

FRAME

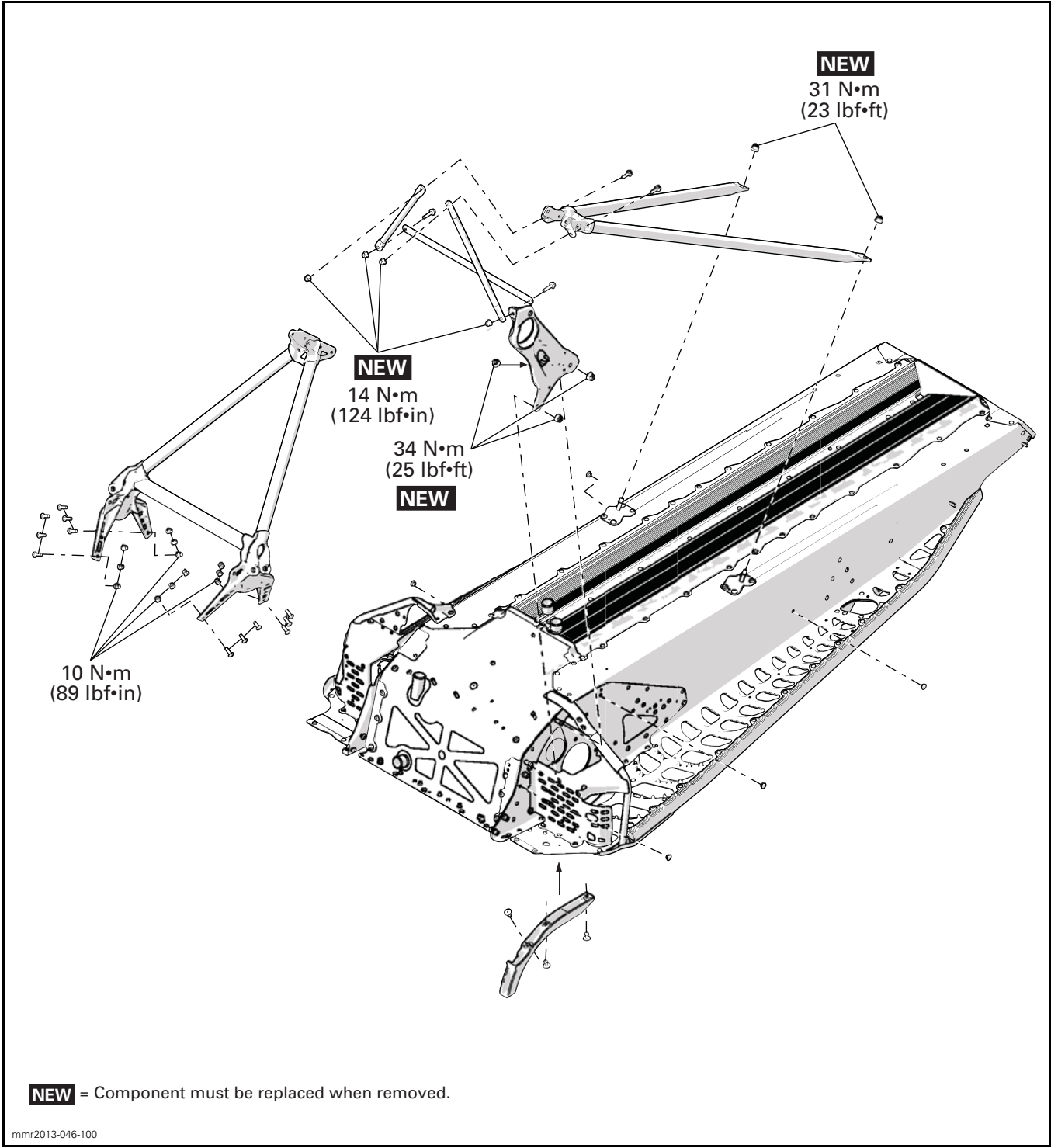
SERVICE TOOLS

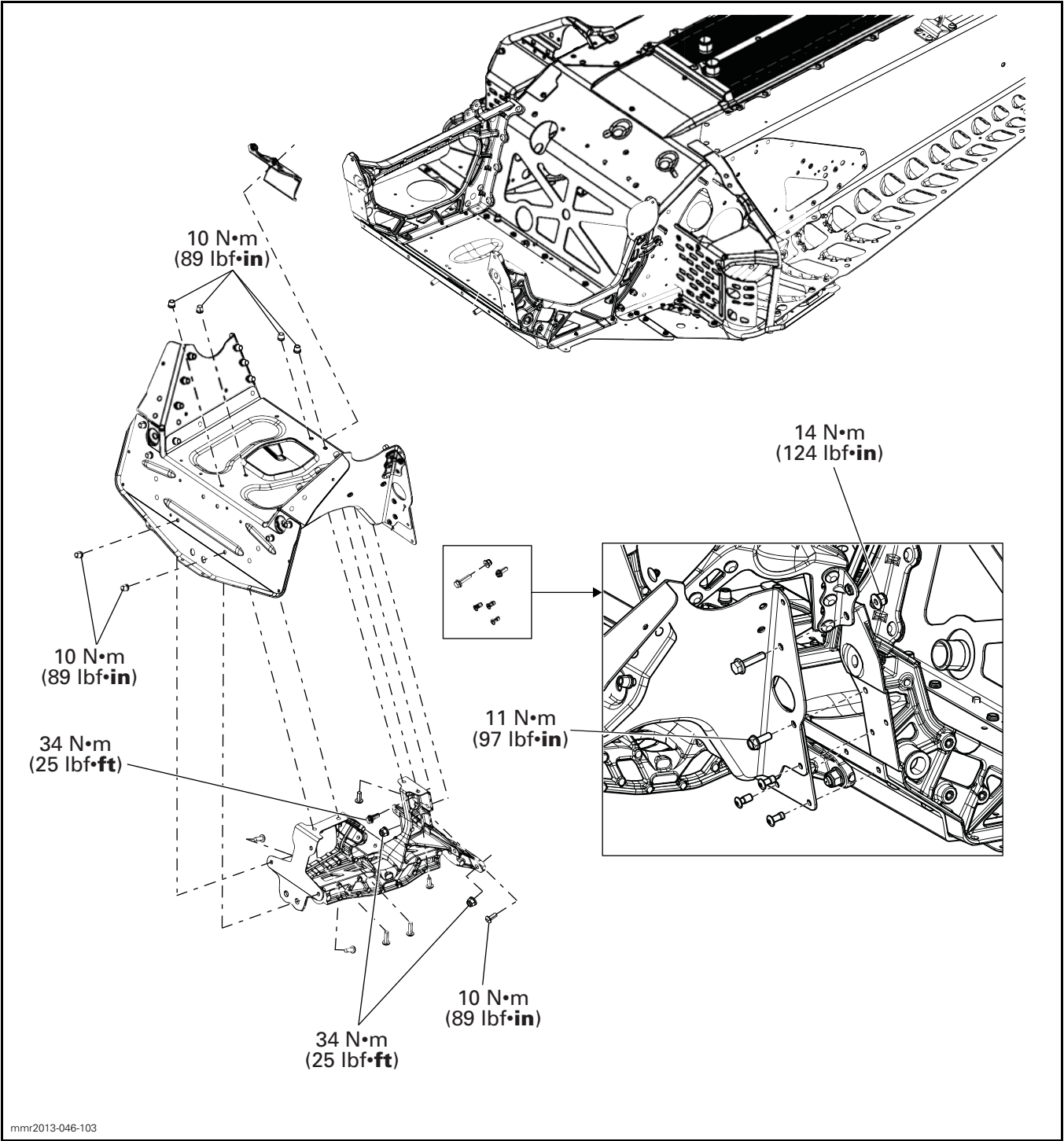
Description	Part Number	Page
SUPERTANIUM DRILL BIT 3/16".....	529 031 800	6

SERVICE PRODUCTS

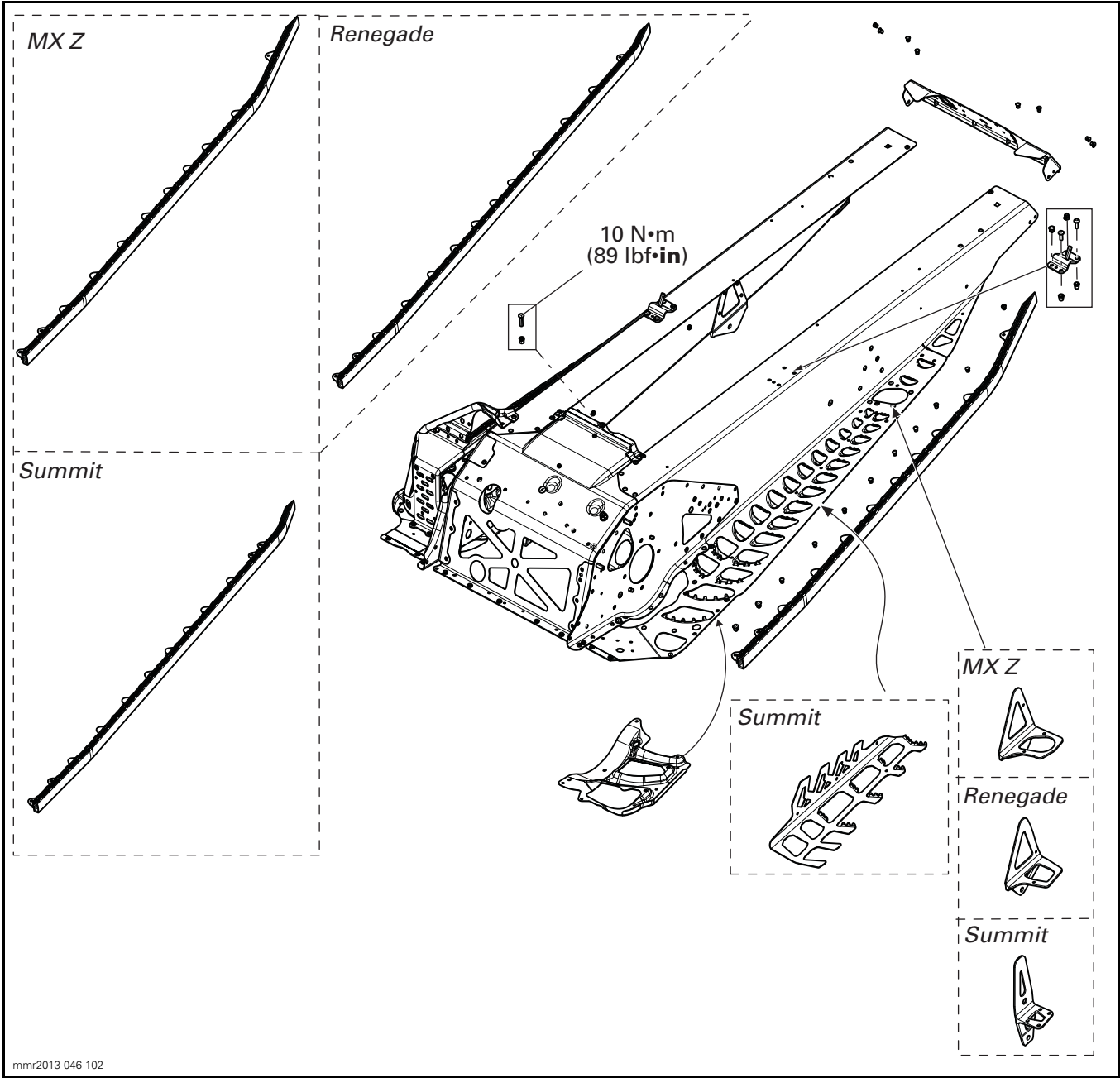
Description	Part Number	Page
LOCTITE 380 (BLACK MAX)	413 408 300	14
XPS SYNTHETIC CHAINCASE OIL	413 803 300	6

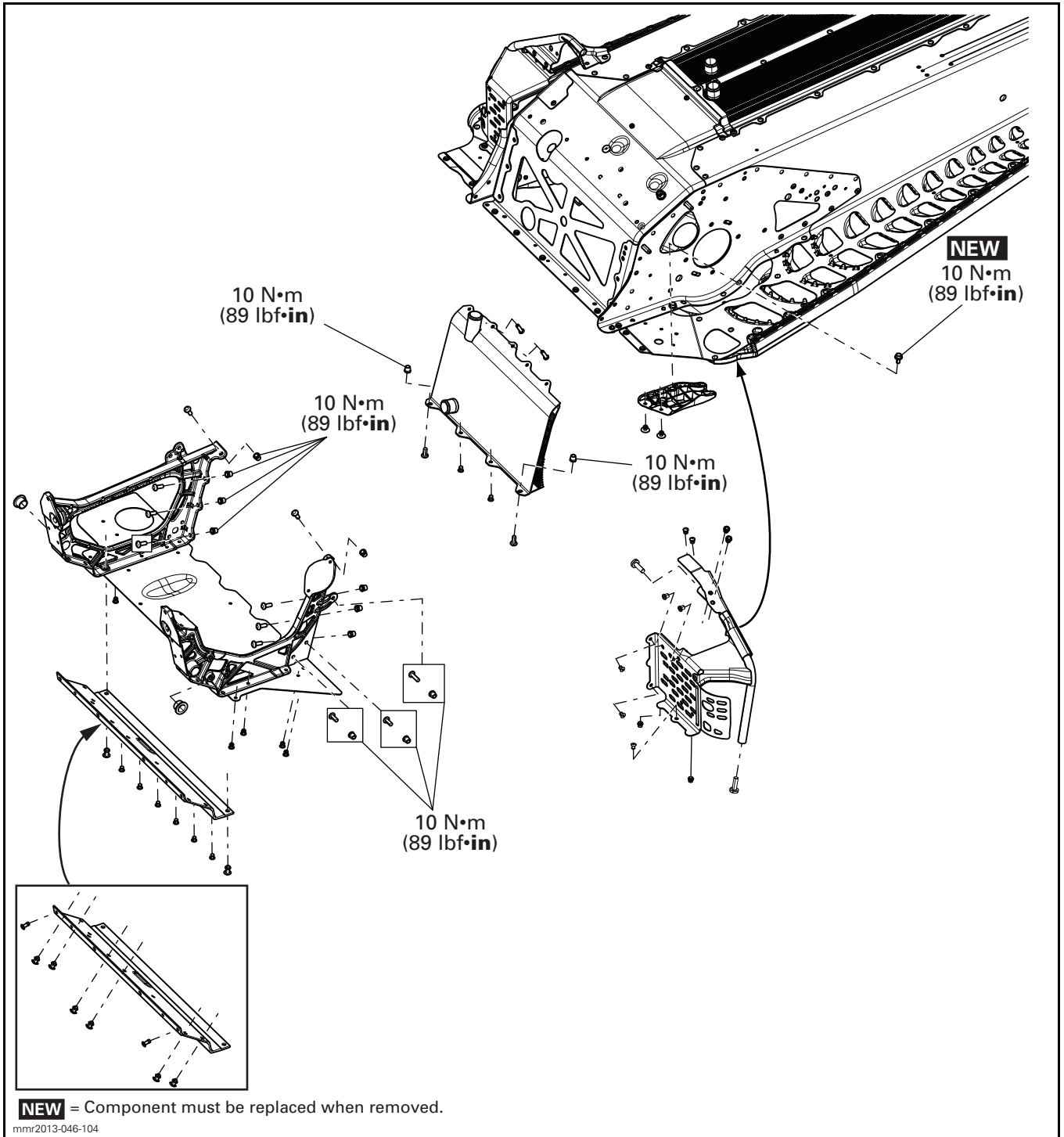
Subsection XX (FRAME)





Subsection XX (FRAME)





GENERAL

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

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* 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, cotter pins, etc.) must be replaced with new ones.

Check for loose, bent, worn out, rusted or otherwise damaged components. Replace the faulty components.

PROCEDURES

RIVETS

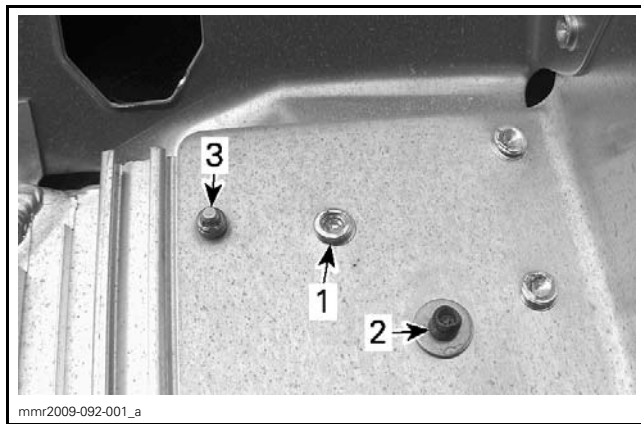
For proper drilling instructions and to prevent premature wear, follow the procedures as detailed.

NOTICE When removing rivets, do not enlarge or deform the rivet holes in the frame.

Self-Percing Rivet Removal

Recommended Method

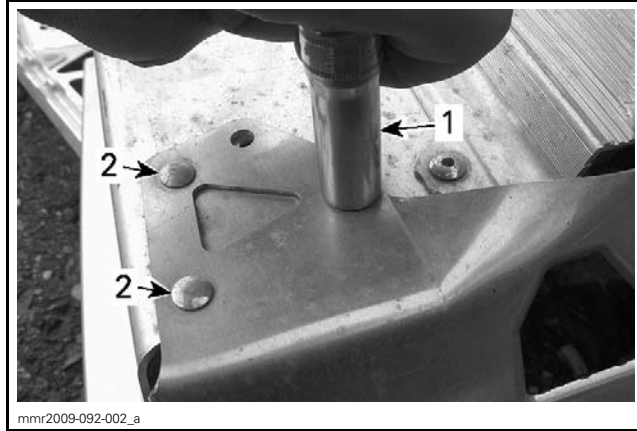
1. Using a grinding disk, grind the rivet end.



TYPICAL

1. Grind this side of self-drilling rivet
2. Pop rivet
3. STAVEX rivet

2. Support the frame around the rivet head with a socket on the opposite side to avoid warpage.



TYPICAL

1. 11 mm socket over a rivet head
2. Rivet heads

3. Drive out remaining rivet using a punch.

Alternative Method

1. Use a SUPERTANIUM DRILL BIT 3/16" (P/N 529 031 800) and a variable speed drill.
2. Partially drill **rivet end** — not the rivet head.

NOTICE High speed drilling will cause excessive heat which may destroy the cutting edge of the bit; therefore, avoid using pneumatic drills.

NOTE: To increase bit life, use XPS SYNTHETIC CHAINCASE OIL (P/N 413 803 300) as a cutting oil.

3. Cut rivet using a chisel.
4. Remove riveted part.
5. Drive out remaining rivet head using a punch.

Pop Rivet Removal

1. Use a SUPERTANIUM DRILL BIT 3/16" (P/N 529 031 800), and a variable speed drill.
2. Drill **rivet head** sufficiently to cut through rivet head.

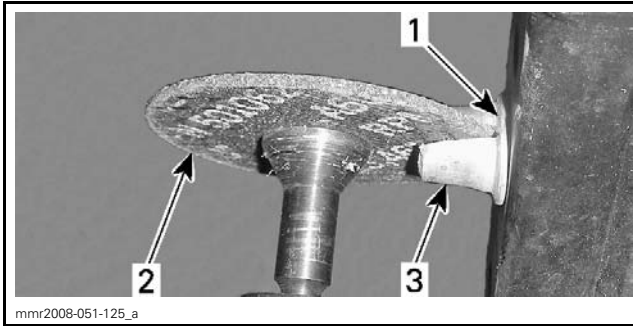
NOTICE Drill only sufficiently to cut rivet head. Do not drill into frame material, or part secured using the rivet. When rivet is used to secure a plastic part, use pliers to avoid rotation of rivet with drill bit and heating or melting of the plastic part.

3. Using a small punch, drive out the remaining rivet end.

HUCK Rivet Removal

Recommended Method

1. Using a cut-off tool, cut the rivet retainer without touching the retainer's shoulder.



1. Rivet retainer's shoulder
2. Cutter wheel
3. Rivet retainer

NOTE: Apply a thin layer of grease on cutter wheel to increase its durability.

2. Break the rivet retainer's shoulder using a chisel.
3. Use a small punch to drive out the rivet stem.

Alternative Method

1. Measure outside diameter of rivet stem and select appropriate drill bit.
2. Drill the **rivet stem** — **not the rivet head** using a variable speed drill until rivet retainer is freed.

NOTE: When possible, use an angle grinder to grind rivet head or use an air hammer to cut the rivet retainer.

FRAME

Frame Cleaning

Clean frame and tunnel with appropriate cleaners and rinse with high pressure hose.

NOTE: For bare aluminum frames use only aluminum cleaner and follow instructions on container.

NOTICE Never direct high-pressure water jet towards decals. They will peel off.

Frame Welding

No welding is permitted unless it is specified on a BRP bulletin.

Frame Repair

NOTE: The following is specific information for aluminum chassis painting. Use common painting techniques.

1. Sand the area to be painted.
2. Clean and dry the area.
3. Apply a thin layer of paint of the appropriate color. Refer to *MINOR REPAIRS* and *MAJOR REPAIRS* for paint information.

4. Allow paint to dry before re-coating.

NOTE: Paint takes approximately 15 minutes to dry following application.

5. Apply a thin coat of clear.

NOTE: Immediately after the clear coat application, apply a thin coat of HR50 blending solvent **around** the painted area.

6. Allow clear coat to dry.

NOTE: Clear coat takes approximately 2 hours to dry following application.

Minor Repairs

BRP COLOR		PAINT STICK P/N
White	B-229	549 011 400
Black	B-160	549 011 404

Major Repairs

BLACK B-160 FORMULA (430g TOTAL)	
PRODUCT	QTY
UR50	41.35 g (1.46 oz)
BC200	388.65 g (13.71 oz)

WHITE B-229 FORMULA (430g TOTAL)	
PRODUCT	QTY
UR50	43 g (1.52 oz)
BC190	387 g (13.65 oz)

REAR BUMPER

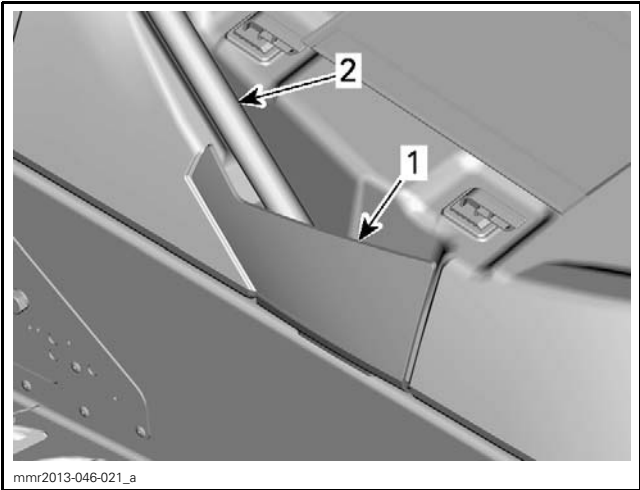
Refer to *BODY* subsection for rear bumper removal and installation procedure.

REAR FRAME MEMBER

Rear Frame Member Removal

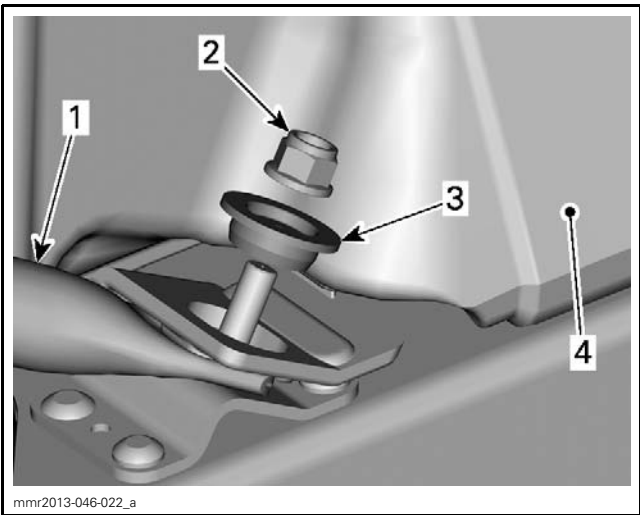
1. Refer to *BODY* subsection to remove the following:
 - Seat
 - Gauge and gauge support
 - Console.
2. Remove trim panel at the bottom of rear frame member (one each side).

Subsection XX (FRAME)



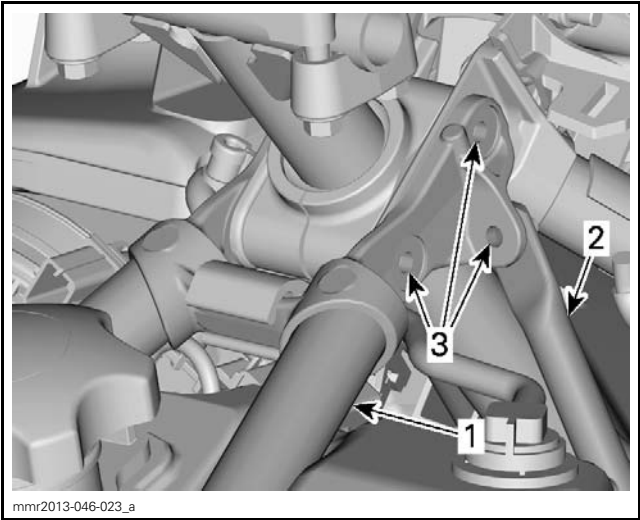
- 1. Trim panel
- 2. Rear frame member

3. Remove nut and shouldered washer securing rear frame member (one each side).



- 1. Rear frame member
- 2. Nut to remove
- 3. Shouldered washer
- 4. Fuel tank

4. Remove screws securing the rear frame member to steering column support and side frame members.



- 1. Rear frame member
- 2. LH side frame member
- 3. Bolts to remove

5. Remove rear frame member.

Rear Frame Member Installation

The installation is the reverse of the removal procedure.

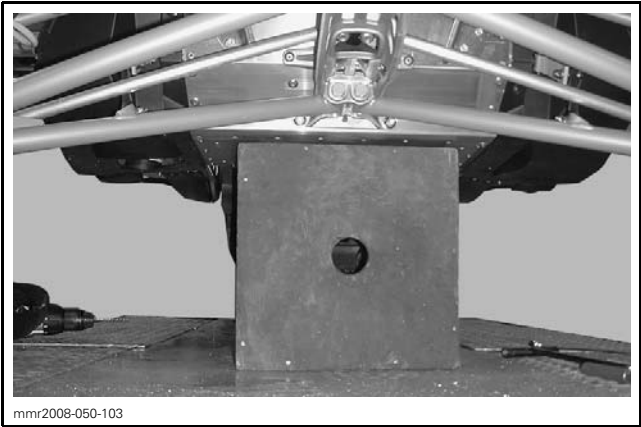
NOTE: Install all bolts and nuts before tightening them.

TIGHTENING TORQUE	
Rear bolts	18 N•m (159 lbf•in)
Side bolts	14 N•m (124 lbf•in)

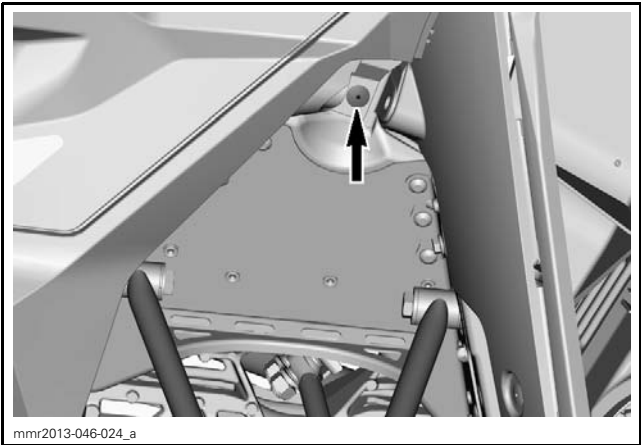
FRONT FRAME MEMBER

Front Frame Member Removal

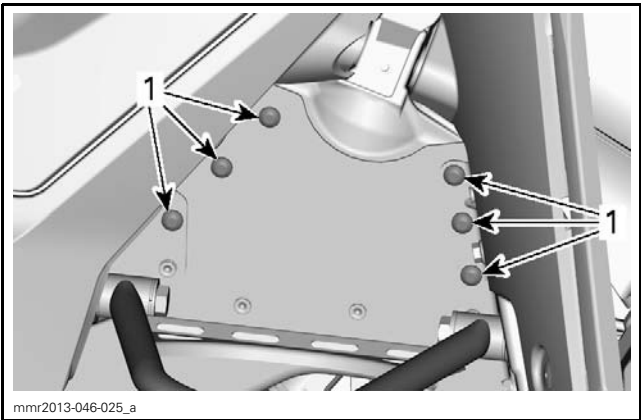
- 1. Refer to *BODY* subsection to remove the following:
 - Hood
 - Console
 - Gauge and gauge support.
- 2. Remove the secondary air intake silencer. Refer to *AIR INTAKE SYSTEM* subsection.
- 3. Remove the tuned pipe. Refer to *EXHAUST SYSTEM* subsection.
- 4. Lift front of vehicle until skis are off the ground.
- 5. Place the front portion of frame on a wooden box to support it securely.



- 6. Remove front shock absorbers.
- 7. Drill the rivet retaining the front bottom pan to front frame member (one each side).

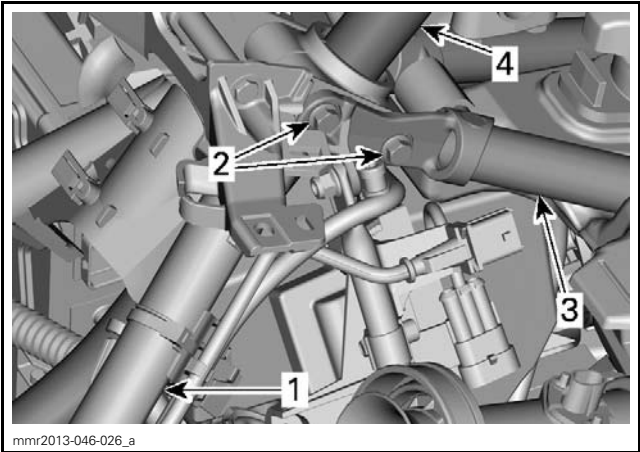


- 8. Remove HUCK rivets (six each side), see removal procedure at the beginning of this section.



1. HUCK rivets

- 9. Remove bolts securing front frame member, rear frame member and steering column support.



- 1. Front frame member
- 2. Bolts to remove
- 3. Rear frame member
- 4. Steering column

- 10. Remove the front frame member.

Front Frame Member Installation

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

- 1. Replace the HUCK rivets with the following parts.

NEW FASTENERS	
Hexagonal flanged bolt M6 x 20	(P/N 207 662 044)
Hexagonal flanged elastic stop nut M6	(P/N 233 261 414)

NOTE: Unless stated otherwise, install bolt heads toward outside of the vehicle.

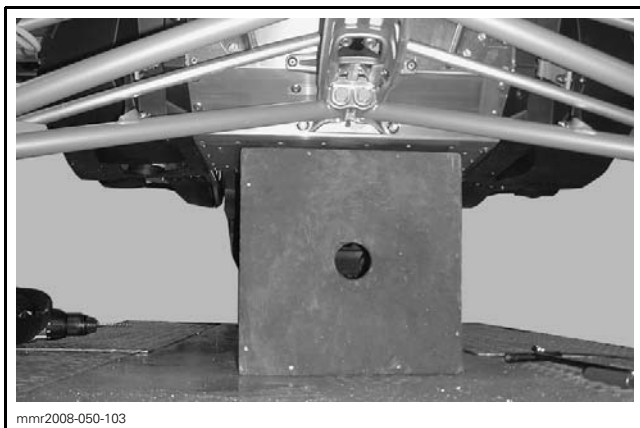
- 2. Torque new fasteners to 10 N•m (89 lbf•in).

FRONT SUSPENSION MODULE

Front Suspension Module Removal

- 1. Lift front of vehicle until skis are off the ground.
- 2. Place the front portion of frame on a wooden box to support it securely.

Subsection XX (FRAME)

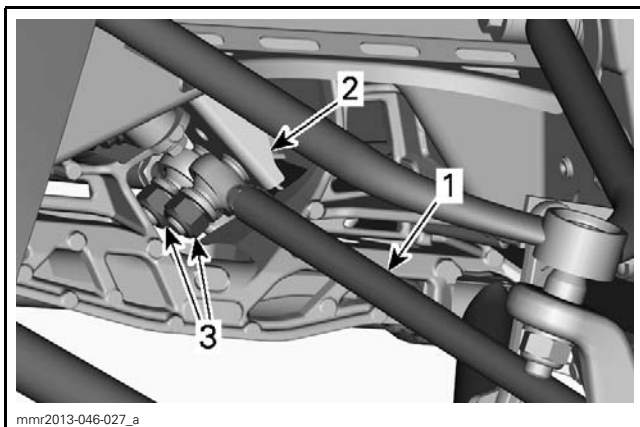


TYPICAL

3. Remove the muffler and the tuned pipe. Refer to *EXHAUST SYSTEM* subsection.

4. Remove the RH front suspension assembly in the following manner:

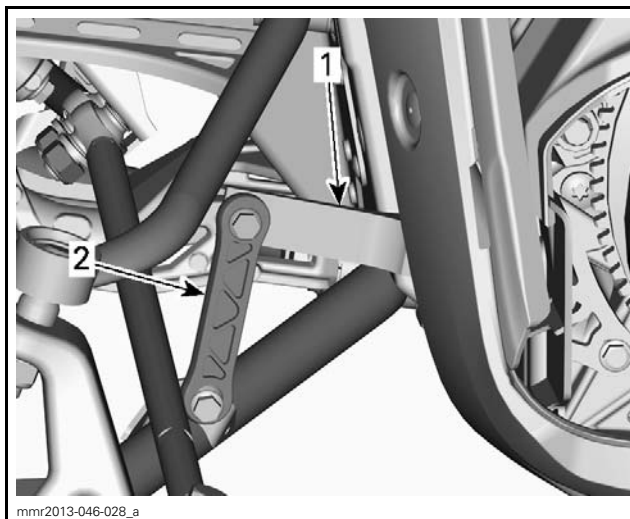
4.1 Detach both tie-rod ends from steering column.



1. Tie-rod
2. Steering column
3. Tie-rod end nut

4.2 Remove upper mounting bolt from both front shock absorbers.

4.3 Remove bolt that secures stabilizer link to stabilizer lever (1 each side).



1. Stabilizer lever
2. Stabilizer link

4.4 Remove upper and lower suspension arms bolts (both sides). Refer to *FRONT SUSPENSION* subsection.

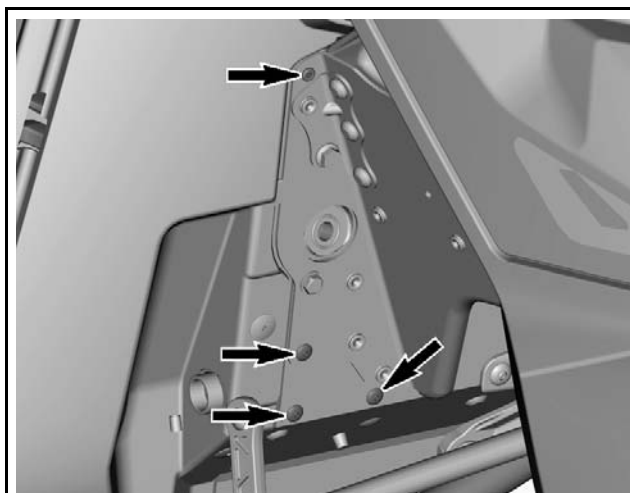
4.5 Pull suspension arms from front suspension module to remove front suspension assembly from vehicle.

5. Remove the stabilizer bar, refer to *FRONT SUSPENSION* subsection.

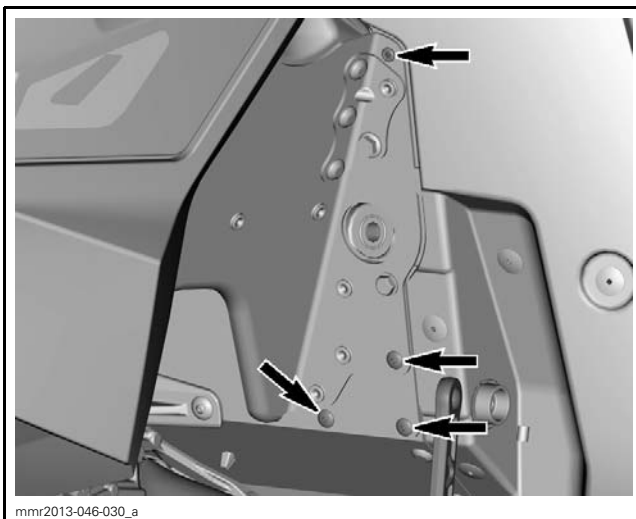
6. Remove the front bottom pan. Refer to *BODY* subsection.

NOTE: Keep the front bumper installed on front bottom pan.

7. Remove the following pop rivets, refer to *POP RIVET REMOVAL* at the beginning of this subsection.

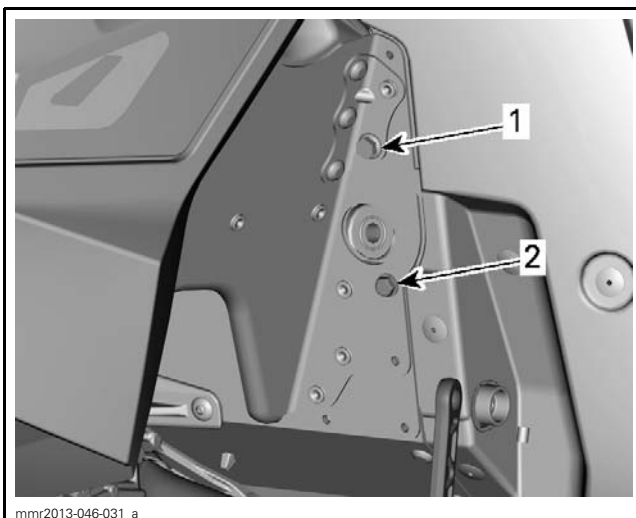


RH SIDE



LH SIDE

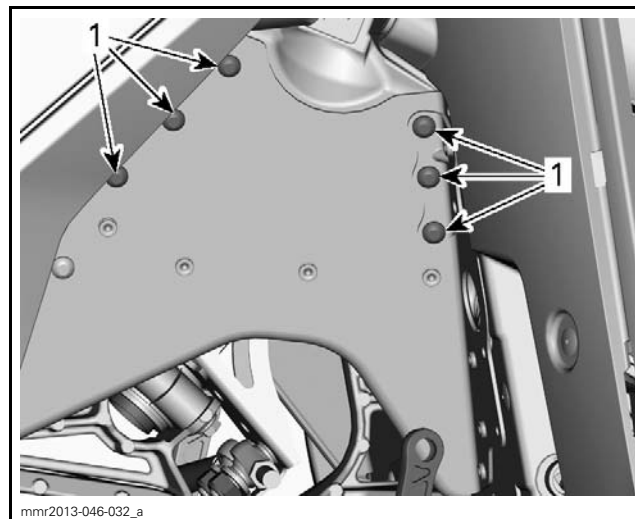
8. Remove screws securing front suspension module to frame (2 each side).



LH SIDE SHOWN

1. Hexagonal flanged bolt
2. Torx screw

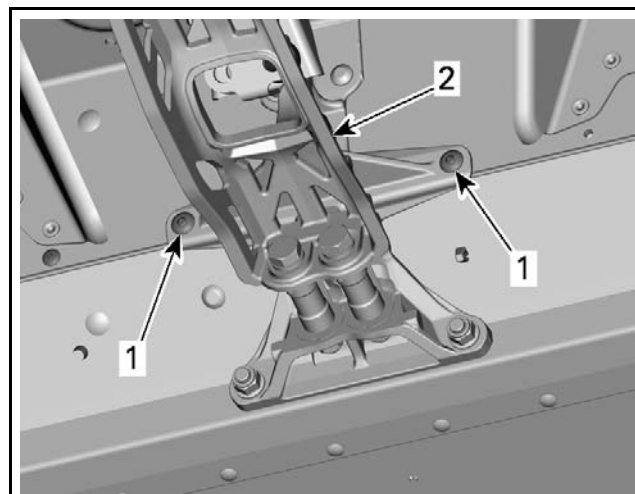
9. Remove HUCK rivets (six each side), see removal procedure at the beginning of this subsection.



LH SIDE SHOWN

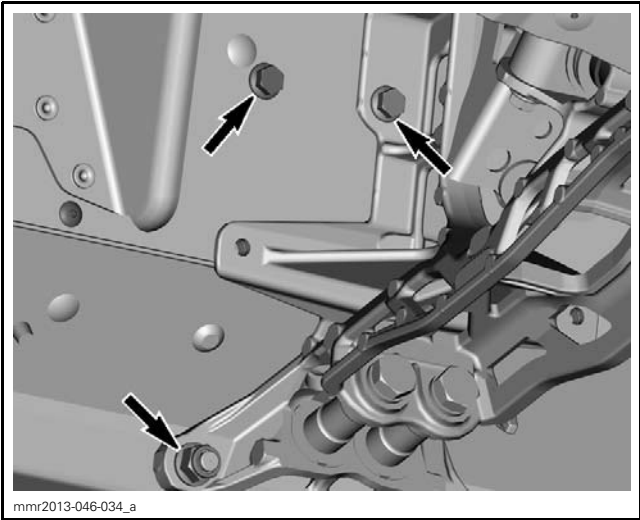
1. HUCK rivets

10. Grind rivets securing the lower suspension arm support to engine module.



1. Rivets
2. Lower suspension arm support

11. Remove the following bolts and nuts.



12. Remove the front suspension module.

Front Suspension Module Installation

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

1. Replace the HUCK rivets with the following parts.

NEW FASTENERS	
Hexagonal flanged bolt M6 x 20	(P/N 207 662 044)
Hexagonal flanged elastic stop nut M6	(P/N 233 261 414)

NOTE: Unless otherwise stated, install bolt heads toward outside of the vehicle.

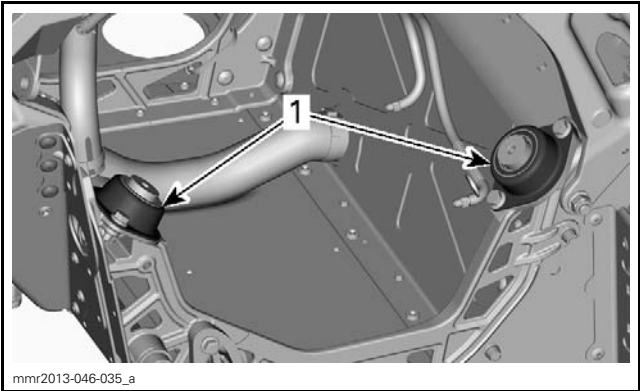
- 2. Torque new fasteners to 10 N•m (89 lbf•in).
- 3. Reinstall all removed parts by using the appropriate installation procedure.

TIGHTENING TORQUE	
Lower suspension arm nuts	34 N•m (25 lbf•ft)

ENGINE MODULE

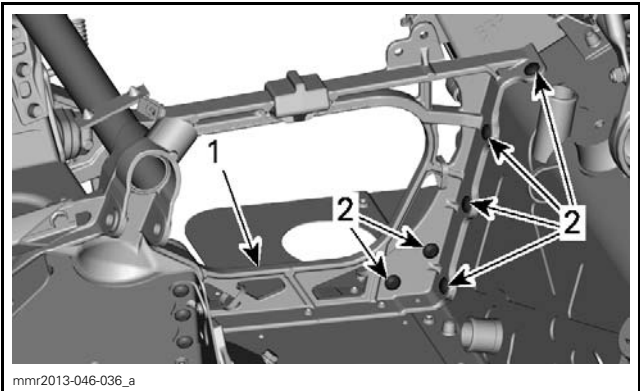
Engine Module Removal

- 1. Remove engine from vehicle. Refer to *ENGINE REMOVAL AND INSTALLATION* subsection.
- 2. Remove track, refer to *TRACK* subsection.
- 3. Remove the *FRONT SUSPENSION MODULE*, see procedure in this subsection.
- 4. Remove side bottom parts. Refer to *BODY*.
- 5. On LH side, remove front and rear engine rubber mounts.



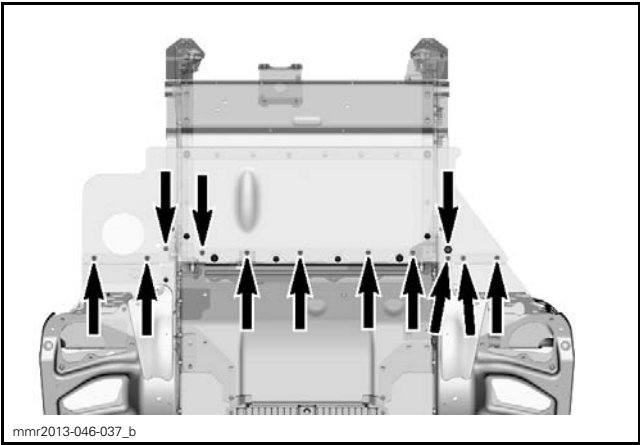
1. Engine rubber mounts

6. Remove HUCK rivets, see removal procedure at the beginning of this subsection.



RH SIDE SHOWN
1. RH engine module
2. HUCK rivets

7. Drill or grind rivets securing engine module to frame.



8. Remove the engine module.

Engine Module Installation

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

1. Replace the HUCK rivets with the following parts.

NEW FASTENERS	
Hexagonal flanged bolt M6 x 20	(P/N 207 662 044)
Hexagonal flanged elastic stop nut M6	(P/N 233 261 414)

NOTE: Install bolt heads toward outside of the vehicle, except the one securing chaincase.

2. Torque new fasteners to 10 N•m (89 lbf•in).
3. Reinstall all removed parts by using the appropriate installation procedure.

HEAT EXCHANGERS

Heat Exchanger Cleaning and Inspection

Remove all debris between heat exchanger fins.

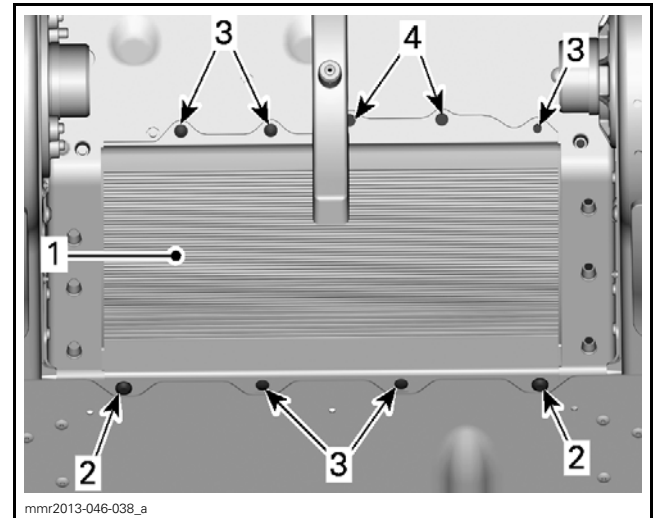
Check if heat exchanger fins are damaged. Replace heat exchanger if necessary.

NOTE: A heat exchanger with many broken fins does not work properly.

Front Heat Exchanger Removal

1. Drain cooling system. Refer to *COOLING SYSTEM DRAINING* in *PERIODIC MAINTENANCE PROCEDURES* subsection.
2. Remove LH and RH body panels. Refer to *BODY* subsection.
3. Remove drive belt guard. Refer to *DRIVE BELT* subsection.
4. Remove primary air intake silencer. Refer to *AIR INTAKE SYSTEM* subsection.
5. Remove throttle body. Refer to *E-TEC-DIRECT FUEL INJECTION* subsection.

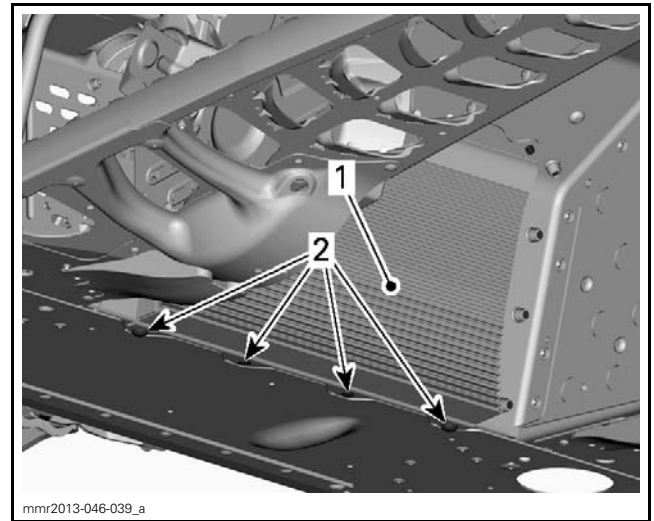
NOTE: To remove the front heat exchanger rivets, refer to *RIVETS* in this subsection for procedure according to rivet type.



TYPICAL FRONT HEAT EXCHANGER FASTENERS - VIEW IN TUNNEL LOOKING FORWARD

1. Front heat exchanger
2. HUCK rivets
3. AVEX rivets
4. Studs (RH aft engine mount)

6. From underneath the frame, remove rivets securing bottom of front heat exchanger.

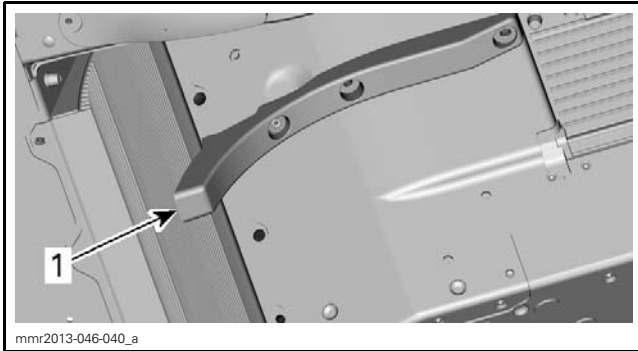


TYPICAL

1. Front heat exchanger
2. Rivets to remove

7. From engine compartment, remove rivets (3x) retaining heat exchanger protector.

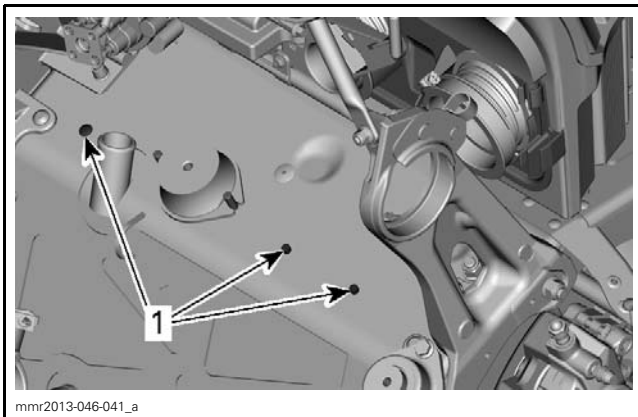
Subsection XX (FRAME)



TYPICAL

1. Heat exchanger protector (in front of track)

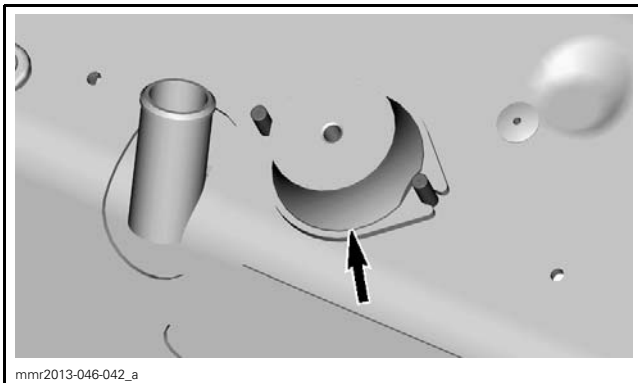
8. Remove upper rivets retaining front heat exchanger to frame.



TYPICAL - SOME PARTS REMOVED FOR CLARITY

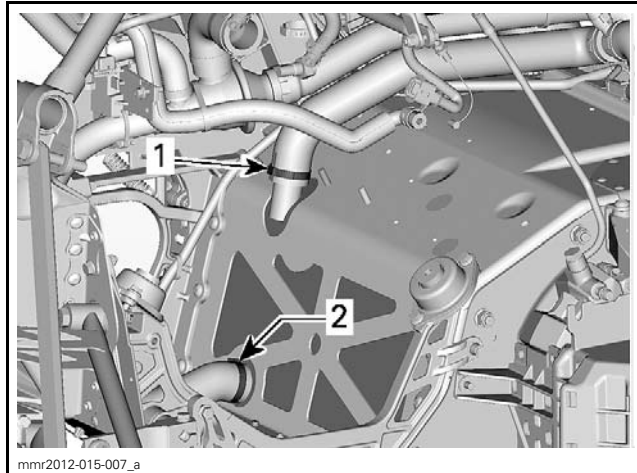
1. Upper rivets of front heat exchanger

9. Remove nuts retaining RH rear engine mount.



TYPICAL - ENGINE MOUNT SHOWN WITHOUT COUNTERSHAFT FOR CLARITY

10. Remove Oetiker clamp securing upper coolant hose.



TYPICAL

1. Upper coolant hose
2. Lower coolant hose

11. Disconnect upper coolant hose from heat exchanger.
12. Carefully pull out on bottom of heat exchanger to expose Oetiker clamp on lower coolant hose.
13. Remove Oetiker clamp securing lower coolant hose.
14. Disconnect lower coolant hose from heat exchanger.
15. Remove heat exchanger.

Front Heat Exchanger Installation

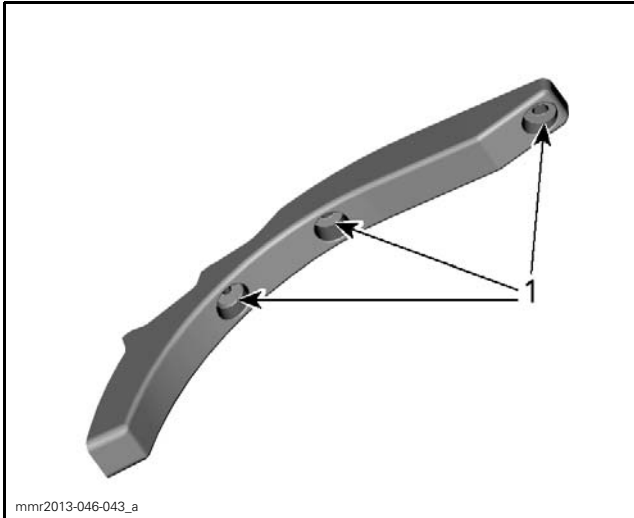
The installation is the reverse of the removal procedure. However, pay attention to the following. Install heat exchanger protector as follows to avoid removing track:

Lift and secure rear of vehicle.

Use 3 washers (P/N 517 124 300).

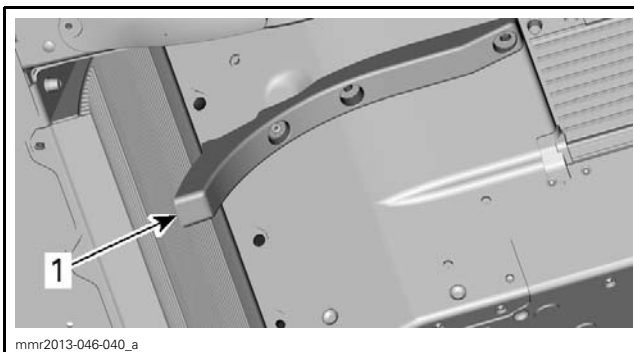
Glue washers in protector bores using LOCTITE 380 (BLACK MAX) (P/N 413 408 300).

NOTE: Only apply a slight quantity of glue between washers and protector.



1. Glue washers here

From underneath frame, position protector.



1. Heat exchanger protector (in front of track)

Apply pressure on protector to ensure that it makes contact with frame.

From engine compartment, secure protector with rivets.

NOTE: Ensure to insert rivet ends in washers.

Replace the HUCK rivets with the following parts.

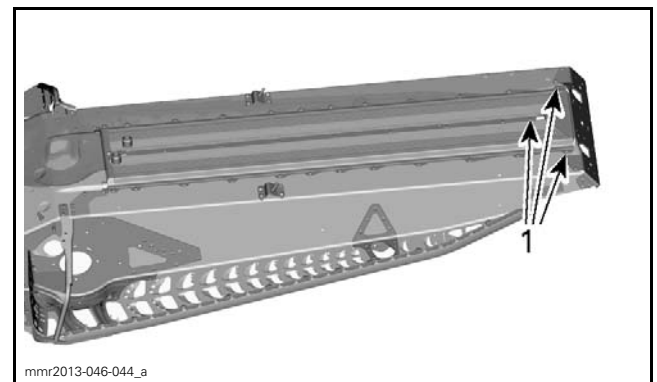
NEW FASTENERS	
Hexagonal flanged bolt M6 x 20	(P/N 207 662 044)
Hexagonal flanged elastic stop nut M6	(P/N 233 261 414)
TORQUE	
10 N•m (89 lbf•in)	

NOTE: Install bolt head towards outside of vehicle.

Properly refill cooling system. Refer to *COOLING SYSTEM REFILL AND BLEEDING* in *PERIODIC MAINTENANCE PROCEDURES* subsection.

Rear Heat Exchanger Removal

1. Drain cooling system, Refer to *COOLING SYSTEM DRAINING* in *PERIODIC MAINTENANCE PROCEDURES* subsection.
2. Remove rear suspension. Refer to the *REAR SUSPENSION* subsection.
3. Remove fuel tank. Refer to *FUEL TANK AND FUEL PUMP* subsection.
4. Remove luggage rack if necessary.
5. Remove snow guard.
6. Remove all rivet rows retaining rear heat exchanger to frame.



1. Remove all rivet rows

NOTE: When pushing the rivets out, support the frame around the rivet with a socket on the opposite side to avoid frame warping.

7. Unplug coolant hoses from rear heat exchanger then remove it from vehicle.

Rear Heat Exchanger Installation

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

NOTE: If traction enhancing products (studs) are used on vehicle, install the appropriate heat exchanger protector. Refer to *TRACK* subsection to choose the proper protectors kit.

Properly refill cooling system. Refer to *COOLING SYSTEM REFILL AND BLEEDING* in *PERIODIC MAINTENANCE PROCEDURES* subsection.

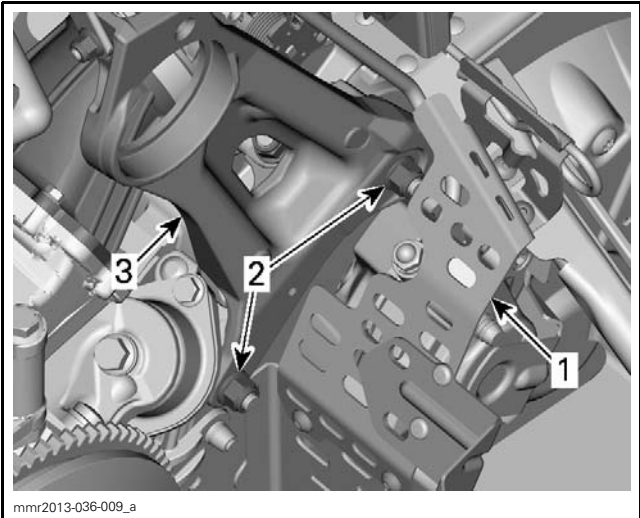
COUNTERSHAFT BEARING SUPPORT

Countershaft Bearing Support Removal

1. Remove *DRIVEN PULLEY*, see procedure in this section.
2. Remove drive belt guard bracket.

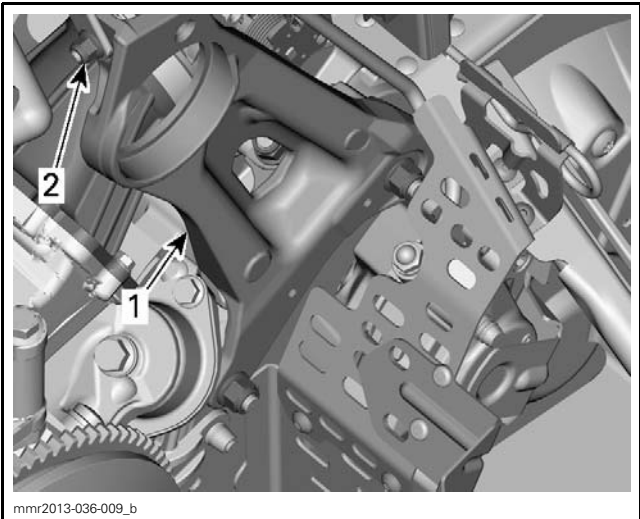
Subsection XX (FRAME)

3. Remove nuts securing the bottom of countershaft bearing support.



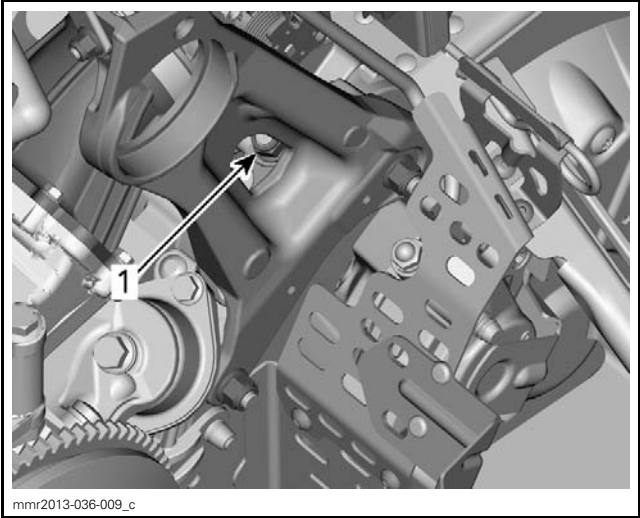
TYPICAL
1. Drive belt guard bracket
2. Nuts to remove
3. Countershaft bearing support

4. Remove bolt retaining top of countershaft bearing support.



1. Countershaft bearing support
2. Upper bolt

5. Remove primary air intake silencer.
6. Loosen lower nut located behind support.



1. Loosen this nut

7. Remove the countershaft bearing support.

Countershaft Bearing Support Installation

1. Position the countershaft bearing support in vehicle.
2. Install all bolts and nuts loosely.
3. Torque all fasteners in the order specified.

TIGHTENING TORQUE	
1) Lower bearing support (2 outer nuts)	34 N•m (25 lbf•ft)
2) Lower bearing support (inner nut)	
3) Upper bearing support nut and bolt	14 N•m (124 lbf•in)

4. Install drive belt guard bracket.

TIGHTENING TORQUE	
Drive belt guard bracket	3.3 N•m (29 lbf•in)

5. Install the driven pulley with the countershaft then all other removed parts.