a message may scroll across the main screen in conjunction with a pilot lamp. Refer to *TROUBLESHOOTING* section for details.

Fault Code Mode

Switch to HI beam and select engine hour meter display. Press and hold selector button while switching high and low beam (three cycles) to access diagnostic fault codes.

Navigating in the LCD Gauge

Default Display Mode

After vehicle startup, the default display mode is either:

– Vehicle speed

– Engine revolutions per minute (RPM)
– Both parameters simultaneously (combined mode).

To change from one display to the other, proceed as follows.

1. Turn ignition key to ON to power-up the system.
2. Wait until the "greeting message" has been displayed.
3. Press and release selector button once to display OD (odometer).
4. Press and HOLD selector button for 2 seconds.

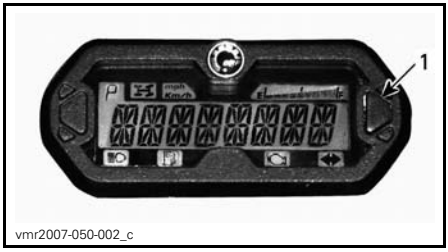
This will change the Mode to either Speed, RPM or Combined.

5. To select another mode, repeat steps 3 and 4 until the desired mode is displayed.

Temporary Display Mode

In the temporary display mode, the following functions are available:
– Odometer
– Clock
– Trip meter (resettable)
– Trip Hour meter (resettable)
– Engine hour meter.

Press and release selector button to change the default display mode to the temporary mode.



1. Selector button

The gauge will display the selected mode for 10 seconds then will return to the normal display mode.

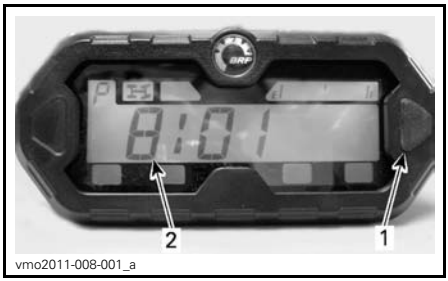
While in a resettable mode, push and HOLD selector button for 2 seconds to reset it.

Gauge Setup

Clock Setting Using Gauge Selector Button

To set current time, proceed as follows:

1. Select the clock display.



1. Selector button
2. Time

2. Press and HOLD selector button.

NOTE: The display will flash.

3. Choose the 12-hour (12H) or 24-hour (24H) format by pressing button.
4. If the 12-hour format was selected, choose Am (A) or Pm (P) by pressing button.
5. Choose hour first digit by pressing button.

6. Choose hour second digit by pressing button.
7. Choose minutes first digit by pressing button.
8. Choose minutes second digit by pressing button.

NOTE: The gauge will display the current time for 10 seconds then will return to the normal display mode.

Unit Selection (km/h vs mph)

The speedometer, odometer and trip meter are factory preset in miles but it is possible to change them to kilometer reading. Contact an authorized Can-Am dealer.

Language Selection

The gauge display language can be changed. Refer to an authorized Can-Am dealer for language availability and setup the gauge to your preference.

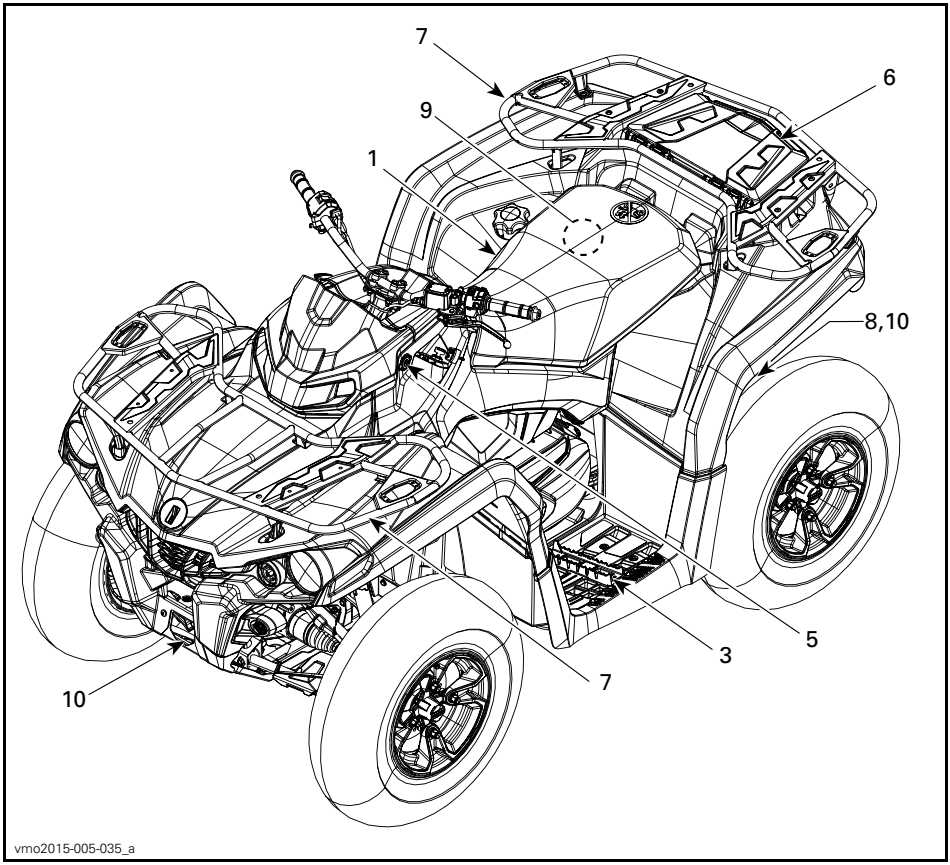
While reading this Operator's Guide, remember that:

⚠ WARNING

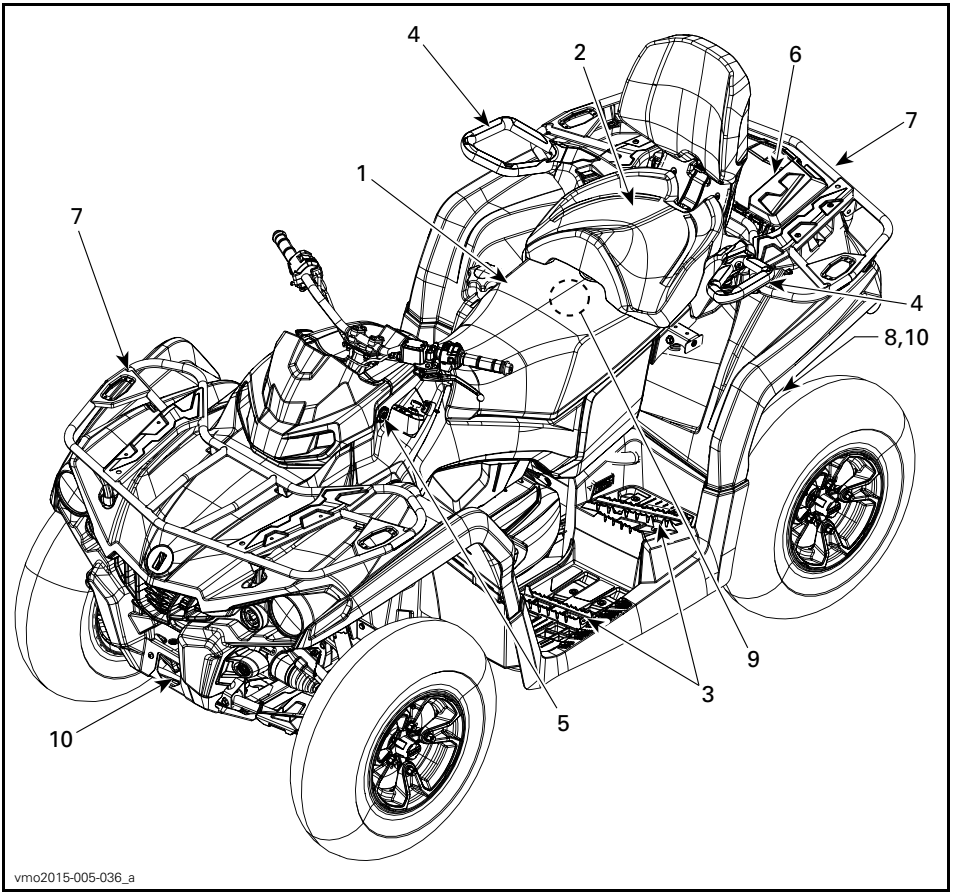
Indicates a potential hazard that, if not avoided, could result in serious injury or death.

EQUIPMENT

NOTE: Some vehicle safety labels are not shown on illustrations. For information on vehicle safety labels, refer to *IMPORTANT ON-PRODUCT LABELS*.



TYPICAL - 1-UP MODEL



TYPICAL - 2-UP MODEL

1) Operator's Seat

The seat is designed for an operator only.

⚠ WARNING

Never allow anyone to seat as a passenger on this vehicle.

Seat Removal

To remove the operator's seat, push its latch upward. This latch is located underneath the rear of seat.

1. Seat latch

Pull seat rearward. Continue lifting movement until you can release the front retaining device then completely remove seat.

Seat Installation

Insert front tabs of seat on U-rod welded to frame. When seat rests in its position, firmly push seat down to latch.

NOTE: A distinctive snap will be felt. Double check that the seat is secure by giving it a tug to confirm proper latching.

⚠ WARNING

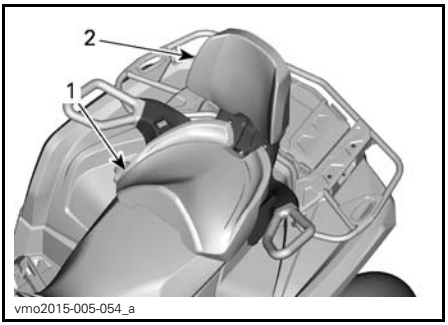
Confirm that the operator's seat is properly locked in position by pulling back and up several times.

2) Passenger's Seat (2-UP Models)

⚠ WARNING

Never operate the vehicle without passenger's seat or glove box installed.

The passenger's seat is designed for a passenger only. The integrated backrest supports his back during the ride.



1. Passenger's seat
2. Integrated backrest

⚠ WARNING

Without its passenger's seat, the vehicle becomes a ONE RIDER vehicle (1-UP model) and NO PASSENGER must be allowed on vehicle.

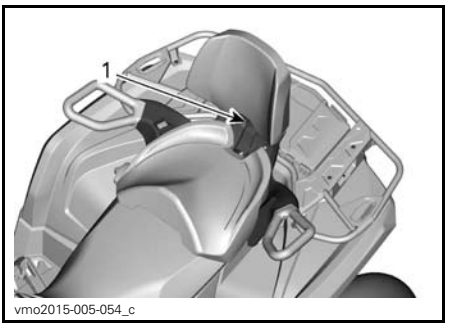
While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

Passenger's Seat Removal

1. To unlock latch, pull the passenger's seat latch lever toward the front of the seat.



1. Seat handle

2. While maintaining latch lever pulled towards the front, apply downward pressure on the back of latch lever to clear rear latch from pin and toggle seat towards front using backrest.
3. Pull seat rearward and up out of location to clear the front tabs.

Passenger's Seat Installation

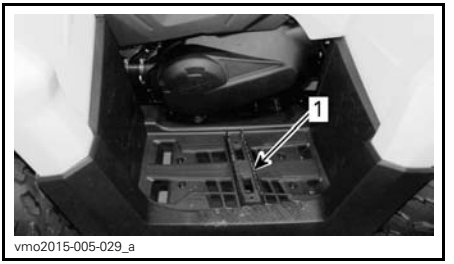
1. Ensure the latch lever is in the open position by pulling it towards the front of seat.
2. Using a forward motion, insert both front tabs of the seat into the vehicle anchor housings.
3. Rotate downwards to engage the rear latch.
4. Close the latch lever by pushing it rearwards to secure seat in position.
5. Check if the seat is firmly secured in position before using it.

⚠ WARNING

It is of the upmost importance for the passenger's safety that you confirm that the passenger's seat is properly locked in position by pulling back and up several times.

3) Footpegs

The operator footpegs are located on the RH and LH side of the vehicle.



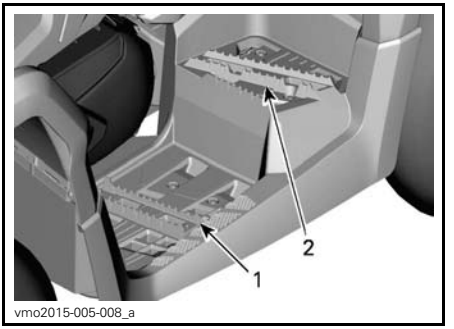
TYPICAL - 1-UP SHOWN
1. Operator's LH footpeg

⚠ WARNING

Operator must have both feet on footpegs at all time during vehicle operation.

2-UP Models

The passenger footpegs are located on the RH and LH side of the vehicle behind the operator footpegs.



TYPICAL
1. Operator's LH footpeg
2. Passenger's LH footpeg

⚠ WARNING

Passenger must have both feet on footpegs at all time during vehicle operation.

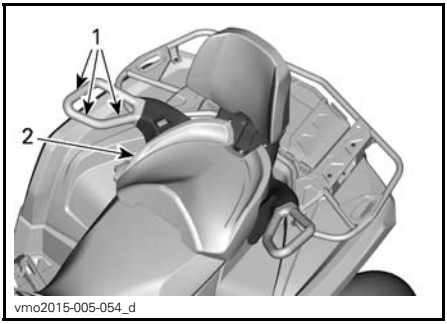
4) Grab Handles (2-UP Models)

The grab handles are located on the RH and LH side of the passenger's seat.

The grab handles must be used by the passenger to hold on firmly during vehicle operation.

⚠ WARNING

The passenger must always hold on to the passenger grab handles, not the operator. He must also have both feet resting firmly against the footrests.



TYPICAL
1. *Grab handles*
2. *Passenger's seat*

5) 12-Volt Power Outlet

Convenient for handheld spotlight or other portable equipment.

1. *12 V power outlet*

Remove protective cap to use. Always reinstall it after use to protect against weather.

Do not exceed the rating capacity. Refer to *FUSES* in *MAINTENANCE*.

6) Rear Storage Compartment

Convenient location to carry personal articles.

1. *Rear storage compartment cover*

⚠ WARNING

Always engage the PARK position on the shift lever before opening cover. Never leave any heavy or loose breakable objects in the storage area. Always latch cover before riding.

To Open Rear Storage Compartment

Unlatch cover and gently lift cover.

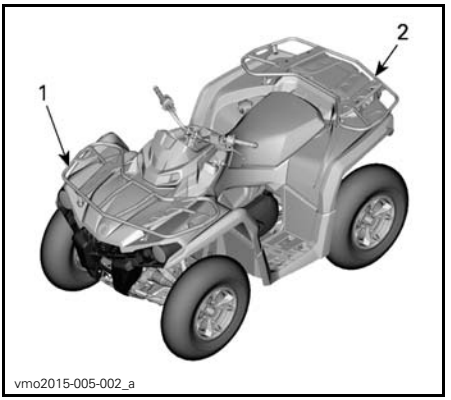
1. *Rear storage compartment latch*

To Close Rear Storage Compartment

Gently lower and latch cover.

7) Cargo Racks

Cargo racks are convenient for carrying equipment and various other cargo. They must never be used to carry a passenger.



TYPICAL
1. *Front cargo rack*
2. *Rear cargo rack*

⚠ WARNING

- Never carry a passenger on a cargo rack.
- Cargo must never interfere with the drivers line of sight or affect his ability to properly steer the vehicle.
- Do not overload the vehicle.
- Always ensure all cargo is properly secured and does not extend out pass the racks.

Refer to *SPECIFICATIONS* for cargo weight recommendations.

8) Trailer Hitch

Convenient hitch to install a ball to tow a trailer or other equipment. Install the proper ball size as per trailer manufacturer recommendations. Refer to *SPECIFICATIONS* for carrying loads and towing recommendations.

TYPICAL
1. *Trailer hitch*

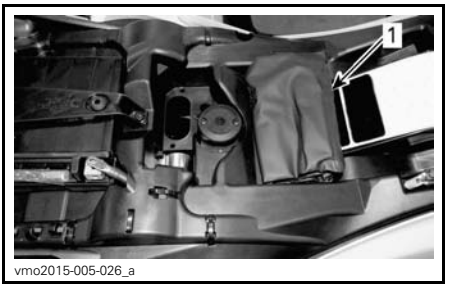
⚠ WARNING

Ensure to install the proper ball size that matches the equipment you will tow.

NOTE: Follow manufacturer's instructions for proper attachment.

9) Tool Kit

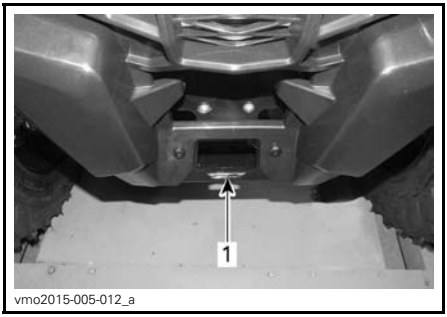
The tool kit is located under seat. It contains tools for basic maintenance.



1. *Tool kit*

10) Recovery Hooks

Convenient hook that can be use to recover a stuck ATV.



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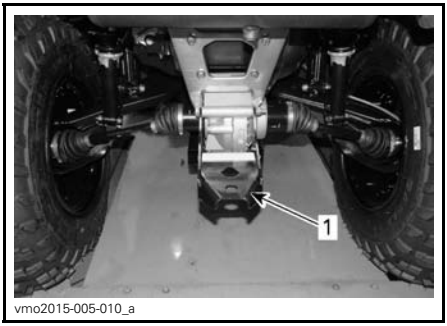
1. Front recovery hook



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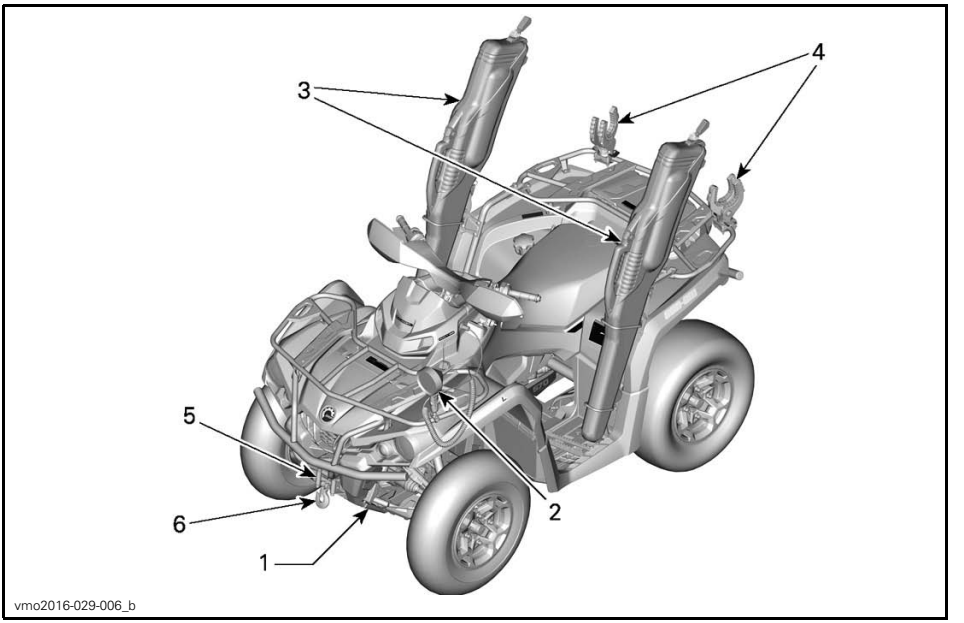
1. Recovery hook

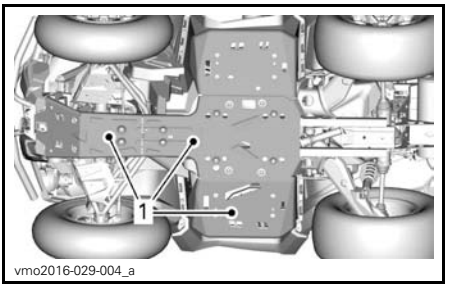
ADDITIONAL ACCESSORIES

Some models are equipped with factory installed accessories.



1) Full Underbody Aluminum Skid Plate

Aluminum plates provide essential protection.



1. Full underbody skid plate

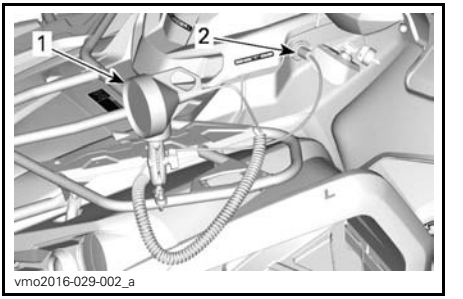
2) Portable Light

A convenient 12 V powered spotlight that can easily be moved around to provided additional lighting on the spot.

⚠ WARNING

Never drive vehicle with portable light on.

NOTE: In some regions, restrictions may apply to the usage of portable light when gun boot is installed on vehicle. Refer to local laws before using spotlight.



1. Portable light
2. 12V power outlet

NOTICE Remove portable light and store when transporting vehicle.

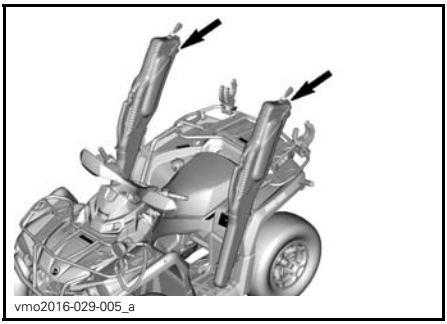
⚠ WARNING

Do not operate the vehicle with the spotlight or coil cable obstructing or interfering with the driver and/or the operation of the vehicle control devices. Do not use this light while the vehicle is in motion, as it may blind other vehicles drivers.

3) Gun Boot

This easy access gun boot is designed to accommodate a variety of rifle and shotguns along with their mods.

NOTE: In some regions, gun boot should be removed from vehicle outside of hunting season. Refer to local laws.



GUN BOOT IN POSSIBLE INSTALLATION LOCATIONS

NOTICE Remove gun booth when transporting vehicle.

⚠ WARNING

Reduce your speed while firearm case is installed on vehicle.

NOTICE Avoid areas with a lot of branches. If avoiding such areas is impossible, make sure branches do not hit the firearm case.

Installing Gun Boot Into Gun Boot Mount

Install gun boot into gun boot mount.

Insert pin into gun boot support and gun boot.

1. Bent plate of gun boot support

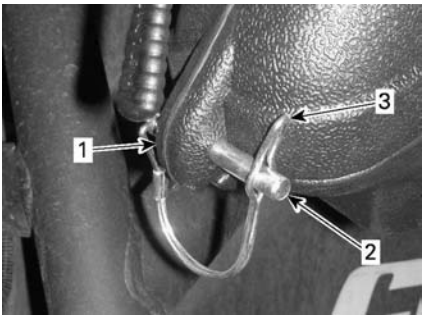
Install lock onto pin.

1. Locked pin

Secure rear section of gun boot using locking pin.

Insert pin into rear section of gun boot.

Install lock onto pin.



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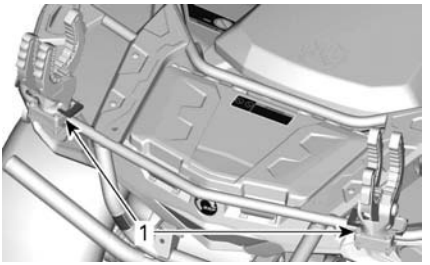
1. Rear section of Gun Boot
2. Pin
3. Lock

4) Gear Grips

These durable and flexible grips allow for easy transportation of tools, bows, and other implements.



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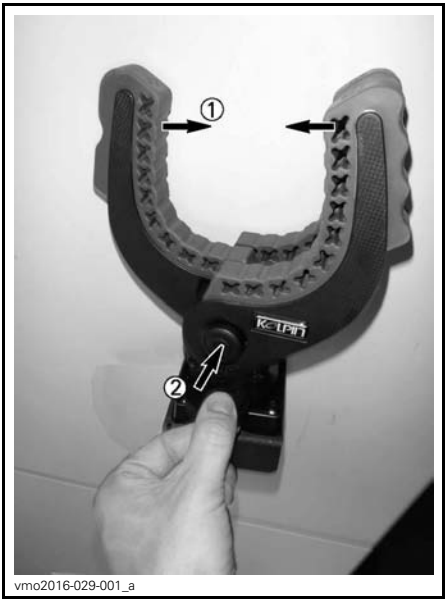
1. Gear grips

Using the Gear Grips

Close grip to hold item and press button to release grip.



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TYPICAL
1. Close grips to hold item.
2. Press button to release grips.

Rotating the Gear Grips

NOTE: Gear grip can be rotated to 360°. To do so, simply remove the U-clip by pushing on the plastic tabs toward exterior side and pulling on the U-clip. Rotate the gear grip into its mounting base.

NOTICE Failure to apply small pressure toward exterior side to the plastic tabs may result in damage to the U-clip.

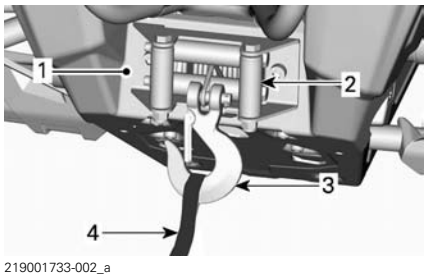
TYPICAL
1. Plastic tabs

⚠ WARNING

Use gear grips in pair. Gear grips should always be installed so the dual arms are facing toward driver. Do not use gear grip to support or hold heavy objects. Objects can dislodge from the grip when riding fast or in a bumpy trail. Reduce your speed and often verify if gear remains in place. Ensure objects loaded do not extend wider than the vehicle width.

5) Winch

The winch can be actuated using the winch control switch or with the remote control (sold separately).



1. Winch
2. Roller fairlead
3. Winch hook
4. Hook strap

NOTE: Using the winch intensively over a long period of time may discharge the battery.

The following tips will help to reduce the risk of discharging the battery:

Always unreel manually: Unlock the cable using the handle then pull on the hook strap to unreel.

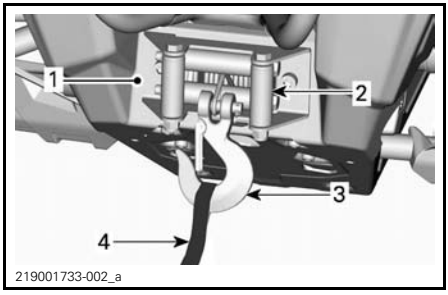
It is recommended to let the vehicle run while winching. Do not stop vehicle immediately after winching to let battery recharge.

Also, when winching for more than 30 seconds, it is recommended to increase engine RPM in the range of 3000 RPM to increase charging power to the battery.

NOTE: Make sure vehicle is in NEUTRAL (N) before increasing engine RPM.

6) Roller Fairlead

The roller fairlead is used to prevent damages to the vehicle and guide the wire rope into the winch.



1. Winch
2. Roller fairlead
3. Winch hook
4. Hook strap

Fuel Requirements

NOTICE Always use fresh gasoline. Gasoline will oxidize; the result is loss of octane, volatile compounds, and the production of gum and varnish deposits which can damage the fuel system.

Alcohol fuel blending varies by country and region. Your vehicle has been designed to operate using the recommended fuels, however, be aware of the following:

- Use of fuel containing alcohol above the percentage specified by government regulations is not recommended and can result in the following problems in the fuel system components:
  - Starting and operating difficulties.
  - Deterioration of rubber or plastic parts.
  - Corrosion of metal parts.
  - Damage to internal engine parts.
- Inspect frequently for the presence of fuel leaks or other fuel system abnormalities if you suspect the presence of alcohol in gasoline exceeds the current government regulations.
- Alcohol blended fuels attract and hold moisture which may lead to fuel phase separation and can result in engine performance problems or engine damage.

Recommended Fuel

Use common unleaded gasoline with an AKI (R+M)/2 octane rating of 87, or an RON octane rating of 92.

NOTICE Never experiment with other fuels. Engine or fuel system damages may occur with the use of an inadequate fuel.

NOTICE Do NOT use fuel from fuel pumps labeled E85.

Use of fuel labeled E15 is prohibited by U.S. EPA Regulations.

Vehicle Fueling Procedure

⚠ WARNING

- Fuel is flammable and explosive under certain conditions.
- Never use an open flame to check fuel level.
- Never smoke or allow flame or spark in vicinity.
- Always work in a well-ventilated area.

1. Stop engine.

⚠ WARNING

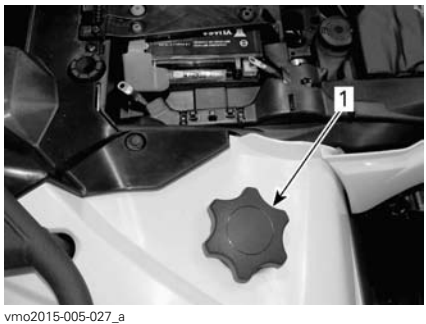
Always stop engine before refueling.

2. Have operator get off vehicle.

⚠ WARNING

Do not allow anyone to remain on the vehicle while fueling. If there is a fire or explosion during fueling, a vehicle occupant could be unable to quickly leave the area.

3. Unscrew slowly the fuel reservoir cap counterclockwise to remove it.



1. Fuel reservoir cap

⚠ WARNING

If a differential pressure condition is noticed (whistling sound heard when loosening fuel reservoir cap) have vehicle inspected and/or repaired before further operation.

4. Insert the spout into the filler neck.
5. Pour fuel slowly so that air can escape from the tank and prevent fuel flow back. Be careful not to spill fuel.
6. Stop filling when the fuel reaches the bottom of filler neck. Do not overfill.

⚠ WARNING

Never top up the fuel tank before placing the vehicle in a warm area. As temperature increases, fuel expands and may overflow.

7. Fully tighten fuel reservoir cap clockwise.

⚠ WARNING

Always wipe off any fuel spillage from the vehicle.

BREAK-IN PERIOD

Operation During Break-In

A break-in period of 10 operating hours or 300 km (200 mi) is required for the vehicle.

Engine

During the break-in period:

- Avoid full throttle operation
- Maximum throttle should not exceed 3/4
- Avoid sustained accelerations
- Avoid prolonged cruising speeds
- Avoid engine overheating.

However, brief accelerations and speed variations contribute to a good break-in.

NOTE: It is normal that the engine will not operate at its maximum efficiency until the break-in period is completed.

Brakes

⚠ WARNING

New brakes will not operate at their maximum efficiency until their break-in is completed. Use extra caution.

Drive Belt

A new drive belt requires a break in period of 50 km (30 mi).

During the break-in period:

- Avoid strong acceleration and deceleration
- Avoid pulling a load
- Avoid high speed cruising.

Starting the Engine

The shift lever must be set to PARK or NEUTRAL.

NOTE: For your convenience, an override mode allows the engine to be started with the shift lever in any position. Press and hold the brake lever or the brake pedal while pressing the engine start button.

Insert key in ignition switch and turn to ON position.

Set the emergency engine stop switch to RUN.

Press the engine start button and hold until the engine starts.

Release the engine start button immediately when the engine has started.

NOTICE **If engine does not start after a few seconds, do not hold the engine start button more than 10 seconds. Refer to TROUBLESHOOTING section.**

Operating the Shift Lever

Apply brakes and immobilize vehicle, then select the desired shift lever position.

Release brakes.

NOTICE **When changing gear selection, always completely stop the vehicle and apply the brakes prior to moving the shift lever. Otherwise damage to the gearbox may occur.**

Gradually press the throttle lever to increase engine speed and thus engaging the continuously variable transmission (CVT).

At the opposite, when the throttle lever is released, the engine speed decreases.

Stopping the Engine and Parking the Vehicle

⚠ WARNING

Avoid parking on steep slope as the vehicle may roll away.

⚠ WARNING

Always put the vehicle in PARK when stopped or parked to prevent rolling.

⚠ WARNING

Avoid parking in places where hot parts can start a fire.

When stopped or parked always bring shift lever to park position. This is especially important when parking on a slope. On very steep inclines or if the vehicle is carrying a cargo, the wheels should be blocked using rocks or bricks.

Select the flattest terrain available for parking.

Release throttle and use brakes to completely stop the vehicle.

Set shift lever in PARK position.

Turn key in ignition switch to OFF position.

Remove key from ignition switch.

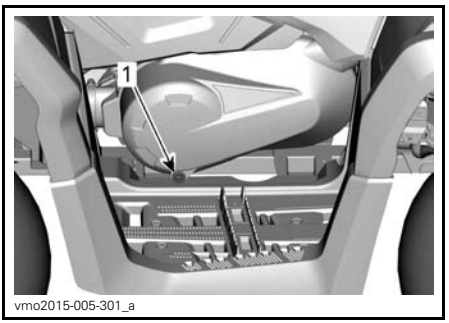
If you must park on a steep incline or if the vehicle is carrying cargo, block the wheels using rocks or bricks.

What to Do if Water Entered the CVT

The CVT drain plug is located on the CVT cover. It is accessible from the rear LH fender.

450 Models

Remove the CVT drain plug to validate if water is present.

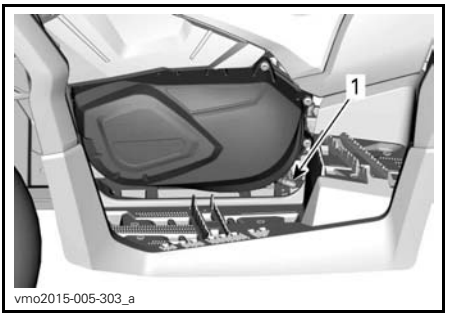


450 MODELS
1. CVT drain plug

570 Models

Inspect the CVT drain plug to validate if water is present.

If water is present, remove CVT drain plug to expel water.



570 MODELS
1. CVT drain plug

All Models

NOTICE If water is present in the CVT, it could result in belt slippage. The engine will accelerate but the vehicle will remain still.

450 Models

Reinstall slotted hexagonal 15 mm (19/32 in) drain plug.

570 Models

Reinstall the drain plug and secure it using the spring clamp.

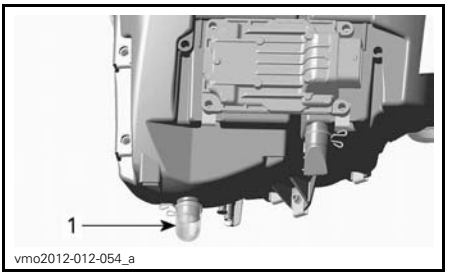
NOTE: Make sure hose is properly inserted on CVT cover nipple.

NOTICE See an authorized Can-Am dealer to have the CVT inspected and cleaned.

What to Do if Water Entered the Air Filter Housing

Remove the LH side panel.

Inspect the drain reservoir underneath the air filter housing to validate if water is present.



TYPICAL
1. Air filter housing drain reservoir

If water is present, press clamp and remove reservoir to drain water from air filter housing.

If one of the following conditions is met, bring the vehicle to your nearest authorized Can-Am dealer to have the vehicle serviced:

- If more than 50 ml (2 U.S. oz) of water (approximately 5 drain reservoirs) is found in the air filter housing.
- If any deposits are present in the drain reservoir.

In such a case, the vehicle must be serviced for:
- Vents
- CVT cleaning
- Fuel tank breather replacement
- Lubricant inspection and replacement as required (engine, gearbox and rear final drive).

NOTICE Failure to have vehicle serviced may lead to permanent damage to the following components but not limited to:
- Engine and gearbox
- Fuel pump
- CVT
- Front differential
- Rear final drive.

What to Do if Vehicle is Turned Over

When vehicle is turned over or stays tilted on the side, put the vehicle back on its wheel. Inspect vehicle for damages.

⚠ WARNING

Never operate the vehicle if damaged. Refer to an authorized Can-Am dealer.

If vehicle has no damage, refer to *MAINTENANCE PROCEDURES* section and inspect the following.
- Inspect air filter housing for oil accumulation, if any oil is found, clean air filter and air filter housing.
- Check engine oil level and refill if necessary.
- Check engine coolant level and refill if necessary.
- Check gearbox oil level and refill if necessary. (570 Models)
- Check rear final drive oil level and refill if necessary.
- Start engine. If the oil pressure light stays on, stop engine immediately. See an authorized Can-Am dealer.

Whenever the vehicle is turned over, it should be inspected by an authorized Can-Am dealer.

What to Do if Vehicle is Immersed in Water

Should the vehicle become immersed, immediately stop the engine. Do not use:
- Any electrical equipments
- Winch (if equipped)

It will be necessary to take the vehicle to an authorized Can-Am dealer as soon as possible. NEVER ATTEMPT TO START THE ENGINE!

NOTICE Immersion of the vehicle can cause serious damage if the correct restart procedure is not followed.

As soon as vehicle is pulled out of water, carry out the following:
- Drain CVT. See procedure in *WHAT TO DO IF WATER IS IN THE CVT*.
- Drain air filter housing. Refer to *WHAT TO DO IF WATER ENTERED THE AIR FILTER HOUSING* in this section.

NOTICE The vehicle should be serviced as soon as possible by an authorized Can-Am dealer.

⚠ WARNING

Suspension adjustment could affect vehicle handling. Always take time to familiarize yourself with the vehicle's behavior after any suspension adjustment have been made.

Suspension Adjustment

Suspension adjustment and loading can have an effect on your vehicle handling and comfort.

Choice of suspension adjustments vary with driver's weight, personal preference, riding speed and field condition.

Spring Preload Adjustment

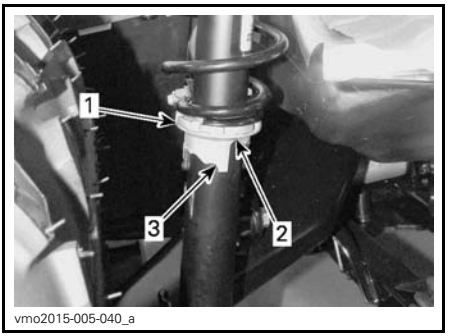
⚠ WARNING

The left and right shock adjustment on front or rear suspension must always be set to the same position. Never adjust one only. Uneven adjustment can cause poor handling and loss of stability, which could lead to an accident.

Shorten the springs for a firmer ride and rough conditions.

Lengthen the springs for a softer ride and smooth conditions.

Adjust spring preload by turning adjustment cam. Use tool from vehicle tool kit.



1. *Adjustment cam*
2. *Softer adjustment*
3. *Firmer adjustment*

Dynamic Power Steering (DPS) Assist Level Adjustment

All Models Except Base Models

The Tri-Mode Dynamic Power Steering (DPS) offers easy steering assistance to the rider. The level of assistance will automatically adapt according to the vehicle's speed and rider's demand, in order to provide maximum steering power at lower speed where the demand is normally higher. As speed increases, the assistance is progressively reduced to keep maximum steering feel and precision to the rider.

It is possible to choose between three modes of assistance: Minimum, Medium and Maximum. Each mode will continue to automatically adapt to the vehicle's speed and rider's demand, so it does not require to be changed when riding. These modes are used to set the level of assistance to match each rider's preferences.

The following DPS modes are preset in the vehicle.

DPS MODE	
DPS MAX.	Maximum steering assist
DPS MED.	Medium steering assist
DPS MIN.	Minimum steering assist

To show the active DPS mode, proceed as follows:

1. Press and release **DPS** button.

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1. DPS button

2. Check the multifunction gauge to confirm the active DPS mode.

1. DPS mode display

To change the DPS mode, proceed as follows:

1. Press and hold **DPS** button for 2 seconds to go to the next setting.
2. Release **DPS** button.
3. Repeat until desired setting is selected.

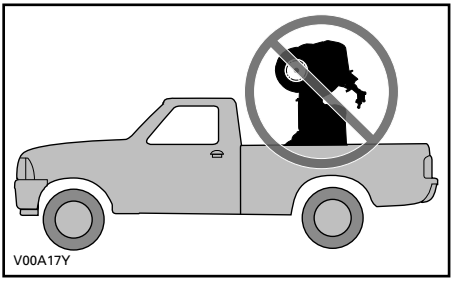
NOTE: The DPS adjustment will not be possible if the vehicle gearbox is set to **REVERSE**.

VEHICLE TRANSPORTATION

When transporting this vehicle, secure it to a trailer or in pickup box with suitable tie-downs. Use of ordinary ropes is not recommended.

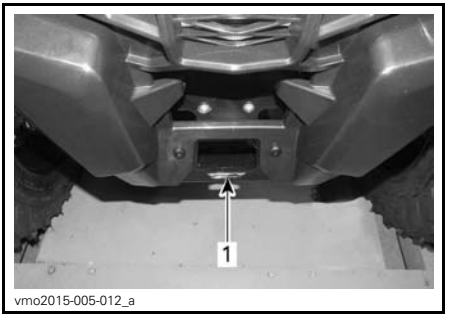
⚠ WARNING

Do not tow this vehicle behind a car or other vehicle. Use a trailer. Never tip this vehicle on end for transporting. The vehicle must be in its normal operating position (on all four wheels).

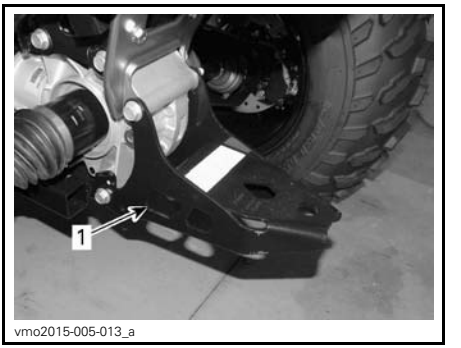


Remember to:

- Unload vehicle racks before transportation.
- Set shift lever to PARK position.
- Set the parking brake.
- Secure the vehicle by the front and rear tie-down points.



1. Front tie-down point location



1. Rear tie-down point location

NOTICE Securing vehicle at other locations may damage the vehicle.

MAINTENANCE

MAINTENANCE SCHEDULE

Maintenance is very important for keeping your vehicle in safe operating condition. The vehicle should be serviced as per the maintenance schedule.

The maintenance schedule does not exempt the pre-ride inspection.

A repair shop or person of the owner's choosing may maintain, replace, or repair emission control devices and systems. These instructions do not require components or service by BRP or authorized Can-Am dealers. Although an authorized Can-Am dealer has an in-depth technical knowledge and tools to service the Can-Am ATV, the emission-related warranty is not conditioned on the use of an authorized Can-Am dealer or any other establishment with which BRP has a commercial relationship. For emission-related warranty claims, BRP is limiting the diagnosis and repair of emission-related parts to the authorized Can-Am dealers. For more information, please refer to the *US EPA EMISSION-RELATED WARRANTY* contained herein. Proper maintenance is the owner's responsibility. A warranty claim may be denied if, among other things, the owner or operator caused the problem through improper maintenance or use.

You must follow the instructions for fuel requirements in the fueling section of this manual. Even if gasoline containing greater than ten volume percent ethanol is readily available, the US EPA issued a prohibition against the use of gasoline containing greater than 10 vol% ethanol that applies to this vehicle. The use of gasoline containing greater than 10 vol% ethanol with this engine may harm the emission control system.

The following message appears in the gauge after every 50 hours of operation, to remind you of maintenance requirements: MAINTENANCE REQUIRED. To erase message, refer to the appropriate *MULTIFUNCTION GAUGE* section.

⚠ WARNING

Failure to properly maintain the vehicle according to the maintenance schedule and procedures can make it unsafe to operate.

SEVERE DUSTY CONDITIONS

Engine Air Filter Maintenance Guideline

Air filter maintenance should be adjusted according to riding conditions.

Air filter maintenance must be increased in frequency in the following dusty conditions:

– Riding on dry sand
– Riding on dry dirt covered surfaces
– Riding on dry gravel roads or similar conditions.

NOTE: Riding in a group in these conditions would increase even more the air filter maintenance.

MAINTENANCE SCHEDULE LEGEND

Operation in trail riding conditions
Operation in severe riding conditions (dusty or muddy) or carrying heavy loads condition

MAINTENANCE SCHEDULE

Make sure to perform proper maintenance at recommended intervals as indicated in the tables. Some items of the maintenance schedule must be performed in function of the calendar, regardless of the distance or time of operation.

EVERY 1 500 KM (1,000 MI) OR 50 HOURS (whichever comes first)
EVERY 750 KM (500 MI) OR 25 HOURS (whichever comes first)
Verify and clean engine air filter. Replace as needed
Verify battery connections
Lubricate rear propeller shaft joint
Inspect tie rod ends and ball joints for play and boots condition
Lubricate front suspension arm bushings
Lubricate rear stabilizer bar bushings
Inspect the drive shaft boots and protectors
Inspect brake pads. Replace as needed
Inspect wheel bearings for abnormal play

EVERY 3 000 KM (2,000 MI) OR 100 HOURS (whichever comes first)
EVERY 1 500 KM (1,000 MI) OR 50 HOURS (whichever comes first)
Adjust valve clearance
Clean muffler spark arrester
Verify and clean throttle body
Replace fuel vent breather filter
Verify CVT drive belt and clean CVT pulleys
Lubricate the one way bearing of the drive pulley
The following must be performed at least once a year:
Change engine oil and filter
Lubricate throttle cable
Inspect and clean brake system
Inspect battery condition
Verify steering system for abnormal play
Verify front differential and rear final drive oil level and look for contamination
Verify gearbox oil level and look for contamination (570)

PERFORM AT THE FIRST 3 000 KM (2,000 MI)AND AT 6 000 KM (4,000 MI) THEN FOLLOW THE REGULAR SCHEDULE
PERFORM AT THE FIRST 1 500 KM (1,000 MI) AND AT 3 000 KM (2,000 MI) THEN FOLLOW THE REGULAR SCHEDULE
Replace gearbox oil (570)
Clean the vehicle speed sensor (VSS) (570)

EVERY 6 000 KM (4,000 MI) OR 200 HOURS (whichever comes first)
EVERY 3 000 KM (2,000 MI) OR 100 HOURS (whichever comes first)
Verify the cooling system
Test engine coolant strength
Verify fuel system for leaks
Verify fuel pump pressure
Replace spark plugs
Replace front differential oil
Replace rear final drive oil
Replace gearbox oil (570 only)
Inspect input and output shaft seals (gearbox, differential and final drive)
Clean vehicle speed sensor
Clean and lubricate lower and upper steering column half bushings
The following must be performed every 2 years:
Replace the brake fluid

EVERY 12 000 KM (8,000 MI) OR 5 YEARS (whichever comes first)
EVERY 6 000 KM (4,000 MI) OR 5 YEARS (whichever comes first)
Replace engine coolant

This section includes instructions for basic maintenance procedures. I

⚠ WARNING

Unless otherwise indicated, always turn ignition switch to OFF position and remove key before performing any maintenance.

⚠ WARNING

Should removal of a locking device be required (e.g. lock tab, self-locking fastener, etc.), always replace it with a new one.

Air Filter

Air Filter Maintenance Guideline

As with any ATV, air filter maintenance is critical to ensure proper engine performance and life span.

Air filter maintenance should be adjusted according to riding conditions.

Air filter maintenance must be increased in frequency and oil must be added to the foam filter for the following dusty conditions:

- Riding on dry sand.
- Riding on dry dirt covered surfaces.
- Riding on dry gravel trails or similar conditions.

NOTE: Riding in a group in these conditions would increase even more the air filter maintenance. Refer to *AIR FILTER CLEANING AND OILING* for maintenance procedure.

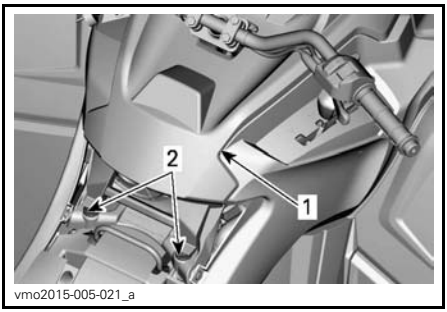
NOTE: An accessory pre-filter for "dusty conditions" may be used. Contact an authorized Can-Am dealer for details.

Air Filter Removal

NOTICE Never remove or modify any component in the air filter housing. Otherwise, engine performance degradation or damage can occur. The engine is calibrated to operate specifically with these components.

Remove seat.

Lift rear portion of console upwards until the studs are released from the grommets.

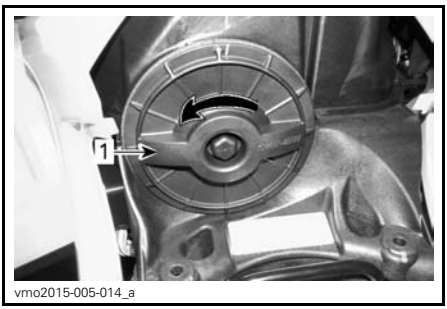


TYPICAL
1. *Console*
2. *Studs and grommets*

Pull console rearwards.

Rotate air filter cover counterclockwise to remove.

NOTE: A socket wrench may be used to ease removal.



1. *Air filter cover*

Remove air filter.

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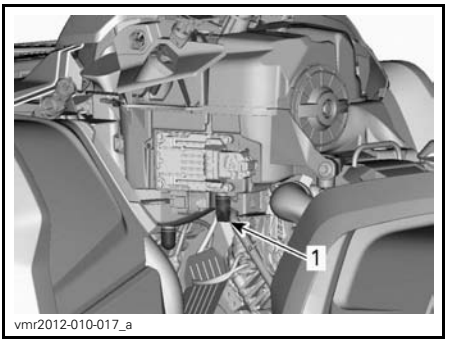
AIR FILTER REMOVAL

Engine Air Filter Housing Inspection and Draining

1. Remove LH side panel.
2. Drain air filter housing inlet drain tube.



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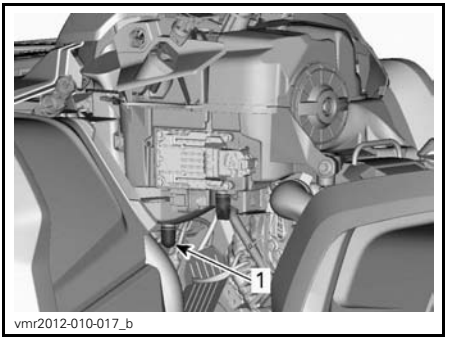
TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Air filter housing inlet drain tube

3. Check air filter dirty chamber for cleanliness.
   – If any debris or water are found, clean air filter chamber using a vacuum cleaner.

NOTICE Do not blow compressed air into air filter chamber.

4. Check air filter drain tube (clean chamber).
   – If any debris or water are found, refer to *SPECIAL PROCEDURES*.
   – Investigate for contamination source.



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TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Air filter drain tube

Air Filter Cleaning and Oiling

⚠ CAUTION Always wear appropriate skin and eye protection. Chemicals can cause a skin rash and eye injury.

Paper Filter Cleaning

1. Ensure that the foam filter is removed from paper filter.
2. Tap out heavy dust from the paper filter.

This will allow dirt and dust to get out of the paper filter.

NOTE: Paper filter have a limited life span; replace filter if too dirty or clogged.

NOTICE It is not recommended to blow compressed air on the paper filter; this could damage the paper fibers and reduce its filtration ability when used in dusty environments.

NOTICE Do not wash the paper filter with any cleaning solution.

Foam Filter Cleaning

1. Spray the foam filter inside and out with a good air filter cleaner and follow manufacturer's instructions.

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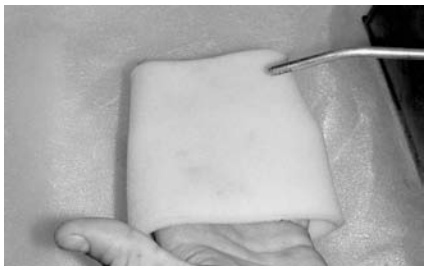
TYPICAL - SPRAY THE FOAM FILTER

2. Dry the foam filter completely.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TYPICAL - DRY

NOTE: A second application may be necessary for heavily soiled elements.

Foam Filter Oiling

1. Make sure filter is clean. Refer to *FOAM FILTER CLEANING*.
2. Spray AIR FILTER OIL (P/N 219 700 340) or equivalent on the foam filter previously dried.

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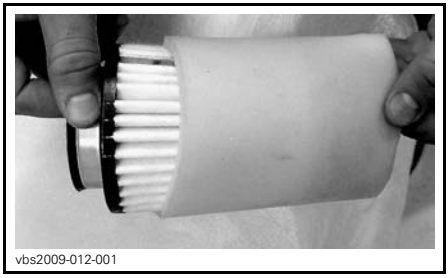
AIR FILTER OIL (P/N 219 700 340)

vbs2009-012-014

TYPICAL - OIL THE FOAM FILTER

3. Let stand for 3 to 5 minutes.
4. Remove any excess of oil that could transfer to the paper filter by wrapping the foam filter into an absorbent cloth and squeezing gently. This will also ensure a full oil coverage on foam filter.
5. Reinstall the foam filter over the paper filter.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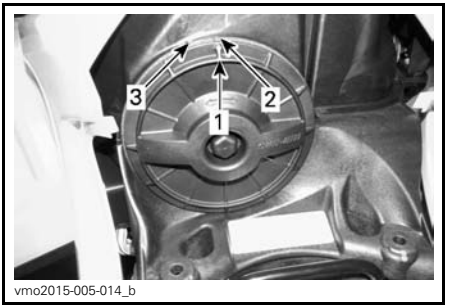
TYPICAL

Air Filter Installation

Slightly grease O-ring seal and plastic body of air filter.

Install air filter as the reverse of removal.

Ensure air filter cover is properly locked onto the air filter housing. See indications on filter cover and housing.

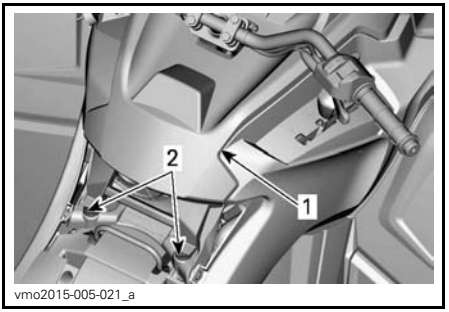


1. Cover position arrow
2. Locked
3. Unlocked

Install console as the reverse of removal. However, pay attention to the following.

Align console front tabs with slots, then push console forward.

Then align and insert studs with grommets on rear portion of console until studs engage with grommets.



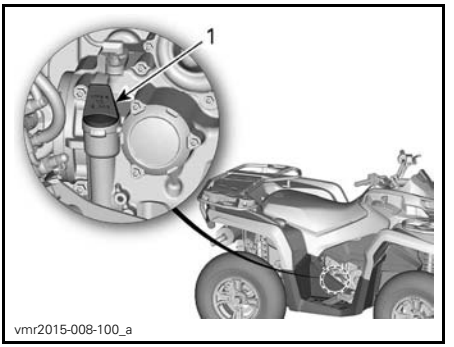
TYPICAL
1. Console
2. Studs and grommets

Engine Oil

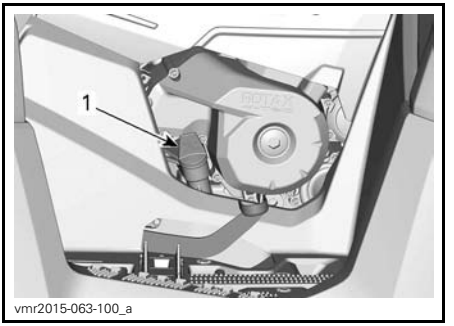
Engine Oil Level

NOTICE Check level frequently and refill if necessary. **Do not overfill.** Operating the engine/gearbox with an improper level may severely damage engine/gearbox. Wipe off any spillage.

NOTE: While checking the oil level, visually inspect engine area for leaks.



450 MODEL - RH SIDE OF ENGINE
1. Dipstick



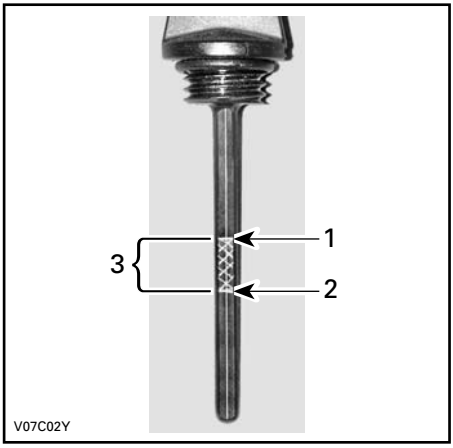
570 MODEL - RH SIDE OF ENGINE
1. Dipstick

NOTE: Do not lose the O-ring placed on the dipstick.

With vehicle on a level surface and engine cold, not running, check the oil level as follows:

1. Unscrew dipstick then remove it and wipe clean.

2. Reinstall dipstick, screw in it completely.
3. Remove and check oil level. It should be near or equal to the upper mark.



TYPICAL
1. Full
2. Add
3. Operating range

To add oil, remove dipstick. Place a funnel into the dipstick tube to avoid spillage.

Add a small amount of recommended oil and recheck oil level.

Repeat the above procedures until oil level reaches the dipstick's upper mark. Do not overfill.

Properly tighten dipstick.

Recommended Engine Oil

RECOMMENDED ENGINE OIL (SUMMER)	
Finland, Norway and Sweden	XPS 4-STROKE SYNTH. BLEND OIL (F) (P/N 619 590 109)
All other countries	XPS 4-STROKE SYNTH. BLEND OIL (P/N 293 600 121)

RECOMMENDED ENGINE OIL (ALL SEASON)	
Finland, Norway and Sweden	XPS 4-STROKE SYNTHETIC OIL (F) (P/N 619 590 114)
All other countries	XPS 4-STROKE SYNTHETIC OIL (P/N 293 600 112)

NOTE: The XPS oil is specially formulated and tested for the severe requirements of this engine. BRP recommends the use of its XPS 4-stroke oil.

If XPS engine oil is not available, use a 4-stroke SAE 5W40 engine oil that meets or exceeds the requirements for API service classification SJ, SL, SM or SN. Always check the API service label certification on the oil container it must contain at least one of the above standards.

NOTICE Damages caused by the use of oil not suitable for this engine may not be covered by the BRP limited warranty.

Engine Oil Change

Start and warm-up engine. Stop engine.

Ensure vehicle is on a level surface.

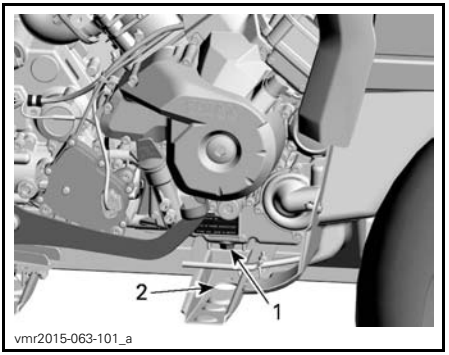
Remove dipstick.

Clean the oil drain plug area.

Place a drain pan under the oil drain plug area.

Unscrew oil drain plug.

⚠ CAUTION The engine oil can be very hot. In order to avoid potential burns, do not remove the engine drain plug if the engine is hot. Wait until engine oil is warm.



TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. *Drain plug*
2. *Access through frame*

Allow enough time for oil to flow out of oil filter.

Replace the oil filter. Refer to *OIL FILTER*.

Change gasket on oil drain plug.

Clean gasket area on engine and oil drain plug then reinstall plug.

Refill engine at the proper level with the recommended oil.

Refer to *SPECIFICATIONS* for oil capacity.

Start engine and let idle for a few minutes.

Ensure oil filter area and oil drain plug areas are not leaking.

Stop engine.

Wait a while to allow oil to flow down to crankcase then check oil level.

Refill as necessary.

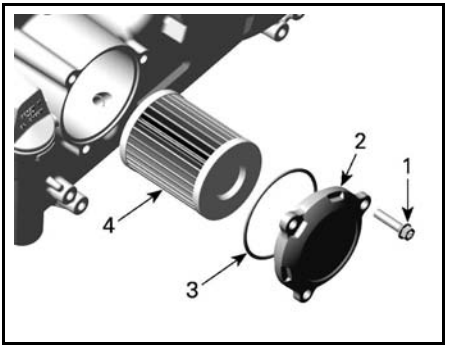
Dispose of oil as per your local environmental regulations.

Oil Filter

Oil Filter Removal

To reach oil filter, remove the following parts:
– Seat
– Console
– RH side panel and extension(s)
– RH footrest panel.

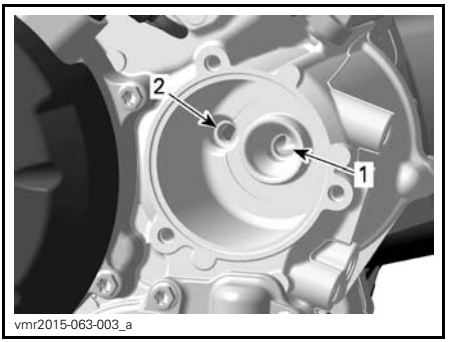
1. Clean oil filter area.
2. Remove oil filter cover.
3. Remove oil filter.



1. *Oil filter screw*
2. *Oil filter cover*
3. *O-ring*
4. *Oil filter*

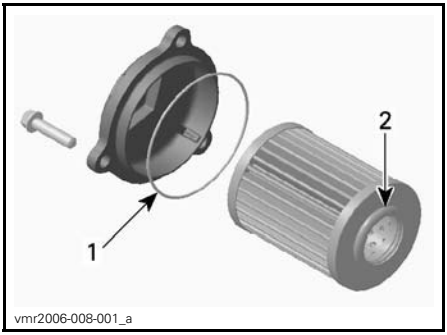
Oil Filter Installation

1. Check and clean the oil filter inlet and outlet area of dirt and other contaminations.



1. *Inlet bore from the oil pump to the oil filter*
2. *Outlet bore to the engine oil providing system*

2. Install a NEW O-ring on oil filter cover.
3. Install the filter into the cover.
4. Apply engine oil on O-ring and on end of filter.



1. Slightly oil
2. Slightly oil

5. Install the cover on the engine.
6. Tighten oil filter cover screws to recommended specification.

TIGHTENING TORQUE	
Oil filter cover screws	10 N•m ± 1 N•m (89 lbf•**in** ± 9 lbf•**in**)

7. Reinstall remaining parts if applicable.

Radiator

Radiator Inspection

Periodically check the radiator area for cleanliness.

TYPICAL - PARTS REMOVED FOR CLARITY

Inspect radiator and hoses for leaks or any damage.

Inspect radiating fins. They must be clean, free of mud, dirt, leaves and any other deposit that would prevent the radiator to cool properly.

Remove as much deposits as you can with your hands. If water is available in proximity, try rinsing the radiating fins.

If available, use a garden hose to rinse the radiating fins.

⚠ CAUTION Never clean radiator with your hands when it is hot. Let the radiator cool down before cleaning.

NOTICE Be careful not to damage the radiating fins when cleaning. Do not use any object/tool that could damage the fins. The fins are purposely thin parts to allow efficient cooling. WHEN HOSING, USE LOW PRESSURE ONLY, NEVER USE A HIGH PRESSURE WASHER.

See an authorized Can-Am dealer, repair shop or person of your own choosing to check the performance of the cooling system.

Engine Coolant

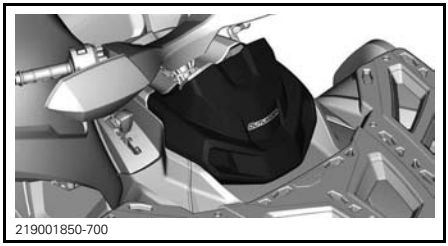
Engine Coolant Level Verification

⚠ WARNING

Check coolant level with engine cold. Never add coolant in cooling system when engine is hot.

Place vehicle on a level surface.

Remove the gauge support.



Remove engine coolant reservoir cap.

With vehicle on a level surface, liquid should be between MIN. and MAX. level marks of coolant reservoir.

1. Engine coolant reservoir

NOTE: When checking level at temperature lower than 20°C (68°F), it may be slightly lower than MIN. mark.

Add coolant if required.

⚠ WARNING

Warning: Do not remove the coolant reservoir cap if engine is hot.

Use a funnel to avoid spillage. **Do not overfill.**

Properly reinstall and tighten reservoir cap.

Reinstall gauge support.

⚠ WARNING

In order to avoid potential burns, do not remove the radiator cap if the engine is hot.

NOTE: A cooling system that frequently requires coolant is the indication of leaks or engine problems. See an authorized Can-Am dealer.

Recommended Engine Coolant

NOTICE **Always use ethylene-glycol antifreeze containing corrosion inhibitors specifically for internal combustion aluminum engines.**

COUNTRY	RECOMMENDED COOLANT
Finland, Norway and Sweden	LONG LIFE ANTIFREEZE (P/N 219 702 685)
All other countries	LONG LIFE ANTIFREEZE(F) (P/N 619 590 204)
Alternative, or if not available	Distilled water and antifreeze solution (50% distilled water, 50% antifreeze)

Engine Coolant Replacement

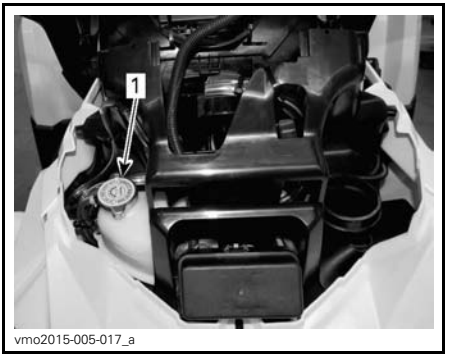
Cooling System Draining

Remove the gauge support.

Remove the coolant reservoir cap.

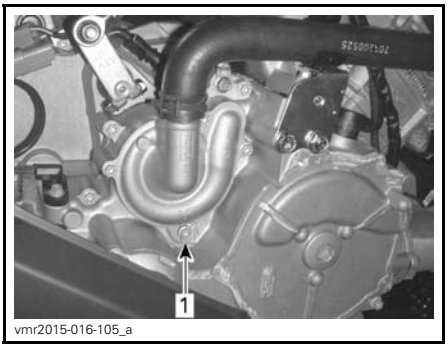
⚠ WARNING

Warning: To avoid potential burns, do not remove the pressure cap if the engine is hot.



1. Engine coolant reservoir cap

Unscrew the coolant drain plug and drain the coolant into a suitable container.



TYPICAL - SOME PARTS REMOVED FOR CLARITY
1. Coolant drain plug

NOTE: Do not unscrew the coolant drain plug completely.

Disconnect the lower radiator hose and drain the remaining coolant into a suitable container.

NOTE: Take note of the position of the hose clamp on the lower radiator hose at the radiator.

Reinstall radiator hose as noted prior to removal.

Reinstall cooling system drain plug with a new gasket ring.

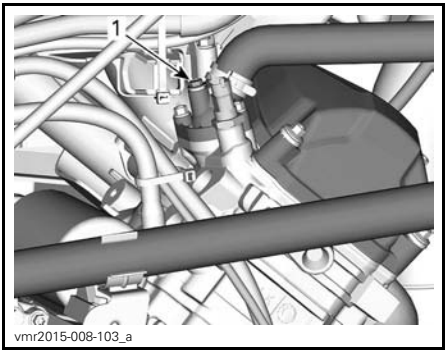
Tighten the coolant drain plug.

TIGHTENING TORQUE	
Cooling system drain plug	9 N•m to 11 N•m (80 lbf•**in** to 97 lbf•**in**)

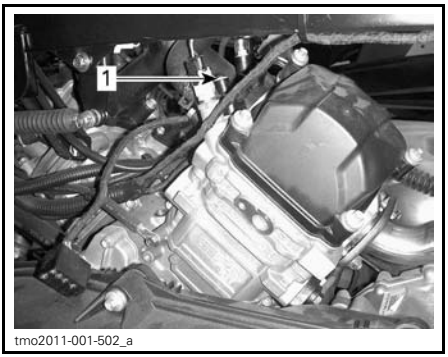
Bleed cooling system, refer to *COOLING SYSTEM FILLING AND BLEEDING*.

Cooling System Filling and Bleeding

1. Unscrew bleed screws above both front and rear cylinders.



TYPICAL
1. Front cylinder bleed screw



TYPICAL - 570 MODELS ONLY
1. Rear cylinder bleed screw

2. Fill the cooling system until coolant comes out of the bleed screw.
3. Squeeze the top of the coolant hose between the radiator and coolant pump several times until all air is bled from the highest point of the hose.
4. Install the bleed screw using a NEW gasket ring and tighten to specification.

TIGHTENING TORQUE	
Bleed screws	5.0 N•m ± 0.6 N•m (44 lbf•**in** ± 5 lbf•**in**)

5. Continue adding coolant until system is full up to the pressure cap.
6. Refill coolant tank up to MAX level mark.

7. Run engine at idle with the radiator cap off. Slowly add coolant if necessary.
8. At this point, wait until engine reaches normal operating temperature.
9. Depress the throttle lever two or three times; then add coolant if required.
10. Stop the engine and let it cool down.
11. Install coolant reservoir cap.
12. Inspect all connections for leaks and check coolant level in the reservoir.

Muffler Spark Arrester

The muffler must be periodically purged of accumulated carbon.

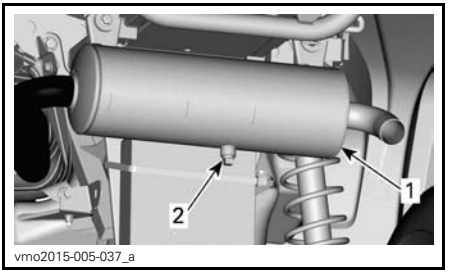
⚠ WARNING

Never run engine in an enclosed area. Never perform this operation immediately after the engine has been run because exhaust system is very hot. Make sure that there are no combustible materials in the area. Wear eye protection and gloves. Never stand behind the vehicle while purging exhaust system. Respect all applicable laws and regulations.

Select a well-ventilated area and make sure the muffler is cool.

Place gearbox on PARK position.

Remove the clean out plug of the muffler.



TYPICAL
1. *Muffler*
2. *Clean out plug*

Block the end of the muffler with a shop rag and start engine.

Momentarily increase engine RPM several times to purge accumulated carbon out of the muffler.

Stop engine and allow muffler to cool.

Reinstall the clean out plug.

Gearbox Oil (570 Models)

Recommended Gearbox Oil

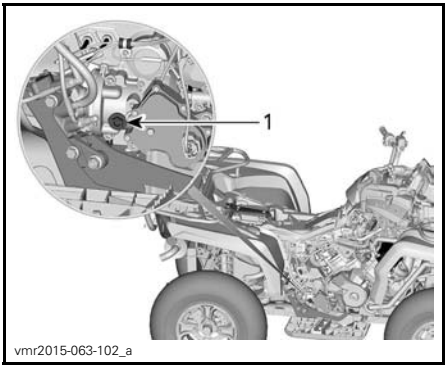
RECOMMENDED PRODUCT	QUANTITY
XPS SYNTHETIC GEAR OIL (75W 140) (P/N 293 600 140)	Approximately 450 ml (15 U.S. oz)

If the recommended oil is not available, use a 75W140 gearbox oil that meets the API GL-5 specification.

Gearbox Oil Level Verification

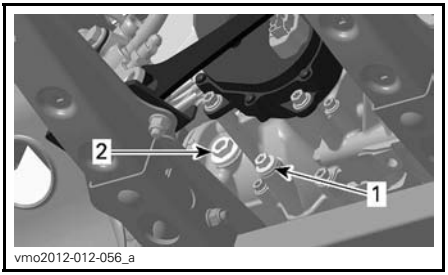
NOTE: Prior checking the gearbox oil level, ensure vehicle is on a level surface.

1. To access gearbox oil level plug, remove the following parts:
   - Seat
   - Console
   - RH side panel and extension(s)
   - RH footrest panel



1. Oil level plug

2. Remove the gearbox oil level plug.



1. Drain plug
2. Oil level plug

3. Check oil level.

The oil should be level with the bottom of the oil level hole.

NOTICE Operating the gearbox with an improper oil level may severely damage gearbox.

Gearbox Oil Replacement

Gearbox Oil Draining Procedure

1. Start engine and operate vehicle to warm-up the gearbox oil.

NOTE: Running engine at idle is not sufficient, vehicle gearbox must be operated.

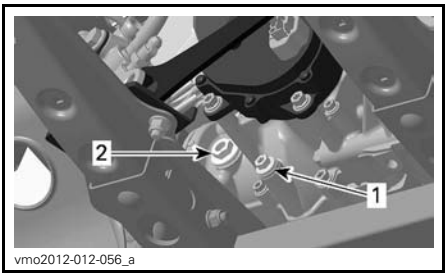
2. Position vehicle on a level surface.
3. Place a drain pan under the gearbox drain plug area.
4. Clean drain plug area.
5. Remove magnetic drain plug and sealing ring. Discard sealing ring.

⚠ WARNING

The gearbox oil can be very hot.

6. Remove oil level plug and its O-ring.

NOTE: Allow oil to completely flow out of gearbox.



1. Magnetic drain plug
2. Oil level plug

7. Clean magnetic drain plug and pay attention to any debris present on drain plug.

NOTE: Presence of excessive debris provides an indication of a gearbox problem.

8. Reinstall magnetic drain plug with a NEW sealing ring and tighten to specification.

TIGHTENING TORQUE	
Drain plug	20 N•m ± 2 N•m (15 lbf•ft ± 1 lbf•ft)

9. Dispose gearbox oil as per your local environmental regulations.

Gearbox Oil Filling Procedure

1. Fill the gearbox through the oil level hole until the oil reaches the bottom of the oil level hole.
2. Install the oil level plug with its O-ring. Tighten plug to specification.

TIGHTENING TORQUE	
Oil level plug	5 N•m ± 0.6 N•m (44 lbf•**in** ± 5 lbf•**in**)

Throttle Cable

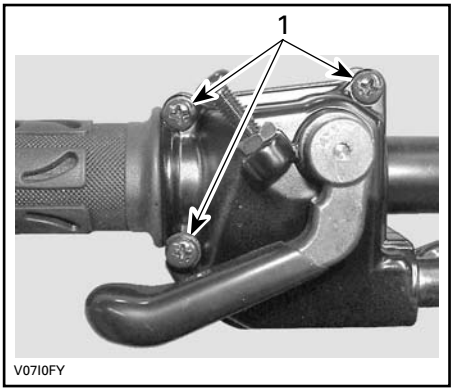
Throttle Cable Lubrication

The throttle cable must be lubricated with silicone based lubricant or an equivalent.

⚠ WARNING

Always use a silicone-based lubricant. Using another lubricant (like a water-based lubricant) could cause the throttle lever/cable to become sticky and stiff.

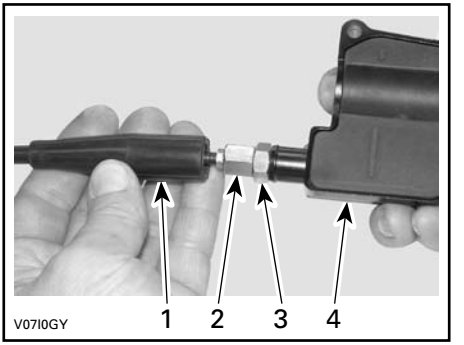
Open the throttle lever housing.



1. Remove these screws

Separate the housing.

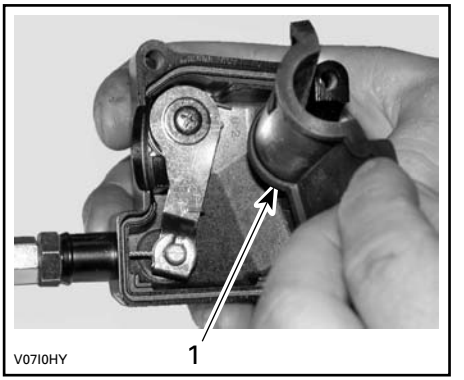
Slide rubber protector back to expose throttle cable adjuster.



1. Cable protector
2. Throttle cable adjuster
3. Lock nut
4. Throttle lever housing

Screw in the throttle cable adjuster.

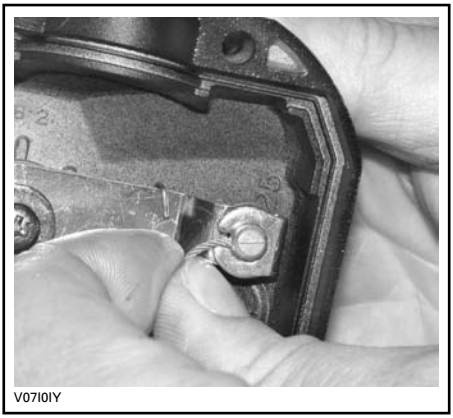
Remove inner housing protector.



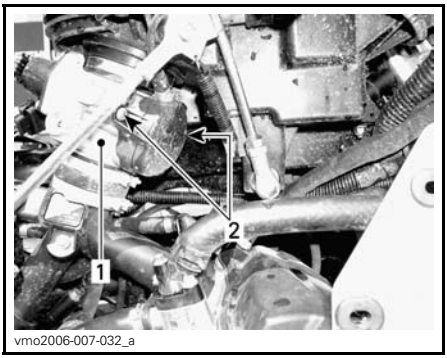
1. Inner housing protector

Remove the cable from the throttle lever housing.

NOTE: Slide cable in clip slot and remove the end of cable from clip.


V07I0IY

Remove the throttle body side cover.



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1. Throttle body
2. Side cover screws

Insert the needle of the lubricant can in the end of throttle cable adjuster.

⚠ CAUTION Always wear appropriate skin and eye protection. Chemicals can cause a skin rash and eye injury.

V07I0JY

TYPICAL

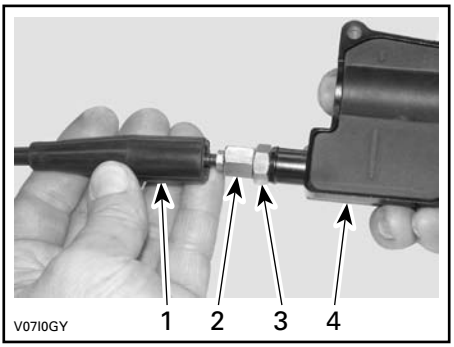
NOTE: Place a rag around the throttle cable adjuster to prevent the lubricant from splashing.

Add lubricant until it runs out at throttle body end of the throttle cable.

Reinstall and adjust the cable.

Throttle Cable Adjustment

Slide rubber protector back to expose throttle cable adjuster.



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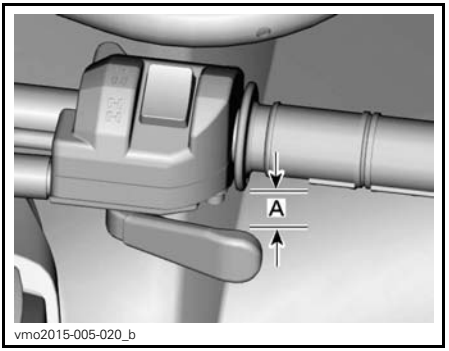
1. Cable protector
2. Throttle cable adjuster
3. Lock nut
4. Throttle lever housing

Loosen lock nut then turn the adjuster to obtain correct throttle lever free play.

Measure throttle free play at the tip of throttle lever.



A. 2 mm (.079 in)

Tighten lock nut and reinstall protector.

With the shift lever on PARK position, start the engine.

Check if the throttle cable is adjusted correctly by turning handlebar fully to the right then fully to the left. If the engine RPM increases, readjust the throttle lever free play.

Spark Plugs

Spark Plug Access

Remove side panels.

Unplug spark plug cable(s).

Spark Plug Removal

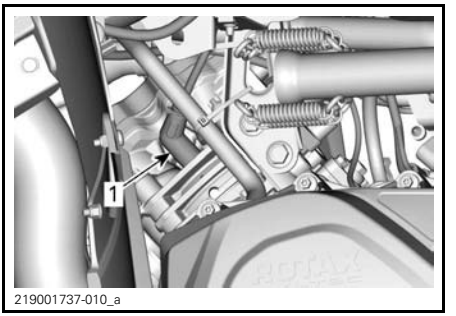
Unscrew spark plugs one turn.

⚠ CAUTION Always wear safety goggles when using pressurized air.

Clean spark plugs and cylinder heads with pressurized air if possible.

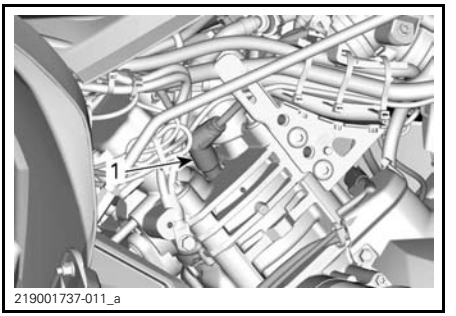
Unscrew spark plugs completely using a spark plug socket, then remove them.

570 Models Only



RH SIDE — REAR CYLINDER
1. Spark plug

All Models



LH SIDE — FRONT CYLINDER
1. Spark plug

Spark Plug Installation

Prior to installation, make sure that contact surfaces of cylinder heads and spark plugs are free of grime.

Using a feeler gauge, set the spark plug gap.

SPARK PLUG GAP	
450	0.7 mm - 0.9 mm (.028 in - .035 in)
570	0.7 mm to 0.8 mm (.028 in to .031 in)

Apply a small amount of copper-based anti-seize lubricant over spark plug threads to prevent a possible seizure.

Screw spark plugs into cylinder heads by hand and tighten with a torque wrench and a proper socket.

⚠ CAUTION Do not overtighten spark plugs, engine damage can occur.

TIGHTENING TORQUE	
Spark plug	20 N•m ± 2.4 N•m (15 lbf•ft ± 2 lbf•ft)

Battery

⚠ CAUTION Never charge a battery while installed in vehicle.

These vehicles are equipped with a VRLA battery (Valve Regulated Lead Acid). It is a maintenance-free type battery, there is no need to add water to adjust electrolyte level.

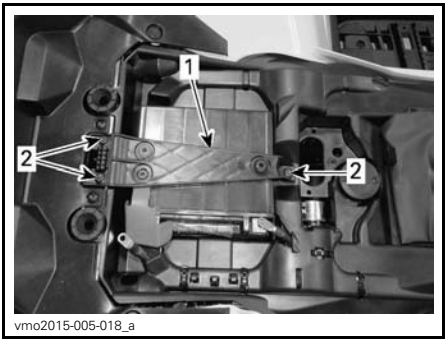
NOTICE Never remove the battery sealing cap.

Battery Removal

Disconnect BLACK (-) cable first then RED (+) cable.

NOTICE Always disconnect BLACK (-) battery cable first.

Remove retaining screws, battery holder then pull the battery out of frame.



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1. Battery holder
2. Retaining screws

Battery Cleaning

Clean battery, battery casing and battery posts using a solution of baking soda and water.

Remove corrosion from battery cable terminals and battery posts using a firm wire brush.

Battery Installation

Battery installation is the reverse of the removal procedure.

NOTICE Always connect RED (+) battery cable first.

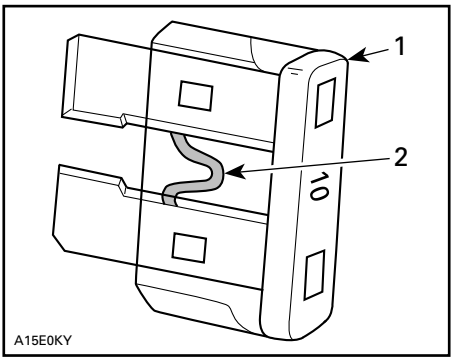
Fuses

⚠ CAUTION Always turn the ignition switch to OFF position before replacing a defective fuse.

Fuse Inspection

Check if filament is melted.

If filament is melted, replace damaged fuse, refer to *FRONT FUSE BOX* for location and proper rating.

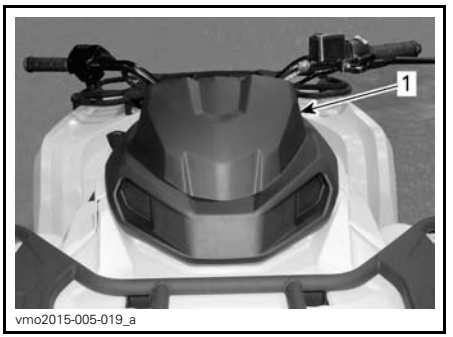


TYPICAL
1. *Fuse*
2. *Check if melted*

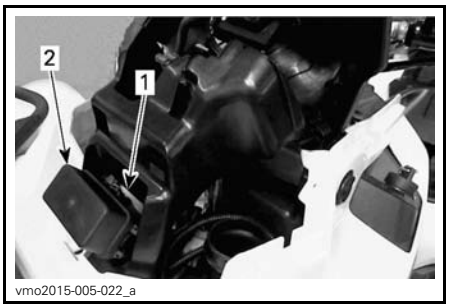
NOTICE Do not use a higher rated fuse as this can cause severe damage.

Front Fuse Box Location

Pull upwards and front to remove the gauge support from its location.



1. *Gauge support*



1. *Front fuse box*
2. *Front fuse box cover*

NOTE: Check inside fuse box cover to know fuses location.

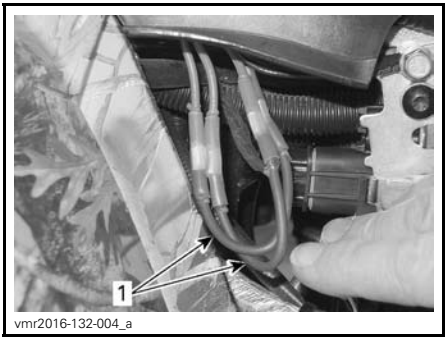
NOTICE Do not store any objects in the front service compartment.

Front Fuse Box Description

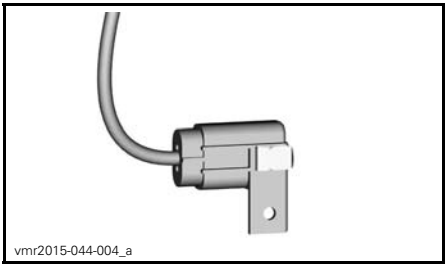
FRONT FUSE BOX		
NO.	DESCRIPTION	RATING
R1	Fan Relay	-
R2	Main Relay	-
R3	Accessories Relay	-
R4	Fuel Pump Relay	-
R8	Brake Relay	-
F4	Gauge (Speedo)	10 A
F5	Injectors/Ignition, ECM, Fuel Pump, VSS	10 A
F8	Key Switch, Starter Solenoid, Clock	10 A
F9	Cooling Fan	20 A
F12	DC Outlet/Light/Accessories, Euro Control (CE), 2WD/4WD	20 A

Fuse Links and Fuse Box 2

The fuse links and fuse box 2 are located behind the RH side panel



1. Fuse links



FUSE BOX 2

Rear Fuse Identification

FUSE LINK IDENTIFICATION			
Fuse links	1	Main	16 awg
	2	Fan/accessories	16 awg
FUSE IN FUSE BOX 2 IDENTIFICATION			
Fuse	3	DPS/ACS (dynamic power steering)	40 A

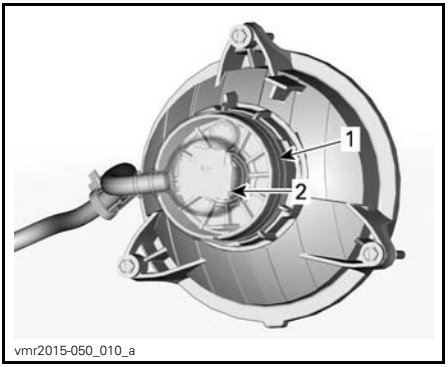
Lights

Always check light operation after replacement.

Headlight Bulb Replacement

NOTICE Never touch glass portion of a halogen bulb with bare fingers, it shortens its operating life. If glass is touched, clean it with isopropyl alcohol which will not leave a film on the bulb.

1. Remove cover.
2. Unplug connector.
3. Remove bulb.

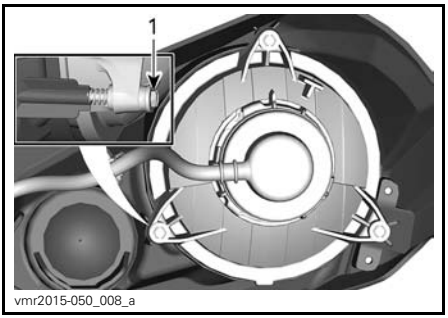


1. Cover
2. Connector

4. Properly reinstall removed parts in the reverse order of their removal.
5. Validate headlight operation.

Headlight Beam Aiming

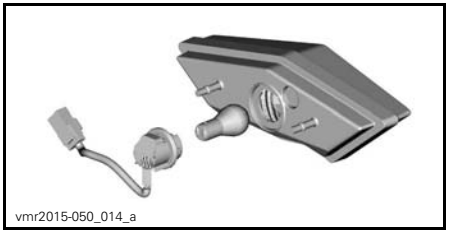
Turn adjustment knobs to adjust beam height and side orientation to specification.



LOW BEAM
1. Adjustment knobs

Taillight/Brake Light Bulb Replacement

1. Unplug connector from bulb.
2. Rotate light bulb counterclockwise to remove it from taillight.



3. Remove bulb socket from taillight.

Installation is the reverse of the removal procedure.

Drive Shaft Boot and Protector

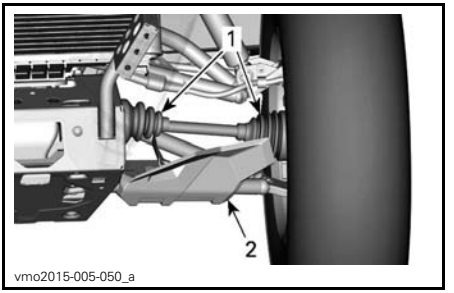
Drive Shaft Boot and Protector Inspection

Visually inspect drive shaft protectors and boots conditions.

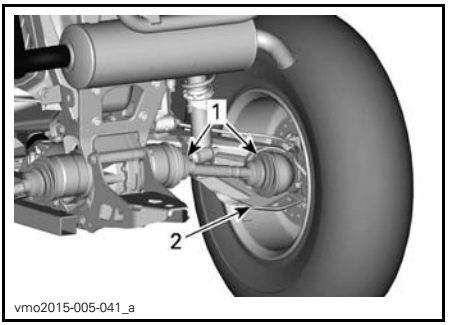
Check protectors for damage or rubbing against shafts.

Check boots for cracks, tears, leaking grease etc.

Repair or replace damaged parts as necessary.



TYPICAL — FRONT OF VEHICLE
1. *Drive shaft boots*
2. *Drive shaft protector*



TYPICAL — REAR OF VEHICLE
1. *Drive shaft boots*
2. *Drive shaft protector*

Wheel Bearing

Wheel Bearing Inspection

Place vehicle on a level surface.

Apply the parking brake.

Lift and support vehicle.

Secure vehicle on jack stands.

Push and pull the wheels from the upper edge to feel the play.

See an authorized Can-Am dealer if there is any play.

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

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TYPICAL

Wheels and Tires

Tire Pressure

⚠ WARNING

Tire pressure greatly affects vehicle handling and stability. Insufficient pressure may cause tire to deflate and rotate on wheel. Overpressure may burst the tire. Always follow recommended pressure. NEVER set tire pressure below minimum. It could cause the tire to dislodge from the rim. Since tires are low-pressure types, a manual pump should be used.

Check pressure when tires are **cold** before using the vehicle. Tire pressure changes with temperature and altitude. Recheck pressure if one of these conditions has changed.

For your convenience, a pressure gauge is supplied in tool kit.

Refer to *SPECIFICATIONS* for proper pressure.

Although the tires are specifically designed for off-road use, a flat may still occur. Therefore, it is recommended to carry a tire pump and a repair kit.

Tire Inspection

Check tire for damage and wear. Replace if necessary.

Do not rotate tires. The front and rear tires have a different size. The tires are directional and their rotation must be kept in a specific direction for proper operation.

Tire Replacement

Tires replacement should be performed by an authorized Can-Am dealer.

⚠ WARNING

- **Replace tires only with the same type and size as original tires.**
- **For unidirectional tread pattern, ensure that the tires are installed in the correct direction of rotation.**
- **Tires should be replaced, by an experienced person, in accordance with tire industry standards and tools.**

Wheel Removal

Place vehicle on a level surface.

Engage 4WD mode.

Apply the parking brake.

Loosen lug nuts then lift vehicle.

Secure vehicle on jack stands.

Remove lug nuts then remove wheel.

Wheel Installation

At installation, it is recommended to apply anti-seize lubricant on threads.

If tires are unidirectional, make sure to install wheel according to tire rotation.

Carefully tighten lug nuts in a crisscross sequence then tighten to specification.

TIGHTENING TORQUE	
Wheel lug nut	100 N•m ± 10 N•m (74 lbf•ft ± 7 lbf•ft)

NOTICE Always use the recommended wheel lug nuts according to the type of wheel. Using a different lug nut could cause damage to the rim or studs.

TYPICAL — ALUMINUM WHEEL
1. Wheel lug nut (closed end type)

Steering

Steering Inspection

Tie-Rod Ends

Place vehicle on a level surface.

Apply parking brake.

Lift vehicle.

Secure vehicle on jack stands.

Inspect tie-rod boots for cracks.

Push and pull the wheels from the front or rear edge to feel the play.

See an authorized Can-Am dealer if there is an abnormal play or the boot is cracked.

⚠ WARNING

The tie-rod end must be replaced if the boot is cracked or shows an abnormal play.

Suspension

Front Suspension Lubrication

Lubricate front suspension arms at grease fittings.

SUSPENSION GREASE	
BRP recommended product	SUSPENSION GREASE (P/N 293 550 033)

Rear Suspension Lubrication

Lubricate rear stabilizer bar links and pivot bushing at grease fittings.

SUSPENSION GREASE	
BRP recommended product	SUSPENSION GREASE (P/N 293 550 033)

Suspension Inspection

Shock Absorbers

Inspect shock absorber for oil leaks or other damage.

Check tightness of fasteners.

See an authorized Can-Am dealer as necessary.

Ball Joints

Place vehicle on a level surface.

Apply parking brake.

Lift vehicle.

Secure vehicle on jack stands.

Inspect ball joint boots for cracks.

Push and pull the wheels from the upper and lower edge to feel the play.

See an authorized Can-Am dealer if there is an abnormal play or the boot is cracked.

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TYPICAL

⚠ WARNING

The ball joint must be replaced if the boot is cracked or it shows an abnormal play.

Front suspensionArms

Check suspensionarms for cracks, bending or other damage.

See an authorized Can-Am dealer as necessary.

Rear Trailing Arms

Check trailing arms for distortion, cracks or bending.

See an authorized Can-Am dealer if any problem is detected.

Brakes

Brake Fluid Reservoir Level Verification

With vehicle on a level surface, check brake fluid in reservoirs for proper level.

NOTE: A low level may indicate leaks or worn brake pads.

Front Brake Reservoir

Turn steering in the straight-ahead position to ensure reservoir is level.

Check the brake fluid level, the reservoir is full when the fluid reaches of the top of window.

Visually inspect lever boot condition.

Check for cracks, tears, etc. Replace if damaged.

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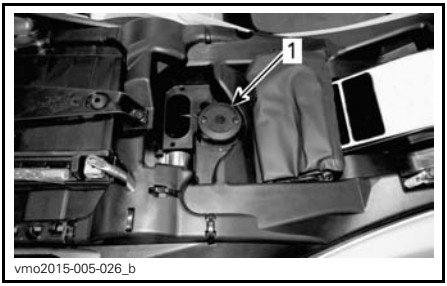
TYPICAL

Rear Brake Reservoir

Remove the seat.

With vehicle on a level surface, liquid should be between MIN. and MAX. level marks of brake pedal fluid reservoir.



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1. Rear brake fluid reservoir

Adding Brake FLuid

Clean filler cap.

⚠ WARNING

Clean filler cap before removing.

Remove screws retaining the reservoir cap.

Remove reservoir cap.

Add fluid as required using a clean funnel. Do not overfill.

NOTICE Brake fluid can damage plastic and painted surface. Wipe off and clean any spillage.

Reinstall reservoir cap and tighten screws.

NOTE: Ensure filler cap diaphragm is pushed inside the cap before closing the brake fluid reservoir.

Recommended Brake Fluid

Always use brake fluid meeting the specification DOT 4 only from a sealed container.

⚠ WARNING

To avoid damage to the braking system, do not use other brake fluid types.

Brake Inspection

⚠ CAUTION The brakes can be very hot after prolonged use of the vehicle and can cause burns. Wait for the brakes to cool down.

The brake inspection, maintenance and repair should be performed by an authorized Can-Am dealer.

However, verify the following between visits to your dealer:

- Brake fluid level
- Brake system for fluid leaks
- Brake cleanliness.

⚠ WARNING

The brake fluid replacement or brake system maintenance and repairs should be performed by an authorized Can-Am dealer.

Post-Operation Care

When vehicle is used in salt-water environment (beach area, launching and loading boats etc.), rinsing the vehicle with fresh water is necessary to preserve vehicle and its components. Metallic parts lubrication is highly recommended. Use XPS LUBE (P/N 293 600 016) or an equivalent. This must be performed at the end of each operating day.

When vehicle is operated in muddy conditions, rinsing the vehicle is recommended to preserve vehicle and its components and to keep lights clean.

Vehicle Cleaning and Protection

NOTICE Never use a high pressure washer to clean the vehicle. USE LOW PRESSURE ONLY (like a garden hose).

Pay attention to certain areas where mud or debris can accumulate and potentially cause wear, interferences or promote corrosion.

Wash the vehicle with a soapy water solution.

NOTICE Never clean polypropylene body parts with any petroleum base cleaning products, as it will alter the glossy finish.

Non Compatible Cleaning Products

MATERIAL TYPE	NON-COMPATIBLE CLEANING PRODUCTS
Polypropylene	ANY PETROLEUM BASE CLEANING PRODUCTS
	XP-S ATV Finishing Spray (P/N 219 701 704)
	XP-S ATV Cleaning Kit (P/N 219 701 713) (it contains the above XP-S ATV Finishing Spray)

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DO NOT USE ON POLYPROPYLENE

Compatible Cleaning Products

MATERIAL TYPE	COMPATIBLE CLEANING PRODUCT
Polypropylene	XPS ATV Wash (P/N 219 701 702)
	Soapy water

vbs2012-006-001

SAFE FOR POLYPROPYLENE

STORAGE AND PRESEASON PREPARATION

When a vehicle is not in use for more than (4) months, proper storage is a necessity.

When using your vehicle after storage, a preparation is required.

See an authorized Can-Am dealer, repair shop or person of your own choosing to have your vehicle prepared for either storage or the preseason.

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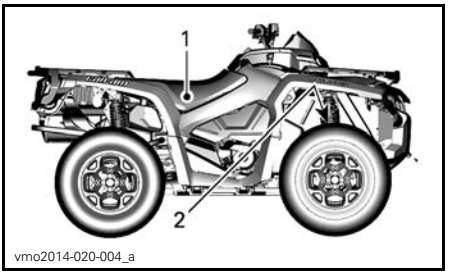
TECHNICAL INFORMATION

VEHICLE IDENTIFICATION

The main components of your vehicle (engine and frame) are identified using different serial numbers. It may sometimes become necessary to locate these numbers for warranty purposes or to trace your vehicle in the event of loss. These numbers are also required by the authorized Can-Am dealer to complete warranty claims properly. We strongly recommend that you take note of all the serial numbers on your vehicle and supply them to your insurance company.

Vehicle Identification Number

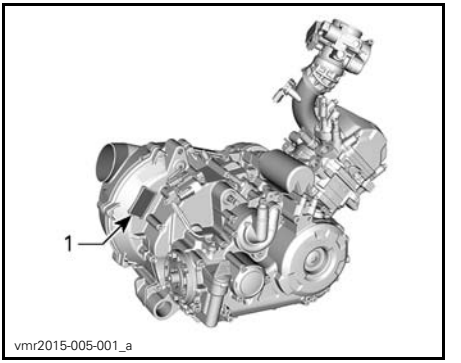


TYPICAL
1. *Label 1 (on the frame under the seat in the middle)*
2. *Label 2 (stamped onto frame behind RH front wheel)*

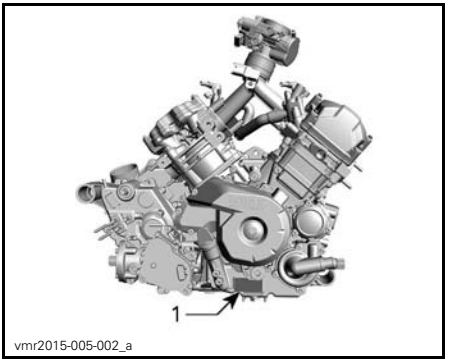
LABEL 1
1. *VIN (Vehicle Identification Number)*
2. *Model number*

LABEL 2
1. *VIN (Vehicle Identification Number)*
2. *Model*

Engine Identification Number (EIN)



BACK OF 450 ENGINE
1. *EIN (Engine Identification Number)*



RH SIDE OF 570 ENGINE
1. *EIN (Engine Identification Number)*

NOISE EMISSION CONTROL SYSTEM REGULATION (CANADA/UNITED STATES)

Tampering with Noise Control System Is Prohibited!

U.S. Federal law and Canadian provincial laws may prohibit the following acts or the causing there of:

1. The removal or rendering inoperative by any person other than for purposes of maintenance, repair or replacement of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use or
2. The use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those Acts Presumed to Constitute Tampering Are the Acts Listed Below:

1. Removal or alteration or the puncturing of the muffler or any engine component which conducts removal of engine exhaust gases.
2. Removal or alteration or the puncturing of any part of the intake system.
3. Replacing any moving parts of the vehicle or parts of the exhaust or intake system, with parts other than those specified by the manufacturer.
4. Lack of proper maintenance.

NOISE EMISSION AND VIBRATION VALUES (ALL COUNTRIES EXCEPT CANADA/UNITED STATES)

MODEL		450	570
NOISE EMISSION AND VIBRATION VALUES[1]			
Noise	Sound pressure (L_{pA})	83 dB @ 3600 RPM (Uncertainty (K_{pA}) 3dB)	81 dB @ 4000 RPM (Uncertainty (K_{WA}) 3dB)
	Sound power level (L_{WA})	95 dB @ 3600 RPM (Uncertainty (K_{WA}) 3dB)	96 dB @ 4000 RPM (Uncertainty (K_{WA}) 3dB)
Vibration	Hand-arm system	<2.5 m/s^2 @ 3600 RPM	<2.5 m/s^2 @ 4000 RPM
	Whole body at seat	<0.5 m/s^2 @ 3600 RPM	<0.5 m/s^2 @ 4000 RPM

[1]: Noise emission and Vibration values are measured in accordance with Standard EN 15997:2011 on a paved surface, at Neutral.

The EC-Declaration of Conformity does not appear in this version of the Operator's Guide.

Please refer to the printed version that was delivered with your vehicle.

SPECIFICATIONS

450 Models

ENGINE		450
Engine type		ROTAX 450, 4-stroke, Single Over Head Camshaft (SOHC), liquid cooled
Number of cylinder		1
Number of valves		4 valves (mechanical adjustment)
Valve clearance	Intake	0.06 mm to 0.14 mm (.0024 in to .0055 in)
	Exhaust	0.11 mm to 0.19 mm (.0043 in to .0075 in)
Bore		94 mm (3.7 in)
Stroke		61.5 mm (2.42 in)
Displacement		426.8 cm^3 (26.04 in^3)
Exhaust system		Spark arrester approved by USDA Forest Service
Engine air filter		Synthetic paper filter with foam

LUBRICATION SYSTEM			450
Lubrication	Type		Wet sump with replaceable oil filter
	Oil filter		Replaceable cartridge
	Engine oil	Capacity (oil change with filter)	3 L (3.2 qt (U.S. liq.)) (engine/transmission)
		Recommended	XPS 4-stroke synth. blend oil (P/N 293 600 121). XPS 4-stroke synthetic oil (P/N 293 600 112). If not available, use a 4-stroke SAE 5W 40 engine oil that meets the requirements for API service classification SJ, SL, SM or SN

COOLING SYSTEM			450
Coolant	Type	Finland, Norway and Sweden	Use Long life antifreeze (P/N 619 590 204)
		All other countries	Use Long life antifreeze (P/N 219 702 685)
		Alternative, or if not available	Coolant specifically designed for aluminum engines Ethyl glycol/distilled water mix (50%/50%).
	Capacity		2.9 L (3.1 qt (U.S. liq.))

TRANSMISSION	450
Type	CVT (Continuously Variable Transmission)
Engagement RPM	2000 RPM

GEARBOX	450
Type	Dual range (HI-LO) with park, neutral and reverse

ELECTRICAL SYSTEM		450
Magneto generator output	Without DPS	400 W @ 6000 RPM
	With DPS	500 W @ 6000 RPM
Ignition system type		IDI (Inductive Discharge Ignition)
Ignition timing		Not adjustable
Spark plug	Quantity	1
	Make and type	NGK LMAR8D-J or equivalent
	Gap	0.7 mm to 0.9 mm (.028 in to .035 in)
Engine RPM limiter setting	Forward	8000 RPM
	Reverse	15 km/h (9 MPH) without Override)

ELECTRICAL SYSTEM		450
Battery	Type	Maintenance free
	Voltage	12 Vdc
	Nominal rating	18 A•h
	Power starter output	0.7 KW
Headlights	High	HS1 35 W
	Low	HS1 35 W
Taillights		P21/5W
Fuses		Refer to *FUSES* in the *MAINTENANCE* section

FUEL SYSTEM			450
Fuel delivery		Type	Electronic Fuel Injection (EFI), 46 mm throttle body, 1 injector per cylinder
Fuel pump		Type	Electrical (in fuel tank)
Idle speed			1250 RPM (not adjustable)
Fuel	Type		Regular unleaded gasoline
	Minimum octane rating	Inside North America	87 (R+M)/2 or higher
		Outside North America	92 RON or higher
Fuel tank capacity			20.5 L (5.4 U.S. gal.)
Fuel remaining when low fuel light turns ON			± 5 L (1.3 U.S. gal.)

DRIVE SYSTEM			450
Drive system type			Selectable 2WD/4WD
Front differential oil/ rear final drive oil	Capacity	Front	500 ml (17 U.S. oz)
		Rear	250 ml (8.5 U.S. oz)
	Type	Front	XPS synthetic gear oil (75W 90) (P/N 93 600 043) OR synthetic oil 75W 90 API GL5)
		Rear	XPS synthetic gear oil (75W 140) (P/N 293 600 140) or a 75W140 API GL-5 synthetic gear oil
Front drive		Base	Straight gear Visco-Lok† auto-locking front differential
		All models except Base	Straight gear Visco-lok† QE auto-locking front differential
Front drive ratio			3.6:1
Rear drive			Bevel Straight gear / final drive
Rear drive ratio			3.6:1
CV joint grease			Castrol CV joint grease (P/N 293 550 062)
Propeller shaft grease			Propeller shaft grease (P/N 293 550 063)

STEERING		450
Turning radius	1-UP	205.7 cm (81 in)
	2-UP	233.7 cm (92 in)
Camber angle (vehicle on ground)		0°

FRONT SUSPENSION		450
Suspension type		Double A-arm with dive-control geometry
Suspension travel		229 mm (9 in)
Shock absorber	Quantity	2
	Type	Oil
Preload adjustment type		5 positions cam

REAR SUSPENSION		450
Suspension type		Trailing arm Independent (TTI) with external stabilizer bar
Suspension travel		220 mm (8.8 in)
Shock absorber	Quantity	2
	Type	Oil
Preload adjustment type		5 positions cam

BRAKES		450
Front brakes	Type	Dual 214 mm cross drilled disc brakes with hydraulic twin-piston calipers
Rear brake	Type	Single 214 mm cross drilled disc brake with hydraulic twin-piston caliper
Brake fluid	Capacity	260 ml (8.8 U.S. oz)
	Type	DOT 4
Caliper		Floating twin pistons (2 x 26 mm)
Brake pad material		Organic
Minimum brake pad thickness		1 mm (.039 in)
Minimum brake disc thickness		4.0 mm (.157 in)
Maximum brake disc warpage		0.2 mm (.008 in)

TIRES				450
Pressure	Front	1-UP		48.3 kPa (7 PSI)
		2-UP		48.3 kPa (7 PSI)
	Rear	1-UP		48.3 kPa (7 PSI)
		2-UP		48.3 kPa (7 PSI)
Minimum tire thread depth				3 mm (.118 in)
Tire size		Standard DPS	Front	635 x 203 x 305 mm (25 x 8 x 12 in)
			Rear	635 x 254 x 305 mm (25 x 10 x 12 in)
		Pro Mossy Oak	Front	660 x 203 x 305 mm (26 x 8 x 12 in)
			Rear	660 x 254 x 305 mm (26 x 10 x 12 in)

WHEELS			450
Type		Base	Steel
		All except base model	Cast Aluminum
Rim size	Front		305 x 152 mm (12 x 6 in)
	Rear		305 x 191 mm (12 x 7.5 in)
Wheel lug nut torque			100 N•m (74 lbf•ft)

DIMENSIONS		450
Overall length	1-UP	211 cm (83 in)
	2-UP	231 cm (91 in)
Overall width		116.8 cm (46 in)
Overall height	1-UP	124 cm (49 in)
	2-UP	133 cm (52.5 in)
Wheelbase	1-UP	129.5 cm (51 in)
	2-UP	149.9 cm (59 in)
Wheel track	Front	97.4 cm (38 in)
	Rear	92.3 cm (36 in)
Ground clearance	All models except Pro	26.7 cm (10.5 in)
	Pro	29.2 cm (11.5 in)

LOADING CAPACITY AND WEIGHT		450
Dry weight	1-UP	308 kg (678 lb)
	2-UP	324 kg (715 lb)
Front rack capacity		54 kg (120 lb)
Rear rack capacity		109 kg (240 lb)
Rear storage compartment loading capacity		10 kg (22 lb)
Total vehicle load allowed (including driver, all other loads and added accessories)	1-UP	235 kg (517 lb)
	2-UP	272 kg (600 lb)
Towing capacity		590 kg (1,300 lb)
Tongue capacity		23 kg (50 lb)

570 Models

ENGINE		570
Engine type		ROTAX® 570, 4-stroke, 2 cylinders (V-twin), liquid cooled
Valve train		4 valves/cylinder (mechanical adjustment), single over head camshaft (SOHC) with timing chain
Valve clearance	Intake	0.06 mm to 0.14 mm (.0024 in to .0055 in)
	Exhaust	0.11 mm to 0.19 mm (.0043 in to .0075 in)
Bore		84 mm (3.31 in)
Stroke		51.4 mm (2.02 in)
Displacement		570 cm^3 (34.8 in^3)
Exhaust system		Spark arrestor approved by USDA Forest Service
Air filter		Synthetic paper filter with foam

LUBRICATION SYSTEM		570
Type		Wet sump. Replaceable cartridge oil filter
Oil filter		Replaceable cartridge
Engine oil	Capacity (oil change with filter)	2.0 L (2.1 qt (U.S. liq.))
	Recommended	XPS 4-stroke synth. blend oil (P/N 293 600 121). XPS 4-stroke synthetic oil(P/N 293 600 112). If not available, use a 5W40 motor oil that meets the requirements for API service classification SJ, SL, SM or SN

COOLING SYSTEM			570
Coolant	Type	Finland, Norway and Sweden	Use Long life antifreeze (P/N 619 590 204)
		All other countries	Use Long life antifreeze (P/N 219 702 685)
		Alternative, or if not available	Coolant specifically designed for aluminum engines Ethyl glycol/distilled water mix (50%/50%).
	Capacity		3.4 L (.9 U.S. gal.)

TRANSMISSION	570
Type	CVT (Continuously Variable Transmission)
Engagement RPM	1800 RPM

GEARBOX		570
Type		Dual range (HI-LO) with park, neutral and reverse
Gearbox oil	Capacity	450 ml (15.2 U.S. oz)
	Recommended	XPS synthetic gear oil (75W 140) (P/N 293 600 140) or a 75W140 API GL-5 synthetic gear oil

ELECTRICAL SYSTEM		570
Magneto generator output	Without DPS	400 W @ 6000 RPM
	With DPS	500 W @ 6000 RPM
Ignition system type		IDI (Inductive Discharge Ignition)
Ignition timing		Not adjustable
Spark plug	Quantity	2
	Make and type	NGK DCPR8E or equivalent
	Gap	0.7 mm to 0.8 mm (.028 in to .031 in)
Engine RPM limiter setting	Forward	8000 RPM
	Reverse	15 km/h (9 MPH) without Override)

ELECTRICAL SYSTEM		570
Battery	Type	Maintenance free
	Voltage	12 Vdc
	Nominal rating	18 A•h
	Power starter output	0.7 KW
Headlights	High	HS1 35 W
	Low	HS1 35 W
Taillights		P21/5W
Fuses		Refer to *FUSES* in the *MAINTENANCE* section

FUEL SYSTEM			570
Fuel delivery		Type	Electronic Fuel Injection (EFI), 46 mm throttle body, 1 injector per cylinder
Fuel pump		Type	Electrical (in fuel tank)
Idle speed			1400 RPM (not adjustable)
Fuel	Type		Regular unleaded gasoline
	Minimum octane rating	Inside North America	87 (R+M)/2 or higher
		Outside North America	92 RON or higher
Fuel tank capacity			20.5 L (5.4 U.S. gal.)
Fuel remaining when low fuel light turns ON			± 5 L (1.3 U.S. gal.)

DRIVE SYSTEM			570
Drive system type			Selectable 2WD/4WD
Front differential oil/ rear final drive oil	Capacity	Front	500 ml (17 U.S. oz)
		Rear	250 ml (8.5 U.S. oz)
	Type	Front	XPS synthetic gear oil (75W 90) (P/N 293 600 043) OR synthetic oil 75W 90 API GL5)
		Rear	XPS synthetic gear oil (75W 140) (P/N 293 600 140) or a 75W140 API GL-5 synthetic gear oil
Front drive		Base	Straight gear Visco-Lok† auto-locking front differential
		All models except Base	Straight gear Visco-lok† QE auto-locking front differential
Front drive ratio			3.6:1
Rear drive			Bevel straight gear / final drive
Rear drive ratio			3.6:1
CV joint grease			Castrol CV joint grease (P/N 293 550 062)
Propeller shaft grease			Propeller shaft grease(P/N 293 550 063)

STEERING		570
Turning radius	1-UP	212 cm (83 in)
	2-UP	239 cm (94 in)
Camber angle (vehicle on ground)		0°

FRONT SUSPENSION		570
Suspension type		Double A-arm with dive-control geometry
Suspension travel		229 mm (9 in)
Shock absorber	Quantity	2
	Type	Oil
Preload adjustment type		5 positions cam

REAR SUSPENSION		570
Suspension type		Trailing arm Independent (TTI) with external stabilizer bar
Suspension travel		220 mm (8.8 in)
Shock absorber	Quantity	2
	Type	Oil
Preload adjustment type		5 positions cam

BRAKES		570
Front brakes	Type	Dual 214 mm cross drilled disc brakes with hydraulic twin-piston calipers
Rear brake	Type	Single 214 mm cross drilled disc brake with hydraulic twin-piston caliper
Brake fluid	Capacity	260 ml (8.8 U.S. oz)
	Type	DOT 4
Caliper		Floating twin pistons (2 x 26 mm)
Brake pad material		Organic
Minimum brake pad thickness		1 mm (.039 in)
Minimum brake disc thickness		4.0 mm (.157 in)
Maximum brake disc warpage		0.2 mm (.008 in)

TIRES				570
Pressure	Front	1-UP		48.3 kPa (7 PSI)
		2-UP		48.3 kPa (7 PSI)
	Rear	1-UP		48.3 kPa (7 PSI)
		2-UP		48.3 kPa (7 PSI)
Minimum tire thread depth				3 mm (.118 in)
Tire size		Base DPS XT	Front	635 x 203 x 305 mm (25 x 8 x 12 in)
			Rear	635 x 254 x 305 mm (25 x 10 x 12 in)
		Mossy Oak† Hunting Edition Pro	Front	660 x 203 x 305 mm (26 x 8 x 12 in)
			Rear	660 x 254 x 305 mm (26 x 10 x 12 in)

WHEELS		570
Type	Base	Steel
	All except base model	Cast Aluminum
Rim size	Front	305 x 152 mm (12 x 6 in)
	Rear	305 x 191 mm (12 x 7.5 in)
Wheel lug nut torque		100 N•m (74 lbf•ft)

DIMENSIONS		570
Overall length	1-UP	211 cm (83 in)
	2-UP	231 cm (91 in)
Overall width		116.8 cm (46 in)
Overall height	1-UP	124 cm (49 in)
	2-UP	133 cm (52.5 in)
Wheelbase	1-UP	129.5 cm (51 in)
	2-UP	149.9 cm (59 in)
Wheel track	Front	97.4 cm (38 in)
	Rear	92.3 cm (36 in)
Ground clearance	All models except Mossy Oak Hunting Edition and Pro	26.7 cm (10.5 in)
	Mossy Oak Hunting Edition Pro	29.2 cm (11.5 in)

LOADING CAPACITY AND WEIGHT		570
Dry weight	1-UP	319 kg (704 lb)
	2-UP	336 kg (741 lb)
Front rack capacity		54 kg (120 lb)
Rear rack capacity		109 kg (240 lb)
Rear storage compartment loading capacity		10 kg (22 lb)

LOADING CAPACITY AND WEIGHT		570
Total vehicle load allowed (including driver, all other loads and added accessories)	1-UP	235 kg (517 lb)
	2-UP	272 kg (600 lb)
Towing capacity		590 kg (1,300 lb)
Tongue capacity		23 kg (50 lb)

TROUBLESHOOTING

TROUBLESHOOTING GUIDELINES

ENGINE DOES NOT TURN

1. Ignition switch is in the OFF position.
   – *Place switch to the ON position.*
2. Emergency engine stop switch.
   – *Make sure that emergency engine stop switch is in ON position.*
3. Gearbox is not set on PARK or NEUTRAL.
   – *Set gearbox either in PARK or in NEUTRAL or press the brake lever.*
4. Burnt fuse.
   – *Check main, ignition or ECM fuse condition.*
5. Weak battery or loose connections.
   – *Check charging system.*
   – *Check connections and terminals condition.*
   – *Have the battery checked.*
   – *Contact an authorized Can-Am dealer.*
6. Weak starter or loose connections.
   – *Check starter connections.*
   – *Check starter relay.*

ENGINE TURNS OVER BUT FAILS TO START

1. Flooded engine (spark plug wet when removed).
   – *(Drowned mode) If the engine does not start and it is fuel-flooded, this special mode can be activated to prevent fuel injection and to cut ignition while cranking. Proceed as follows:*
   • Insert key in ignition switch and turn to ON position.
   • Move shift lever in park position.
   • Press completely and HOLD throttle lever.
   • Press the engine START button.
   The engine should be cranked for 20 seconds. Release engine START button.
   Release throttle lever and start/crank engine again to allow starting.
   If it does not work:
   • Clean the spark plug caps area then remove them.
   • Remove the spark plugs.
   • Unplug injector electrical connector.
   • Crank engine several times.
   • Install new spark plugs if possible or clean and dry spark plugs.
   • Start engine as explained above.
   If engine continues to flood, seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.
   NOTE: *Make sure to verify that there is no fuel in engine oil, if so, replace engine oil.*

ENGINE TURNS OVER BUT FAILS TO START (cont'd)

2. No fuel to the engine (spark plug dry when removed).
   - *Check fuel tank level.*
   - *A failure of the fuel pump may have occurred.*
   - *Check fuel pump fuse and relay.*
   - *Seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.*
3. Spark plug/ignition (no spark).
   - *Remove spark plug then reconnect to ignition coil.*
   - *Start engine with spark plug grounded to the engine away from spark plug hole. If no spark appears, replace spark plug.*
   - *If trouble persists, seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.*
4. Multifunction gauge CHECK ENGINE indicator lamp is on and display shows CHECK ENGINE.
   - *Seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.*
5. Engine is under a protection (limp home) mode.
   - *Multifunction gauge CHECK ENGINE indicator lamp is on and display shows CHECK ENGINE, seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.*

ENGINE LACKS ACCELERATION OR POWER

1. Fouled or defective spark plug.
   - *Refer to ENGINE TURNS OVER BUT FAILS TO START.*
2. Lack of fuel to engine.
   - *Refer to ENGINE TURNS OVER BUT FAILS TO START.*
3. Engine is overheating. (CHECK ENGINE indicator light will turn on and HI TEMP will appear in the multifunction display.)
   - *Refer to ENGINE OVERHEATS.*
4. Air filter/housing clogged or dirty.
   - *Check air filter and clean if necessary.*
   - *Check deposits in air filter housing drain.*
   - *Check the position of the air intake tube.*
5. CVT dirty or worn-out.
   - *Contact an authorized Can-Am dealer.*

ENGINE LACKS ACCELERATION OR POWER (cont'd)

6. Engine is under a protection (limp home) mode.
   – *Check multifunction gauge display for messages.*
   – *Multifunction gauge CHECK ENGINE indicator lamp is on and display shows CHECK ENGINE or LIMP HOME, seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.*

ENGINE OVERHEATS

1. Low coolant in cooling system.
   – *Check engine coolant, refer to ENGINE COOLANT in MAINTENANCE PROCEDURES.*
2. Dirty radiator fins.
   – *Clean radiator fins, refer to RADIATOR in MAINTENANCE PROCEDURES section.*
3. Cooling fan inoperative.
   – *Check cooling fan fuse or relay, refer to MAINTENANCE PROCEDURES section. If the fuse is good, seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.*

ENGINE BACKFIRE

1. Exhaust system leakage.
   – *Seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.*
2. Engine is running too hot.
   – *Refer to ENGINE LACKS ACCELERATION OR POWER.*
3. Ignition timing is incorrect or there is an ignition system failure.
   – *Seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.*

ENGINE MISFIRE

1. Fouled/defective/worn spark plug.
   – *Clean/verify spark plug and heat range. Replace as required.*
2. Water in fuel.
   – *Drain fuel system and refill with fresh fuel.*

VEHICLE CANNOT REACH FULL SPEED

1. Engine.
   – *Refer to ENGINE LACKS ACCELERATION OR POWER.*

VEHICLE CANNOT REACH FULL SPEED (cont'd)

2. Parking Brake.
   – *Ensure parking brake is completely removed.*
3. Air filter/housing plugged or dirty.
   – *Check air filter and clean if necessary.*
   – *Check deposits in air filter housing drain.*
   – *Check the position of the air intake tube.*
4. CVT dirty or worn-out.
   – *Contact an authorized Can-Am dealer.*
5. Engine is under a protection (limp home) mode.
   – *Check multifunction gauge display for messages.*
   – *Multifunction gauge CHECK ENGINE indicator lamp is on and display shows CHECK ENGINE or LIMP HOME, seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.*

SHIFT LEVER IS HARD TO MOVE

1. Gearbox gears are in a position that prevents the shift lever to work.
   – *Rock the vehicle back and forth to move the gears in the gearbox and allow the shift lever to be set.*
2. CVT dirty or worn-out.
   – *Contact an authorized Can-Am dealer.*

THE RPM INCREASES BUT THE VEHICLE DOES NOT MOVE

1. The gearbox is on PARK or NEUTRAL position.
   – *Select the R, HI or LO position.*
2. CVT dirty or worn-out.
   – *Contact an authorized Can-Am dealer.*
3. Water in the CVT housing.
   – *Contact an authorized Can-Am dealer.*

REDUCED POWER STEERING ASSIST

1. When DPS is subjected to sustained severe steering conditions, the assistance provided by the DPS motor may be reduced to protect the system.
   – *Once the load is reduced, the normal steering assistance will return.*
2. CHECK ENGINE INDICATOR LAMP is ON and display shows CHECK DPS
   – *Seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement.*

MULTIFUNCTION GAUGE MESSAGES

MESSAGE	PILOT LAMP(S) ON	DESCRIPTION
BRAKE	None	Displayed when brake is applied for more than 15 seconds (while riding).
LO BATT VOLT	Check engine	Low battery voltage, check battery voltage and charging system.
HIGH BATT VOLT	Check engine	High battery voltage, check battery voltage and charging system.
LOW OIL (1)	Check engine	Engine low oil pressure, stop engine immediately.
HI TEMP	Check engine	Engine is overheating, refer to *ENGINE OVERHEATS* in *TROUBLESHOOTING* section.
LIMP HOME	Check engine	Serious fault on the engine that can change the normal operation of the engine, CHECK ENGINE indicator lamp will also blink, refer to *TROUBLESHOOTING* section.
CHECK ENGINE	Check engine	Engine fault, CHECK ENGINE indicator lamp will also be ON, refer to *TROUBLESHOOTING* section.
ECM NOT RECOGNIZED	Check engine	Communication error between speedometer and engine control module (ECM).
CHECK DPS (models with DPS)	Check engine	Indicates that the DPS (Dynamic Power Steering) does not work properly. See an authorized Can-Am dealer.
MAINTENANCE REQUIRED (2)	None	Displayed in gauge when vehicle is due for a maintenance.
TPS FAULT PRESS OVERRIDE BUTTON TO LIMP HOME	Check engine	Throttle position sensor does not work properly. Seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims.

NOTICE (1) If the message and the check engine light stay on after engine starting, stop engine. Check engine oil level. Refill if necessary. If the oil level is good, seek service from an authorized Can-Am dealer, repair shop or person of your own choosing for maintenance, repair or replacement. Please refer to the US EPA Emissions-related warranty contained herein for information about warranty claims. . Do not use the vehicle until repaired.

(2) To erase the MAINTENANCE REQUIRED message, proceed as follows:

1. From main display (vehicle speed), press SET and HOLD.
2. Alternate between LOW beam and HIGH beam 3 times.

NOTE: Step 2 must be completed within **2 seconds**.

3. Release SET button.

WARRANTY

BRP LIMITED WARRANTY USA AND CANADA: 2018 CAN-AM® ATV

SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. ("BRP")* warrants its 2018 Can-Am ATV sold by authorized Can-Am ATV dealers (as hereinafter defined) in the United States of America ("USA") and in Canada from defects in material or workmanship for the period and under the conditions described below. This limited warranty will become null and void if: (1) the ATV was used for racing or any other competitive activity, at any point, even by a previous owner; or (2) the ATV has been altered or modified in such a way so as to adversely affect its operation, performance or durability, or has been altered or modified to change its intended use.

Non-factory installed parts and accessories are not covered under this limited warranty. Please refer to the applicable parts and accessories limited warranty text.

LIMITATIONS OF LIABILITY

THIS WARRANTY IS EXPRESSLY GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY SOME STATES/PROVINCES DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS, AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH MAY VARY FROM STATE TO STATE, OR PROVINCE TO PROVINCE.

Neither the distributor, any BRP dealer nor any other person has been authorized to make any affirmation, representation or warranty regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against BRP. BRP reserves the right to modify this limited warranty at any time, being understood that such modification will not alter the warranty conditions applicable to the products sold while this warranty is in effect.

EXCLUSIONS – ARE NOT WARRANTED

The following are not warranted under any circumstances:

- Normal wear and tear;
- Routine maintenance items, tune ups, adjustments;
- Damage caused by failure to provide proper maintenance and/or storage, as described in the Operator's Guide;
- Damage resulting from removal of parts, improper repairs, service, maintenance, modifications or use of parts not manufactured or approved by BRP or resulting from repairs done by a person that is not an authorized servicing Can-Am ATV dealer;
- Damage caused by abuse, abnormal use, neglect or operation of the product in a manner inconsistent with the recommended operation described in the Can-Am ATV Operator's Guide;
- Damage resulting from accident, submersion, fire, theft, vandalism or any act of God;

– Operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operator's Guide);
– Damages from rust, corrosion or exposure to the elements;
– Damage resulting from water or snow ingestion;
– Incidental or consequential damages, or damages of any kind including without limitation towing, storage, telephone, rental, taxi, inconvenience, insurance coverage, loan payments, loss of time, loss of income.

WARRANTY COVERAGE PERIOD

This limited warranty will be in effect from (1) the date of delivery to the first retail consumer or (2) the date the product is first put into use, whichever occurs first and for the applicable period below:

SIX (6) CONSECUTIVE MONTHS, for private use or commercial use owners. For emission-related components; please also refer to the *US EPA EMISSION-RELATED WARRANTY* contained herein.

The repair or replacement of parts or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date.

CONDITIONS TO HAVE WARRANTY COVERAGE

This warranty coverage is available **only** if **each** of the following conditions has been fulfilled:

– The 2018 Can-Am ATV must be purchased as new and unused by its first owner from a Can-Am ATV dealer authorized to distribute Can-Am ATVs in the country in which the sale occurred ("Can-Am ATV dealer");
– The BRP specified pre-delivery inspection process must be completed and documented and signed by the purchaser;
– The 2018 Can-Am ATV must have undergone proper registration by an authorized Can-Am ATV dealer;
– The 2018 Can-Am ATV must be purchased in the country in which the purchaser resides;
– Routine maintenance outlined in the Operator's Guide must be timely performed in order to maintain warranty coverage. BRP reserves the right to make warranty coverage contingent upon proof of proper maintenance.

BRP will not honor this limited warranty to any private use owner or commercial use owner if one of the preceding conditions has not been met. Such limitations are necessary in order to allow BRP to preserve both the safety of its products, and also that of its consumers and the general public.

WHAT TO DO TO OBTAIN WARRANTY COVERAGE

The customer must cease using the Can-Am ATV upon the appearance of an anomaly. The customer must notify a servicing BRP dealer within three (3) days of the appearance of a defect, and provide it with reasonable access to the product and reasonable opportunity to repair it. The customer must also present to the authorized BRP dealer, proof of purchase of the product and must sign the repair/work order prior to starting the repair in order to validate the warranty repair. All parts replaced under this limited warranty become the property of BRP.

WHAT BRP WILL DO

BRP's obligations under this warranty are limited to, at its sole discretion, repairing parts found defective under normal use, maintenance and service, or replacing such parts with new genuine Can-Am ATV parts without charge for parts and labor, at any authorized BRP dealer during the warranty coverage period under the conditions described herein. No claim of breach of warranty shall be cause for cancellation or rescission of the sale of the Can-Am ATV to the owner.

In the event that service is required outside of the country of original sale, the owner will bear responsibility for any additional charges due to local practices and conditions, such as, but not limited to, freight, insurance, taxes, license fees, import duties, and any and all other financial charges, including those levied by governments, states, territories and their respective agencies.

BRP reserves the right to improve or modify products from time to time without assuming any obligation to modify products previously manufactured.

ADDITIONAL SUPPLIER WARRANTIES

A GPS receiver may be supplied by BRP as standard equipment on certain 2018 Can-Am ATV's. The GPS receiver is covered under BRP's limited warranty policy. Additional warranty coverage if offered by the GPS receiver "supplier" that is longer than BRP's limited warranty is to be dealt by the dealer or consumer directly with the GPS receiver "supplier".

TRANSFER

If the ownership of a product is transferred during the warranty coverage period, this limited warranty, subject to its terms and conditions, shall also be transferred and be valid for the remaining coverage period provided BRP or an authorized Can-Am ATV Distributor/Dealer receives a proof that the former owner agreed to the transfer of ownership, in addition to the co-ordinates of the new owner.

CONSUMER ASSISTANCE

In the event of a controversy or a dispute in connection with this limited warranty, BRP suggests that you try to resolve the issue at the dealership level. We recommend discussing the issue with the authorized dealer's service manager or owner.

If the matter still remains unresolved, contact BRP by filling out the customer contact form at www.brp.com or contact BRP by mail at one of the addresses listed under the *CONTACT US* section of this guide.

* In the USA, products are distributed and serviced by BRP US Inc.
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US EPA EMISSION-RELATED WARRANTY

Bombardier Recreational Products Inc. ("BRP")* warrants to the ultimate purchaser and each subsequent purchaser that this new vehicle, including all parts of its exhaust emission control system and its evaporative emission control system, meets two conditions:

1. It is designed, built, and equipped so it conforms at the time of sale to the ultimate purchaser with the requirements of 40 CFR 1051 and 40 CFR 1060.
2. It is free from defects in materials and workmanship that may keep it from meeting the requirements of 40 CFR 1051 and 40 CFR 1060.

Where a warrantable condition exists, BRP will repair or replace, as it elects, any part or component with a defect in materials or workmanship that would increase the engine's emissions of any regulated pollutant within the stated warranty period at no cost to the owner, including expenses related to diagnosing and repairing or replacing emission-related parts. All defective parts replaced under this warranty become the property of BRP.

For all emission-related warranty claims, BRP is limiting the diagnosis and repair of emission-related parts to the authorized Can-Am dealers, unless for emergency repairs as required by item 2 of the following list.

As a certifying manufacturer, BRP will not deny emission-related warranty claims based on any of the following:

1. Maintenance or other service BRP or BRP's authorized facilities performed.
2. Engine/equipment repair work that an operator performed to correct an unsafe, emergency condition attributable to BRP as long as the operator tries to restore the engine/equipment to its proper configuration as soon as possible.
3. Any action or inaction by the operator unrelated to the warranty claim.
4. Maintenance that was performed more frequently than BRP specify.
5. Anything that is BRP fault or responsibility.
6. The use of any fuel that is commonly available where the equipment operates unless BRP written maintenance instructions state that this fuel would harm the equipment's emission control system and operators can readily find the proper fuel. See maintenance information section and fuel requirements of fueling section.

Emission-Related Warranty Period

The emission-related warranty is valid for the following period whichever comes first:

	HOURS	MONTHS	KILOMETERS
Exhaust emission-related components	500	30	5000
Evaporative emission-related components	N/A	24	N/A

Components Covered

The emission-related warranty covers all components whose failure would increase an engine's emissions of any regulated pollutant, including the following listed components:

1. For exhaust emissions, emission-related components include any engine parts related to the following systems:
   - Air-induction system
   - Fuel system
   - Ignition system
   - Exhaust gas recirculation systems
2. The following parts are also considered emission-related components for exhaust emissions:
   - Aftertreatment devices
   - Crankcase ventilation valves
   - Sensors
   - Electronic control units
3. The following parts are considered emission-related components for evaporative emissions:
   - Fuel tank
   - Fuel cap
   - Fuel line
   - Fuel line fittings
   - Clamps*
   - Pressure relief valves*
   - Control valves*
   - Control solenoids*
   - Electronic controls*
   - Vacuum control diaphragms*
   - Control cables*
   - Control linkages*
   - Purge valves
   - Vapor hoses
   - Liquid/vapor separator
   - Carbon canister
   - Canister mounting brackets
   - Carburetor purge port connector
4. Emission-related components also include any other part whose only purpose is to reduce emissions or whose failure will increase emissions without significantly degrading engine/equipment performance.

*As related to the evaporative emission control system

Limited Applicability

As a certifying manufacturer, BRP may deny emission-related warranty claims for failures that have been caused by the owner's or operator's improper maintenance or use, by accidents for which the manufacturer has no responsibility, or by acts of God. For example, an emission-related warranty claim need not be honored for failures that have been directly caused by the operator's abuse of the engine/equipment or the operator's use of the engine/equipment in a manner for which it was not designed and are not attributable to the manufacturer in any way.

* In the USA, products are distributed and serviced by BRP US Inc.

BRP INTERNATIONAL LIMITED WARRANTY: 2018 CAN-AM® ATV

1) SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. ("BRP")* warrants its 2018 Can-Am ATV sold by Can-Am ATV distributors or dealers authorized by BRP to distribute Can-Am ATVs ("Can-Am ATV Distributor/Dealer") outside of the United States of America ("USA"), Canada, member states of the European Economic Area (which is comprised of the states of the European Union plus Norway, Iceland and Liechtenstein) ("EEA"), Turkey, member states of the Commonwealth of the Independent States (including Ukraine and Turkmenistan) ("CIS") and Turkey, from defects in material or workmanship for the period and under the conditions described below.

Non-factory installed parts and accessories are not covered under this limited warranty. Please refer to the applicable parts and accessories limited warranty text.

This limited warranty will become null and void if: (1) The ATV was used for racing or any other competitive activity, at any point, even by a previous owner; or (2) the ATV has been altered or modified in such a way so as to adversely affect its operation, performance or durability, or has been altered or modified to change its intended use.

2) LIMITATIONS OF LIABILITY

TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY IS EXPRESSLY GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME JURISDICTIONS DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH MAY VARY FROM COUNTRY TO COUNTRY. (FOR PRODUCTS PURCHASED IN AUSTRALIA SEE CLAUSE 4 BELOW).

Neither the Can-Am ATV Distributor/Dealer nor any other person has been authorized to make any affirmation, representation or warranty regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against BRP.

BRP reserves the right to modify this warranty at any time, being understood that such modification will not alter the warranty conditions applicable to the products sold while this warranty is in effect.

3) EXCLUSIONS – ARE NOT WARRANTED

The following are not warranted under this limited warranty under any circumstances:

- Normal wear and tear;
- Routine maintenance items, tune ups, adjustments;
- Damage caused by negligence or failure to provide proper maintenance and/or storage, as described in the Operator's Guide;

– Damage resulting from removal of parts, improper repairs, service, maintenance, modifications or use of parts or accessories not manufactured or approved by BRP which in its reasonable judgement are either incompatible with the product or adversely affect its operation, performance and durability, or resulting from repairs done by a person that is not an authorized servicing Can-Am ATV Distributor/Dealer;
– Damage caused by abuse, abnormal use, neglect, racing or operation of the product in a manner inconsistent with the recommended operation described in the Operator's Guide;
– Damage resulting from accident, submersion, fire, snow or water ingestion, theft, vandalism or any act of God;
– Operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operator's Guide);
– Damage resulting from rust, corrosion or exposure to the elements;
– Incidental or consequential damages, or damages of any kind including without limitation towing, storage, transportation expenses, telephone, rental, taxi, inconvenience, insurance coverage, loan payments, loss of time, loss of income; or time missed for downtime experience due to service work.

4) WARRANTY COVERAGE PERIOD

This warranty will be in effect from (1) the date of delivery to the first retail consumer or (2) the date the product is first put into use, whichever occurs first and for a period of:

SIX (6) CONSECUTIVE MONTHS for private use or commercial use.

The repair or replacement of parts or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date.

Note that the duration and any other modalities of the warranty coverage are subject to the applicable national or local legislation in the customer's country.

FOR PRODUCTS SOLD IN AUSTRALIA ONLY

Nothing in these Warranty terms and conditions should be taken to exclude, restrict or modify the application of any condition, warranty, guarantee, right or remedy conferred or implied under the Competition and Consumer Act 2010 (Cth), including the Australian Consumer Law or any other law, where to do so would contravene that law, or cause any part of these terms and conditions to be void. The benefits given to you under this limited warranty are in addition to other rights and remedies that you have under Australian law.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

5) CONDITIONS TO HAVE WARRANTY COVERAGE

This warranty coverage is available **only** if **each** of the following conditions has been fulfilled:

- The 2018 Can-Am ATV must be purchased as new and unused by its first owner from a Can-Am ATV Distributor/Dealer authorized to distribute Can-Am ATVs in the country in which the sale occurred;
- The BRP specified pre-delivery inspection process must be completed and documented;
- The product must have undergone proper registration by an authorized Can-Am ATV Distributor/Dealer;
- The 2018 Can-Am ATV must be purchased in the country or union of countries in which the purchaser resides; and
- Routine maintenance outlined in the Operator's Guide must be timely performed in order to maintain warranty coverage. BRP reserves the right to make warranty coverage contingent upon proof of proper maintenance.

BRP will not honour this limited warranty to any private use owner or commercial use owner if one of the preceding conditions has not been met. Such limitations are necessary in order to allow BRP to preserve both the safety of its products, and also that of its consumers and the general public.

6) WHAT TO DO TO OBTAIN WARRANTY COVERAGE

The customer must cease using the ATV upon the appearance of an anomaly. The customer must notify a servicing Can-Am ATV Distributor/Dealer within two (2) days of the appearance of a defect, and provide it with reasonable access to the product and reasonable opportunity to repair it. The customer must also present to the authorized Can-Am ATV Distributor/Dealer proof of purchase of the product and must sign the repair/work order prior to starting the repair in order to validate the warranty repair. All parts replaced under this limited warranty become the property of BRP.

Note that the notification period is subject to the applicable national or local legislation in customer's country.

7) WHAT BRP WILL DO

To the extent permitted by law, BRP's obligations under this warranty are limited to, at its sole discretion, repairing parts found defective under normal use, maintenance and service, or replacing such parts with new genuine Can-Am ATV parts without charge for parts and labour, at any authorized Can-Am ATV Distributor/Dealer during the warranty coverage period under the conditions described herein. BRP's responsibility is limited to making the required repairs or replacements of parts. No claim of breach of warranty shall be cause for cancellation or rescission of the sale of the Can-Am ATV to the owner. You may have other legal rights which may vary from country to country.

In the event that service is required outside of the country of original sale, the owner will bear responsibility for any additional charges due to local practices and conditions, such as, but not limited to, freight, insurance, taxes, license fees, import duties, and any and all other financial charges, including those levied by governments, states, territories and their respective agencies.

BRP reserves the right to improve or modify products from time to time without assuming any obligation to modify products previously manufactured.

8) TRANSFER

If the ownership of a product is transferred during the warranty coverage period, this warranty shall also be transferred and be valid for the remaining coverage period provided BRP or an authorized Can-Am ATV Distributor/Dealer receives a proof that the former owner agreed to the transfer of ownership, in addition to the co-ordinates of the new owner.

9) CONSUMER ASSISTANCE

In the event of a controversy or a dispute in connection with this limited warranty, BRP suggests that you try to resolve the issue at the Can-Am ATV Distributor/Dealer level. We recommend discussing the issue with the authorized Can-Am ATV Distributor/Dealer's service manager or owner.

If the matter still remains unresolved, contact BRP by filling out the customer contact form at www.brp.com or contact BRP by mail at one of the addresses listed under the *CONTACT US* section of this guide.

* For the territory covered by this limited warranty, products are distributed and serviced by Bombardier Recreational Products Inc. or its affiliates.

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BRP LIMITED WARRANTY FOR THE EUROPEAN ECONOMIC AREA, THE COMMONWEALTH OF THE INDEPENDENT STATES AND TURKEY: 2018 CAN-AM® ATV

1) SCOPE OF THE LIMITED WARRANTY

Bombardier Recreational Products Inc. ("BRP")* warrants its 2018 Can-Am ATVs sold by distributors or dealers authorized by BRP to distribute Can-Am ATVs ("Can-Am ATV Distributor/Dealer") in member states of the European Economic Area (which is comprised of the member states of the European Union plus Norway, Iceland and Liechtenstein) ("EEA"), in member states of the Commonwealth of the Independent States (including Ukraine and Turkmenistan) ("CIS") and Turkey from defects in material or workmanship for the period and under the conditions described below.

Non-factory installed parts and accessories are not covered under this limited warranty. Please refer to the applicable parts and accessories limited warranty text.

This limited warranty will become null and void if: (1) The ATV was used for racing or any other competitive activity, at any point, even by a previous owner; or (2) the ATV has been altered or modified in such a way so as to adversely affect its operation, performance or durability, or has been altered or modified to change its intended use.

2) LIMITATIONS OF LIABILITY

TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY IS EXPRESSLY GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME JURISDICTIONS DO NOT ALLOW FOR THE DISCLAIMERS, LIMITATIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS AND YOU MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH MAY VARY FROM COUNTRY TO COUNTRY.

Neither the Can-Am ATV Distributor/Dealer nor any other person has been authorized to make any affirmation, representation or warranty regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against BRP.

BRP reserves the right to modify this warranty at any time, being understood that such modification will not alter the warranty conditions applicable to the products sold while this warranty is in effect.

3) EXCLUSIONS – ARE NOT WARRANTED

The following are not warranted under this limited warranty under any circumstances:

– Normal wear and tear;
– Routine maintenance items, tune ups, adjustments;

– Damage caused by negligence or failure to provide proper maintenance and/or storage, as described in the Operator's Guide;
– Damage resulting from removal of parts, improper repairs, service, maintenance, modifications or use of parts or accessories not manufactured or approved by BRP which in its reasonable judgement are either incompatible with the product or adversely affect its operation, performance and durability, or resulting from repairs done by a person that is not an authorized servicing Can-Am ATV Distributor/Dealer;
– Damage caused by abuse, abnormal use, neglect, racing or operation of the product in a manner inconsistent with the recommended operation described in the Operator's Guide;
– Damage resulting from accident, submersion, fire, snow or water ingestion, theft, vandalism or any act of God;
– Operation with fuels, oils or lubricants which are not suitable for use with the product (see the Operator's Guide);
– Damage resulting from rust, corrosion or exposure to the elements;
– Incidental or consequential damages, or damages of any kind including without limitation towing, transportation expenses, storage, telephone, rental, taxi, inconvenience, insurance coverage, loan payments, loss of time, loss of income or time missed for downtime experience due to service work.

4) WARRANTY COVERAGE PERIOD

This warranty will be in effect from (1) the date of delivery to the first retail consumer or (2) the date the product is first put into use, whichever occurs first and for a period of:

TWENTY-FOUR (24) CONSECUTIVE MONTHS for private use.

SIX (6) CONSECUTIVE MONTHS for commercial use or rental use.

The product is used commercially when it is used in connection with any work or employment that generates income during any part of the warranty period. The product is also used commercially when, at any point during the warranty period, it is licensed for commercial use.

The repair or replacement of parts or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration date.

Note that the duration and any other modalities of the warranty coverage are subject to the applicable national or local legislation in the customer's country.

5) CONDITIONS TO HAVE WARRANTY COVERAGE

This warranty coverage is available **only** if **each** of the following conditions has been fulfilled:
– The 2018 Can-Am ATV must be purchased as new and unused by its first owner from a Can-Am ATV Distributor/Dealer authorized to distribute Can-Am ATVs in the country in which the sale occurred;
– The BRP specified pre-delivery inspection process must be completed and documented;
– The product must have undergone proper registration by an authorized Can-Am ATV Distributor/Dealer;

– The 2018 Can-Am ATV must be purchased within the EEA by an EEA resident, in the CIS for residents of the countries comprised in such area and in Turkey for residents of Turkey; and
– Routine outlined in the Operator's Guide must be timely performed in order to maintain warranty coverage. BRP reserves the right to make warranty coverage contingent upon proof of proper maintenance.

BRP will not honour this limited warranty to any private use owner or commercial use owner if one of the preceding conditions has not been met. Such limitations are necessary in order to allow BRP to preserve both the safety of its products, and also that of its consumers and the general public.

6) WHAT TO DO TO OBTAIN WARRANTY COVERAGE

The customer must cease using the ATV upon the appearance of an anomaly. The customer must notify a servicing Can-Am ATV Distributor/Dealer within two (2) months of the appearance of a defect and provide it with reasonable access to the product and reasonable opportunity to repair it. The customer must also present to the authorized Can-Am ATV Distributor/Dealer, proof of purchase of the product and must sign the repair/work order prior to starting the repair in order to validate the warranty repair. All parts replaced under this limited warranty become the property of BRP.

Note that the notification period is subject to the applicable national or local legislation in customer's country.

7) WHAT BRP WILL DO

To the extent permitted by law, BRP's obligations under this warranty are limited to, at its sole discretion, repairing parts found defective under normal use, maintenance and service, or replacing such parts with new genuine Can-Am ATV parts without charge for parts and labour, at any authorized Can-Am ATV Distributor/Dealer during the warranty coverage period under the conditions described herein. BRP's responsibility is limited to making the required repairs or replacements of parts. No claim of breach of warranty shall be cause for cancellation or rescission of the sale of the Can-Am ATV to the owner. You may have other legal rights which may vary from country to country.

In the event that service is required outside of the EEA, CIS or Turkey, the owner will bear responsibility for any additional charges due to local practices and conditions, such as, but not limited to, freight, insurance, taxes, license fees, import duties, and any and all other financial charges, including those levied by governments, states, territories and their respective agencies.

BRP reserves the right to improve or modify products from time to time without assuming any obligation to modify products previously manufactured.

8) TRANSFER

If the ownership of a product is transferred during the warranty coverage period, this warranty shall also be transferred and be valid for the remaining coverage period provided BRP or an authorized Can-Am ATV Distributor/Dealer receives a proof that the former owner agreed to the transfer of ownership, in addition to the co-ordinates of the new owner.

9) CONSUMER ASSISTANCE

In the event of a controversy or a dispute in connection with this limited warranty, BRP suggests that you try to resolve the issue at the Can-Am ATV Distributor/Dealer level. We recommend discussing the issue with the authorized Can-Am ATV Distributor/Dealer's service manager or owner.

If the matter still remains unresolved, contact BRP by filling out the customer contact form at www.brp.com or contact BRP by mail at one of the addresses listed under the *CONTACT US* section of this guide.

* In the EEA, products are distributed and serviced by BRP European Distribution S.A. and other affiliates or subsidiaries of BRP.

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ADDITIONAL TERMS AND CONDITIONS FOR FRANCE ONLY

The following terms and conditions are applicable to products sold in France only:

The seller shall deliver goods that are complying with the contract and shall be responsible for defects existing upon delivery. The seller shall also be responsible for defects resulting from packaging, assembling instructions or the installation when it is its responsibility per the contract or if accomplished under its responsibility. To be compliant with the contract, the good shall:

1. Be fit for normal use for goods similar thereto and, if applicable:
   - Correspond to the description provided by the seller and have the qualities presented to the buyer though sample or model;
   - Have the qualities that a buyer may legitimately expect considering the public declarations of the seller, the manufacturer of its representative, including in advertising or labeling; or
2. Have the characteristics mutually agreed upon as between the parties or be fit for the specific use intended by the buyer and brought to the attention of the seller and which accepted by the seller.

The action for failure to comply is prescribed after two years after delivery of the goods. The seller is responsible for the warranty for hidden defects of the good sold if such hidden defects are rendering the good unfit for the intended use, or if they diminish its use in such a way that the buyer would not have acquired the good or would have given a lesser price, had he known. The action for such hidden defects shall be taken by the buyer within 2 years of the discovery of the defect.

CUSTOMER INFORMATION

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ATV MODEL No. _____

VEHICLE
IDENTIFICATION NUMBER (V.I.N.) _____

ENGINE
IDENTIFICATION NUMBER (E.I.N.) _____

Owner: _____
NAME

_____
No. STREET APT

_____
CITY STATE/PROVINCE ZIP/POSTAL CODE

Purchase Date _____ | | | | |
YEAR MONTH DAY

Warranty Expiry Date _____ | | | | |
YEAR MONTH DAY

To be completed by the dealer at the time of the sale.

DEALER IMPRINT AREA

V00A2IL

Please verify with your dealer to ensure your vehicle has been registered with BRP.

While reading this Operator's Guide, remember that:

⚠ WARNING

Indicates a potential hazard that, if not avoided, could result in serious injury or death.

⚠ WARNING

THIS VEHICLE CAN BE HAZARDOUS TO OPERATE. A collision or rollover can occur quickly, even during routine maneuvers such as turning and driving on hills or over obstacles, if you fail to take proper precautions.

SEVERE INJURY OR DEATH can result if you do not follow these instructions:

- **BEFORE YOU OPERATE THIS VEHICLE, READ THIS OPERATOR'S GUIDE, ALL ON PRODUCT SAFETY LABELS AND WATCH THE SAFETY VIDEO.**
- **NEVER OPERATE THIS VEHICLE WITHOUT PROPER INSTRUCTIONS.** Complete a certified training course.
- **DO NOT EXCEED VEHICLE SEATING CAPACITY**
- **FOR MAX MODELS, NEVER CARRY MORE THAN ONE PASSENGER.** You increase your risk of losing control if you carry more than a passenger.
- **FOR 1UP MODELS, NEVER CARRY A PASSENGER.** You increase your risk of losing control if you carry a passenger.
- **NEVER OPERATE THIS VEHICLE ON A PAVED SURFACE.** You increase your risk of losing control if you operate this vehicle on pavement.
- **NEVER OPERATE THIS VEHICLE ON PUBLIC ROADS.** You can collide with another vehicle if you operate this vehicle on a public road.
- **OPERATOR AND PASSENGER (MAX models) SHOULD ALWAYS WEAR AN APPROVED HELMET,** eye protection, and protective clothing.
- **NEVER USE WITH DRUGS OR ALCOHOL.** They slow reaction time and impair judgment.
- **NEVER OPERATE THIS VEHICLE AT EXCESSIVE SPEEDS.** You increase your risk of losing control if you operate this vehicle at speeds too fast for the terrain, visibility conditions, or your experience.
- **NEVER ATTEMPT WHEELIES, JUMPS, OR OTHER STUNTS.**

219 001 856
OPERATOR'S GUIDE OUTLANDER / MAX Series / ENGLISH
GUIDE DU COND. Séries OUTLANDER / MAX / ANGLAIS

OUTLANDER
RENEGADE

ACCESSORIES
RIDING GEAR
GENUINE PARTS

2018

can-am BRP

ENHANCE & EXTEND YOUR OFF-ROAD EXPERIENCE WITH ACCESSORIES BUILT BY CAN-AM FOR CAN-AM.

Wherever you're going, and whatever you're doing, Can-Am Off-Road accessories can help get you there and get it done – faster and more efficiently. High-quality, innovative accessories that work right, fit right and feel right because they're developed or approved by Can-Am for Can-Am.

QUALITY FIRST.

The very best off-road accessories have to begin somewhere. At Can-Am, it all starts with our unwavering commitment to innovation, quality and seamless integration. It goes into everything we do, and everything we make; that's why we excel. High-performance engineering drives our race for perfection, quality steers it, and the result is Can-Am off-road customization that meets the very highest of standards. Yours.

RUGGED RELIABILITY.

Countless years of expertise and experience have allowed Can-Am to create off-road accessories without equal. Because they're created in parallel with the vehicles they're designed for, they come with an extra measure of confidence. Our guarantee. Genuine Can-Am accessories installed by you or an authorized dealer are covered for an entire year. Rely on it!

STYLE & VISION.

You get far more out of your Can-Am off-road vehicle when you customize it with genuine top-quality Can-Am accessories. But we've also gone the extra mile when it comes to design – so choosing Can-Am accessories means you always enjoy the very latest look – one that matches both your ride and your style.

ACCESSORIES
RIDING GEAR
GENUINE PARTS

ATV ACCESSORIES

TIRES & RIMS

ALWAYS CHECK OUT THE ***COMPATIBILITY GUIDE*** *P.8-9 BEFORE YOU CUSTOMIZE*

8 COMPATIBILITY GUIDE
10 CARGO & STORAGE
17 WINDSHIELDS
19 HANDLEBARS & MIRRORS
20 SEAT KITS
21 RACKS & HOLDERS
24 SKID PLATES
28 BUMPERS & GUARDS
31 LIGHTS & ELECTRICAL
34 WINCHES
37 HITCHES
38 PERFORMANCE
42 COVERS, DECALS & ADD-ONS
43 APACHE TRACK SYSTEMS
46 PLOWS
47 ALPINE FLEX PLOWS
49 ALPINE SUPER-DUTY STEEL PLOWS
52 OUTLANDER 6X6 ACCESSORIES
55 TIRES
56 RIMS

CAN-AMOFFROAD.COM

Shop the online store for genuine parts, accessories and riding gear.

Check out our videos to learn more about our new innovative riding gear and accessories.

Explore our interactive online catalog. Instantly explore products, videos, large format images and share with friends!

Learn about and purchase XPS oils and lubricants.

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18

OUTLANDER

RENEGADE

SPORTSWEAR & RIDING GEAR

58 KAPPA SPORTSWEAR
67 CAN-AM SPORTSWEAR
69 JERSEYS
70 HELMETS
72 GOGGLES
72 GLOVES
72 JUNIOR
72 BAGS
73 SIZING CHART

PARTS & MAINTENANCE

75 GENUINE PARTS
76 OILS & MAINTENANCE

*Visit **instructions.brp.com** for BRP accessories instruction sheets. You will find complete installation instructions, part number lists and service kits for repair and maintenance.*

BRP LIMITED WARRANTY*

FOR NEW PARTS, ACCESSORIES AND RIDING GEAR.

1 YEAR LIMITED WARRANTY**

GENUINE BRP PARTS & ACCESSORIES
installed by you or your authorized BRP dealer

AFTERMARKET PRODUCTS SOLD THROUGH BRP[1]

RIDING GEAR

4 YEARS LIMITED WARRANTY**

HELMETS

[1]Use other than which the product is designed for will void the product lifetime warranty. *Applies only to BRP-made products or aftermarket products made by accredited BRP partners. Purchased at an authorized BRP dealership / distributor or on a BRP-authorized online store. Other exclusions may apply, see complete limited warranty or contact your Can-Am off-road authorized dealer. [1]Includes only BRP-approved aftermarket products and products made by currently accredited BRP partners. **Unless otherwise stipulated or required by law. This limited warranty does not apply to factory installed accessories. This limited warranty does not apply on Evinrude parts and accessories. This limited warranty is effective as of March 1st, 2016.

OUTLANDER ACCESSORIES BUILT FOR

PUMP UP YOUR OUTLANDER

ADD MUCH MORE MUSCLE, VERSATILITY, COMFORT, PROTECTION, & RUGGED ABILITY WITH OUR SELECTED ACCESSORIES BUILT FOR TAKING ON THE TOUGHEST JOBS.

1 LinQ LOW PROFILE BASKET P. 16
2 LinQ BASE P. 15
3 LinQ HEAVY-DUTY BASKET P. 16
4 XT FRONT BUMPER P. 29
5 EXTREME FRONT BUMPER P. 29
6 XT REAR BUMPER P. 29
7 CAN-AM TERRA 35 WINCH BY SUPERWINCH† P. 35

OUTLANDER ACCESSORIES BUILT FOR THE

PUMP UP YOUR OUTLANDER

EQUIP YOURSELF WITH ACCESSORIES BUILT FOR THE TRAIL AHEAD AND RIDE WITH MUCH MORE COMFORT, AGILITY, VISIBILITY, STYLE, & CARGO CAPACITY.

1 DELUXE FAIRING P. 17
2 HIGH WINDSHIELD P. 17
3 LinQ 23 GAL (86 L) TRUNK BOX P. 13
4 LinQ 6" (15 CM) RACK EXTENSION P. 21

OUTLANDER RENEGADE

ATV ACCESSORY COMPATIBILITY GUIDE

WE'VE MADE THINGS SUPER SIMPLE.

Determine your MODEL YEAR, find your MODEL and ENGINE CONFIGURATION, and that'll reveal your PLATFORM CODE.

This PLATFORM CODE will let you know at a glance if the accessory is compatible with your vehicle.

EXAMPLE

FULL WRAP ALUMINUM MOUNTING KIT

- Lightweight black die cast aluminum construction.
- Includes complete hardware.
- Handlebar wind deflectors sold separately.

Fits: G2, G2L, G2S

715001378

$84.99

MODEL YEAR	MODEL	ENGINE CONFIGURATION	PLATFORM CODE
2013	Outlander	400	G1
	Outlander	500, 650, 800, 1000	G2
	Outlander MAX	400	G1
	Outlander MAX	500, 650, 800, 1000	G2
	Renegade	500, 800, 1000	G2S
2014	Outlander	400	G1
	Outlander	500, 650, 800, 1000	G2
	Outlander MAX	400	G1
	Outlander MAX	500, 650, 800, 1000	G2
	Renegade	500, 800, 1000	G2S

G1

G1S

For G1 accessories, refer to your local dealer.

MODEL YEAR	MODEL	ENGINE CONFIGURATION	PLATFORM CODE
2015	Outlander L	450,500	G2L
	Outlander	500, 650, 800, 1000	G2
	Outlander L MAX	450, 500	G2L
	Outlander MAX	500, 650, 800, 1000	G2
	6x6	650, 1000	G2
	Renegade	500, 800, 1000	G2S

G2

2016	Outlander L	450, 570	G2L
	Outlander	570, 650, 850, 1000	G2
	Outlander L MAX	450, 570	G2L
	Outlander MAX	570, 650, 850, 1000	G2
	6x6	650, 1000	G2
	Renegade	570, 850, 1000	G2S

G2L

2017	Outlander	450, 570	G2L
	Outlander	650, 850, 1000	G2
	Outlander MAX	450, 570	G2L
	Outlander MAX	650, 850, 1000	G2
	6x6	650, 1000	G2
	Renegade	570, 850, 1000	G2S

G2

2018	Outlander	450, 570	G2L
	Outlander	650, 850, 1000	G2
	Outlander MAX	450, 570	G2L
	Outlander MAX	650, 850, 1000	G2
	6x6	650, 1000	G2
	Renegade	570, 850, 1000	G2S

G2S

For G1 accessories, refer to your local dealer.

CARGO BOX OPTIONS

RUGGED LinQ CARGO BOXES INSTALL & REMOVE IN SECONDS!

RELIABLE & DURABLE, THEY'RE PERFECT FOR WORK & PLAY.

LinQ SYSTEM™ CARGO BOXES

THERE'S A STORAGE SOLUTION THAT FITS YOU.

LinQ 8 GAL / 30L COOLER BOX
715002892 P.13

KEEP THINGS COOLER, LONGER.

LinQ 11.5 GAL / 43L AUDIO CARGO BOX
715003018 P.14

BRING YOUR GEAR & YOUR TUNES ALONG FOR THE RIDE.

DID YOU KNOW?

The LinQ System originated in 2009 alongside the development of the Can-Am ATV G2 platform during which the BRP designers began to focus on racks and cargo. Until LinQ, riders had relied on tangled nets of bungee cords to strap down cargo, a solution that was prone to frequent failure. Once again necessity became the mother of invention and over time the innovative, modular LinQ system has proven to be a game changer, setting new standards for practicality and durability. Because of its great success, BRP has developed the LinQ system for its range of Ski-Doo accessories.

LinQ 12 GAL / 45L
715003879 P.14

LinQ 23 GAL / 86L
715002474 P.13

LinQ 32 GAL / 124L
715001749 P.12
715001747 P.12

OUTLANDER RENEGADE

LinQ 32 GAL (124L) TRUNK BOXES

Seamless integration with vehicle
- Built from the design stage to specifically match your Can-Am vehicle.
- Totally cohesive design eliminates the need to modifiy your vehicle in any way*.
- Rear tail light.

Easy quick-attach installation
- Equipped with the LinQ System, the rear trunk box plugs in and out in seconds.
- Instantly transforms your vehicle to suit the need of the moment.

Unparalleled storage
- 32 Gal (124L) load capacity with contiguous unobstructed space to maximize storage room and access to the trunk's interior.

Built tough
- Made of injection-molded polyethylene, double walled in critical areas.

Dust & weather proof
- The fully sealed lid protects your belongings from dust, moisture and the elements.

LinQ 32 GAL (124L) TRUNK BOX
- LinQ Retrofit Adaptor Plate (715001334) is required for G1 models.
- Trunk Box Panels available in many colors to match your vehicle (sold separately).
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2 (except MAX models & 6x6), G2S

715001747

$419.99

EUROPEAN VERSION (EC compliant)
- No rear tail light

715001748

LinQ 32 GAL (124L) TRUNK BOX FOR OUTLANDER MAX
- Passenger comfort is ensured on active rides as well as longer recreational rides thanks to the ergonomically designed passenger padding comfort-fitted with a portion made of closed cell foam that won't absorb water.
- Very easy to embark even when driver is seated.
- Trunk Box Panels available in many colors to match your vehicle (sold separately).

Fits: G2 (MAX models only)

715001749

$514.99

EUROPEAN VERSION (EC compliant)
- No rear tail light

715001750

LinQ 32 GAL (124L) TRUNK BOX PANELS
- Color panels to match the 32 Gal (124L) LinQ Trunk Box to your vehicle.

Fits: LinQ 32 Gal (124L) Trunk Boxes

- 715001391 • Black
- 715001392 • Yellow
- 715001395 • Viper Red
- 715002481 • White
- 715002480 • Light Grey
- 715002984 • Octane Blue
- 715002985 • Manta Green
- 715002986 • Can-Am Red

$49.99

EUROPEAN VERSION (EC compliant)
- No rear tail light

- 715001397 • Black
- 715001398 • Yellow
- 715002482 • Light Grey
- 715002483 • White

CAMO DECALS FOR BLACK TRUNK BOX PANELS
- Camo pattern perfectly matches your camo vehicle.

Fits: Black LinQ 32 Gal (124L) Trunk Box Panel

715002975 • Mossy Oak Break-Up Country Camo

$54.99

715001683 • Next G-1 Vista Camo

$54.99

LinQ REPLACEMENT PART

715001707

$24.99

* WARNING: You should never accessorize your Can-Am off-road vehicle with accessories not approved by BRP because your vehicle may no longer meet certain safety and construction standards. This situation could increase the risk of severe injury or death and render your vehicle not legal for use.

NOT SURE IF AN ACCESSORY FITS YOUR MODEL? CHECK OUT OUR ACCESSORY COMPATIBILITY GUIDE ON P.8-9

OUTLANDER **RENEGADE**

PREMIUM INSULATION KEEPS THINGS COOLER, LONGER!

LinQ SYSTEM™

LinQ 8 GAL (30L) COOLER BOX

- Installs without vehicle modification.
- LinQ mounted for easy-on, easy-off installation.
- Rotomolded construction provides exceptional rigidity and durability.
- Premium-quality foam insulation for optimal ice retention.
- Integrated, fully-removable compartment protects food.
- Weather-resistant, lockable.
- Convenient drain plug.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2, G2S

715002892

$429.99

LinQ SYSTEM™

LinQ 23 GAL (86L) TRUNK BOX

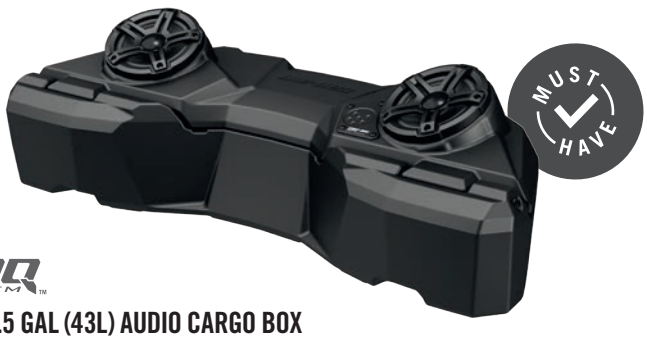
- Installs without vehicle modification.
- LinQ mounted for easy-on, easy-off installation.
- Lockable and weather-resistant.
- Holds cargo safely and securely while riding.
- Comfort pads for passenger.
- LinQ Base (715002350) is required for G2L.

Fits: G2 (except 6x6), G2L, G2S

715002474

$334.99

OUTLANDER RENEGADE



LinQ 11.5 GAL (43L) AUDIO CARGO BOX

- Delivers the best sound quality on the market to sweeten your ride courtesy of a built-in full range high efficiency amplifier.
- Mounts on/off easily to hold/carry cargo safely and securely.
- Automatic shut-off function protects your battery by turning the system off after 10 minutes of inactivity.
- Water-resistant speakers.
- The Bluetooth enabled receiver and 6.5" (16.5 cm) speakers are smartly concealed and integrated in the cover.
- Backlit control panel perfect for night riding.
- LinQ Base (715002350) is required for G2L.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2 (front only for 6x6 & MAX models 2013-2014), G2L, G2S

715003018

$659.99

LinQ 12 GAL (45L) CARGO BOX

- Installs without vehicle modification.
- LinQ mounted for easy-on, easy-off installation.
- Holds cargo safely and securely while riding.
- LinQ Base (715002350) is required for G2L.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2 (front only for 6x6 & MAX models 2013-2014), G2L, G2S

715003879

$274.99

LinQ DELUXE MODULAR BAG

- Installs without vehicle modification.
- LinQ mounted for easy-on, easy-off installation.
- Tool-less installation and removal.
- Versatile, rugged and spacious.
- Ideal for carrying anything you need in any conditions.
- Weatherproof, scratch-resistant, with molded rubber bottom.
- Central compartment can be used alone on the rack.
- Removable bin.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2 (front only for 6x6), G2S

12 Gal (44L) Bag

715001695

$304.99

20 Gal (73L) Bag

715001694

$349.99

OUTLANDER RENEGADE

SOFT STORAGE BAG

- 3-section bag.
- Transport gear in a weatherproof bag.
- 11.8 Gal (45L) capacity soft cargo bag designed with vehicle's rear or front rack and rack extensions in mind to maximize potential storage.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2, G2L, G2S

715003759 • Black

$169.99

715001935
Mossy Oak Break-Up Country Camo

$204.99

PROTECTS YOUR GEAR. ORGANIZES YOUR STORAGE & MAXIMIZES VERSATILITY.

STORAGE 2.6 GAL (10L) BAG

- Roll-top dry bag for fully protecting your cargo from the elements.
- Fits in rear compartment of your vehicle.

Fits all

269502121

$34.99

LinQ SYSTEM™

LinQ STORAGE BOX 2 GAL (7.5L)

- Features easy quick-attach LinQ installation on Outlander front and rear racks.
- Also installable behind the driver seat on Outlander MAX.
- Fully sealed box provides additional storage for essential and valuable items.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2, G2S

708200255

$79.99

Fits: G2, G2L (G2 L MAX only behind the driver seat), G2S

708200408

$79.99

LinQ SYSTEM™

LinQ BASE

- Made of polypropylene glass fiber.
- Allows you to install LinQ accessories.
- Sold in pack of 4.

Fits: G2L

715002350

$27.99

CARGO BAG

- Rugged all-purpose cargo bag with rain cover for additional protection against the elements.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2, G2L, G2S

280000539 • Black

$189.99

RAIN COVER FOR ADDITIONAL PROTECTION

OUTLANDER RENEGADE

LinQ SYSTEM

LinQ HEAVY-DUTY BASKET

- Made of high strength, low-alloy steel.
- Installs without vehicle modification.
- LinQ mount for easy-on, easy-off installation.
- Can be placed on both front and back racks of vehicle.
- LinQ Base (715002350) is required for G2L.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2, G2L (front only for MAX models), G2S

715001215

$254.99

LinQ SYSTEM

LinQ LOW PROFILE BASKET

- Low profile, open basket increases cargo space.
- Perfect for easy access to tools, rope, winch and plow accessories.
- Multiple bungee cord and tie-down anchor points.
- Made of impact-resistant injected polypropylene.
- LinQ Base (715002350) is required for G2L.

Fits: G2L (front only for MAX models)

715003027

$194.99

RENEGADE

REAR BAG FOR RENEGADE 4.5 GAL (17L)

- Weatherproof, scratch-resistant, with a molded rubber bottom.
- Tool-less installation and removal.
- With 2 straps that go underneath the rack and click into the front of the bag.
- Requires Rear Aluminum Rack.

Fits: G2S

715002391

$224.99

OUTLANDER

CREATE YOUR ULTIMATE WIND PROTECTION IN 3 EASY STEPS

1 CHOOSE A DELUXE FAIRING COLOR

DELUXE FAIRING

- Innovative, richly-featured wind protection.
- Quick tool-less removal once base brackets are mounted on handlebar.
- 2 cup holders.
- GPS-mounting-kit-ready.
- Optional mirrors and auxiliary lighting.
- Requires low, high or extra high windshield.
- Tapered Handlebar Adaptor Kit is required for vehicles with 1 1/8" (28 mm) tapered aluminum handlebars.

Fits: G2 (except X mr & 6X6), G2L

715000935 • Yellow
715001231 • Red
715001232 • Black
715002479 • Light Grey

$244.99

CAMO DECALS FOR BLACK DELUXE FAIRING

- Camo pattern perfectly matches your camo vehicle.

Fits: Deluxe Fairing

715002976
Mossy Oak Break-Up Country Camo
$54.99

715001684
Next G-1 Vista Camo
$54.99

TAPERED HANDLEBAR ADAPTOR KIT

(Not illustrated)

- Required to install Deluxe Fairing on an Outlander X-TP and on any vehicle equipped with 1 1/8" (28 mm) tapered aluminum handlebars.

Fits: Deluxe Fairing

715002470

$30.99

2 CHOOSE A DELUXE WINDSHIELD

LOW WINDSHIELD

- 6" (15 cm) windshield allows you to keep your vehicle looking sporty while giving you some protection from the elements and the possibility of enjoying directional lighting.
- Tool-less installation and replacement.

Fits: Deluxe Fairing

715001227

$74.99

HIGH WINDSHIELD

- 11" (28 cm) high, for wind protection and winter applications.
- Tool-less installation and replacement.

Fits: Deluxe Fairing

715001211

$84.99

EXTRA HIGH WINDSHIELD

- 16" (41 cm) windshield provides the ultimate protection against the elements while touring.
- For wind protection and winter applications.
- Tool-less installation and replacement.

Fits: Deluxe Fairing

715000936

$119.99

3 YOU MIGHT ALSO LIKE...

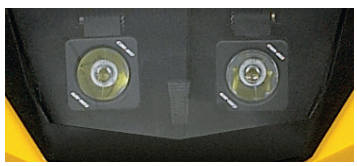
AUXILIARY WINDSHIELD LIGHTING

- 2 premium LED spots for Deluxe Fairing for both increased output and directional lighting.
- 1,800 lumens.
- 2 10W LED Cree light kit.
- Long-range illumination up to 350' (107 m), drawing less than 1 amp per light.

Fits: Deluxe Fairing

715003115

$379.99



DELUXE MIRROR KIT

- Improved mounting system.
- Wide rear view.
- Perfect fit with your Deluxe Fairing and Deluxe Windshield.

Fits: Deluxe Fairing

715002353

$74.99

OUTLANDER **RENEGADE**

PROVIDES EXCELLENT WIND PROTECTION

SPORT WINDSHIELD

- Offers your Renegade wind protection without compromising its sporty look.
- Fits straight and tapered handlebars.
- Easy mounting system allows you to install it effortlessly.

Fits: G2S (except X mr)

715001212 • Yellow
715001429 • White
715001468 • Black

$224.99

HIGH WINDSHIELD KIT

- Provides excellent wind protection.
- Fits straight and tapered handlebars.
- Easy mounting system allows you to install it effortlessly.

Fits: G2, G2L, G2S (except X mr)

715001937 • Yellow
715001938 • Black
715002061 • Red

$234.99

OUTLANDER RENEGADE

HANDLEBAR WIND DEFLECTORS

- Rugged injected plastic construction with Can-Am logo.
- Include removable cap for air flow adjustment.
- Mounting kit sold separately.

Fits: G2, G2L, G2S

715000525 - Black / Yellow
715000537 - White / Black
715001706 - Black / Black
715000733 - Yellow / Black
715003811 - Can-Am Red / Black
715003812 - Manta Green / Black
715003813 - Orange / Black
715003814 - Octane Blue / Black

$30.99

PASSENGER WIND DEFLECTORS

- These wind deflectors fit on the passenger handles and provide greater comfort while riding.
- Easy to install and remove.

Fits: G2 and G2L (MAX models only)

715001669

$99.99

FULL WRAP ALUMINUM MOUNTING KIT

- Lightweight black die cast aluminum construction.
- Includes complete hardware.
- Handlebar wind deflectors sold separately.

Fits: G2, G2L, G2S

715001378

$109.99

SHORT ALUMINUM MOUNTING KIT

- Lightweight black die cast aluminum construction.
- Includes complete hardware.
- Handlebar wind deflectors sold separately.

Fits: G2, G2L, G2S

715001379

$74.99

ALUMINUM TAPERED HANDLEBAR

- 7/8"- 1 1/8" (22 mm - 28 mm) tapered handlebar made of 6061-T6 aluminum.
- Includes all hardware, center steering foam and cover.

Fits: G2, G2L, G2S

715000550

$129.99

MIRROR KIT FOR HANDLEBAR WIND DEFLECTORS

- Do not fit with Full Wrap Aluminum Mounting Kit (715001378).
- Sold in pairs.

Fits: Handlebar Wind Deflectors

860200080

$29.99

XT HANDLEBAR PROTECTOR KIT

- Not compatible with Mud Strap (715003053).

Fits: G2, G2L

703100352 - Black

$84.99

MIRRORS

- True vision surface 5" x 3" (13 cm x 8 cm).
- Matte finish.
- Stem includes 3/8" (10 mm) thread.

Left - 3/8" (10 mm)

- Bracket (715000190) is required for installation on DS 450.
- Bracket not required for installation on Outlander and Renegade.

709400406

$34.99

Right - 3/8" (10 mm)

- Bracket (715000190) required except for vehicles with right hand break.

709400523

$39.99

SEAT KITS

OUTLANDER

NEW DRIVER BACKREST

- Provides the rider's back with that extra support that makes riding that extra mile way more comfortable.
- Adjusts horizontally to match the driver's height and preference.
- Mounts and locks in firmly onto the vehicle.

Fits: G2 (except MAX models)	Fits: G2 and G2L (MAX models only)	Fits: G2L (except MAX models)
715003940	715003942	715003941
$274.99	$274.99	$274.99

OUTLANDER MAX PASSENGER SEAT KIT

- Perfect to replace used or damaged passenger seat.

Fits: G2 2015 and up, G2L (MAX models only)	Fits: G2 2013-2014 (MAX models only except with 400 engine)
715002373	715002032
$714.99	$714.99

OUTLANDER RENEGADE

LinQ SYSTEM™

LinQ 4" (10 CM) RACK EXTENSION

- Fits front or rear.
- Strong and durable.
- Helps keep cargo securely in place.
- Easy and tool-less installation thanks to the LinQ System.
- Anti-corrosion coating with durable powder coat finish.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2, G2S

715001711 • Silver
715001665 • Black

$209.99

LinQ SYSTEM™

LinQ 6" (15 CM) RACK EXTENSION

- Fits front or rear.
- Strong and durable.
- Helps keep cargo securely in place.
- Easy and tool-less installation thanks to the LinQ System.
- Anti-corrosion coating with durable powder coat finish.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2, G2S

715001712 • Silver
715001671 • Black

$234.99

OUTLANDER

5" (13 CM) RACK EXTENSION

- Fits front or rear.
- Made of carbon steel.
- Provides tie-down points to secure cargo on racks.
- Easy installation on tubular rack.
- Anti-corrosion coating with durable powder coat finish.

Fits: G2L

715001913

$124.99

8" (20 CM) RACK EXTENSION

- Fits front or rear.
- Made of carbon steel.
- Provides tie-down points to secure cargo on racks.
- Easy installation on tubular rack.
- Anti-corrosion coating with durable powder coat finish.

Fits: G2L

715001914

$149.99

RENEGADE

LinQ SYSTEM

LinQ LUGGAGE RACK

- Bolt-on rack.
- Enables use of LinQ mounted accessories on the G2S.

Fits: G2S (except X mr models)

715001734

$289.99

BOLT-ON RACK QUICKLY & EASILY LETS YOU ADD LinQ MOUNTED CARGO ONTO YOUR RENEGADE!

REAR ALUMINUM RACK

- 30 lb (14 kg) capacity.
- Compact, lightweight aluminum construction.
- Engraved Can-Am logo.
- Stamped 5052 aluminum center plate.
- Easy to install.

Fits: G2S

715001360

$244.99

OUTLANDER

LinQ GUN BOOT RACK

(Not illustrated)
- This lightweight Gun Boot Rack can be mounted on either side of your Outlander using the tool-less LinQ System.
- For use with Gun Boot 6.0 Impact by Kolpin.

Fits: G2 (except MAX, 6X6 & X mr 1000)
715002112 • Black
$169.99

Fits: G2 (MAX & X mr 1000 models only)
715002113 • Black
$149.99

GUN BOOT RACK

- Made of steel.
- Designed for the tubular rack.
- For use with Gun Boot 6.0 Impact by Kolpin.
- Can be mounted to either side of the vehicle.

Fits: G2L (except MAX models)	Fits: G2L (MAX models only)
715001918	715001919
$144.99	$144.99

715001919

GEAR GRIPS BY KOLPIN

- Durable, flexible grips cushion and protect while providing a custom fit for a variety of items from 1" to 4" (2.5 cm to 10 cm) in diameter.
- Heavy-duty design for carrying bows, fishing poles, rakes, farm tools and more.
- Quick-release button opens grip quickly for easy access to gear.
- Heavy-duty base system built for the toughest adventures.
- Easy installation on tubular racks, extension racks, brackets or bumpers.
- Sold in pairs.

Fits: G2L
715001421
$84.99

GUN BOOT 6.0 IMPACT† BY KOLPIN†

- Extra room for pistol-grip-type weapons and small bipods.
- Easily fits firearms up to 51" (130 cm) in total length.
- Provides ample room for 2 3/8" (60 mm) scopes.
- Hatchback design allows easy access.
- Ergonomically designed handle and molded attachment points for sling.
- Snap-close cover with locking capability.
- Designed to accommodate left and right hand bolt-action rifles and shotguns.
- Includes removable, shock absorbing foam and nylon impact liner for superior interior protection.
- Requires appropriate mounting kit for installation.

Fits: G2, G2L
715001419
$84.99

MULTI-FIT HOLDER

- Open u-shaped bracket for carrying tools (shovel, axe) and hunting weapons (rifle, bow) that are safely secured, but easily accessible.
- Easy installation on tubular rack, extension racks, basket or bumpers.
- For G2 the LinQ Rack Extension is required.
- Sold in pairs.

Fits: G2, G2L Single	Fits: G2, G2L Double
715002354	715001945
$59.99	$79.99

OUTLANDER RENEGADE

LinQ MOUNTED GEAR GRIPS BY KOLPIN

(Not illustrated)
- Same features as Gear Grip by Koplin (715001421).
- Make transporting your tools a snap by combining the Gear Grips with the LinQ System.
- 360° orientation.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2, G2S
715001351
$129.99

LinQ TOOL HOLDER

- Ultra-versatile tool holder.
- Convenient swivel-latch allows tools to be stored in any orientation.
- LinQ Luggage Rack (715001734) is required for G2S.
- Sold in pairs.

Fits: G2, G2S
715003059
$64.99

SKID PLATES

OUTLANDER

ALUMINUM SKID PLATES

Our Aluminum Plates are made with high strength 5052 H32 aluminum. A must-have for rugged terrain.

Offer your Outlander
THE FULL PROTECTION KIT
or
GET THEM INDIVIDUALLY

OUTLANDER

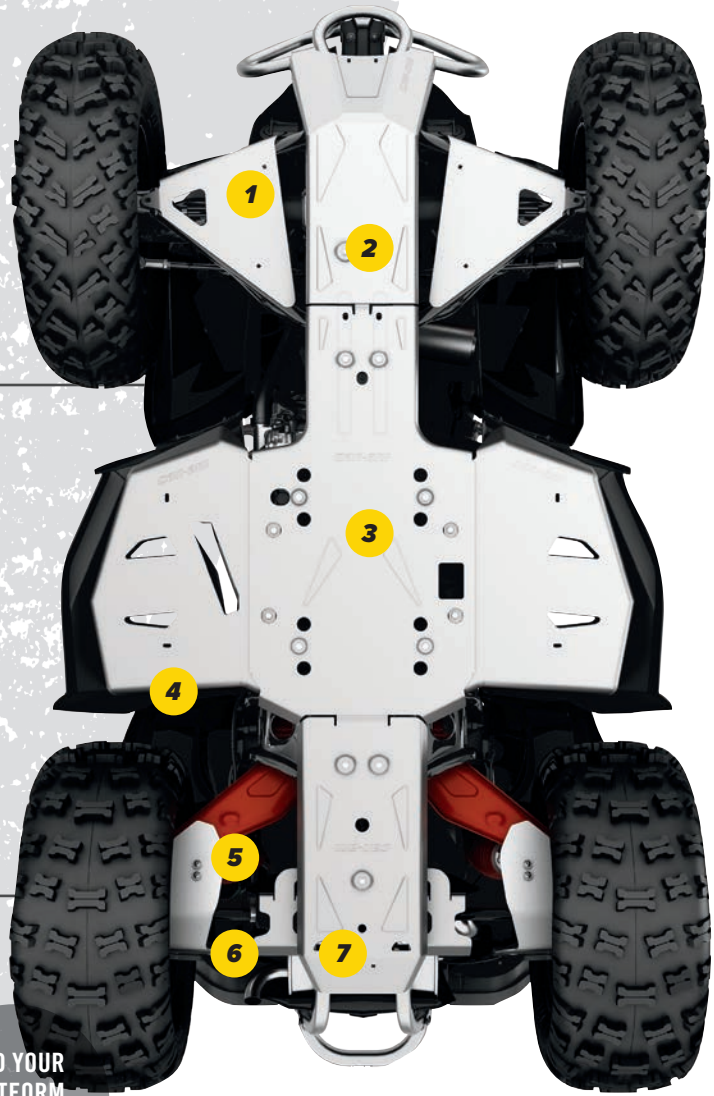
FIND YOUR PLATFORM →	G2 2016 & PRIOR (EXCEPT MAX MODELS)	G2 2017 & UP (EXCEPT MAX MODELS)	G2 2016 & PRIOR (MAX MODELS & OUTLANDER X MR 1000 ONLY)	G2 2017 & UP (MAX MODELS & OUTLANDER X MR 1000 ONLY)	G2L (EXCEPT MAX MODELS)	G2L (MAX MODELS ONLY)	G2 (6X6 ONLY)
ALUMINUM SKID PLATE PROTECTION KIT	715002137 $814.99	715004197 $829.99	715002138 $839.99	715004198 $844.99	715004199 $864.99	715004200 $879.99	
INDIVIDUAL ALUMINUM SKID PLATES							
1 A-ARM PROTECTORS • 1/8" (3 mm) thick lightweight and durable design. • Add more protection to the CV joints and rubber boots. • Drain holes to release water, mud and debris. • Easy to install. • Replace stock plastic protectors. • Sold in pairs. • Except X mr models.	715001667 $149.99	715001667 $149.99	715001667 $149.99	715001667 $149.99	715001667 $149.99	715001667 $149.99	715001667 $149.99
2 FRONT SKID PLATE • 3/16" (4.5 mm) thick and die-formed for strength and durability. • Use in conjunction with the central skid plate for full frame protection.	715000926 $84.99	715000926 $84.99	715000926 $84.99	715000926 $84.99	715001906 $119.99	715001906 $119.99	
3 CENTRAL SKID PLATE • 3/16" (4.5 mm) thick for durability and strength. • Drain holes to release water, mud and debris. • Allows access to oil drain plug. • Must be installed with front skid plate.	715002078 $119.99	715002078 $119.99	715002078 $119.99	715002078 $119.99	715002078 $119.99	715002078 $119.99	
4 FOOTWELL PROTECTOR PLATES • 1/8" (3 mm) thick lightweight and durable design. • Use in conjunction with the central skid plate. • Drain holes to release water, mud and debris. • Sold in pairs.	715001359 $154.99	715001359 $154.99	715001359 $154.99	715001359 $154.99	715001359 $154.99	715001359 $154.99	
5 TRAILING ARM PROTECTORS • 1/8" (3 mm) thick lightweight and durable design. • Replace stock plastic protectors. • Sold in pairs.	715001129 $139.99	715003741 $134.99	715001129 $139.99	715003741 $134.99	715003741 $134.99	715003741 $134.99	715001129 (2016 & prior) $139.99 715003741 (2017 & up) $134.99
6 REAR DIFFERENTIAL PROTECTORS • 1/8" (3 mm) thick lightweight and durable design. • Replace stock plastic protector.	715000920 $74.99	715000920 $74.99	715000920 $74.99	715000920 $74.99	715000920 $74.99	715000920 $74.99	
7 REAR SKID PLATE • 3/16" (4.5 mm) thick for durability and strength. • Must be installed with the central and front skid plates.	715002028 $109.99	715002028 $109.99	715002029 $124.99	715002029 $124.99	715002028 $109.99	715002029 $124.99	

RENEGADE

ALUMINUM SKID PLATES

Our Aluminum Plates are made with high strength 5052 H32 aluminum. A must-have for rugged terrain.

Offer your Renegade
THE FULL PROTECTION KIT
or
GET THEM INDIVIDUALLY



FIND YOUR PLATFORM →

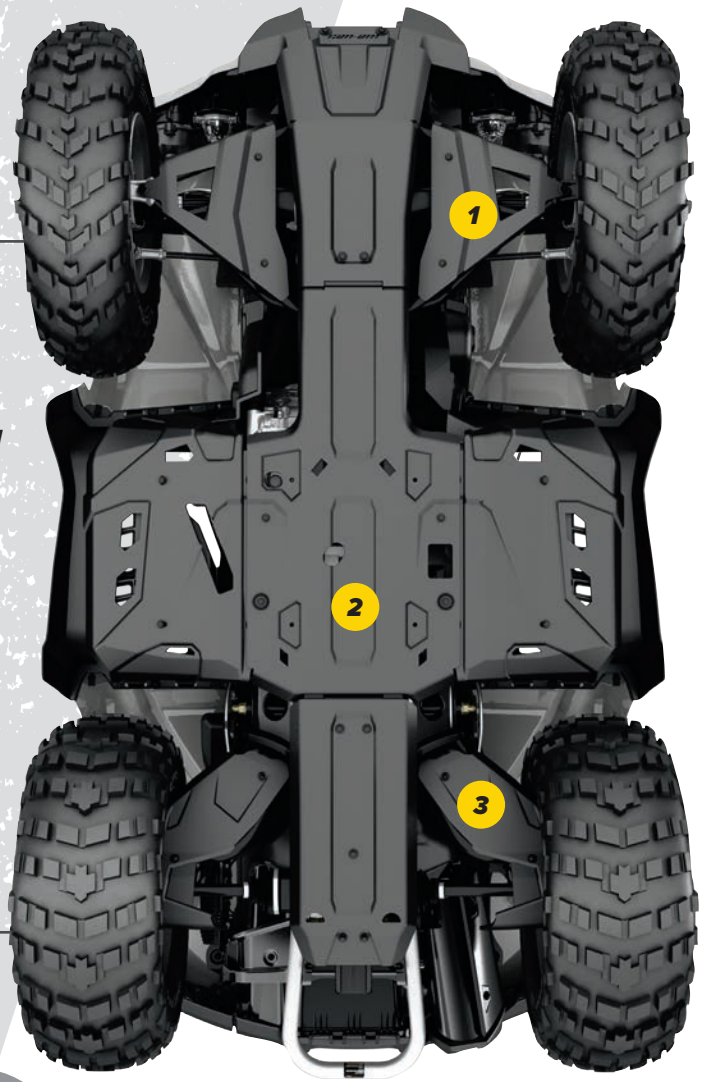
	G2S 2016 & PRIOR	G2S 2017 & UP
ALUMINUM SKID PLATE PROTECTION KIT	715002139 $839.99	715004201 $854.99
INDIVIDUAL ALUMINUM SKID PLATES		
1 A-ARM PROTECTORS • 1/8" (3 mm) thick lightweight and durable design. • Add more protection to the CV joints and rubber boots. • Drain holes to release water, mud and debris. • Easy to install. • Replace stock plastic protectors. • Sold in pairs.	715001667 $149.99	715001667 $149.99
2 FRONT SKID PLATE • 3/16" (4.5 mm) thick and die-formed for strength and durability. • Recessed bolt holes.	715000925 $84.99	715000925 $84.99
3 CENTRAL SKID PLATE • 3/16" (4.5 mm) thick for durability and strength. • Drain holes to release water, mud and debris. • Allows access to oil drain plug. • Standard on Renegade X xc. • Must be installed with Front Skid Plate.	715002078 $119.99	715002078 $119.99
4 FOOTWELL PROTECTOR PLATES • 1/8" (3 mm) thick lightweight and durable design. • Drain holes to release water, mud and debris. • Use in conjunction with Central Skid Plate. • Sold in pairs.	715001359 $179.99	715001359 $179.99
5 TRAILING ARM PROTECTORS • 1/8" (3 mm) thick lightweight and durable design. • Replace stock plastic protectors. • Sold in pairs.	715001129 $139.99	715003741 $134.99
6 REAR DIFFERENTIAL PROTECTORS • 1/8" (3 mm) thick lightweight and durable design. • Replace stock plastic protector.	715000920 $74.99	715000920 $74.99
7 REAR SKID PLATE • 3/16" (4.5 mm) thick for durability and strength. • Must be installed with the central and front skid plates.	715002028 $109.99	715002028 $109.99

OUTLANDER | RENEGADE

HMWPE SKID PLATES

Our Plastic Plates glide smoothly and silently over obstacles, offering great protection in rough terrain. Made of 1/4" (6 mm) thick abrasion-resistant thermoformed High Molecular Weight Polyethylene (HMWPE). Lighter than aluminum. Superior stress crack resistance. High impact strength.

Offer your Outlander & Renegade
THE FULL PROTECTION KIT
or
GET THEM INDIVIDUALLY



FIND YOUR PLATFORM →

	G2 2017 & UP	G2 2016 & PRIOR	G2 MAX 2017 & UP	G2 MAX 2016 & PRIOR	G2L	G2L MAX	G2S 2017 & UP
HMWPE SKID PLATE PROTECTION KIT	715004209 $784.99	715004214 $789.99	715004210 $799.99	715004215 $804.99	715004211 $789.99	715004212 $814.99	715004213 $789.99
INDIVIDUAL HMWPE SKID PLATES							
1 **A-ARM PROTECTORS** • Protect CV joints and rubber boots. • Include water and mud drainage holes. • Sold in pairs.	715002924 $139.99	715002924 $139.99	715002924 $139.99	715002924 $139.99	715002924 $139.99	715002924 $139.99	715002924 $139.99
2 **UNDERBELLY PLATES** • Include Front Skid Plate, Central Skid Plate, Footwell Protector Plates and Rear Skid Plate. • Allow access to oil drain plug. • Include water and mud drainage holes.	715002926 $509.99	715002926 $509.99	715002927 $524.99	715002927 $524.99	715002928 $514.99	715002929 $539.99	715002974 $514.99
3 **TRAILING ARM PROTECTORS** • Include water and mud drainage holes. • Sold in pairs.	715003466 $134.99	715002925 $139.99	715003466 $134.99	715002925 $139.99	715003466 $134.99	715003466 $134.99	715003466 $134.99
PLASTIC SKID PLATES							
FRONT AND CENTRAL PLASTIC SKID PLATES (Not illustrated) • Designed to protect frame and engine from rough terrain conditions. • Standard on Outlander L DPS® and Outlander L MAX DPS.					715002374 (STD only) $64.99		

BUMPERS & GUARDS

OUTLANDER

KEEP YOUR VEHICLE & YOUR LIVESTOCK SAFE WITH FULL-PERIMETER PROTECTION. THINK OF IT AS RANCHING ARMOR.

COMPLETE RANCHER PROTECTION KIT

(Not illustrated)

Introducing a whole new level of surround protection for your ATV thanks to this Full Body Protection Kit.

Includes:
- Rancher Front Bumper (715003461)
- Rancher Rear Bumper (715003462)
- Body Side Protector (715003459)

- Requires Body Side Protector Extensions (715003460) for installation on MAX models.

Fits: G2, G2L

715003463

$969.99

RANCHER FRONT BUMPER

- The heavy-duty bumper designed to pull double duty: protect your ATV and anything it comes in contact with, while also enhancing the look of your ATV.
- Made tough and designed to deliver a rugged appearance, this bumper offers front protection for farmer, rancher and forestry applications.
- The low front end protection and plates allow you to use your ATV within cattle herds and guard the safety of both the vehicle and the animals.
- The flat front portion facilitates gently prodding cattle or pushing light objects, e.g. closing a fence.
- The full frontage coverage extends to provide an extra layer of defense to your headlights and radiator.
- Inside and outside anti-corrosion coating with durable powder coat finish.
- Not compatible with track systems, plows and front hitch.

Fits: G2, G2L

715003461

$329.99

RANCHER REAR BUMPER

- The heavy-duty bumper designed to pull double duty: protect your ATV and anything it comes in contact with, while also enhancing the look of your ATV.
- Made tough and designed to deliver a rugged appearance, this bumper offers rear protection for farmer, rancher and forestry applications.
- Ideal for using your ATV within cattle herds and guard the safety of both the vehicle and the animals.
- Coverage extends to provide an extra layer of defense to your tail lights.
- Inside and outside anti-corrosion coating with durable powder coat finish.
- Not compatible with track systems.

Fits: G2, G2L

715003462

$284.99

BODY SIDE PROTECTOR

- The heavy-duty fender guard designed to pull double duty: protect your ATV and also enhance the look of your ATV.
- Made tough and designed to deliver a rugged appearance, this fender guard offers full side protection for farmer, rancher and forestry applications.
- Built of durably bold 1.25" (3 cm) diameter steel-tube construction, with inside and outside anti-corrosion coating with durable powder coat finish.
- XT Front and Rear Bumpers or Rancher Front and Rear Bumpers are required for installation.

Fits: G2 with XT or Rancher Bumpers, G2L with Rancher Bumpers
- Requires Body Side Protector Extensions (715003460) for installation on MAX models.

715003459

$354.99

Fits: G2L with XT Bumpers

715003614

$394.99

BODY SIDE PROTECTOR EXTENSIONS

(Not illustrated)
- This specially designed extension for Body Side Protector (715003459 or 715003614) is made specifically to fit and seamlessly integrate the look of Outlander MAX models.

Fits: G2 MAX, G2L MAX

715003460

$74.99

OUTLANDER

XT FRONT BUMPER

- Provides additional protection against the elements.
- Tough and durable, can be added on base Outlander model to convert vehicle into XT model.
- Large tube construction with textured black finish.
- Standard on XT model.

Fits: G2

715000947

$199.99

XT FRONT BUMPER

- Large tube construction.
- Protects vehicle frame against obstacles.
- Winch compatible.

Fits: G2L

715001910

$169.99

EXTREME FRONT BUMPER

- Ultra-sturdy build.
- Enhances front-vehicle protection.
- Compatible with XT Front Bumper.
- Fits the Apache 360 Track System (when side panels are removed).
- Not compatible with Front Hitch.

Fits: G2

715001286

$294.99

EXTREME FRONT BUMPER

- Ultra-sturdy build.
- Enhances front-vehicle protection.
- Compatible with XT Front Bumper.
- Fits the Apache 360 Track System (when side panels are removed).

Fits: G2L

715004279

$269.99

XT REAR BUMPER

- Provides additional protection against the elements.
- Tough and durable, can be added on base Outlander model to convert vehicle into XT model.
- Large tube construction with textured black finish.
- Standard on XT model.

Fits: G2

715000948

$189.99

XT REAR BUMPER

- Large tube construction.
- Protects vehicle frame against the obstacles.

Fits: G2L

715001911

$124.99

RENEGADE

RENEGADE EXTREME FRONT BUMPER

- Enhanced vehicle front protection.
- Required as a mounting point for Radiator Relocator (715001929).

Fits: G2S

715002469

$264.99

OUTLANDER

FENDER FLARE

- Kit designed to deliver extra protection from dirt and debris, therefore a must if you enjoy riding in the mud.
- Made of injected plastic that hugs your vehicle fenders perfectly.
- Gives vehicle added flair for that rugged cool look.
- Includes front and rear extensions and all mounting hardware.

Fits: G2 (except with 30" tires)

715001764

Fits: G2L

715001909

$159.99

Fits: G2 (with 30" tires)

- Standard on G2 X mr 1000R.

715004250

$164.99

FENDER FLARE EXTENSIONS

- Block terrain debris from kicking up onto you as you ride or damaging your vehicle thanks to these extra-large Fender Flare Extensions, which also include mud flaps for added protection from mud/snow, especially when riding with track kits.
- Made of High Molecular Weight Polyethylene (HMWPE) for advanced abrasion resistance.
- Include front and rear extensions.

Fits: G2

- Must be used with Fender Flare for G2 (715001764).

715003458

$244.99

Fits: G2L

- Must be used with Fender Flare for G2L (715001909).

715003615

$244.99

RENEGADE

FENDER FLARE

- Integrated extended Fender Flare for sporty look and full body protection from dirt and water.
- Includes front and rear extensions and all mounting hardware.

Fits: G2S (except X mr models)

715001681

$204.99

OUTLANDER **RENEGADE**

LinQ SYSTEM™

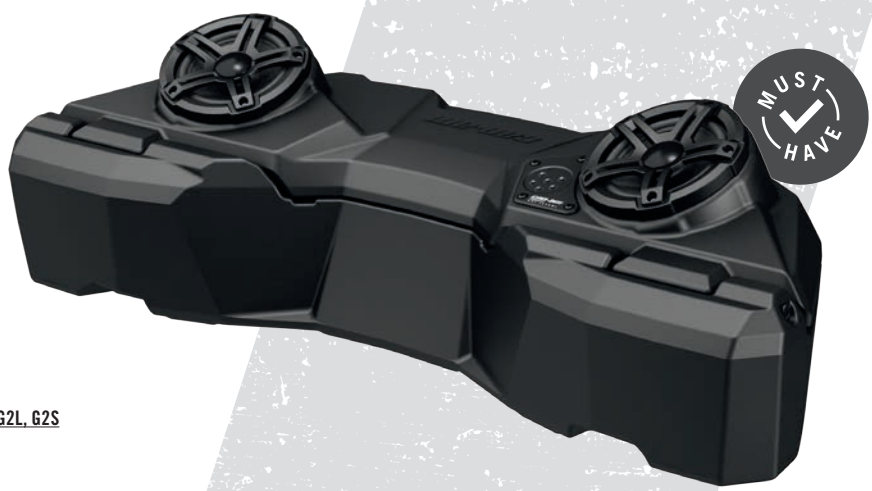
LinQ 11.5 GAL (43L) AUDIO CARGO BOX

- Delivers the best sound quality on the market to sweeten your ride courtesy of a built-in full range high efficiency amplifier.
- Mounts on/off easily to hold/carry cargo safely and securely.
- The Bluetooth enabled receiver and 6.5" speakers are smartly concealed and integrated in the cover.
- Automatic shut-off function protects your battery by turning the system off after 10 minutes of inactivity.
- Backlit control panel perfect for night riding.
- Water-resistant speakers.
- LinQ Base (715002350) is required for G2L.
- LinQ Luggage Rack (715001734) is required for G2S.

Fits: G2 (front only for Outlander 6x6 and Outlander MAX 2013-2014), G2L, G2S

715003018

$659.99



OUTLANDER RENEGADE

HEATED HAND GRIPS & THROTTLE COMBO

Fits: G2, G2L (Wiring Cable (710004567) required for installation), G2S

715003250

$274.99

1. *LED dimmer facilitates reading temperature settings.*
2. *4 temperature settings with individual controls for thumb and grips. Returns to previous heat setting.*
3. *One-touch shutdown.*

INDIVIDUAL THUMB & GRIP CONTROLS WITH 4 TEMPERATURE SETTINGS, ONE-TOUCH SHUTDOWN + EASY-TO-READ LED DISPLAY WITH DIMMER. ALL AT YOUR FINGERTIPS.

CYCLOPS 360° PANORAMIC HD VIDEO CAMERA

- Features a 220-degree wide-angle lens.
- Video resolutions up to 4K at 30 frames per second.
- Professional 16MP quality photos.
- Rugged, light and portable.
- Magnetic mount for vibration-free footage and mounting to any metal surface.
- Comes with 32GB Class 10 micro SD card.
- Waterproof case up to 164' (50m).
- Wi-Fi available to remotely control your camera from your smartphone or computer with the free CG360 App.
- 16 modes and effects, including driving mode, loop recording, time lapse and slow motion.
- Comes with 10 mounting accessories.
- Compatible with VR goggles.

9700020090

$399.99

OUTLANDER

HEATED PASSENGER GRIPS & VISOR OUTLET

- Replace your stock passenger handles.
- Dual temperature switch integrated into seat arm for 3-zone heated handles and grips.
- Heated visor outlet integrated into seat arm.

Fits: G2, G2L (MAX models only)

715001926

$254.99

Fits: G2 (2013-2014) (MAX models only)

715002116

$244.99

HEATED VISOR OUTLET

- Strategically positioned on vehicle to maintain your agility.
- Optional visor outlet that delivers fog-free riding.
- Quick and easy installation.
- Sold individually.
- Heated Visor not included.

Fits: G2, G2L

715001246

$64.99

WIRING CABLE

- Required for installation of Heated Hand Grips & Throttle Combo.

Fits: G2L

710004567

$13.99

OUTLANDER RENEGADE

baja designs

NEW BAJA DESIGNS HIGH BEAM KIT

- Thanks to their direct bolt-on and plug-and-play installation right into the original high beam location, upgrading from your stock high beam lights to these powerful Baja Designs Squadron Pro LED Lights becomes child's play.
- Each spot is equipped with 4 Cree LEDs producing 4,900 lumens at 40 watts.
- Driving/Combo light pattern for smooth blend of light for both near field applications and distance.

Fits: G2

715004284

$719.99

FRONT BUMPER LIGHTS

- 2 x 900 lumens 10W LED Cree light kit.
- Long-range illumination up to 350' (107 m), drawing less than 1 amp per light.
- Include multi-position clamps that fit on various tubing sizes.
- Not EC compliant.

Fits: G2 (except X xc), G2L

715001741

$314.99

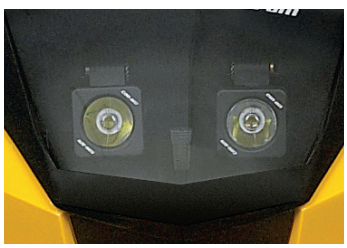
AUXILIARY WINDSHIELD LIGHTING

- 2 premium LED spots for Deluxe Fairing for both increased output and directional lighting.
- 1,800 lumens.
- 2 10W LED Cree light kit.
- Long-range illumination up to 350' (107 m), drawing less than 1 amp per light.

Fits: Deluxe fairing

715003115

$379.99



RAM LED SPOTLIGHT

- 540 lumens LED light (9 Watt) heavy-duty spotlight standard-equipped with 1" (2.5 cm) diameter rubber-coated double ball and socket system.

710005423 • Black

$139.99

CENTER CONSOLE DAY LIGHT

- Mountable on top end of center console.
- Enhances look of vehicle.

Fits: G2S (except X mr)

715000691

$74.99

GARMIN† MONTANA† 680T GPS

- Rugged and waterproof, the Montana 680T is element-proof.
- 4-inch dual-orientation, sunlight-readable touchscreen and glove-friendly touchscreen display, to give you vivid colors and high-resolution images.
- 8-megapixel autofocus camera automatically geotags photos.
- Tracks both GPS and GLONASS satellites for improved positioning and typically faster fixes.
- Preloaded TOPO maps, plus 1-year BirdsEye Satellite Imagery subscription.
- 3-axis compass with barometric altimeter.
- Specific GPS cradle included (vehicle mounting kit required).
- Includes a preloaded map for US.

Fits: G2, G2L, G2S

715002830

$759.99

EUROPEAN VERSION

- EC compliant.
- Includes preloaded European recreation map.

715003456

CANADIAN MAP FOR GARMIN MONTANA 680T GPS

- Additional and readily-programmable Canadian basemap for Garmin Montana 680T GPS system.
- Requires Garmin Montana 680T GPS (715002830).

710005065

$149.99

GPS RAM† MOUNT FOR HANDLEBAR

- Convenient bracket for installing the Garmin Montana GPS (not included) onto your unit's handlebar.

Fits: G2, G2L, G2S

715001985

$69.99

YUASA† AUTOMATIC 1 AMP BATTERY CHARGER

- Keeps your battery charged and ready to ride.
- Hook it up - plug it in – charge. Includes adapter and clips.
- 3-stage charge cycle switches automatically to maintenance mode.
- Easy-to-read 3-color LED charge monitor.
- Built-in overcharge prevention.

529036307

$49.99

BE READY FOR ANYTHING WITH THE RUGGED HEAVY-DUTY PULLING POWER OF A WINCH!

1 CHOOSE YOUR VEHICLE	2 CHOOSE YOUR WINCH *See page 35 for more information.*	3 INSTALLATION REQUIRES	
		HARNESS	MOUNTING PLATE
G2	Can-Am Terra Winches by Superwinch or Warn Provantage Winches	NA	NA
G2L	Can-Am Terra Winches by Superwinch or Warn Provantage Winches	715002453 (For Warn winches only)	NA
G2S	Warn Provantage Winches	NA	715000927

OUTLANDER

CAN-AM TERRA BY SUPERWINCH†

- Heavy-duty 4-way roller fairlead.
- Ergonomic clutch handle.
- Rugged all-steel gears and bushings, provides more torque and longer life.
- Automatic 100% load-holding brake.
- Sealed solenoid for all weather protection.
- Corded 10 ft. (3 m) weather sealed hand-held remote.
- Weather sealed handlebar mounted switch.
- EC Compliant.

CAN-AM TERRA 25 WINCH BY SUPERWINCH

- Pulling strength capability of 2,500 lb (1,134 kg).
- 50 ft. of 3/16" (15.2 m of 4.8 mm) wire steel cable.

Fits: G2, G2L

715003475

$394.99

CAN-AM TERRA 35 WINCH BY SUPERWINCH

- Pulling strength capability of 3,500 lb (1,588 kg).
- 50 ft. of 13/64" (15.2 m of 5.2 mm) wire steel cable.

Fits: G2, G2L

715003476

$444.99

OUTLANDER RENEGADE

WARN† PROVANTAGE

- Patented roller disc brake for outstanding control while winching.
- Ergonomic clutch handle.
- Three-stage planetary gear train for smooth, efficient operation.
- All-metal gear housing and gears.
- Fully sealed motor and drive train to keep the elements out.
- Corded remote and mini-rocker control switch with integrated socket.
- Limited lifetime warranty for mechanical components and 3-year warranty for electrical components.
- Winch mounting plate (715000927) is required for G2S.
- Winch wire harness (715002453) is required for G2L.
- EC Compliant.

WARN PROVANTAGE 2500-S WINCH

- Double powder coated hawse fairlead.
- Pulling strength capability of 2,500 lb (1,134 kg).
- 50 ft. of 3/16" (15.2 m of 4.8 mm) synthetic rope.

Fits: G2, G2L, G2S

715003472

$714.99

WARN PROVANTAGE 3000 WINCH

- Roller fairlead.
- Pulling strength capability of 3,000 lb (1,361 kg).
- 50 ft. of 3/16" (15.2 m of 4.8 mm) wire steel cable.

Fits: G2, G2L, G2S

715003474

$669.99

WARN PROVANTAGE 3500-S WINCH

- Double powder coated hawse fairlead.
- Pulling strength capability of 3,500 lb (1,588 kg).
- 50 ft. of 3/16" (15.2 m of 4.8 mm) synthetic rope.

Fits: G2, G2L, G2S

715003473

$834.99

OUTLANDER RENEGADE

WARN HAWSE FAIRLEAD

- Double powder coated construction.
- Required to use the Synthetic Winch Cable (715004254) on Warn winches.
- To be used with synthetic winch cables only.

Fits: Warn winches

715004255

$84.99

WINCH MOUNTING PLATE

- Adds functionality to your Renegade.
- Fits Can-Am winches by Warn.

Fits: G2S

715000927

$139.99

WINCH ACCESSORIES KIT

- Get the most out of your winch.
- Double your pulling power, change your pulling direction and keep your winch in proper working order.
- Includes tree straps, snatch block, shackle and winching gloves.

715002409

$119.99

WIRELESS REMOTE CONTROL

- The system is quick and easy to install, thanks to a wiring harness with an integrated antenna and all necessary mounting hardware.
- The system allows you to operate your winch from anywhere within a 50' (15.2 m) radius, increasing your recovery options.
- All components are weatherproof.

Fits: Warn winches

715002542

$229.99

ROLLER FAIRLEAD

- Features top, bottom and side rollers for less cable wear and smoother operation from any direction for easier winching.

715000011 • Warn

$69.99

705204571 • Superwinch

$44.99

HOOK WITH SAFETY LATCH & STRAP KIT

- Heavy-duty winch-rope hook with stainless steel snap.
- Includes a nylon safety strap.

715003523

$35.99

WIRED REMOTE CONTROL

- This kit allows winch owners to add the hand-held remote to their winch.
- Works in conjunction with the mini-rocker switch.
- EC compliant.

Fits: For ATVs with handlebar winch remote socket.

710002270

Fits: ATVs without the winch remote socket on the handlebar

- Side panel Remote socket (715003651) is required.
- EC compliant.

710001002

$74.99

Fits: Superwinch winches

710004887

$25.99

REPLACEMENT WIRE ROPE

- Play it safe, always carry a replacement wire rope.
- 3,500 lb (1,588 kg) pulling strength.

Fits: ATV SuperWinch

- 50 ft. of 7/32" (15.2 m of 5.5 mm) wire rope.

705009321

$39.99

Fits: ATV Warn winches

- 50 ft. (15.2 m) aircraft grade steel wire.
- 3/16" (4.8 mm) diameter.

715000047

$69.99

SYNTHETIC WINCH CABLE

- Easier to manipulate than steel cable.
- Replaces the original cable on any factory installed Warn winch or sold as an accessory by BRP.
- Kit includes synthetic rope and rock guard sleeve.
- Always use with new hawse fairlead (715004255).
- 50 ft. (15.2 m).
- 3,500 lb (1,588 kg) pulling strength.

715004254

$134.99

WARN REMOTE SOCKET

(Not illustrated)

- Winch remote socket, located on side panel is required for wired remote control.

715003651

$30.99

WINCH WIRE HARNESS

(Not illustrated)

- Required plug-and-go wiring to install Warn winch only.
- Not required for Can-Am Terra winch.

Fits: G2L

715002453

$49.99

HARDWARE ADAPTER KIT

(Not illustrated)

- Required to install Warn Winch Kit (715002500, 715002561, 715002499) on 2016 and up models.
- Required to install Can-Am Terra 25 Winch (715002167) and Can-Am Terra 35 Winch (715002057) on G2L 2017 and up models.

715003477

$40.99

OUTLANDER

FRONT RECEIVER HITCH

- Front receiver hitch for Outlander with or without a winch.
- This hitch offers 1,300 lb (590 kg) of towing capacity.
- Allows you to maneuver your trailer easily in tight, confined areas.
- Hitch bar sold separately.
- Not compatible with Extreme Front Bumper and Rancher Bumper.

Fits: G2

715000921

$104.99

OUTLANDER RENEGADE

FRONT & REAR HITCH DRAWBAR

- Standard on 2" (5 cm) receiver hitch.
- It offers 1,300 lb (590 kg) of towing capacity.
- Hitch ball not included.

Fits: G2, G2L, G2S

715000972

$89.99

EUROPEAN VERSION

- Drawbar with 2" (50 mm) hitch ball.

715001473

705206264 (T Homologated)

RUBBER RECEIVER PLUG

- Rubber cap for 2" (5 cm) hitch receiver.

705204503

$15.99

REAR HITCH

- E-coat finish.
- Fixed hitch ball mounting bracket.
- Provides fixed mounting point for trailer ball to provide vehicle with towing capabilities.
- This hitch offers 1,300 lb (590 kg) of towing capacity.
- Hitch ball not included.

Fits: G2, G2L, G2S

715001925

$64.99

REAR RECEIVER HITCH

- E-coat finish.
- Does not affect ground clearance.
- Trailer ball not included.
- This hitch offers 1,300 lb (590 kg) of towing capacity.

Fits: G2L, G2S

715001329

$109.99

WE'LL MAKE YOU READY FOR MUD.

OUTLANDER

OUTLANDER RADIATOR RELOCATOR KIT

- Relocates radiator to top mount position.
- Prevents cooling performance loss in muddy conditions.
- Uses existing radiator.
- Includes support, hardware and hoses.
- Engineered for easy cooling system bleeding and maintenance.
- Radiator not included.

Fits: G2, G2L

715001930 • Black

$474.99

RELOCATE YOUR RADIATOR UP & AWAY FROM THE MUD! YOU'LL LEAVE OVERHEATING BEHIND AND RIDE COOL!

OUTLANDER SNORKEL KIT

- Comprehensive kit.
- Extended air intakes and CVT exhaust.
- CVT Outlet integrates into pod cover.
- Ideal for muddy conditions.
- Must be installed on a vehicle without XT handlebar protector kit.
- For 6x6, appropriate gauge support is required for best fit and finish.
- Not compatible with windshields.

Fits: G2, G2L

715002392

$444.99

Fits: G2 (2012-2014 only)

715001730

$444.99

Fits: G2 (X mr models only), G2L (X mr models only)

- Raised horn only.
- Provides higher intake.
- For best fit and finish, appropriate gauge support is required.

715002518

$114.99

TRANSFORM YOUR VEHICLE INTO THE ULTIMATE CREEK CONQUERING MUD-RIDING MACHINE!

X MR TRACTION PLATES

- Provide extra foot grip for driver when riding in extreme mud conditions.
- Help driver to maintain ideal riding position to maximize vehicle traction.
- Made of aluminum.
- Not meant for a passenger.

Fits: G2, G2L (MAX models only)

715001752 • Aluminum

$124.99

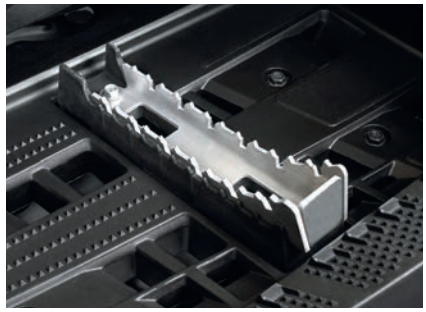
FOOTPEG KIT

- Provides maximum integrated grip and more stability during vigorous riding.
- Kick-up end generates added grip during hard cornering.
- Made of aluminum.
- Sold in pairs.

Fits: G2, G2L

715001131

$54.99



RENEGADE

RENEGADE SNORKEL KIT

- Comprehensive kit.
- Extended air intakes and CVT exhaust.
- CVT Outlet integrates into pod cover.
- Ideal for muddy conditions.

Fits: G2S

715001928

$549.99

ADAPTOR KIT

(Not illustrated)

- Necessary to install the G2S Snorkel Kit (715001928) on 2012 to 2014 models.

Fits: G2S (for 2012-2014 models only)

715003122

$54.99

RENEGADE RADIATOR RELOCATOR KIT

- Relocates radiator to top mount position.
- Prevents cooling performance loss in muddy conditions.
- Uses existing radiator.
- Includes support, hardware and hoses.
- Engineered for easy cooling system bleeding and maintenance.
- Radiator not included.
- Renegade Extreme Front Bumper (715002469) required for installation (except X mr).

Fits: G2S

715001929

$474.99

OUTLANDER RENEGADE

MUD STRAP

- Convenient sturdy grab-handle.
- Lets drivers redistribute their weight for improved traction in demanding conditions.
- Not compatible with XT Handelbar Protector Kit (703100352).

Fits: G2, G2L, G2S

715003053

$44.99

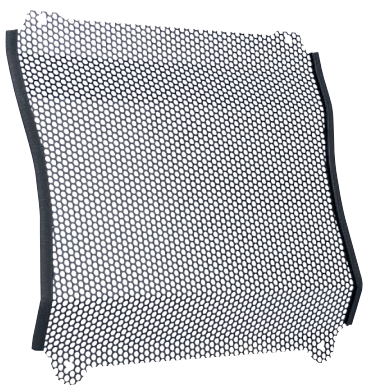
RADIATOR PROTECTOR

- Metal shield which mounts over radiator face, providing protection from stones and branches.

Fits: G2, G2S (except G2S with 500 engine)

715001744

$74.99



YOSHIMURA
EXHAUST MADE IN THE USA FOR
can-am

YOSHIMURA GIVES YOU THE EDGE WITH MORE PERFORMANCE & LESS WEIGHT.

OUTLANDER

YOSHIMURA
can-am

YOSHIMURA SLIP-ON EXHAUST

- Made from 304-grade stainless steel.
- Better sounding, better looking and lighter than stock muffler.
- USDF/USDA approved spark arrester.
- NON EPA compliant (for racing application only).
- Not EC compliant.
- Fuel injection system tuning not required.

Fits: G2 (except 6x6 models)

715001738

$514.99

RENEGADE

YOSHIMURA
can-am

YOSHIMURA SLIP-ON EXHAUST

- Made from 304-grade stainless steel.
- Better sounding, better looking and lighter than stock muffler.
- USDF/USDA approved spark arrester.
- NON EPA compliant (for racing application only).
- Not EC compliant.
- Fuel injection system tuning not required.

Fits: G2S (except X mr models)

715001739

$639.99

OUTLANDER RENEGADE

FOX SHOCKS

- Engineered for the more agressive riders.
- Offers increased bump absorption and better roll control.
- Offers a slightly firmer ride than standard kits but remains very useable for all-around use.
- Kit includes 4 shocks and springs.
- Rebuildable.
- Threaded preload adjusters.

Fits: G2 (except X mr, XT-P, Limited & 6x6), G2 X mr 650 & G2S (base model with 500 & 570 only)

715001471

$714.99

FOX PERFORMANCE SHOCKS 1.5 PODIUM X RC2 HPG

- High-performance front and rear shocks.
- Allow handling to readily adapt to terrain and riding style.
- Easy-adjust dual-speed compression, rebound and preload settings.
- Standard on G2S X xc.

Fits: G2 (except X mr, Limited & 6x6), G2 X mr 650 & G2S (base model & X mr 570 only)

715003201

$2,339.99

FRONT SHOCK COVERS

- Feature ventilation holes.
- Offer added protection in rough terrain and weather conditions.
- Sold in pairs.

Fits: G2, G2L, G2S

715500301

$44.99

HEAVY-DUTY SPRINGS

- Heavy-duty springs provide enhanced stiffness.
- Perfect for snow clearing and hauling heavy loads.
- Improves handling and helps prevent accidental overturns.
- Sold in pairs.
- Standard on Outlander Pro and Mossy Oak models

Fits: G2

FRONT
G2 (base model, DPS, XT, X mr with 650 engine only & Limited), G2S (base model with 500 & 570 engines only)

715003199

$129.99

REAR
G2 (base model, DPS, XT & X mr with 650 engine only), G2S (base model with 500 & 570 engines only)

715003200

$129.99

Front Rear

FOAM AIR FILTER BY TWINAIR†

- Maximizes performance by increasing air flow throughout RPM range.
- Maintenance-friendly, i.e. just wash, re-oil and re-use after riding in severely dusty/muddy environments.

Fits: G2, G2S

715001333

$84.99

COVERS, DECALS & ADD-ONS

TRAILERING COVERS

- Heavy-duty canvas made of UV-resistant solution-dyed polyester.
- Inner soft liner protects windshield and colored panels from abrasion.
- All high abrasion areas are reinforced with a double canvas layer.
- Opening for fuel cap access.
- Weather-resistant trailering cover protects your vehicle during transportation.
- Quick and easy installation.
- Designed to perfectly fit your vehicle with or without Can-Am accessories.

STORAGE COVERS

- Weather-resistant storage cover.
- For vehicle storage only.
- UV-resistant solution-dyed polyester construction.
- Quick and easy installation.
- Designed to perfectly fit your vehicle with or without Can-Am accessories.

Fits: G2 (except MAX models)
715001737
$224.99

Fits: G2 (MAX models only)
715001736
$254.99

Fits: G2L (except MAX models)
715002026
$224.99

Fits: G2L (MAX models only)
715002025
$254.99

Fits: G2S (except X mr models)
715000683
$189.99

Fits: G2 Xmr (except 1000R), G2L Xmr, G2S, G2S Xmr
715001720
$179.99

Fits: G2 MAX, G2L MAX, G2 Xmr 1000
715001668
$189.99

Fits: G2L (except MAX models)
715001916
$169.99

Fits: G2L (except MAX models)
715001597 • Mossy Oak Break-Up Country Camo
$259.99

Fits: G2L (MAX models only)
715001735 • Mossy Oak Break-Up Country Camo
$274.99

DECAL

- 6" x 12 3/4" (15 cm x 32 cm)

704901483
$17.99

LICENSE PLATE BRACKET

- Provides specific area to install license plate.
- Mounts to rear of vehicle.

Fits: G2L
715002498
$26.99

Fits: G2S
715001401
$27.99

LOCKABLE GAS TANK CAP

- Protects your fuel.
- Meets EPA requirements.

Fits: G2, G2L, G2S
860200387 • Black
$44.99

CUP HOLDER

- Mounts easily to handlebars or racks.

715000121
$89.99

RATCHET TIE-DOWNS

- 400 lb (181 kg) safe working load.
- 1" x 10' (2.5 cm x 3 m) strap with Sea-Doo, Ski-Doo and Can-Am logos.
- Deluxe ratchet with rubber handle.
- Coated S hooks.
- Pack of 2.

860200447 • Black/Grey
$19.99

FLAG

- Make sure everyone knows what you're riding.
- Perfect for the dunes and new riders.
- 8-foot (2.4 m) length.
- Includes flag mount (715000127).

715000277 • Yellow
$29.99

FLAG MOUNT

715000127
$24.99

GO OFF THE BEATEN PATH

CLIMB HIGHER

RIDE IN DEEP SNOW

WITH THE NEW APACHE BACKCOUNTRY TRACK SYSTEM.

CATCH THE VIDEO

CAN-AMOFFROAD.COM

THE PERFECT FUSION OF SKI-DOO SNOWMOBILE & APACHE TRACK TECHNOLOGY. DELIVERS BETTER DEEP-SNOW PERFORMANCE THAN ANY OTHER ATV TRACK SYSTEM.

OUTLANDER RENEGADE

APACHE TRACK SYSTEMS

· Highly engineered track system provides ultimate traction in deep snow for your Can-Am vehicle.

WINTER TRACKS

Can-Am's new Apache Backcountry Track System is the perfect fusion of BRP's renowned snowmobile and innovative Apache 360 Track System technologies. It delivers the highest ground clearance, the most flotation, and the best deep-snow performance of any ATV track kit on the market today. Period. An efficient frame and rail design ensures weight is spread evenly on snow so you always enjoy higher traction, remarkable acceleration, turning, braking and side-hilling. And it's the only kit available with a 13.5" X 96" (34 cm x 244 cm) front track / 14" X 138" (36 cm x 351 cm) rear track, which adds up to the largest contact patch anywhere.

CLIMB HIGHER, RIDE IN DEEPER SNOW AND GO OFF THE BEATEN PATH.

NEW APACHE BACKCOUNTRY TRACK SYSTEM

- Designed to deliver the best flotation level and deep-snow performance on the market.
- Contact patch is 23% bigger than the Apache 360 LT.
- Impressive ground clearance of 20.3" (51.6 cm), keeps the vehicle out of deep snow.
- Aggressive track design with 2" (5 cm) lug height for maximum traction on snow.
- Apache Backcountry Mounting Kit is required.
- For winter use only.

Fits: G2 (except 6x6), G2S

715003042

$5,829.99

NEW APACHE BACKCOUNTRY MOUNTING KIT

(Not illustrated)

- Simple system that reduces installation time.
- Includes DPS Module.
- Required for installation of the Apache Backcountry Track System.

Fits: G2 (except 6x6), G2S

715003043

$769.99

IDLER WHEEL KIT

- Reduces drag and rolling resistance.
- Includes 2 wheels, brackets and hardware.
- Add up to 2 kits per rear track.
- Can extend slider life in hardened snow conditions.

Fits: Apache Backcountry Track System, rear tracks only

860201230 · 141 mm

$84.99

SLIDERS WITH VESPEL† INSERTS

- Use DuPont Vespel inserts for less friction.
- Longer life.
- Can be cut to desired lenght.
- 8 needed per vehicle.
- Sold individually.

Fits: Apache Backcountry Track System

503194815 · Black

$104.99

· Heavy-duty components ensure reliability and the design offers excellent acceleration, turning, braking and side-hilling performance.

· The DPS† module, included in the mounting kits, optimizes your Dynamic Power Steering (DPS) performance by maximizing steering agility at lower speeds while providing firmer steering at cruising speeds. It also provides a speed correction factor for the speedometer.

YEAR ROUND TRACKS

The Apache 360 and 360 LT Track Systems offer a unique adjustable contact patch engineered to take on the toughest conditions, year round. Their built-in versatility means you can optimize your attack angle in rough terrain, or dial it down for enhanced deep-snow flotation – it's that easy. They're great in muddier, softer spring thaw conditions so you can work or play wherever and whenever you want. Their superior ground adhesion makes them a favorite for navigating swamps and bogs.

APACHE 360 LT TRACK SYSTEM

- Multifunctional tracks designed to support heavy loads and to fit on most Can-Am off-road vehicles.
- Extra contact patch adjustment for better performance over rough terrain.
- Contact patch is 7 to 9% bigger than the Apache 360's.
- Average ground clearance of 17.3" (44 cm).
- 1" (2.5 cm) lugs in the front and 1.25" (3.2 cm) in the back.
- Apache 360 Mounting Kit and Apache 360 LT ATV Adaptor are required.

Fits: G2 (except 6x6), G2S

715003064

$5,044.99

APACHE 360 TRACK SYSTEM

- Multifunctional tracks perfect for any Can-Am ATV.
- Average ground clearance of 16" (41 cm).
- 1" (2.5 cm) lugs in the front and 1.25" (3.2 cm) in the back.
- Apache 360 Mounting Kit is required.

Fits: G2 (except 6x6 models), G2L, G2S

715001981

$4,224.99

Unique adjustable contact patch system to tackle the toughest year-round conditions.

Easy installation and quick conversion from tires to tracks.

Rubber over molded heavy-duty double bearing wheels and offset wheel spacing reduce friction and vibration while ensuring reliability.

APACHE 360 MOUNTING KIT

(Not illustrated)

- Simple system that reduces installation time.
- Includes DPS Module.
- Requires Apache 360 LT ATV Adaptor (715003063) for installation of the Apache 360 LT Track System.

Fits: G2 (except 6x6 models), G2L, G2S

715002388

$374.99

APACHE 360 LT ATV ADAPTOR

(Not illustrated)

- Required to install an Apache 360 LT Track System (715003064).
- Apache 360 Mounting Kit (715002388) also required.

Fits: G2 (except 6x6 models), G2S

715003063

$179.99

DPS MODULE

(Not illustrated)

- Calibrates speedometer and DPS support for Apache and Backcountry Track Kits.

Fits: G2L (except base models), G2 (except base models), G2S

715001202

$224.99

AIR INTAKE PRE-FILTER

- Adds extra protection for your engine in harsh riding conditions.
- Filter blocks particles larger than 0.005".
- A pre-filter is necessary to maintain the vehicle warranty when an Apache 360 Track System or an Apache 360 LT Track System is installed.

Fits: G2, G2L, G2S

715000291

$34.99

PLOW KITS

OUTLANDER

TURN YOUR VEHICLE INTO A SNOW CONQUEROR!

60" (152 CM) ALPINE FLEX PLOW KIT

Fits: G2, G2L

715003149

$1,189.99

KIT INCLUDES:

60" (152 cm) Alpine Flex Plow
715001181 · Black

Alpine Flex Push Frame with Quick-Attach System
715001847

Plow Mounting Kit
715001411

60" (152 CM) ALPINE SUPER-DUTY STRAIGHT PLOW KIT

Fits: G2, G2L

715003148

$884.99

KIT INCLUDES:

60" (152 cm) Alpine Super-Duty Straight Plow
715000648 · Yellow

Alpine Super-Duty Push Frame with Quick-Attach System
715001182

Plow Mounting Kit
715001411

OUTLANDER **RENEGADE**

54" (137 CM) ALPINE SUPER-DUTY STRAIGHT PLOW KIT

Fits: G2, G2L, G2S

715003147

$704.99

KIT INCLUDES:

54" (137 cm) Alpine Super-Duty Straight Plow
715000208 · Black

Alpine Super-Duty Push Frame
715001064

Plow Mounting Kit
715002858

ALPINE FLEX PLOWS

OUTLANDER **RENEGADE**

PLOWS

ALPINE FLEX PLOW 54" (137 CM) & 60" (152 CM)

- Clears 50" (127 cm) or 54" (137 cm) when plow is angled.
- Ideal for clearing narrower areas, like sidewalks.
- Plow made of flexible UHMWPE, which delivers the highest impact strength of any thermoplastic presently made.
- Enormous flex action prevents damaging your plow when accidental impact happens.
- Impact absorption properties return plow to its original shape.
- Rearward release action practically eliminates jolts from being transferred to the driver or unit.
- Attaches and detaches effortlessly thanks to a fast and easy mounting system.
- Blade-turning mechanism mounted high to eliminate having to bend down to change or adjust blade's angle.
- High pivot point keeps plow on pavement.
- Compatible with all Alpine Flex Plow accessories to further enhance plow versatility.

Fits: G2, G2L, G2S

54" (137 cm)	60" (152 cm)
715001677	715001181
$409.99	$454.99

BUILD YOUR CUSTOM ALPINE FLEX PLOW SYSTEM IN 4 EASY STEPS

1 FIND YOUR PLATFORM	2 MATCH THE PUSH FRAME	3 MATCH THE MOUNTING KIT	4 CHOOSE THE PLOW WIDTH	⊕ ADD
G2, G2L	715001847	715001411	60" (152 cm) Alpine Flex Plow **715001181** **OR** 54" (137 cm) Alpine Flex Plow **715001677**	Add **Alpine Flex Push Frame Extension (715001389)** if using Alpine Flex UHMW Thermoplastic Plow with Apache 360, 360 LT and Backcountry Track System
G2S	715001848			

PUSH FRAME

ALPINE FLEX PUSH FRAME WITH QUICK-ATTACH SYSTEM

- Includes cable saver limit switch and plow roller fairlead.
- Refer to the chart on page 50 for the fitting.

715001848

$609.99

715001847

$609.99

ALPINE FLEX PUSH FRAME EXTENSION

- Bolt-on push frame extension for use with Apache 360, 360 LT and Backcountry Track System.
- Does not alter plow functionality.
- Fits Alpine Flex Push Frames (715001847 and 715001848).

Fits: Alpine Flex Plows

715001389

$124.99

MOUNTING KIT

PLOW MOUNTING KIT

(Not illustrated)

- Required to install Alpine Super-Duty Push Frames with Quick-Attach System (715001182, 715001474) and Alpine Flex Push Frames (715001847, 715001848).
- Mounting plate precision-designed to stay on year round without compromising ground clearance.
- Fits with or without Can-Am Skid Plates.
- Refer to the chart on page 50 for the fitting.

715001411

$124.99

ALPINE FLEX PLOW ACCESSORIES

ALPINE FLEX PLOW EDGE MARKERS

- For a more accurate view of the width of your plow so you avoid damaging your curb, your car or your house.

Fits: Fit Alpine Flex Plows

715001388

$44.99

ALPINE FLEX DRIFT CUTTER

- Keeps snow securely in the plow.
- Fits on either left or right side.
- Sold individually.
- Requires 8" (20 cm) Alpine Flex Extensions.

Fits: Alpine Flex Plows

715001386

$119.99

ALPINE FLEX 8" (20 CM) PLOW EXTENSIONS

- These conveniently extend your Alpine Flex Plow.

Fits: Fit Alpine Flex Plows

715001385

$169.99

ALPINE FLEX WEAR BLADE (STEEL)

- Long lasting wear blade that provides a sharper cut than the stock wear blade.
- Replaces stock wear blade.

Fits: Alpine Flex Plow 54" (137 cm)

715001704

$109.99

Fits: Alpine Flex Plow 60" (152 cm)

715001476

$109.99

- Stock replacement blade that is versatile for general plowing.

Fits: Alpine Flex Plow 54" (137 cm)

705203199

$109.99

Fits Alpine Flex Plow 60" (152 cm)

705202835

$109.99

ALPINE FLEX WEAR BLADE (PLASTIC)

- Flexible UHMWPE plastic construction won't scratch your driveway.
- Replaces stock wear blade.

Fits: Alpine Flex Plow 54" (137 cm)

715001703

$169.99

Fits Alpine Flex Plow 60" (152 cm)

715001475

$169.99

ALPINE FLEX PLOW RUBBER FLAP

(Not illustrated)

- Keeps snow away from the driver.
- Minimizes snow flowing over plow.
- Increases snow rolling effect.

Fits: Alpine Flex Plow 60" (152 cm)

715001387

$74.99

Fits: Alpine Flex Plow 54" (137 cm)

715001767

$74.99

ALPINE SUPER-DUTY STEEL PLOWS

OUTLANDER **RENEGADE**

PLOWS

ALPINE SUPER-DUTY STRAIGHT PLOW

- Super-duty plow blades made from 12-gauge steel.
- Replaceable wear blades.
- Blades swivel left or right, 5 positions.
- Large pin designed for easy blade rotation to eliminate dirt and snow buildup at pivot point.
- Blade design provides best snow/dirt roll-off at any angle.
- Yellow-colored version Can-Am branded.

Fits: G2, G2L, G2S

54" (137 cm)
- When angled, clears 48" (123 cm) path.

715000208 • Black
715000647 • Yellow

$274.99

60" (152 cm)
- When angled, clears 53½" (136 cm) path.

715000209 • Black
715000648 • Yellow

$284.99

54" (137 cm)

ALPINE SUPER-DUTY ONE WAY STATE PLOW

- One-way "winged" state plow designed to throw snow higher.
- Wing end of plow measures 25" (63 cm) high and tapers down to 16" (41 cm).
- Rubber flap designed to keep snow away from driver.
- Yellow-colored version Can-Am branded.

Fits: G2, G2L, G2S

60" (152 cm)

715000649 • Yellow
715000207 • Black

$379.99

66" (168 cm)

715000650 • Yellow

$419.99

60" (152 cm)

66" (168 cm)

BUILD YOUR CUSTOM ALPINE SUPER-DUTY STEEL PLOW IN 4 EASY STEPS

1 FIND YOUR PLATFORM	2 MATCH THE PUSH FRAME	3 MATCH THE MOUNTING KIT	4 CHOOSE THE PLOW WIDTH	⊕ ADD
G2, G2L	715001064 + 715002858 OR 715001182 + 715001411		66” (168 cm) Alpine Super-Duty One Way State Plow **715000650 · Yellow** **OR** 60” (152 cm) Alpine Super-Duty One Way State Plow **715000649 · Yellow** **715000207 · Black** **OR** 60” (152 cm) Alpine Super-Duty Straight Plow **715000648 · Yellow** **715000209 · Black** **OR** 54” (137 cm) Alpine Super-Duty Straight Plow **715000647 · Yellow** **715000208 · Black**	Add **Alpine Super-Duty Push Frame Extension (703500603)** if using Alpine Super-Duty Steel Plow with Apache 360 and Backcountry Track System.
G2S	715001064 + 715002858 OR 715001474 + 715001411			

PUSH FRAME

ALPINE SUPER-DUTY PUSH FRAME WITH QUICK-ATTACH SYSTEM

- Tubes withstand roughest use.
- Mid-mount carriage provides up to 11½” (29 cm) lift.
- Fits all steel blade styles.
- Improved auto aligning quick-attach system, easy foot lever release pedal, cable saver limit switch preventing cable breakage by automatically stopping the winch.
- Fits on Plow Mounting Kit (715001411 & 715002858) depending on your vehicle platform.
- Refer to the chart above for the fitting.

715001182 • Includes plow roller fairlead
715001474

$474.99

ALPINE SUPER-DUTY PUSH FRAME

- Super-duty push tubes withstand the roughest use.
- Mid-mount carriage provides up to 11½” (29 cm) of lift.
- Fits all steel blade styles.
- Quick-attach not included.
- Refer to the chart above for the fitting.

715001064

$304.99

MOUNTING KIT

PLOW MOUNTING KIT

(Not illustrated)

- Required to install Alpine Super-Duty Push Frames with Quick-Attach System (715001182, 715001474) and Alpine Flex Push Frames (715001847 and 715001848).
- Mounting plate precision-designed to stay on year round without compromising ground clearance.
- Fits with or without Can-Am Skid Plates.
- Refer to the chart above for the fitting.

715001411

$124.99

PLOW MOUNTING KIT

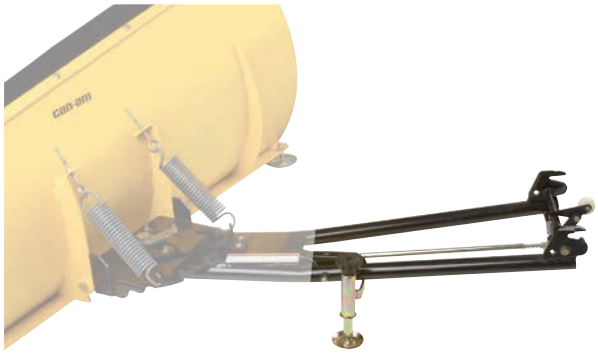
(Not illustrated)

- Required to install Alpine Super-Duty Push Frame (715001064).
- Quick-release pins attach and detach plow blade and base assembly in minutes.
- Simplified installation.
- Can be used with or without Alpine Super-Duty Quick-Attach System (715000731).
- No frame drilling required.
- Refer to the chart above for the fitting.

715002858

$124.99

ALPINE SUPER-DUTY ACCESSORIES



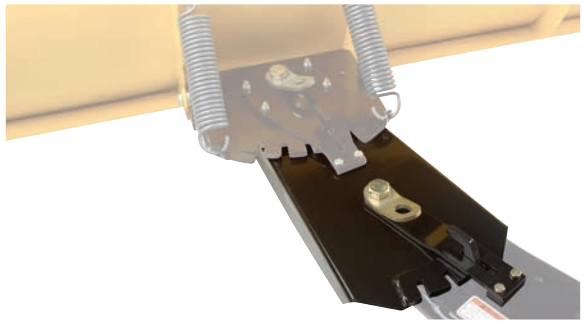
ALPINE SUPER-DUTY QUICK-ATTACH SYSTEM

- Available as an option to upgrade Alpine Super-Duty Push Frame (715001064).
- The plow will be easy to install with this quick-attach system.
- Durable with a powder-coated rust-resistant finish.

Fits: Alpine Super-Duty Plow

715000731

$214.99



ALPINE SUPER-DUTY PUSH FRAME EXTENSION

- 12 1/4" (31 cm) chassis extension for use with Apache 360 Track System.
- Increases angle and enables extra blade rotation.
- Fits on Alpine Super-Duty Push Frame (715001063, 715001064, 715001182 and 715001474).

703500603

$184.99

ALPINE SUPER-DUTY DRIFT CUTTER

- Helps keep snow in the plow.
- Designed with a rear pivot point.
- Works with both Straight and One Way State Blades.

Fits: Alpine Super-Duty Plow

Left	Right
715000217	715000218
$104.99	$104.99

ALPINE SUPER-DUTY PULLEY KIT

- Pulley kit to be used in conjunction with the winch when using a snow plow.
- Recommended to increase winch efficiency.
- To be used with the XT Front Bumper.

Fits: Alpine Super-Duty Plow

715000279

$64.99

OTHER PLOW ACCESSORIES

ALPINE SYNTHETIC WINCH CABLE

- Specially designed for plowing applications.
- 8' (2.4 m) section of durable, extra-strong synthetic rope.
- Stands up to repeated, sharp angle pulls used to lift heavy plow blades.
- Temporarily replace your winch rope for plow season to save wear and tear on wire rope.

715000540

$49.99

PLOW ROLLER FAIRLEAD

- Larger diameter lower roller reduces wear on wire rope for plow application.
- For use with Alpine Super-Duty Plow.

Fits: G2

705005715

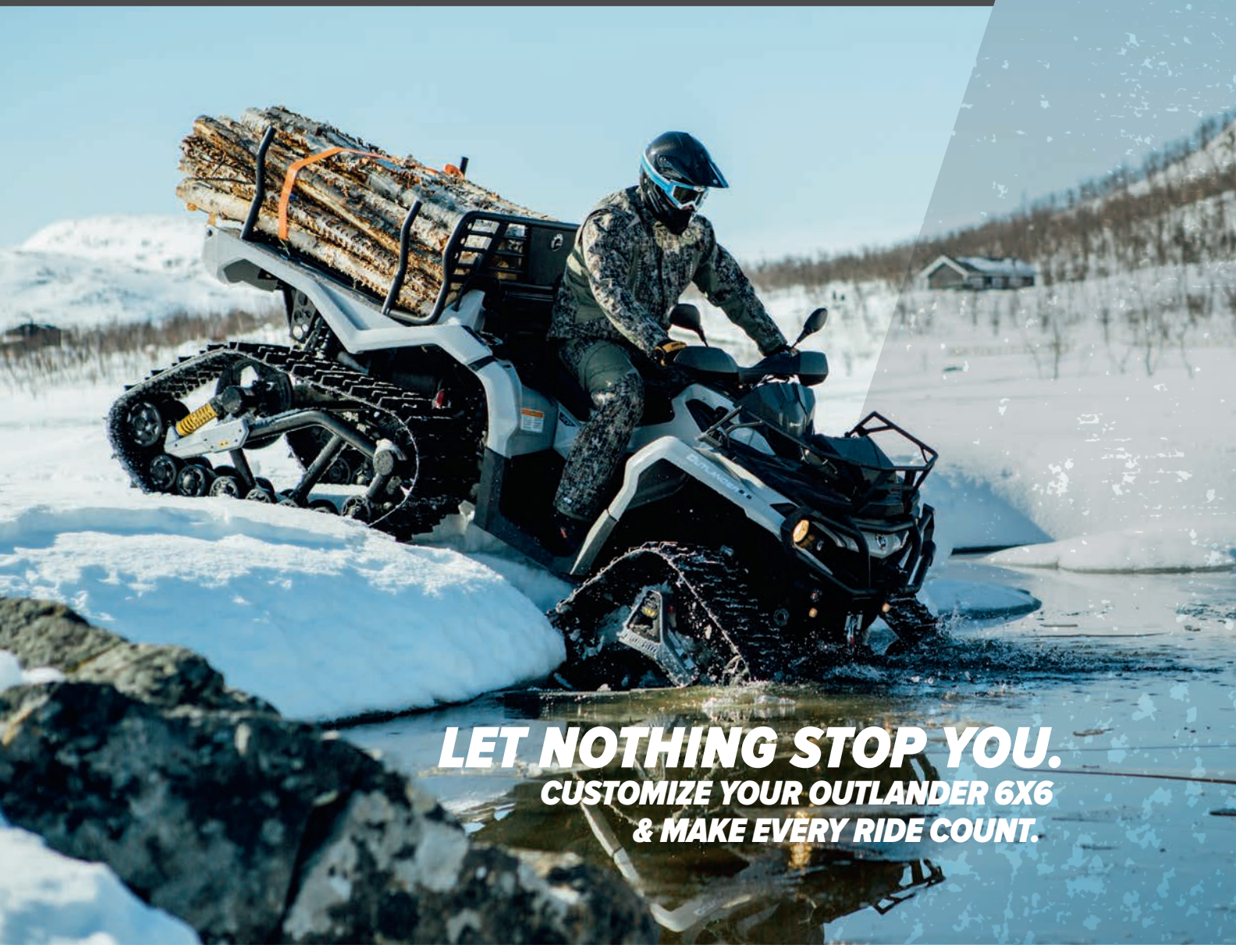
$74.99

REAR TIRE CHAINS

- Improve your traction in mud and snow.
- Sold in pairs.

26" x 10" x 12"	25" x 10" x 12"
715500218	715000225
$99.99	$89.99

OUTLANDER 6X6 ACCESSORIES



OUTLANDER 6X6

APACHE 360 LT TRACK SYSTEM

- Exclusively for the Outlander 6x6.
- Cross obstacles up to 12" (30 cm) high.
- Enjoy superior acceleration, turning, braking, and side-hilling.
- Switch easily between enhanced attack angle or improved flotation.
- Reliable heavy-duty build.
- Can-Am designed technology.
- Mounting kit included.
- For winter use only.
- EC Compliant.

Fits: G2 (6x6 2016 and up models only)

715002386

$7,239.99

Fits: G2 (6x6 2014-2015 models only)

619590299

$7,299.99

OUTLANDER 6X6

LOG BARS

- Log bars allow you to convert the cargo bed into a perfect transport space for 4' (120 cm) timber.
- The driver's safety is guaranteed by the protective front screen.

Fits: G2 (6x6 models only)

715002486

$1,094.99

NEW DRIVER BACKREST

- Provides the rider's back with that extra support that makes riding that extra mile way more comfortable.
- Adjusts horizontally to match the driver's height and preference.
- Mounts and locks in firmly onto the vehicle.

Fits: G2 (6x6 only)

715003611

$259.99

TAILGATE LIMITER KIT

- 2 L-shape brackets that hold the tailgate open horizontally.
- Keeps tailgate flush with the rest of the flatbed for longer oversized cargo.

Fits: G2 (6x6 models only)

715002534

$74.99

TAILGATE EXTENSION/DIVIDER

- The sturdy tailgate extension provides a 10" (25 cm) extension to the cargo space.
- Thanks to the longer cargo bed, even large loads pose no problem.
- With the help of LinQ quick locks, the extension also acts as a solid space divider for the cargo bed.

Fits: G2 (6x6 models only)

715002488

$544.99

HARD TOP

- The hard top provides a 116 Gal (440L) cargo box.
- Locking secures your belongings.
- The cover raises assisted by gas cylinders.

Fits: G2 (6x6 models only)

715002490

$1,039.99

OUTLANDER 6X6

18 GAL (70L) UTILITY BOX

- Wherever you go and whatever you do, this handy 18 Gal (70L) utility box is your mobile storage.
- The lid keeps your equipment safe from the elements in all conditions.
- Slides under the flatbed with handles for easy access.

Fits: G2 (6x6 models only)

715002487

$524.99

FLATBED PROTECTION TUBES

- Bolt-on bumpers for the sides of the 6x6 flatbed.
- Protects the exterior plastic components of the flatbed from rocks, trees and other obstacles when traversing enclosed areas or loading cargo onto the bed.

Fits: G2 (6x6 models only)

715002489

$504.99

REAR WINCH KIT

- The remote-controlled rear winch is a godsend when you want to pull yourself out of a tough spot or move heavy loads.
- Includes a fully-sealed Warn winch and all wiring and hardware needed for an easy and quick installation.
- Pulling strength capability of 3,000 lb (1,361 kg).
- 50 ft. of 3/16" (15.2 m of 4.8 mm) wire steel cable.

Fits: G2 (6x6 models only)

715002484

$1,279.99

TARPAULIN

- Fitted to cover all of the items in your cargo box thoroughly.
- Prevents splash from entering cargo box.
- Easily removable for quick access.

Fits: G2 (6x6 models only)

715002491

$379.99

STORAGE COVER

(Not illustrated)

- For storage use only.
- Heavy-duty elastic cord around bottom for secure fit.
- 100-dernier polyester construction.
- Fits with or without windshield and mirrors.

Fits: G2 (6x6 models only)

715002492

$314.99

FULL BODY SKID PLATE

- A full body plastic skid plate (10 mm HDPE) designed to protect the frame and the engine case from rough terrain conditions.
- The plastic allows your ATV to slide easily over stumps and logs.

Fits: G2 (6x6 models only)

715002485

$684.99

ITP TERRACROSS TIRE

- This smooth-riding tire will command every bit of traction from the ground while still managing to float across loose snow, sand and mud.
- Features extreme-duty construction for improved puncture protection, extra-tough rubber compound for increased tread life, and the interlocking tread pattern and wide footprint make it one of the toughest and grippiest radials around.
- Not EC compliant.

Fits: G2 XTP, G2 Limited

Front
26" x 8" x 14"
705401906
$179.99

Rear
26" x 10" x 14"
705502421
$234.99

GROUND-GRIPPING TRACTION MEETS LOOSE SNOW, SAND, & MUD MANEUVERABILITY. THE TOUGH TIRE WITH THE SMOOTH RIDE.

ZILLA TIRE BY MAXXIS*

- Sold individually.

Front
27" x 10" x 14"
705401302
$199.99

Rear
27" x 12" x 14"
705501703
$244.99

CARLISLE ACT TIRE

Fits: G2 (500-1000 XT models only)

Front
26" x 8" x 12"
705401333
$139.99
705401334 · CE

Rear
26" x 10" x 12"
705501769
$174.99
705501770 · CE

Fits: G2 (400 XT models only)

Front
25" x 8" x 12"
705400606
$149.99
705400326 · CE

Rear
25" x 11" x 12"
705500933
$184.99
705500598 · CE

CARLISLE ACT HD TIRE

Front
26" x 8" x 12"
705401736
$169.99

Rear
26" x 10" x 12"
705502297

MAXXIS MUDZILLA TIRE

- Not EC compliant.

Fits: G2 (X mr 570 & 650 models only)

Front
28" x 8" x 12"
705402131
$274.99

Rear
28" x 10" x 12"
705502645
$299.99

GORILLA SILVERBACK TIRE

- AT30X9-14 Gorilla Silverback mud tire.
- Sold individually.
- Not EC compliant.

Fits: G2 (850 & 1000 models only)

30" x 9" x 14"
705402178
$324.99

CARLISLE BADLANDS A/R TIRE

Fits: G2 (500-1000 Base models only)

Front
26" x 8" x 12"
705401331
$159.99
705401332 · CE

Rear
26" x 10" x 12"
705501767
$149.99
705501768 · CE

*Consult your operator's guide/owner's manual for proper tire type and rim sizing. Improper tire type and rim selection may affect vehicle handling. Check with your local authorities for proper regulation.

CARLISLE TRAIL WOLF TIRE

Fits: G2 (400 Base models only)

Front	Rear
25" x 8" x 12"	25" x 11" x 12"
705401625	705502164
$119.99	$164.99
705400607 · CE	705502165 · CE

ITP HOLESHOT ATR TIRE

Fits: G2S

Front 205/80R12	Rear 270/60R12
25" x 8" x 12"	25" x 10" x 12"
705400600	705500926
$174.99	$179.99
705400475 · CE	705500820 · CE

DURO THRASHER TIRE

Fits: DS 90/70

Front - 19" x 7" x 8"	Rear - 18" x 9.5" x 8"
V42711DGF000LL	V42712DGF010LL
$84.99	$94.99

KENDA KLAW MXR TIRE

Fits: DS 90 X

Front - 20" x 6" x 10"	Rear - 18" x 10.5" x 8"
V42711DGF01HLL	V42712DGF01HLL
$119.99	$149.99

REAR TIRE CHAINS

- Improve your traction in mud and snow.
- Sold in pairs.

26" x 10" x 12"	25" x 10"x 12"
715500218	715000225
$99.99	$89.99

KENDA KNARLY TIRE

Fits: DS 250

Front - 22" x 7" x 10"	Rear - 20" x 11" x 9"
S44710RCA000	S42710RCA000
$114.99	$124.99

RIMS

14" RIM

- Premium cast aluminum black painted with machining and clear coat rim.
- Center hole: 72 mm
- Bolt circle pattern: 4/136 mm

Fits: G2 DPS, G2 XT, G2 MAX 650, G2 MAX XT, G2 MAX Limited

Front - 14" x 6.5" offset = 40 mm	Rear - 14" x 8.5" offset = 50 mm
705401853 • Black and machined	705502402 • Black and machined
$144.99	$159.99
705401852 • Black with clear coat	705502401 • Black with clear coat
705401851 • Silver with clear coat	705502400 • Silver with clear coat
$134.99	$149.99

NOTE: Matching Nuts - 250100100 Black, 250100082 Chrome / Matching Cap - 705400928

OUTLANDER X MR AND DEFENDER RIM

- Cast aluminum rim with trend setting explosive styling so you can ride - and look - like a trailblazer.
- Front: 14" x 6.5" offset = 10 mm.

Fits: ATV (X mr models front & rear wheels)

705401848 • Black and machined
705401849 • Black

$159.99

NOTE: Matching Nuts - 250100100 Black, 250100082 Chrome / Matching Cap - 705401541

OUTLANDER X MR RIM - ITP-SS212*

- Black with machining and clear coat rim.
- Matching Cap (705400963), Matching Nuts (250100100).
- Sold individually.

Fits: G2 (X mr models only)

Front & Rear - 14" x 6"

705400877 • Black and machined

$154.99

OUTLANDER RIM (CAMO MODEL)

- Black with clear coat aluminum rim.

Fits: G2, G2L, G2S

Front - 12" x 6" offset = 41 mm

705401127 • Black with clear coat

$174.99

Rear - 12" x 7.5" offset = 51 mm

705501493 • Black with clear coat

$184.99

LOCKOUT 393 14" RIM BY VISION*

- Sold individually.
- Matching Cap (705401362), Matching Nuts (250100100).

Front - 14" x 7"
Bolt circle pattern: 4/136 mm
Wheel offset: 4 + 3
705401363
$134.99

Rear - 14" x 8"
Bolt circle pattern: 4/136 mm
Wheel offset: 4 + 4
705501787
$134.99

12" BEADLOCK RIM

- Black with clear coat aluminum rim.
- Needs 16 bolts (250000435) for installing the Beadlock.
- Choice of Beadlock color (not included).

Fits: G2, G2L, G2S

Front - 12" x 6" offset = 41 mm
705401678 • Black
$234.99

Rear - 12" x 7.5" offset = 51 mm
705502244 • Black
$234.99

12" BEADLOCK

- Cast aluminum beadlock.
- Must be installed on Front Rim (705401678) and Rear Rim (705502244).

Fits: G2, G2L, G2S

705401763 • Can-Am Red
705401156 • Yellow
705401533 • Orange Crush
705401812 • Manta Green

$79.99

NOTE: Matching Nuts - 250100100 / Matching Cap 705400928

14" BEADLOCK RIM

- Black with clear coat aluminum rim.
- Choice of beadlock color (not included).
- Needs 16 bolts (250000435) for installing the beadlock.

Fits: G2

Front - 14" x 6.5" offset = 41 mm
705401594
$264.99

Rear- 14" x 8" offset = 51 mm
705502146
$264.99

14" BEADLOCK

- Cast aluminum beadlock.
- Must be installed on Front Rim (705401594) and Rear Rim (705502146).

Fits: G2

705401586 • Manta Green
705401702 • Octane Blue
705401837 • Can-Am Red
705401840 • Black

$84.99

NOTE: Matching Nuts - 250100100 / Matching Cap 705400928

CAN-AM SPORTSWEAR & JERSEYS

P.67-69

Kappa ATTITUDE + ACTION COLLECTION

P.55

PERFORMANCE STYLED CROSS HELMETS & GOGGLES

P.70-72

GO FAS RACING TEAM GEAR

GO FAS RACING TEAM POLO

- Short sleeve polo.
- Embroidered sponsor patches.
- Can-Am logos on front and back.
- Red numbering on left sleeve.
- Red numbering on back.

100% Polyester

MEN'S

286634
S, M, L, XL, 2XL, 3XL
White (01), Yellow (10), Black (90)

$44.99

LADIES'

- Feminine cut.

286635
XS, S, M, L, XL, 2XL
White (01)

$44.99

KAPPA, CAN-AN AND GO FAS CREATED WITH PERFORMANCE IN MIND.

GO FAS RACING TEAM HOODIE

- Full-zip hooded fleece with long sleeves.
- Embroidered sponsor patches.
- Can-Am logos on front and back.
- Red numbering on left sleeve.

60% Cotton, 40% Polyester

MEN'S

286638
S, M, L, XL, 2XL, 3XL
Black (90)

$79.99

LADIES'

286639
XS, S, M, L, XL, 2XL
White (01)

$79.99

GO FAS RACING TEAM TECHNICIAN SHIRT

- Short sleeve shirt.
- Embroidered sponsor patches.
- Can-Am logos on front and back.
- Red numbering on left sleeve.
- Chest pocket.

58% Cotton, 38% Polyester, 4% Elastane

286636
S, M, L, XL, 2XL
Black (90)

$59.99

GO FAS RACING TEAM JACKET

- Mix of embroidered and printed sponsor patches.
- Can-Am logos on front and back.
- Red numbering on left sleeve.

58% Cotton, 38% Polyester, 4% Elastane

286640
S, M, L, XL, 2XL, 3XL
Black (90)

$99.99

GO FAS RACING TEAM CAP

- Can-Am logo on front.
- Embroidered sponsor patches.
- Kappa logo on side.
- Red numbering on peak.

100% Polyester

286641 · One size · Yellow (10), Black (90)

$24.99

GO FAS RACING TEAM GEAR

CATCH THE VIDEO

CAN-AMOFFROAD.COM

GO FAS RACING TEAM JERSEY

- Long sleeve jersey with mesh inserts.
- Embroidered sponsor patches.
- Can-Am logo on front.
- Kappa logo on sleeves.

100% Polyester

286637
S, M, L, XL, 2XL, 3XL
Yellow (10), Green (70), Blue (80)

$59.99

GO FAS RACING TEAM T-SHIRT

- Short sleeve t-shirt.
- Embroidered sponsor patches.
- Can-Am logos on front and back.
- Red numbering on left sleeve and back.

100% Cotton

286632
S, M, L, XL, 2XL, 3XL
Yellow (10), Black (90)

$29.99

LADIES' GO FAS RACING TEAM T-SHIRT

- Short sleeve t-shirt.
- Feminine cut.
- Can-Am logo on front.
- Red numbering on sleeve and front.

100% Cotton

286633
XS, S, M, L, XL, 2XL
Yellow (10), Black (90)

$29.99

KAPPA KOMBAT TECHNICAL GEAR

KAPPA KOMBAT TECHNICAL JERSEY

- Printed graphics and mesh inserts.
- Kappa logo on front.

100% Polyester

MEN'S LONG SLEEVE
286666
S, M, L, XL, 2XL, 3XL
Blue (80)
$59.99

MEN'S SHORT SLEEVE
286667
S, M, L, XL, 2XL, 3XL
Blue (80)
$54.99

MEN'S SLEEVELESS
286668
S, M, L, XL, 2XL, 3XL
Blue (80)
$49.99

LADIES' LONG SLEEVE
- Feminine cut.

286655
XS, S, M, L, XL, 2XL
White (01)
$59.99

LADIES' SHORT SLEEVE
- Feminine cut.

286669
XS, S, M, L, XL, 2XL, 3XL
White (01)
$54.99

LADIES' SLEEVELESS
- Feminine cut.

286670
XS, S, M, L, XL, 2XL, 3XL
Black (90)
$49.99

KAPPA KOMBAT TECHNICAL GEAR

CAN-AM LONG SLEEVE JERSEY

- Printed graphics and mesh inserts.
- Can-Am logo on front and on sleeves.

100% Polyester

MEN'S
454050
S, M, L, XL, 2XL, 3XL
White (01)
$59.99

LADIES'
454051
XS, S, M, L, XL, 2XL
Pink (36)
$59.99

CAN-AM TRIPLE BLACK LONG SLEEVE JERSEY

- Printed graphics and mesh inserts.
- Can-Am logo on front and on sleeves.

100% Polyester

454052
S, M, L, XL, 2XL
Black (90)
$59.99

KAPPA KOMBAT LONG SLEEVE JERSEY

- Printed graphics and mesh inserts.
- Kappa logo on front and on sleeves.
- Kombat logo on back.

100% Polyester

KAPPA KOMBAT DUAL
454049
S, M, L, XL, 2XL, 3XL
Blue (80)
$59.99

KAPPA KOMBAT ACTIVE
454046
S, M, L, XL, 2XL, 3XL
Red (30)
$59.99

KAPPA KOMBAT STEALTH
454048
S, M, L, XL, 2XL, 3XL
Black (90)
$59.99

KAPPA KOMBAT TECHNICAL GEAR

KAPPA KOMBAT TECHNICAL JERSEYS

- Printed graphics and mesh inserts.
- Kappa logo on front.

100% Polyester

LONG SLEEVE
286652
S, M, L, XL, 2XL, 3XL · Yellow (10), Green (70)
$59.99

SHORT SLEEVE
286653
S, M, L, XL, 2XL, 3XL · Yellow (10), Green (70)
$54.99

SLEEVELESS
286654
S, M, L, XL, 2XL, 3XL · Yellow (10), Green (70)
$49.99

KAPPA KOMBAT TECHNICAL COMPRESSION SHIRT

- Compression shirt with mesh inserts.
- Kappa and Kombat logos.

95% Polyester 5% Spandex

LONG SLEEVE
286643
S, M, L, XL, 2XL, 3XL · Black (90)
$59.99

SHORT SLEEVE
286644
S, M, L, XL, 2XL, 3XL · Black (90)
$49.99

KAPPA KOMBAT TECHNICAL WATERPROOF JACKET

- Waterproof jacket.
- Kappa logo on right shoulder and right sleeve.
- Kombat logo on left side.

MEN'S
96% Polyester, 4% Spandex
286656 · S, M, L, XL, 2XL, 3XL · Black (90))
$99.99

LADIES'
- Feminine cut.

100% Polyester
286657 · XS, S, M, L, XL, 2XL · Black (90)
$99.99

KAPPA KOMBAT TECHNICAL JACKET

- Water-resistant jacket with mesh inserts.
- Kappa logo on right shoulder and on both sleeves.
- Kombat logo on left side.

100% Polyester

MEN'S
286658
S, M, L, XL, 2XL, 3XL
Black (90)
$89.99

LADIES'
- Feminine cut.

286659
XS, S, M, L, XL, 2XL
Grey (09), Pink (36)
$89.99

CAN-AM GEAR BY KAPPA

CATCH THE VIDEO

CAN-AMOFFROAD.COM

Kappa

POLO

- Short sleeve polo.
- Can-Am logo on left chest.
- Kappa logo on right shoulder.

100% Cotton

286663
S, M, L, XL, 2XL, 3XL
Red (30), Blue (80)

$44.99

KAPPA LOGO ON RIGHT SHOULDER

CAN-AM GEAR BY KAPPA

LONG SLEEVE TEE

- Long sleeve t-shirt.
- Can-Am logo.
- Kappa logo on the back of the neckline and on left sleeve.

100% Cotton

286661 · S, M, L, XL, 2XL, 3XL · Yellow (10), Red (30), Black (90)

$44.99

LONG SLEEVE TEE

- Long sleeve t-shirt.
- Feminine cut.
- Can-Am logo on front at neckline.
- Kappa logo on upper back.

100% Cotton

286662 · XS, S, M, L, XL, 2XL · White (01), Grey (09)

$44.99

HOODIE

- Full-zip hoodie fleece.
- Printed graphics.
- Kappa logo on shoulder.

60% Cotton, 40% Polyester

MEN'S

- Can-Am logo on front.

286664 · S, M, L, XL, 2XL, 3XL · Grey (09), Blue (80)

$79.99

LADIES'

- Feminine cut.
- Can-Am logo on right sleeve.

286665 · XS, S, M, L, XL, 2XL · Grey (09), Purple (40)

$79.99

KAPPA CASUAL WEAR

POLO

- Short sleeve polo.
- Kappa logo on right shoulder.

100% Cotton

MEN'S

286645 · S, M, L, XL, 2XL, 3XL · Grey (09), Blue (80)

$44.99

LADIES'

- Feminine cut.

286646 · XS, S, M, L, XL, 2XL · White (01), Red (30)

$44.99

KAPPA CASUAL WEAR

HOODIE

- Full-zip hoodie.
- Kappa logo on left chest and on right sleeve.

60% Cotton,
40% Polyester

MEN'S

286647 · S, M, L, XL, 2XL, 3XL · Yellow (10), Green (70)

$79.99

LADIES'

286648 · XS, S, M, L, XL, 2XL · White (01), Black (90)

$79.99

ZIP UP TOP

- Full-zip top with mesh inserts.
- Kappa logo on left side of chest.

60% Cotton,
40% Polyester

286642
XS, S, M, L, XL, 2XL
Black (90)

$54.99

SPORT PANTS

- Sport pants with mesh inserts.
- Kappa logo on right thigh.

60% Cotton,
40% Polyester

286671
XS, S, M, L, XL, 2XL
Black (90)

$44.99

MEN'S KAPPA SPORT SHOES

- Laced training shoes.
- Soft and ultralight removable PU foam insock.
- Phylon outsole with non-slip rubber inserts.
- Kappa logo.

286660 · 8, 9, 10, 10.5, 11 · Black (90)

$124.99

FLEECE

- Full-zip fleece.
- Wicking fabric.
- Zipped pocket on left chest.
- Can-Am logo on chest.
- Kappa logo on left shoulder.

60% Cotton,
40% Polyester

MEN'S

286649 · S, M, L, XL, 2XL, 3XL · Black (90)

$74.99

LADIES'

- Feminine cut.

286650 · XS, S, M, L, XL, 2XL · White (01)

$74.99

SHORT

- Shorts with Kappa logo on left thigh and on right upper back.
- Two back pockets.

97% Cotton, 3% Elastane

286651 · S, M, L, XL, 2XL, 3XL · Black (90)

$59.99

NEW ZIPPED HOODIE

- Full-zip hooded sweatshirt.
- Ribbed waistband and cuffs.
- Can-Am print on hood with contrasting hood cords.
- Screen printed logos.

60% Cotton, 40% Polyester

286690
S, M, L, XL, 2XL, 3XL
Brick (33), Black (90)

$94.99

NEW IMPULSE HOODIE

- Ribbed waistband and cuffs.
- Contrasting inner hood.
- Kangaroo front pocket.
- Screen printed logos.

60% Cotton, 40% Polyester

286689
S, M, L, XL, 2XL, 3XL
Khaki (05), Blue (80)

$89.99

TECHNICIAN SHIRT

- Large X-Team embroidery at upper back.
- Pleat at back center for ease of movement.
- Chest pocket.

65% Polyester, 35% Cotton

286566 · S, M, L, XL, 2XL, 3XL
Charcoal Grey (07), Black (90)

$79.99

ORIGINAL TEE

100% Cotton

286402 • S, M, L, XL, 2XL, 3XL • Heather Grey (27), Ice (38), Black (90)

$29.99

NEW MAVERICK TEE

100% Cotton

454057 · S, M, L, XL, 2XL, 3XL · Sand (03), Blue (80)

$39.99

X-TEAM TEE

- Print at sleeve and front.

100% Cotton

286618
S, M, L, XL, 2XL, 3XL
White (01), Black (90)

$39.99

LADIES' X-TEAM TEE

- V-neck.

95% Cotton, 5% Spandex

286567
XS, S, M, L, XL
White (01) (01), Black (90)

$39.99

NEW CLASSIC CAP

- Ultra comfortable, stretch, lightweight fabric.
- Metal adjuster with BRP logo.

55% Cotton, 45% Polyester

286675
One size
Orange (12), Black (90)

$24.99

NEW MAVERICK CAP

- Plastic strap adjuster at back.
- Embroidered logo.

447354
One size
Khaki (05), Black (90)

$29.99

X-RACE JERSEY

- Ultralight, quick-dry, antibacterial and moisture-wicking fabric.
- Mesh fabric for maximum breathability.
- Extended back for coverage while riding.
- Non-fading sublimated graphics.
- Rib cuffs.

100% Polyester

286614 · S, M, L, XL, 2XL, 3XL · Orange (12), Blue (80)

$59.99

TEAM JERSEY

- Quick-dry, antibacterial moisture-wicking fabric.
- Extended back for coverage while riding.
- Non-fading sublimated graphics.
- Rib cuffs.

100% Polyester

286553 · S, M, L, XL, 2XL, 3XL · Khaki (05), Yellow (10)

$54.99

LADIES' TEAM JERSEY

- Semi-fitted lady's cut.
- Quick-dry, antibacterial, moisture-wicking fabric for maximum comfort.
- Mesh fabric for extra ventilation underarms and side seam.
- Rib cuff.

90% Polyester, 10% Spandex

286616 · XS, S, M, L, XL, 2XL · Pink (36), Teal (74)

$54.99

MUD GEAR

NEW MUD JACKET

- 100% waterproof PVC.
- Electronically-welded seams.
- Underarm and rear vent panels.
- 2 hand pockets.
- Elastic cuffs.
- Drawstring hood and hem.

286676
S, M, L, XL, 2XL
Clear (00),
Matte Black (93)

$39.99

MUD PANTS

- Oversized pants made of 100% waterproof PVC.
- Electronically-welded seams.
- Strategically placed ventilation.
- Side openings at bottom leg.

Polyvinyl Chloride (PVC)

286128
S, M, L, XL, 2XL
Clear (00),
Matte Black (93)

$19.99

XP-R2

ULTRA LIGHTWEIGHT AND STRONG MULTI-DIRECTIONAL CARBON FIBER CONSTRUCTION WITH PREMIUM STYLE AND DETAILS.

XP-R2 CARBON LIGHT BLAZE HELMET

Shell: Carbon Fiber Composite

447657
XS, S, M, L, XL, 2XL, 3XL
Orange (12)

$554.99

DOT ECE 22.05

XP-R2 CARBON LIGHT HELMET

Shell: Carbon Fiber Composite

447656
XS, S, M, L, XL, 2XL, 3XL
Black (90)

$519.99

DOT ECE 22.05

XP-R2 MORPHO KIT

- For a perfect custom fit.
- Left and right pads included.

447754 · XS, S, M, L, XL, 2XL, 3XL · Clear (00)

$16.99

ENDURO

DESIGNED FOR LONG RIDES AND HIGH ADVENTURE.

NEW CAN-AM EX-2 ENDURO HELMET

Shell: Polycarbonate Composite

448466
XS, S, M, L, XL, 2XL
Black with graphics (94)

$249.99

DOT ECE 22.05

XP-3

SUPERLIGHT CROSS-STYLE HELMET: FEATURE-PACKED FOR EXCEPTIONAL PERFORMANCE, PROTECTION AND COMFORT.

XP-3 X-RACE HELMET

- Durable multi-colored clear-coated graphics.

Shell: Fiberglass

448395
XS, S, M, L, XL, 2XL
Orange (12), Blue (80)

$279.99

DOT Snell ECE 22.05

XP-3 HELMET

Shell: Fiberglass

448253
XS, S, M, L, XL, 2XL
Matte Black (93)

$289.99

DOT Snell

XC-4

PREMIUM LOOK & STYLE.

XC-4 MODERN HERITAGE HELMET

Shell: Polycarbonate Composite

448251
XS, S, M, L, XL, 2XL
White (01), Grey (09)

DOT Snell

$164.99

ECE VERSION
(Not available in NA)

448340
XS, S, M, L, XL, 2XL
White (01)

ECE 22.05

LADIES' XC-4 HELMET

Shell: Polycarbonate Composite

448397
XS, S, M, L, XL, 2XL
Pink (36)

$209.99

DOT ECE 22.05

XC-4 HELMET

Shell: Polycarbonate Compostite

448255
XS, S, M, L, XL, 2XL
Black (90)

$174.99

DOT Snell

DUST MASKS

- Easily replaceable filters remove 99.9% of airborne dust, particles, pollen and odors.
- Made from soft yet durable neoprene material that fits snugly under helmets and goggles.
- XS/S fits most kids 12 and under, M/L fits most riders and XL/2XL fits larger frames (235+ lbs).
- Includes 2 replacement filters and a small storing pouch.

CAN-AM ORIGIN DUST MASK

447833
XS/S, M/L, XL/2XL
Black (90)

$39.99

CAN-AM VENTED DUST MASK

448246
XS/S, M/L, XL/2XL
Grey (09)

$39.99

COMMUNICATION SYSTEM

SENA 20S BLUETOOTH COMM SYSTEM

- Super-versatile, water-resistant multi-function Bluetooth communication, navigation and music system designed for outdoor and vehicle sound environment use.
- Driver-to-passenger and driver-to-driver communication at a range over 1.2 miles (2 km).
- Up to 12-hour talk and 10-day stand-by time on a single charge – permits simultaneous charge and play.
- 4-way conference, smartphone, intercom-to-phone connection, GPS and MP3 music playback via AVRCP operation, or easy-adjust manual operation with exclusive Jog Dial.
- Bluetooth technology allows for seamless connection with stereo headset, MP3 players, and smartphones.
- Voice-prompt feedback, clear and natural sound quality, individual volume control for each audio source, fully-integrated audio booster delivers optimal sound level – fully firmware-upgradable.
- Complete with integrated microphone, wired microphone, wired boom microphone, speakers, plus MP3, earbud, and GPS ports.

Single Pack

448207 · One size
Black (90)

$374.99

Dual Pack

448208 · One size
Black (90)

$689.99

*Some models and accessories shown may not be available or homologated in your country. Contact your BRP dealer or local authorities for information.

GOGGLES

NEW CAN-AM RACE SAND GOGGLES BY SCOTT

- Integrated custom painted frame and strap graphics.
- No Fog† anti-fog lens treatment.
- 100% UV protected grey Lexan† lens.
- Dust catcher vent foam.
- Multi-layer face foam.
- Durable anti-slip strap.
- Tear-off and roll-off compatible (sold separately).

448491
One size
Black (90)

$94.99

CAN-AM TRAIL GOGGLES BY SCOTT

- 100% UV protected clear Lexan lens.
- Hypoallergenic super-soft face foam.
- Durable anti-slip strap.
- Tear-off and roll-off compatible (sold separately).

447899
One size
White (01), Yellow (10), Black (90)

$44.99

GLOVES

X-RACE GLOVES

- Air mesh panels and perforated palm for ventilation and mobility.
- Double Clarino† layer at palm and thumb for extra durability and comfort.
- Knuckle gussets for better mobility.
- Pre-curved design.
- Silicone at fingertips for added grip and control.
- Direct-injection details on back hand.
- Hook-and-loop wrist closure system to keep glove in place.

MEN'S'

Air Mesh, Spandex, Clarino

286561
S, M, L, XL, 2XL
Charcoal Grey (07), Blue (80)

$54.99

LADIES'

35% Synthetic Leather, 30% Polyester, 15% Lycra, 10% Nylon, 10% Neoprene

286617
S, M, L, XL, 2XL
White (01), Pink (36)

$44.99

TEAM GLOVES

- Spandex construction for flexibility.
- Chamude palm.
- Pre-curved design.
- Non-fading sublimated graphics.
- Easy slip-on/slip-off convenience.

Shell: Spandex, Chamude, Polyester

286554
S, M, L, XL, 2XL, 3XL
Charcoal Grey (07)

$34.99

RANCH HEAVY DUTY GLOVES

- Full leather gloves.
- Durable double-layer sueded palm.
- Elastic wrist for slip-on/slip-off convenience.

100% Cow Leather

286563
S, M, L, XL, 2XL, 3XL
Beige (02)

$24.99

JUNIOR

NEW JUNIOR X CROSS CRUSH HELMET

- High-tech, lightweight and tough.
- Fully-adjustable aero-tuned peak.
- Moisture-wicking and breathable chin strap, liner and cheek pads.
- Ventilation system.
- Easily removable and washable liner and cheek pads.
- Provides maximum visibility.
- Fits all goggles.
- Strap grip to hold goggles strap in place.
- D.O.T. and EC certified.
- Breath deflector mask included.
- Available with clear-coated bold waterslide graphics.

ABS

448506 · S, M, L · Black with graphics (94)

$129.99

DOT ECE22.05

NEW CAN-AM JUNIOR TRAIL GOGGLES BY SCOTT

- Integrated custom painted frame and strap graphics.
- No Fog† anti-fog lens treatment.
- 100% Plastic UV protected clear Lexan† lens.
- Multi-layer face foam.
- Durable anti-slip strap.

448512
One size
Black (90)

$44.99

BAGS

NEW CAN-AM SLAYER GEAR BAG BY OGIO

- Large main compartment with easy access to all gear.
- Large separated boot pocket.
- Zippered accessory pocket.
- Easy grab handles for transport.
- Detachable shoulder strap.
- Heavy-duty reinforced base
- Dimensions: 32" H x 16" W x 18" D (81 cm x 41 cm x 46 cm)

469294 · One size · Black (90)

$124.99

NEW CAN-AM URBAN BACKPACK BY OGIO

- Airport security friendly protective laptop compartment.
- Padded iPad™/tablet/e-reader pocket.
- Dual side water bottle/accessory holders.
- Fully adjustable ergonomic shoulder straps.
- Front pocket with two padded accessory compartments and slip pocket.
- Dimensions: 19.5" H x 13.5" W x 9.5" D (50 cm x 34 cm x 24 cm).

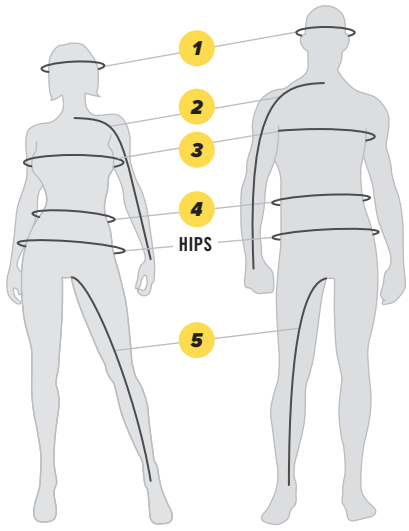
469293 · One size · Black (90)

$104.99

HOW TO MEASURE

- For best results, have someone else take measurements.
- Measure body in underwear.
- Tape must be snug but not tight.
- If measurements fall between two sizes, order the larger size.

1	HEAD	Around your head, from the center of the forehead, above the ears and over the natural bump at the back of the head.
2	ARM LENGTH	Let the hands hang down on the side in a slightly bent position. Measure from the center of the back of your neck, along the lenght of your arm, to the wrist.
3	CHEST/BUST	Measure under your arms, around the fullest part of your chest.
4	WAIST	Measure around your natural waistline, keeping one finger between the tape and body.
5	INSEAM	Without shoes, from crotch to the floor.
	GLOVES	Measure palm width.



WHAT CODE REPRESENTS YOUR SIZE?

1. Find your size.
2. The corresponding code is **THE CODE** you use to complete the part number on your order.
   Example: 440227__90 Size: M = Code "**06**", therefore 440227**06**90

SIZE	CODE	SIZE	CODE	SIZE	CODE	SIZE	CODE	SIZE	CODE	SIZE	CODE
One Size	00	XL	12	L/XL	73	11/12	56	10	30	32	38
XS	02	XLT	13	2	21	13/14	80	10.5	99	34	39
XS/S	90	2XL	14	3/4	79	14/16	50	11	31	36	40
S	04	3XL	16	5/6	52	4	23	12	32	38	41
M	06	4XL	18	6/8	48	6	25	13	33	40	42
MT	07	5XL	88	7/8	54	7	27	14	34	42	43
L	09	S/M	72	9/10	55	8	28	28	36	44	44
LT	10	M/L	91	10/12	49	9	29	30	37		

MEN'S - 1,77 M - 1,83 M BODY MEASUREMENTS

	S	M	L	XL	2XL	3XL
CHEST	89-94	94-102	102-112	112-122	122-132	132-142
WAIST	74-79	79-86	86-97	97-107	107-117	117-127
HIPS	89-94	94-102	102-112	112-122	122-132	132-142
ARM LENGTH	79-81	81-84	84-86	86-89	89	89-91
INSEAM	80-81	81	81	81	81-82	82-83

LADIES' - 1,64 M - 1,77 M

	XS	S	M	L	XL	2XL	3XL
CHEST	81-86	86-91	91-99	99-107	107-114	114-124	124-134
WAIST	61-66	66-71	71-76	76-86	86-94	94-104	104-114
HIPS	86-91	91-97	97-102	102-112	112-119	119-132	132-140
ARM LENGTH	79	79-81	81	81-83	83	83-86	86
INSEAM	76	76	76	76	76	76-77	77

MEN'S GLOVES (MEASURE PALM WIDTH)

	S	M	L	XL	2XL	3XL
CM	7.5	8.5	9.5	10.5	11.5	14

LADIES' GLOVES (MEASURE PALM WIDTH)

	S	M	L	XL	2XL
CM	6.8	7.5	8.3	9	11.5

HELMETS

	XS	S	S/M	M	M/L	L	XL	2XL	3XL
HAT SIZE	6 5/8 - 6 3/4	6 7/8 - 7	7 1/8	7 1/8 - 7 1/4	7 1/4	7 3/8 - 7 1/2	7 5/8 - 7 3/4	7 7/8 - 8	8 1/8 - 8 1/4
HEAD (CM)	53-54	55-56	57	57-58	58	59-60	61-62	65-66	65-66

JUNIOR HELMETS

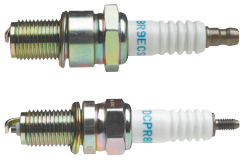
	S	M	L
HAT SIZE	6 1/8 - 6 1/4	6 3/8 - 6 1/2	6 5/8 - 6 3/4
HEAD (CM)	49-50	51-52	53-54

GENUINE BRP PARTS:

THE RIGHT WAY TO PROTECT YOUR INVESTMENT.

GENUINE MAINTENANCE PARTS

ENGINEERED TO DELIVER OPTIMUM PERFORMANCE AND EXTEND ENGINE LIFE ACROSS A WIDE RANGE OF OPERATING CONDITIONS.



NGK SPARK PLUGS

- Ask your authorized Can-Am dealer which one fits your vehicle.

FUEL FILTER

(Not illustrated)

709000330 • Fits ATV 2011 and up

$7.99

COMPLETE OIL CHANGE KIT ALSO AVAILABLE. (SEE PAGE 77)

OIL FILTER

420256188 • Fits all
420256455 • Fits DS450

$18.99

O-RING (DRAIN PLUG)

(Not illustrated)

420552280

$3.99

O-RING (OIL FILTER COVER)

(Not illustrated)

420230920

$5.99

AIR FILTERS

- Prevent airborne contaminants from reaching your engine.
- Protect internal components against premature wear.
- Genuine BRP air filters ensure absolute compatibility and a perfect fit.
- Ask your authorized Can-Am dealer which one fits your vehicle.

OIL & MAINTENANCE PRODUCTS AT PAGE 77

DID YOU KNOW?
1 YEAR LIMITED WARRANTY ON BRP REPLACEMENT GENUINE PARTS

PRESERVE THE VALUE OF YOUR VEHICLE WITH REPLACEMENT PARTS YOU CAN RELY ON. ENGINEERED WITH HIGH PRECISION & TOLERANCES, NOTHING FITS A BRP VEHICLE BETTER THAN BRP GENUINE PARTS.

LEARN MORE ON PAGE 76

PREMIUM DRIVE BELT

- High-performance design ideal for off-road use.
- BRP-specific calibration adjusted to best suit your Can-Am vehicle.
- Ask your authorized Can-Am dealer which one fits your vehicle.

422280360 — $159.99

715900024 — $74.99

PERFORMANCE DRIVE BELT (100% PBO)

- High-performance belt technology designed for Side-by-side usage, but compatible on ATV for the most enthousiat drivers.
- 100% cutting-edge PBO high-tensile strength polymer fiber construction.
- Designed for high-temperature robustness and prolonged durability.

422280364

$194.99

PULLER/LOCKING TOOL / DRIVEN ADAPTOR

(Not illustrated)

- Spreads the secondary clutch open for easy belt replacement.
- Locks engine at TDC for maintenance tasks.

529036098

$23.99

CVT GASKET COVER

(Not illustrated)

G2 (Outlander MAX & Renegade)	G2L (Outlander & Outlander MAX 450)	G1 (Outlander & Outlander MAX 400)
420430126	420630292	420630290
$39.99	$30.99	$30.99

METALLIC BRAKE PAD KIT

- Built strong to last long – heavy-duty construction stands up to hard braking.
- Designed to handle demanding riding conditions with challenging braking environments such as mud and sand.
- Created specifically for use with Can-Am ATV.

Fits: G2 2013 & up (except with 400 engine), G2 2012 with 800R or 1000 engine (except MAX models), G2L 2015 & up, G2S 2012 & up (except G2S 2012 with 500 engine)

Front Left	Front and Rear Right
715900248	715900249

ORGANIC BRAKE PAD KIT

- Chosen as the standard OEM on Can-Am ATV for dry conditions.
- Provides excellent braking capacity with optimal efficiency, a great feel, and low noise.

Fits: G2 2013 & up (except with 400 engine), G2 2012 with 800R or 1000 engine (except MAX models), G2L 2015 & up, G2S 2012 & up (except G2S 2012 with 500 engine)

Front Left	Front and Rear Right
705601015	705601014

TOUCH-UP PEN

- Ideal for do-it-yourself small paint repairs caused by rock chips and scratches on your bumpers, roll cage, a-arms, springs, beadlocks, etc.
- Genuine Can-Am color perfectly matches original paint for seamless coverage.
- For use on metal parts only.

529036363 • Can-Am Red
529036362 • Manta Green
529000084 • Octane Blue
529000095 • Sunburst Yellow

$20.99

YUASA† BATTERIES

- Top of the line models from the leading preferred original equipment battery supplier in North America.

18 Amps. Wet • (YTX20L-BS) • 410301203

$124.99

19 Amps. Dry • (YB16CL-B) • 278001756

$99.99

13 Amps. Wet • (YTX15L-BS) • 710000283

$129.99

MOTOCROSS† BATTERIES

- Complete line-up of economical and high-performance batteries.
- These 22 batteries cover more than 75% of the powersports market and meet Powersport Original Equipment Specifications.
- Ask your authorized Can-Am dealer which one fits your vehicle.

Renegade & Outlander 2004-2012

18 Amps. (YTX20L-BS) • 715900189

$94.99

Traxter & Quest 1999-2005

19 Amps. (YB16CL-B) • 715900191

$69.99

CV BOOT KITS

- Come with clamps and grease.
- Genuine BRP CV Boot Kits ensure absolute compatibility and a perfect fit.
- Ask your authorized Can-Am dealer which one fits your vehicle.

PREMIUM HALF SHAFT

- Premium quality design ideal for off-road use.
- Includes CVs, Shaft and Boots with the best suited geometry for your Can-Am vehicle.
- Ask your authorized Can-Am dealer which one fits your vehicle.

$249.99

NEW PRICE

PERFORMANCE HALF SHAFT

- High-performance design ideal for off-road use with superior protection in mud riding.
- Includes CVs, shaft and Boots with the best suited geometry for your Can-Am vehicle.
- Ask your authorized Can-Am dealer which one fits your vehicle.

$299.99

NEW PRICE

CHOOSING THE RIGHT ONE CAN IMPACT POWER & PERFORMANCE.

A drive belt is the essential link between engine & drivetrain, so there's no overstating its importance for obtaining maximum power & efficiency. If your drive belt can't reach & maintain performance, then no amount fine-tuning or performance customization will make a difference.

Clutches & gears are calibrated for optimum ride-specific performance, so it only makes sense to use a specialized ride-specific drive belt too.

Our engineers always consider the heat generation & load conditions created by different riding styles. For example, the Maverick X3 produces higher drivetrain loads at hard throttle through dunes and requires a stiffer drive belt with high heat resistance. But a heavily loaded utility vehicle can also encounter high drivetrain loads. However, the clutch calibration, engine, RPM, velocity, and work environment differ significantly necessitating a drive belt optimized for those conditions. That's why it's so important to choose the right drive belt.

Always make sure you match any replacement drive belt to the requirements of your BRP vehicle's make & year of manufacture. While third-party and BRP drive belts are identical in size & shape, ours were designed to deliver the highest levels of performance & longevity based upon your vehicle's specific end-use and calibration.

WHAT MAKES OUR BELT STAND OUT?

One essential material stands among our drive belt components; aramid. Aramid, commonly used in the manufacture of drive belts, is a heat and abrasion resistant man-made fiber that improves the strength & durability of rubber.

- ***Top cog with special aramid fiber***
- ***Adhesion rubber***
- ***Specialized high-modulus aramid cord***
- ***Compressive rubber with high-modulus PBO fiber***
- ***Bottom cog with aramid fabric***

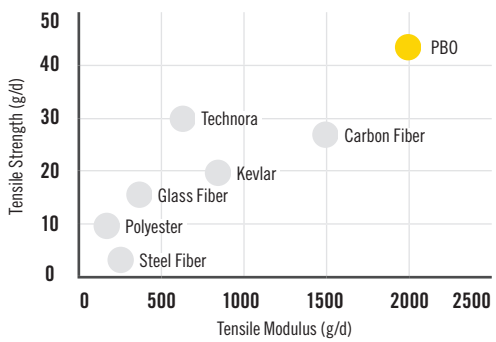
BRP BELT CONSTRUCTION VS. COMPETITORS

MATERIALS	*BRAND A*	*BRAND A C12*	*BRAND B*	*BRP*
Top Rubber Chopped Fiber	CR Aramid	CR Aramid	H-NBR Aramid/Cotton	**CR Aramid**
Upper Adhesion Rubber Chopped Fiber	CR	CR	H-NBR	**CR**
Cord	Aramid	Carbon	Aramid	**Aramid**
Lower Adhesion Rubber Chopped Fiber	CR	CR	H-NBR	**CR**
Bottom Rubber Chopped Fiber	CR Aramid	CR Aramid	H-NBR Aramid/Cotton	**CR PBO Aramid**
Bottom Fabric	Acrylic 1 ply	Acrylic 1 ply	CR Aramid/Cotton	**Aramid/PET 1 ply**

CR: Chloroprene Rubber

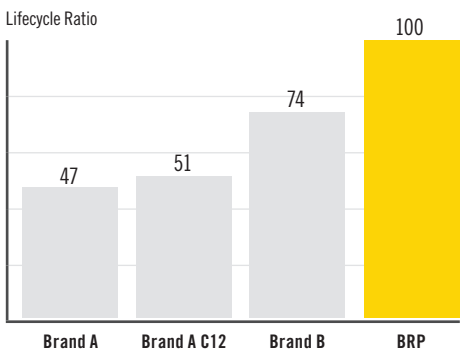
MODULUS & TENSILE STRENGTH

Based on BRP Dynamometer Testing



DURABILITY COMPARISON

When compared to BRP's Performance Drive Belt (100% PBO) (715900212).



XPS ENGINE OILS & MAINTENANCE PRODUCTS

XPS IS A COMPLETE RANGE OF PERFORMANCE PRODUCTS DESIGNED TO PROTECT, ENHANCE, AND EXTEND THE LIFE OF YOUR BRP VEHICLE. EACH HAS BEEN RIGOROUSLY DEVELOPED, TESTED AND APPROVED. TAKE THE GUESSWORK OUT OF YOUR VEHICLE MAINTENANCE AND GET TRUE XPS PEACE-OF-MIND.

KYLE CHANEY
PROFESSIONAL CAN-AM RACER, MULTI-TIME GNCC CHAMPION

XPS ENGINE OILS

XPS 4-STROKE SYNTHETIC OIL (0W40)

- The best all-year-long choice for any BRP vehicle with a 4-stroke engine.
- Full-synthetic formula made from premium oil base stocks.
- Performs consistently throughout a broad temperature range.
- Tested and proven by BRP engineers to offer the best engine protection where its use is specified.
- Easy cold starting.
- Protects against corrosion and rust.
- Ambient temperature operating range +40°C/+104°F to -45°C/-49°F.

1 quart / 946 ml
779139

1 US gallon / 3.785 L
779140

XPS 4-STROKE SYNTHETIC BLEND OIL (5W40)

- The warm-weather choice for any BRP vehicle with a 4-stroke engine.
- Synthetic blend formula made from premium oil base stocks.
- Performs consistently throughout a broad temperature range.
- Tested and proven by BRP engineers to offer the best engine protection where its use is specified.
- Wet clutch compatible.
- Protects against corrosion and rust.
- Ambient temperature operating range +40°C/+104°F to -35°C/-31°F.

1 quart / 946 ml)
779133

1 US gallon / 3.785 L
779134

CONVENIENT DO-IT-YOURSELF KIT!

XPS OIL CHANGE KIT

- Ultra-convenient "all-in-one" oil change kit saves time and money.
- Includes XPS Synthetic or Synthetic Blend Oil, oil filter, o-rings and washer.

For Can-Am off-road vehicle with 450 cc or lower Rotax engine (except Rally & DS models)

703500902 • Synthetic Blend (5W40)

$79.99

703500903 • Synthetic (0W40)

$91.99

For Can-Am off-road vehicle with 500 cc or higher Rotax engine (except Maverick X3, Traxter 1999-2005 & Quest models)

703500904 • Synthetic Blend (5W40)

$64.99

703500905 • Synthetic (0W40)

$78.99

Note: Please contact your dealer or visit our online store for suggested retail prices of oil based products.

NEW XPS PRODUCTS AVAILABLE THIS FALL!

XPS MAINTENANCE PRODUCTS

XPS SYNTHETIC GEAR OIL

- XPS Synthetic Gear Oil uses a unique combination of synthetic base stocks and additives that allow higher loads, superior shear stability and reduced oxidation compared to other synthetics and conventional API GL-5 gear oils.
- Its tremendous thermal stability and relatively constant viscosity give exceptional wear protection and superior performance for excellent low-temperature characteristics and improved gear protection at higher temperatures.
- Contains specific additives custom matched to provide the best performance of the BRP limited slip differentials.
- Offers added assurance during extended drain intervals.
- Exceeds API GL-5 specifications.
- Provides excellent protection in nearly all differentials, conventional and limited slip.
- Recommended for use in all Can-Am off-road vehicles.
- 1 quart / 946 ml

779158 • 75W-90

$32.99

779160 • 75W-140

$38.99

XPS ANTI-CORROSIVE LUBRICANT

- A multipurpose lubricant that can also be used to prevent rust, corrosion and moisture intrusion.
- It contains extreme pressure additives that work as an all-around lubricant for just about anywhere lubrication is needed.
- 12 oz. / 340 g

779168

$14.99

XPS SUSPENSION GREASE

- Designed to work specifically with the components found in Can-Am off-road vehicles suspensions.
- It is highly stable and offers optimal lubrication at both extreme cold and high temperatures while protecting suspension components from dirt and moisture, as well as corrosion under extreme washout conditions.
- 14 oz. / 397 g

779163

$12.99

XPS PRE-MIXED ANTIFREEZE/COOLANT

- XPS Antifreeze/Coolant contains the correct dilution and the necessary additives to prevent corrosion and inhibit cavitation in BRP cooling systems.
- Long-life, 5-year formula specially formulated for BRP vehicles.
- Superior heat transfer.
- Ideal replacement for vehicles that normally use a 2-year antifreeze/coolant (green).
- 5 years (orange) - 1 quart / 946 ml

779150

$11.99

XPS MAINTENANCE PRODUCTS

XPS FUEL STABILIZER

- Ethanol-compatible and will stabilize fuel in your tank to keep it from breaking down and causing hard starting, throttle hesitation and poor run quality.
- Ethanol attracts moisture, and this product contains powerful anti-corrosion additives to protect fuel system components.
- Prevents problems associated with E10 fuels.
- 8 oz. / 240 ml

779171

$12.99

NEW XPS CARBURETOR CLEANER

- Complete fuel treatment specially formulated to prevent small engine problems caused by Ethanol-blended fuels.
- It removes fuel system gum and varnish that may have accumulated during storage, stabilizes fuel against breakdown for 12 months or more, and adds corrosion protection from moisture for short- and long-term storage.
- It also helps restore throttle response and easy starting.
- It can be used periodically to maintain fuel system integrity, keep carburetor jets clean, and also combat moisture problems caused by Ethanol-blended fuels to keep ferrous and soft metal parts clean and free of corrosion.
- 12 oz. / 355 ml

779172

$9.99

XPS CARBON FREE FUEL TREATMENT

- Combination of a fuel treatment and a fuel system cleaner that can be used periodically to restore lost starting or throttle performance, as well as maintain fuel system integrity and keep internal engine parts clean.
- It treats fuel for storage and addresses the moisture problems inherent in today's Ethanol-blended fuels, keeping ferrous and soft metal parts clean and free of corrosion.
- Uses patented, state-of-the-art additives.
- Cleans valves, sticky rings and combustion chamber.
- 12 oz. / 355 ml

779169

$9.99

XPS BRAKE FLUID

- Meets or exceeds all DOT3 and DOT4 brake fluid requirements.
- High-temperature formula resists fade, and also conditions seals and o-rings in braking system.
- 12 oz. / 355 ml

779151

$11.99

NEW XPS RACING BRAKE FLUID

- Exceeds DOT4 brake fluid requirements for extreme conditions and competition use.
- Extreme, 579-degree boiling point temperature is ideal for high-demand competition conditions to combat brake fade.
- 12 oz. / 355 ml

779152

$19.99

NEW XPS HIGH PERFORMANCE SUSPENSION FLUID

- A synthetic, fade-free formula for servicing FOX† shocks.
- Specially formulated for high demand or racing application.
- Ultra high VI shock oil.
- Engineered viscosity for optimized performance with FOX† shocks valving.
- 12 oz. / 355 ml

779154

$22.99

XPS CLEANERS

XPS SPRAY CLEANER & POLISH

- Features a water-based formula safe for all plastics.
- Rinse-free spray-on/buff-off formula.
- Protects against UV and ozone damage and resists dirt accumulation.
- It can be used on painted surfaces, fiberglass, chrome and plastics.
- 12 oz. / 340 g

219702844

$11.99

XPS OFF-ROAD WASH

- A biodegradable non-toxic cleaner that removes mud and dried-on dirt from your off-road vehicle.
- Whether grimy from the track, the woods or the fields, this cleaner will leave your off-road vehicle sparkling.
- When used as directed, XPS Wash is safe for all off-road vehicle finishes.
- 32 oz. / 946 ml

219701702

$11.99

XPS BRAKES & PARTS CLEANER

- A concentrated blend of solvents with a powerful blasting spray that effectively removes grease, grime, brake fluid and other contaminants from brake components and metal parts.
- Evaporates instantly and completely, leaving no residue to hinder performance.
- Contains no ozone depleters.
- 14 oz. / 397 g

219701776

$9.99

XPS MICROFIBER TOWELS

- Made from extremely fine fibers whose soft surfaces have been perfected for use in drying and polishing.
- Won't harm delicate surfaces.
- Holds up to seven times its weight in water.
- Machine washable and reusable.
- Pack of 2.

219701759

$9.99

CHART NEW TERRITORY

You know who you are.
You are among the few who dare to go off the beaten path. You are all about performance that goes beyond belief. Which is why you need products that go beyond expectations. XPS oils and lubricants answer the call. Specifically designed to optimize high performance, reliability and long engine life for Can-Am off-road vehicles, XPS was developed right alongside Rotax engines. Passing the highest levels of testing for an unparalleled experience in all conditions. Begin your journey at your BRP dealer.

Kyle Chaney
Professional Can-Am Racer,
Multi-time GNCC Champion
XPS

ski-doo LYNX SEA-DOO EVINRUDE ROTAX can-am

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MIX
Paper from responsible sources
FSC® C011825

ski-doo LYNX SEA-DOO EVINRUDE ROTAX can-am

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2018 THE RIDE SAYS IT ALL can-am

Can-Am® creates the world's most innovative family of off-road vehicles, one that has taken decades of design, development, and real-world trials to perfect. This is what a tradition of outstanding all-terrain performance looks like.

Maverick MAX X mr 1000R *Outlander X mr 1000R* *Maverick X3 X rs TURBO R* *Defender XT HD10* *Outlander DPS 570* *DS 90*

A Maverick doesn't take shortcuts, and neither did we. An unquenchable thirst for harnessing earth-shattering power led to our most advanced suspension, chassis, cockpit, and driver-focused design ever. The Maverick X3: built to defy what you thought was possible.

Maverick X3 MAX X rs TURBO R & Maverick X3 X rs TURBO R shown

Maverick X3 MAX X ds TURBO R shown

WITNESS THIS.

The Can-Am Maverick X3 has an extremely bold character that lets it stands out powerfully from the crowd, and it's designed so the driver and passenger feel connected with its every move. Engineered to be intuitive and driver-focused, the Maverick X3 ensures that drivers of any skill level will be able to confidently tackle their terrain of choice.

THRILLING POWER.

*Meet the king of side-by-side engines, the precision-engineered, industry-leading triple cylinder **172 hp** Rotax ACE engine delivers 7,250 RPM and 124 lb-ft of torque at 6,500 RPM for uncompromising power and searing speed, no matter the terrain. Tell your friends: 0-60 MPH in just 4.4 seconds*.*

**Based on BRP internal testing.*

SHOCKINGLY CAPABLE.

Featuring a revolutionary, best-in-class, high-performance suspension system with excellent front and rear balance, the Maverick X3's optimized handling is anchored by a next-generation fully-welded lightweight steel chassis for superior performance.

MAVERICK X3

MAVERICK X3 MAX X ds

MAVERICK X3 X rs

KEY FEATURES	MAVERICK X3		MAVERICK X3 X ds	MAVERICK X3 X rs
Rotax® ACE Triple-cylinder engine options	TURBO	TURBO R	TURBO R	TURBO R
Horsepower	120 hp	**172 hp**	**172 hp**	**172 hp**
Fully integrated intercooler		✓	✓	✓
Quick Response System X (QRS-X) CVT with high airflow	✓		✓	✓
Double A-arm front suspension with sway bar and 4-link Torsional Trailing-arm X (TTX) with sway bar	✓		✓	✓
Industry leading front and rear suspension travel	20 in. / 20 in.		20 in. / 20 in.	22 in. / 24 in. MAX 22 in. / 22 in.
Low seating position	✓		✓	✓
Ergo-Lok cockpit with four way adjustable seats and multifunction analog / digital gauge	✓		✓	✓
Ultra efficient and lightweight chassis	✓		✓	✓
Tri-Mode Dynamic Power Steering (DPS)	✓		✓	✓
RF Digitally Encoded Security System (D.E.S.S.™) with Start / Stop button	✓		✓	✓
LED headlights and tail lights with unique Can-Am LED signature	✓		✓	✓
Integrated front bumper, full High Molecular Weight (HMW) skid plate and quarter-doors	✓		✓	✓
Base package specific features: 14-in. aluminum wheels with 28-in. Maxxis Bighorn† 2.0 tires and FOX† 2.5 PODIUM Piggyback shocks with QS3† compression adjustment	✓			
X ds package extras: 14-in. aluminum beadlock wheels with 29-in. Maxxis Bighotn† 2.0 tires, fully adjustable FOX† 2.5 PODIUM RC2† Piggyback shocks and X-package trims and graphics			✓	
X rs package extras: 72-in. overall width, 14-in. aluminum beadlock wheels with 30-in. Maxxis Bighotn† 2.0 tires, fully adjustable FOX† 3.0 PODIUM RC2† remote reservoir rear shocks with bypass, full roof, heavy-duty HMW skid plate, 4-point harness and X-package trims and graphics				✓
Available in 4-passenger configuration	✓		✓	✓
Color options	White, Hyper Silver & Sunburst Yellow	White	Platinum Satin Circuit Yellow Triple Black	Platinum Satin Triple Black Gold & Can-Am Red

Engine and color choices vary per package. See full specifications at can-amoffroad.com.

Awesome performance produces an incredible rush of adrenaline. That's why you ride a Maverick X3 X rs Turbo R with a 172 hp Rotax as its heart. Excitement is what got you in the game—and our accessories let you play according to your rules. Choose from a selection of fully-engineered, performance-driven accessories to get more comfort, more protection, and to enhance the look of your Maverick X3. Like; your choice of doors, windshield, and roof options, a thumping Wet Sounds audio system, and even a Yoshimura slip-on exhaust that'll turn your tunes up to 11.

VISIT YOUR DEALER OR CAN-AMOFFROAD.COM TODAY AND CREATE YOUR VERY OWN CAN-AM.

1 TINTED HALF WINDSHIELD
2 DUNE FRONT BUMPER
3 DUNE REAR BUMPER
4 LIGHTED WHIP FLAG
5 40" (102 CM) BAJA DESIGNS ONX6 ARC LED LIGHT BAR
6 LIGHT SUPPORT BAR
7 FRONT LOWER DOOR PANELS

1 FRONT PRE-RUNNER BUMPER
2 ROCK SLIDERS
3 GLASS WINDSHIELD WIPER AND WASHER KIT
4 FRONT LOWER DOOR PANELS
5 REAR LOWER DOOR PANELS
6 ADVENTURE ROOF RACK
7 BAJA DESIGNS XL SPORT LED LIGHTS
8 10" (25 CM) BAJA DESIGNS ONX6 LED LIGHT BAR
9 COMPLETE MTX AUDIO SYSTEM
10 RACING SIDE MIRRORS
11 SUPER EXTENDED FENDER FLARES
12 BAJA DESIGNS SQUADRON SPORT LED LIGHTS
13 CHASE LIGHTS
14 LinQ PIVOTING RACK
15 LinQ 8 GAL (30L) COOLER BOX

Getting the job done is what the Defender is designed to do and does best. Whether it's working the woods, roaming and ruling the farmland, or leading the hunt. From the toughness of its outperforming engines and all-terrain traction, to its steadfast, class-leading payload and towing capabilities, to the out-and-out intelligence and flexibility of its work and ride-enhancing innovations. Tough. Capable. Clever.

Defender XT HD10 shown

WHATEVER YOU'RE INTO, HE'S UP FOR.

The Defender family of side-by-side vehicles has been engineered to be tough, capable, and clever to fit owners' needs, but we know it goes beyond that. With never before-seen innovations that maximize interior space, power, handling, and hauling, chances are you'll probably end up spending a lot of time in its award-winning seats.

MAKE IT LOOK EASY.

Want the headline figures? Defender helps you tow up to 2,000 lb (907.2 kg) or carry a total payload up to 1,500 lb (680 kg). Getting there is easy, and getting it done is, too.

FOR LIFE BEYOND WORK.

We built the Defender's interior for when you're on the move and in between tasks. It's ready for demanding drives, or even a quick cruise to pick up the morning paper. We've got "recreational" and "workhorse" models, each fit for specific tasks, but what makes the Defender family unique is its ability to inspire what's next, with the driver in full control. How are you going to get the most out of it?

Defender MAX XT CAB HD10 shown

DEFENDER

DEFENDER MAX DPS

DEFENDER XT

DEFENDER XT CAB

DEFENDER Mossy Oak Hunting Edition

KEY FEATURES	DEFENDER			DEFENDER DPS			DEFENDER XT		DEFENDER XT CAB		DEFENDER Mossy Oak Hunting Edition
Rotax® engine options	HD5	HD8	HD10	HD5	HD8	HD10	HD8	HD10	HD8	HD10	HD10
Horsepower	38 hp	50 hp	72 hp	38 hp	50 hp	72 hp	50 hp	72 hp	50 hp	72 hp	72 hp
Double A-arm front suspension and TTA-HD rear suspension with sway bar		✓			✓		✓		✓		✓
VERSA-PRO bench seat with passenger seats flipping up, underside hooks and contoured bench / Adjustable tilt steering		✓			✓		✓		✓		✓
Multifunction cargo box with sturdy tailgate and 2-in hitch receiver		✓			✓		✓		✓		✓
PRO-TORQ Transmission with Quick Response System (QRS), high airflow ventilation, Electronic Drive Belt Protection and extra low L-gear		✓			✓		✓		✓		✓
Lockable rear differential, 27-in. Maxxis Bighorn 2.0† tires and additonal storage (water-resistant toolbox and complete under dash storage)		✓ (with convenience package only)	✓		✓		✓		✓		✓
Dynamic Power Steering (DPS) and Visco-Lok QE					✓		✓		✓		✓
1,000 lb (454 kg) of cargo box capacity** / 2,000 lb (907.2 kg) of towing capacity	600 lb (272.2 kg) / 1,500 lb (680 kg)	✓		600 lb (272.2 kg) / 1,500 lb (680 kg)	✓		✓		✓		✓
XT package extras: 4,500-lb (2,041 kg) winch, front bumper, full skid plate, full hard roof, adjustable driver seat, reinforced XT seat skin, waterproof & removable box under passenger seat, ECO™ / Work / Normal driving modes and multifunction analog / digital gauge							✓		✓		✓
XT CAB package extras: Full black doors with electric opening windows, 3-position full glass tilt up windshield with wiper / washer kit, rear glass with sliding opening, full hard roof with liner, interior dome light and integrated heater kit, arched front A-arms									✓		
Mossy Oak Hunting Edition package extras: Full underbody skid plate with front aluminum pre-runner skid plate, half windshield, headache rack with LinQ quick-attach system, double Kolpin Stronghold Gun Boots - Impact, tool holders, portable RAM LED spotlight and side mirror											✓
10.6 gal (40 L) of fuel capacity		✓			✓		✓		✓		✓
1-year maintenance free and easy access to key maintenance components		✓			✓		✓		✓		✓
Available in 6-passenger configuration*		✓				✓	✓			✓	
Color options	Green			Green Mossy Oak Break-Up Country Camo		Green Yellow Intense Red Mossy Oak Break-Up Country Camo	Intense Red Pure Magnesium Metallic Mossy Oak Break-Up Country Camo		Pure Magnesium Metallic Intense Red Mossy Oak Break-Up Country Camo		Mossy Oak Break-Up Country Camo

*Some colors or engine options may not be available with the 6-passenger configuration. **California only: 600 lb (272.2 kg). / Engine and color choices vary per package. See full specifications at can-amoffroad.com.

We admit it, we're enablers because the official lineup of Can-Am accessories for the Defender family was developed to enable you to excel; do more, go beyond, and forever find new ways to incorporate your vehicle into your lifestyle. From cargo and storage accessories to cab enclosures, bumpers and guards, options for hauling, lighting, plows, and even hunting accessories, there's a Defender built for it.

VISIT YOUR DEALER OR CAN-AMOFFROAD.COM TODAY AND CREATE YOUR VERY OWN CAN-AM.

1 S3 FRONT WINCH BUMPER
2 S3 REAR WINCH BUMPER
3 S3 NERF BARS
4 SPORT ROOF
5 HALF WINDSHIELD
6 CARGO BED RAILS
7 S3 HIGH CLEARENCE A-ARM FRONT
8 ALUMINUM SKID PLATE PROTECTION KIT

Built to thrill over any terrain, the Maverick side-by-side is the closest you'll come to a true weekend getaway. Access trails, dominate dunes, travel to remote destinations, and experience remarkable out-of-doors experiences with the speed and precision of a sport-tuned machine.

Maverick MAX X mr 1000R shown

HONE YOUR BEAST.

Excitement is designed into every Can-Am off-road vehicle. The beauty of our Maverick performance side-by-sides is that you can share the acceleration, corner carving, climbing and endless outdoor adventure with a buddy or the whole family.

HEART YOU CAN FEEL.

There's nothing like the feeling of a beefy, torquey, naturally-aspirated Rotax 1000R V-Twin with the roar of a sport-tuned center-mounted engine backing it up. Working together with a responsive, efficient, and low-maintenance CVT transmission, it's a pairing designed specifically for quick blasts and thrilling adventures.

GO ANYWHERE, WITH ANYONE.

There's a Maverick for almost every terrain imaginable: Sand dunes, desert, trails and deep mud. For the full effect bring along a friend on your test ride.

Outperform your expectations for life off-road—go from fast family tourer to beastly all-terrain vehicle without missing a beat. Our large range of Can-Am accessories were developed to deliver the performance you crave, with the looks, build quality and reliability you've come to expect from BRP.

VISIT YOUR DEALER OR CAN-AMOFFROAD.COM TODAY AND CREATE YOUR VERY OWN CAN-AM.

BIMINI ROOF WITH SUN VISOR 1
HALF WINDSHIELD 2
SPORT ALUMINUM DOORS 3
FRONT PRE-RUNNER BUMPER 4
SPORT ROCK SLIDER FOR MAX 5
39" (99CM) DOUBLE STACK LED LIGHT BAR (270 WATTS) 6

KEY FEATURES	MAVERICK xc	MAVERICK xc DPS	MAVERICK X xc	MAVERICK DPS	MAVERICK X mr
Rotax® V-Twin engine option	1000R	1000R	1000R	1000R	1000R
Horsepower	101 hp	101 hp	101 hp	101 hp	101 hp
60-in. (152.4 cm) overall width	✓	✓	✓		
Double A-arm front suspension with sway bar and Torsional Trailing A-arms (TTA) independent rear suspension with sway bar	✓	✓	✓	✓	✓
Front and rear FOX performance series shocks	✓	✓	✓	✓	✓
Tri-Mode Dynamic Power Steering (DPS) and Visco-Lok QE		✓	✓	✓	✓
12-in. cast-aluminum wheels with 27-in. Maxxis Bighorn 2.0 tires	✓	✓		✓	
Adjustable driver's seat and tilt steering	✓	✓	✓	✓	✓
X xc package extras: 12-in. aluminum beadlock wheels, X-package seat trims & graphics, multifunction analog / digital gauge			✓		
X mr package extras: 14-in. cast-aluminum wheels with 30-in. ITP Cryptid[1] tires, strategically positioned engine air intake and CVT inlets / outlets, QRS CVT with high airflow, extra low L-gear, 4,500-lb (2,041 kg) winch, X-package seat trims & graphics, multifunction analog / digital gauge					✓
Available in 4-passenger configuration				✓	✓
Color options	White	White & Can-Am Red	Black & Octane Blue Black & Can-Am Red	White & Can-Am Red	Carbon Black & Sunburst Yellow

Engine and color choices vary per package. See full specifications at can-amoffroad.com.

Forests. The wide-open plains. Snow-capped mountains. The Can-Am Commander family of side-by-side was built with the soul of adventure and the tools to handle any terrain. It's time to let your passion carry you further than ever before.

Commander Mossy Oak Hunting Edition 1000R shown

GET INTO IT.

This is what adventure looks like. Some call this segment of side-by-side "a blend of recreation and utility", but we'd prefer you think of it as a blend between "work stuff" and "whatever else you'd ever want to do".

TAKE COMMAND.

We built the Commander's interior for two purposes: all-day riding comfort and a surprising amount of utility. Up front, we've fitted everything you could need, from well-placed controls to supple, body-hugging seats. Out back, its versatile two-level cargo box boasts a 600-lb (272 kg) capacity, tilt-assist dumping, and spacious storage. In between? Surprise us.

EXCLUSIVE AND VERSATILE.

Its versatility makes it a great partner for getting the job done, a great companion on a hunt or a satisfying trail cruiser. No matter which specialized package you choose, your Commander will be powerful, capable and comfortable.

COMMANDER

COMMANDER MAX DPS

COMMANDER MAX XT

COMMANDER Mossy Oak Hunting Edition

COMMANDER MAX Limited

KEY FEATURES	COMMANDER	COMMANDER DPS		COMMANDER XT		COMMANDER MOSSY OAK HUNTING EDITION	COMMANDER LIMITED
Rotax® V-Twin engine options	800R	800R	1000R	800R	1000R	1000R	1000R
Horsepower	71 hp	71 hp	92 hp	71 hp	92 hp	92 hp	92 hp
Double A-arm front suspension with sway bar and Torsional Trailing arm Independent (TTI) rear suspension with sway bar	✓	✓		✓		✓	✓
Industry's exclusive Dual-Level cargo box	✓	✓		✓		✓	✓
Adjustable driver's seat and tilt steering	✓	✓		✓		✓	✓
27-in. Maxxis Bighorn 2.0† tires	✓	✓		✓		✓	✓
14-in. cast-aluminum wheels		✓		✓		✓	✓
Tri-Mode Dynamic Power Steering (DPS) and Visco-Lok QE		✓		✓		✓	✓
4,500-lb (2,041 kg) winch, front bumper, mudguards, bed rails and multifunction analog / digital gauge				✓		✓	✓
Mossy Oak Hunting Edition package extras: Full under body aluminum skid plate, 2-piece full hard roof, half windshield, double Kolpin 6.0 Impact Gun Boots and tool holders						✓	
LIMITED package extras: Front and rear FOX† 2.0 PODIUM QS3† shocks, integrated / removable Garmin† Montana® 650t touchscreen GPS, bluetooth ready sound system with four integrated speakers, iPod†-iPhone† connector with gauge controls, USB port and auxiliary input, half windshield, rear net and 2-piece full hard roof							✓
Available in 4-passenger configuration		✓		✓			✓
Color options*	White	Green		Intense Red Brushed Aluminum & Can-Am Red Mossy Oak† Break-Up Country Camo†		Mossy Oak† Break-Up Country Camo†	Midnight Blue Triple Black

*Some colors or engine options may not be available with the 4-passenger configuration. / Engine and color choices vary per package. See full specifications at can-amoffroad.com.

Whether your weekends are spent hauling firewood, hunting, blazing a trail through the forest, or exploring your comfort zone, the Commander family can easily be adapted to excel in any conditions, thanks to a wide range of high-quality and innovative accessories.

VISIT YOUR DEALER OR CAN-AMOFFROAD.COM TODAY AND CREATE YOUR VERY OWN CAN-AM.

1 SPORT ROOF WITH SKYLIGHT
2 FLIP WINDSHIELD
3 SPORT ROCK SLIDER FOR MAX
4 XTREME FRONT BUMPER
5 FRONT LIGHT PROTECTION
6 FRONT RACK
7 GEAR RAIL
8 GUN BOOT 6.0 IMPACT BY KOLPIN
GUN BOOT MOUNT BY KOLPIN
9 4" (10 CM) ROUND LED LIGHT (2 X 25 WATTS)
10 15" (38 CM) LED DOUBLE STACKED LIGHT BAR (90 WATTS)
11 LIGHT RACK FOR SPORT ROOF

1 72" (183 CM) ALPINE FLEX PLOW
2 CAB ENCLOSURE
3 MIRROR FOR CAB ENCLOSURE
4 XTREME FRONT BUMPER
5 REAR BUMPER
6 SPORT ROCK SLIDER
7 LIGHT RACK FOR SPORT ROOF
8 DEFROST, HEAT & VENTILATION SYSTEM

Every Can-Am off-road vehicle is a perfect combination of industry-leading performance, precision-engineered handling and rider-focused design.

Outlander DPS 570

Renegade X mr

DS 90

With the Outlander 450 / 570, we've taken all the things that make our Outlander ATVs successful and made them more accessible than ever. Because whether you're hauling, towing, hunting or hitting the trail, you need a machine that more than meets your expectations.

Outlander DPS 570 shown

Outlander X mr 1000R shown

EASY ON, EASY OFF.

The Outlander 450 / 570 models feature robust front and rear steel rack designs with a 360-lb (163 kg) combined rack capacity. The integrated LinQ quick-attach accessory system offers convenient and adaptable cargo hauling capabilities.

VARIABLE STEERING ASSISTANCE.

The exclusive Tri-Mode DPS features three selectable assist modes – MIN, MED, & MAX. Each provides less assist with more precision at high speed, and more at low speed for easier steering.*

** Available with DPS, XT, Mossy Oak Hunting Edition packages and X mr.*

TAKE A SEAT.

Making the ride comfortable in all conditions and for a wide variety of riders is part of our DNA, which explains why Can-Am's designs win consistent praise from owners for long-duration use. For the Outlander 450 / 570, it starts by having a seat and controls that respond nimbly to the task at hand and a platform that's truly built to be customized.

BASE

DPS

MAX XT

Mossy Oak Hunting Edition

X mr

KEY FEATURES	BASE		DPS		XT	MOSSY OAK HUNTING EDITION		X mr
Rotax® engine options	450	570	450	570	570	450	570	570
Engine power	38 hp	48 hp	38 hp	48 hp	48 hp	38 hp	48 hp	48 hp
Engine type	Monocylinder	V-Twin	Monocylinder	V-Twin	V-Twin	Monocylinder	V-Twin	V-Twin
Tri-Mode Dynamic Power Steering (DPS)			✓		✓	✓		✓
Torsional Trailing arm Independent (TTI) rear suspension	✓		✓		✓	✓		✓
Wheels	12-in steel		12-in aluminum		12-in aluminum	12-in aluminum		12-in aluminum
3,000-lb (1,361 kg) WARN† winch with roller fairlead					✓	✓		
Bumpers					Front and rear	Front and rear		Front
Mossy Oak Hunting Edition package extras: Kolpin 6.0 Impact gun boot, full under body aluminum skid plate, heated grips and throttle, reinforced seat skin						✓		
X mr package extras: Mud performance tires, relocated radiator, mud-riding footrests, X-package coloration, graphics and seat cover								✓
Available in 2-passenger MAX configuration*	✓		✓		✓			
Color options*	Viper Red Green		Orange Green Mossy Oak† Break-Up Country Camo†		Intense Red Pure Magnesium	Mossy Oak† Break-Up Country Camo†		Can-Am Red & Black

*Some colors and 2-passenger configuration are offered only on specific engines. / Engine and color choices vary per package. See full specifications at can-amoffroad.com.

We designed an ATV that, above all, can be outfitted to suit your needs. Do you use your trunk box for hunting or to keep gear dry while mudding? Are your heated grips handier for an early morning ride or during winter? In addition to options for windshields, heavy-duty bumpers, or a Yoshimura slip-on exhaust, our LinQ quick-attach system allows for many other everyday accessories to be quickly and easily attached or removed.

VISIT YOUR DEALER OR CAN-AMOFFROAD.COM TODAY AND CREATE YOUR VERY OWN CAN-AM.

Outlander DPS 450 shown

TThere's a good reason the Outlander is our flagship ATV – it's a veritable showcase for Can-Am performance, handling, versatility & design. It's just as capable of taking on a hard day's work, a long day's trail ride, a weekend hunt, or a morning of snow plowing.

Outlander X mr shown

MORE THAN A LITTLE EXTRA.

We've developed the Convertible Rack & Storage (CRS) system to provide the flexibility to easily convert from storage to an extra seat in a matter of seconds. Nor is the second seat an afterthought; it's on hours-long endurance saddle that ensures passengers stay comfortable.

EASY ON, EASY OFF.

The Outlander is equipped with high-strength racks that feature anti-skid surfaces and raised edges that stabilize cargo during a ride. Multiple edges and holes offer numerous anchor points, and it also comes with our exclusive LinQ system, so you can quickly & easily add or remove ride-specific Can-Am accessories.

MORE THAN READY.

Whatever you throw at it, the Outlander 6 X 6 is more than ready. It's a true 6x6 drive mated to the most powerful engines in their class, so that almost no load is too heavy, no mud too sticky, and no slope too steep. And its massive reconfigurable Dual-Level™ cargo bed is unique to the industry.

Outlander MAX XT 1000 shown

MAX DPS | *MAX XT* | *X xc* | *North Edition* | *Mossy Oak Hunting Edition* | *X mr*

KEY FEATURES	BASE	DPS			XT			NORTH EDITION		MOSSY OAK HUNTING EDITION	XT-P		X xc	X mr			LIMITED
Rotax® engine options	650	650	850	1000R	650	850	1000R	650	850	1000R	850	1000R	1000R	650	850	1000R	1000R
Engine power	62 hp	62 hp	78 hp	89 hp	62 hp	78 hp	89 hp	62 hp	78 hp	89 hp	78 hp	89 hp	89 hp	62 hp	850	89 hp	89 hp
Engine type	V-Twin	V-Twin			V-Twin			V-Twin		V-Twin	V-Twin		V-Twin	V-Twin			V-Twin
Tri-Mode Dynamic Power Steering (DPS)		✓			✓			✓		✓	✓		✓	✓			✓
Shocks	Oil	Oil			Oil			Oil		Oil	FOX† 1.5 PODIUM† QS3		FOX† 1.5 PODIUM† RC2	Oil	FOX† HPG	FOX† 1.5 PODIUM† QS3	Air Control Suspension (ACS) with FOX Air Assist†
Wheels	12-in. steel black	14-in. cast-aluminum wheels			14-in. cast-aluminum wheels			14-in. cast-aluminum wheels		12-in. cast-aluminum	14-in. cast-aluminum beadlock		14-in. cast-aluminum beadlock	12-in. cast-aluminum	14-in. cast-aluminum		14-in. cast-aluminum with LIMITED finish
3,000-lb (1,361 kg) WARN† winch with roller fairlead					✓			✓		✓	✓				✓	✓	✓
Bumpers					Front and rear					Front and rear	Front and rear		Front sport with pre-runner	Front		Front and rear	Front and rear
North Edition package extras: Heated grips and throttle, windshield, mudguards								✓									
Mossy Oak Hunting Edition package extras: Kolpin 6.0 Impact gun boot, full under body aluminum skid plate, heated grips and throttle, reinforced seat skin										✓							
X mr package extras: Mud performance tires, relocated radiator, mud-riding footrests, X-package coloration, graphics and seat cover															✓		
Limited package extras: Garmin† Montana† 650t touchscreen GPS, mudguards, comfort grips																	✓
Available in 2-passenger configuration*		✓			✓			✓			✓						✓
Available in 6x6 configuration		✓					✓										
Color options*	Viper Red	Orange			Intense Red Brushed Aluminum & Can-Am Red Mossy Oak Break-Up Country Camo			White		Mossy Oak Break-Up Country Camo	Triple Black		Black, Hyper Silver & Sunburst Yellow	Can-Am Red & Black		Can-Am Red & Black Carbon Black & Sunburst Yellow	Midnight blue

**Some colors and 2-passenger configuration are offered only on specific engines. / Engine and color choices vary per package. See full specifications at can-amoffroad.com.*

Keep cargo stable and secure during rides with our high-strength rack. Designed to be practical, it features anti-skid surfaces and raised edges that serves as convenient anchor points for tie-downs and bungee cords. And because it's part of our exclusive LinQ system lineup, you can quickly and easily add or remove many ride-specific Can-Am accessories from trunk boxes to gun scabbards, modular bags, rack extensions, and much more.

VISIT YOUR DEALER OR CAN-AMOFFROAD.COM TODAY AND CREATE YOUR VERY OWN CAN-AM.

DELUXE FAIRING 1
HIGH WINDSHIELD 2
LinQ 23 GAL (86 L) TRUNK BOX 3
LinQ 6" (15 CM) RACK EXTENSION 4

Outlander XT 1000 shown

We didn't just wake up and decide to build the most powerful ATV in the industry, it took years of overcoming engineering challenges while working to exceed rider expectations. Whether you choose the standard model or the mud-conquering X mr 1000R, there's a Renegade that's ready for the ride.

Renegade X mr 1000R shown

Renegade Xxc 1000R shown

BEST-IN-CLASS PERFORMANCE.

The Renegade's signature styling screams performance. So it's good thing we designed and equipped it with technology to back that up – and it'll only take one ride to make you a believer.

YOU'RE HERE FOR THE POWER.

You're probably the type that's not happy until you've cracked the throttle as far as it'll go, right? The days of suffering through peaky performance and iffy reliability are over with your pick of 48, 78, or 89 horsepower ROTAX V-Twin engines; all possessing tremendous torque, remarkable reliability, and an easy-to-follow maintenance schedule.

YOUR RIDE. YOUR WAY.

All Renegades feature a performance riding platform that's versatile enough to take you on a thrilling flat-out blast, or in the case of the X mr 1000R, capable enough to totally dominate North America's toughest mud terrain.

BASE

X xc

X mr

KEY FEATURES	BASE			X xc		X mr	
Rotax® engine options	570	850	1000R	850	1000R	570	1000R
Engine power	48 hp	78 hp	89 hp	78 hp	89 hp	48 hp	89 hp
Engine type	V-Twin			V-Twin		V-Twin	
Tri-Mode Dynamic Power Steering (DPS)				✓		✓	
Shocks	Oil	FOX† HPG		FOX† 1.5 PODIUM† RC2		FOX† HPG	FOX† 1.5 PODIUM† QS3
Tires	25-in. ITP Holeshot† ATR			25-in. ITP Holeshot† ATR		28-in. ITP Mega Mayhem†	30-in. ITP† Cryptid
Wheels	12-in. cast-aluminum			12-in. cast-aluminum beadlock		12-in. cast-aluminum beadlock	14-in. cast-aluminum beadlock
3,000-lb (1,361 kg) WARN† winch with roller fairlead							✓
Bumpers	Front			Front		Front and rear	
Aluminum skid plate				✓			✓
X mr package extras: Snorkel with relocated CVT intake and outlet, mudguards, X-package coloration, graphics and seat cover						✓	
Color options	Can-Am Red			White, Black & Can-Am Red Triple Black / 1000R		White, Black & Can-Am Red	Carbon Black & Sunburst Yellow Carbon Black & Can-Am Red

Engine and color choices vary per package. See full specifications at can-amoffroad.com.

Whether you're into the roar of a Yoshimura slip-on exhaust upgrade, the responsive feel of aggressive terrain-ripping tires, or the extreme go-anywhere capabilities offered by our Radiator Relocator and Snorkel Kits, all Renegade models can be customized to deliver the thrills you're seeking—and, with LinQ accessories, add the gear you want to bring along.

VISIT YOUR DEALER OR CAN-AMOFFROAD.COM TODAY AND CREATE YOUR VERY OWN CAN-AM.

SPORT WINDSHIELD 1
HANDLEBAR WIND DEFLECTORS 2
LinQ LUGGAGE RACK 3
LinQ 11.5 GAL (43 L) AUDIO CARGO BOX 4

Renegade X mr 1000R shown

Renegade Xxc 1000R shown

We live for the challenge of designing and building off-road machines that push the limits of speed, handling, and durability. But among the most important ones we make are those for youth — they're the next generation of riders in waiting. Everything about them shows your loved ones are top-of-mind at Can-Am. We're here to help you share with them the freedom of the great outdoors.

DS 70 shown

START THEIR PASSION EARLY.

Our DS youth and teen ATVs have the ideal mix of performance features modeled off our adult vehicles, and safety features to give parents control and peace of mind.

PARENTAL CONTROL.

The DS series include a built-in throttle limiter so parents can regulate their child's vehicle speed, allowing you to raise the limit as they age, growing both in confidence & maturity.

CONFIDENCE FOR KIDS.

Pushing the safe, easy thumb throttle on a fun and responsive Can-Am Off-Road vehicle is an opportunity for kids to explore new horizons within limits you set. Freedom can't come fast enough for youth - so the DS 70 & DS 90 models' built-in limiter ensures their safety while they acquire the necessary driving skills.

KEY FEATURES	DS 70	DS 90	DS 90 x	DS 250
Starting driving age	6 and up	10 and up	10 and up	14 and up
4 stroke engine	✓	✓	✓	✓
CVT transmission	✓	✓	✓	✓
Starting system	Electric with back-up kick start			Electric
X mr package extras: Square race-style handlebar pad, Handlebar riser block (+1 in.), Aluminum front bumper with number plate, Racing kick-up pegs, Sport-look exhaust, X-package graphics and seat cover			✓	
Color options	Can-Am Red	Can-Am Red	Black & Can-Am Red	Yellow

Engine and color choices vary per package. See full specifications at can-amoffroad.com.

Freedom is the ability to go anywhere, especially where lesser men & machines don't dare. Fortunately, a mud-ready, muck-conquering Can-Am can transform the most challenging terrain into an absolute playground.

Your Can-Am vehicle is more than a tool – it's an important part of your life. So when it came to a camouflage partner, Mossy Oak was the perfect fit. These are the finest off-road vehicles we've made, each expertly dressed in official Mossy Oak Break-Up Country camouflage. Equipped with extra standard features, these special edition vehicles have been engineered to perform just as well as they look.

BREAK-UP COUNTRY MOSSY OAK

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