

## 2007 Acura RL

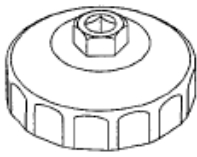
2005-08 ENGINE Engine Lubrication - RL

### 2005-08 ENGINE

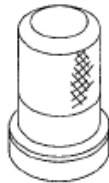
#### Engine Lubrication - RL

## SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07AAA-PLCA100	Oil Filter Wrench	1
②	070AD-RCAA100	Oil Seal Driver, 64 mm	1



①



②

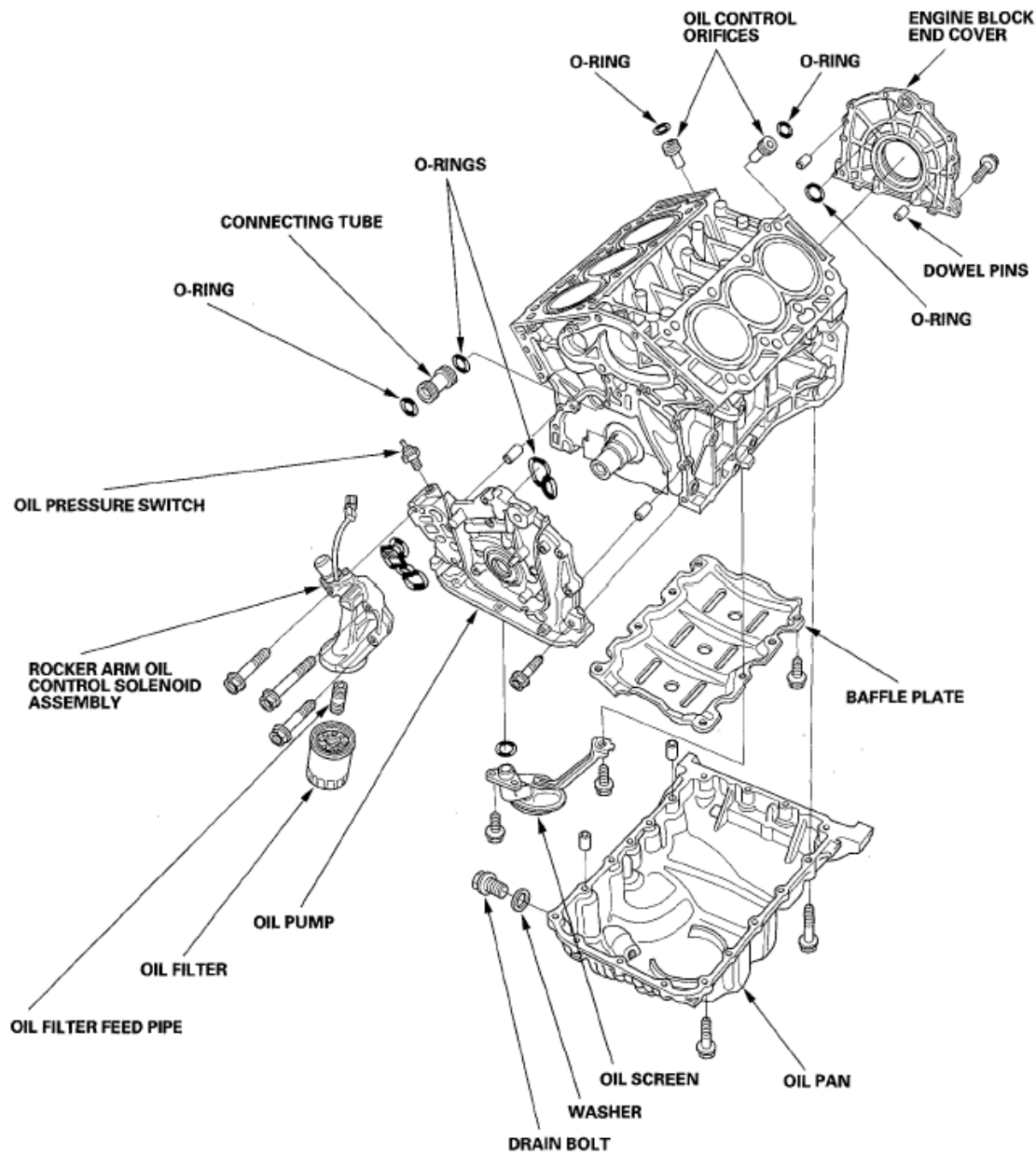
**Fig. 1: Identifying Special Tools**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

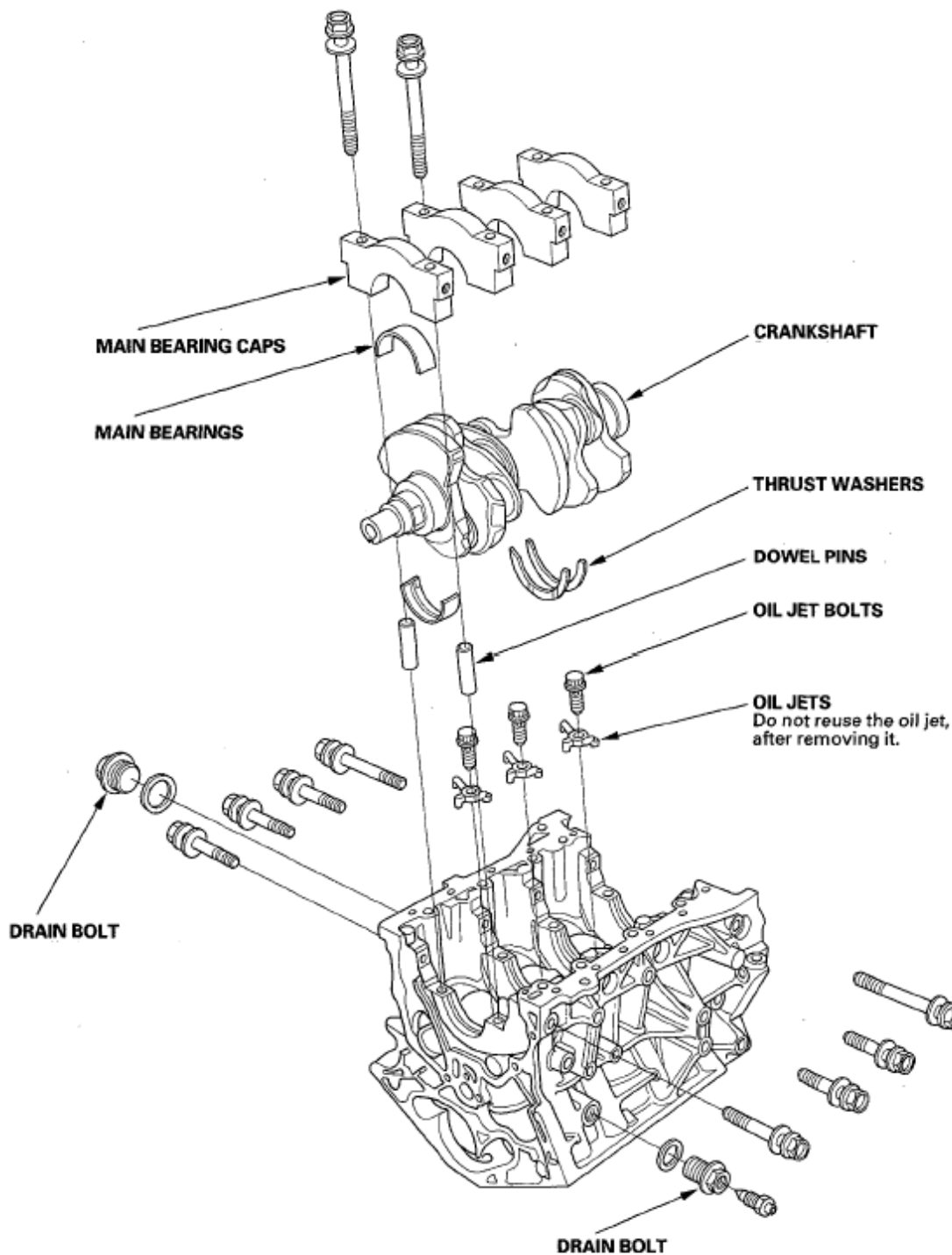
## COMPONENT LOCATION INDEX

## 2007 Acura RL

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**Fig. 2: Identifying Engine Lubrication Components Location (1 Of 2)**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.



**Fig. 3: Identifying Engine Lubrication Components Location (2 Of 2)**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

## SYMPTOM TROUBLESHOOTING INDEX

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Symptom	Diagnostic procedure	Also check for
	1. Verify the engine oil filler cap, oil drain bolt,	

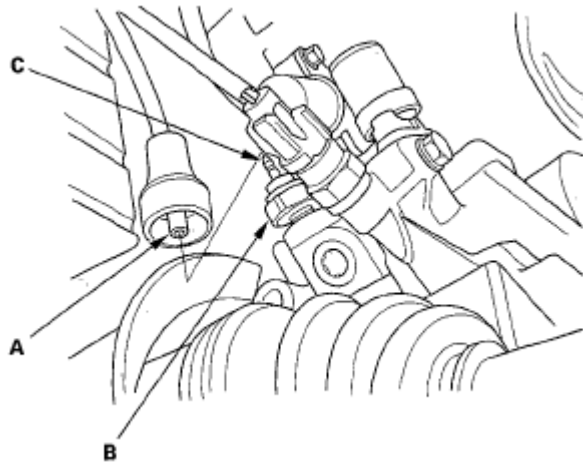
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Excessive engine oil consumption	<p>and oil filter are tight.</p> <ol style="list-style-type: none"><li>2. Check for oil leaks.</li><li>3. Check for worn valve guide(s) (see <b><u>VALVE INSPECTION</u></b> ) or worn valve stem seal(s) (see <b><u>VALVE, SPRING, AND VALVE SEAL REMOVAL</u></b> ).</li><li>4. Check for damaged or worn piston ring(s) (see <b><u>PISTON RING REPLACEMENT</u></b> ).</li><li>5. Check for damaged or worn engine internal parts (cylinder wall, pistons, etc.) (see <b><u>BLOCK AND PISTON INSPECTION</u></b> ).</li></ol>	
Low oil pressure indicator does not come on with the ignition switch ON (II)	<ol style="list-style-type: none"><li>1. Do the gauge control module self-diagnostic function (see <b><u>SELF-DIAGNOSTIC FUNCTION</u></b> ).</li><li>2. Test the oil pressure switch (see <b><u>OIL PRESSURE SWITCH TEST</u></b> ).</li></ol>	An open in the wire between the gauge control module and the oil pressure switch
Low oil pressure indicator stays on	<ol style="list-style-type: none"><li>1. Check the engine oil level.</li><li>2. Do the gauge control module self-diagnostic function (see <b><u>SELF-DIAGNOSTIC FUNCTION</u></b> ).</li><li>3. Test the oil pressure switch (see <b><u>OIL PRESSURE SWITCH TEST</u></b> ).</li><li>4. Check the engine oil pressure (see <b><u>OIL PRESSURE TEST</u></b> ).</li><li>5. Check the oil filter for clogging.</li><li>6. Check the oil screen for clogging.</li><li>7. Check the relief valve.</li><li>8. Test the oil pump (see <b><u>OIL PUMP OVERHAUL</u></b> ).</li></ol>	A wire shorted to ground between the gauge control module and the oil pressure switch

## OIL PRESSURE SWITCH TEST

1. Remove the YEL/RED wire (A) from the oil pressure switch (B).

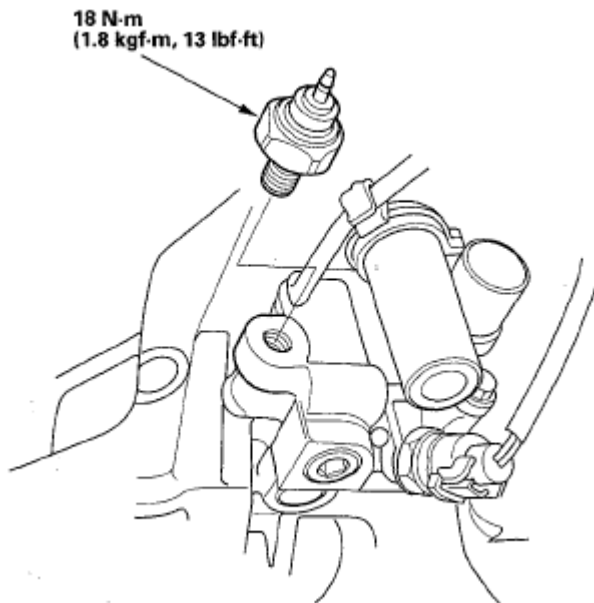


**Fig. 4: Identifying Oil Pressure Switch And Connector**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check for continuity between the positive terminal (C) and the engine (ground). There should be continuity with the engine stopped. There should be no continuity with the engine running.

## OIL PRESSURE SWITCH REPLACEMENT

1. Disconnect the oil pressure switch connector, then remove the oil pressure switch.



**Fig. 5: Identifying Oil Pressure Switch With Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove any old liquid gasket from the switch and switch mounting hole.
3. Apply a very small amount of liquid gasket to the oil pressure switch threads, then install the oil pressure switch.

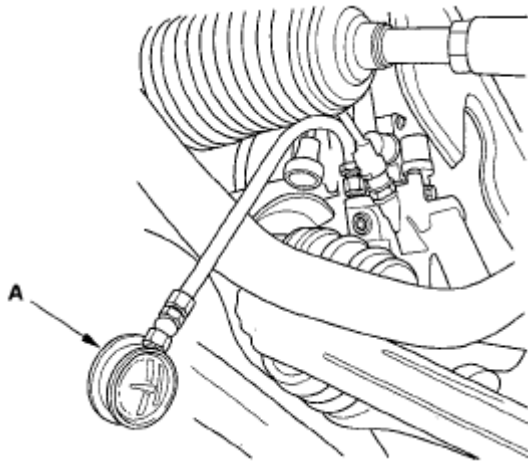
**NOTE:** Using too much liquid gasket may cause liquid gasket to enter the oil

passage or the end of the new oil pressure switch.

## OIL PRESSURE TEST

If the low oil pressure indicator stays on with the engine running, check the engine oil level. If the oil level is correct:

1. Remove the oil pressure switch, then install an oil pressure gauge (A).



**Fig. 6: Identifying Oil Pressure Gauge**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Start the engine. Shut it off immediately if the gauge registers no oil pressure. Repair the problem before continuing.
3. Allow the engine to reach operating temperature (fan comes on at least twice). The pressure should be:

**Engine Oil Temperature: 176°F (80°C)**

**Engine Oil Pressure:**

**At Idle: 70 kPa (0.7 kgf/cm<sup>2</sup> , 10 psi) min.**

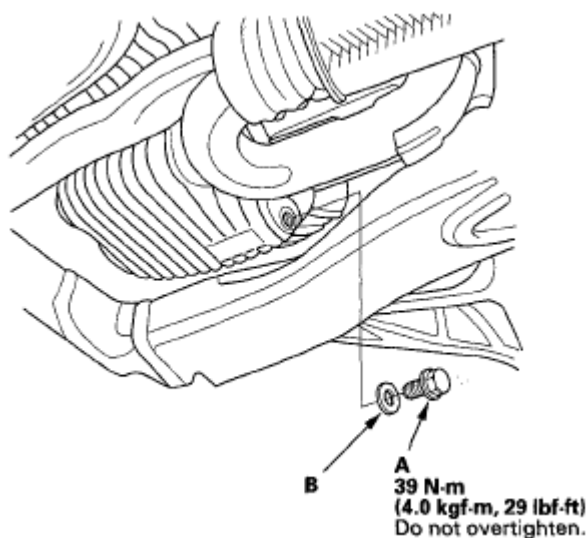
**At 3,000 RPM: 490 kPa (5.0 kgf/cm<sup>2</sup> , 71 psi) min.**

4. If oil pressure is out of specifications, inspect these items:
  - Replace the oil filter (see **ENGINE OIL FILTER REPLACEMENT** ).
  - Inspect the oil pressure relief valve (see **OIL PUMP OVERHAUL** ).
  - Check the oil screen for clogging.
  - Inspect the oil pump (see **OIL PUMP OVERHAUL** ).

## ENGINE OIL REPLACEMENT

1. Warm up the engine.

2. Remove the drain bolt (A), and drain the engine oil.



**Fig. 7: Identifying Engine Oil Drain Bolt With Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Reinstall the drain bolt with a new washer (B).
4. Refill with the recommended oil (see **LUBRICANTS AND FLUIDS** ).

### **Capacity**

#### **At Oil Change:**

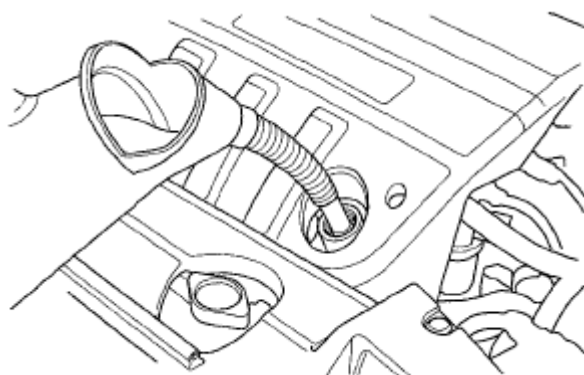
**4.0 L (4.2 US qt)**

#### **At Oil Change including Filter:**

**4.3 L (4.5 US qt)**

#### **After Engine Overhaul:**

**5.0 L (5.3 US qt)**



**Fig. 8: Filling Engine Oil**

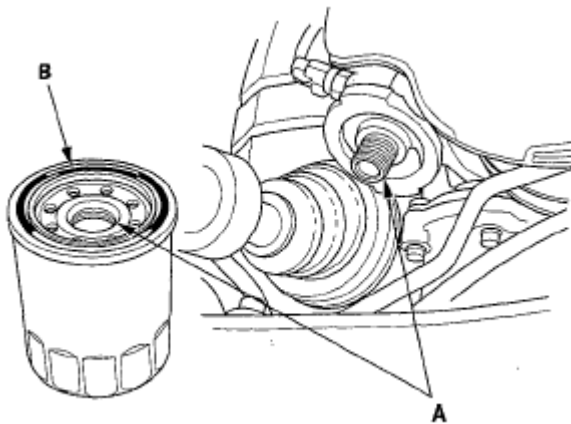
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. If the maintenance minder required to replace the engine oil, reset the maintenance minder (see **RESETTING THE MAINTENANCE-INFORMATION DISPLAY** ) and this procedure is complete. If the maintenance minder did not require replacement of the engine oil, go to step 6.
6. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 under **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)** ).
7. Turn the ignition switch ON (II).
8. Select the BODY ELECTRICAL with the HDS.
9. Select the ADJUSTMENT in GAUGE MENU with the HDS.
10. Select the RESET in the MAINTENANCE MINDER with the HDS.
11. Select the RESETTING THE ENGINE OIL LIFE with the HDS.
12. Run the engine for more than 3 minutes, then check for oil leakage.

**ENGINE OIL FILTER REPLACEMENT****Special Tools Required**

Oil filter wrench 07AAA-PLCA100

1. Remove the oil filter with the oil filter wrench.
2. Make sure all of the rubber seal was removed from the oil filter seating surface.
3. Inspect the threads (A) and rubber seal (B) on the new filter. Clean the seat on the engine block, then apply a light coat of new engine oil to the filter rubber seal. Use only filters with a built-in bypass system.



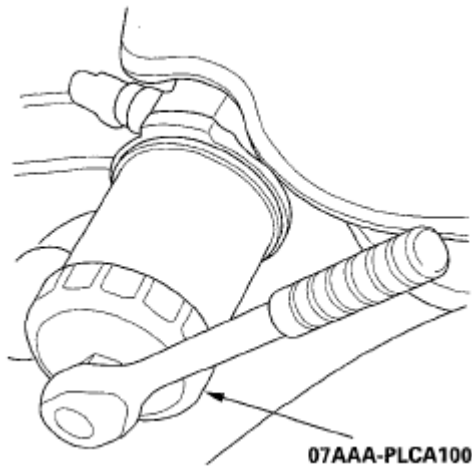
**Fig. 9: Identifying Threads And Rubber Seal On Filter**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Install the oil filter by hand.
5. After the rubber seal seats, tighten the oil filter clockwise with the oil filter wrench.

**Tighten: 3/4 Turn Clockwise**

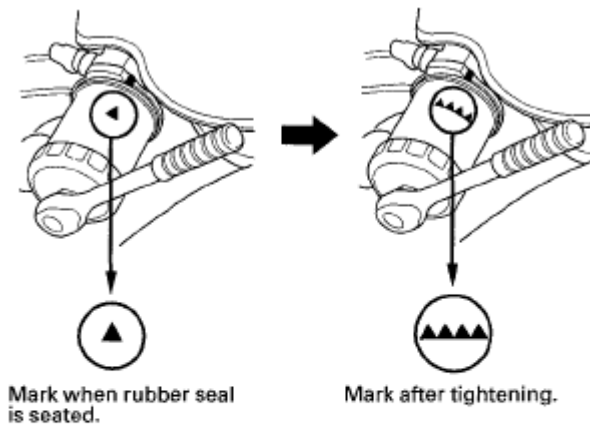
**Tightening Torque: 12 N.m (1.2 kgf.m, 8.8 lbf.ft)**



**Fig. 10: Tightening Oil Filter**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If four numbers or marks (1 to 4 or ? to ????) are printed around the outside of the filter, you can use the following procedure to tighten the filter.
  - Spin the filter on until its seal lightly seats against the block, and note which number or mark is at the bottom.
  - Tighten the filter by turning it clockwise three numbers or marks from the one you noted. For example, if mark ? is at the bottom when the seal is lightly seated, tighten the filter until the mark ???? comes around to the bottom.



Number or Mark when rubber seal is seated	1 or ▼	2 or ▼▼	3 or ▼▼▼	4 or ▼▼▼▼
Number or Mark after tightening	4 or ▼▼▼▼	1 or ▼	2 or ▼▼	3 or ▼▼▼

**Fig. 11: Identifying Marks Printed Around Outside Of Filter**

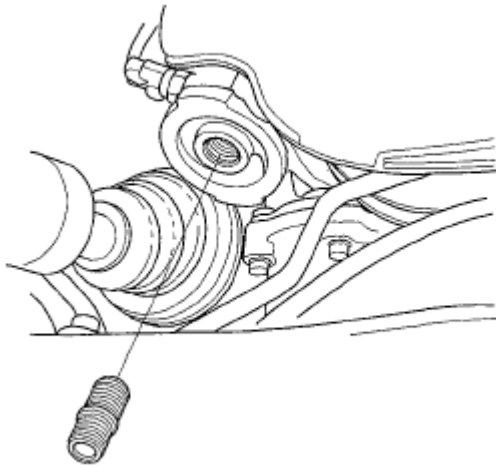
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.
8. Reset the multi-information display (see **RESETTING THE MAINTENANCE-INFORMATION**

**DISPLAY** ).

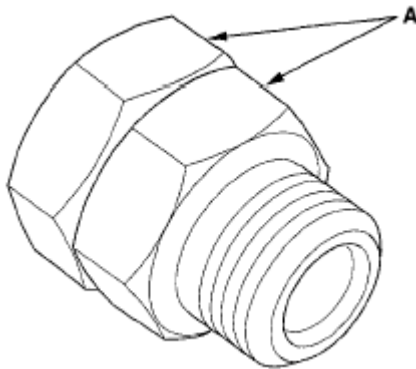
## OIL FILTER FEED PIPE REPLACEMENT

1. Remove the filter (see **ENGINE OIL FILTER REPLACEMENT** ).
2. Remove the oil filter feed pipe.



**Fig. 12: Identifying Oil Filter Feed Pipe**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install two 20 x 1.5 mm nuts (A) onto the new oil filter feed pipe, and hold one nut with a wrench, then tighten the other nut.

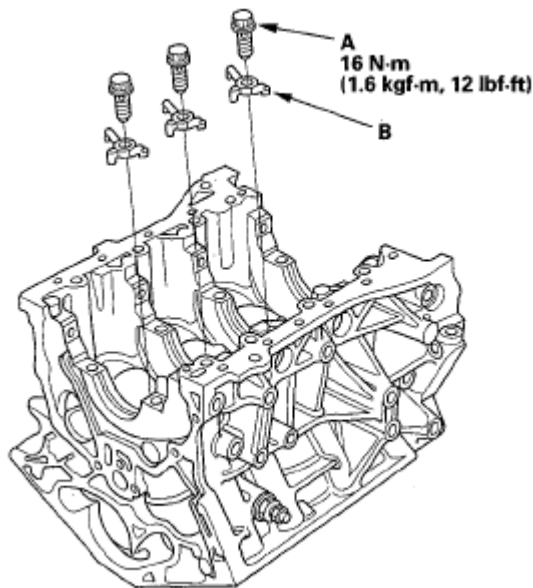


**Fig. 13: Identifying Oil Filter Feed Pipe Nuts**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Tighten the oil filter feed pipe to 49 N.m (5.0 kgf.m, 36 lbf.ft), then remove the nuts from the oil filter feed pipe.

## OIL JET REPLACEMENT

1. Remove the crankshaft from the engine block (see **CRANKSHAFT AND PISTON REMOVAL** ).
2. Remove the oil jet bolt (A), then remove and discard the oil jet (B).

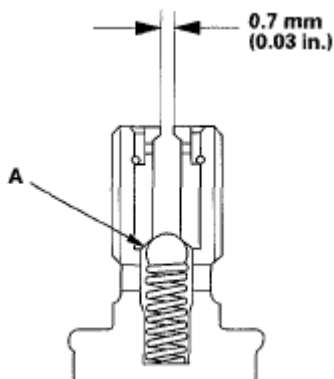


**Fig. 14: Identifying Oil Jet Bolt And Oil Jet With Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Carefully install the new oil jet and tighten the oil jet bolt.
4. Install the crankshaft (see **CRANKSHAFT AND PISTON INSTALLATION**).

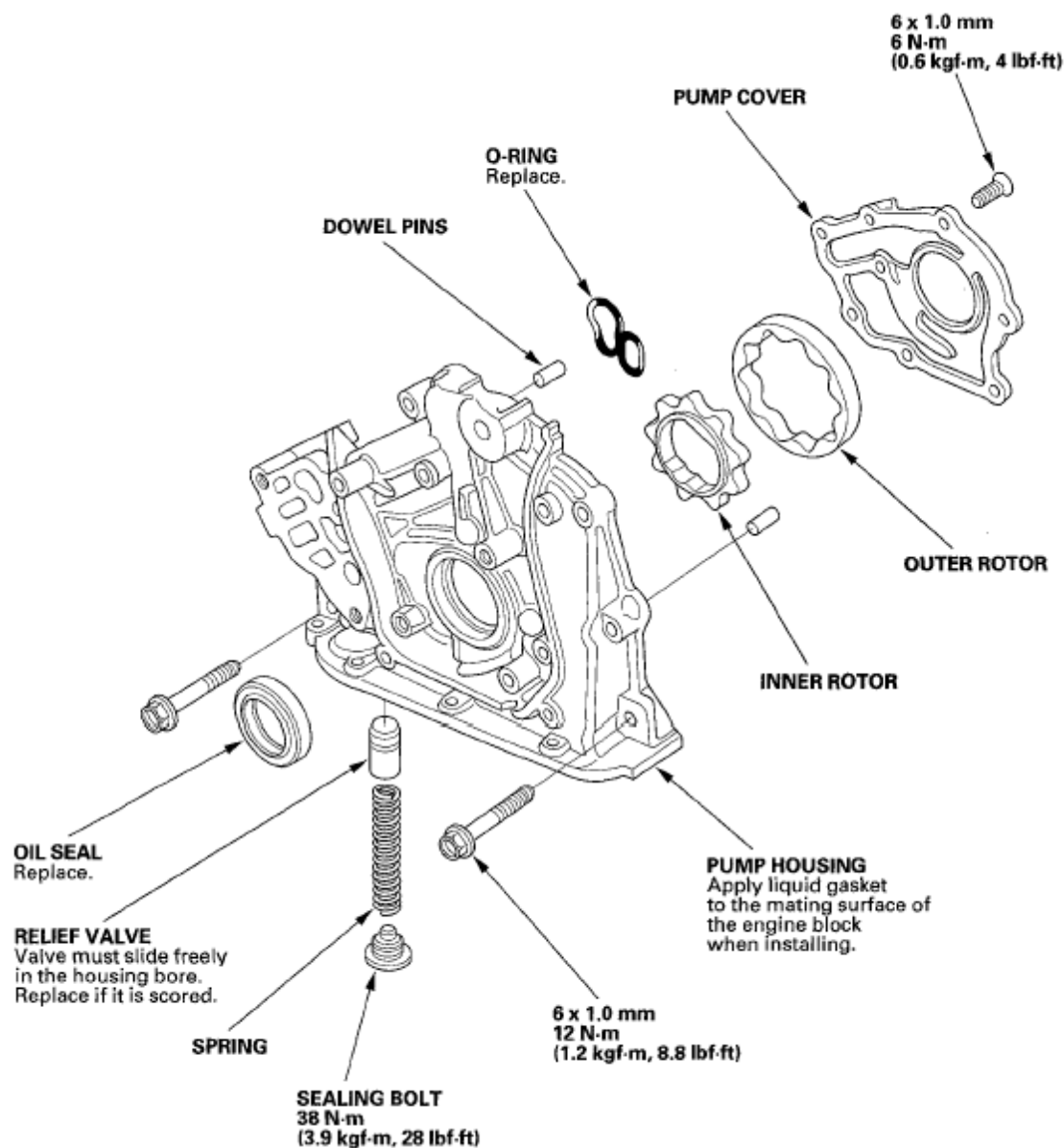
## OIL JET BOLT INSPECTION

1. Remove the oil jet bolt (see **OIL JET REPLACEMENT**).
2. Inspect the oil jet bolt as follows.
  - Make sure that a 0.6 mm (0.02 in.) diameter drill will go through the oil intake (0.7 mm (0.03 in.) diameter). Make sure the check ball (A) moves smoothly and has a stroke of about 4.0 mm (0.16 in.)
  - Check the oil jet bolt operation with an air nozzle. It should take at least 120 kPa (1.2 kgf/cm, 17 psi) to unseat the check ball.



**Fig. 15: Identifying Oil Jet Check Ball**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

## OIL PUMP OVERHAUL

**EXPLODED VIEW**

**Fig. 16: Exploded View Of Oil Pump With Torque Specifications**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**Special Tools Required**

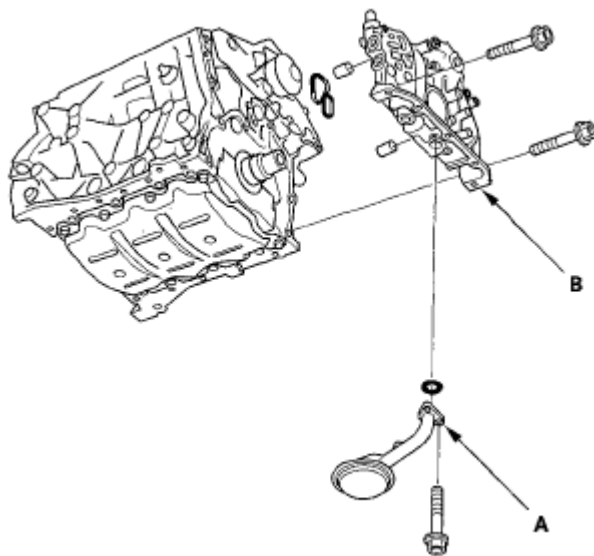
- Oil seal driver, 64 mm 070AD-RCAA100
- Engine support hanger, A and Reds AAR-T-12566 \*
- Engine hanger balance bar VSB02C000019 \*

\* Available through the Honda Tool and Equipment program, 1-888-424-6857.

**REMOVAL**

1. Drain the engine oil (see **OIL PRESSURE TEST** ).

2. Remove the windshield wiper arms (see **WIPER MOTOR REPLACEMENT** ).
3. Remove the engine cover, right upper fender trim, battery trim, and left upper fender trim, then remove the upper grille cover and cowl cover (see step 3 under **ENGINE REMOVAL** ).
4. Remove the under-hood fuse/relay box, connector, and transfer breather hose from the strut brace, then remove the strut brace (see step 18 under **ENGINE REMOVAL** ).
5. Remove the connector bracket from the front cylinder head; use the bracket bolt hole to attach engine balance bar front arm (see step 55 under **ENGINE REMOVAL** ).
6. Remove the engine mount control solenoid valve bracket from the rear cylinder head; use the bracket bolt hole to attach engine balance bar rear arm (see step 56 under **ENGINE REMOVAL** ).
7. Lift and support the engine with engine hanger and engine balance bar. Attach the front arm to the front cylinder head with a spacer and the 10 x 1.25 mm bolt. Attach the rear arm to the rear cylinder head with the 8 x 1.25 mm bolt (see step 57 under **ENGINE REMOVAL** ).
8. Remove the timing belt (see **TIMING BELT REMOVAL** ).
9. Remove the crankshaft position (CKP) sensor (see **CKP SENSOR REPLACEMENT** ).
10. Remove the rocker arm oil control solenoid/oil filter assembly (see step 9 under **CRANKSHAFT AND PISTON REMOVAL** ).
11. Remove the oil pan (see **OIL PAN REMOVAL** ).
12. Remove the oil screen (A), then remove the oil pump (B).



**Fig. 17: Identifying Oil Screen And Oil Pump**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

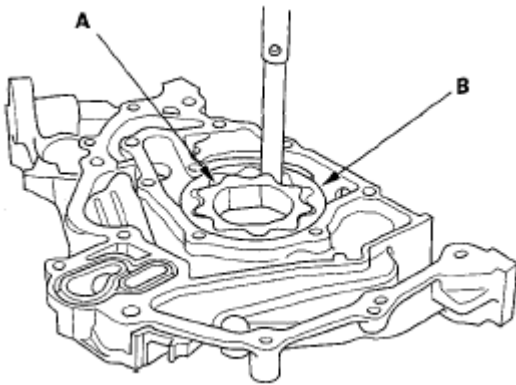
## INSPECTION

1. Remove the screws from the pump housing, then separate the housing and cover.
2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor clearance exceeds the service limit, replace the oil pump assembly.

### Inner Rotor-to-Outer Rotor Radial Clearance

**Standard (New): 0.04-0.16 mm (0.002-0.006 in.)**

**Service Limit: 0.20 mm (0.008 in.)**



**Fig. 18: Checking Inner-To-Outer Rotor Radial Clearance Between Inner Rotor And Outer Rotor**

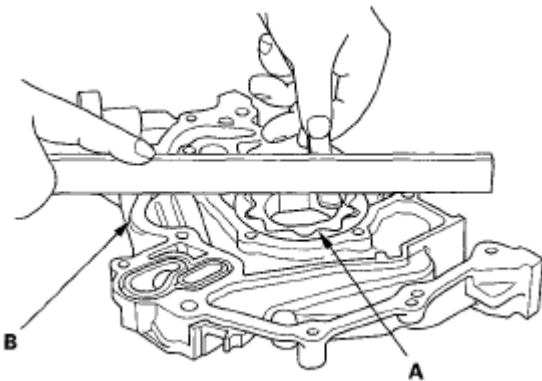
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Check the housing-to-rotor axial clearance between the rotors (A) and pump housing (B). If the housing-to-rotor axial clearance exceeds the service limit, replace the oil pump assembly.

#### **Housing-to-Rotor Axial Clearance**

**Standard (New): 0.02-0.07 mm (0.001-0.003 in.)**

**Service Limit: 0.12 mm (0.005 in.)**



**Fig. 19: Checking Housing-To-Rotor Axial Clearance Between Rotors And Pump Housing**

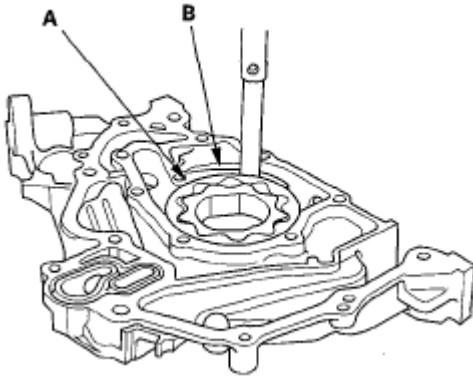
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Check the housing-to-outer rotor radial clearance between the outer rotor (A) and pump housing (B). If the housing-to-outer rotor radial clearance exceeds the service limit, replace the oil pump assembly.

#### **Housing-to-Outer Rotor Radial Clearance**

**Standard (New): 0.14-0.19 mm (0.006-0.007 in.)**

**Service Limit: 0.20 mm (0.008 in.)**



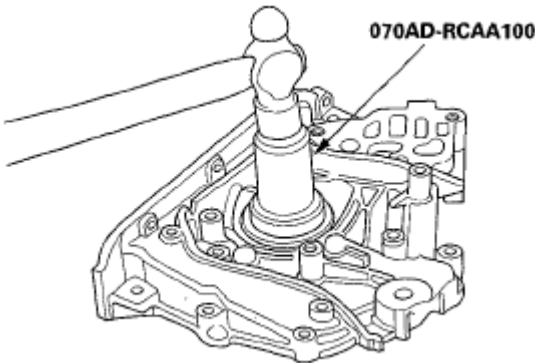
**Fig. 20: Checking Housing-To-Outer Rotor Radial Clearance Between Outer Rotor And Pump Housing**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Inspect both rotors and pump housing for scoring or other damage, Replace the parts, if necessary.
6. Apply liquid thread lock to the pump housing screws, then install the oil pump cover.
7. Make sure the oil pump turns freely.

## INSTALLATION

1. Remove the old oil seal from the oil pump.
2. Gently tap in the new oil seal until the oil seal driver bottoms on the pump.



**Fig. 21: Installing Oil Seal**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

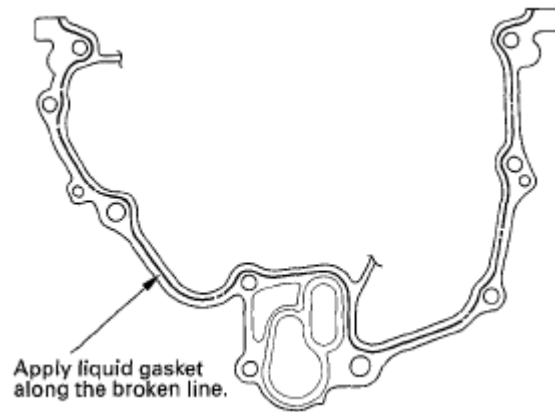
3. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.
4. Clean and dry the oil pump mating surfaces.
5. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the oil pump. Install the component within 5 minutes of applying the liquid gasket.

### NOTE:

- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid

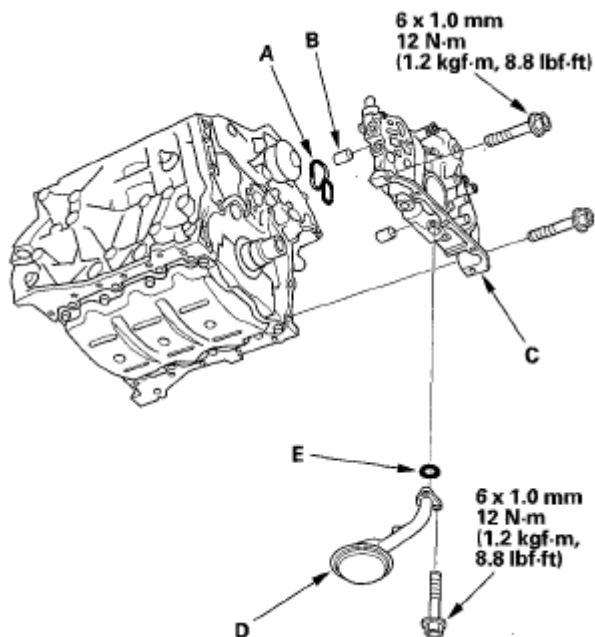


**gasket.**



**Fig. 22: Identifying Liquid Gasket Applying Area Of Engine Block Mating Surface Of Oil Pump**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Grease the lip of the oil seal, and apply oil to the new O-ring (A).



**Fig. 23: Identifying Oil Seal And Oil Pump With Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Install the dowel pins (B), then align the inner rotor with the crankshaft, and install the oil pump (C).
8. Clean the excess grease off the crankshaft, and check the seal for distortion.
9. Install the oil screen (D) with a new O-ring (E).
10. Install the rocker arm oil control solenoid/oil filter assembly, with a new rocker arm oil control solenoid filter (see step 38 under **OIL PAN INSTALLATION** ).
11. Install the oil pan (see **OIL PAN INSTALLATION** ).
12. Install the crankshaft position (CKP) sensor (see **CKP SENSOR REPLACEMENT** ).



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13. Install the timing belt (see **TIMING BELT INSTALLATION** ).
14. Remove the engine balance bar and hanger.
15. Install the connector bracket to the front cylinder head (see step 46 under **ENGINE INSTALLATION** ).
16. Install the engine mount control solenoid valve bracket to the rear cylinder head (see step 47 under **ENGINE INSTALLATION** ).
17. Install the strut brace, then install the under-hood fuse/relay box, connector, and transfer breather hose (see step 59 under **ENGINE INSTALLATION** ).
18. Install the cowl cover and upper grille cover (see step 77 under **ENGINE INSTALLATION** ), then install the left upper fender trim, battery trim, right upper fender trim, and engine cover (see step 78 under **ENGINE INSTALLATION** ).
19. Install the windshield wiper arms (see **WIPER MOTOR REPLACEMENT** ).