

ENGINE REMOVAL AND INSTALLATION

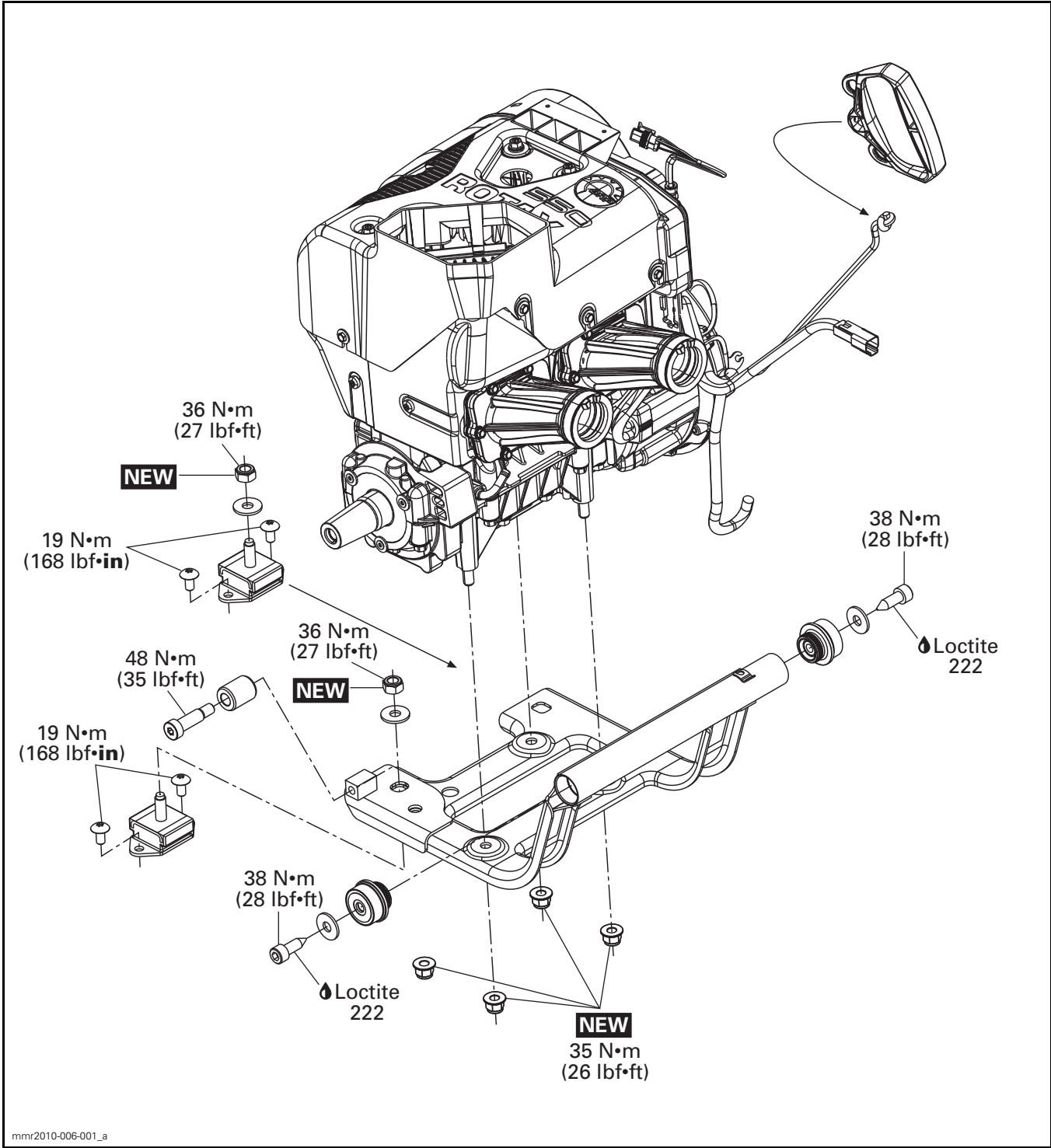
SERVICE TOOLS

| Description | Part Number | Page |
|---------------------------|-------------------|------|
| BALL JOINT INSTALLER..... | 529 035 975 | 9 |

SERVICE PRODUCTS

| Description | Part Number | Page |
|-------------------|-------------------|------|
| LOCTITE 222 | 413 703 400 | 8 |

Subsection XX (ENGINE REMOVAL AND INSTALLATION)



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GENERAL

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

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 when removed (e.g.: locking tabs, elastic stop nuts, cotter pin, etc.) must be replaced.

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

PROCEDURES

ENGINE

Engine Removal

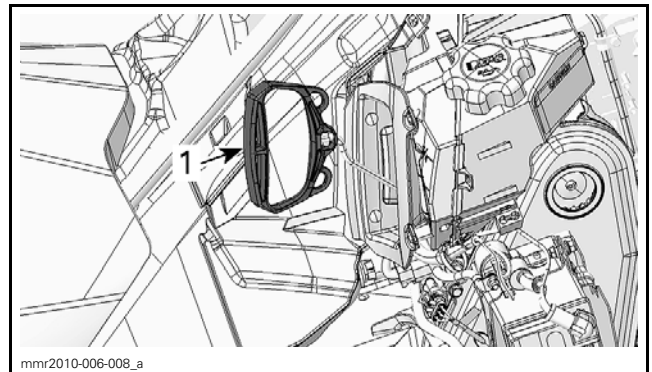
1. Place vehicle at workstation that will have access to an engine-lifting hoist.
2. On applicable models, disconnect BLACK negative cable (-) from battery.



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INSIDE STORAGE COMPARTMENT
1. BLACK negative cable (-)

3. Refer to *BODY* subsection and remove:
 - Hood
 - Side panels.

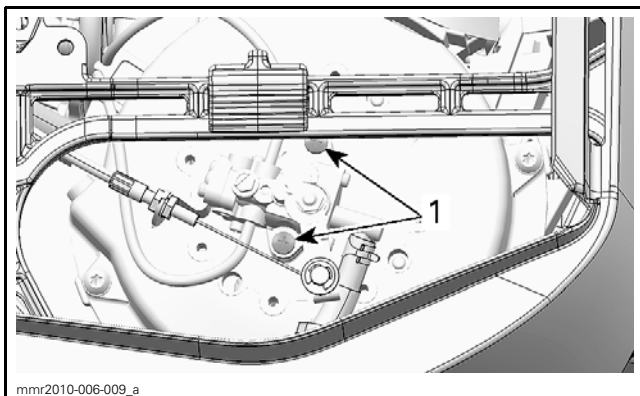
4. Refer to *EXHAUST SYSTEM* subsection and remove:
 - Muffler
 - Tuned pipe
 - Exhaust manifold.
5. Refer to *AXIAL FAN* subsection and remove:
 - Upper inlet air duct
 - Lower inlet air duct
 - Air outlet duct.
6. Refer to *AIR INTAKE SYSTEM* subsection and remove:
 - Primary air intake silencer
 - Headlight/gauge module as a unit with secondary air intake silencer.
7. Refer to *DRIVE SYSTEM AND BRAKE* subsection and remove:
 - Drive belt
 - Drive pulley
 - Driven pulley
 - Countershaft and countershaft bearing support.
8. Remove the rewind starter handle.



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TYPICAL
1. Rewind starter handle

9. Remove screws securing oil pump to rewind starter housing.

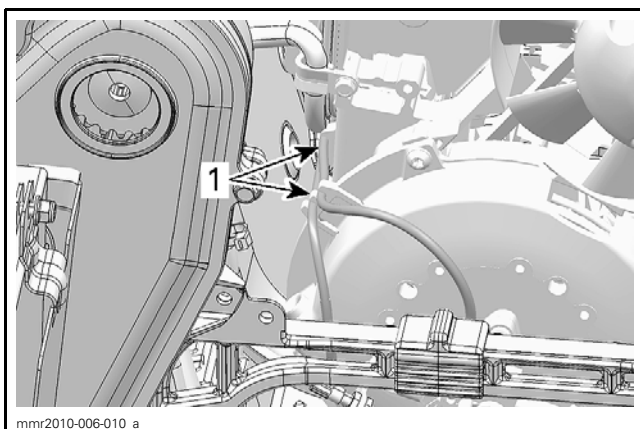
Subsection XX (ENGINE REMOVAL AND INSTALLATION)



TYPICAL

1. Oil pump retaining screws

10. Detach oil injection hoses from rewind starter housing and crankcase housing.

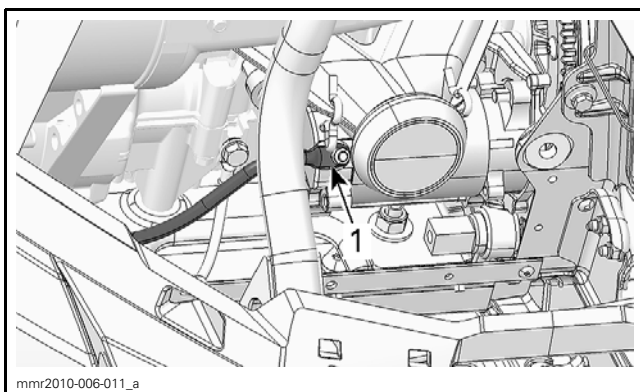


TYPICAL

1. Detach oil injection hoses here

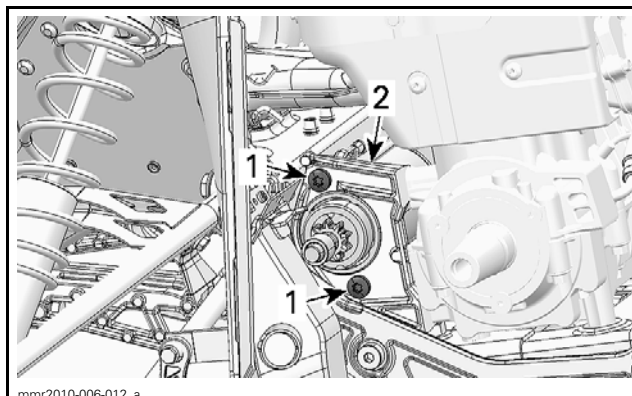
11. Remove the starter (if applicable).

11.1 Remove starter cable from starter post.



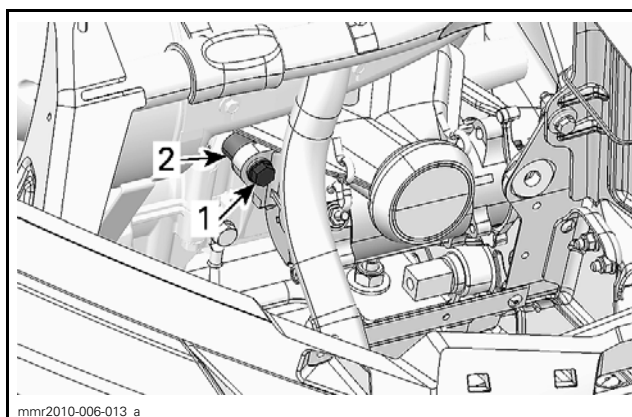
1. Starter cable

11.2 Remove both TORX screws securing starter to starter support.



1. Starter retaining TORX screws
2. Starter support

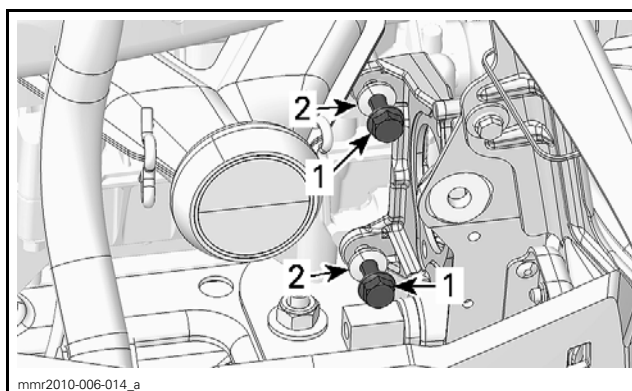
11.3 Remove the last retaining starter screw and the starter spacer.



1. Starter retaining screw
2. Starter spacer

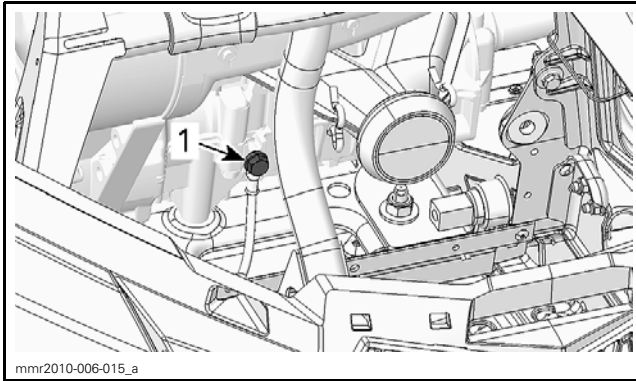
11.4 Remove starter from vehicle.

11.5 Remove starter support screws and Belleville washers.



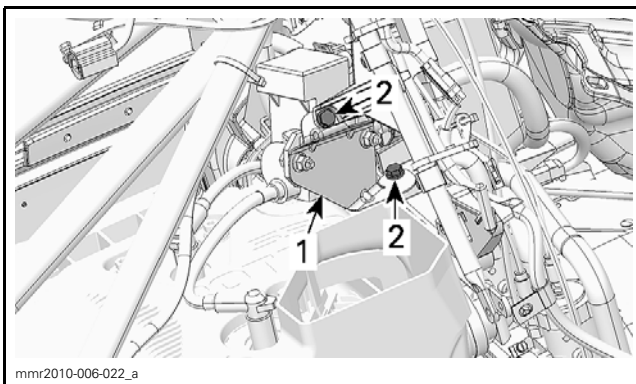
1. Starter support screws
2. Belleville washers

12. Remove engine ground cable screw from the engine.



1. Engine ground cable screw

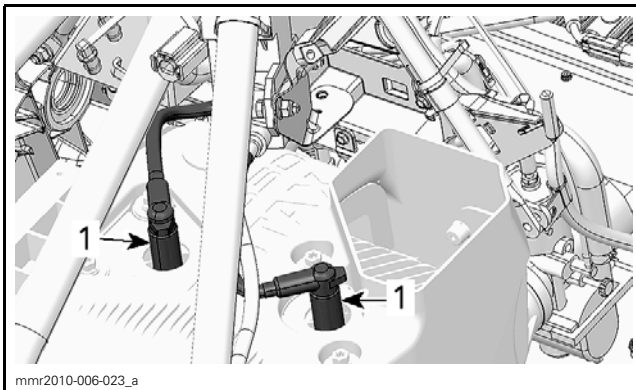
13. Remove screws securing the ECM support.



TYPICAL

1. ECM support
2. ECM support retaining screws

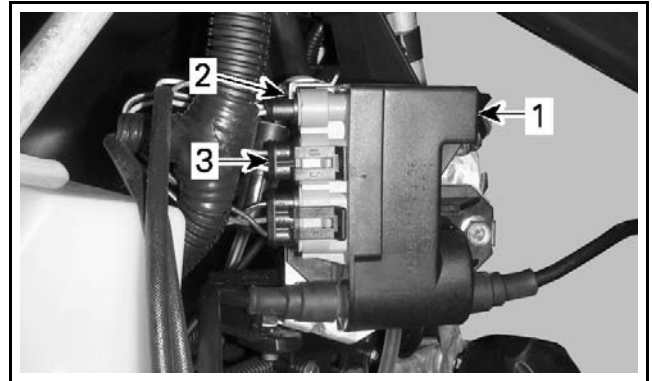
14. Disconnect spark plug cables.



TYPICAL

1. Spark plug cables

15. From the ECM, disconnect the 4-pin connector and the 2-pin connector.



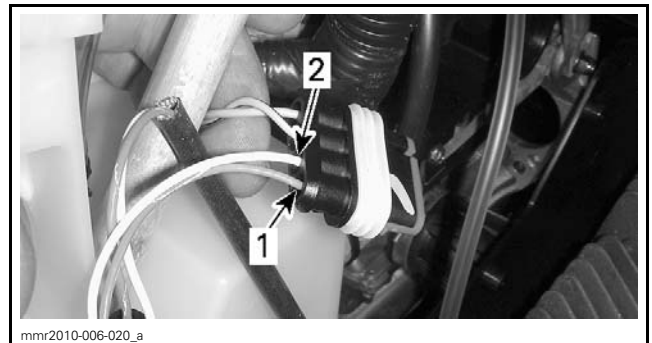
1. ECM
2. 4-pin connector
3. 2-pin connector

16. On 4-pin connector, disconnect the BLUE/YELLOW and the WHITE/YELLOW wires from the connector.

16.1 Remove the RED lock.

16.2 Using a small screwdriver, lift the terminal lock.

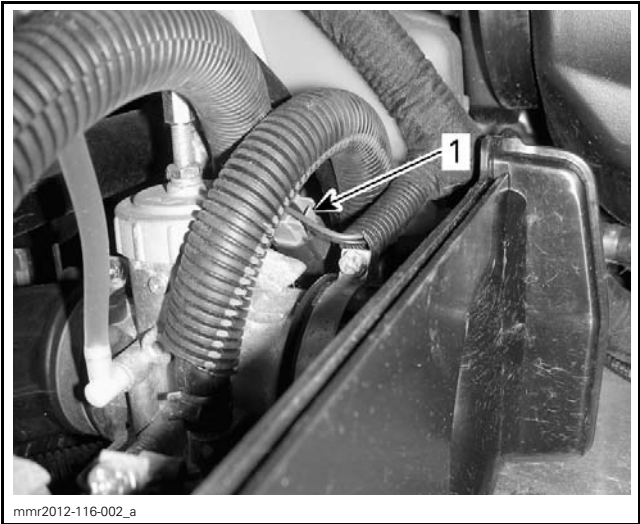
16.3 Extract the wire from the connector.



1. BLUE/YELLOW wire
2. WHITE/YELLOW wire

17. Disconnect the magneto ignition winding connector (MA).

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1. Magneto ignition winding connector (MA)

18. Remove the upper cylinder cowl. Refer to *AXIAL FAN* subsection.

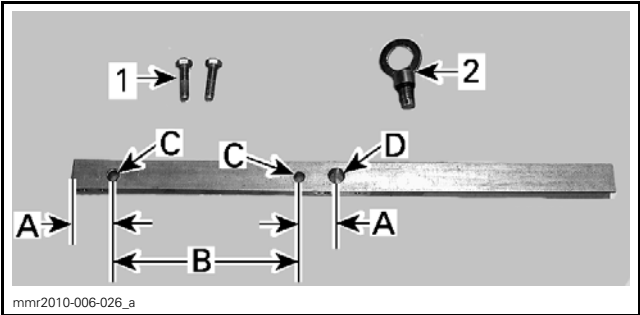
19. Install the lifting bar on two cylinder cowl supports.



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TYPICAL

| REQUIRED TOOLS |
|---|
| M8 x 30 hexagonal screws (QTY: 2) |
| Engine lifting ring (P/N 529 035 830) |
| Flat bar 152 x 25.4 x 13 mm (16 x 1 x 1/2 in) |



FLAT BAR 152 X 25.4 X 13 MM (16 X 1 X 1/2 IN)

1. M8 x 30 hexagonal screws

2. Engine lifting ring (P/N 529 035 830)

A. 30 mm (1.181 in)

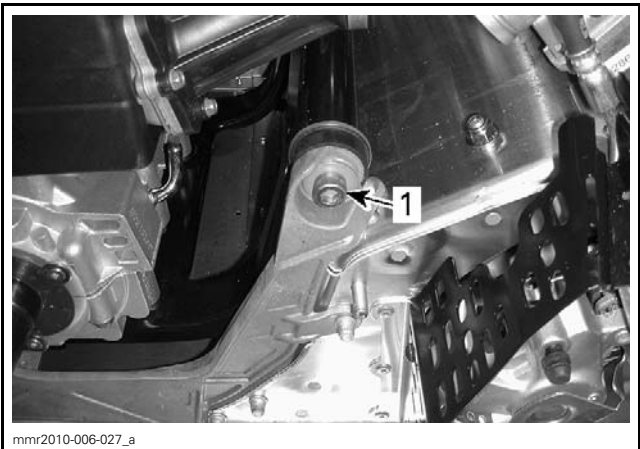
B. 125 mm (4.921 in)

C. Diameter: 9.53 mm (3/8 in)

D. Diameter: 13 mm (1/2 in) and do threads using a M14 x 1.0 screw tap

20. Attach the engine-lifting hoist to lifting tool.

21. Remove the rear engine mounting screws.



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PTO SIDE

1. LH rear engine mounting screw



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MAG SIDE

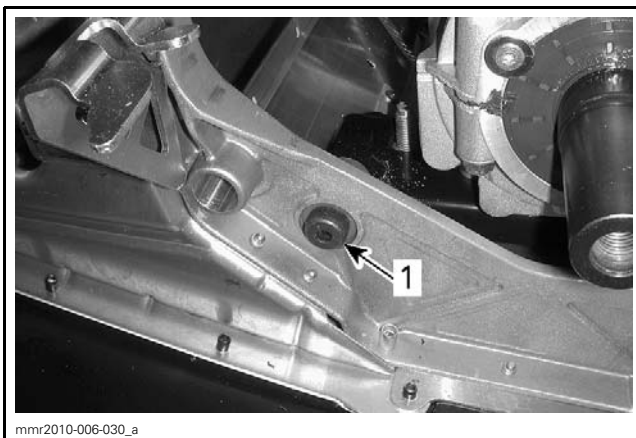
1. RH rear engine mounting screw

22. Remove and discard the front engine mounting nuts.



1. Front engine mounting nuts

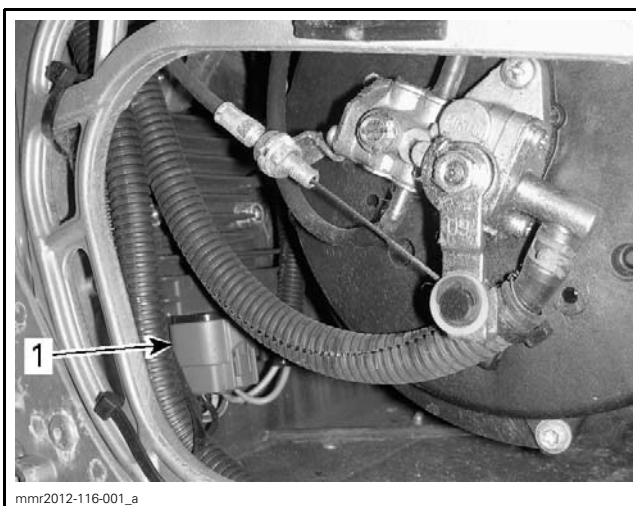
23. Unscrew and remove the engine stopper.



1. Engine stopper screw

24. Slightly lift the engine.

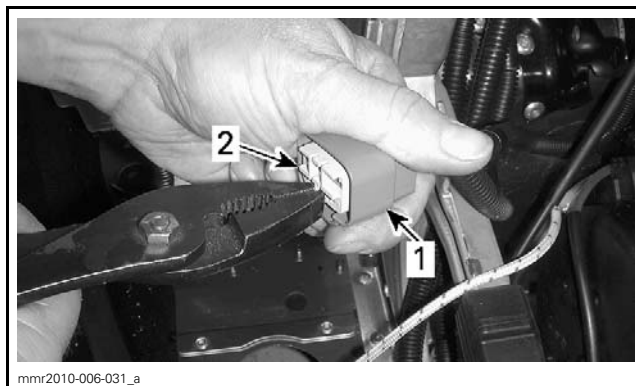
25. Disconnect the voltage regulator/rectifier connector.



1. Voltage regulator/rectifier connector

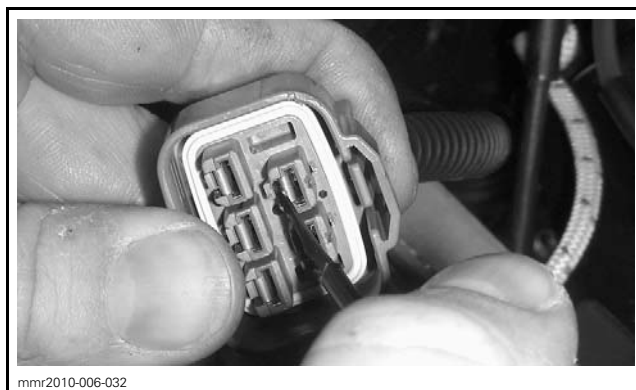
26. Remove the YELLOW and the YELLOW/BLACK wires from the connector.

26.1 Remove the BLUE lock.



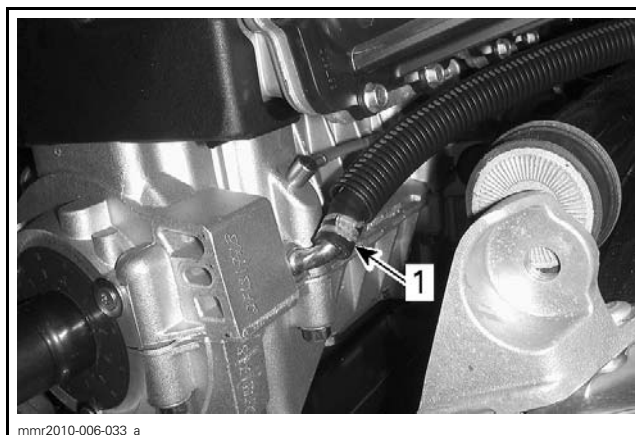
1. Voltage regulator/rectifier connector
2. Connector lock

26.2 Using a small screwdriver, lift the terminal lock.



26.3 Extract the wire from the connector.

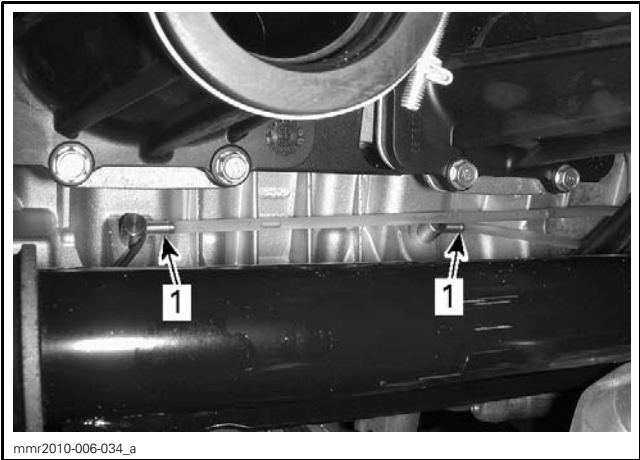
27. Unplug the fuel pump pulse line from crankcase.



1. Fuel pump pulse line

28. Unplug oil injection hoses from the crankcase fittings.

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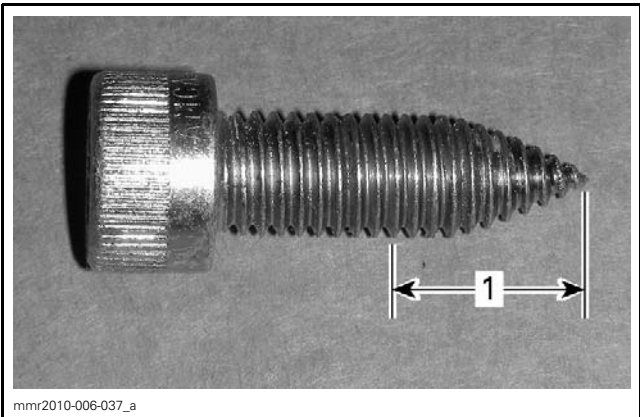
1. Oil injection hoses

- 29. Cut all necessary locking ties.
- 30. Lift and slide out engine.

Engine Installation

Install **NEW** self-locking fasteners where required, see the exploded view at the beginning of this subsection.

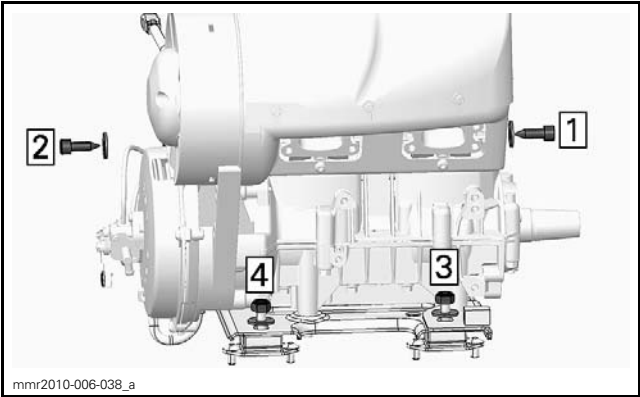
Before installing engine mounting bolts, apply LOCTITE 222 (P/N 413 703 400) only on the first 10 threads.



1. Apply Loctite 222 in this area

Install engine mounting bolts and engine mounting nuts. Refer to the following table and illustration for the tightening torque and sequence.

| FASTENER | TORQUE |
|-----------------------|--------------------|
| Engine mounting bolts | 38 N•m (28 lbf•ft) |
| Engine mounting nuts | 36 N•m (27 lbf•ft) |



Refer to *STARTING SYSTEM* to install the starter properly.

When engine installation is completed, bleed oil system. Refer to *LUBRICATION SYSTEM* subsection for proper procedure.

Perform a driven pulley alignment. Refer to *DRIVEN PULLEY* subsection.

If a new engine is installed or the engine was repaired, premix the fuel with oil.

ENGINE SUPPORT

Engine Support Inspection

Check if engine supports are cracked, bent or damaged. Replace if necessary.

Engine Support Removal

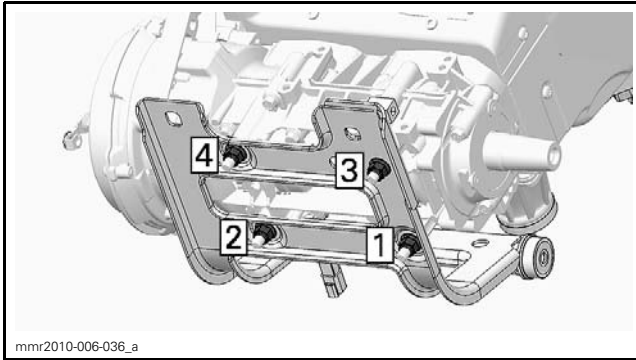
1. Remove engine from vehicle.
2. Remove and discard nuts retaining engine support to engine.
3. Remove engine support.

Engine Support Installation

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

Refer to the following table and illustration for the tightening torque and sequence.

| FASTENER | TORQUE |
|---------------------|--------------------|
| Engine support nuts | 35 N•m (26 lbf•ft) |



ENGINE RUBBER MOUNT

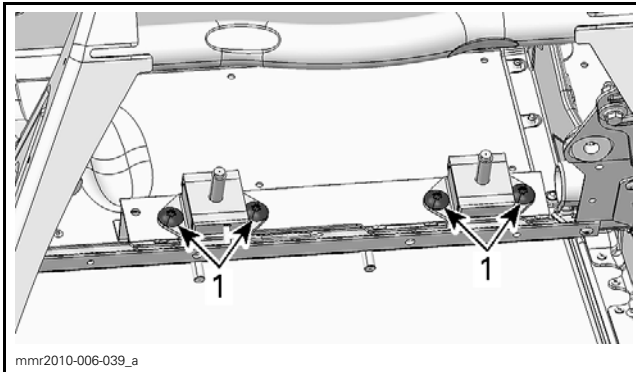
Engine Rubber Mount Inspection

Check rubber mounts. Replace them if brittle, cracked or damaged.

Engine Rubber Mount Replacement

Front Engine Rubber Mount

1. Remove engine from vehicle. See the procedure in this subsection.
2. Remove screw securing the front engine rubber mount to frame.



1. Front engine rubber mount screws

3. Remove the engine rubber mount.
4. Install the new rubber mount and tighten screws to 19 N•m (168 lbf•in).
5. Reinstall engine. See the procedure in this subsection.

Rear Engine Rubber Mount

1. Remove engine from vehicle. See the procedure in this subsection.
2. Using a punch, carefully drive the rear engine rubber mount out of the engine support.



3. Support the other side of the engine support and using the BALL JOINT INSTALLER (P/N 529 035 975), install the new rear engine rubber mount.



BALL JOINT INSTALLER OVER NEW ENGINE RUBBER MOUNT FOR INSTALLATION

4. Repeat steps 2 and 3 for the other side.
5. Reinstall engine. See the procedure in this subsection.