



TORQUE VALUES

ENGINE MOUNTING

 = Apply Victory All Purpose Grease 2872187

ENGINE INSTALLATION


1. Install all bolts in order A-H
Do not tighten.
2. Torque bolts as specified in order 1 - 10
3. Install left and right footrest supports
(page 6.5)


- D**  Torque to 27 Nm (20 lb-ft). Do not fully tighten until Step 7.
Fully torque to 111 Nm (82 lb.-ft)
M12 x 100mm

E  41 Nm (30 lb-ft)
M8 x 25mm


C  41 Nm (30 lb-ft)
M8 x 25mm

Nut Plates

A  Align engine to frame and minor pivot. Route brake line as shown on page 6.4.
Torque to 48 Nm (35 lb-ft)
M10 x 55mm

C  Minor pivot bolts:
Torque to 48 Nm (35 lb-ft)
(See page 6.4)

B  111 Nm (82 lb-ft)
12 x 100mm

H  24.5 Nm (18 lb-ft)
M8 x 16mm

11  11 Nm (96 lb-in)
M6 x 12mm

48  48 Nm (35 lb-ft)
M10 x 55mm

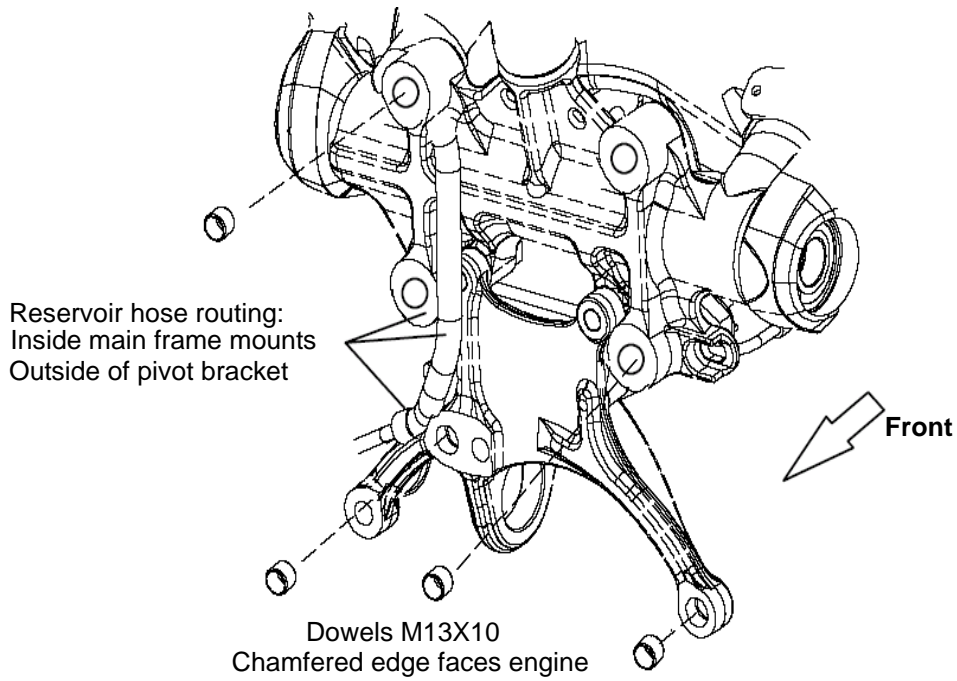
G 

F  48 Nm (35 lb-ft)
M10 x 70mm

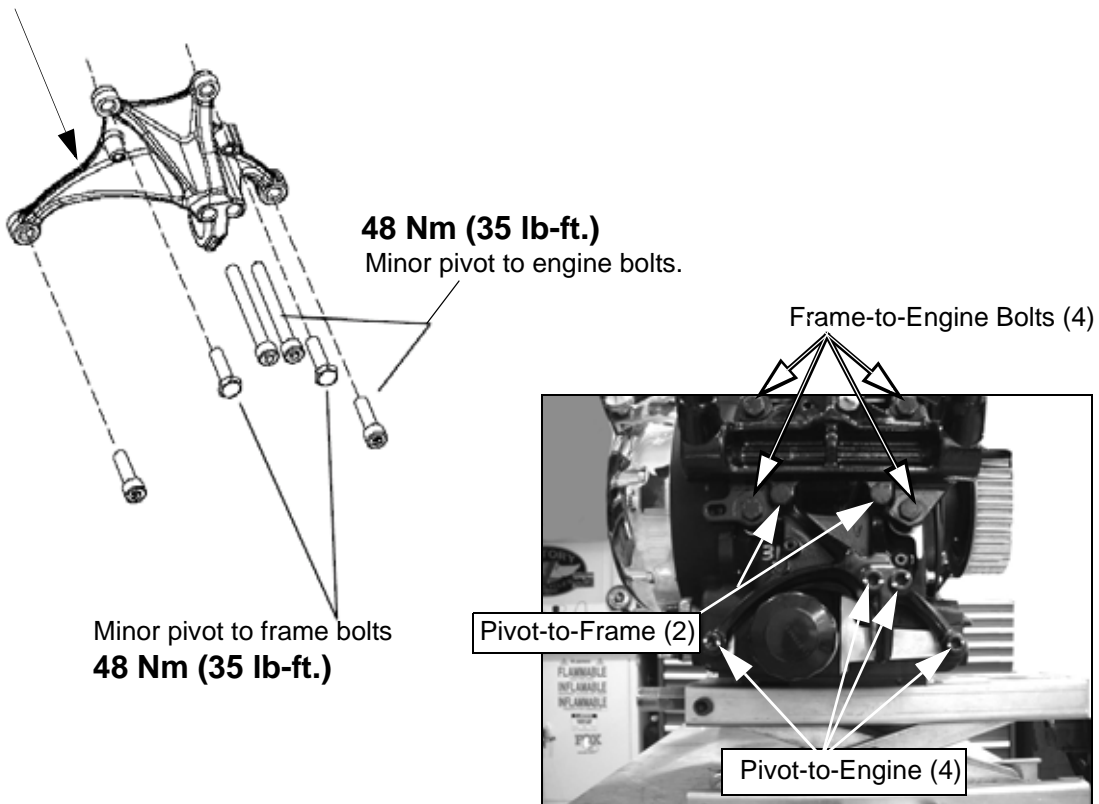


ENGINE REMOVAL & INSTALLATION

SUSPENSION MINOR PIVOT (SIDER BRACKET) / REAR ENGINE



Suspension minor pivot can remain on frame or engine when engine is removed.

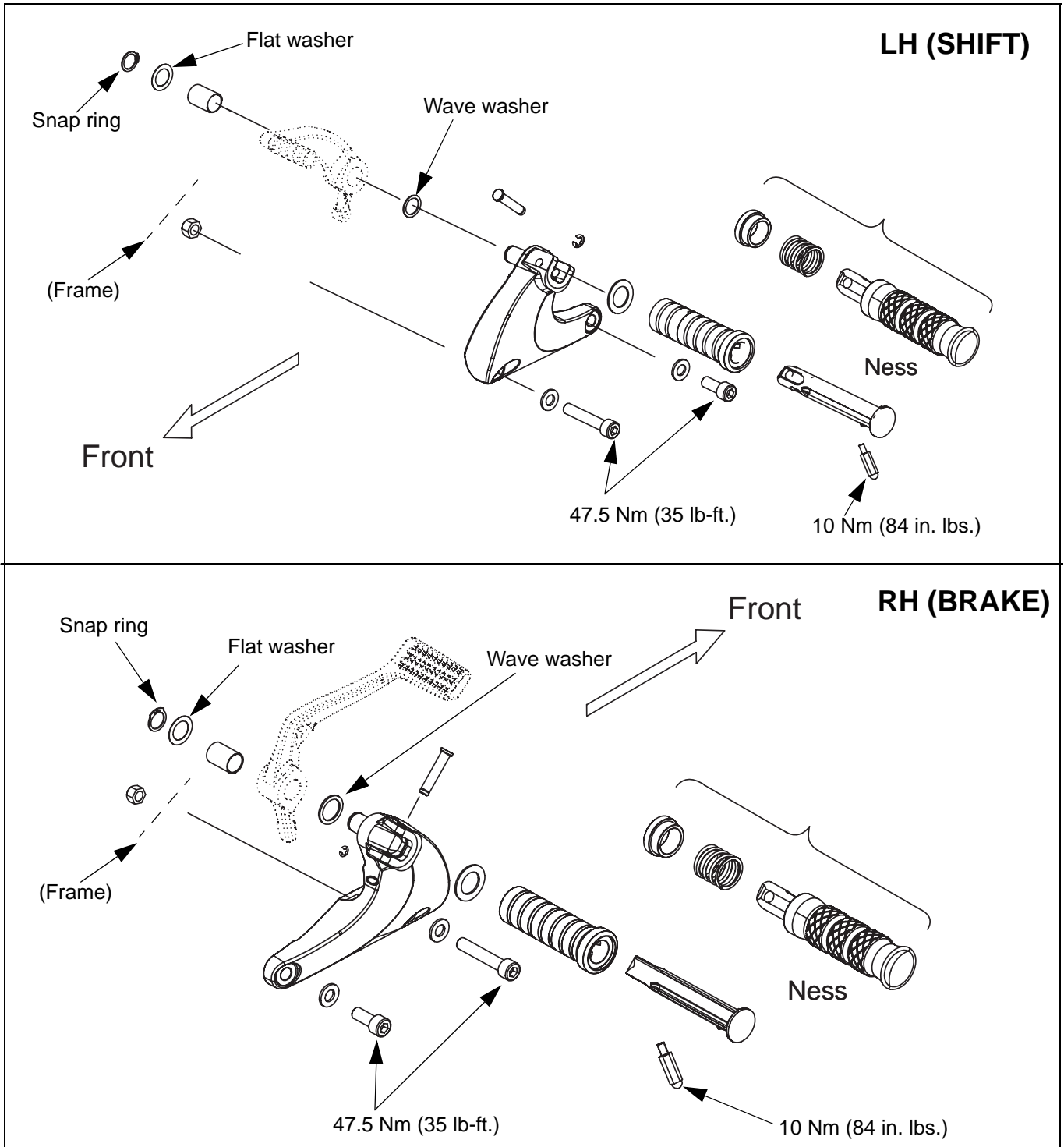


FOOT REST SUPPORTS

⚠ WARNING

Do not bend brake lines. Support brake pedal and lines to prevent damage.

Remove L and R footrest as an assembly with brake pedal or shift pedal attached.



ENGINE REMOVAL & INSTALLATION

ENGINE REMOVAL

PREPARATION FOR ENGINE REMOVAL

A number of different methods can be used to remove the engine depending on the equipment available to the technician. All methods require the front wheel to be held stationary and securely to allow the rear of the motorcycle to be elevated at least 8-10 inches above the surface of the lift.

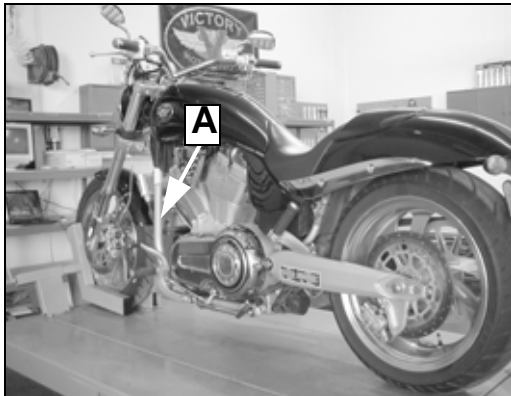
Refer to illustrations on page 6.3 - 6.5, and routing diagrams in Chapter 1 for locations of electrical connectors.

Remove the regulator / rectifier to prevent damage.

1. Support motorcycle securely in an upright position. Clamp front tire securely in a wheel vise of lift bench, so rear tire and chassis can be raised 10-12 inches off the bench to allow engine removal.

PRECAUTIONS:

- Protect frame down tubes (A) and other areas from scratches with tape or a protective wrap.

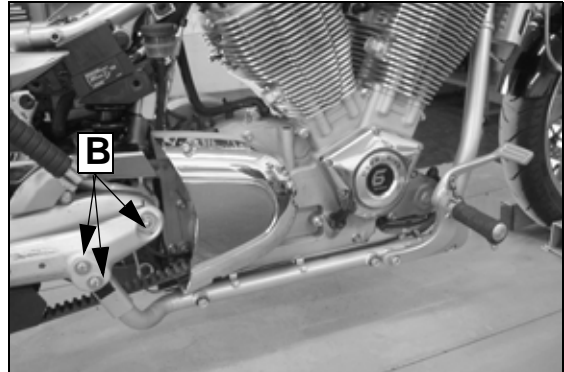


- Clean areas where items (such as oil lines) attach to the engine before you remove them to prevent debris from entering. Cover any openings during and after engine removal as required.
- Note routing of wires, cables and hoses. Refer to routing diagrams in Chapter 1.

REMOVE:

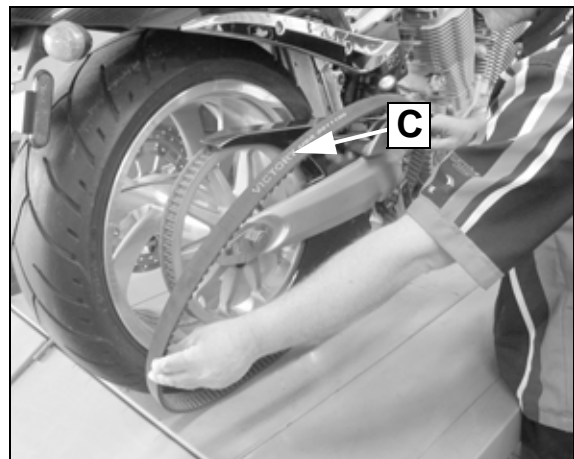
- Side covers (page 3.3)
- Seat(s) (page 3.4 - 3.5)
- Fuel tank (page 5.12)
- Ignition switch and IAC cover (page 3.3)

- Battery - Remove negative (-) cable first (page 2.23)
- Exhaust system (page 3.8 - 3.9)
- Exhaust support bracket

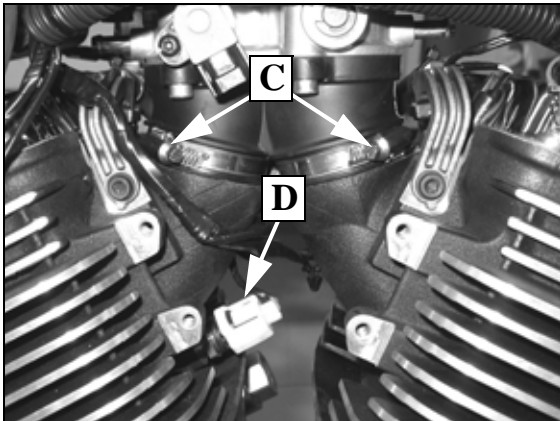


NOTE: If you plan to disassemble the engine crankcase, remove drive sprocket cover and drive sprocket (Chapter 11).

- Breather hose with clamp and guide. Cover breather opening.
- Speed sensor harness connector.
- Clutch cable or pull rod from release arm
- Clutch cable bracket from crankcase (remove slave cylinder assembly - hydraulic clutch models).
- Engine ground cable (rear left corner of engine).
- Drive belt guard.
- Drive belt sprocket cover and drive belt. Note direction belt is installed, with "VICTORY" readable from right side (C). Do not kink or twist the drive belt.

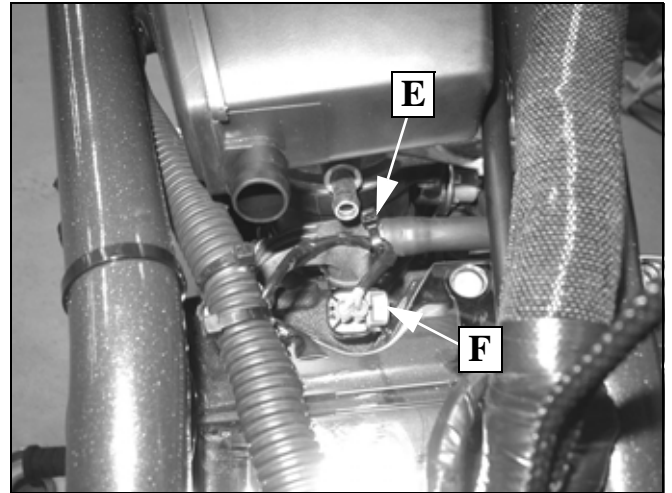


- Gear position and CPS switch wire harness, guides, P-clamps, and tie straps. Note location and orientation of all fasteners for assembly.
- Rear brake light switch bracket at left rear corner of engine.
- Oil pressure switch wire.
- Cut any tie straps and note location for assembly.
- Oil cooler and lines (page 4.6).
- **IMPORTANT! Remove** Regulator / Rectifier from front of engine to prevent damage upon engine removal (Chapter 16).
- Oil cooler (Chapter 4).
- Right lower frame rail assembly (page 6.5). Do not allow assembly to hang by brake lines.
- Linkage arm from shift shaft and left lower frame rail (page 6.5).
- Disconnect TPS and TMAP sensor.
- Loosen inlet manifold hose clamps (C).
- Disconnect engine temperature sensor wire (D).



- Cut each tie strap (E) that secures the front and rear injector wire harness to the fuel rail.
- Disconnect injector wires from injector.

NOTE: This is a double-lock connector. Pull the lock tab (F) out of the connector, then depress the tab to remove harness from injector.



- Drain engine oil
- Clean oil filter area. Remove oil filter. Cover opening to prevent debris from entering.

NOTE: Oil filter can remain installed if engine can be lowered far enough on jack to clear the lower left corner of suspension minor pivot ("spider") bracket.

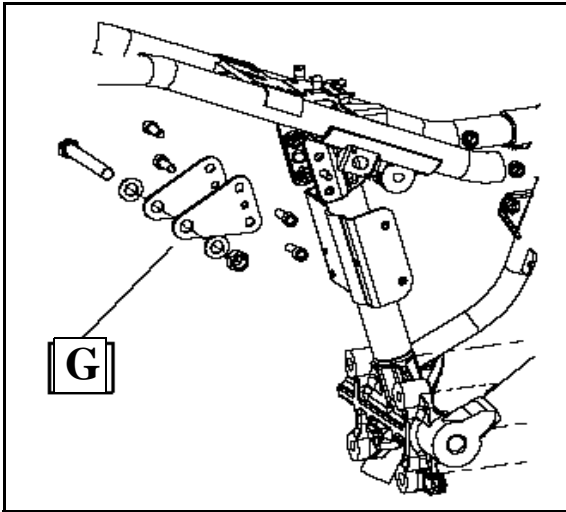
- Secure air box to upper frame tubes to support it when engine is lowered.
- Place a platform jack or lift hoist under the engine in a position that will center the load. Apply slight upward pressure on lift or jack until engine is supported.

⚠ CAUTION

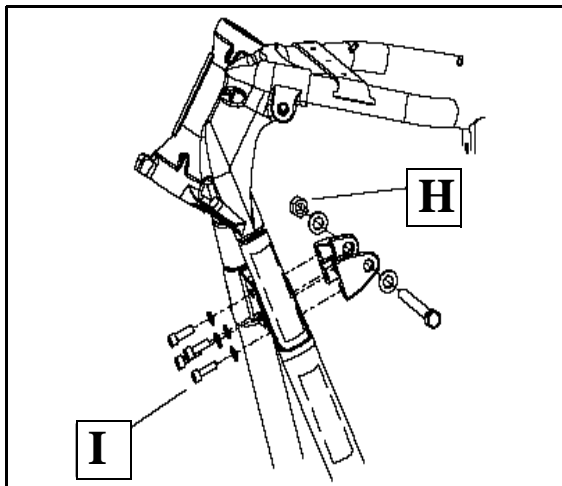
Arrange to have assistance when engine is ready to be removed from frame. The engine is very heavy and could cause severe personal injury if not handled properly. Be sure engine, front wheel, and frame are properly secured and supported before proceeding.

ENGINE REMOVAL & INSTALLATION

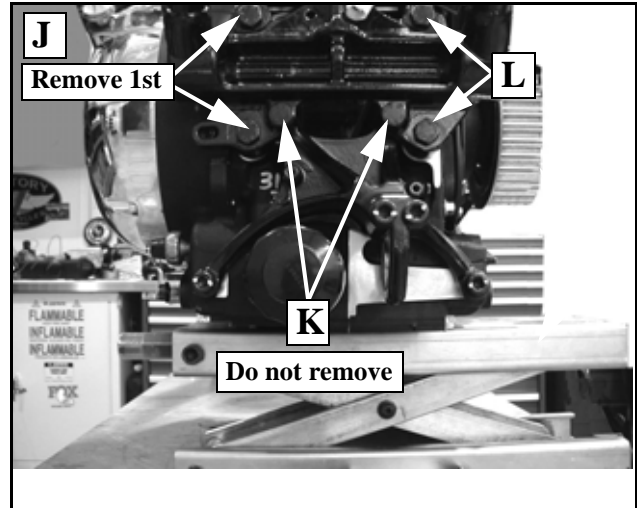
- Remove rear upper engine mounting bolt and both left and right brackets (G).



- Loosen, but do not remove front upper mount bolt (H) and (4) bracket bolts (I).



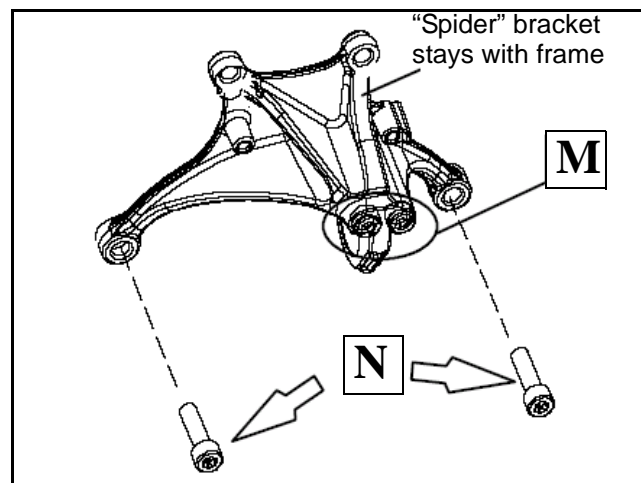
- Remove LEFT side main frame-to-engine bolts (J). Do not remove bolts (K) that hold suspension minor pivot bracket to frame.
- Remove lower left and lower right suspension minor pivot bracket bolts (L).



REAR SHOCK / LINKAGE REMOVAL

NOTE: Rear shock removal allows easy access to the right side frame-to-engine bolts (L in photo above) and suspension minor pivot bracket-to-engine bolts.

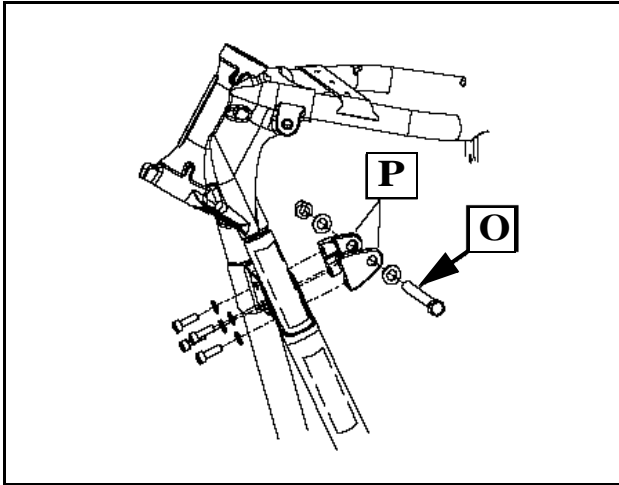
- Lift engine / frame slightly to remove weight from rear shock absorber and linkage.
- Remove rear shock absorber and linkage pin in swingarm (Chapter 13).
- Remove RIGHT side frame-to-engine bolts.
- Remove center spider bolts (M) and outer bolts (N).



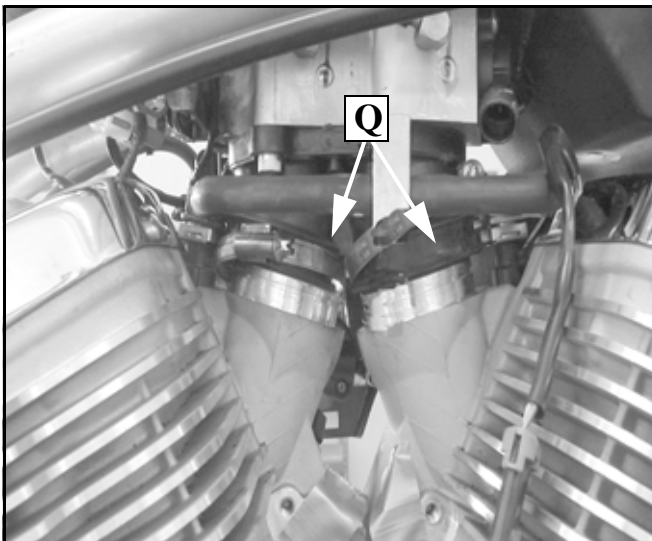
NOTE: When all rear bolts are removed, re-install rear shock absorber and linkage loosely to support frame and suspension.

REMOVING ENGINE FROM FRAME

- With suspension re-installed, raise the engine jack until weight of engine is fully supported.
- Remove front upper engine mount bolt (O) and both brackets (P).

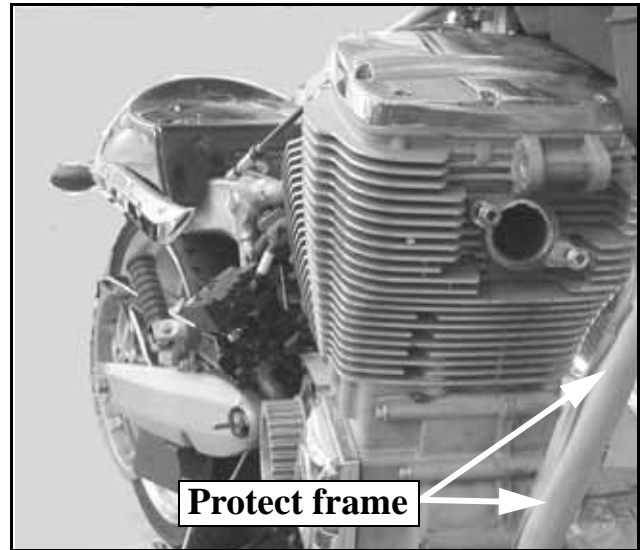


- When all fasteners have been removed, check to be sure all hoses, wiring, and components have been disconnected or removed to allow engine removal.
- Lower engine jack slightly until throttle body can be released from intake adapters (Q).

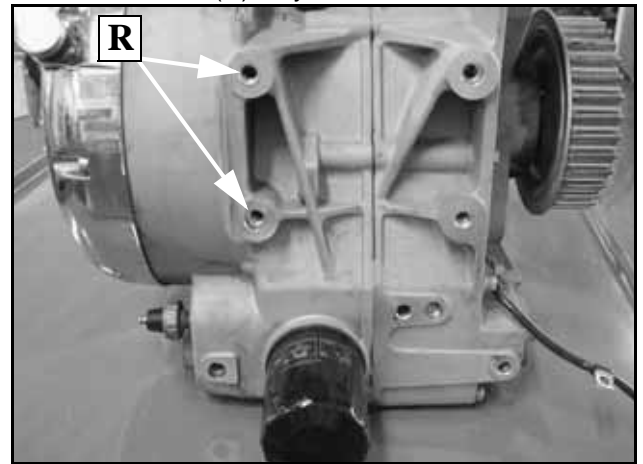


- Move engine back and forth slightly to release engine from alignment pins at rear of crankcase.

- Slide engine forward until dowel pins on frame and suspension bracket are dislocated.
- Elevate the rear of the motorcycle to help engine clear the frame tubes in front and bracket in back.
- Rotate engine carefully and remove from right side of frame.



NOTE: Attach engine securely to an engine stand to prevent damage and for ease of disassembly. Use spacers as needed for the stand you are using. If crankcases will be separated, use the two left crankcase mounts (R) only.



INJECTOR REMOVAL

NOTE: IMPORTANT! Debris could have collected in and around injector cavities. If injector removal is required, clean cavity and surrounding area with compressed air before removing injectors. If removed, injectors must be indexed properly to the fuel rail (aligned) to ensure proper spray pattern. See Chapter 5.