GEARBOX

SERVICE TOOLS

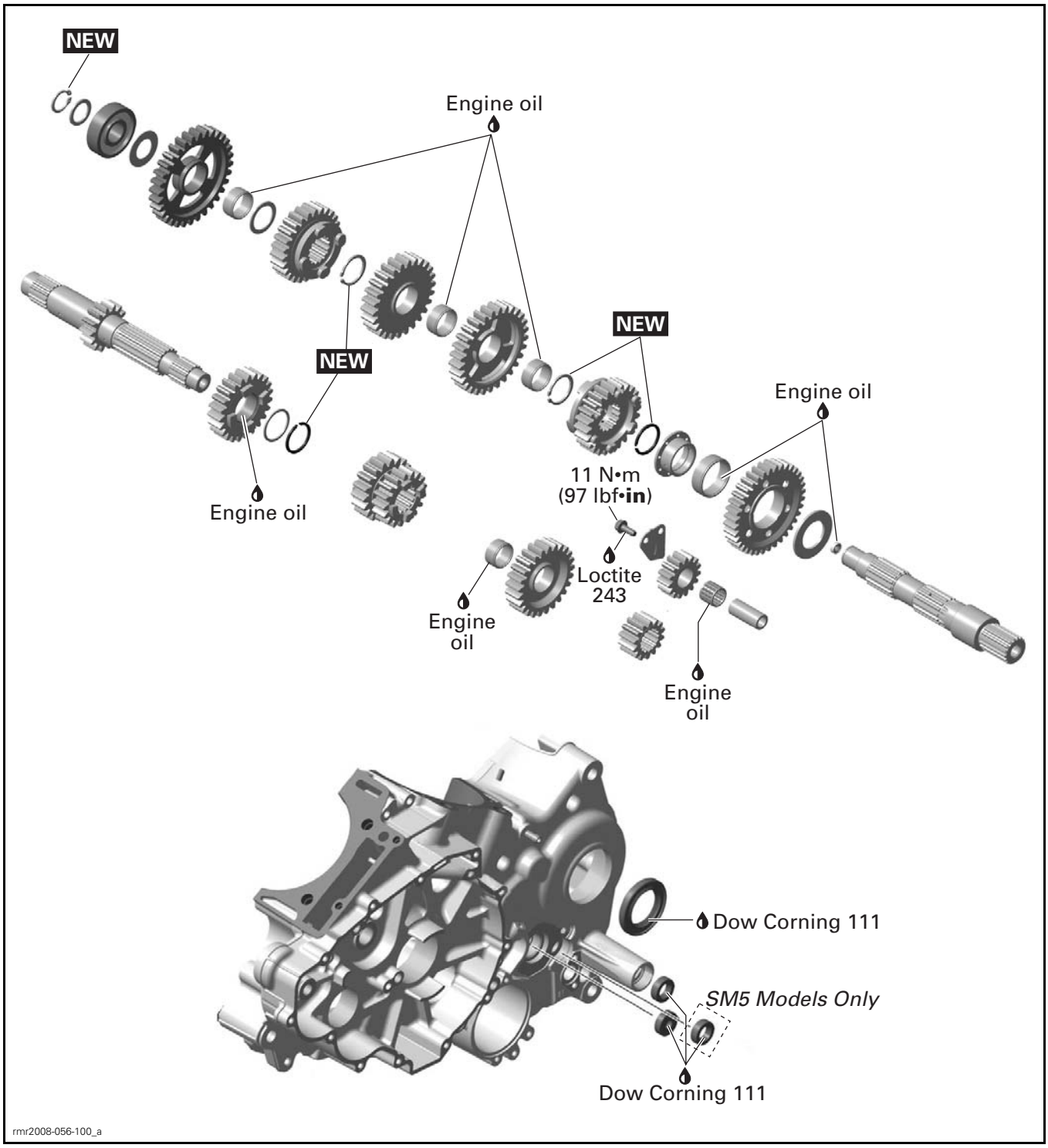
Description	Part Number	Page
CRANKCASE SEAL PUSHER	529 036 092	9
ECM ADAPTER TOOL	529 036 166	6
FLUKE 115 MULTIMETER	529 035 868	10
HANDLE	420 877 650	8–9
MAIN SHAFT PROTECTOR	529 036 123	8, 19
MAIN SHAFT SEAL INSTALLER	529 036 088	8
MAIN SHAFT SEAL PUSHER	529 036 124	9
OIL SEAL INSTALLER	529 036 070	8–9
PROTECTION SLEEVE	529 036 071	8–9

SERVICE TOOLS – OTHER SUPPLIER

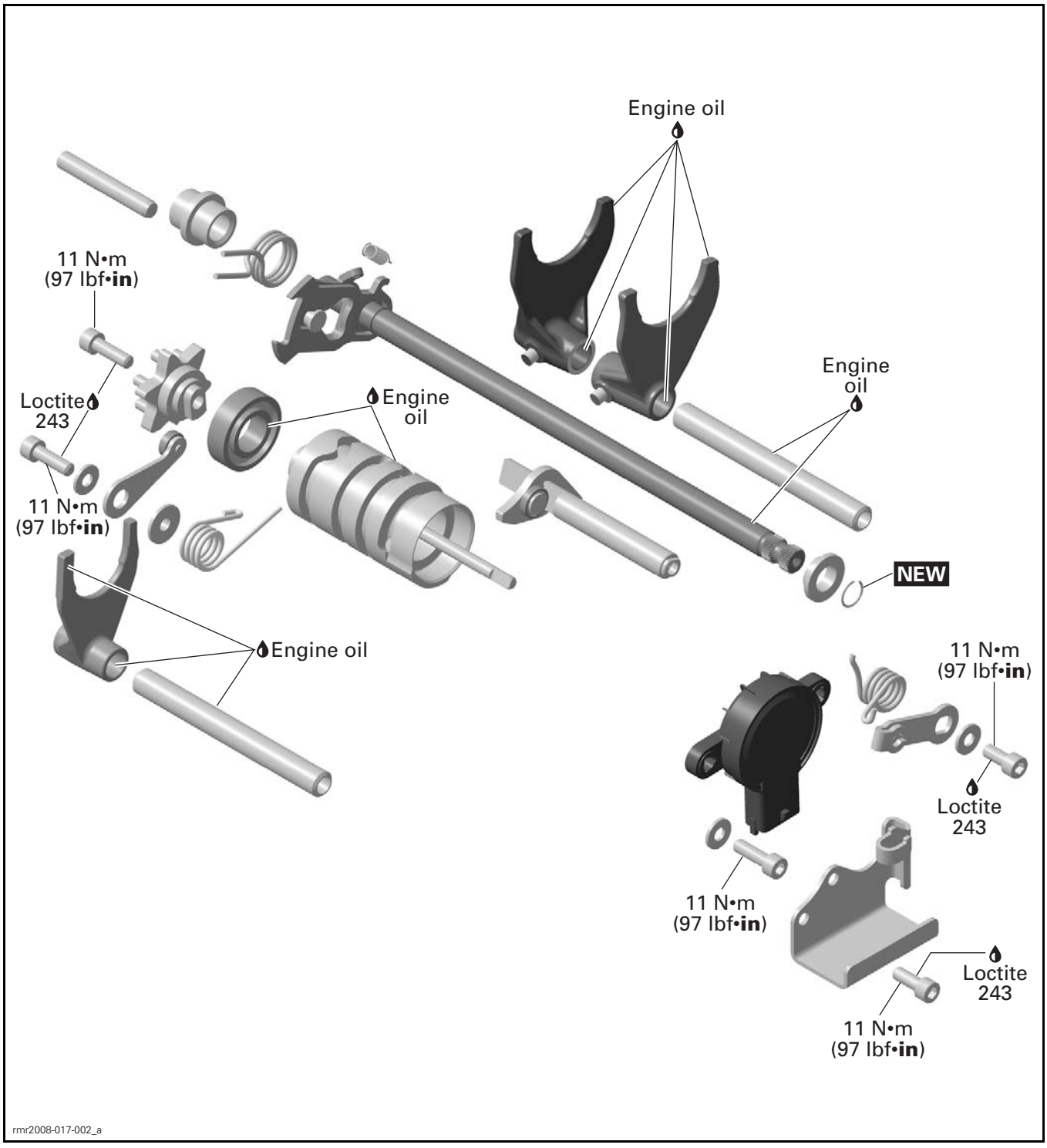
Description	Part Number	Page
SNAP-ON SNAP RING PLIERS	SRP3	14

SERVICE PRODUCTS

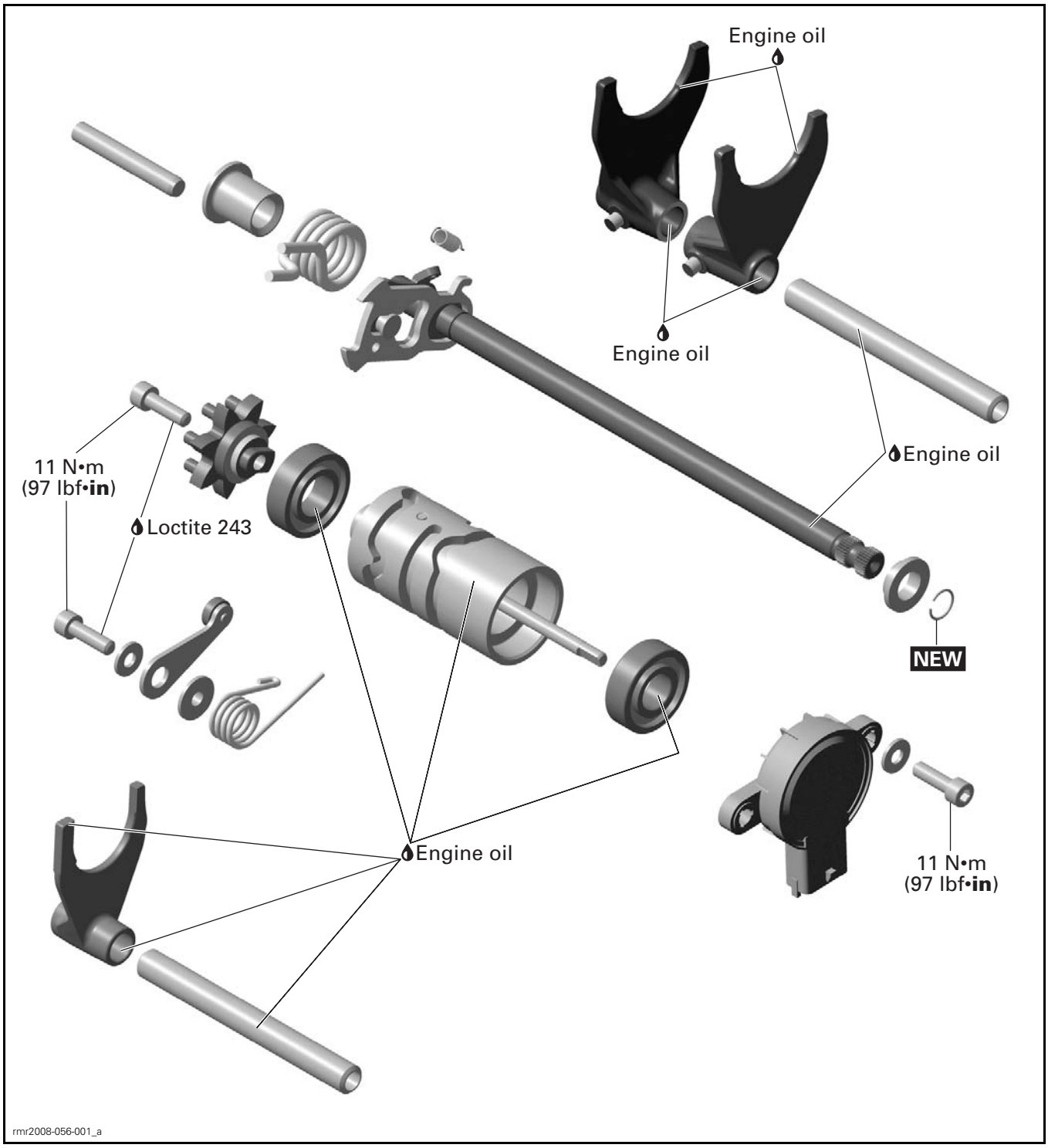
Description	Part Number	Page
DOW CORNING 111	413 707 000	8


NEW
Engine oil
NEW
NEW
Engine oil
Engine oil
11 N•m
(97 lbf•in)
Loctite
243
Engine
oil
Engine
oil
Dow Corning 111
SM5 Models Only
Dow Corning 111
rmr2008-056-100_a

SM5 Model


Engine oil
11 N•m
(97 lbf•**in**)
Loctite
243
Engine
oil
Engine
oil
11 N•m
(97 lbf•**in**)
NEW
Engine oil
11 N•m
(97 lbf•**in**)
Loctite
243
11 N•m
(97 lbf•**in**)
Loctite
243
11 N•m
(97 lbf•**in**)
rmr2008-017-002_a

SE5 Model


Engine oil
Engine oil
Engine oil
11 N•m
(97 lbf•in)
Loctite 243
NEW
Engine oil
11 N•m
(97 lbf•in)
rmr2008-056-001_a

GENERAL

NOTE: For a better understanding, the following illustrations are taken with engine out of vehicle. However, it is not always necessary to remove engine from vehicle to perform some instructions.

Always disconnect the BLACK (-) cable from the battery before working on the engine.

⚠ WARNING

Always disconnect BLACK (-) cable first and reconnect last.

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.

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

⚠ 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.

GEARBOX POSITION SENSOR (GBPS) RESET

When replacing the gearbox position sensor (GBPS), it is required to reset (re-zero) its values for proper operation.

NOTE: B.U.D.S. software is used to perform the reset.

PART REPLACED	WHAT TO DO
GBPS	Reset Closed Throttle and Gear Position Sensor in **Setting, ECM**

TROUBLESHOOTING

TROUBLESHOOTING GUIDELINES

Gearbox Does Not Shift Into Reverse

Check fuse F7 of the front fuse box.

Make sure the actuator cable is properly adjusted and aligned. Refer to *REVERSE ACTUATOR CABLE ADJUSTMENT* in this subsection.

Carry out a *REVERSE BUTTON TEST WITH B.U.D.S.* in this subsection.

PROCEDURES

REVERSE BUTTON TEST WITH B.U.D.S.

Connect vehicle to B.U.D.S.

Select the **TCM** tab in the **Monitoring** page. Look at the **Switch Inputs**.

If LED turns ON when the reverse button is pressed in, it indicates that the button sends the message.

- **On SM5 model**, carry out the *REVERSE ACTUATOR ACTIVATION WITH B.U.D.S.* in this subsection.
- **On SE5 model**, verify the shift system operation. Refer to *ELECTRONIC SHIFT SYSTEM (SE5)* and *HYDRAULIC CONTROL MODULE (SE5)* subsections.

If LED does not turn ON when reverse button is pressed in, check left multifunction switch (MSL), refer to *LIGHTS, GAUGE AND ACCESSORIES* subsection.

GEARBOX POSITION SENSOR (GBPS)

Gearbox Position Sensor Test

First, check fault codes in B.U.D.S. software.

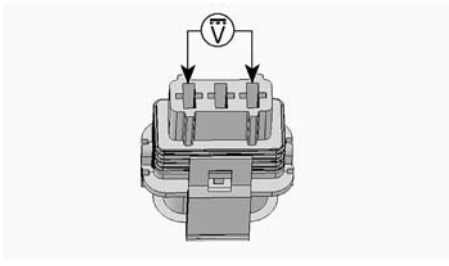
Before beginning the test, ensure vehicle is on NEUTRAL.

On left side, remove the bottom rear side panel and the rear side panel. Refer to *BODY* subsection.

Unplug the GBPS connector.

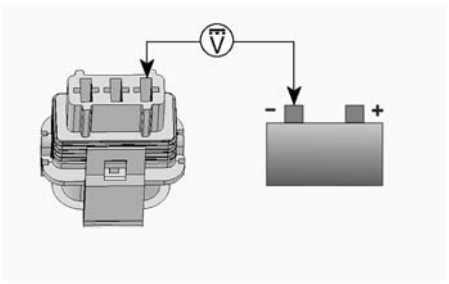
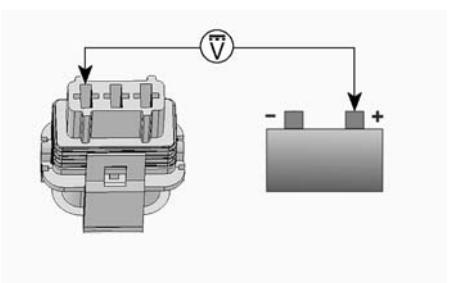
Before replacing the GBPS, check the following.

GBPS Input Voltage Test

MULTIMETER PROBE POSITIONS	VOLTAGE
GBPS connector (pin 1) and GBPS connector (pin 3)	5 volts
	

If voltage is adequate, check GBPS communication link (CAN).

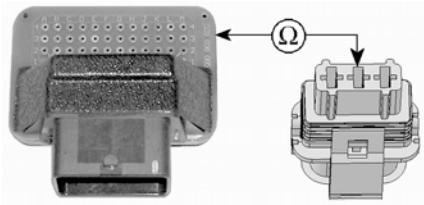
If there is no voltage, check each GBPS input as follows.

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.

GBPS Communication Link Continuity Test

Unplug "A" connector from ECM and connect it to the ECM ADAPTER TOOL (P/N 529 036 166).

MULTIMETER PROBE POSITIONS	RESISTANCE @ 20°C (68°F)
GBPS connector (pin 2) and ECM adapter tool on ECM A (pin C4)	Below 1 Ω
	

If resistance is out of specification, check wires and connector pins. Repair and reset fault codes.

If resistance is good, replace the GBPS and reset fault codes.

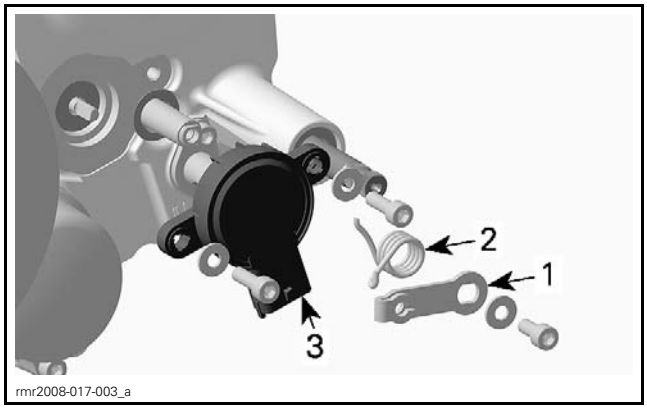
Gearbox Position Sensor Removal

Make sure that gearbox is in neutral position.

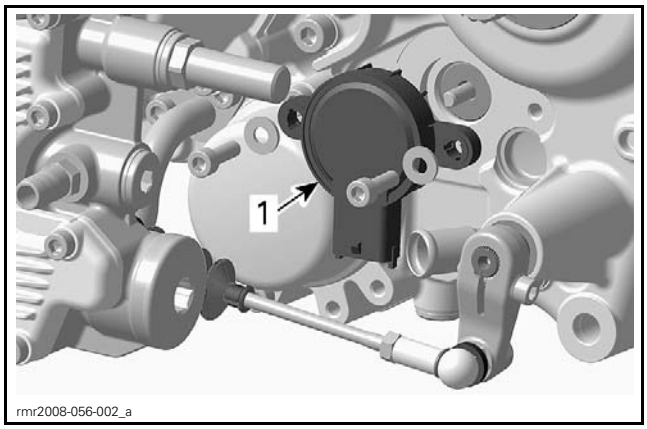
On **SM5 model**, remove the control lever and the control lever spring.

Remove GBPS screws.

Remove the GBPS.



SM5 MODEL
1. *Control lever*
2. *Control lever spring*
3. *Gearbox position sensor (GBPS)*

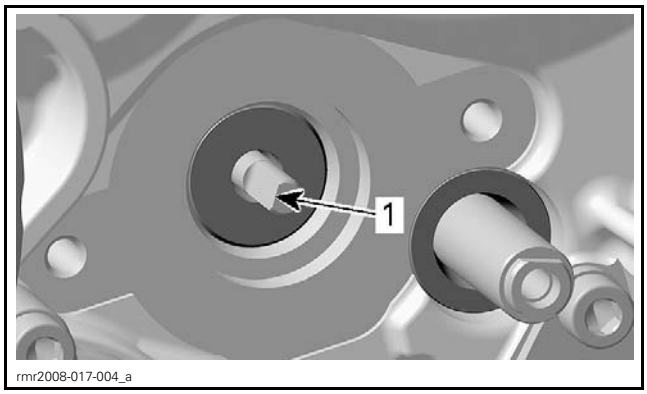


SE5 MODEL
1. *Gearbox position sensor (GBPS)*

Gearbox Position Sensor Installation

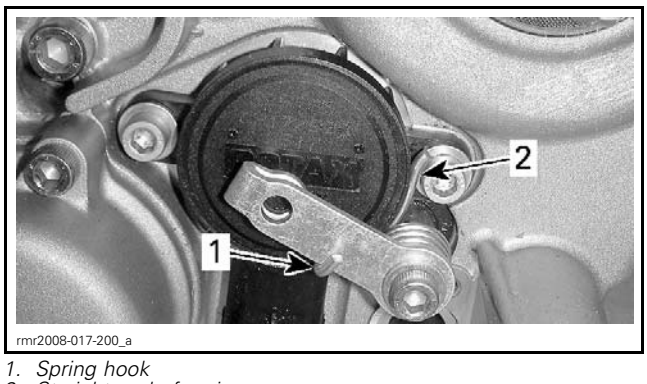
For installation reverse the removal procedure.

Align GBPS with the flat on the shift drum shaft.



TYPICAL
1. *Flat on shift drum shaft*

On **SM5 model**, install the control lever spring as shown in the next illustration.



1. *Spring hook*
2. *Straight end of spring*

After installation, refer to *CLOSED THROTTLE AND GEARBOX POSITION SENSOR RESET* in the *ELECTRONIC FUEL INJECTION (EFI)* subsection to perform the GBPS reset.

OIL SEALS

Oil Seals Removal

A small flat screwdriver can be used to remove these oil seals.

NOTICE **Avoid scoring surfaces when replacing oil seals.**

Main Shaft Oil Seal

To access this seal, remove the *FRONT SPROCKET*. See procedure in this subsection.

Gear Locking Shaft Oil Seal (SM5)

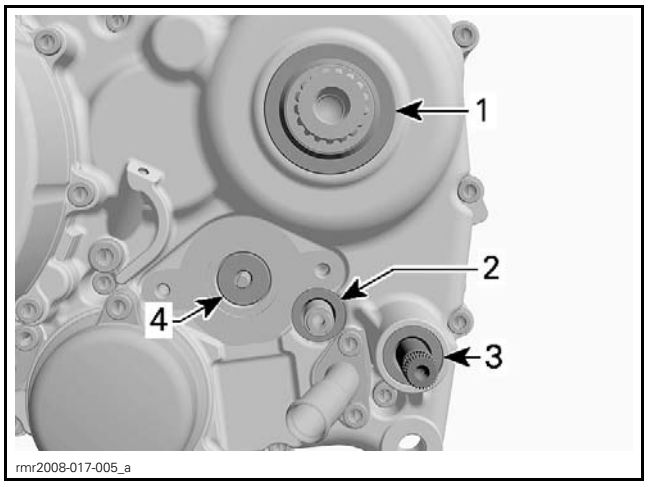
To access this seal, remove the *GEARBOX POSITION SENSOR*. See procedure in this subsection.

Shift Shaft Oil Seal

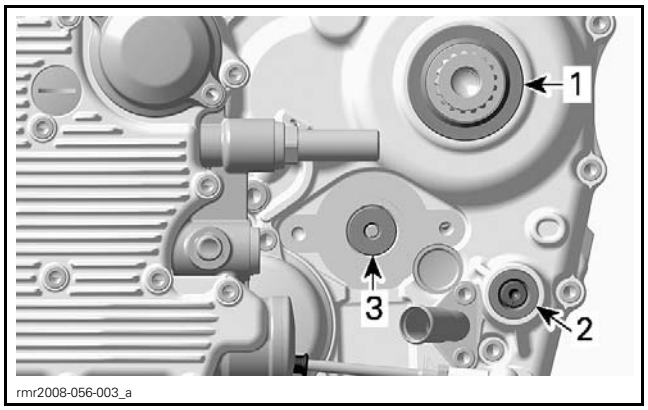
To access this seal, remove gearshift lever.

Shift Drum Shaft Oil Seal

To access this seal, remove gear position sensor the *GEARBOX POSITION SENSOR*. See procedure in this subsection.



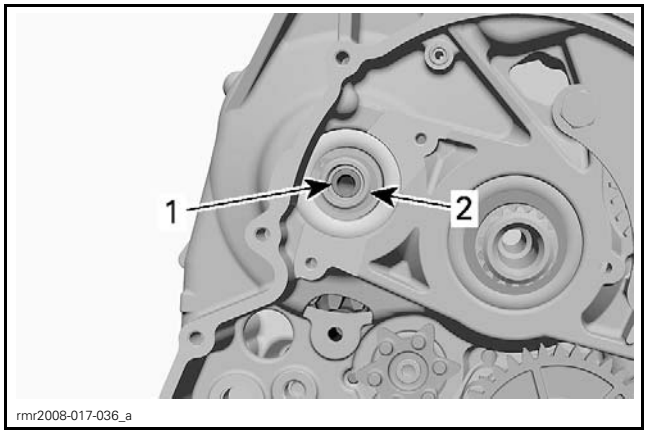
SM5 MODEL
1. *Main shaft oil seal*
2. *Gear locking shaft oil seal*
3. *Shift shaft oil seal*
4. *Shift drum shaft oil seal*



SE5 MODEL
1. *Main shaft oil seal*
2. *Shift shaft oil seal*
3. *Shift drum shaft oil seal*

Oil Duct Cover Oil Seal

To access this seal, remove the *OIL DUCT COVER* as in the *LUBRICATION SYSTEM* subsection.



1. *Oil seal, oil duct cover*
2. *Main shaft, clutch side*

Oil Seals Inspection

Replace oil seals if they are brittle, hard or damaged.

Check running surface of shafts for scratches. Replace if necessary, refer to *SHIFTING SYSTEM* or *GEARBOX* in this subsection.

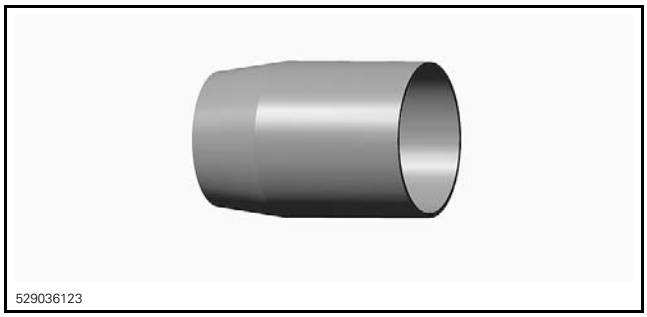
Oil Seals Installation

NOTICE **All oil seals must be installed with sealing lip towards gearbox.**

Apply DOW CORNING 111 (P/N 413 707 000) inside each seal.

Main Shaft Oil Seal

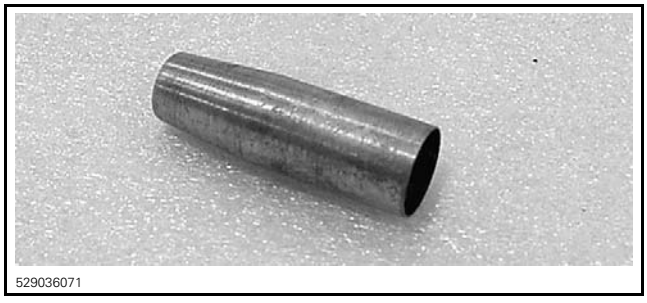
Put the MAIN SHAFT PROTECTOR (P/N 529 036 123) on main shaft and move oil seal on shaft.



Assemble the MAIN SHAFT SEAL INSTALLER (P/N 529 036 088) and the HANDLE (P/N 420 877 650) then use the assembly to push oil seal in place.

Gear Locking Shaft Oil Seal

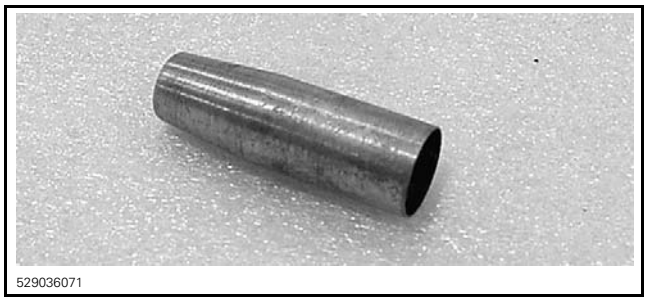
Put the PROTECTION SLEEVE (P/N 529 036 071) on gear locking shaft and move oil seal on shaft.



Then use the OIL SEAL INSTALLER (P/N 529 036 070) and push oil seal into place.

Shift Shaft Oil Seal

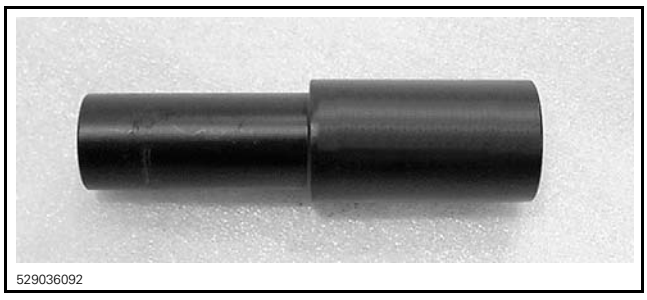
Put the PROTECTION SLEEVE (P/N 529 036 071) on gear locking shaft and move oil seal on shaft.



Then use the OIL SEAL INSTALLER (P/N 529 036 070) and push oil seal into place.

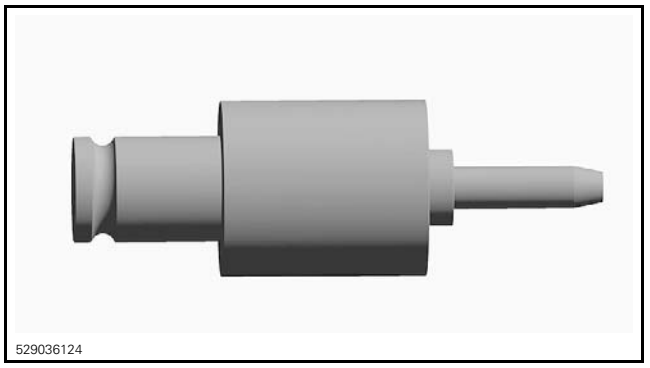
Shift Drum Shaft Oil Seal

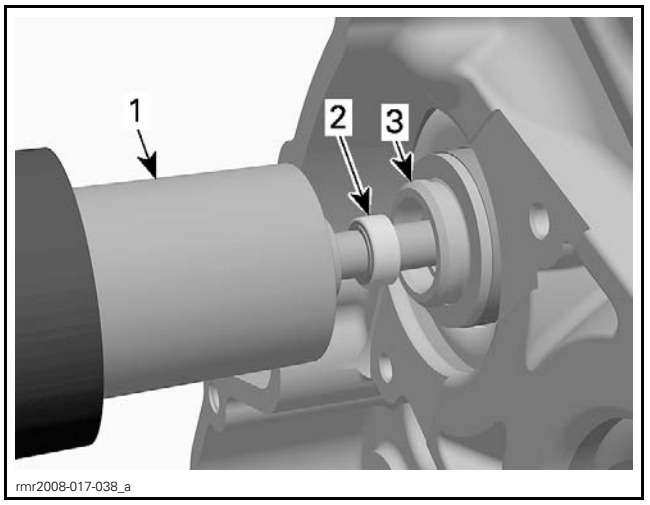
Put oil seal on shift drum shaft and use the CRANKCASE SEAL PUSHER (P/N 529 036 092) to push oil seal into place.



Oil Duct Cover Oil Seal

Use the MAIN SHAFT SEAL PUSHER (P/N 529 036 124) and the HANDLE (P/N 420 877 650) to push oil seal into main shaft.



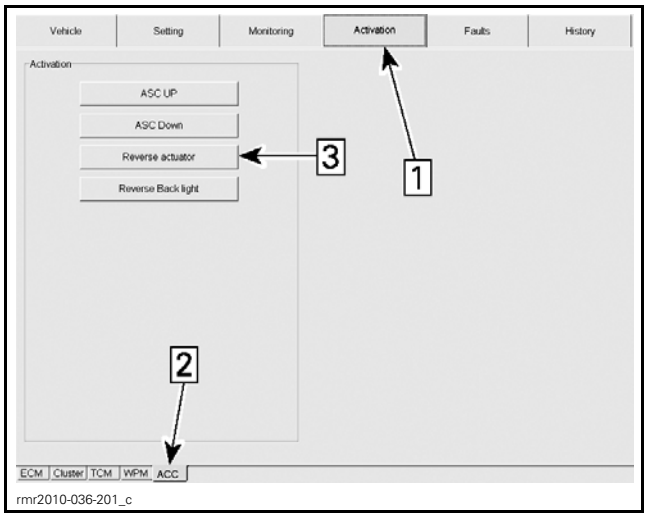


1. *Oil seal installer with handle*
2. *Oil seal*
3. *Main shaft*

REVERSE ACTUATOR (SM5 MODEL)

Reverse Actuator Activation with B.U.D.S..

1. On left side, remove the bottom rear side panel and the rear side panel. Refer to *BODY* subsection.
2. Connect vehicle to B.U.D.S..
3. Select the **Activation** and **ACC** tabs.
4. Keep an eye on the reverse actuator.
5. Click on the **Reverse actuator** button.



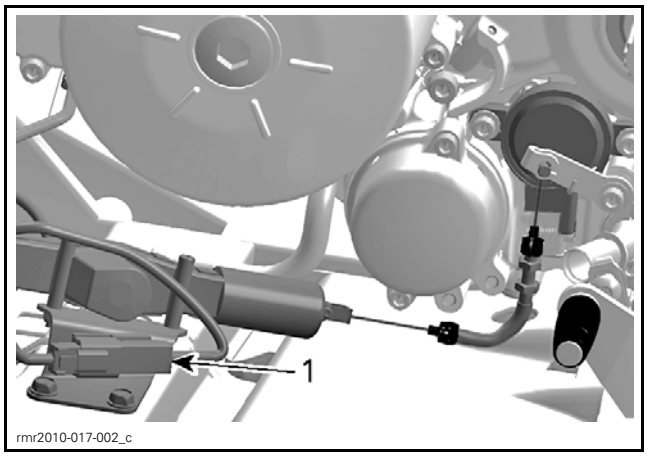
Step 1: **Activation** *tab*
Step 2: **ACC** *tab*
Step 3: **Reverse actuator** *button*

If actuator operates, check the lever, cable and bracket condition and make sure the cable is properly adjusted and aligned.

If actuator does not operate, carry out a *REVERSE ACTUATOR INPUT VOLTAGE TEST*.

Reverse Actuator Input Voltage Test

1. Make sure fuse F7 is good.
2. On left side, remove the bottom rear side panel and the rear side panel. Refer to *BODY* subsection.
3. Disconnect the reverse actuator connector.



1. Reverse actuator connector

4. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc.
5. Place the RED multimeter probe on pin 2 (OR/VI wire) of the actuator connector.
6. Pace the BLACK (COM) probe on a good ground.
7. Measure voltage.

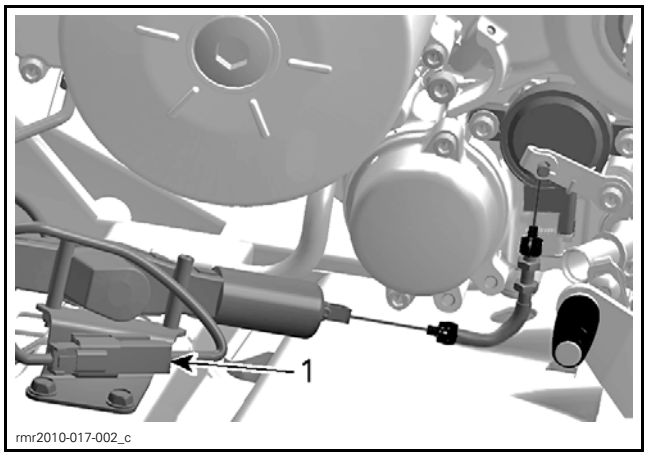
REVERSE ACTUATOR INPUT VOLTAGE TEST		
TEST PROBES		RESULT
Actuator connector pin 2	Ground	Battery voltage

If voltage is as specified, carry out a *REVERSE ACTUATOR CONTROL CIRCUIT TEST*.

If voltage is not as specified, look for an open circuit between fuse F7 and reverse actuator connector.

Reverse Actuator Control Circuit Test

1. On left side, remove the bottom rear side panel and the rear side panel. Refer to *BODY* subsection.
2. Disconnect the reverse actuator connector.



1. Reverse actuator connector

3. Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc.
4. Place the RED probe on a positive source such as the starter solenoid battery input.
5. Place the multimeter BLACK (COM) probe on pin 1 of the actuator connector.
6. Have an assistant:
   – Taking place on the vehicle.
   – Holding the clutch and selecting the first gear with the engine running.
   – Pressing the reverse button.
   selecting

NOTE: Vehicle must not be moving and engine speed must be below 1800 RPM.

7. Measure voltage while button is pressed.

NOTE: Once reverse button is pressed, the ground signal (control) will be held for 2 to 3 seconds wether the button is held or not. After a few attempts, it is normal for the system to shut down the reverse function for a few minutes.

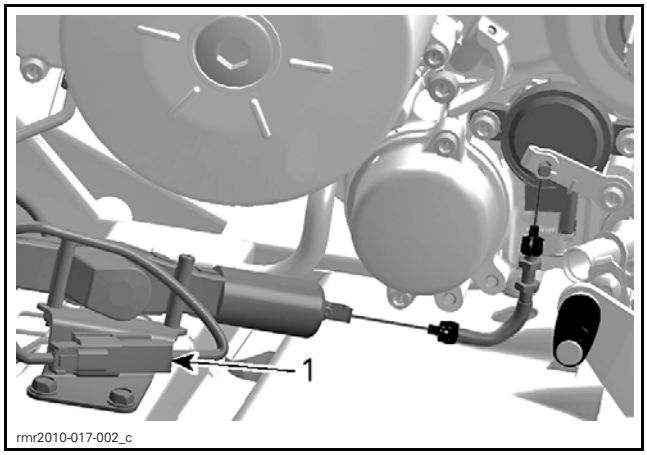
REVERSE ACTUATOR CONTROL CIRCUIT TEST		
TEST PROBES		RESULT (REVERSE BUTTON PRESSED)
Actuator connector pin 1	Positive source	Battery voltage

If voltage is as specified, try a new reverse actuator.

If voltage is not as specified, look for an open circuit between reverse actuator connector and cluster connector pin 3.

Reverse Actuator Replacement

1. On left side, remove the bottom rear side panel and the rear side panel. Refer to *BODY* subsection.
2. Disconnect the reverse actuator connector.



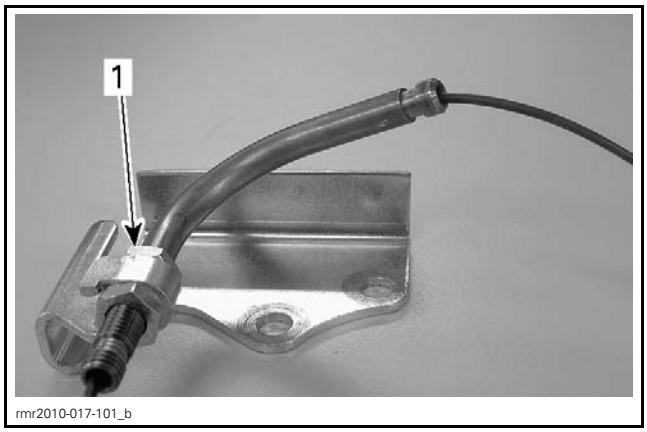
1. Reverse actuator connector

3. Remove reverse actuator mounting screws.
4. Remove cable guide bracket mounting screws.
5. Detach actuator cable from control lever.
6. Installation is the reverse of removal however, it is critical to carry out the *REVERSE ACTUATOR CABLE ADJUSTMENT*.

NOTE: Start adjustment procedure before installing the new actuator on the vehicle.

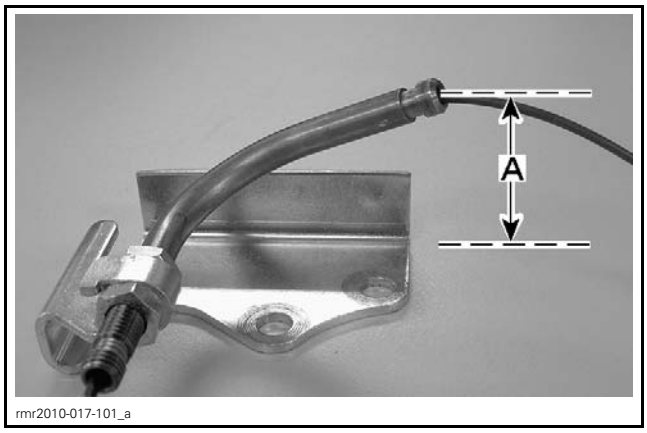
Reverse Actuator Cable Adjustment

1. Lay the cable guide bracket on a workbench and loosen the adjusting nuts.
2. Set the lower adjusting nut against the bottom of the cable guide threads.



1. Lower nut against bottom of threads.

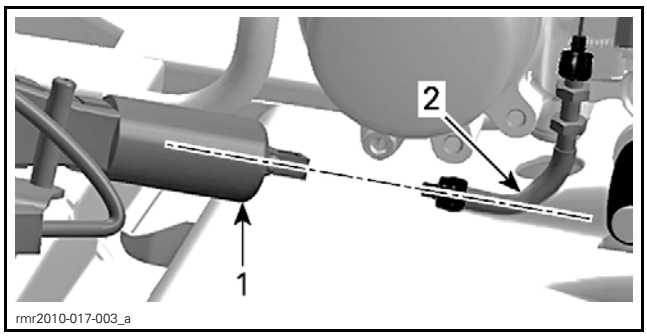
3. Set the distance between the workbench surface and the cable guide center line to 37 mm ± 1 mm (1.46 in ± .04 in) as shown, then tighten the upper adjustment screw.



A. 37 mm ± 1 mm (1.46 in ± .04 in)

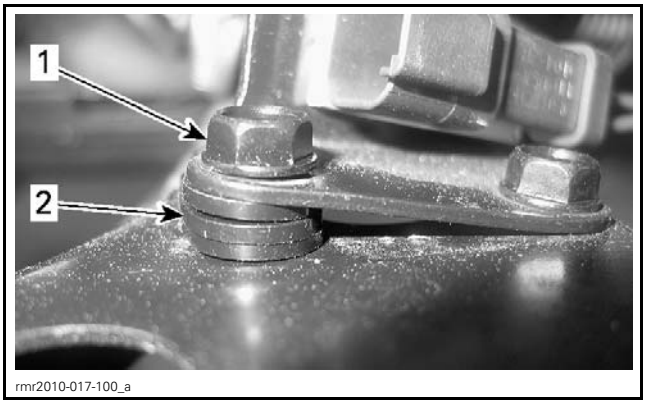
4. Install the cable guide bracket on the engine.
5. Position actuator on the frame member, then loosely thread the rear mounting bolt.

The actuator center axis must be in line with the cable guide vertically.



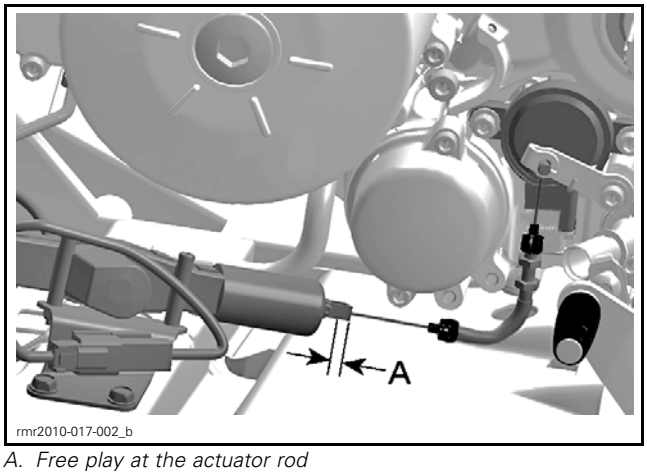
ACTUATOR AND CABLE GUIDE IN LINE
1. Actuator
2. Cable guide

6. Place enough shims (P/N 710 002 024) underneath the actuator mounting plate front hole to obtain alignment.
7. Once parts are aligned, thread the front mounting screw through the shims.



1. Front mounting screw
2. Shims

8. Tighten mounting screws.
9. Make sure that there is an axial free play of 2 mm (1/16 in) minimum at actuator rod.



A. Free play at the actuator rod

10. Validate that gearbox engages in reverse.

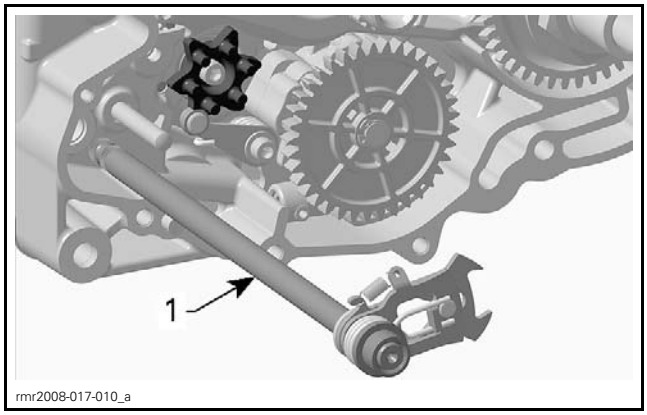
SHIFTING MECHANISM

Parts of the shifting mechanism can be replaced without removing the engine:
– Shift shaft
– Index lever
– Index shim
– Index spring.

Shifting Mechanism Removal

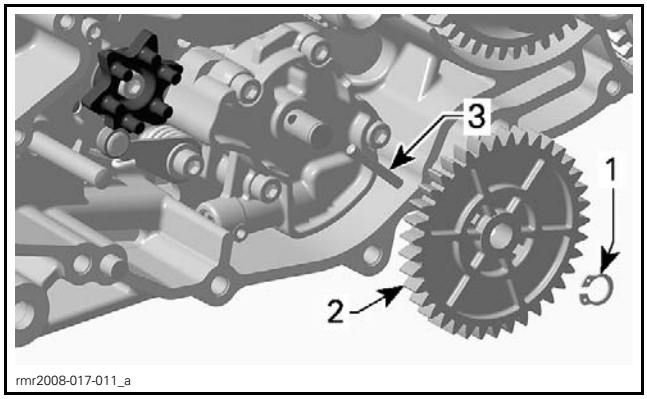
Remove clutch cover and clutch drum. Refer to the appropriate clutch subsection.

Pull out shift shaft assembly from crankcase.



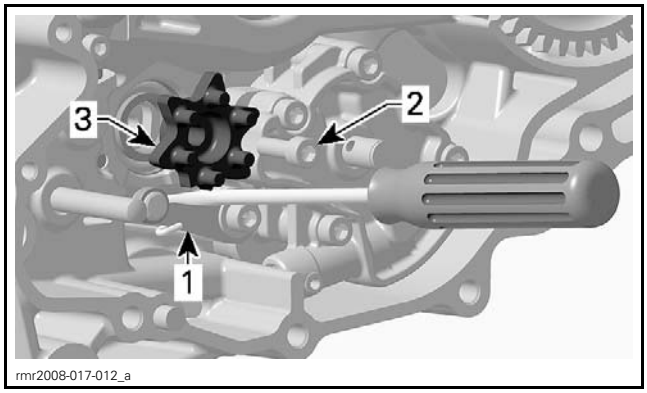
TYPICAL
1. Shift shaft assembly

Remove oil pump gear.



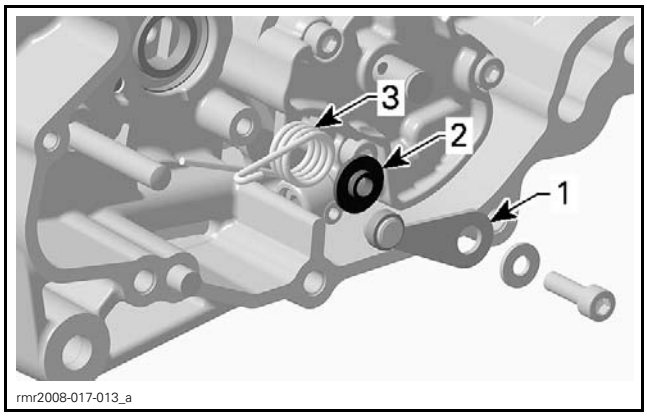
TYPICAL
1. Retaining ring
2. Oil pump gear
3. Needle pin

Use a flat screwdriver to turn index lever counterclockwise while removing index shim.



TYPICAL
1. Index lever
2. Screw
3. Index shim

Remove index lever and index spring.



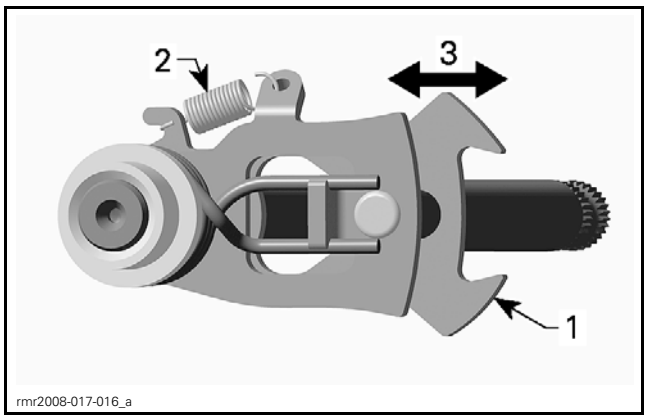
TYPICAL
1. *Index lever*
2. *Step ring*
3. *Index spring*

Shifting Mechanism Inspection

Shift Shaft

Check shift shaft for worn splines or other damages.

Check pawl and pawl spring for wear and proper operation.



TYPICAL
1. *Pawl*
2. *Spring*
3. *Check for free movement*

Index Lever

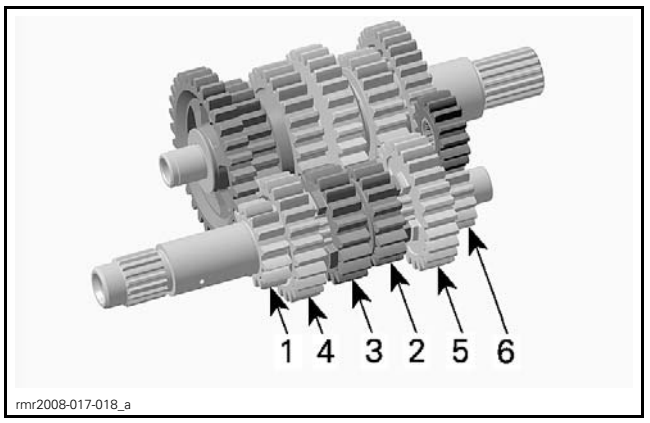
Roller of index lever must move freely. Replace as necessary.

Shifting Mechanism Installation

The Installation is the reverse of the removal procedure.

When installation of shifting mechanism is finished check if gears engage exactly and shifting system works properly.

GEARBOX



1. *1st speed*
2. *2nd speed*
3. *3rd speed*
4. *4th speed*
5. *5th speed*
6. *Reverse speed*

Gearbox Disassembly

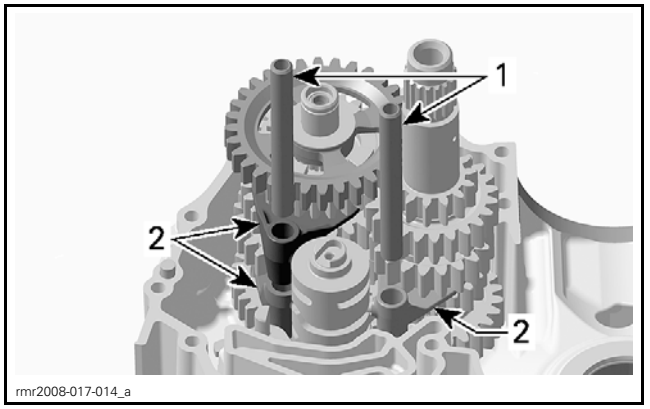
Remove engine from vehicle. Refer to *ENGINE REMOVAL AND INSTALLATION* subsection.

Remove *FRONT SPROCKET*. See procedure in this subsection.

Remove the *SHIFTING MECHANISM*. See procedure in this subsection.

Separate both crankcase housings. Refer to *CRANKCASE AND CRANKSHAFT* subsection.

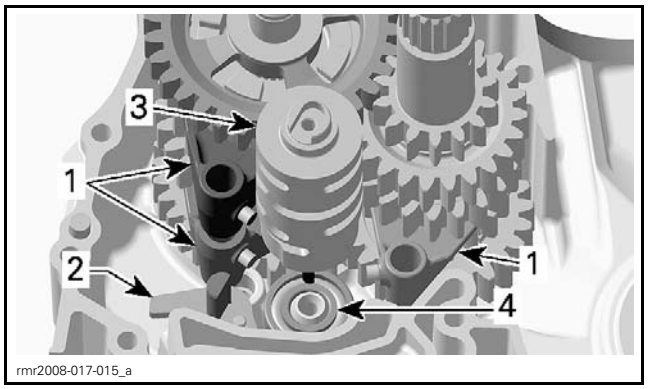
Remove both shift fork shafts from shift forks.



1. *Shift fork shafts*
2. *Shift forks*

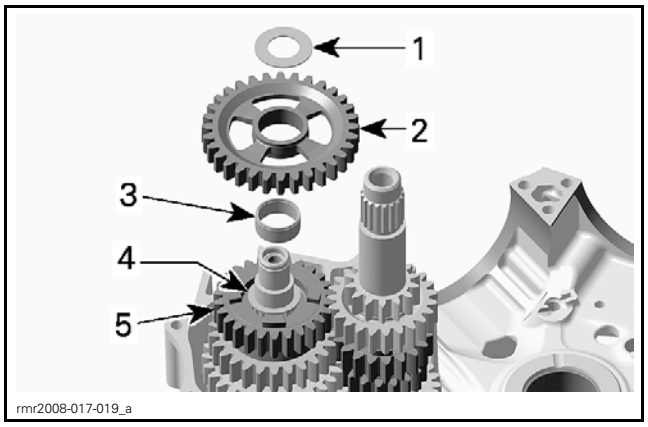
On **SM5 model**, disengage shift forks and gear locking shaft from shift drum.

Remove shift drum and bearing.



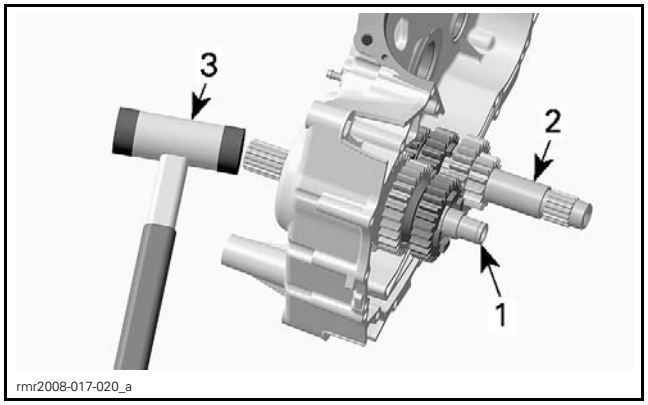
1. *Shift forks*
2. *Gear locking shaft (SM5 Model only)*
3. *Shift drum*
4. *Bearing*

Before removing the gearbox from crankcase withdraw the following separate parts from main shaft.



1. *Thrust washer*
2. *Free pinion (1st gear)*
3. *Needle bearing*
4. *Thrust washer*
5. *Shifting gear (4th gear)*

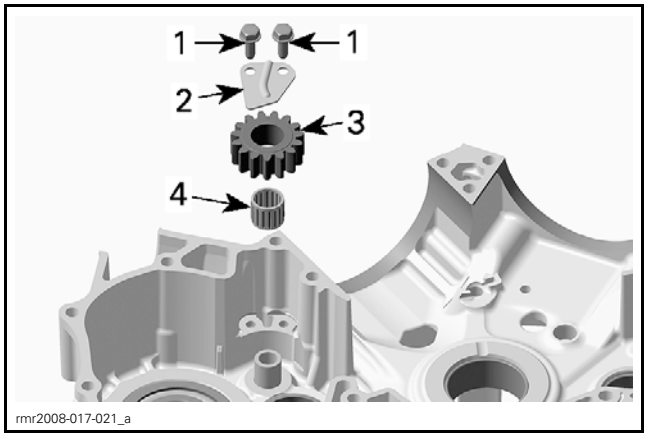
Using a soft hammer, tap main shaft to assist withdrawing main shaft assembly together with clutch shaft assembly.



1. *Main shaft assembly*
2. *Clutch shaft assembly*
3. *Soft hammer*

Reverse Intermediate Gear

Remove screws and retaining plate and withdraw intermediate gear and needle bearing.



1. *Screws*
2. *Retaining plate*
3. *Intermediate gear*
4. *Needle bearing*

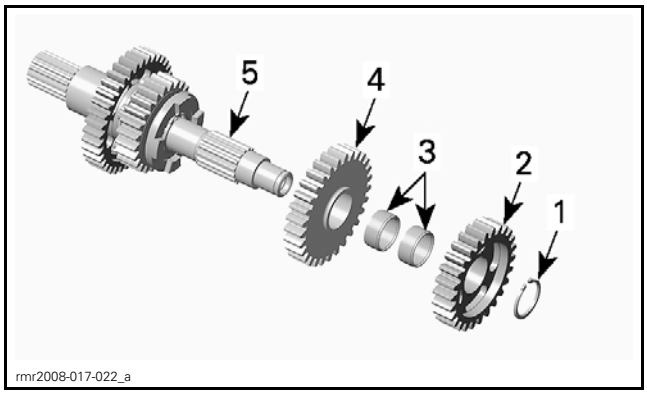
Ball Bearings

When gearbox is removed check gearbox ball bearings for contamination and/or metal shavings. Check if bearings turn freely and smoothly. Replace if necessary, refer to *CRANKCASE AND CRANKSHAFT*.

Main Shaft

Remove and discard the snap ring using special pliers as such the SNAP-ON SNAP RING PLIERS (P/N SRP3).

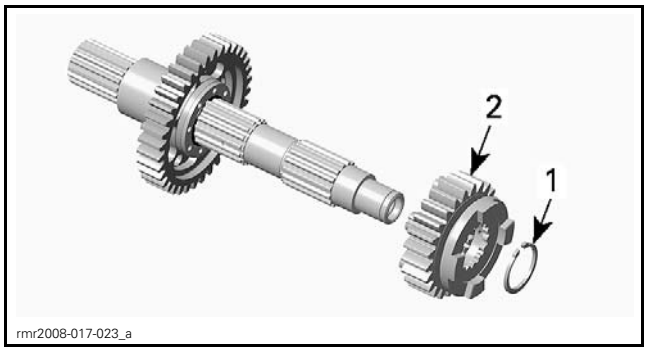
Remove free pinions and needle bearings.



1. *Snap ring*
2. *Free pinion (3rd gear)*
3. *Needle bearings*
4. *Free pinion (2nd gear)*
5. *Main shaft assembly*

Remove and discard snap ring retaining the shifting gear (5th gear).

Withdraw shifting gear.

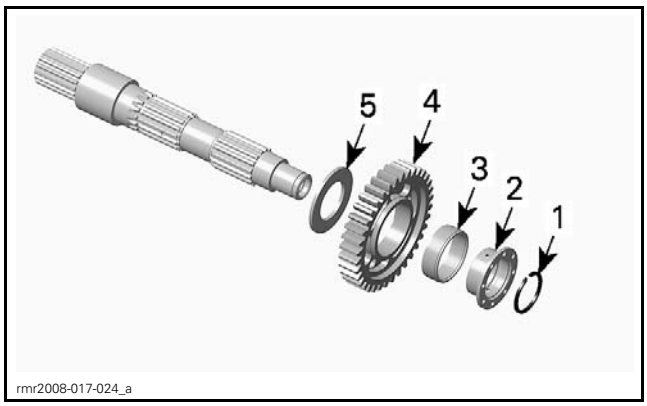


1. *Snap ring*
2. *Shifting gear (5th gear)*

Remove and discard snap ring securing the reverse gear.

Withdraw free pinion with needle bearing and bearing sleeve.

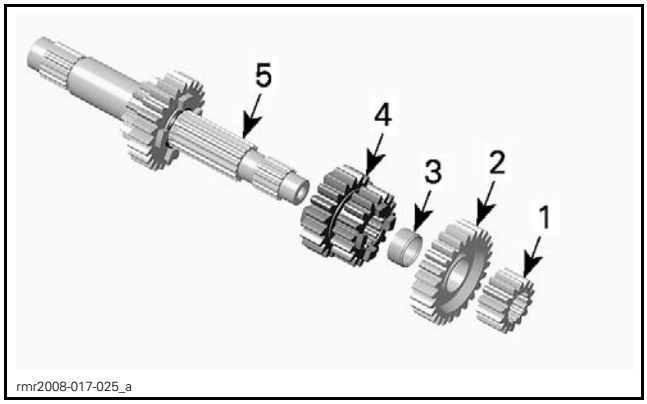
Then remove thrust washer.



1. *Snap ring*
2. *Bearing sleeve*
3. *Needle bearing*
4. *Free pinion (reverse gear)*
5. *Thrust washer*

Clutch Shaft

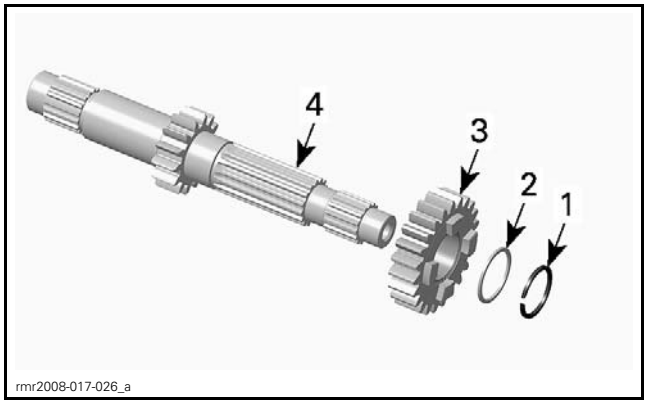
Remove fixed gear, free pinion, needle bearing and thrust washer and shifting gear from clutch shaft.



1. *Fixed gear (reverse gear)*
2. *Free pinion (5th gear)*
3. *Needle bearing*
4. *Shifting gear (2nd and 3rd gear)*
5. *Clutch shaft assembly*

Remove and discard snap ring the free pinion (4th gear).

Withdraw thrust washer and free pinion from clutch shaft.

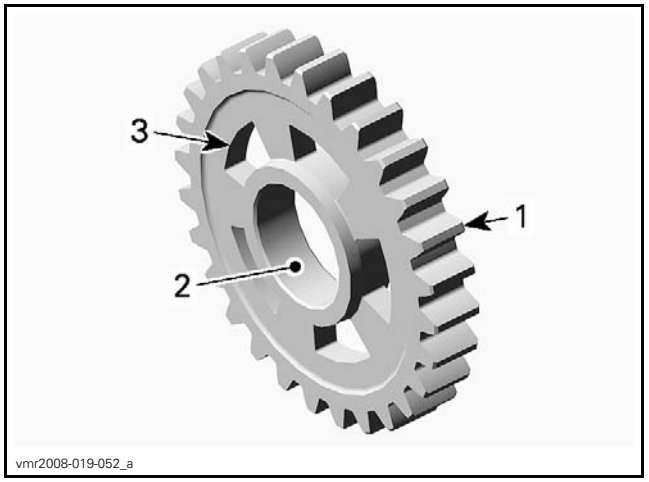


1. *Snap ring*
2. *Thrust washer*
3. *Free pinion (4th gear)*
4. *Clutch shaft (1st gear)*

Gearbox Inspection

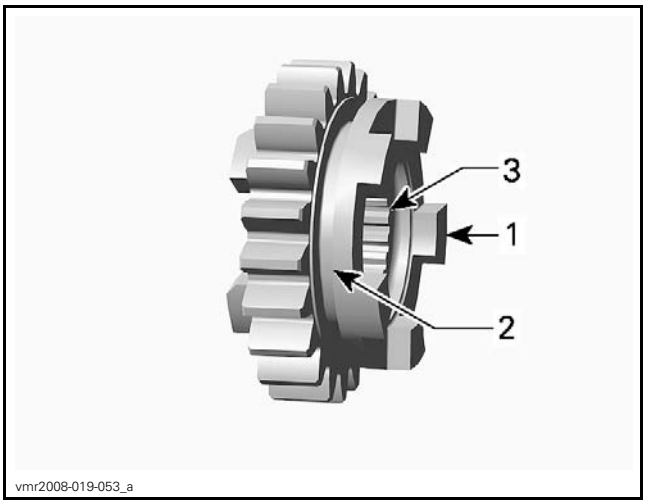
Always verify for the following when inspecting gearbox components:

- Gear teeth damage
- Worn or scored bearing surfaces
- Rounded engagement dogs and slots
- Worn shift fork engagement groove
- Worn tracks on shift drum
- Worn shift fork engagement pins
- Worn splines on shafts and gears
- Bent, worn or scored shift fork shafts
- Bent, worn or scored shift fork.



TYPICAL — FREE PINION

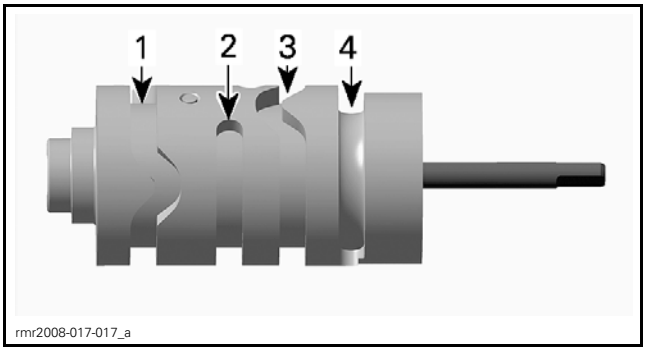
1. *Teeth*
2. *Bearing surface*
3. *Engagement slot*



TYPICAL — SHIFTING GEAR
1. *Engagement dog*
2. *Shift fork engagement groove*
3. *Inner splines*

Shift Drum

Check shift drum tracks for scouring or heavy wear, like rounded engagement slots.



1. *Track for 1st / 3rd gear shift fork*
2. *Track for 4th / 5th gear shift fork*
3. *Track for 2nd / Reverse gear shift fork*
4. *Track for gear locking shaft (SM5 model only)*

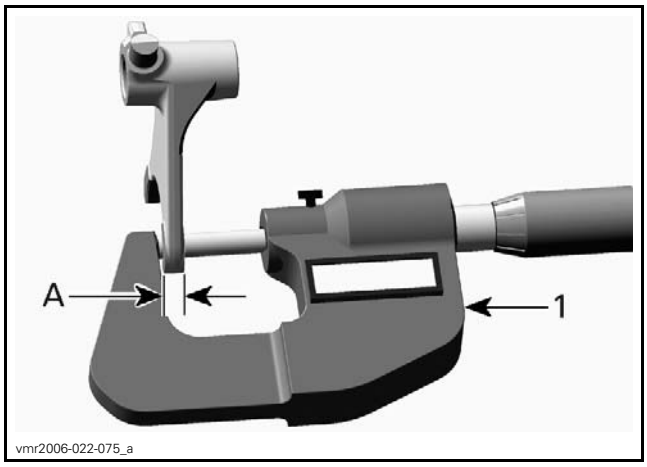
Gear Locking Shaft (SM5)

Roller of gear locking shaft must move freely. Replace as necessary.

Shift Fork

Check shift forks for visible damage, wear or bent shift fork claws.

Measure the shift fork claw thickness.

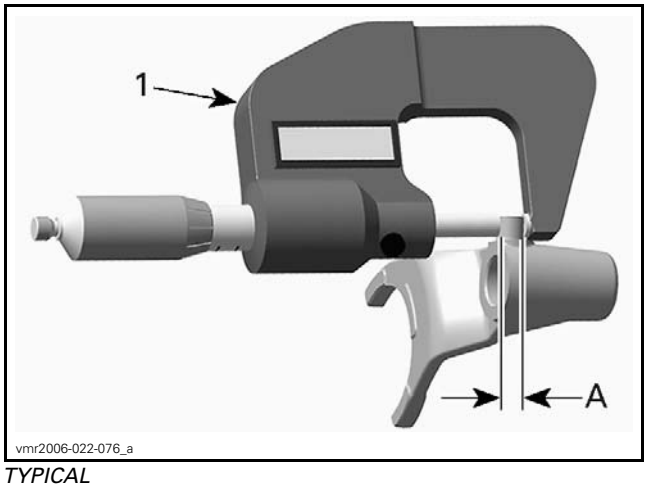


TYPICAL
1. *Micrometer*

A. Shift fork claw thickness

SHIFT FORK CLAW THICKNESS	
New	4.00 mm to 4.10 mm (.1575 in to .1614 in)
Service limit	3.90 mm (.1535 in)

Measure the shift fork engagement pin diameter.



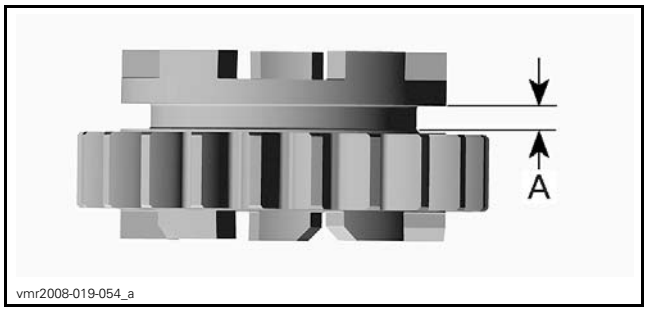
TYPICAL
1. *Micrometer*

A. Shift fork engagement pin diameter

SHIFT FORK ENGAGEMENT PIN DIAMETER	
New	5.92 mm to 5.97 mm (.2331 in to .235 in)
Service limit	5.850 mm (.2303 in)

Gears

Measure the width of shift fork engagement groove.

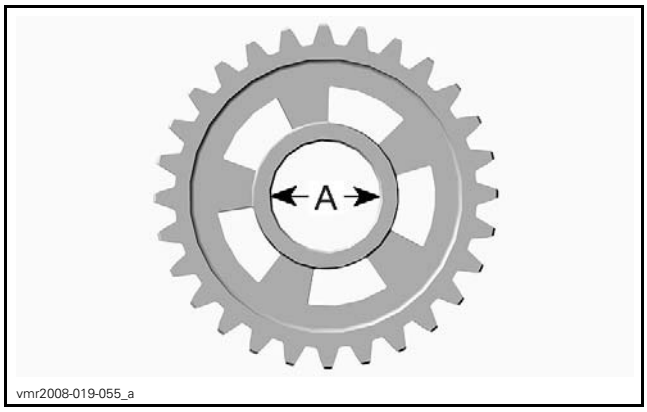


TYPICAL — SHIFTING GEAR
A. Width of shift fork engagement groove

WIDTH OF SHIFT FORK ENGAGEMENT GROOVE	
New	4.20 mm to 4.30 mm (.1654 in to .1693 in)
Service limit	4.50 mm (.1772 in)

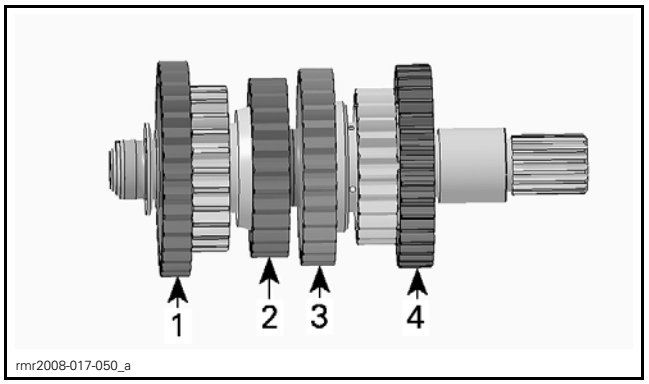
Check free pinions for wear.

Measure the inside diameter of free pinion.



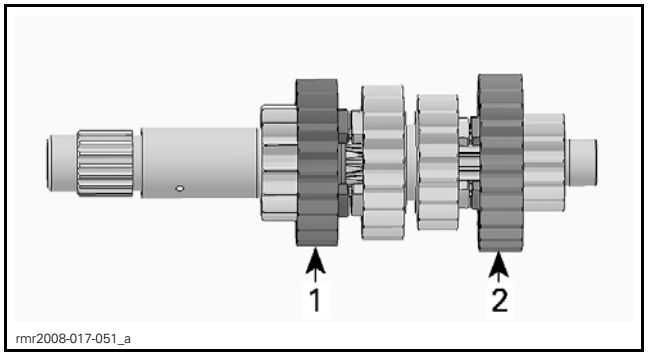
TYPICAL
A. Diameter free pinion bearing

MAIN SHAFT FREE PINIONS	
NEW	
1st gear	29.007 mm to 29.020 mm (1.142 in to 1.1425 in)
2nd gear	
3rd gear	
Reverse gear	40.009 mm to 40.025 mm (1.5752 in to 1.5758 in)
SERVICE LIMIT	
1st gear	29.035 mm (1.143 in)
2nd gear	
3rd gear	
Reverse gear	40.040 mm (1.5764 in)



MAIN SHAFT — FREE PINION
1. 1st gear
2. 3rd gear
3. 2nd gear
4. Reverse gear

CLUTCH SHAFT FREE PINIONS	
NEW	
4th gear	29.080 mm - 29.100 mm (1.1449 in - 1.1457 in)
5th gear	26.000 mm - 26.013 mm (1.0236 in - 1.0241 in)
SERVICE LIMIT	
4th gear	29.125 mm (1.1467 in)
5th gear	26.025 mm (1.0246 in)



CLUTCH SHAFT — FREE PINION
1. 4th gear
2. 5th gear

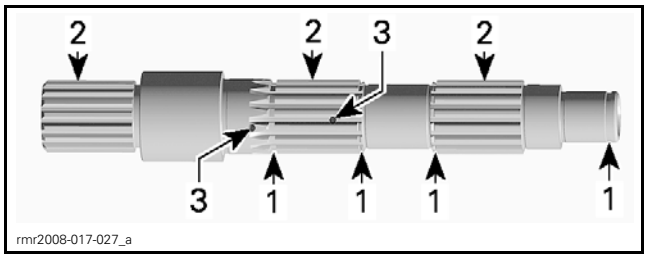
Main Shaft

Check main shaft for wear.

Check retaining ring grooves.

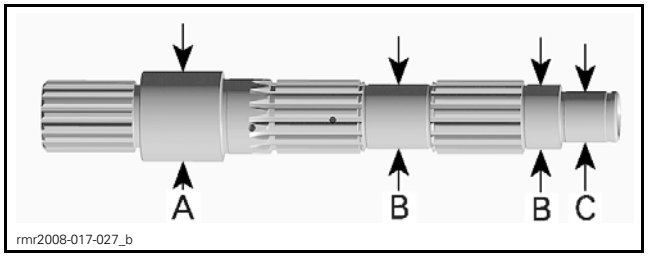
Check splines for wear and/or damages.

Blow out the oil orifices and check if they are not clogged.



1. Retaining ring grooves
2. Splines
3. Oil orifices

Measure diameters of main shaft bearing journals.

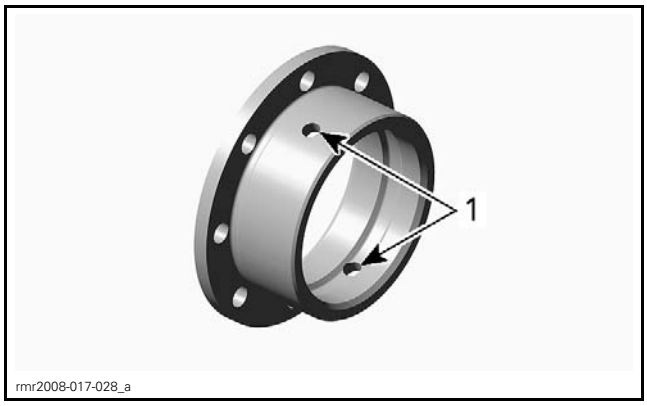


A. Magneto side bearing journal
B. Free pinion bearing journal
C. Clutch side bearing journal

MAIN SHAFT BEARING JOURNAL	
NEW	
Magneto side bearing journal	34.989 mm - 35.000 mm (1.3775 in - 1.378 in)
Free pinion bearing journal	24.980 mm - 24.993 mm (.9835 in - .984 in)
Clutch side bearing journal	19.987 mm - 20.000 mm (.7869 in - .7874 in)
SERVICE LIMIT	
Magneto side bearing journal	34.975 mm (1.377 in)
Free pinion bearing journal	24.970 mm (.9831 in)
Clutch side bearing journal	19.970 mm (.7862 in)

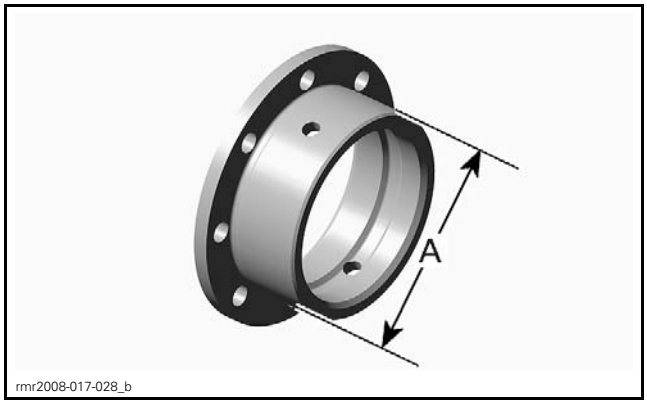
Bearing Sleeve

Check if oil orifices are free. Clean if required.



1. Oil orifices

Measure external diameter of reverse gear free pinion bearing.



A. External diameter

FREE PINION BEARING EXTERNAL DIAMETER	
New	34.984 mm - 35.000 mm (1.3773 in - 1.378 in)
Service limit	34.970 mm (1.3768 in)

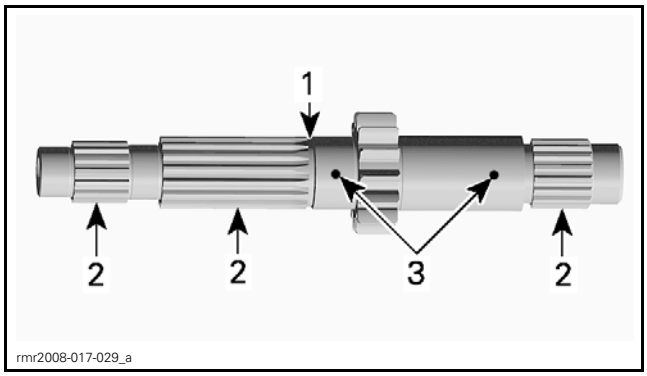
Clutch Shaft

Check clutch shaft for wear.

Check retaining ring groove.

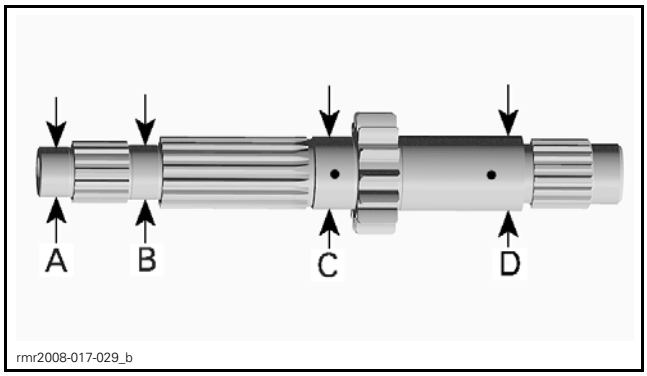
Check splines for wear and/or damages.

Blow out the oil orifices and check if they are not clogged.



1. Retaining ring groove
2. Splines
3. Oil orifices

Measure diameters of clutch shaft bearing journals.



A. Magneto side bearing journal
B. Free pinion bearing journal (5th gear)
C. Free pinion bearing journal (4th gear)
D. Clutch side bearing journal

CLUTCH SHAFT BEARING JOURNAL	
NEW	
Magneto side bearing journal	19.987 mm - 20.000 mm (.7869 in - .7874 in)
Free pinion bearing journal (5th gear)	21.987 mm - 22.000 mm (.8656 in - .8661 in)
Free pinion bearing journal (4th gear)	29.041 mm - 29.054 mm (1.1433 in - 1.1439 in)
Clutch side bearing journal	29.980 mm - 29.993 mm (1.1803 in - 1.1808 in)
SERVICE LIMIT	
Magneto side bearing journal	19.970 mm (.7862 in)
Free pinion bearing journal (5th gear)	21.970 mm (.865 in)
Free pinion bearing journal (4th gear)	29.030 mm (1.1429 in)
Clutch side bearing journal	29.965 mm (1.1797 in)

Reverse Intermediate Gear

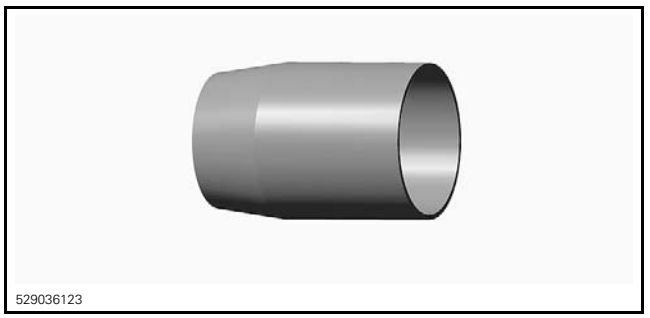
Check reverse intermediate gear, needle bearing and bearing pin visually for wear, pitting and/or scoring. Replace parts if necessary.

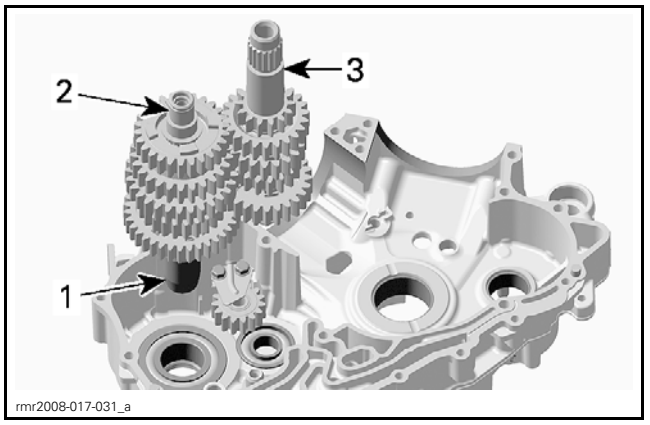
Gearbox Assembly and Installation

For assembly and installation, reverse the disassembly and removal procedures. Pay attention to the following details.

NOTICE Always install NEW snap rings.

For gearbox installation put the MAIN SHAFT PROTECTOR (P/N 529 036 123) on main shaft in order not to damage main shaft oil seal.





1. Main shaft protector
2. Main shaft
3. Clutch shaft

Seat shafts fully home by tapping them into place with a plastic hammer.

Install the shifting mechanism.

Install all other removed parts.