

DRIVE PULLEY

SERVICE TOOLS

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PULLEY SPRING COMPRESSOR TOOL.....	529 036 012	5, 8, 10, 12
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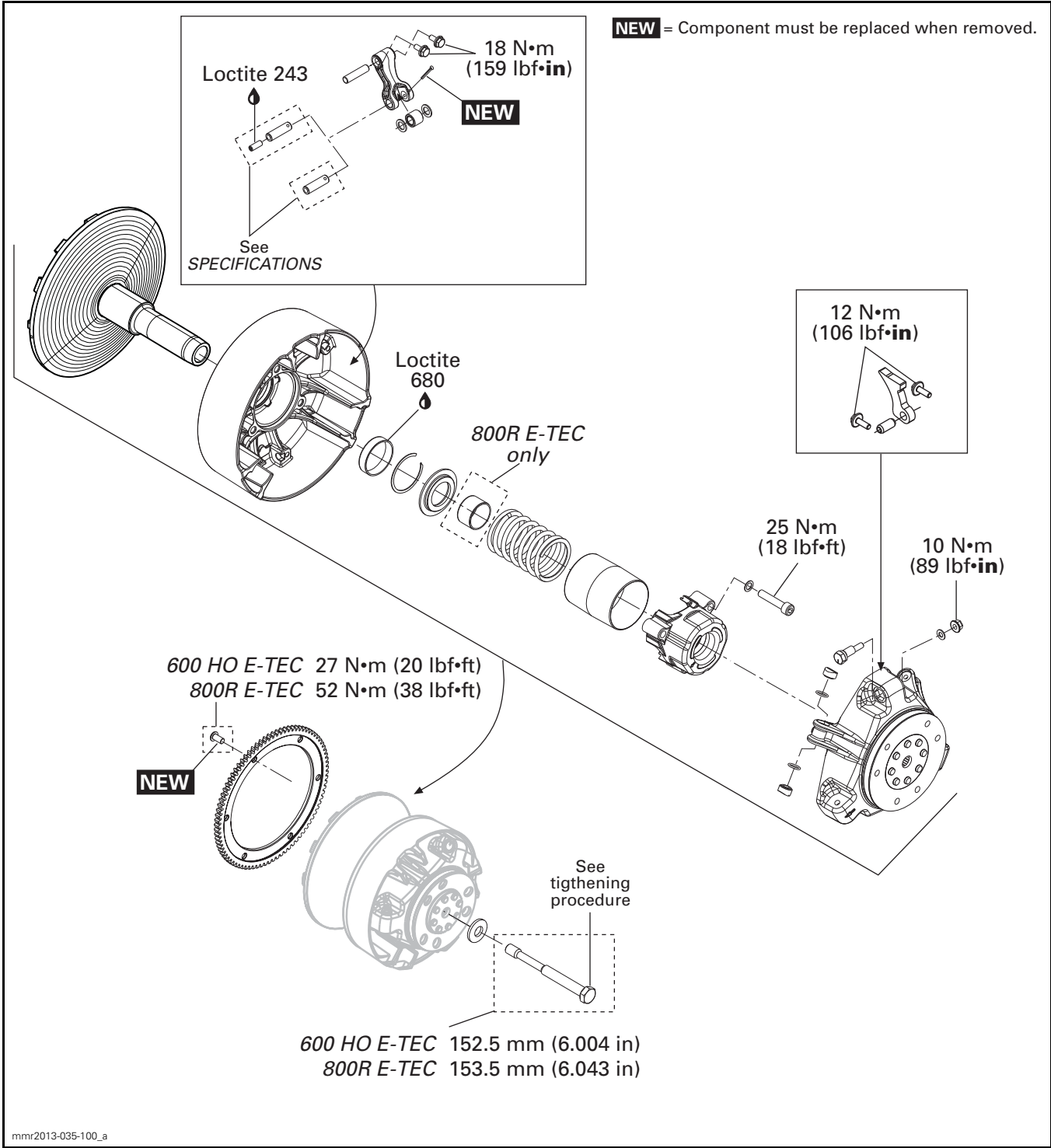
SERVICE TOOLS – OTHER SUPPLIER

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Subsection XX (DRIVE PULLEY)



GENERAL

TRA™ drive pulley stands for **Total Range Adjustable** drive pulley.

These are lubrication free drive pulleys. Do not lubricate any component.

Always refer to appropriate *PARTS CATALOG* for replacement parts.

NOTICE Never use any type of impact wrench for drive pulley removal and installation. The use of impact wrench could damage the drive pulley and modify the calibration.

Some drive pulley components (return spring, ramp) can be changed to improve vehicle performance in high altitude regions. A Service Bulletin provides information about calibration according to altitude.

NOTICE Such modifications should only be performed by experienced mechanics since they can greatly affect vehicle performance. Verify spring specifications before installation. Do not only refer to the spring color code.

⚠ WARNING

Any drive pulley repairs must be performed by an authorized Ski-Doo dealer. Subcomponent installation and assembly tolerances require strict adherence to procedures detailed.

During assembly/installation, use torque values and 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 must be replaced with new ones when removed (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.).

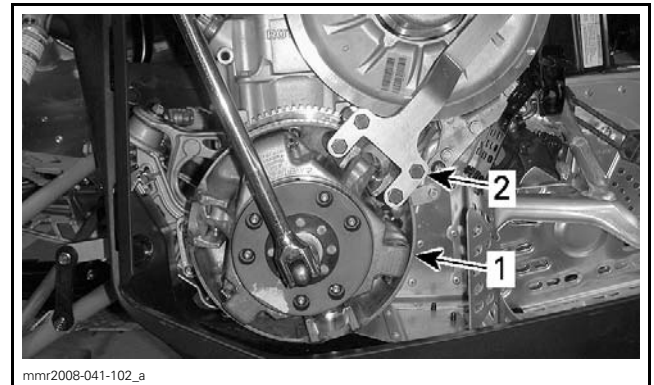
PROCEDURES

DRIVE PULLEY

Drive Pulley Removal

1. Remove drive belt. Refer to *DRIVE BELT* subsection.

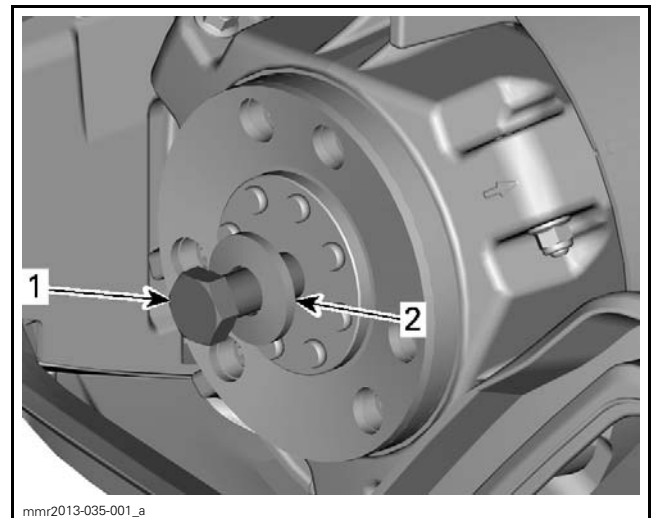
2. Secure drive pulley with the DRIVE PULLEY HOLDER (P/N 529 035 674). Install it over a sliding sheave tower.



TYPICAL

1. Drive pulley
2. Drive pulley holder

3. Remove the drive pulley bolt and its conical spring washer.



TYPICAL

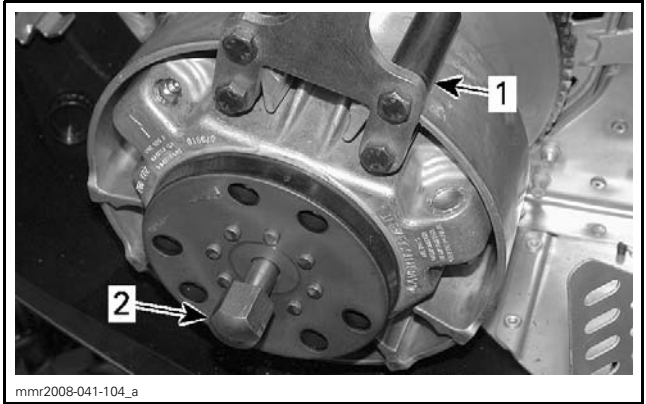
1. Drive pulley bolt
2. Conical spring washer

4. To remove drive pulley from engine, use the following tools

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TOOL	MODEL
DRIVE PULLEY HOLDER (P/N 529 035 674)	All
DRIVE PULLEY PULLER (P/N 529 000 064)	All

5. To remove the drive pulley, hold drive pulley and tighten the puller.



TYPICAL
1. Drive pulley holder
2. Drive pulley puller

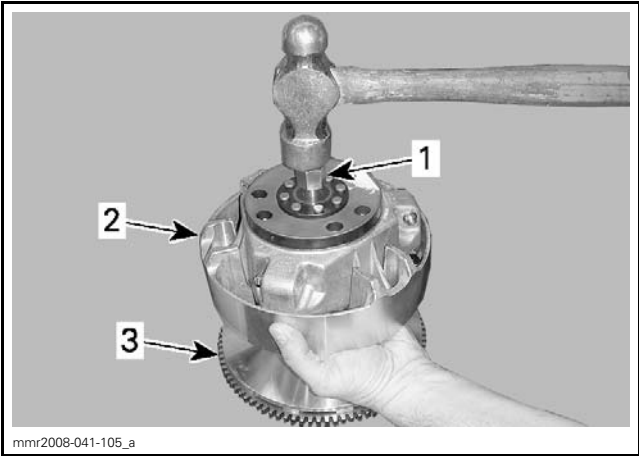
NOTICE These pulleys have metric threads. Do not use a puller with ANS (American National Standard) or IS (International Standard) type threads. Always tighten puller by hand to ensure that the drive pulley has the same type of threads (metric vs ANS or IS) prior to fully tightening.

Drive Pulley Disassembly

To separate fixed sheave from sliding sheave, screw puller into fixed sheave shaft about 13 mm (1/2 in).

Raise drive pulley and hold it by the sliding sheave while knocking on puller head to disengage fixed sheave.

NOTICE NEVER tap on governor cup.



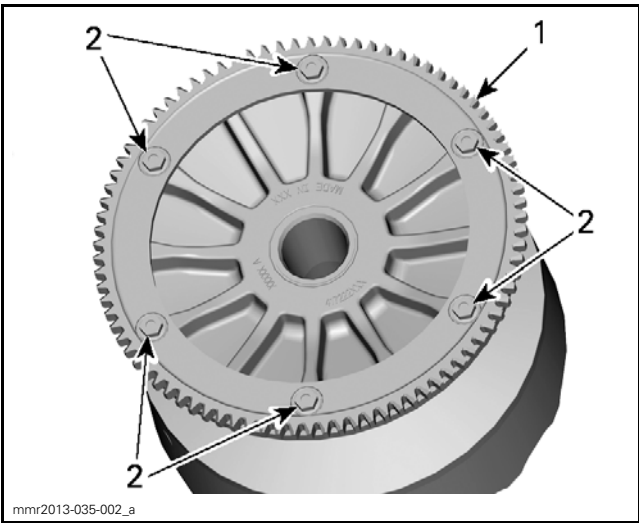
TYPICAL
1. Puller screwed 13 mm (1/2 in) in fixed sheave
2. Sliding sheave
3. Fixed sheave

NOTE: No component marking is required before disassembly. This drive pulley features factory ap-posed index marks as references.

NOTICE Never use any type of torch to heat governor cup.

Ring Gear Removal

To remove the ring gear, use a heat gun to break the threadlocker on ring gear screws. Discard the ring gear screws.

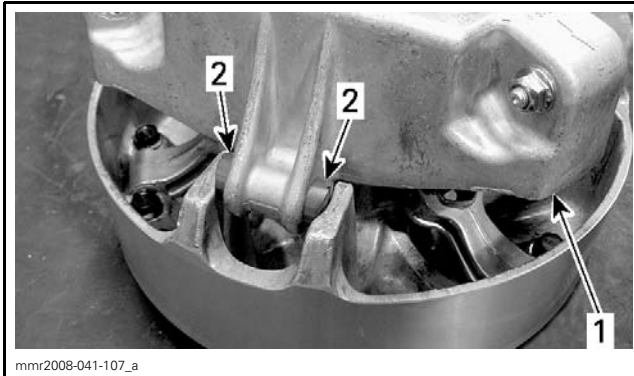


1. Ring gear
2. Ring gear screws

NOTICE If a tool other than a heat gun is used, do not exceed 150°C (302°F).

Slider Shoes and Governor Cup Removal

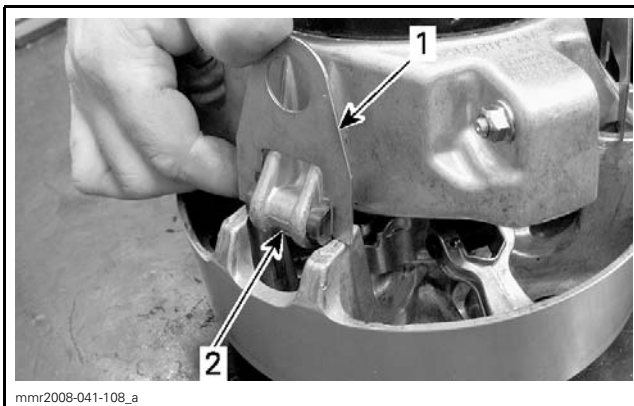
1. Carefully lift governor cup until slider shoes are at their highest position in the guides.



TYPICAL

1. Governor cup
2. Slider shoes

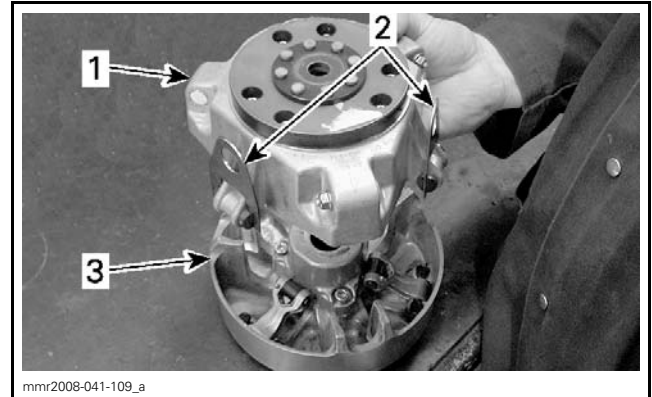
2. Hold a slider shoe set then carefully lift its housing and install a SLIDER SHOE FORK (P/N 529 005 500). Proceed the same way for other housings lifting one at a time.



TYPICAL

1. Governor cup
2. Slider shoe forks

3. When all slider shoes are held with the forks, remove the governor cup.



TYPICAL

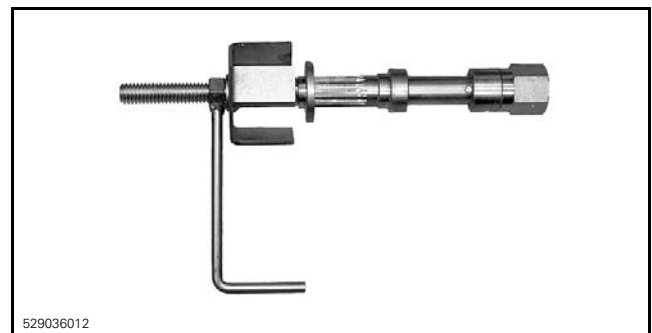
1. Governor cup
2. Slider shoe forks
3. Sliding sheave

Spring Cover Removal

1. To remove the spring cover, always use the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 012).

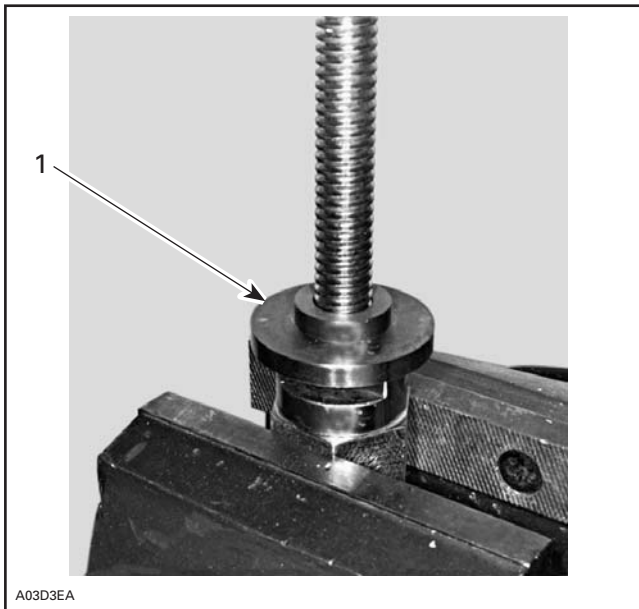
⚠ WARNING

Clutch spring cover is under high clutch spring preload. Never attempt to remove spring cover without the recommended tools.



2. Install support guide of spring compressor in a vice.

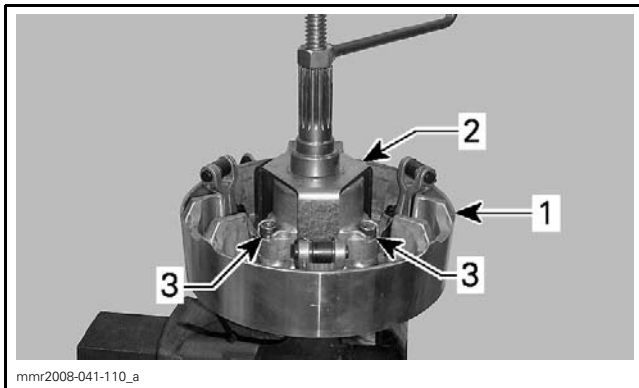
Subsection XX (DRIVE PULLEY)



1. Support guide

NOTE: The support guide will prevent bushing damage.

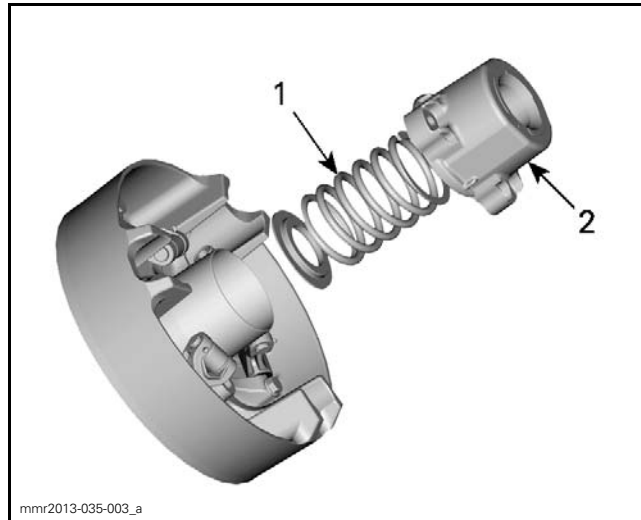
3. Install sliding sheave then the support cup over spring cover.
4. Remove 3 Allen screws and washers retaining spring cover, then unscrew compressor tool.



TYPICAL

1. Sliding sheave
2. Support cup
3. Spring cover screws

5. Remove spring cover, spring and spring seat.



TYPICAL

1. Spring
2. Spring cover

Hollow Threaded Pin Set Screw Removal

1. Position a propane torch ± 25.4 mm (1 in) from the end of the pin (on the opposite side of the cotter pin).
2. Heat during 10 to 15 seconds or until the end of the pin reaches 100°C (212°F) and stop heating.

NOTE: Probe the end of the pin with a temperature indicator stick such as the TEMPILSTIK INDICATOR STICK (P/N TS212F), which will liquefy when pin reaches the correct temperature.

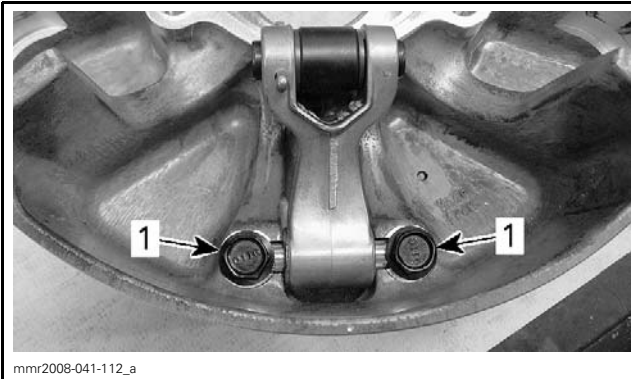
NOTICE Make sure not to exceed 100°C (212°F). Exceeding this temperature will cause severe pulley damage.

3. Wait approximately 30 seconds and remove the set screw.

NOTE: If the set screw cannot be removed, heat the pin end again during 5 seconds and try again to remove set screw. Make sure not to exceed 100°C (212°F).

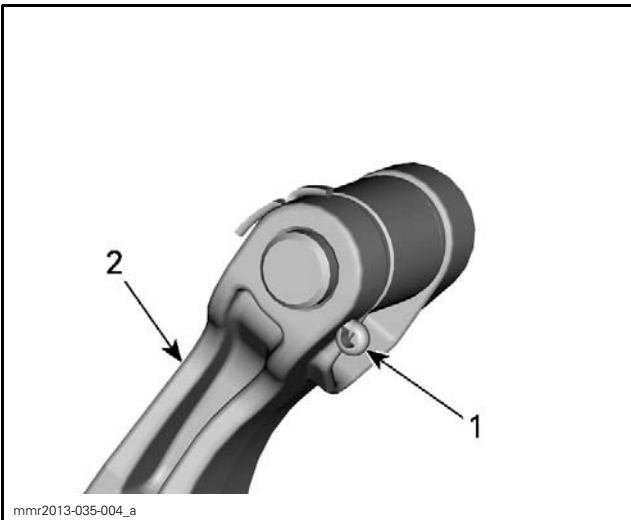
Lever, Roller and Pin Removal

1. Remove lever retaining screws.



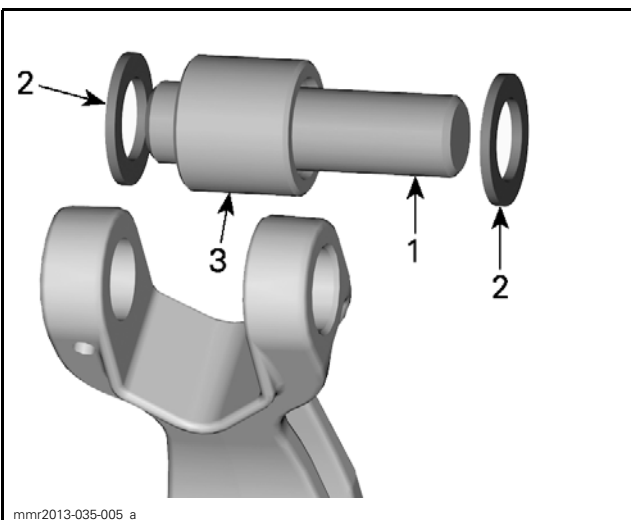
1. Lever retaining screws

2. Pull lever to remove it from sliding sheave.
3. Remove and discard the cotter pin.



1. Cotter pin
2. Lever

4. Remove pin, thrust washers and roller.

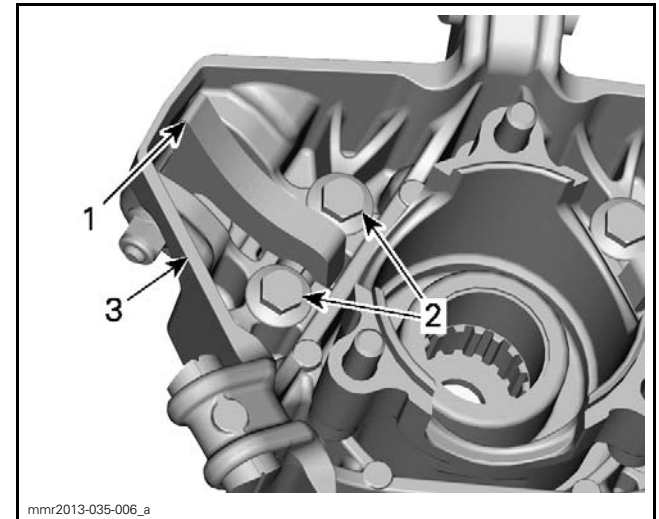


1. Pin
2. Thrust washers
3. Roller

Ramp Removal

Turn the governor cup up side down.

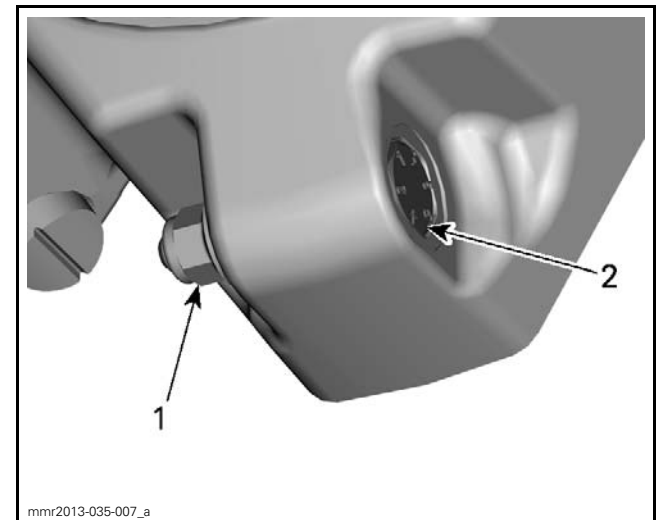
Remove screws retaining ramp to governor cup.



1. Ramp
2. Ramp screws
3. Governor cup

Calibration Screw Removal

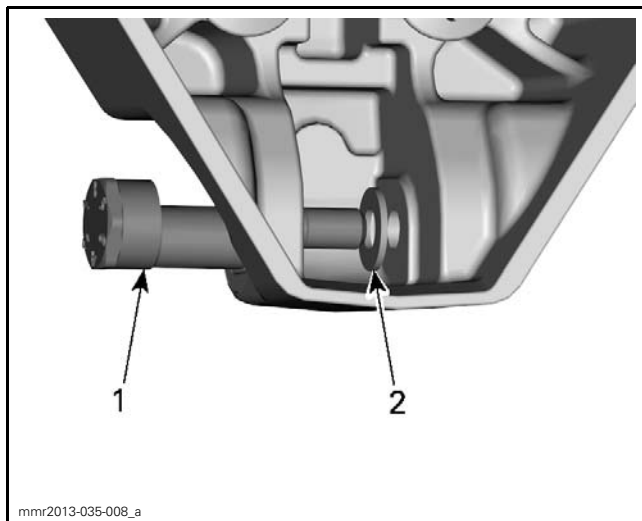
Unscrew the nut securing the calibration screw.



1. Retaining nut
2. Calibration screw

Remove calibration screw and its washer.

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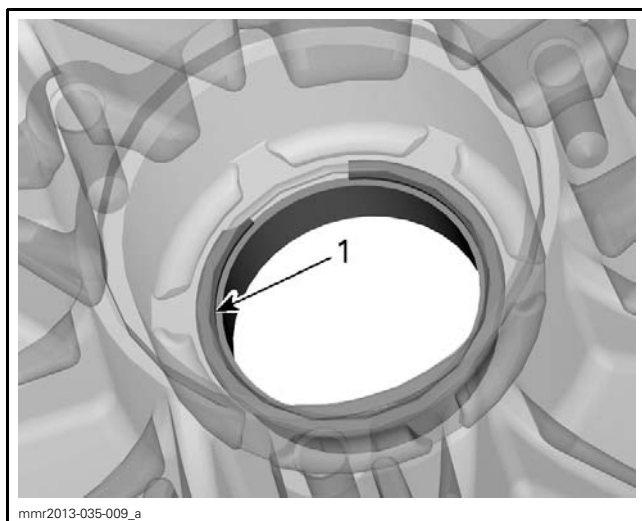
1. Calibration screw
2. Washer

Sliding Sheave Bushing Removal

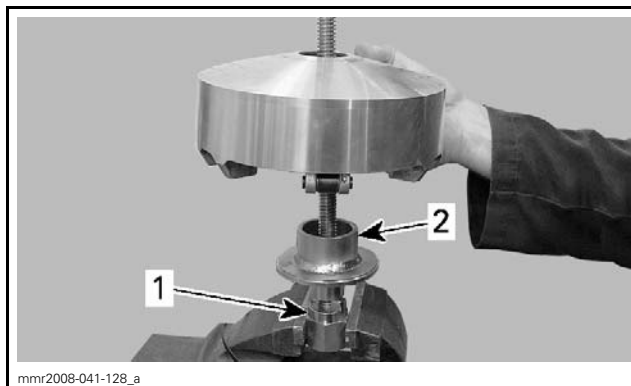
NOTE: In case of worn out bushing, it is advisable to replace whole sliding sheave assembly as replacing just the bushing may reduce drive pulley performance.

If bushing is out of specifications, remove it as follows:

1. Remove circlip from sliding sheave.



1. Circlip
2. Secure the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 012) in a vice.
3. Mount the BUSHING PULLER/INSTALLER (P/N 529 031 200) and the sliding sheave assembly on it.



TYPICAL

1. Spring compressor
2. Bushing remover/installer

4. Use the BUSHING REMOVER/INSTALLER (P/N 529 035 931) to press out old bushing.

NOTE: Make sure to use the tool as marked; to remove the bushing press using the side marked "OUT", as shown below in the picture.



TYPICAL

5. Use a soft sand paper to clean sliding sheave bushing mounting surface.



6. Clean sliding sheave bushing mounting surface with PULLEY FLANGE CLEANER (P/N 413 711 809).
7. Clean the circlip groove.

Drive Pulley Cleaning

NOTE: Parts must be at room temperature before cleaning.

Clean pulley sheaves and shaft with fine steel wool and dry cloth.

Using a paper towel with PULLEY FLANGE CLEANER (P/N 413 711 809), clean the following components.

- Crankshaft tapered end
- Taper inside fixed sheave of drive pulley
- Crankshaft threads
- Retaining screw threads.

NOTICE Avoid contact between cleaner and crankshaft seal because damage may occur.

Remove all hardened oil deposits that are baked on crankshaft and pulley tapered surfaces with 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 cleaning solvent.

Wipe off the mounting surfaces with a clean, dry paper towel.

NOTICE Mounting surfaces must be free of any oil, cleaner or towel residue.

Drive Pulley Inspection

NOTE: During inspection, replace any component if found defective or out of specifications.

Fixed Sheave and Governor Cup Inspection

Inspect fixed sheave for marks or scratches.

600 HO E-TEC

Inspect fixed sheave and governor cup splines.

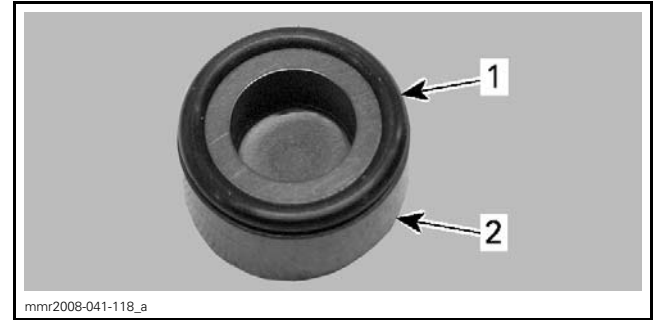
Check free-play between governor cup and fixed sheave.

NOTE: Maximum free play is measured at calibration screw radius.

MAXIMUM FREE PLAY	
Between fixed sheave and governor cup splines	0.5 mm (.02 in)

Slider Shoe Inspection

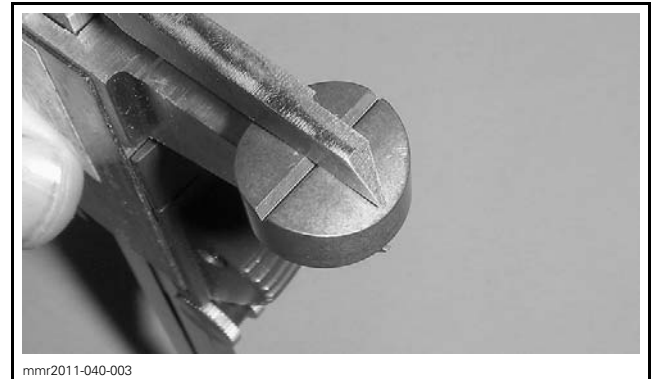
Check if slider shoe O-rings are cracked, cut or crushed.



1. O-ring
2. Slider shoe

Measure the thickness of slider shoes. Take measurement at the center of slider shoe, perpendicularly with the groove.

SLIDER SHOE THICKNESS	
MODELS	SERVICE LIMIT
600 HO E-TEC	7.45 mm (19/64 in)
800R E-TEC	7.95 mm (5/16 in)

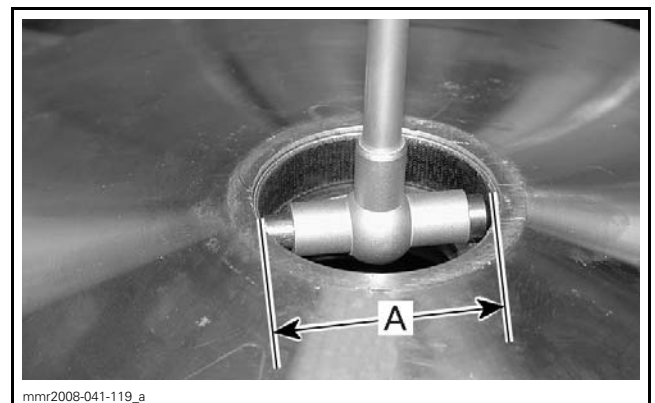


Sliding Sheave Inspection

Inspect pulley sheave for marks or scratches.

Visually inspect coating of bushings.

Using a bore gauge, measure the inner diameter of sliding sheave bushing.



A. Inner diameter of sliding sheave bushing

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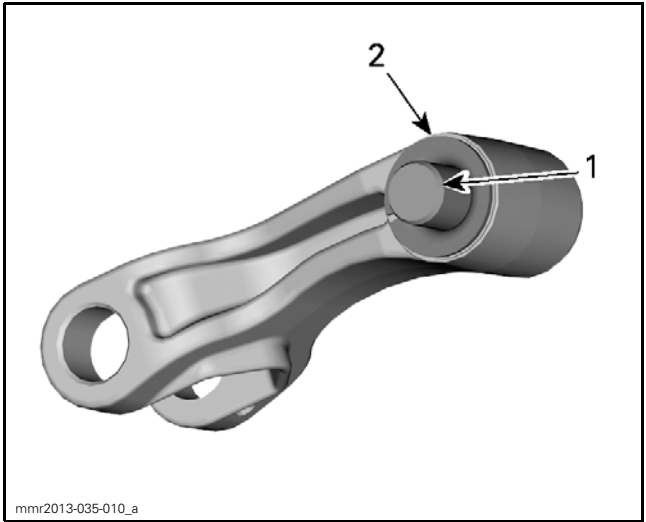
MEASURING POINT	
At least 5 mm (1/4 in) from bushing edge	
SLIDING SHEAVE BUSHING	SERVICE LIMIT
Inner diameter	40.3 mm (1.587 in)

Lever, Roller and Pin Inspection

Check levers for cracks, distortion or other damages.

Check lever pivot for wear.

Check lever flanged bushing for wear.



- 1. Lever pivot
- 2. Lever flanged bushing

Check rollers for roundness of external diameter.

Check thrust washers for thickness wear.

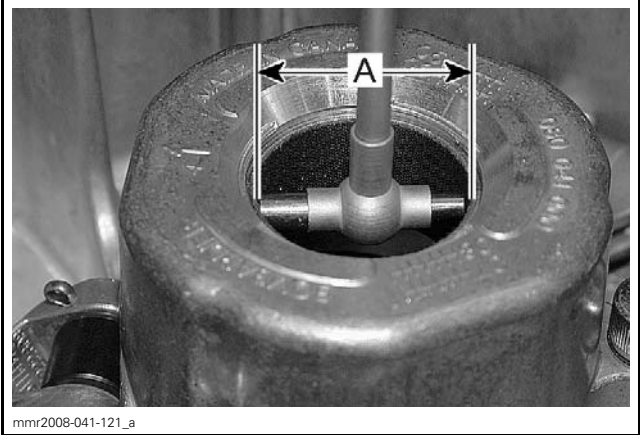
Check roller pins for wear.

Spring Cover Inspection

Check spring cover for cracks or wear.

Visually inspect the coating of spring cover bushing for wear.

Using a bore gauge, measure the inner diameter of spring cover bushing.



A. Inner diameter of spring cover bushing

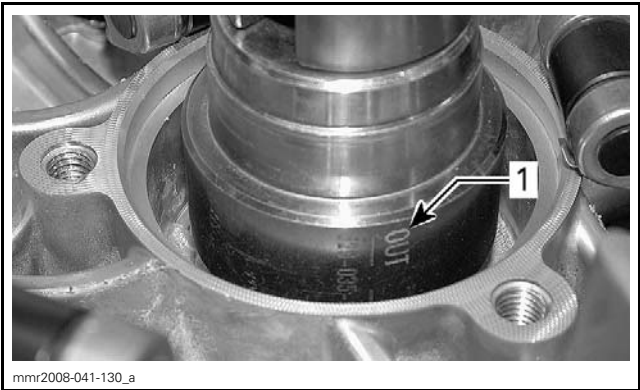
MEASURING POINT	
At least 5 mm (1/4 in) from bushing edge	
SPRING COVER BUSHING	SERVICE LIMIT
Inner diameter	30.4 mm (1.197 in)

Replace the spring cover if the inner diameter of bushing is out of specification.

Drive Pulley Assembly

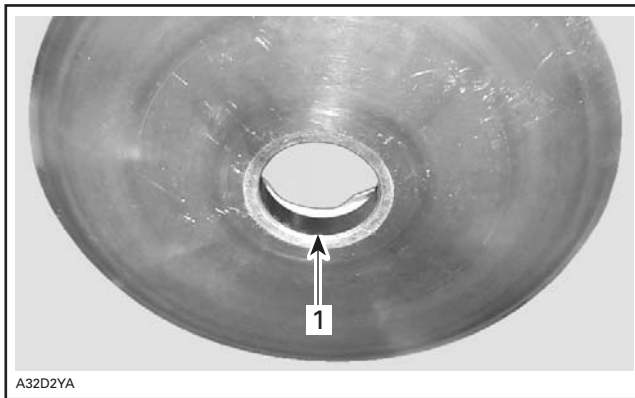
Sliding Sheave Bushing Installation

1. Secure the PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 012) in a vice and mount the sliding sheave.
2. Apply LOCTITE 680 (P/N 293 800 118) on the outside of **NEW** bushing face.
3. Insert the bushing from inner side of sliding sheave.
4. Mount the BUSHING REMOVER/INSTALLER (P/N 529 035 931) with side marked "IN" to press in a new bushing.



1. Mark "OUT" toward outside

NOTE: Make sure that the bushing is well seated on the sliding sheave.



1. Bushing

5. Install the circlip.



1. Circlip

NOTICE Make sure that the circlip is properly position in its groove.

Ring Gear Installation

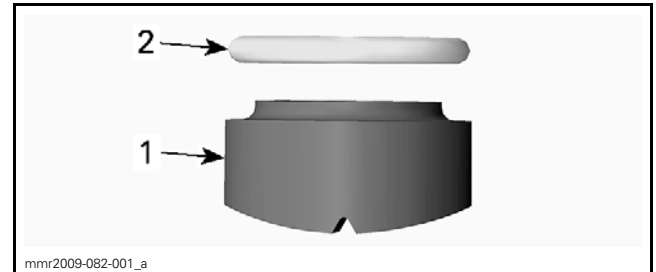
Clean ring gear and the inner threads of fixed sheave.

Install **NEW** ring gear screws and torque them in accordance with the following chart.

RING GEAR SCREW TORQUE	
600HO E-TEC	27 N•m (20 lbf•ft)
800R E-TEC	52 N•m (38 lbf•ft)

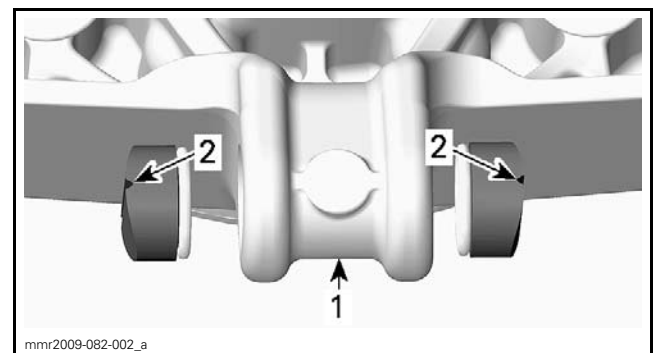
Sliding Sheave, Slider Shoes and Governor Cup Installation

1. Install an O-ring on each slider shoes.



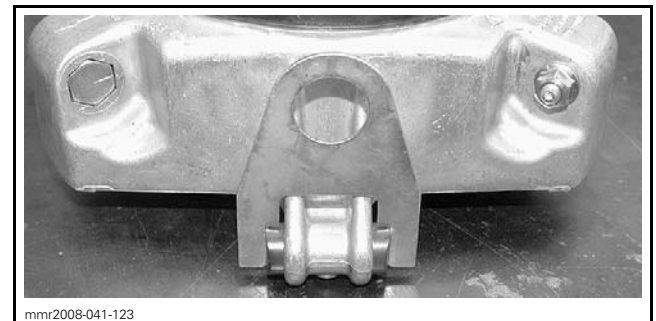
1. Slider shoe
2. O-ring

2. Insert slider shoes into governor cup so that groove in each slider shoe is vertical to properly slide in guides.



1. Governor cup
2. Slider shoe grooves

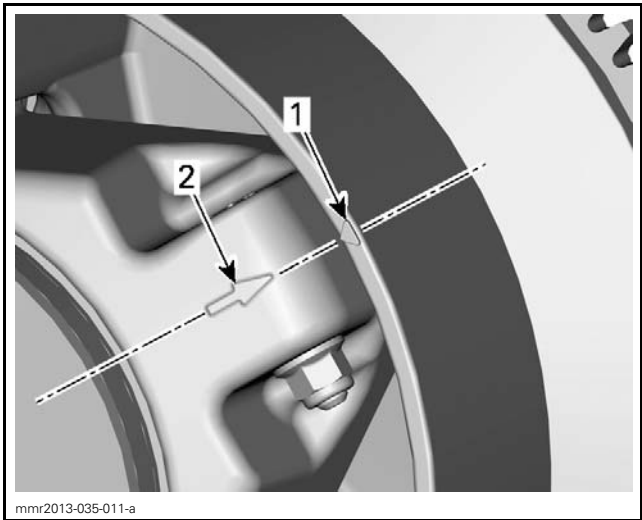
3. Install a SLIDER SHOE FORK (P/N 529 005 500) into slider shoe grooves to maintain them for governor cup installation. Proceed on 3 set of slider shoes.



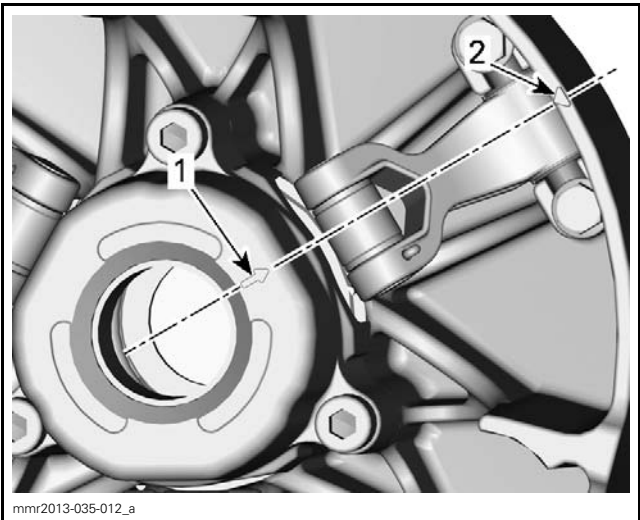
4. Index governor cup with sliding sheave by aligning index marks.

NOTE: Disregard any paint markings.

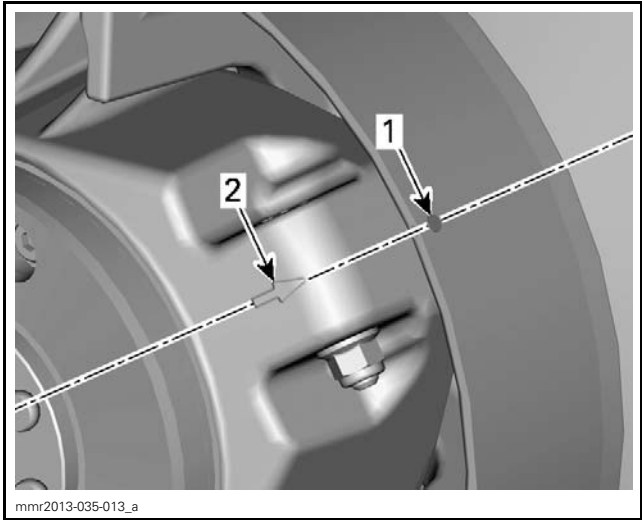
Subsection XX (DRIVE PULLEY)



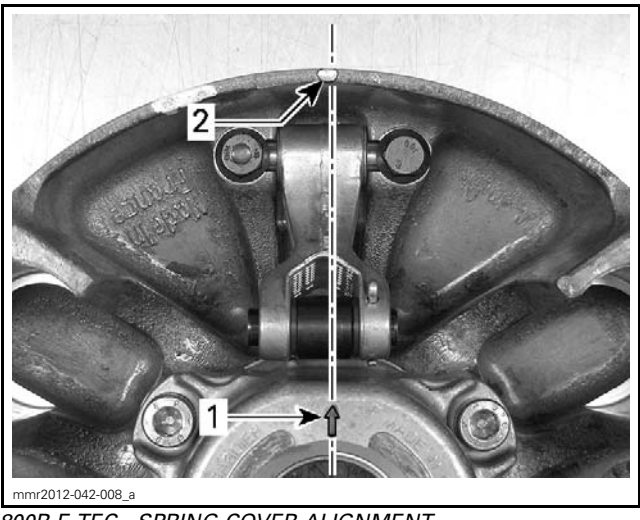
600 HO E-TEC - SLIDING SHEAVE/GOVERNOR CUP ALIGNMENT
1. Sliding sheave index mark (EMBOSSEMENT)
2. Governor cup index mark (ARROW)



600 HO E-TEC - SPRING COVER ALIGNMENT
1. Spring cover index mark (ARROW)
2. Sliding sheave index mark (EMBOSSEMENT)



800R E-TEC - SLIDING SHEAVE/GOVERNOR CUP ALIGNMENT
1. Sliding sheave index mark (4 mm (5/32 in) CIRCLE)
2. Governor cup index mark (ARROW)



800R E-TEC - SPRING COVER ALIGNMENT
1. Spring cover index mark (ARROW)
2. Sliding sheave index mark (NOTCH)

All Engines

- 5. Carefully slide governor cup into sliding sheave.
- 6. Remove forks and fully insert governor cup.

Spring Cover Installation

- 1. Install spring cover using the following tool.

REQUIRED TOOL	
PULLEY SPRING COMPRESSOR TOOL (P/N 529 036 012)	

- 2. Index spring cover with sliding sheave by aligning index marks.

NOTE: Disregard any paint markings.

- 3. Tighten spring cover screws to specification.

TIGHTENING TORQUE	
Spring cover screws	25 N•m (18 lbf•ft)

Lever, Roller and Pin Installation

Always use the same type of pin as originally installed when servicing. Refer to *TECHNICAL SPECIFICATIONS*.



SOLID PIN



HOLLOW PIN

NOTE: Different types have different weights for calibration purpose. Refer to *HIGH ALTITUDE BULLETIN*.

While installing lever make sure that the curved sides of the levers are outwards as shown.

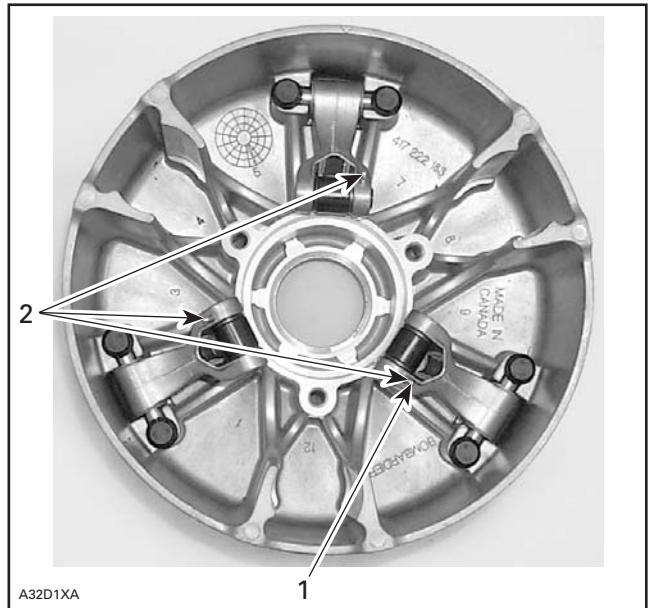


Always install lever assemblies so cotter pin heads are oriented on top when lever is set at the bottom of sliding sheave.

Bend cotter pin ends gently to sit perfectly against lever.

⚠ WARNING

Whenever replacing centrifugal levers, always replace all 3 at the same time. Otherwise, drive pulley unbalance will occur because of levers difference.



TYPICAL

1. Cotter pin head on top
2. All on the same side

Tighten lever screws to specification.

TIGHTENING TORQUE	
Lever screws	25 N•m (18 lbf•ft)

NOTICE Levers and rollers must move easily after installation.

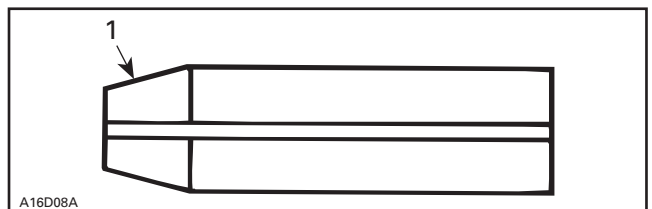
Hollow Threaded Pin Set Screw Installation

Apply LOCTITE 243 (BLUE) (P/N 293 800 060) on set screw.

Tighten the set screw completely inside the hollow threaded pin.

Ramp Installation

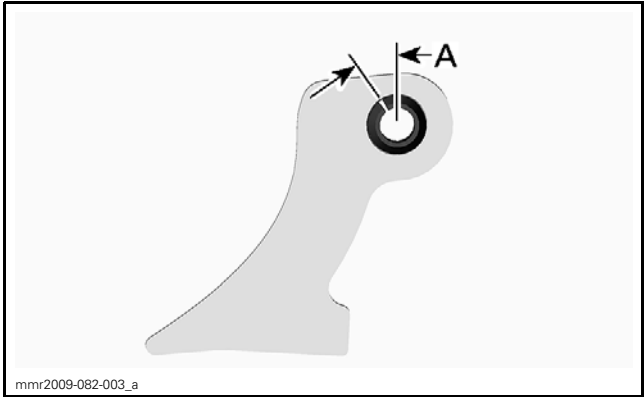
Insert dowel tube from chamfered side.



1. Chamfered side

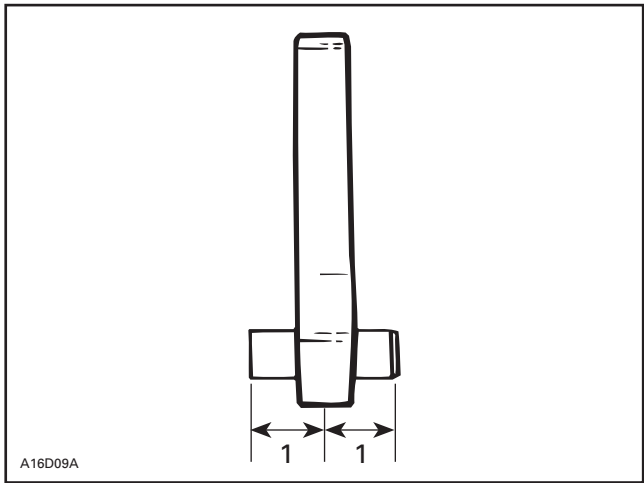
Position dowel tube split at the angle "A".

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MODEL	ANGLE "A"
All	45 ± 3°

Make sure ramp is centered on dowel tube.



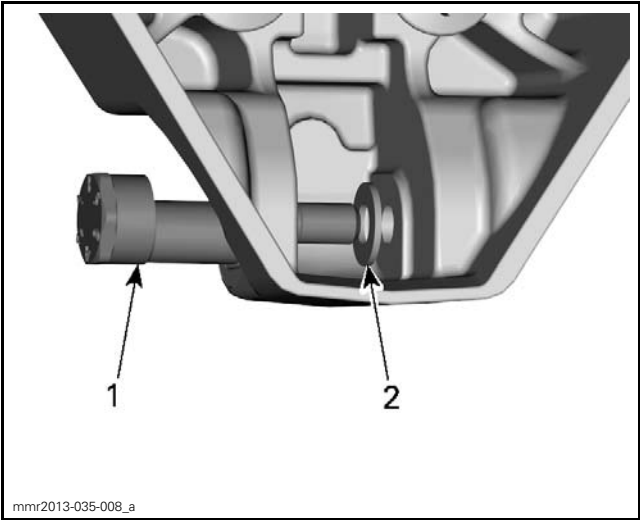
1. Equal distance

Tighten ramp screws to specification **12 N•m (106 lbf•in)**.

TIGHTENING TORQUE	
Ramp screws	12 N•m (106 lbf•in)

Calibration Screw Installation

When installing calibration screw, make sure to install washer as shown.



- 1. Washer
- 2. Calibration screw

NOTE: Refer to *DRIVE PULLEY ADJUSTMENT*, further in this section, to install the calibration screws in original setting.

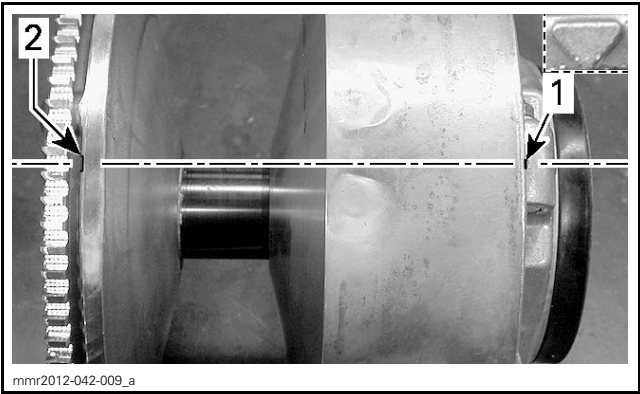
Tighten lock nut to specification.

TIGHTENING TORQUE	
Calibration screw lock nut	10 N•m (89 lbf•in)

Sliding Sheave and Fixed Sheave Assembly

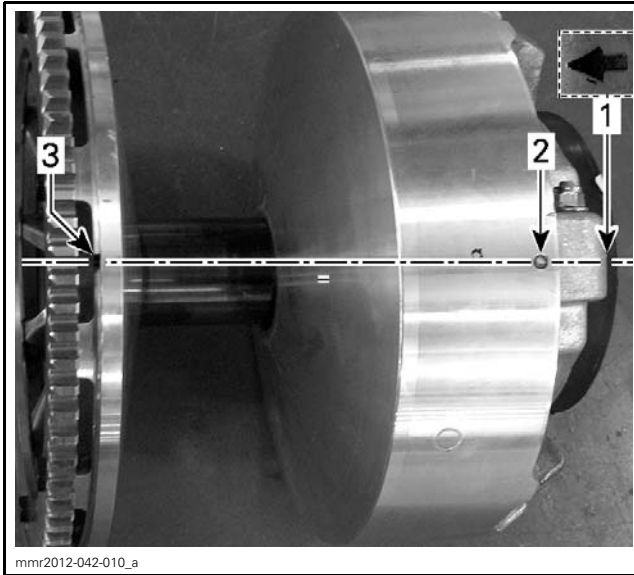
Index sliding sheave with fixed sheave by aligning index marks.

NOTE: Disregard any paint markings.



- 600 HO E-TEC - SLIDING SHEAVE/FIXED SHEAVE ALIGNMENT**
- 1. Sliding sheave index (EMBOSSMENT)
 - 2. Fixed sheave index (NOTCH)

Push sliding sheave until governor cup splines are engaged on fixed sheave splines.



800R E-TEC - SLIDING SHEAVE/FIXED SHEAVE ALIGNMENT

1. Governor cup index (ARROW)
2. Sliding sheave index (4 mm (5/32 in)) CIRCLE
3. Fixed sheave index (NOTCH)

Drive Pulley Installation

Clean mounting surfaces as described in *DRIVE PULLEY CLEANING* above.

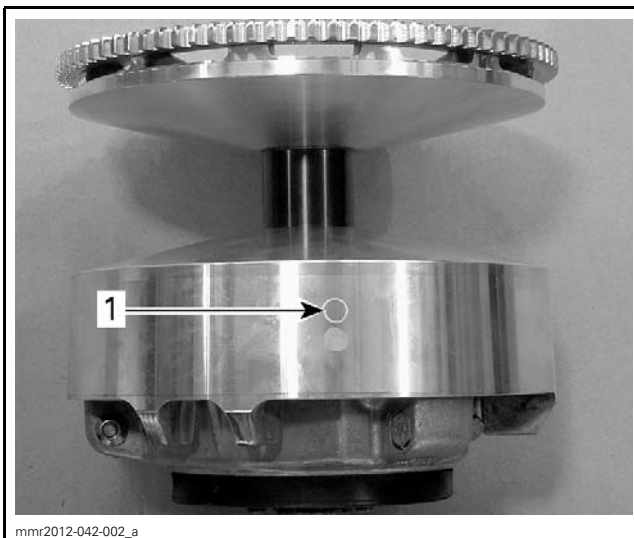
NOTICE Do not apply antiseize or any lubricant on crankshaft and drive pulley tapers.

Install drive pulley on crankshaft.

800R E-TEC Engine

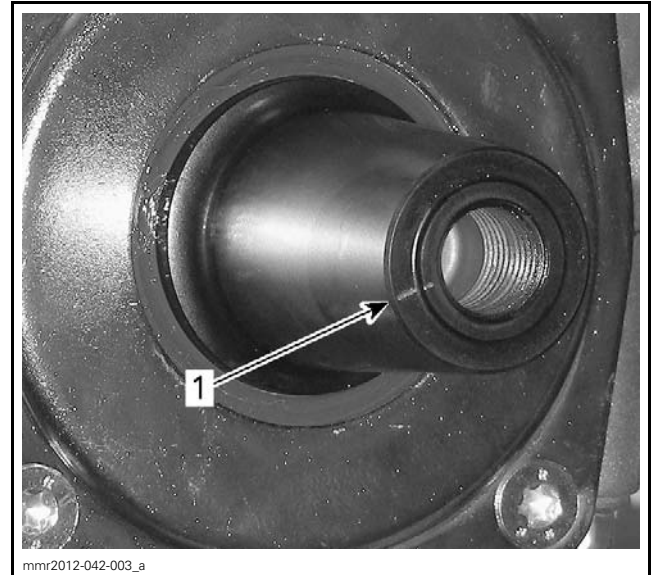
Install drive pulley on crankshaft by aligning index marks.

NOTE: Disregard any paint markings.



800R E-TEC MODELS ONLY

1. Drive pulley index mark (9 mm (11/32 in)) CIRCLE



800R E-TEC MODELS ONLY

1. Crankshaft index mark

All Models

Install a **NEW** conical spring washer with its concave side towards drive pulley then install drive pulley bolt.

Install the drive pulley bolt. Refer to the following table to use the proper bolt length.

ENGINE	DRIVE PULLEY BOLT LENGTH
600 HO E-TEC	152.5 mm (6.004 in)
800R E-TEC	153.5 mm (6.043 in)

NOTICE Always use BRP genuine parts for conical spring washer and bolt.

Use the DRIVE PULLEY HOLDER (P/N 529 035 674) to retain drive pulley. See removal procedure.

Torque drive pulley bolt.

DRIVE PULLEY FIRST TORQUE	
All engines	120 N•m (89 lbf•ft)

Before starting engine, perform drive pulley adjustment, see further in this section.

Install drive belt and guard.

Subsection XX (DRIVE PULLEY)

Raise the rear of the vehicle and support it with a mechanical stand.

WARNING

Ensure that the track is free of particles which could be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track. Ensure nobody is standing near the vehicle.

Accelerate the vehicle at low speed (maximum 32 km/h (20 MPH) and apply the brake, repeat 5 times.

Re-torque drive pulley bolt.

DRIVE PULLEY FINAL TORQUE	
All engines	120 N•m (89 lbf•ft)

⚠ WARNING

After 10 hours of operation the transmission system of the vehicle must be inspected to ensure drive pulley bolt is properly torqued.

Drive Pulley Adjustment

The drive pulley is factory calibrated to transmit maximum engine power at a predefined RPM. Factors such as ambient temperature, altitude or surface condition may vary this critical engine RPM thus affecting snowmobile efficiency.

This adjustable drive pulley allows setting maximum engine RPM in the vehicle to maintain maximum power.

Calibration screws should be adjusted so that actual maximum engine RPM in vehicle matches the maximum horsepower RPM given in *TECHNICAL SPECIFICATIONS*.

NOTE: The adjustment has an effect on high RPM only.

To adjust, modify ramp end position by turning calibration screws.

Governor cup has a notch while calibration screw head has 6 positions numbered 1 to 6.



GOVERNOR CUP

1. Notch



CALIBRATION SCREW HEAD

1. Position 1

See the following table for original setting.

CALIBRATION SCREW		
ENGINE	MODEL	POSITION
600 HO E-TEC	All models	3
800R E-TEC	MX Z	3
	RENEGADE	
		2
	Summit (EUR models)	
		1
	Summit (except EUR)	

Each number modifies maximum engine RPM by about 200 RPM.

Lower numbers decrease engine RPM in steps of 200 RPM and higher numbers increase it in steps of 200 RPM.

Example:

Calibration screw is set at position 3 and is changed to position 5. So maximum engine RPM is increased by about 400 RPM.

Subsection XX (DRIVE PULLEY)

To Adjust:

Just loosen locking nut enough to pull calibration screw **partially** out. Do not completely remove the locking nut.

NOTICE Do not completely remove calibration screw otherwise its inside washer will fall off.



1. Loosen just enough to permit rotating of calibration screw

Adjust to desired position.

NOTICE Always adjust all 3 calibration screws and make sure they are all set at the same number.

Torque locking nuts to 10 N•m (89 lbf•in).