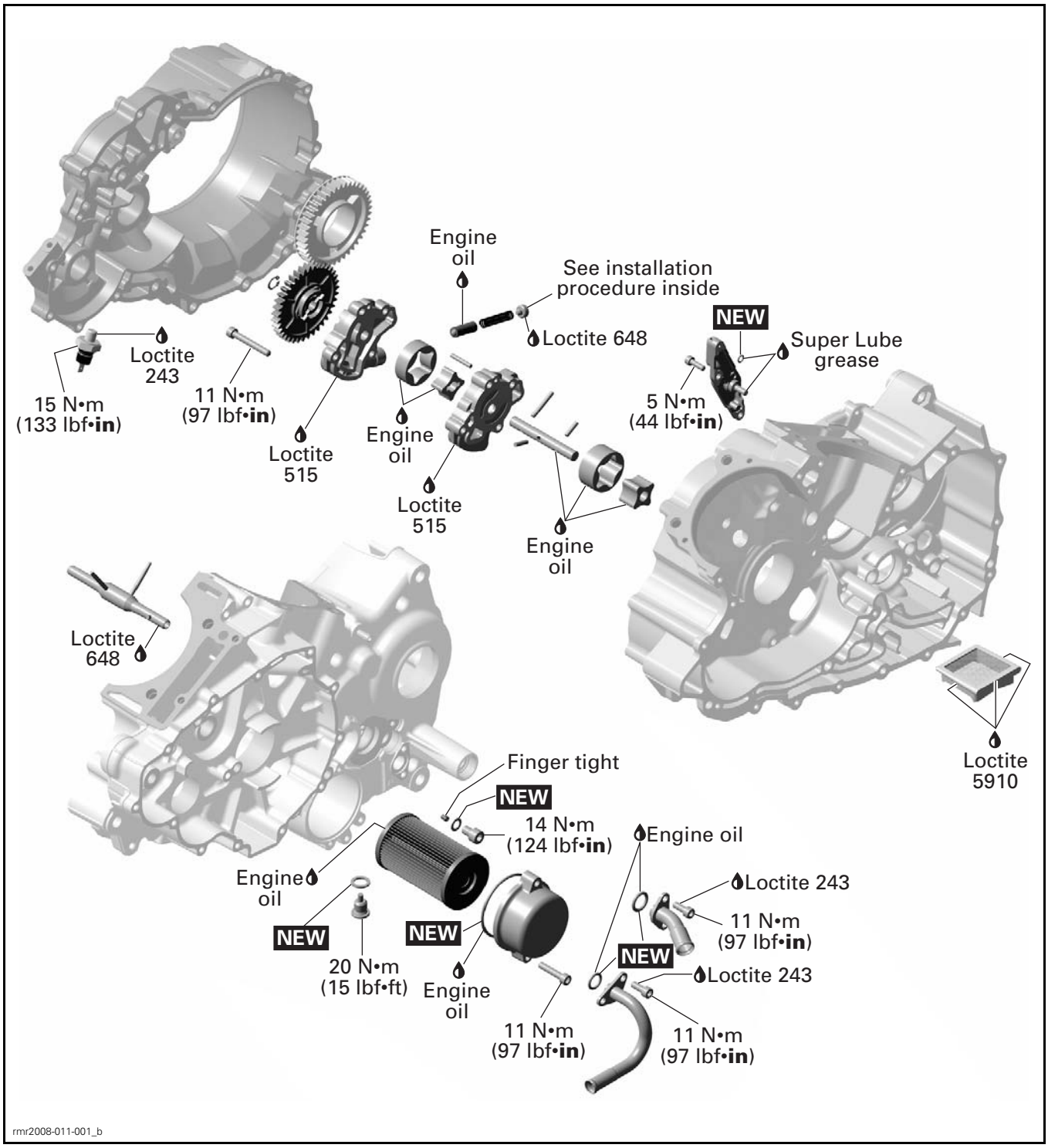
LUBRICATION SYSTEM

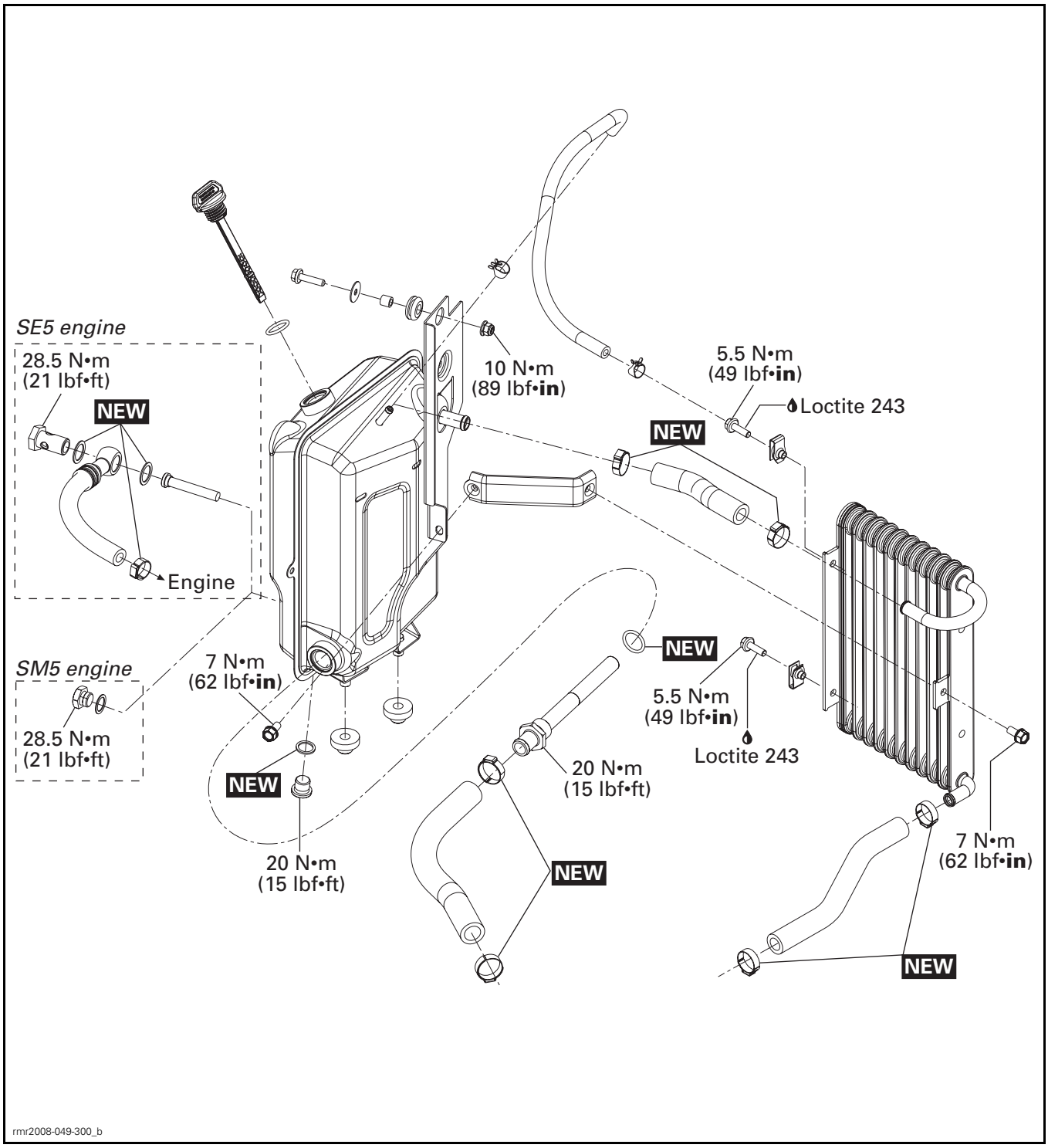
SERVICE TOOLS

Description	Part Number	Page
ADAPTER HOSE	529 035 652	7
ECM ADAPTER TOOL	529 036 166	8
FLUKE 115 MULTIMETER	529 035 868	8
OETIKER PLIERS	295 000 070	12
PRESSURE GAUGE	529 035 709	7

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 243 (BLUE)	293 800 060	9, 14
LOCTITE 515	413 702 700	17
LOCTITE 648 (GREEN)	413 711 400	18, 20
LOCTITE CHISEL (GASKET REMOVER)	413 708 500	17
SUPER LUBE GREASE	293 550 030	19
XPS SYNTHETIC BLEND OIL (SUMMER GRADE)	293 600 121	4


Engine oil
See installation procedure inside
Loctite 648
NEW
Super Lube grease
Loctite 243
15 N•m (133 lbf•in)
11 N•m (97 lbf•in)
Loctite 515
Engine oil
Loctite 515
5 N•m (44 lbf•in)
Engine oil
Loctite 648
Loctite 5910
Finger tight
NEW
14 N•m (124 lbf•in)
Engine oil
Engine oil
NEW
NEW
20 N•m (15 lbf•ft)
Engine oil
11 N•m (97 lbf•in)
Engine oil
Loctite 243
11 N•m (97 lbf•in)
NEW
Loctite 243
11 N•m (97 lbf•in)
rmr2008-011-001_b


SE5 engine
28.5 N•m
(21 lbf•ft)
NEW
Engine
SM5 engine
28.5 N•m
(21 lbf•ft)
10 N•m
(89 lbf•in)
5.5 N•m
(49 lbf•in)
Loctite 243
NEW
7 N•m
(62 lbf•in)
NEW
20 N•m
(15 lbf•ft)
NEW
5.5 N•m
(49 lbf•in)
Loctite 243
20 N•m
(15 lbf•ft)
NEW
7 N•m
(62 lbf•in)
NEW
rmr2008-049-300_b

GENERAL

During assembly/installation, use the torque values and service products as specified 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.

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

MAINTENANCE

ENGINE OIL

Recommended Engine Oil

The same oil is used for the engine, gearbox, clutch and the hydraulic control module (SE5 model).

Use XPS SYNTHETIC BLEND OIL (SUMMER GRADE) (P/N 293 600 121) or a 5W 40 semi-synthetic or synthetic motorcycle oil meeting the requirements for API service SL, SJ, SH or SG classification. Always check the API service label on the oil container.

NOTICE **To avoid damaging the clutch, do not use a motor oil meeting the API service SM or ILSAC GF-4 classification. Clutch slippage will occur.**

Engine Oil Level Verification

NOTICE **To obtain a precise reading of the engine oil level, follow this procedure and make sure engine is at normal operating temperature.**

Park the vehicle on a level surface.

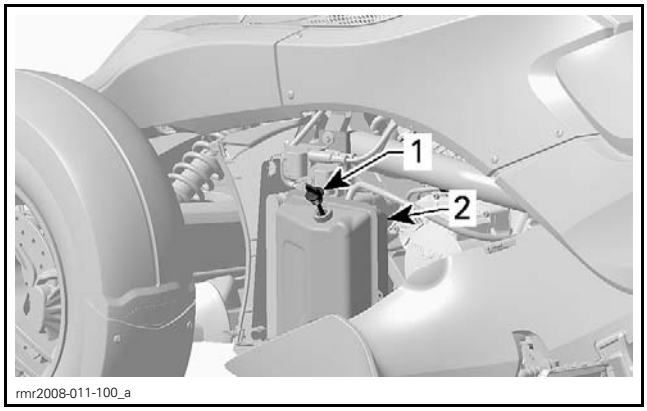
Remove the LH middle side panel. Refer to *BODY* subsection.

With the engine already at normal operating temperature, start engine and let it run for at least 30 seconds.

NOTE: Running engine for at least 30 seconds allows the suction oil pump to drain the oil from the engine crankcase back into the oil tank. Not carrying out this step could result in overfilling the engine oil.

Stop engine.

Unscrew and remove the oil dipstick.



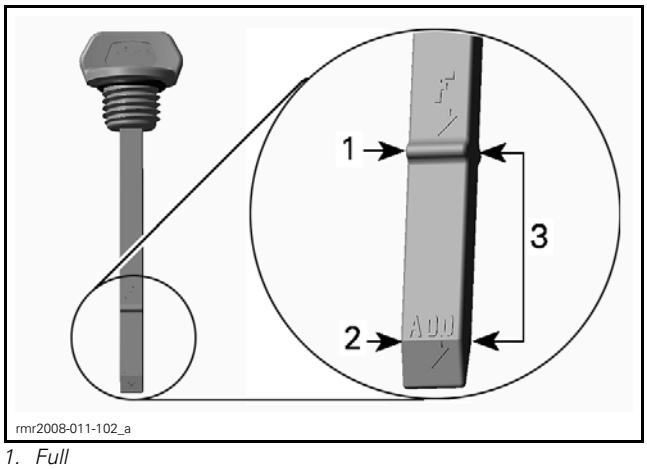
1. Oil dipstick
2. Oil tank

Wipe off the dipstick.

Reinsert and completely screw in the dipstick to assure an accurate reading.

Unscrew and remove the dipstick again.

Check the oil level on the dipstick. It should be near or equal to the upper mark.



1. Full
2. Add
3. Operating range

Oil Level is at or Near Upper Mark

Properly insert and tighten dipstick.

Install the LH middle side panel, refer to *BODY* subsection.

Oil Level Under Operating Range

Add a small amount of recommended oil.

NOTE: The oil quantity between ADD mark and F mark is 0.5 L (.5 qt (U.S. liq.)).

Recheck oil level.

Repeat the above steps until oil level reaches the dipsticks upper (F) mark. **Do not overfill.**

Properly insert and tighten dipstick.

Install the LH middle side panel, refer to *BODY* subsection.

Engine Oil Change

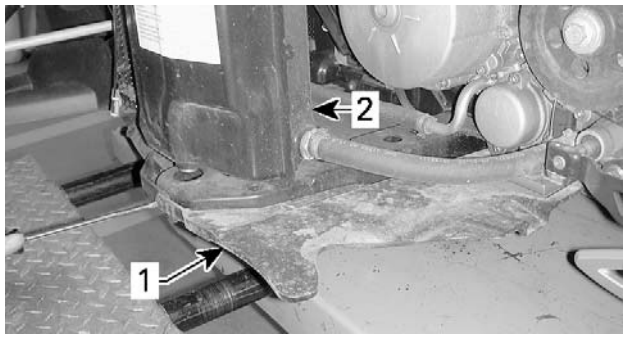
Prior to changing the oil, ensure vehicle is on a level surface.

NOTICE **Oil and engine oil filter must be replaced at the same time. Oil change should be carried out with a warm engine.**

⚠ CAUTION **Engine oil can be very hot.**

Remove the following LH body panels, refer to *BODY* subsection:
- Middle side panel
- Top side panel
- Rear side panel
- Bottom front side panel
- Bottom rear side panel.

Remove the bottom plate under oil tank.



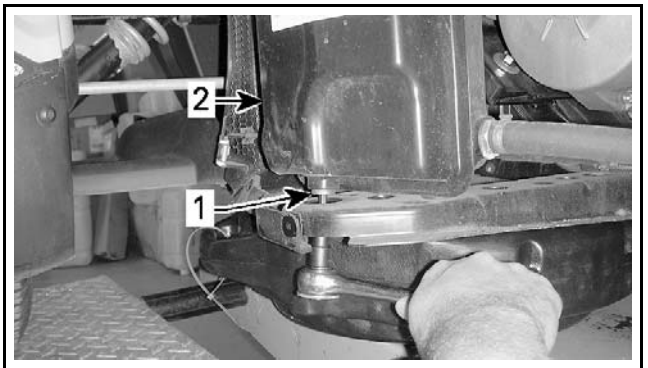
rmr2008-011-101_a

TYPICAL
1. *Bottom plate*
2. *Oil tank*

Clean area around drain plug under oil tank.

Place an appropriate drain pan under oil tank.

Remove the reservoir drain plug and discard the sealing washer.



rmr2008-011-103_a

TYPICAL
1. *Reservoir drain plug*
2. *Oil tank*

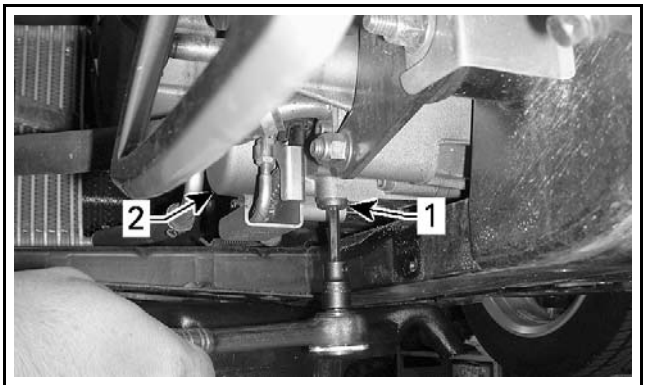
Remove the dipstick.

Allow sufficient time for oil to completely drain out of reservoir.

Clean area around engine drain plug.

Place an appropriate drain pan under the engine.

Remove the engine oil drain plug and discard the sealing washer.



rmr2008-011-104_a

TYPICAL
1. *Engine oil drain plug*
2. *Oil filter cover*

Allow sufficient time for oil to completely drain from crankcase.

Clean the magnet on the engine drain plug.

Using **NEW** sealing washers, install engine and oil tank drain plugs.

NOTICE **Never reuse the drain plug sealing washer. Always replace it with a new one.**

Torque drain plugs (engine and oil tank) 20 N•m (15 lbf•ft).

Replace engine oil filter. Refer to *ENGINE OIL FILTER* further in this subsection.

Pour 3 L (3.2 qt (U.S. liq.)) of the recommended oil into oil tank.

Start engine and **let idle for two minutes**.

NOTICE Do not rev up engine during idling period as this may cause permanent engine damage.

NOTICE Ensure oil pressure warning lamp goes out within 5 seconds from engine start. If oil pressure warning lamp stays ON for more than 5 seconds, STOP ENGINE and recheck oil level.

Ensure oil filter cover, engine drain plug and oil tank drain plug are not leaking.

Stop engine.

NOTE: The oil level dipstick is accurate when the oil temperature is at 80°C (176°F). If the oil level is checked when the oil is at room temperature (20°C (68°F)), the proper oil level indication is half way between the lower (ADD) and upper (F) marks on the dipstick. This must be considered to prevent overfilling the oil tank.

SM5 Model

Add 0.9 L (1 qt (U.S. liq.)) of the recommended oil in the oil tank (3.9 L (4.1 qt (U.S. liq.)) total quantity).

Check oil level immediately and adjust if required.

Reinstall all removed body panels.

Dispose of used oil as per your local environmental regulations.

SE5 Model

Add 1.2 L (1.3 qt (U.S. liq.)) of the recommended oil in the oil tank (4.2 L (4.4 qt (U.S. liq.))) total quantity).

Check oil level immediately and adjust if required.

NOTE: If both the engine oil filter and the HCM oil filter are replaced, the total oil quantity to add will be 4.3 L (4.5 qt (U.S. liq.)).

Reinstall all removed body panels.

Dispose of used oil as per your local environmental regulations.

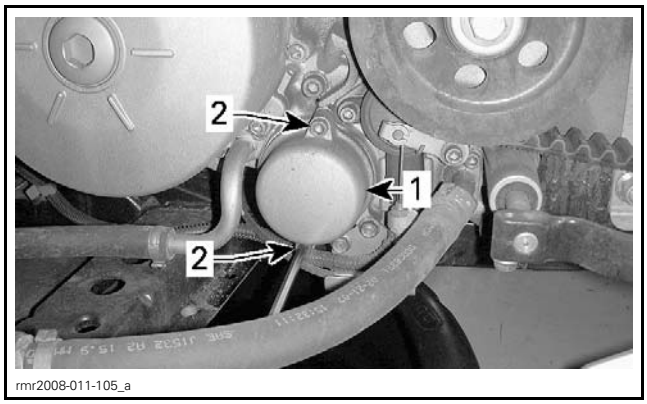
ENGINE OIL FILTER

NOTE: For the HCM oil filter replacement procedure, refer to the *HYDRAULIC CONTROL MODULE (SE5)* subsection.

Engine Oil Filter Removal

Refer to *OIL CHANGE* for the list of required body panels to be removed.

Remove oil filter cover screws.



TYPICAL
1. *Oil filter cover*
2. *Cover screws*

Remove oil filter cover with O-ring. Discard O-ring.

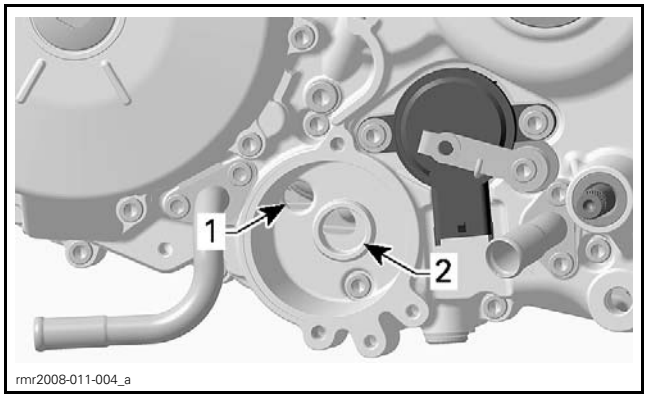
Remove oil filter.

Dispose filter as per your local environmental regulations.

Engine Oil Filter Installation

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

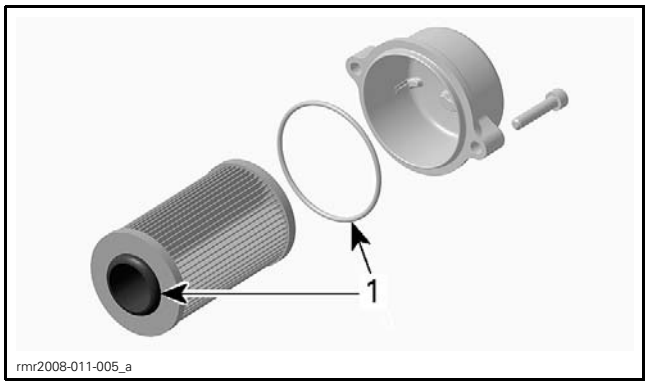
Check and clean the oil inlet and outlet orifices in crankcase for dirt and contaminants.



TYPICAL
1. *Oil inlet orifice from oil pressure pump*
2. *Oil outlet orifice to engine lubrication system*

Install a NEW O-ring on the oil filter cover.

To ease assembly and prevent displacement of the O-ring during installation, slightly oil filter and O-ring, refer to following illustration.



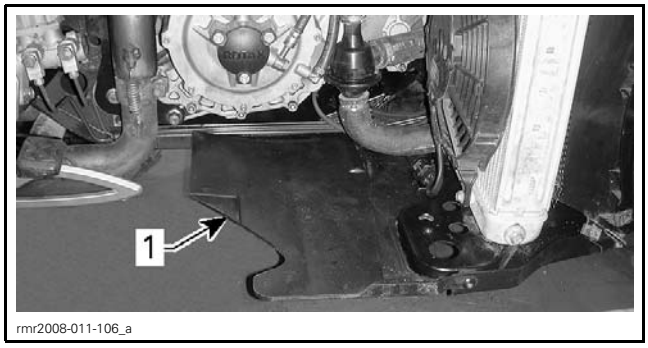
1. Apply oil here

INSPECTION

ENGINE OIL PRESSURE TEST

NOTE: The engine oil pressure test should be carried out with a **warm engine** (80°C (176°F) engine oil temperature) and with the **recommended oil** at the appropriate level.

Remove the bottom plate behind radiator. Refer to *BODY* subsection.



TYPICAL
1. Bottom plate

Connect the ADAPTER HOSE (P/N 529 035 652) to the PRESSURE GAUGE (P/N 529 035 709).

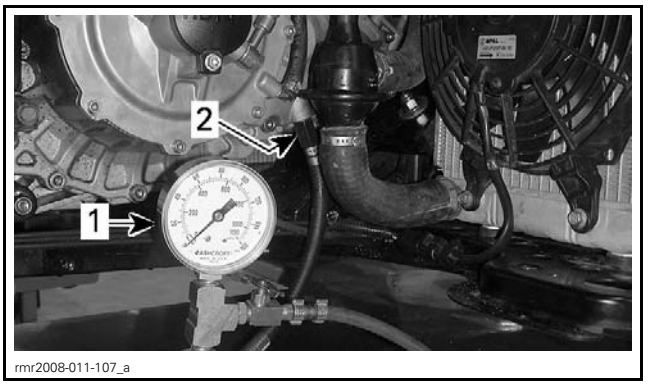
OIL PRESSURE GAUGE

HOSE ADAPTER

Remove the *OIL PRESSURE SWITCH*, see the procedure in this subsection.

NOTE: Place a container to retrieve engine oil that will flow out of engine.

Screw the the hose adapter into the oil pressure switch location.



TYPICAL
1. Oil pressure gauge
2. Hose adapter

Measured engine oil pressure should be within the following values.

OIL PRESSURE	1400 RPM	5000 RPM
MINIMUM	70 kPa (10 PSI)	350 kPa (51 PSI)
NOMINAL	150 kPa (22 PSI)	420 kPa (61 PSI)
MAXIMUM	300 kPa (44 PSI)	550 kPa (80 PSI)

After engine oil pressure test, reinstall oil pressure switch, see procedure in this subsection.

Reinstall body panels.

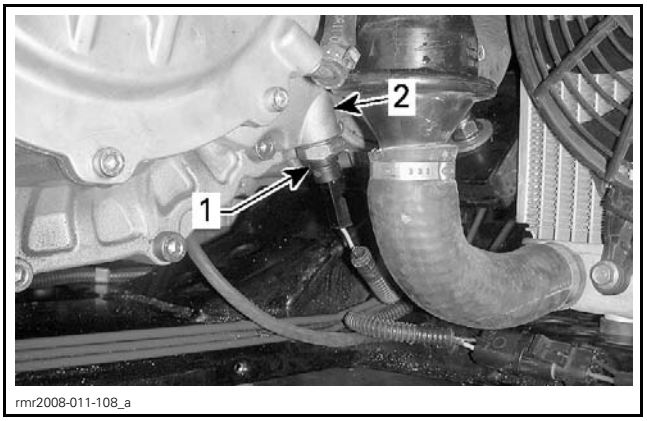
PROCEDURES

ENGINE OIL PRESSURE SWITCH (EOP)

Engine Oil Pressure Switch Access

Remove the following RH body panels, refer to *BODY* subsection:
- Middle side panel
- Top side panel
- Rear side panel
- Bottom front side panel
- Bottom rear side panel.

The engine oil pressure switch is located on the RH side of the engine on the clutch housing.



TYPICAL
1. *Oil pressure switch*
2. *Clutch housing*

Engine Oil Pressure Switch Activation

The engine oil pressure switch activates if engine the oil pressure is in the range of 30 kPa to 60 kPa (4.4 PSI to 8.7 PSI).

Engine Oil Pressure Switch Inspection

First ensure engine oil pressure is within specifications. Refer to *ENGINE OIL PRESSURE TEST* in this subsection.

If the engine oil pressure is good, carry out an *OIL PRESSURE SWITCH RESISTANCE TEST*.

Engine Oil Pressure Switch Resistance Test

NOTE: The engine must be warm to test the oil pressure switch properly.

Disconnect the oil pressure switch connector.

Use a FLUKE 115 MULTIMETER (P/N 529 035 868) set to Ω setting and test the resistance of the EOP switch as follows.

EOP SWITCH RESISTANCE TEST (Ω)		
Engine Not Running		
EOP switch pin	Engine ground	Close to 0 Ω (normally closed switch)

If resistance is incorrect, replace the oil pressure switch.

If the resistance is correct, retest the EOP switch with engine running. Read result and compare to table.

EOP SWITCH RESISTANCE TEST (Ω)		
Engine Running		
EOP switch pin	Engine ground	Infinite (OL)

If resistance is incorrect, replace the oil pressure switch.

If the resistance is correct, test the oil pressure switch wiring circuit.

Engine Oil Pressure Switch Circuit Test

EOP Switch Circuit Dynamic Test

First, ensure an engine oil pressure test has been performed and that engine oil pressure is within specifications.

Start the engine.

Disconnect the EOP switch connector.

Ground the EOP switch connector. The low oil pressure pilot lamp should turn on.

Unground the EOP switch connector. Oil pilot lamp should turn off.

If the test succeeded and the low oil pressure pilot lamp stays ON when engine is running, try a new EOP switch.

If the low oil pressure pilot lamp does not come on with the circuit grounded, test continuity of EOP switch circuit wiring.

EOP Switch Circuit Continuity Test

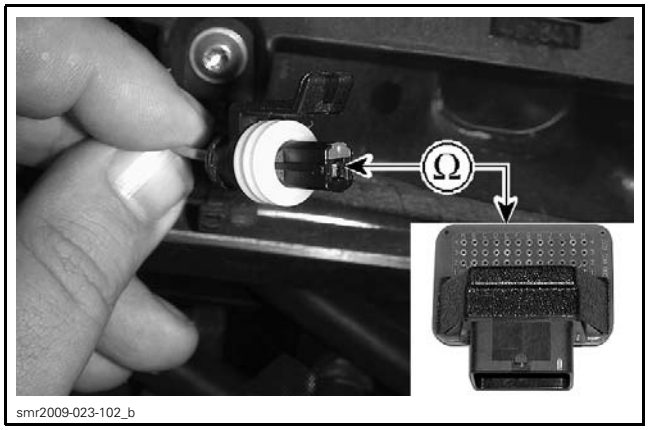
Disconnect the connector "A" from the ECM. Refer to *ELECTRONIC FUEL INJECTION (EFI)* subsection for the procedure.

Use the ECM ADAPTER TOOL (P/N 529 036 166) and the FLUKE 115 MULTIMETER (P/N 529 035 868).


529036166

Check continuity of OPS circuit as per following table.

TEST PROBES		RESISTANCE
OPS connector	ECM adapter pin E3	Close to 0 Ω (continuity)



smr2009-023-102_b

If circuit continuity is not measured, repeat test at the engine disconnect (HIC) connector. Repair wiring/connectors as required.

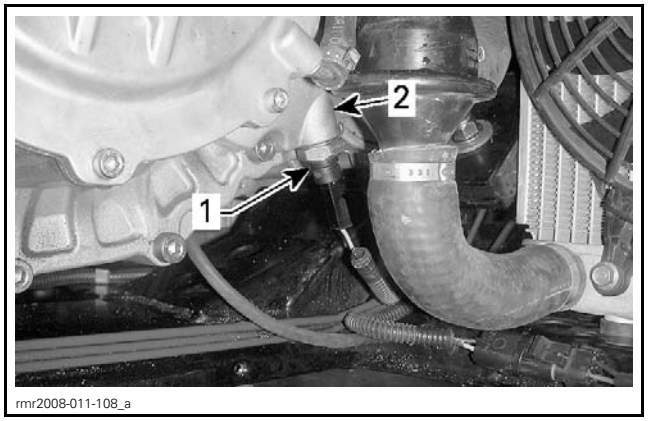
Engine Oil Pressure Switch Removal

Start vehicle and let engine run approximately 5 minutes.

NOTE: This is recommended to avoid oil drainage from engine when removing switch.

Disconnect the oil pressure switch connector.

Unscrew and remove the oil pressure switch.



rmr2008-011-108_a

TYPICAL
1. *Oil pressure switch*
2. *Clutch housing*

Engine Oil Pressure Switch Installation

Apply LOCTITE 243 (BLUE) (P/N 293 800 060) on threads of oil pressure switch.

NOTICE **Do not apply Loctite 243 to the first thread. If Loctite seeps into pressure switch, oil pressure switch may malfunction.**

Torque oil pressure switch to 15 N•m (133 lbf•**in**).

OIL TANK

Oil Tank Access

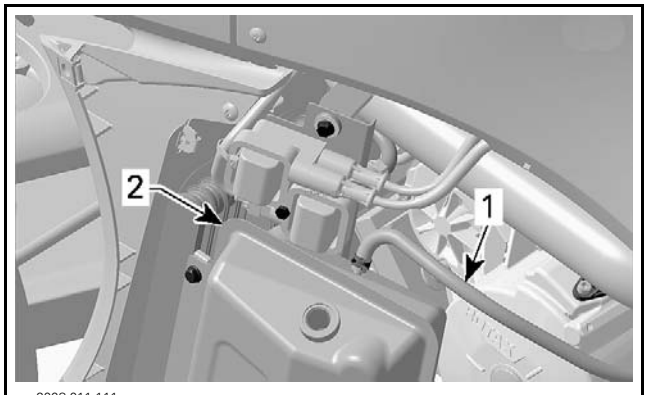
Remove the following LH body panels, refer to *BODY* subsection:

– Middle side panel
– Bottom front side panel.

Oil Tank Removal

Drain oil tank. Follow the procedure in *OIL CHANGE*.

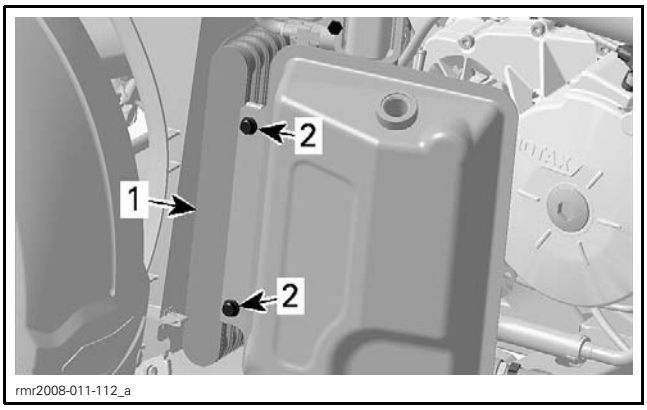
Disconnect vent hose from top of oil tank.



rmr2008-011-111_a

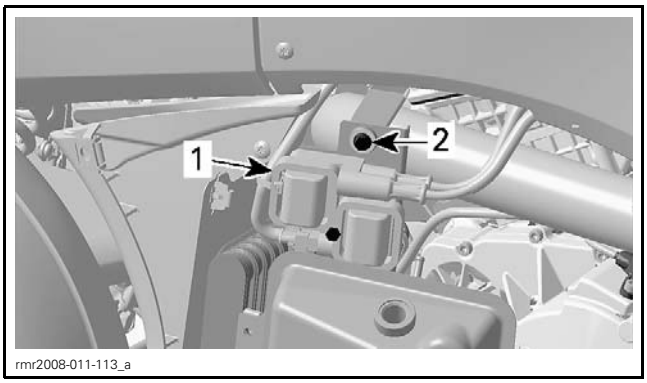
TYPICAL
1. *Vent hose*
2. *Oil tank*

Remove screws retaining oil tank and oil cooler.



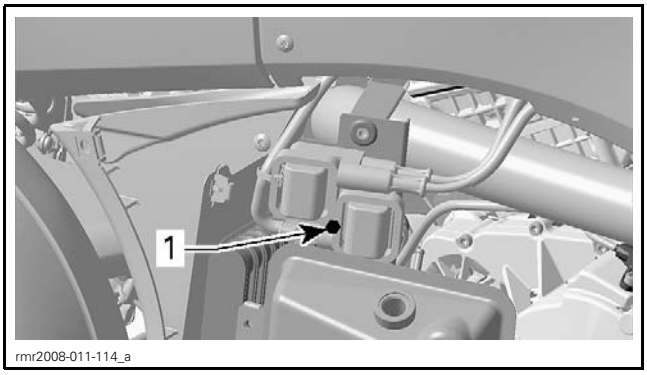
TYPICAL
1. *Oil cooler*
2. *Remove these screws*

Unscrew bolt above ignition coil securing oil tank to frame.



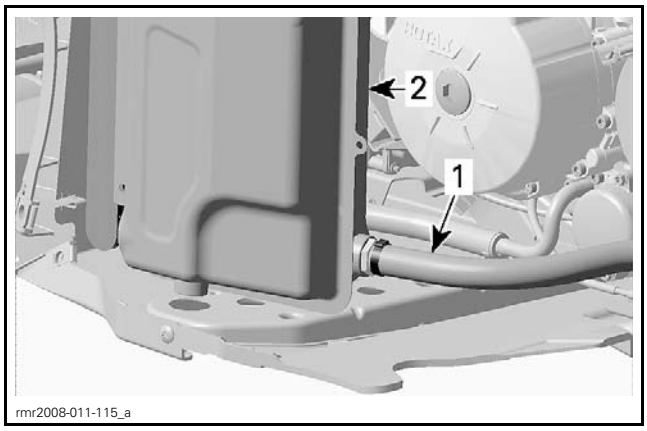
TYPICAL
1. *Ignition coil*
2. *Remove this bolt*

Remove ignition coil retaining bolt.



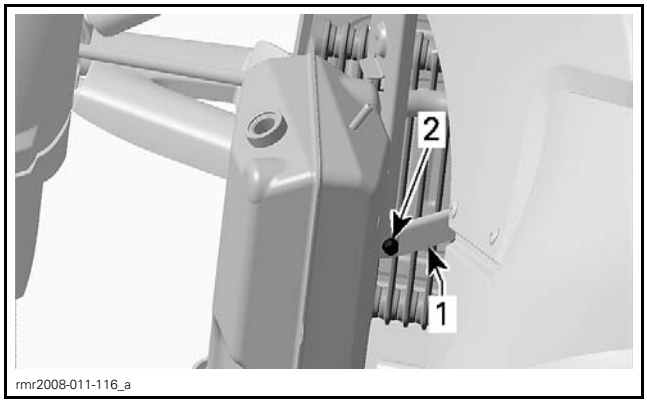
TYPICAL
1. *Ignition coil bolt*

At the bottom of oil tank, disconnect the oil tank return hose.



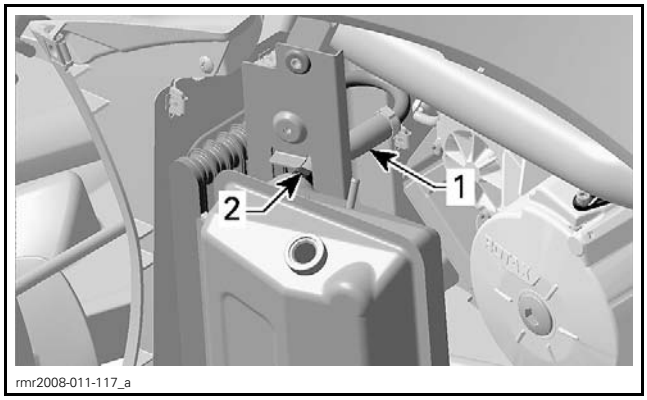
TYPICAL
1. *Return hose*
2. *Oil tank*

Behind oil tank, unscrew bolt securing oil tank to support.



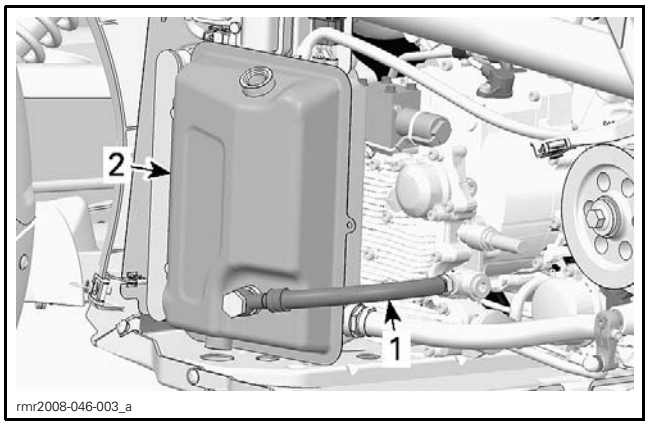
TYPICAL
1. *Oil tank support*
2. *Support bolt*

Disconnect the oil cooler outlet hose.



TYPICAL
1. *Oil cooler outlet hose*
2. *Remove this Oetiker clamp*

On SE5 Model, remove the HCM clutch servo hose in the front of the tank.



TYPICAL
1. *Clutch servo hose*
2. *Oil tank*

Remove oil tank.

Oil Tank Installation

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

Install NEW Oetiker clamps.

Using a NEW sealing washer, install oil tank drain plug.

NOTICE **Never reuse a sealing washer a second time. Always replace it with a new one.**

Torque drain plug to 20 N•m (15 lbf•ft).

Refill oil tank with recommended oil. Refer to *ENGINE OIL* at the beginning of this subsection.

OIL TANK STRAINER

Oil Tank Strainer Access

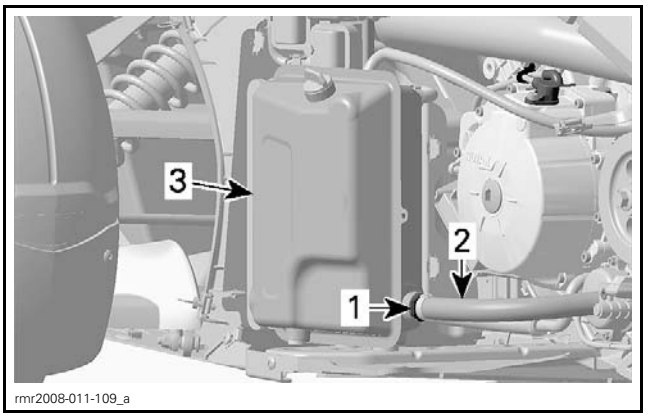
Remove the following LH body panels, refer to *BODY* subsection:

– Middle side panel
– Bottom front side panel.

Oil Tank Strainer Removal

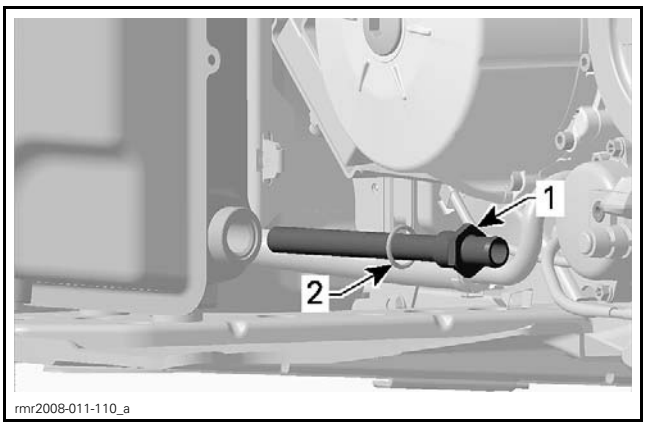
Drain oil tank. See *OIL CHANGE* procedure in this subsection.

Disconnect oil tank return hose.



TYPICAL
1. *Strainer end*
2. *Oil tank return hose*
3. *Oil tank*

Unscrew and remove oil tank strainer with its O-ring. Discard the O-ring.



1. *Oil tank strainer*
2. *O-ring*

Oil Tank Strainer Cleaning

Clean oil tank strainer with a parts cleaner then use air pressure to dry it.

Oil Tank Strainer Inspection

Check condition of strainer mesh. Replace strainer as required.

Oil Tank Strainer Installation

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

Wipe off any oil spillage on oil tank.

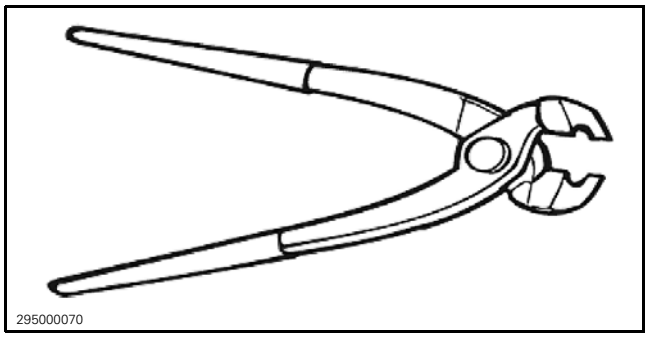
Install a new O-ring on the oil strainer.

Apply engine oil on O-ring.

Install strainer in oil tank and torque to 20 N•m (15 lbf•ft).

NOTICE **Take care not to damage O-ring while inserting strainer into oil tank. Apply oil on O-ring to ease installation.**

Using OETIKER PLIERS (P/N 295 000 070), install a **NEW** Oetiker clamp on oil return hose.



Refill oil tank with recommended oil. Refer to *ENGINE OIL* at the beginning of this subsection.

Install all other removed parts.

OIL COOLER

Oil Cooler Access

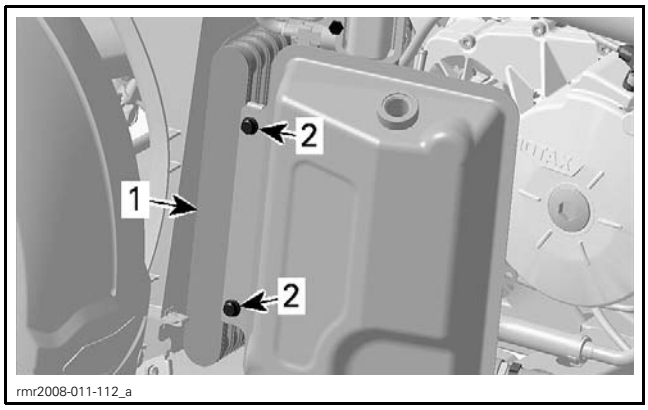
Remove the following LH body panels, refer to *BODY* subsection:

– Middle side panel
– Bottom front side panel.

Oil Cooler Removal

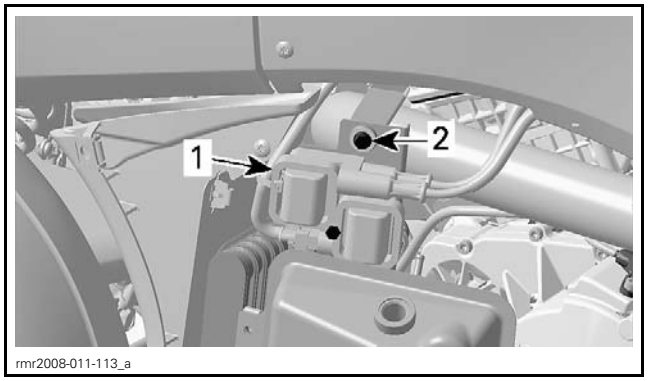
Drain oil tank. See *OIL CHANGE* procedure in this subsection.

Remove screws retaining oil tank and oil cooler.



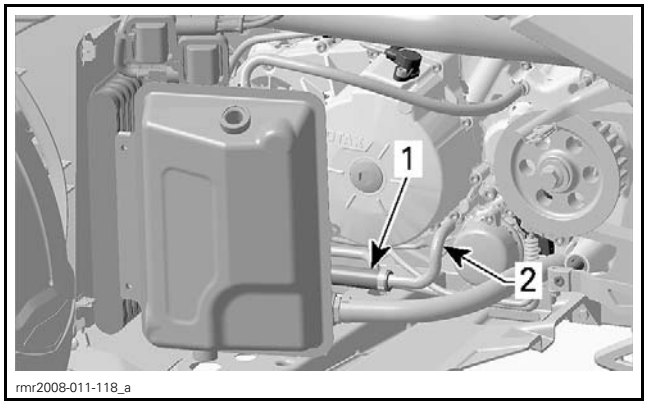
1. Oil cooler
2. Remove these screws

Unscrew bolt above ignition coil securing oil tank to frame.



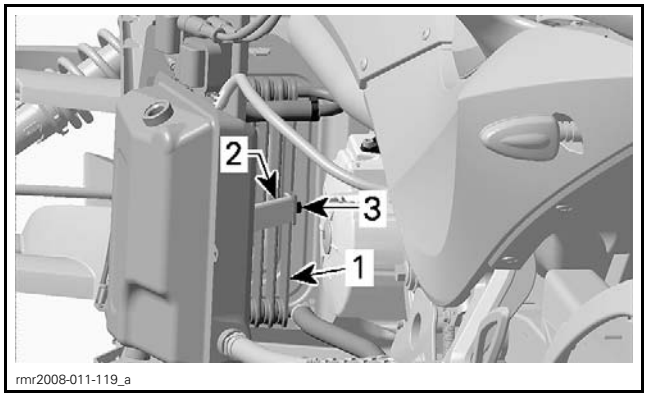
TYPICAL
1. Ignition coil
2. Remove this bolt

Disconnect oil cooler inlet hose from engine outlet connector tube.



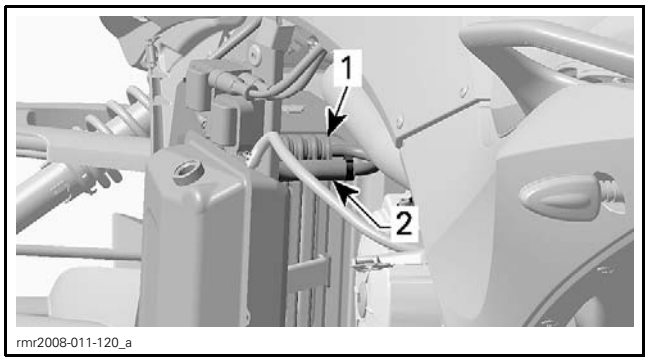
TYPICAL
1. Oil cooler inlet hose
2. Engine outlet connector tube

Behind oil tank, remove screw securing oil cooler to support.



TYPICAL
1. Oil cooler
2. Support
3. Remove this screw

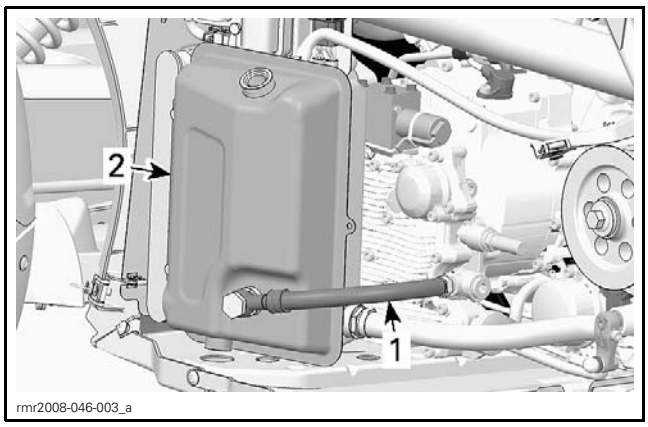
Remove and discard Oetiker clamp securing oil cooler outlet hose.



1. Oil cooler
2. Oil cooler outlet hose

Disconnect oil cooler outlet hose. Be careful to avoid breaking oil cooler outlet tube.

On SE5 Model, remove the HCM clutch servo hose from the front of the tank.



TYPICAL
1. Clutch servo hose
2. Oil tank

Move oil tank rearward to remove oil cooler.

Oil Cooler Installation

For installation, reverse the removal procedure.

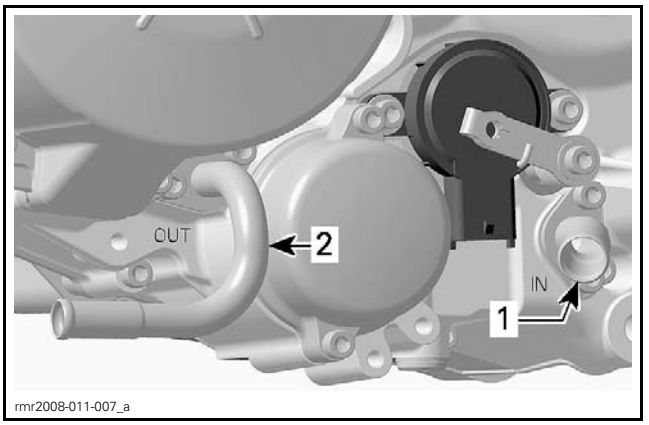
Refill oil tank with recommended oil and check engine oil level. Refer to *ENGINE OIL* at the beginning of this subsection.

OIL HOSE CONNECTOR TUBES

Oil Hose Connector Tube Access

Remove the following LH body panels, refer to *BODY* subsection:
– Middle side panel
– Top side panel
– Rear side panel
– Bottom front side panel
– Bottom rear side panel.

The oil hose connector tubes are located on the crankcase, magneto side.



TYPICAL
1. Oil hose connector tube "IN"
2. Oil hose connector tube "OUT"

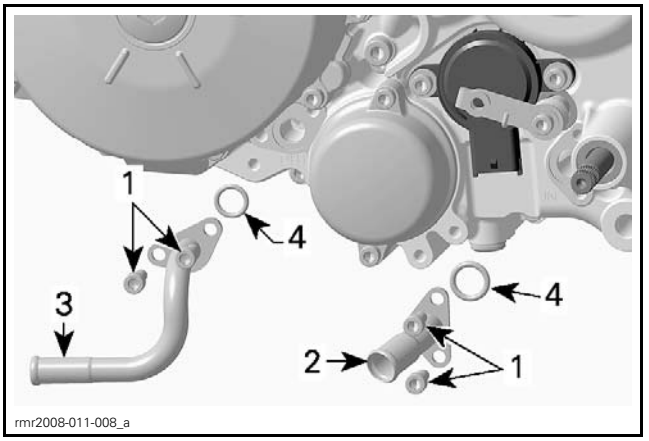
Oil Hose Connector Tube Removal

Drain engine oil, refer to *OIL CHANGE* in this subsection.

Remove oil hoses from connectors tubes.

Loosen connector tube retaining screws.

Remove connector tubes and O-rings. Discard O-rings.



TYPICAL
1. Screws
2. Oil hose connector tube "IN"
3. Oil hose connector tube "OUT"
4. O-rings

Oil Hose Connector Tube Inspection

Clean oil hose connector tubes with a parts cleaner, then use air pressure to dry the parts.

⚠ WARNING

Always wear skin and eye protection. Chemicals can cause skin rash, skin burns and severe eye injury.

Check connector tubes for cracks or other damages. Replace if necessary.

Oil Hose Connector Tube Installation

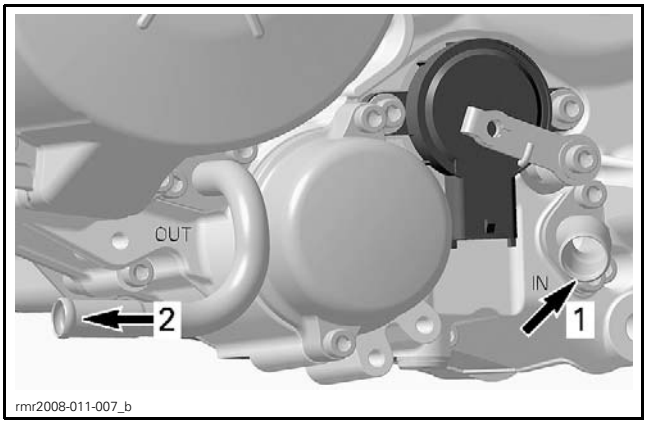
For installation, reverse the removal procedure. However, pay attention to the following details.

Always replace connector tube O-rings with **NEW** ones.

Apply LOCTITE 243 (BLUE) (P/N 293 800 060) on connector tube retaining screws.

Torque screws to 11 N•m (97 lbf•**in**).

Install hoses as shown.



TYPICAL
1. *From oil tank*
2. *To oil cooler*

Refill oil tank with recommended oil and check engine oil level. Refer to *ENGINE OIL* at the beginning of this subsection.

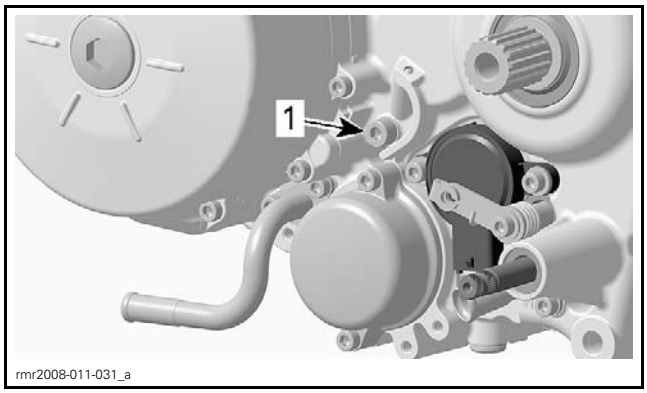
OIL JET

Oil Jet Access

Remove the following LH body panels, refer to *BODY* subsection:

– Middle side panel
– Top side panel
– Rear side panel
– Bottom front side panel
– Bottom rear side panel.

The oil jet is located on the magneto side, screwed inside crankcase. It supplies oil to the wet clutch.



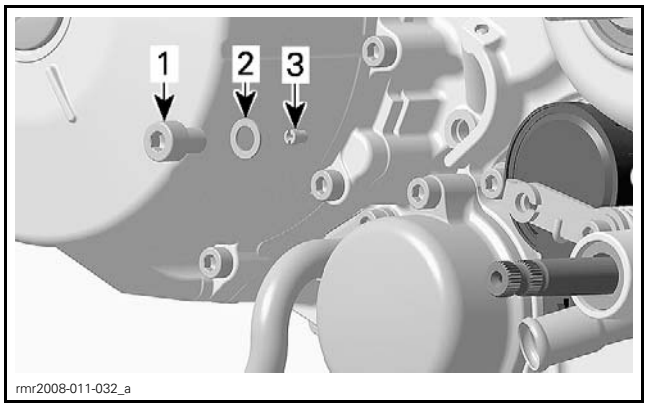
TYPICAL
1. *Oil jet*

Oil Jet Removal

Remove plug screw.

Remove and discard gasket ring.

Unscrew oil jet.



TYPICAL
1. *Plug screw*
2. *Gasket ring*
3. *Oil jet*

Oil Jet Cleaning

Clean oil jet with a parts cleaner, then use air pressure to dry it.

⚠ WARNING

Always wear skin and eye protection. Chemicals can cause skin rash, skin burns and severe eye injury.

Oil Jet Installation

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

Fasten oil jet finger tight.

Install a new gasket ring on the plug screw.

Wipe off any oil spillage.

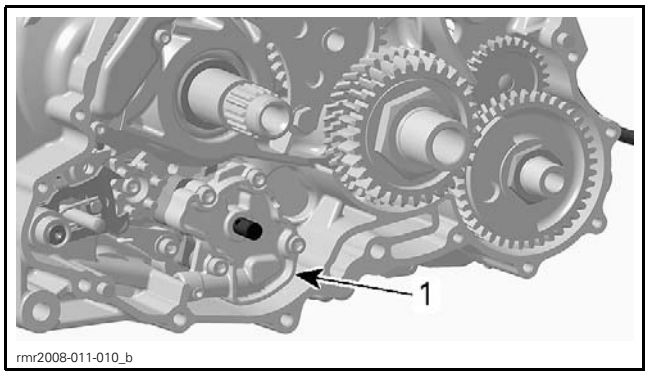
OIL PUMP MODULE

The engine is equipped with two oil pumps, an oil pressure pump and an oil suction pump. Both pumps are integrated into one oil pump module.

Oil Pump Module Access

Remove clutch and centrifugal clutch (SE5 model). Refer to appropriate clutch subsection.

The oil pump module is located behind the clutch on the crankcase.



1. Oil pump module

Oil Pump Module Removal

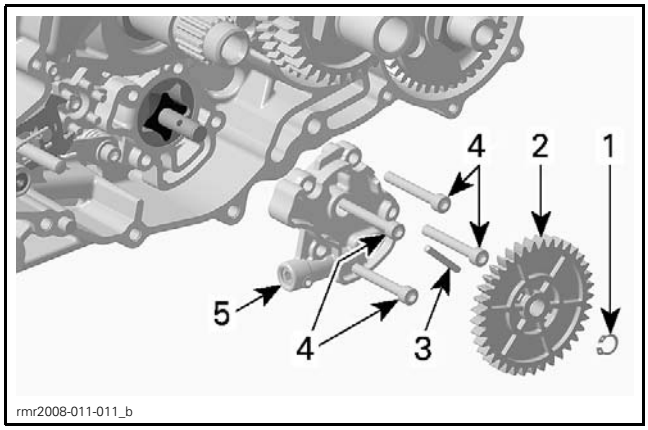
Remove snap ring.

Remove oil pump gear.

Remove needle pin retaining oil pump gear.

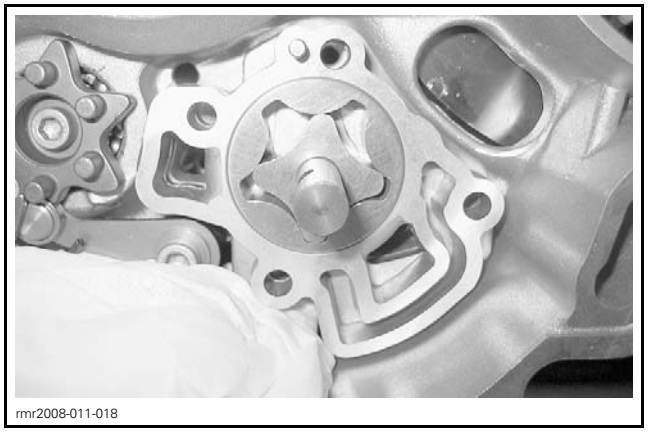
Remove oil pump module screws.

Remove oil pump module cover.



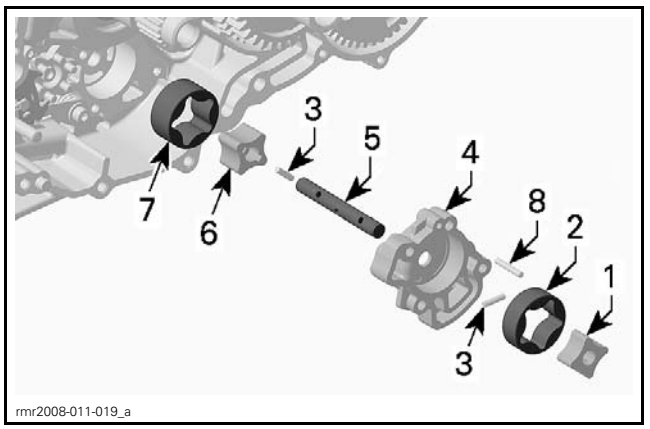
1. Snap ring
2. Oil pump gear
3. Needle pin
4. Oil pump screws
5. Oil pump module cover

Using a rag, block the oil passages to prevent the needle pin from falling into the crankcase.



BLOCK HOLES IN CRANKCASE WITH A RAG

Remove the remaining oil pump module parts:



1. Inner rotor (pressure pump)
2. Outer rotor (pressure pump)
3. Needle pins
4. Oil pump housing
5. Oil pump shaft
6. Inner rotor (suction pump)
7. Outer rotor (suction pump)
8. Dowel pin

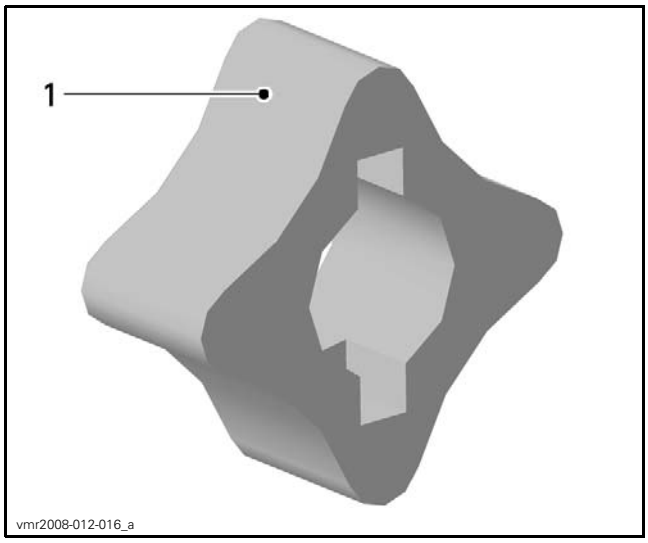
Oil Pump Module Inspection

NOTE: The inspection procedure is the same for both oil pumps.

Check oil pump module housing and crankcase surface (where the oil pump module housing fits) for flatness with a straight edge.

Inspect oil pumps and oil pump bores for wear marks, scratches, cracks or other damages. Replace damaged parts.

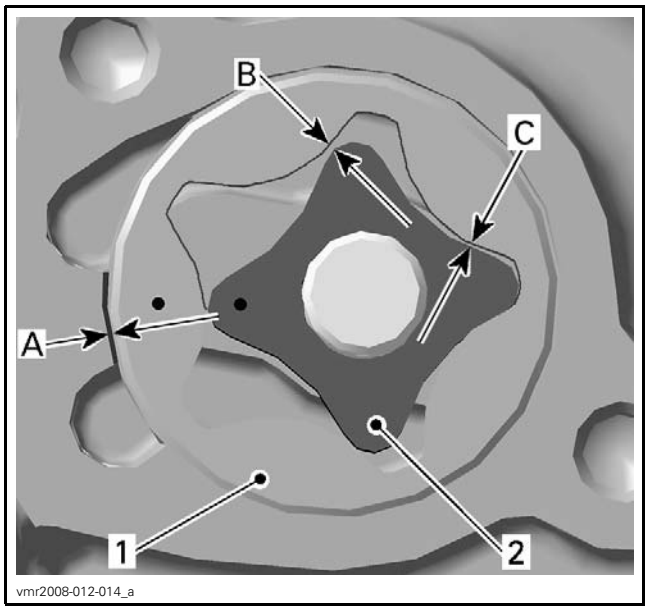
Check inner rotor for corrosion pin holes, pitting or other damages. If defects or damages are found, replace oil pump inner and outer rotor.



TYPICAL
1. Pitting on the teeth

Radial Clearance

Using a feeler gauge, measure the radial clearance as illustrated. Refer to table following illustration for service limits.



TYPICAL
1. Outer rotor
2. Inner rotor

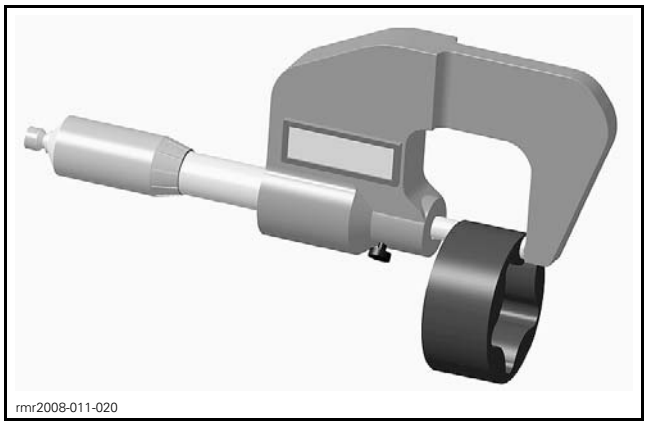
OUTER AND INNER ROTOR CLEARANCE	
SERVICE LIMIT	
A	0.25 mm (.0098 in)
B	
C	

If clearance between inner and outer rotors exceeds the tolerance, replace the respective oil pump.

If clearance between outer rotor and its bore in crankcase or if oil pump module housing exceeds the tolerance, replace the oil pump module and the crankcase if required.

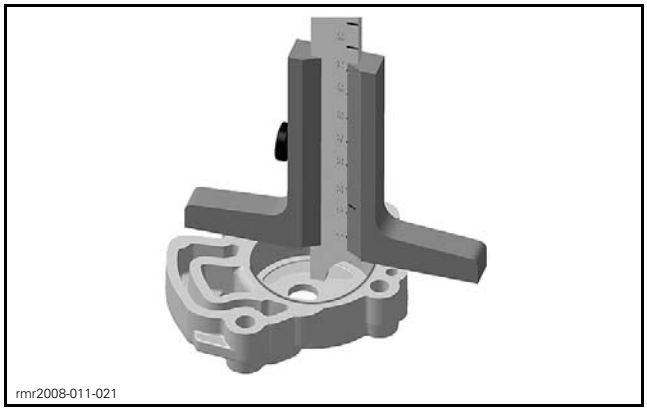
Axial Clearance

Measure outer rotor thickness with micrometer.

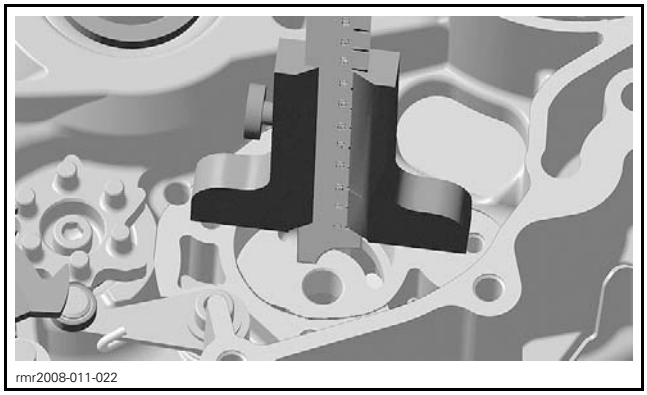


OUTER ROTOR THICKNESS

Using a depth gauge, measure the depth of the corresponding oil pump bore as illustrated.



OIL PUMP BORE DEPTH (OIL PUMP HOUSING)



OIL PUMP BORE DEPTH (CRANKCASE)

The difference between measurements should not exceed 0.15 mm (.0059 in). If the oil pump axial clearance is out of tolerance, replace the complete oil pump assembly.

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

Oil Pump Module Installation

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

Clean all metal components in a solvent.

Remove old sealant from mating surfaces of crankcase, oil pump module housing and oil pump module cover, using LOCTITE CHISEL (GASKET REMOVER) (P/N 413 708 500) and scotch-bride (if necessary).

Apply a thin film of LOCTITE 515 (P/N 413 702 700) on crankcase and oil pump housing surface.

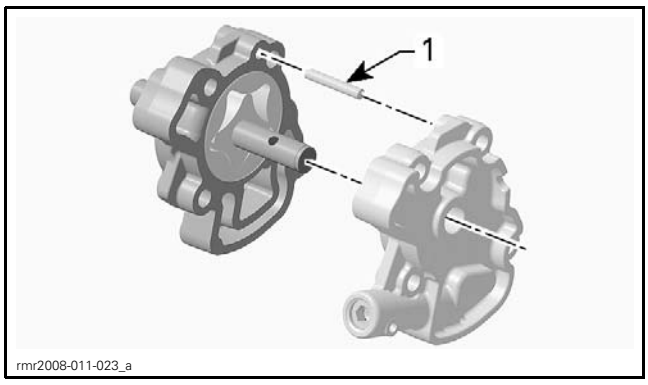
IMPORTANT: When beginning the application of sealant, the assembly and the first torquing should be carried out within 10 minutes. It is suggested to have all required parts, tools and products on hand to save time.

NOTE: Coat inner and outer rotors with oil.

First, assemble oil pressure pump rotors into the oil pump module housing. Markings on inner and outer rotors must face outwards and be visible when holding the housing.

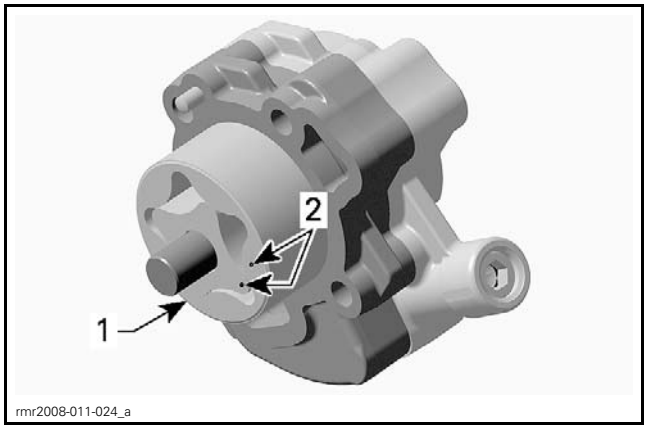
Install oil pump module cover on oil pump module housing.

Install the dowel pin into oil pump module housing.



1. Dowel pin

Next, assemble oil suction pump onto oil pump shaft. Markings on inner and outer rotor must be visible.



1. Oil suction pump
2. Markings on inner and outer rotor

Finally, install complete oil pump module into crankcase.

NOTICE **At installation take care not to lose needle pin and drop it in the crankcase.**

Torque oil pump retaining screws in a criss-cross pattern to 11 N•m (97 lbf•**in**).

After installation, check for smooth operation of the oil pump assembly.

Install all other removed parts.

Final Test

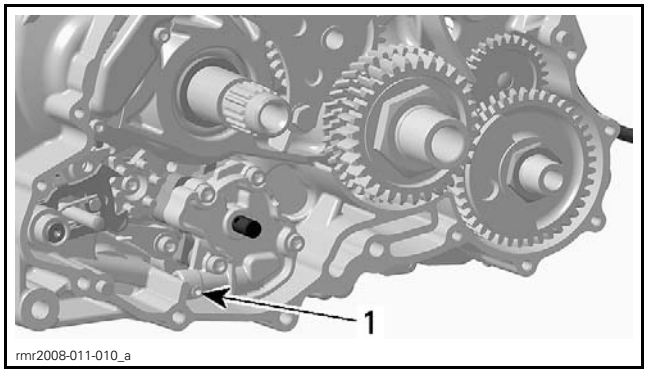
After engine is completely reassembled, start engine and make sure oil pressure is within specifications (refer to *ENGINE OIL PRESSURE TEST* in this subsection).

ENGINE OIL PRESSURE REGULATOR

Engine Oil Pressure Regulator Access

Remove clutch and centrifugal clutch (SE5 model). Refer to appropriate clutch subsection.

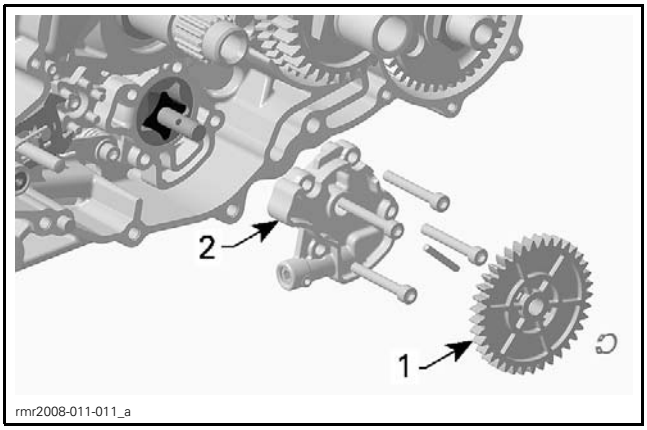
The engine oil pressure regulator is located inside the oil pump module cover.



1. Engine oil pressure regulator

Oil Pressure Regulator Removal

Remove oil pump module cover. Refer to *OIL PUMP MODULE* above.



1. Oil pump gear
2. Oil pump module cover

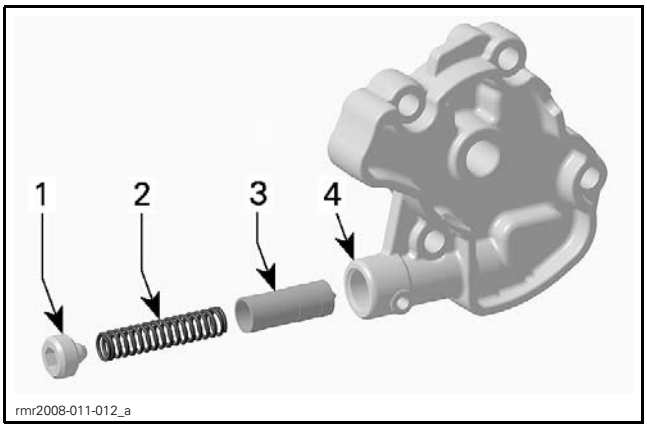
NOTE: Check the pressure regulator piston for freedom of movement. If piston moves freely and oil pressure is within specification, there is no need to remove the plug screw.

Using a vise with aluminium jaws, lightly clamp oil pump module cover.

Unscrew the plug screw.

Remove the regulator spring.

Remove the regulator piston.



1. Plug screw
2. Regulator spring
3. Regulator piston
4. Oil pump module cover

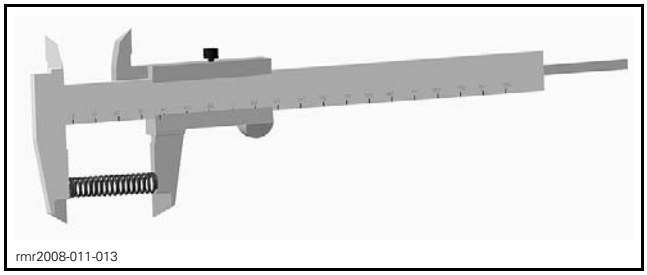
Oil Pressure Regulator Inspection

Inspect the regulator piston for scoring or other damages. Check also the bore of the oil pump module cover.

Check if piston moves easily in oil pump module cover.

Check compression spring for any deformation.

Check compression spring free length.



SPRING FREE LENGTH	
NEW NOMINAL	37.6 mm (1.48 in)
SERVICE LIMIT	36.6 mm (1.441 in)

Replace worn or damaged components.

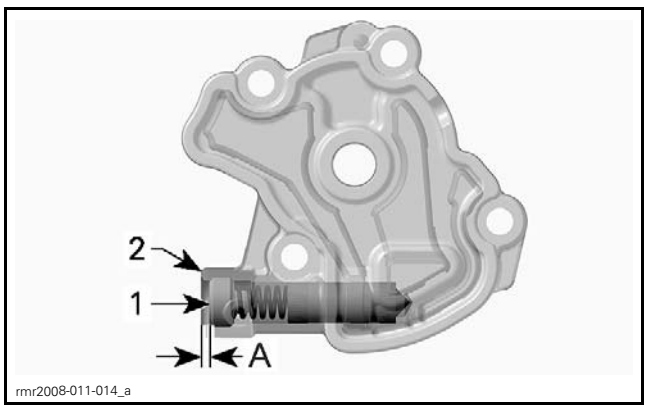
Clean bore and screw threads in the oil pump module cover of metal shavings and other contaminants.

Oil Pressure Regulator Installation

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

Apply LOCTITE 648 (GREEN) (P/N 413 711 400) on the plug screw threads.

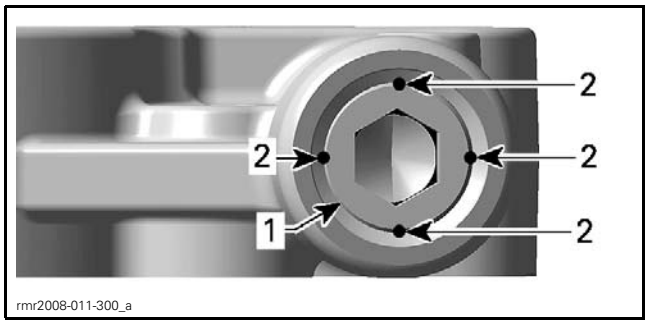
Install plug screw until its position is 2 mm (.0787 in) deeper than the collar of the oil pump module cover, see next illustration.



1. Plug screw
2. Collar of oil pump module cover
A. 2 mm (.0787 in)

Check if oil pressure regulator works by pushing on regulator piston.

Secure plug screw with four (4) center punch marks.



1. Plug screw
2. Punch marks

OIL DUCT COVER

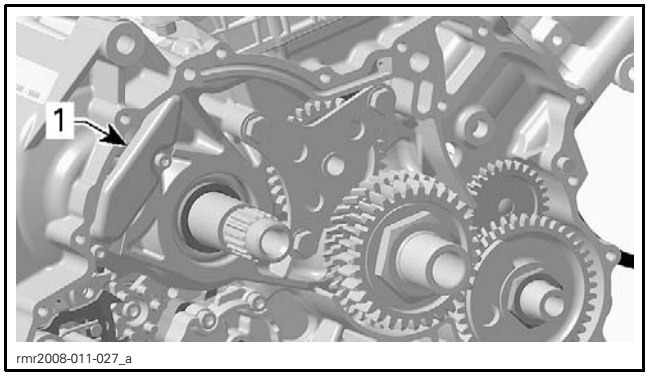
The oil duct cover supplies additional oil to the main shaft in the gearbox.

Oil Duct Cover Access

Refer to the *CLUTCH* subsection and remove the following parts:

– Clutch cover
– Clutch plates
– Clutch housing
– Clutch drum assembly.

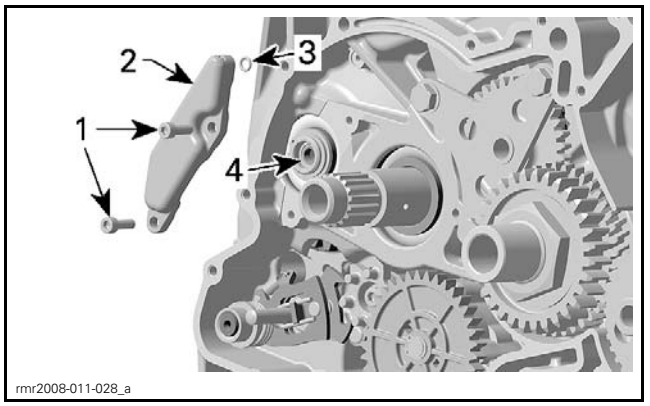
The oil duct cover is located on the crankcase behind the clutch.



1. Oil duct cover

Oil Duct Cover Removal

Remove two (2) retaining screws and pull oil duct cover from the crankcase.



1. Retaining screws
2. Oil duct cover
3. O-ring (discard)
4. Oil seal

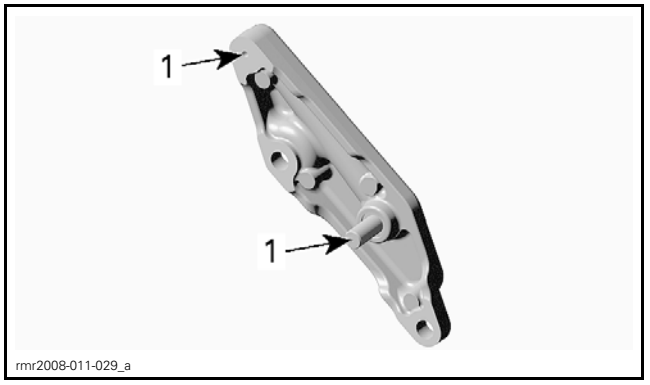
Oil Duct Cover Inspection

Check oil duct cover for cracks or other damages. Replace if necessary.

Clean oil passage in cover with a parts cleaner, then use an air gun to dry it.

⚠ WARNING

Always wear skin and eye protection. Chemicals can cause skin rash, skin burns and severe eye injury.



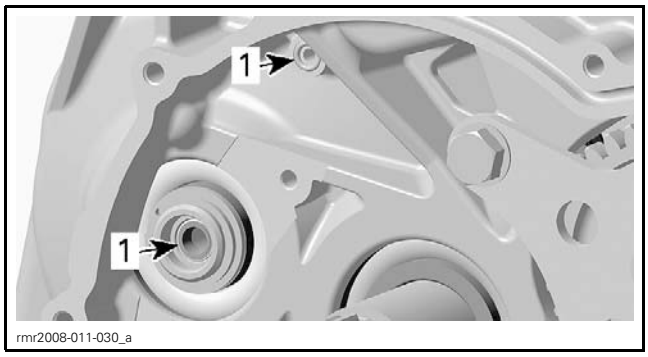
1. Clean oil passage

Oil Duct Cover Installation

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

Install a **NEW** O-ring.

Apply SUPER LUBE GREASE (P/N 293 550 030) on O-ring and oil seal, as shown.



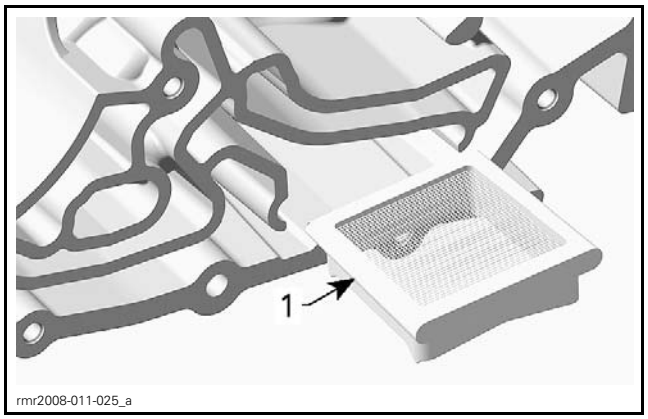
1. Apply Super Lube grease here

Reinstall remaining parts, refer to the appropriate sections in this manual.

ENGINE OIL STRAINER

Engine Oil Strainer Access

The engine oil strainer (sieve) is located between both crankcase halves.



1. Engine oil strainer

Engine Oil Strainer Removal

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

Engine Oil Strainer Inspection

Clean engine oil strainer with a parts cleaner then use air pressure to dry it.

Check engine oil strainer for damage and change if necessary.

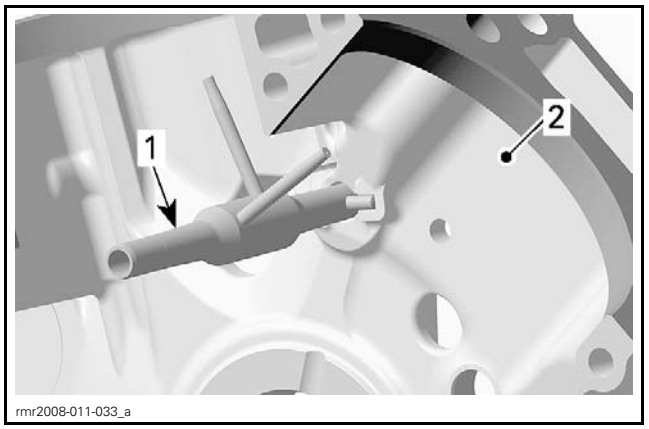
Engine Oil Strainer Installation

Refer to *CRANKCASE* in *CRANKCASE AND CRANKSHAFT* subsection.

OIL TUBE

Oil Tube Access

The oil tube is located inside crankcase, between both crankcase halves.



1. Oil tube
2. Crankcase halve- magneto side

NOTE: If the engine has to be dismantled within the scope of repair work, take this opportunity to clean the oil tube.

Oil Tube Removal

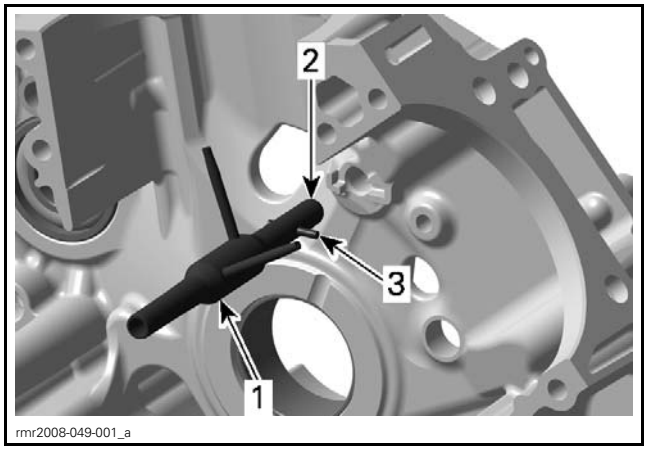
Separate both crankcase halves, refer to *CRANKCASE AND CRANKSHAFT* subsection.

Oil Tube Inspection

Clean oil tube with a parts cleaner, then use air pressure to dry the parts.

Oil Tube Installation

NOTE: If the oil tube is damaged or bent during work in the crankcase, it must be replaced immediately.



1. Oil tube
2. LOCTITE 648 (GREEN) (P/N 413 711 400)
3. Needle pin

NOTE: Make sure not to apply too much LOCTITE 648 (GREEN) (P/N 413 711 400) on oil tube, otherwise oil passage may be clogged.

NOTICE At assembly, ensure the needle pin in the oil tube is correctly fitted into the crankcase. If this is not ensured, the oil spray direction will change, causing potential engine damage.