2007-08 ENGINE

Cylinder Head - TL

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07AAJ-PNAA101	Air Pressure Regulator	1
②	07HAH-PJ7A100	Valve Guide Reamer, 5.5 mm	1
③	07JAA-001020A	Socket, 19 mm	1
④	07JAB-001020A	Holder Handle	1
⑤	07MAB-PY3010A	Holder Attachment, 50 mm, Offset	1
⑥	07PAD-0010000	Stem Seal Driver	1
⑦	07GAF-SD40330	Camshaft Oil Seal Driver	1
⑧	07VAJ-P8A010A	VTEC Air Adapter	1
⑨	070AJ-0030100	VTEC Air Stopper	1
⑩	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑪	07757-PJ1010A	Valve Spring Compressor Attachment	1

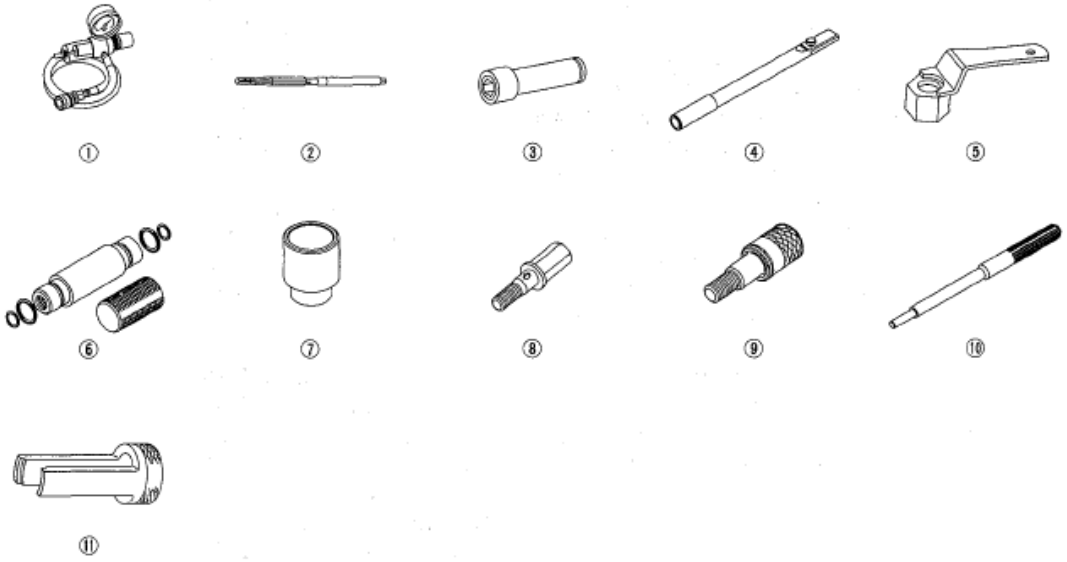

Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

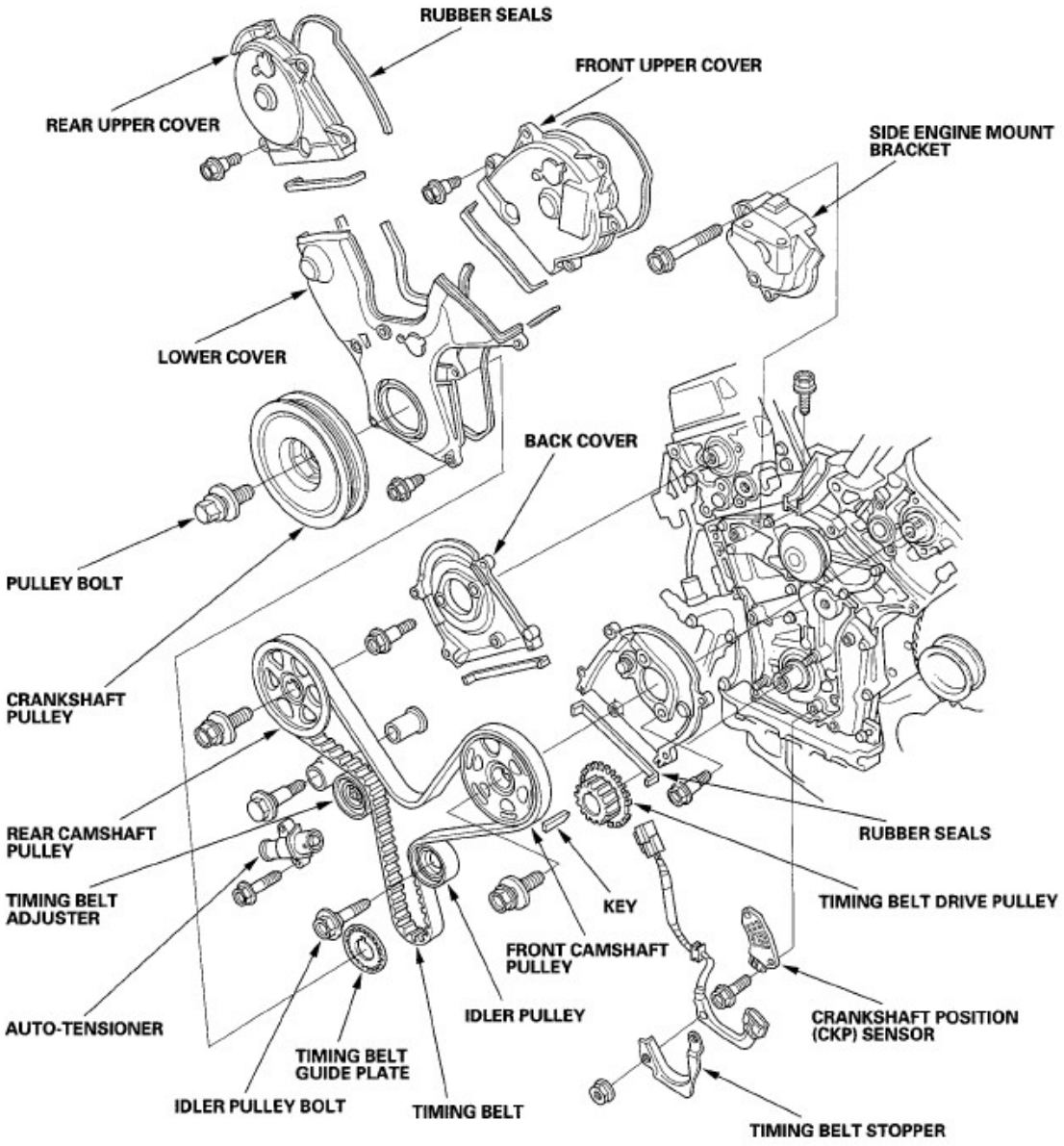

Fig. 2: Identifying Cylinder Head Components (1 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

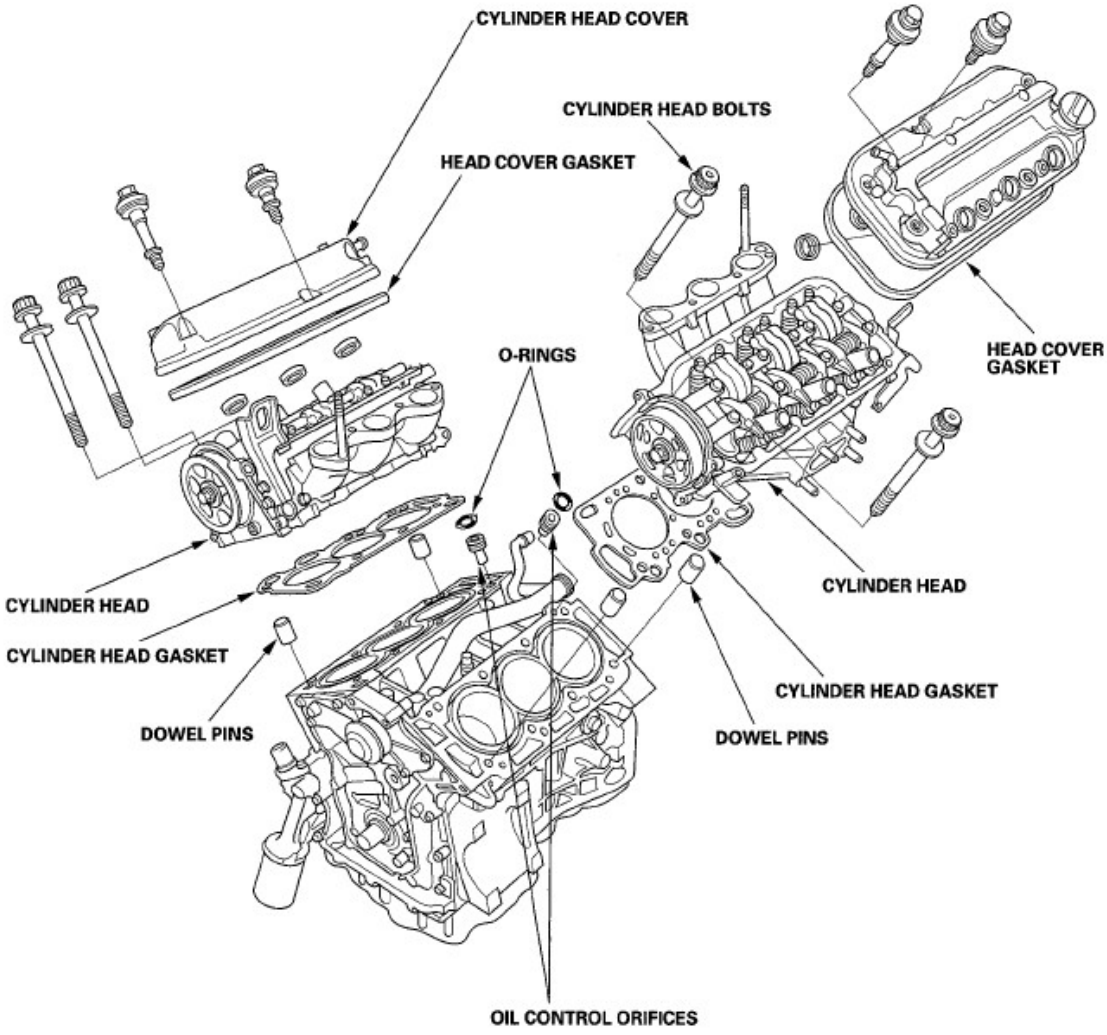

Fig. 3: Identifying Cylinder Head Components (2 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

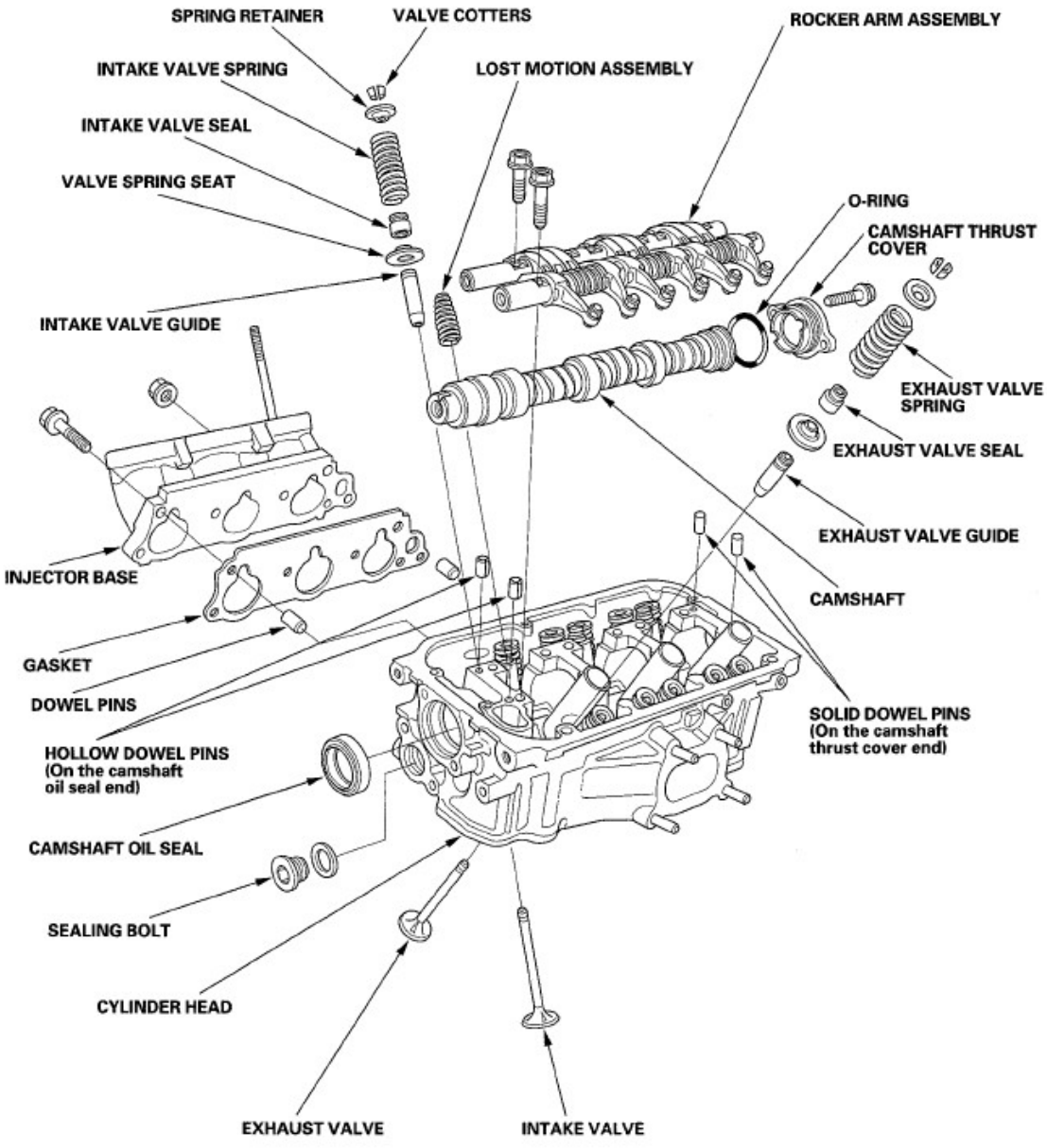

Fig. 4: Identifying Cylinder Head Components (3 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ENGINE COMPRESSION INSPECTION

NOTE: After the inspection, you must reset the engine control module (ECM)/powertrain control module (PCM). Otherwise, the ECM/PCM will continue to stop the fuel injectors from functioning.

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch OFF.

3. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **GENERAL TROUBLESHOOTING INFORMATION**).
4. Turn the ignition switch ON (II).
5. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it doesn't communicate, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING (PART 2)**).
6. Select PGM-FI, INSPECTION, then ALL INJECTORS OFF on the HDS.
7. Turn the ignition switch OFF.
8. Remove the six ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
9. Remove the six spark plugs.
10. Attach the compression gauge to the spark plug hole.

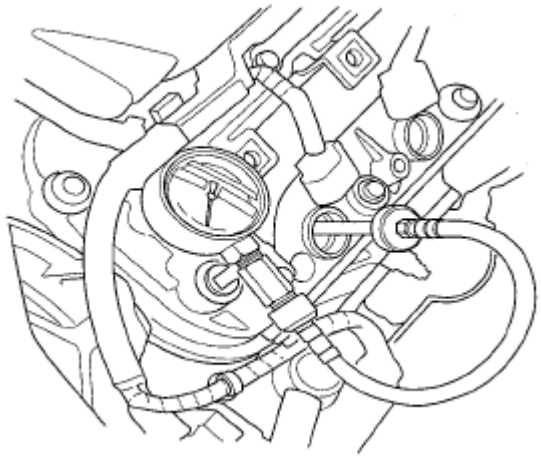

Fig. 5: Attaching Compression Gauge To Spark Plug Hole
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Open the throttle fully, then crank the engine with the starter motor, and measure the compression.

    Compression Pressure: Above 930 kPa (9.5 kgf/cm^2 , 135 psi)

12. Measure the compression on the remaining cylinders.

    Maximum Variation: Within 200 kPa (2.0 kgf/cm^2 , 28 psi)

13. If the compression is not within specifications, check the following items, then remeasure the compression.
    - Damaged or worn valves and seats
    - Damaged cylinder head gasket
    - Damaged or worn piston rings
    - Damaged or worn piston and cylinder bore
14. Select ECM/PCM reset (see **ECM/PCM RESET**) to cancel the ALL INJECTORS OFF function on the HDS.

VTEC ROCKER ARM TEST

Special Tools Required

- VTEC air adapter 07VAJ-P8A010A
- VTEC air stopper 070AJ-0030100
- Air pressure regulator 07AAJ-PNAA101

1. Start the engine and let it run for 5 minutes, then turn the ignition switch OFF.
2. Remove the cylinder head covers (see **CYLINDER HEAD COVER REMOVAL**).
3. Set the No. 1 piston at top dead center (TDC) (see step 3 on **VALVE CLEARANCE ADJUSTMENT**).
4. Push on the intake mid rocker arm (A) for the No. 1 cylinder. The mid rocker arm should move independently of the primary rocker arm (B) and secondary rocker arm (C).
    - If the mid rocker arm moves freely, go to step 5.
    - If the intake mid rocker arm does not move, remove the mid, primary, and secondary intake rocker arms as an assembly, then check that the pistons in the mid and primary rocker arms move smoothly. If any rocker arm needs replacing, replace the primary, mid, and secondary rocker arms as an assembly, then retest.

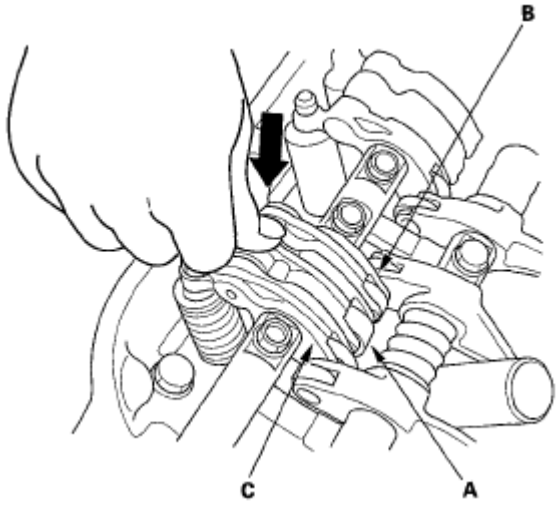

Fig. 6: Pushing Intake Mid Rocker Arm For No. 1 Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Repeat step 4 on the remaining intake mid rocker arms with each piston at TDC. When all the mid rocker arms pass the test, go to step 6.
6. Check that the air pressure on the shop air compressor gauge indicates over 690 kPa (7.0 kgf/cm^2 , 100 psi).
7. Inspect the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).
8. Remove the No. 1 and No. 6 intake rocker shaft mounting bolts, then install the VTEC air adapter and VTEC air stopper, and connect the air pressure regulator.

FRONT:

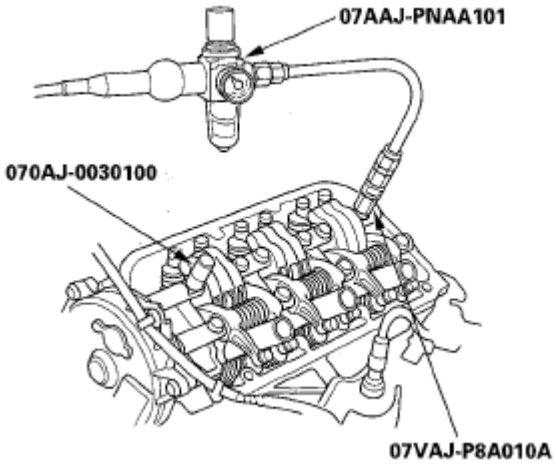

Fig. 7: Identifying VTEC Air Adapter And VTEC Air Stopper - Front
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR:

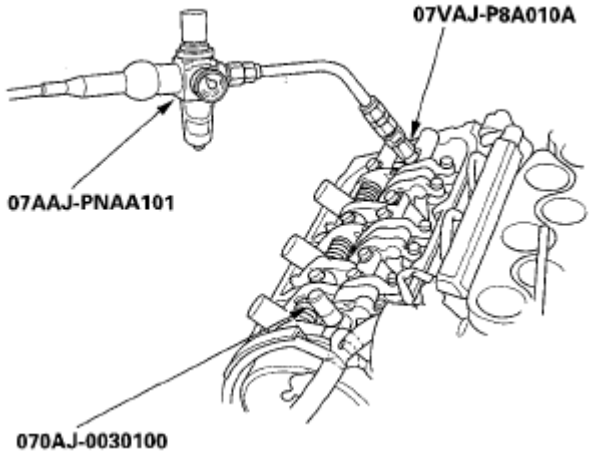

Fig. 8: Identifying VTEC Air Adapter And VTEC Air Stopper - Rear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Loosen the valve on the regulator, and apply the specified air pressure.

   Specified Air Pressure: 440-540 kPa (4.5-5.5 kgf/cm^2 , 64-78 psi)

   NOTE: If the rocker arm pistons do not move after applying air pressure, move the primary or secondary rocker arm up and down manually.

10. Make sure that the intake primary rocker arm (A) and intake secondary rocker arm (B) are mechanically connected by the piston and that the mid rocker arm (C) does not move when pushed manually. If any intake mid rocker arm moves independently of the primary and secondary rocker arms, replace the rocker

arms as a set.

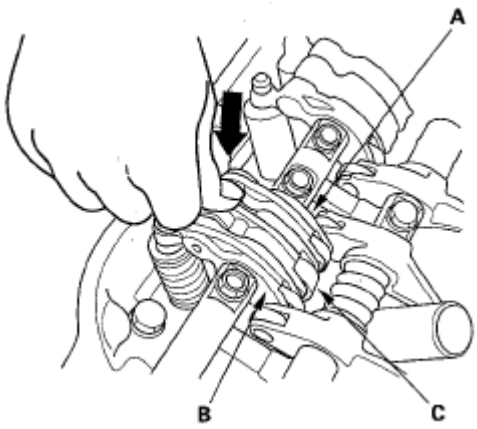

Fig. 9: Pushing Intake Mid Rocker Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the VTEC air adapter and VTEC air stopper.
12. Tighten the rocker shaft bolts to 24 N.m (2.4 kgf.m, 18 lbf-ft)
13. Install the cylinder head covers (see **CYLINDER HEAD COVER INSTALLATION**).

VALVE CLEARANCE ADJUSTMENT

NOTE: Adjust the valves only when the cylinder head temperature is less than 100 ° (38°C).

1. Remove the right side engine compartment cover (see step 1 on **TIMING BELT INSPECTION**).
2. Remove the cylinder head covers (see **CYLINDER HEAD COVER REMOVAL**).
3. Set the No. 1 piston at top dead center (TDC). Align the pointer (A) on the front upper cover with the No. 1 piston TDC mark (B) on the front camshaft pulley.

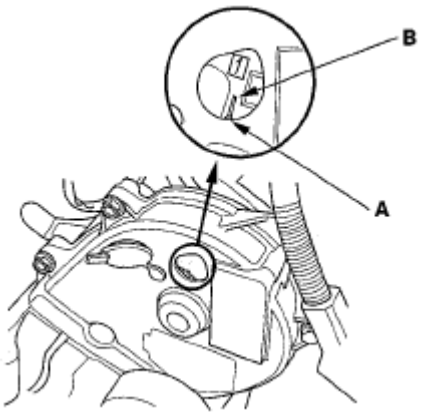

Fig. 10: Aligning Pointer On Front Upper Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Select the correct thickness feeler gauge for the valves you're going to check.

Valve Clearance

Intake: 0.20-0.24 mm (0.008-0.009 in.)

Exhaust: 0.28-0.32 mm (0.011-0.013 in.)

REAR:

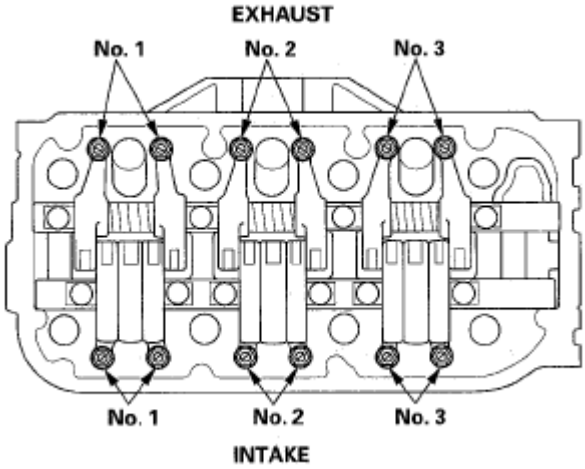

Fig. 11: Identifying Intake And Exhaust Valves - Rear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FRONT:

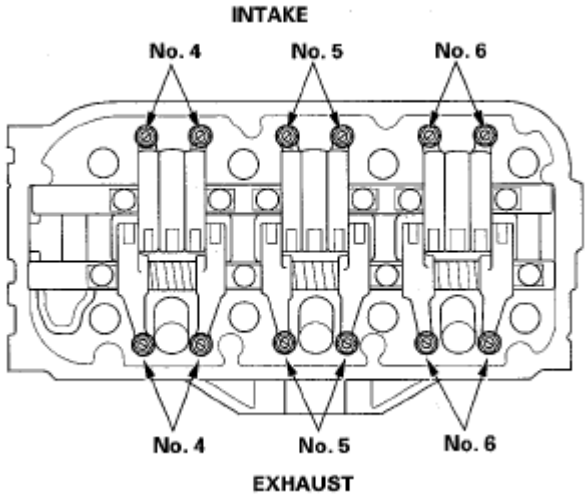

Fig. 12: Identifying Intake And Exhaust Valves - Front
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Insert the feeler gauge (A) between the adjusting screw and the end of the valve stem on the No. 1 cylinder and slide it back and forth; you should feel a slight amount of drag.

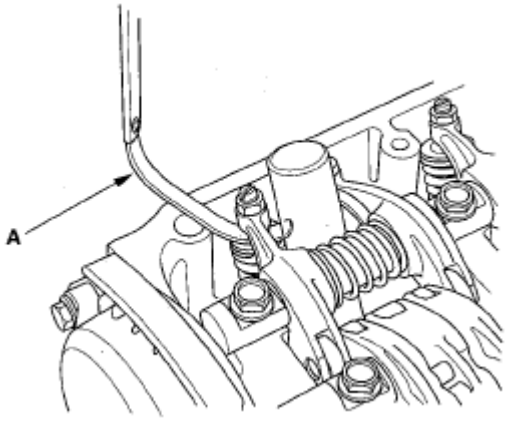

Fig. 13: Inserting Feeler Gauge Between Adjusting Screw
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If you feel too much or too little drag, loosen the locknut (A), and turn the adjusting screw (B) until the drag on the feeler gauge is correct.

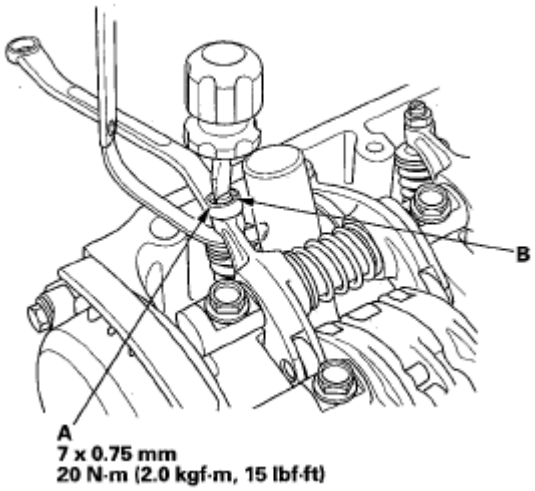

Fig. 14: Identifying Locknut And Adjusting Screw With torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Tighten the locknut and recheck the clearance. Repeat the adjustment, if necessary.
8. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 4 piston TDC mark (B) on the front camshaft pulley.

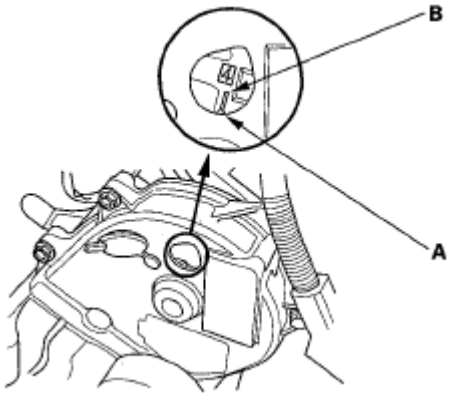

Fig. 15: Aligning Pointer On Front Upper Cover With No. 4 Piston TDC Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Check and, if necessary, adjust the valve clearance on No. 4 cylinder.
10. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 2 piston TDC mark (B) on the front camshaft pulley.

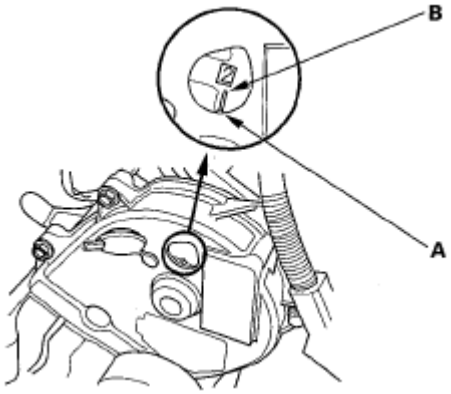

Fig. 16: Aligning Pointer On Front Upper Cover With No. 2 Piston TDC Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check and, if necessary, adjust the valve clearance on No. 2 cylinder.
12. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 5 piston TDC mark (B) on the front camshaft pulley.

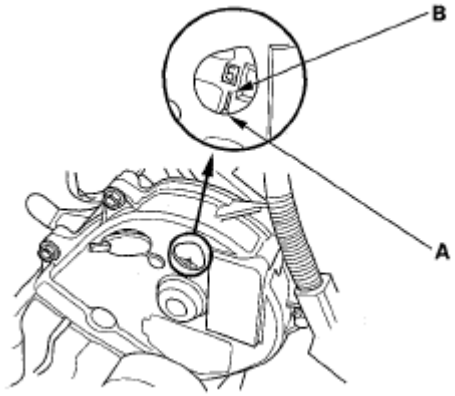

Fig. 17: Aligning Pointer On Front Upper Cover With No. 5 Piston TDC Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Check and, if necessary, adjust the valve clearance on No. 5 cylinder.
14. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 3 piston TDC mark (B) on the front camshaft pulley.

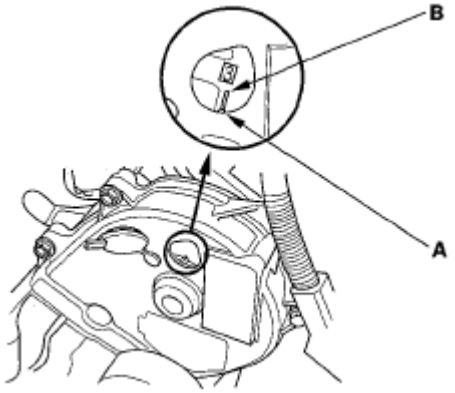

Fig. 18: Aligning Pointer On Front Upper Cover With No. 3 Piston TDC Mark On Front Camshaft Pulley
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Check and, if necessary, adjust the valve clearance on No. 3 cylinder.
16. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 6 piston TDC mark (B) on the front camshaft pulley.

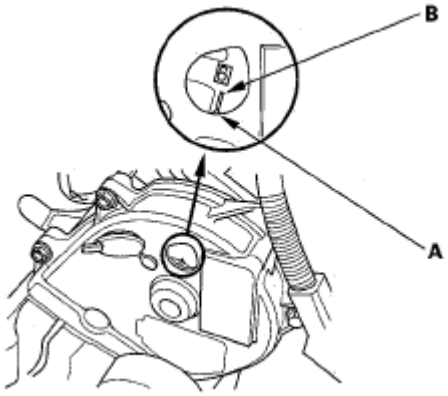

Fig. 19: Aligning Pointer On Front Upper Cover With No. 6 Piston TDC Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Check and, if necessary, adjust the valve clearance on No. 6 cylinder.
18. Install the cylinder head covers (see **CYLINDER HEAD COVER INSTALLATION**).
19. Install the right side engine compartment cover (see step 81 on **ENGINE INSTALLATION**).

CRANKSHAFT PULLEY REMOVAL AND INSTALLATION

Special Tools Required

- Holder handle 07JAB-001020A
- Holder attachment, 50 mm, offset 07MAB-PY3010A
- Socket, 19 mm 07JAA-001020A, or a commercially available 19 mm socket

REMOVAL

1. Remove the right front wheel.
2. Remove the splash shield.

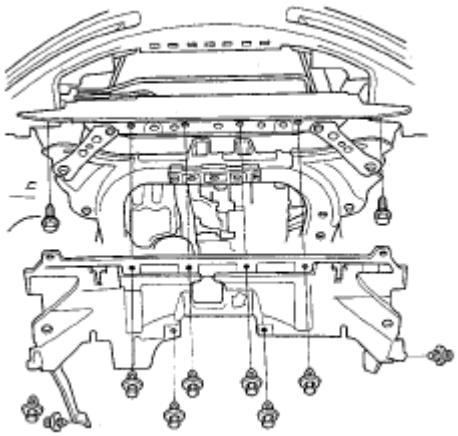

Fig. 20: Identifying Splash Shield Bolts

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the drive belt (see **DRIVE BELT REPLACEMENT**).
4. Hold the crankshaft pulley with the holder handle (A) and holder attachment (B).

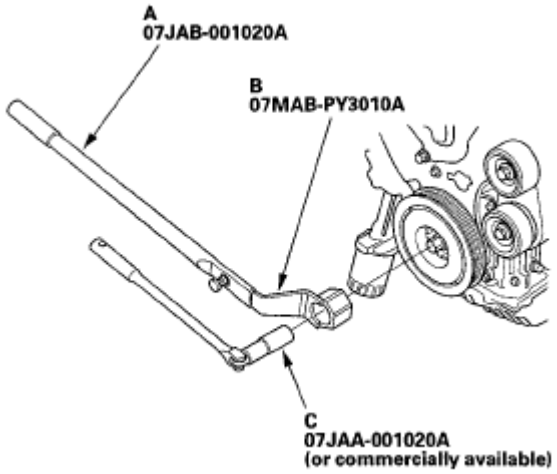

Fig. 21: Identifying Crankshaft Pulley With Holder Handle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the bolt with a heavy duty 19 mm socket (C) and breaker bar, then remove the crankshaft pulley.

INSTALLATION

1. Remove any oil and clean the pulleys (A), crankshaft (B), bolt (C), and washer (D). Lubricate with new engine oil as shown.

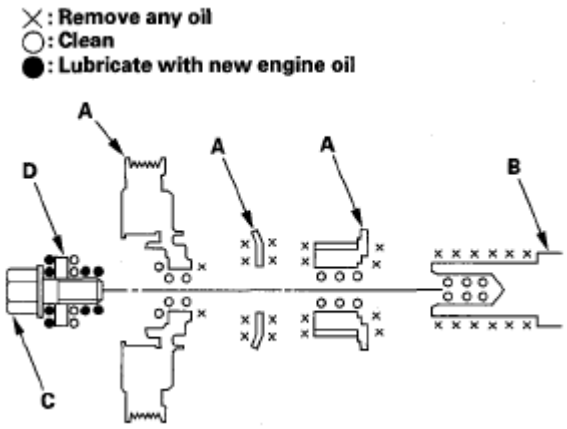

Fig. 22: Identifying Lubricating And Non-Lubricating Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the crankshaft pulley, and tighten the bolt. Do not use an impact wrench.
    1. Hold the pulley with the holder handle (A) and holder attachment (B). Torque the bolt to 65 N.m

(6.5 kgf.m, 48 lbf.ft) with a torque wrench and heavy duty 19 mm socket (C).

2. Mark the bolt head (D) and crankshaft pulley (E) as shown, then tighten the bolt an additional 60 ° (The mark on the bolt head lines up with the mark on the crankshaft pulley).

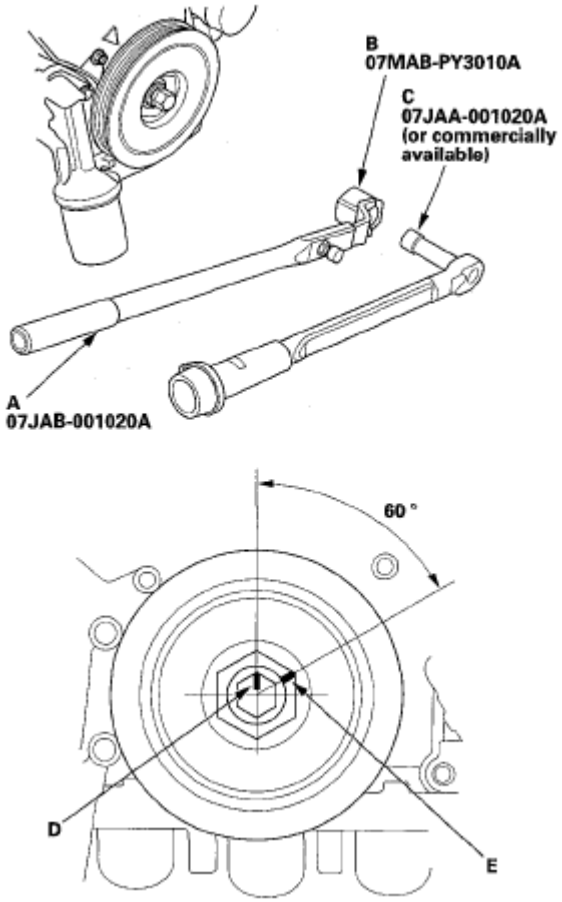

Fig. 23: Identifying Pulley With Holder Handle And Holder Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the drive belt (see **DRIVE BELT INSPECTION**).
4. Install the splash shield (see step 43 on **ENGINE INSTALLATION**).
5. Install the right front wheel.

NOTE: On J35A8 engine, be careful not to damage or chip the paint of the brake calipers when installing the wheel.

TIMING BELT INSPECTION

1. Remove the right side engine compartment cover.

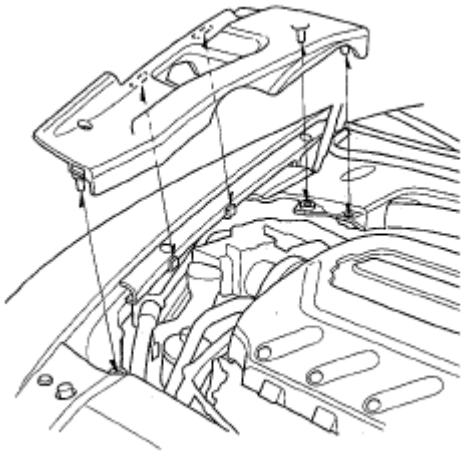

Fig. 24: Identifying Right Side Engine Compartment Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the drive belt (see **DRIVE BELT REPLACEMENT**).
3. Remove the front upper cover.

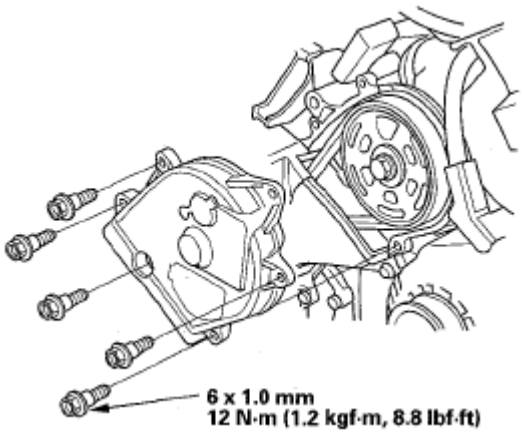

Fig. 25: Identifying Front Upper Cover Bolts With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Inspect the timing belt for cracks and oil or coolant contamination. Replace the belt if it is cracked, or is contaminated with oil or coolant. Wipe off any oil or solvent that gets on the belt.

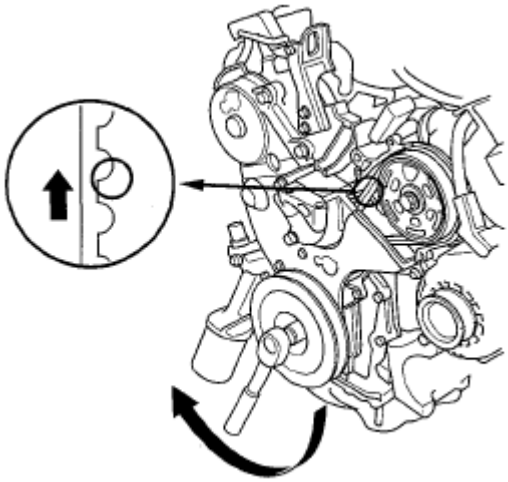

Fig. 26: Inspecting Timing Belt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TIMING BELT REMOVAL

1. Remove the right side engine compartment cover (see step 1 on **TIMING BELT INSPECTION**).
2. Turn the crankshaft so its white mark (A) on the crankshaft pulley lines up with the pointer (B).

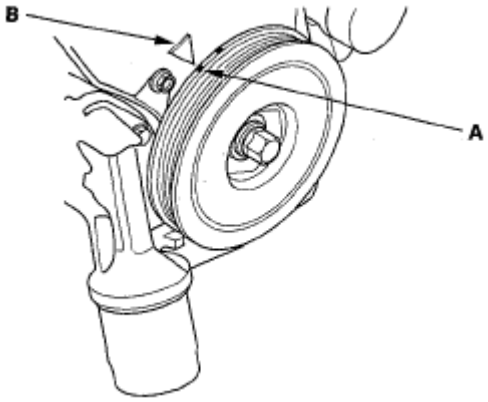

Fig. 27: Identifying White Mark On Crankshaft Pulley Lines
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check that the No. 1 piston top dead center (TDC) mark (A) on the front camshaft pulley and the pointer (B) on the front upper cover are aligned.

NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.

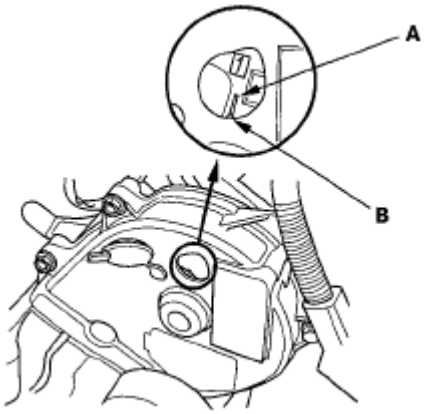

Fig. 28: Identifying Front Camshaft Pulley And Pointer On Front Upper Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the right front wheel.
5. Remove the splash shield.

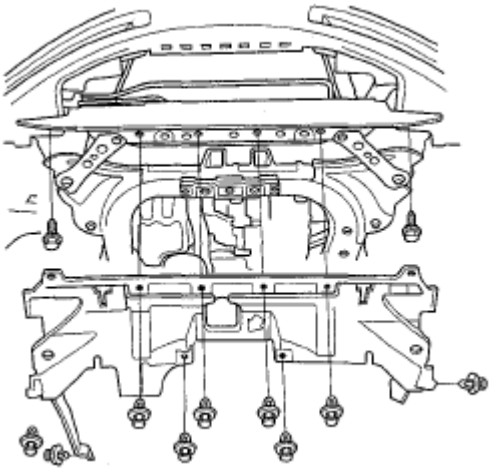

Fig. 29: Identifying Splash Shield Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the drive belt (see **DRIVE BELT REPLACEMENT**).
7. Support the engine with a jack and wood block under the oil pan.
8. Remove the ground cable (A), then remove the upper half of the side engine mount bracket (B).

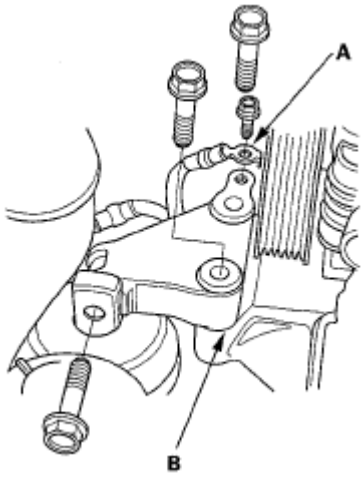

Fig. 30: Identifying Upper Half Of Side Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the crankshaft pulley (see **CRANKSHAFT PULLEY REMOVAL AND INSTALLATION**).
10. Remove the front upper cover (A) and rear upper cover (B).

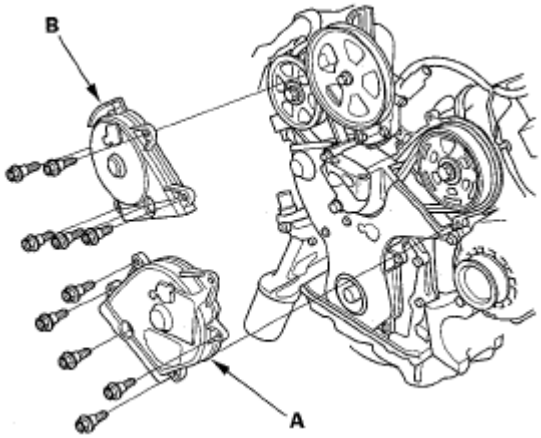

Fig. 31: Identifying Front Upper Cover And Rear Upper Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the lower cover.

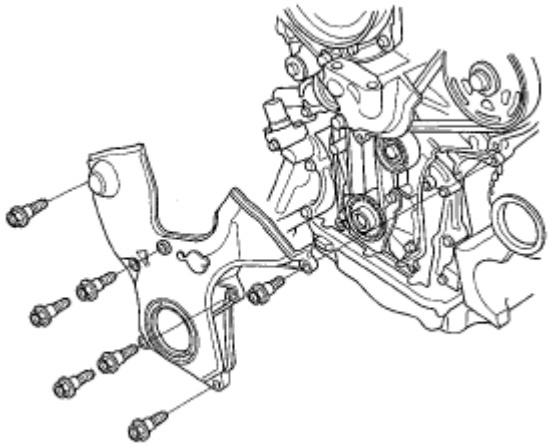

Fig. 32: Identifying Lower Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove one of the battery clamp bolts from the battery tray, and grind the end of it as shown.

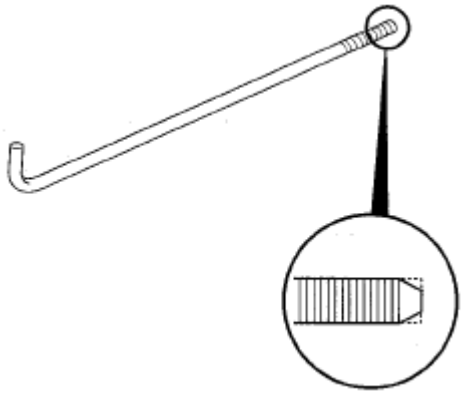

Fig. 33: Identifying Battery Clamp Bolts Threads
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Thread in the battery clamp bolt as shown to hold the timing belt adjuster in its current position. Tighten it by hand; do not use a wrench.

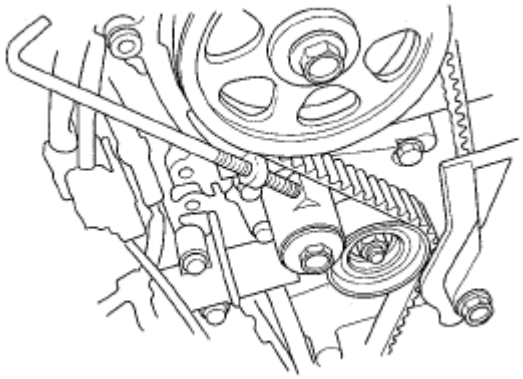

Fig. 34: Threading Battery Clamp Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the timing belt guide plate (A).

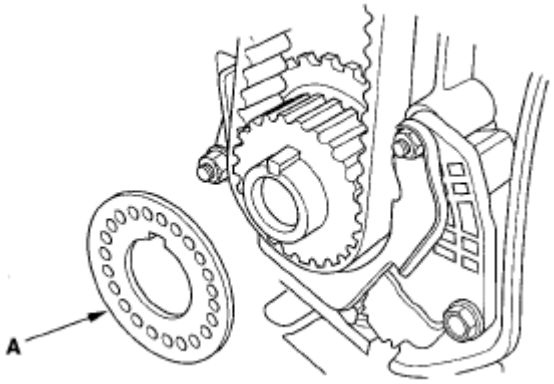

Fig. 35: Identifying Timing Belt Guide Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the lower half of the side engine mount bracket.

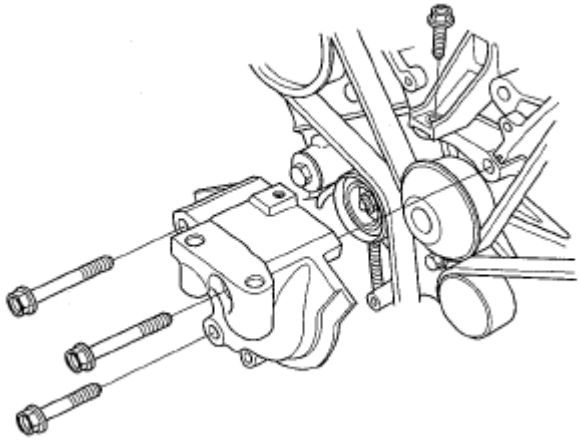

Fig. 36: Identifying Lower Half Of Side Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the idler pulley bolt (A) and idler pulley (B), then remove the timing belt. Discard the idler pulley bolt.

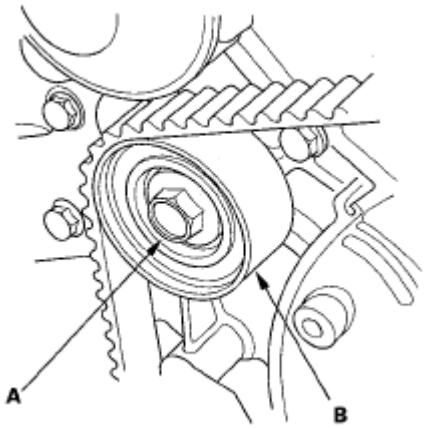

Fig. 37: Identifying Idler Pulley Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TIMING BELT INSTALLATION

NOTE: The following procedure is for installing a used timing belt. If you are installing a new belt, refer to the timing belt replacement procedure (see TIMING BELT REPLACEMENT).

1. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
2. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

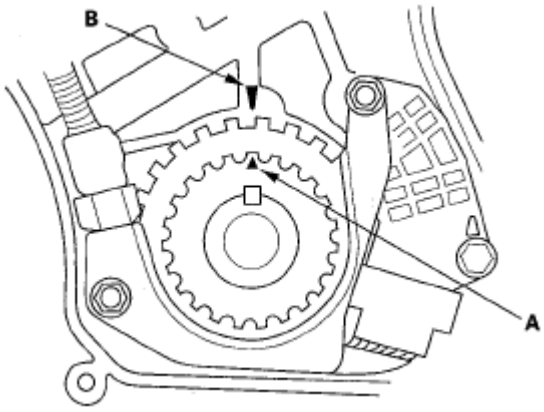

Fig. 38: Aligning TDC Mark On Tooth Of Timing Belt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT:

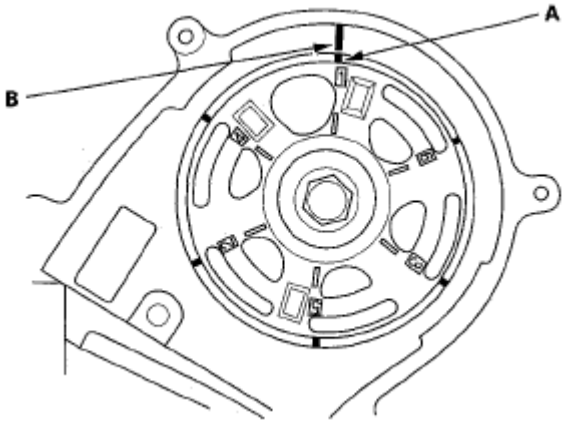

Fig. 39: Aligning TDC Marks On Camshaft Pulleys With Pointers - Front
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR:

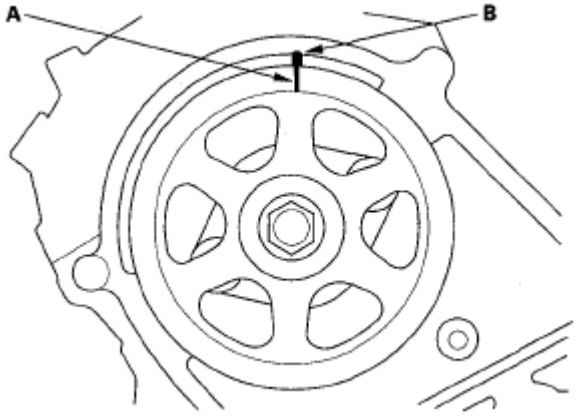

Fig. 40: Aligning TDC Marks On Camshaft Pulleys With Pointers - Rear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Loosely install the idler pulley with a new idler pulley bolt so the pulley can move and does not come off.
5. If the auto-tensioner has extended and the timing belt cannot be installed, do the timing belt replacement procedure (see **TIMING BELT REPLACEMENT**).
6. Install the timing belt in a counterclockwise sequence starting with the drive pulley. Take care not to damage the timing belt during installation.
    1. Drive pulley (A)
    2. Idler pulley (B)
    3. Front camshaft pulley (C)
    4. Water pump pulley (D)
    5. Rear camshaft pulley (E)
    6. Adjusting pulley (F)

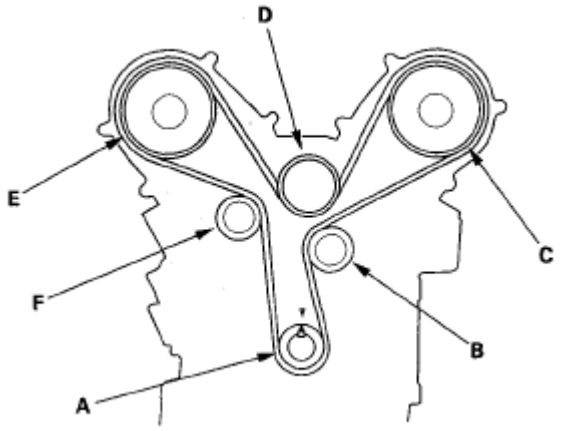

Fig. 41: Identifying Timing Belt Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Tighten the idler pulley bolt.

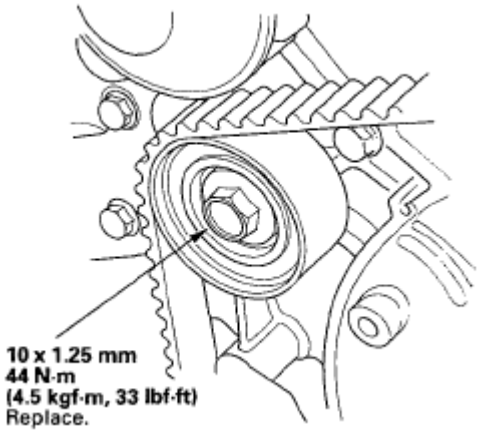

Fig. 42: Identifying Idler Pulley Bolt With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the battery clamp bolt from the back cover.

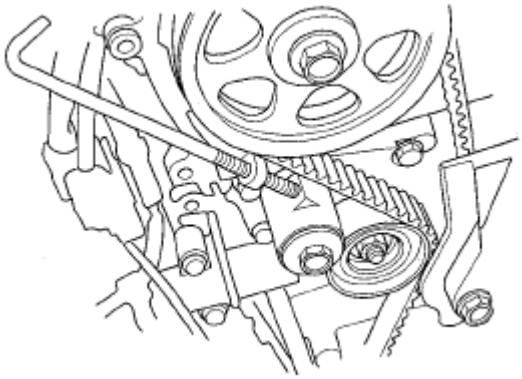

Fig. 43: Identifying Battery Clamp Bolt From Back Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the lower half of the side engine mount bracket.

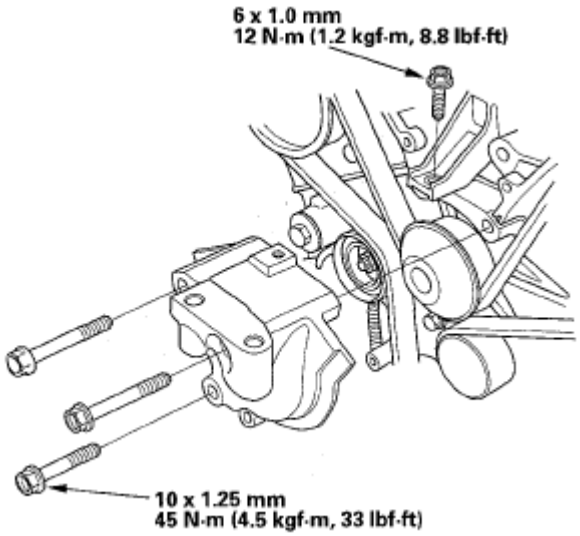

Fig. 44: Identifying Lower Half Of Side Engine Mount Bracket With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the timing belt guide plate as shown.

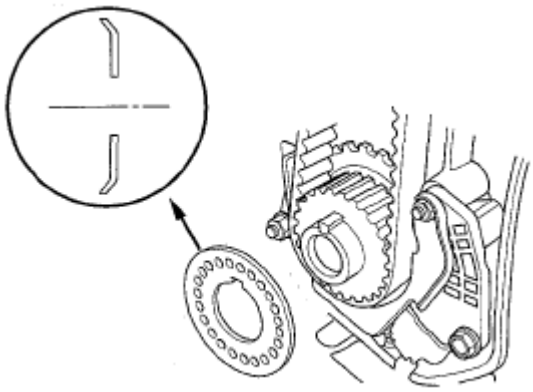

Fig. 45: Identifying Timing Belt Guide Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Install the lower cover.

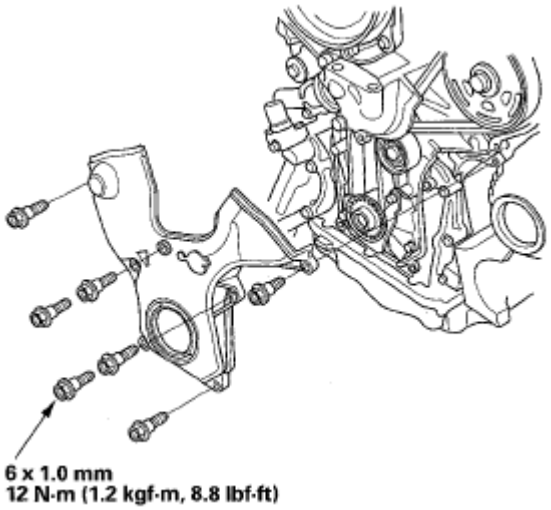

Fig. 46: Identifying Lower Cover With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the front upper cover (A) and rear upper cover (B).

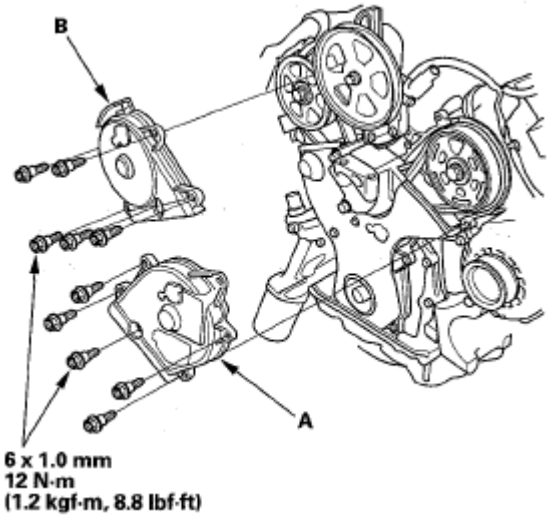

Fig. 47: Identifying Front Upper Cover And Rear Upper Cover Bolts With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the crankshaft pulley (see **INSTALLATION**).
14. Rotate the crankshaft pulley six turns clockwise so the timing belt positions itself on the pulleys.
15. Turn the crankshaft pulley so its white mark (A) lines up with the pointer (B).

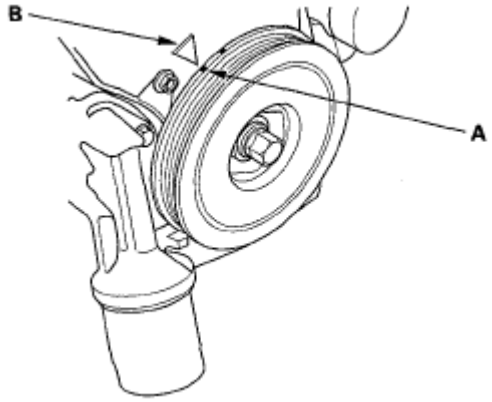

Fig. 48: Identifying Crankshaft Pulley White Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Check the camshaft pulley marks.

NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.

- If the camshaft pulley marks are at TDC, go to step 17.
- If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 2 through 16.

FRONT:

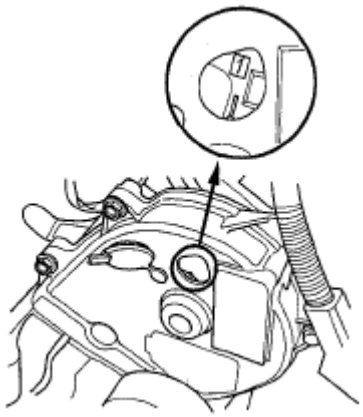

Fig. 49: Identifying Camshaft Pulley Marks - Front
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR:

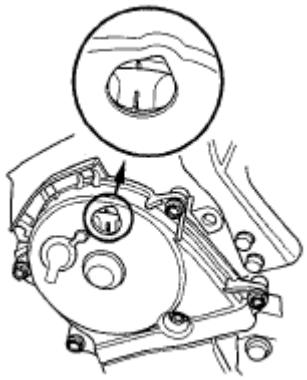

Fig. 50: Identifying Camshaft Pulley Marks - Rear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Install the upper half of the side engine mount bracket (A), and tighten the bolts in the numbered sequence shown.

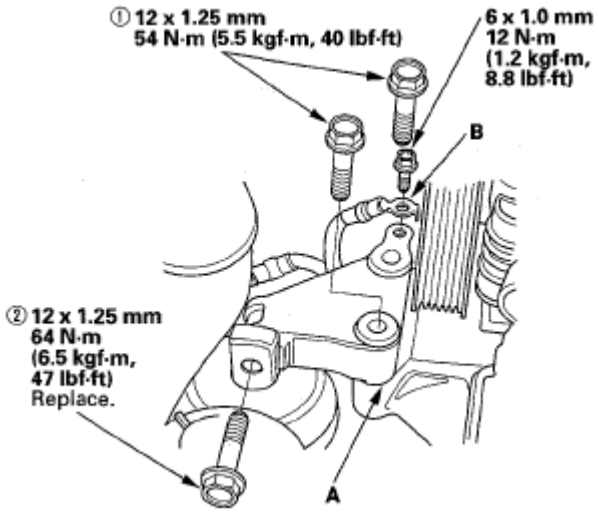

Fig. 51: Identifying Upper Half Of Side Engine Mount Bracket Bolts With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the ground cable (B).
19. Install the drive belt (see **DRIVE BELT INSPECTION**).
20. Install the splash shield (see step 43 on **ENGINE INSTALLATION**).
21. Install the right front wheel.

NOTE: On J35A8 engine, be careful not to damage or chip the paint of the brake calipers when installing the wheel.

22. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).

TIMING BELT REPLACEMENT

NOTE: The following procedure is for the installation of a new timing belt. If you are installing a used belt, refer to the timing belt installation procedure (see TIMING BELT INSTALLATION).

1. Remove the timing belt (see **TIMING BELT REMOVAL**).
2. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
3. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

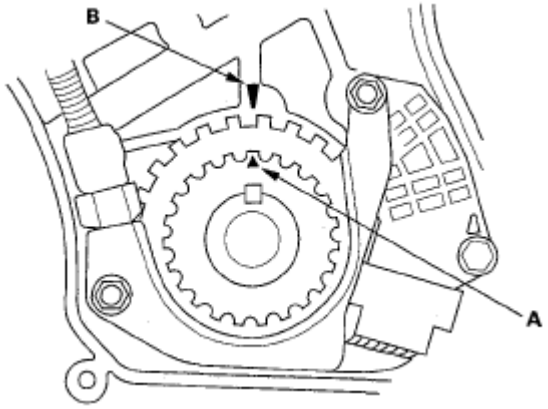

Fig. 52: Aligning TDC Mark On Tooth Of Timing Belt Drive Pulley With Pointer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT:

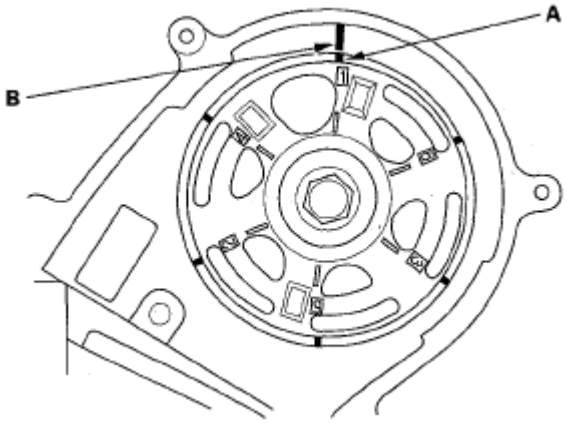

Fig. 53: Aligning TDC Marks On Camshaft Pulleys With Pointers - Front
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR:

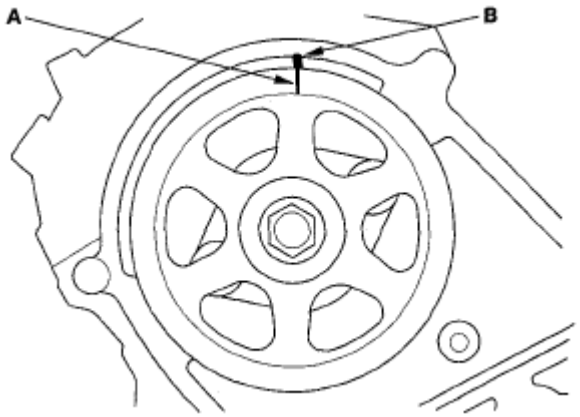

Fig. 54: Aligning TDC Marks On Camshaft Pulleys With Pointers - Rear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the battery clamp bolt from the back cover.
6. Remove the auto-tensioner.

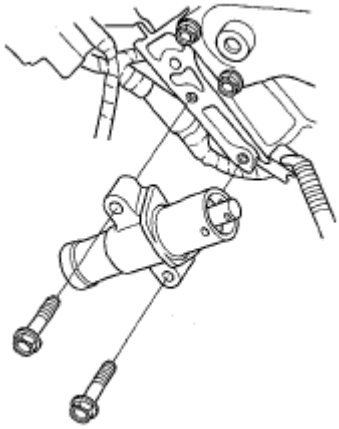

Fig. 55: Identifying Battery Clamp Bolt From Back Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Align the holes on the rod and housing of the auto-tensioner.

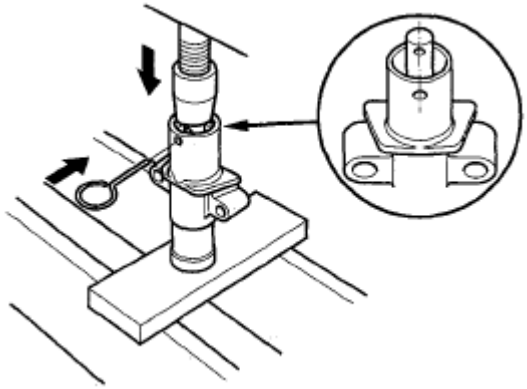

Fig. 56: Aligning Holes On Rod And Housing Of Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Use a hydraulic press to slowly compress the auto-tensioner. Insert a 2.0 mm (0.08 in.) pin through the housing and the rod.

NOTE: The compression pressure should not exceed 9,800 N (1,000 kgf, 2,200 lbf).

9. Install the auto-tensioner.

NOTE: Make sure the pin (A) stays in place.

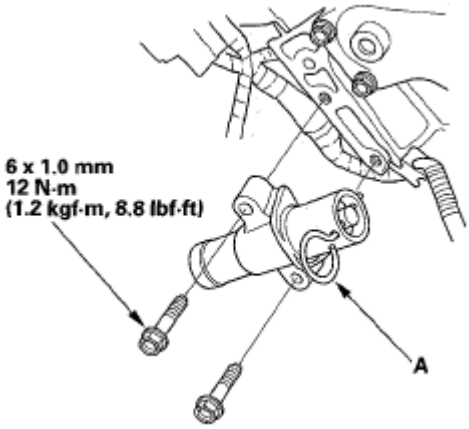

Fig. 57: Identifying Auto-Tensioner Pin With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Thread in the battery clamp bolt as shown to hold the timing belt adjuster. Tighten it by hand, do not use a wrench.

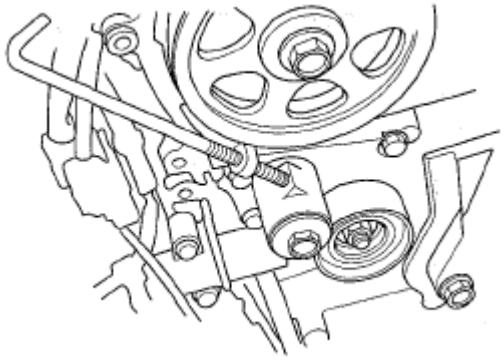

Fig. 58: Identifying Thread Of Battery Clamp Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Loosely install the idler pulley with a new idler pulley bolt so the pulley can move but does not come off.
12. Install the timing belt in a counterclockwise sequence starting with the drive pulley. Take care not to damage the timing belt during installation.
    1. Drive pulley (A)
    2. Idler pulley (B)
    3. Front camshaft pulley (C)
    4. Water pump pulley (D)
    5. Rear camshaft pulley (E)
    6. Adjusting pulley (F)

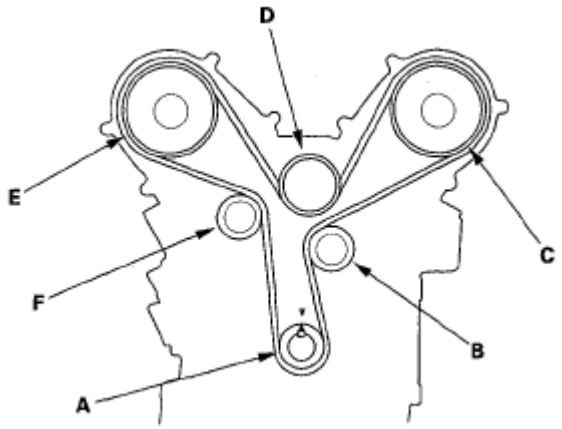

Fig. 59: Identifying Timing Belt Installing Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Tighten the idler pulley bolt.

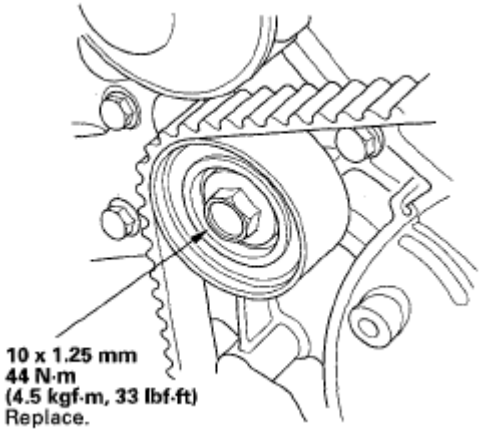

Fig. 60: Identifying Idler Pulley Bolt With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the pin from the auto-tensioner.

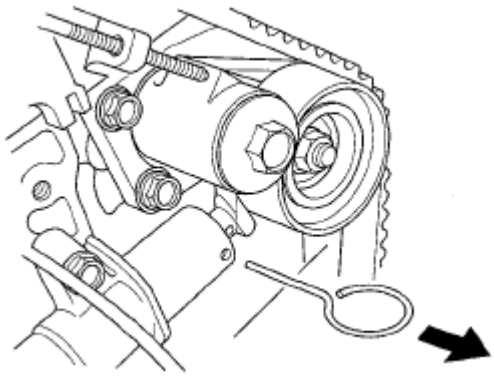

Fig. 61: Identifying Pin From Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the battery clamp bolt from the back cover.
16. Install the lower half of the side engine mount bracket.

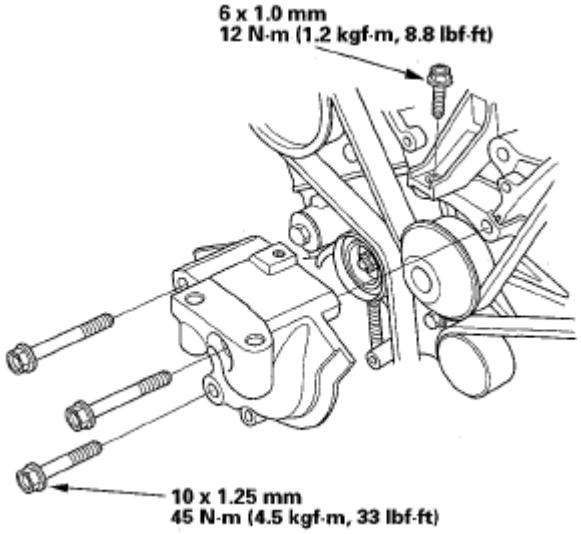

Fig. 62: Identifying Lower Half Of Side Engine Mount Bracket And Bolts With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Install the timing belt guide plate as shown.

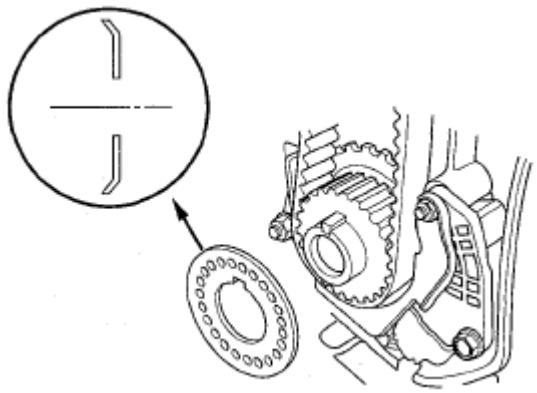

Fig. 63: Identifying Timing Belt Guide Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the lower cover.

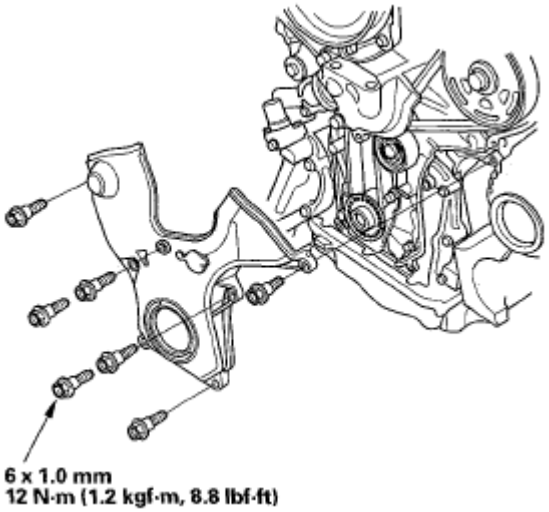

Fig. 64: Identifying Lower Cover With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Install the front upper cover (A) and rear upper cover (B).

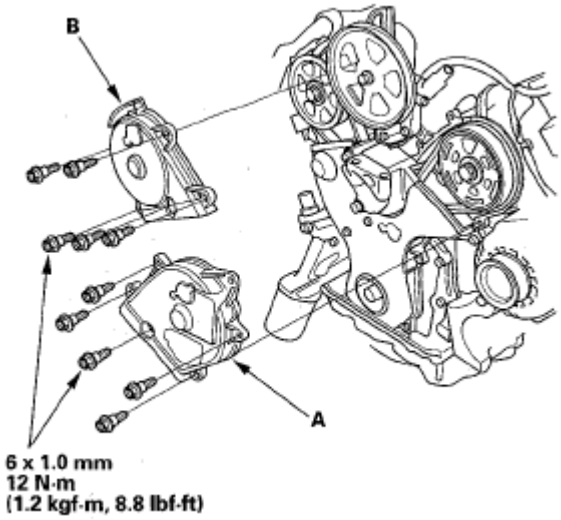

Fig. 65: Identifying Front Upper Cover And Rear Upper Cover With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the crankshaft pulley (see **INSTALLATION**).
21. Rotate the crankshaft pulley six turns clockwise so the timing belt positions itself on the pulleys.
22. Turn the crankshaft pulley so its white mark (A) lines up with the pointer (B).

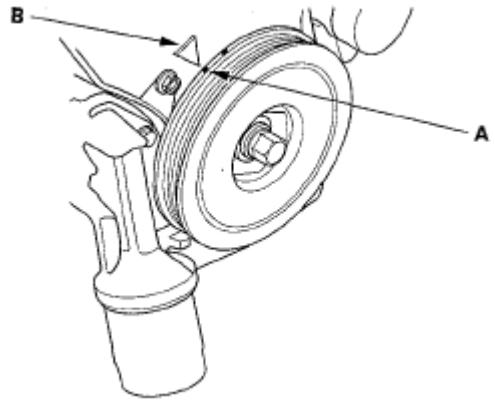

Fig. 66: Identifying Crankshaft Pulley White Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Check the camshaft pulley marks.

NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.

- If the camshaft pulley marks are at TDC, go to step 24.
- If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 3 through 23.

FRONT:

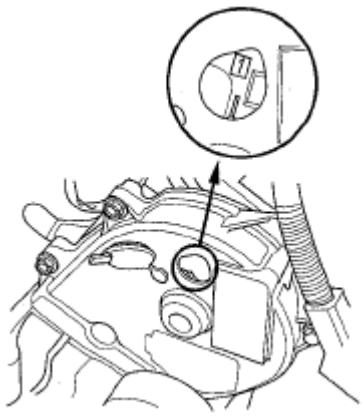

Fig. 67: Identifying Camshaft Pulley Marks - Front
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR:

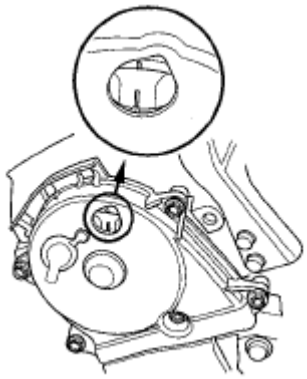

Fig. 68: Identifying Camshaft Pulley Marks - Rear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Install the upper half of the side engine mount bracket (A), then tighten the bolts in the numbered sequence shown.

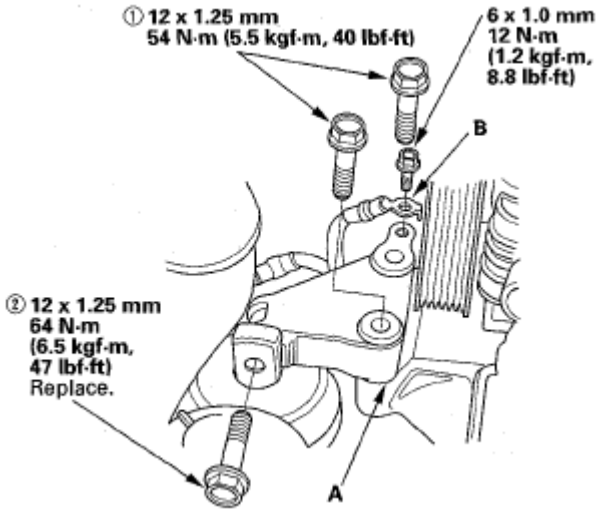

Fig. 69: Identifying Engine Mount Bracket Bolts With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Install the ground cable (B).
26. Install the drive belt (see **DRIVE BELT INSPECTION**).
27. Install the splash shield (see step 43 on **ENGINE INSTALLATION**).
28. Install the right front wheel.

NOTE: On J35A8 engine, be careful not to damage or chip the paint of the brake calipers when installing the wheel.

29. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).

TIMING BELT ADJUSTER REPLACEMENT

1. Remove the timing belt (see **TIMING BELT REMOVAL**).
2. Remove the auto-tensioner.
3. Remove the bolt (A), then remove the timing belt adjuster (B) and collar (C).

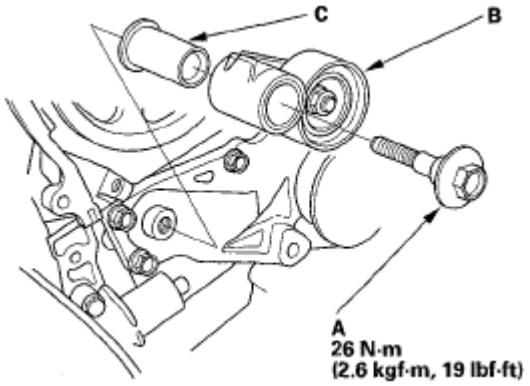

Fig. 70: Identifying Timing Belt Adjuster Bolt With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the timing belt adjuster in the reverse order of removal.
5. Replace the timing belt (see **TIMING BELT REPLACEMENT**).

TIMING BELT DRIVE PULLEY REPLACEMENT

1. Remove the timing belt (see **TIMING BELT REMOVAL**).
2. Remove the crankshaft position (CKP) sensor (see **CKP SENSOR REPLACEMENT**).
3. Remove the timing belt drive pulley.

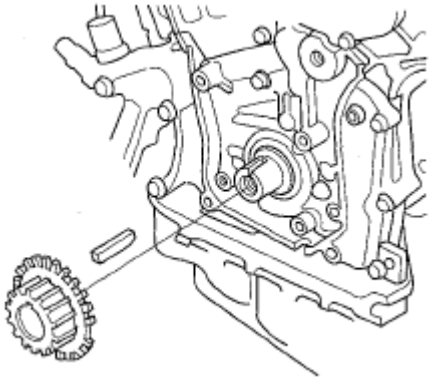

Fig. 71: Identifying Timing Belt Drive Pulley
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the new timing belt drive pulley.

5. Install the CKP sensor (see **CKP SENSOR REPLACEMENT**).
6. Install the timing belt (see **TIMING BELT INSTALLATION**).

CYLINDER HEAD COVER REMOVAL

1. Remove the intake manifold (see **REMOVAL**).
2. Remove the six ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
3. Remove the three bolts (A) securing the harness holder, and remove the dipstick (B).

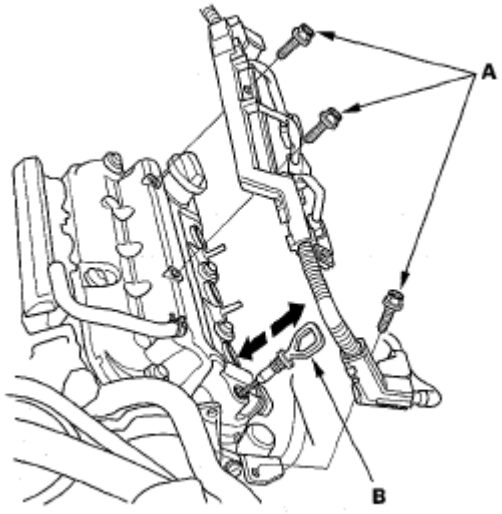

Fig. 72: Identifying Cylinder Head Cover Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the bolt (A) securing the power steering (P/S) hose bracket.

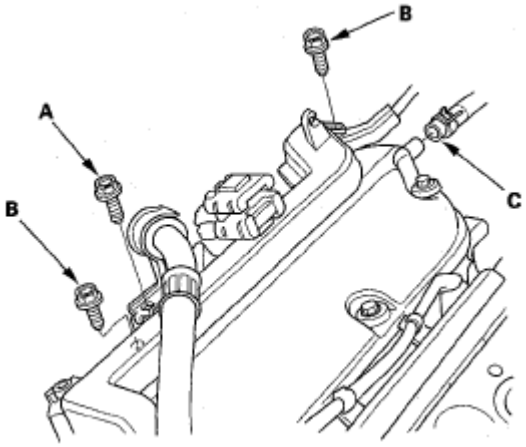

Fig. 73: Identifying Power Steering (P/S) Hose Bracket Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the two bolts (B) securing the harness holder.
6. Disconnect the breather hose (C).
7. Remove the cylinder head covers.

FRONT:

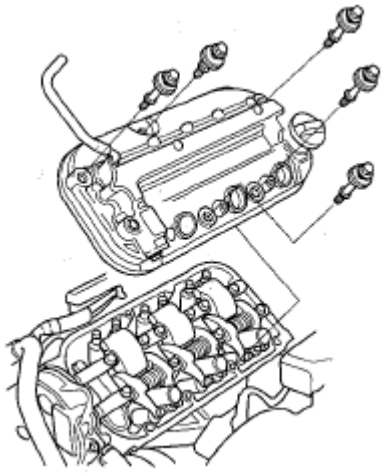

Fig. 74: Identifying Cylinder Head Covers Bolts - Front
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR:

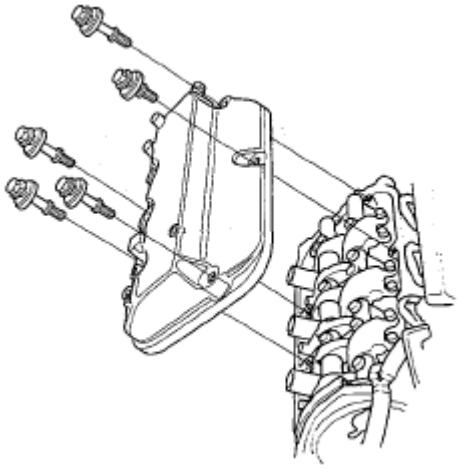

Fig. 75: Identifying Cylinder Head Covers Bolts - Rear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER HEAD COVER INSTALLATION

1. Check the spark plug seals for damage. If the seal is damaged, replace it.
2. Thoroughly clean the head cover gasket and the groove of the cylinder head cover.

3. Clean the head cover contacting surfaces with a shop towel.
4. Install the head cover gasket (A) in the groove of the cylinder head cover (B). Make sure the head cover gasket is seated securely, then install new spark plug seals (C) on the spark plug tubes, and install the cylinder head covers.

FRONT:

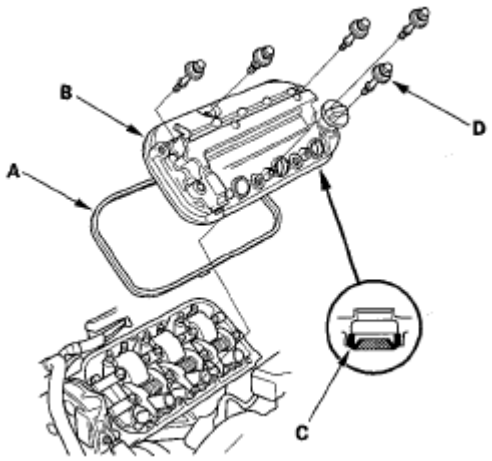

Fig. 76: Identifying Head Cover Gasket And Bolts - Front
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR:

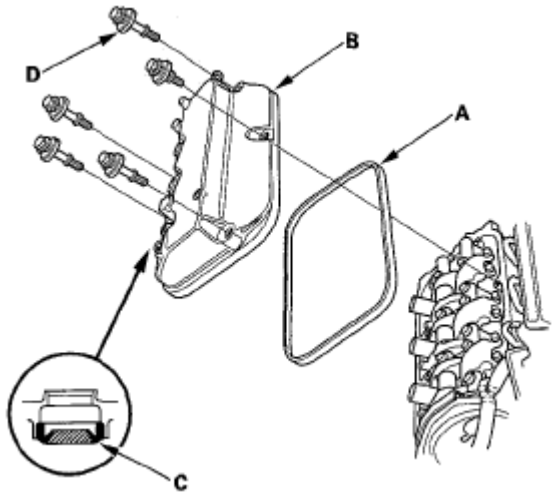

Fig. 77: Identifying Head Cover Gasket And Bolts - Rear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Visually check the spark plug seals for damage.
6. Install new cover washers (D).
7. Tighten the bolts in three steps. In the final step tighten all of the bolts, in sequence, 12 N.m (1.2 kgf.m,

8.8 lbf.ft) (front cover shown).

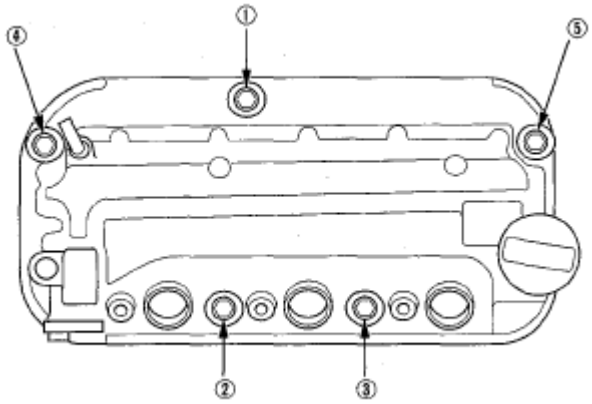

Fig. 78: Identifying Front Cover Tightening Bolts Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the breather hose (A).

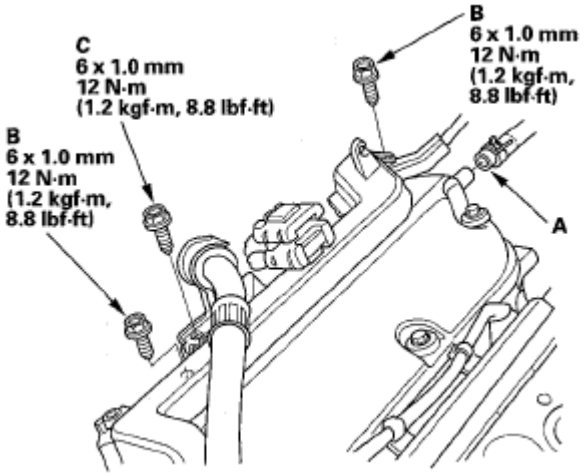

Fig. 79: Identifying Breather Hose With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Tighten the two bolts (B) securing the harness holder.
10. Tighten the bolts (C) securing the power steering (P/S) hose bracket.
11. Tighten the three bolts (A) securing the harness holder, and install the dipstick (B).

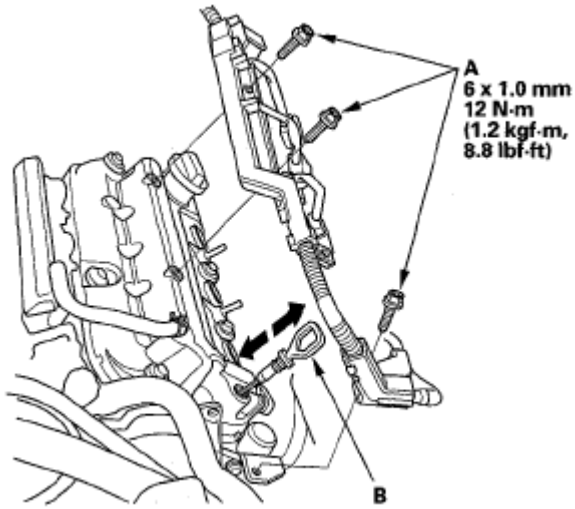

Fig. 80: Identifying Harness Holder, Dipstick And Bolts With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the six ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
13. Install the intake manifold (see **INSTALLATION**).

CYLINDER HEAD REMOVAL

NOTE:

- **Use fender covers to avoid damaging painted surfaces.**
- **To avoid damaging the wires and terminals, unplug the wiring connectors carefully while holding the connector portion.**
- **To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 100°F (38°C) before loosening the cylinder head bolts.**
- **Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.**

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped). Make sure the ignition switch is OFF.
2. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
3. Disconnect the negative cable from the battery.
4. Drain the engine coolant (see **COOLANT CHECK**).
5. Remove the front warm up three way catalytic converter (front WU-TWC) (see **WARM UP TWC REMOVAL/INSTALLATION**) and rear warm up three way catalytic converter (rear WU-TWC) (see **REAR (BANK 1)**).
6. Remove the drive belt (see **DRIVE BELT REPLACEMENT**).
7. Remove the timing belt (see **TIMING BELT REMOVAL**).
8. Remove the power steering (P/S) pump (A), and P/S hose bracket (B).

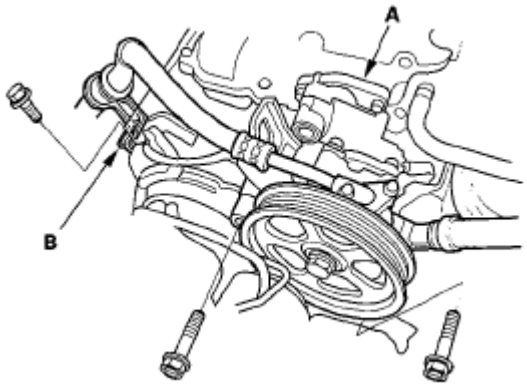

Fig. 81: Identifying Power Steering (P/S) Pump, And P/S Hose Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).
10. Remove the intake manifold (see **REMOVAL**).
11. Remove the six ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
12. Remove the engine wire harness connectors and wire harness clamps from the cylinder head.
    - Six injector connectors
    - Engine coolant temperature (ECT) sensor 1 connector
    - Camshaft position (CMP) sensor connector
    - Crankshaft position (CKP) sensor connector
    - Exhaust gas recirculation (EGR) valve connector
    - Rocker arm oil control solenoid connector
    - Rocker arm oil pressure switch connector
    - Oil pressure switch connector
    - Two air fuel ratio (A/F) sensor connectors
    - Two secondary heated oxygen sensor (secondary HO2S) connectors
13. Remove the upper radiator hose (A) and lower radiator hose (B).

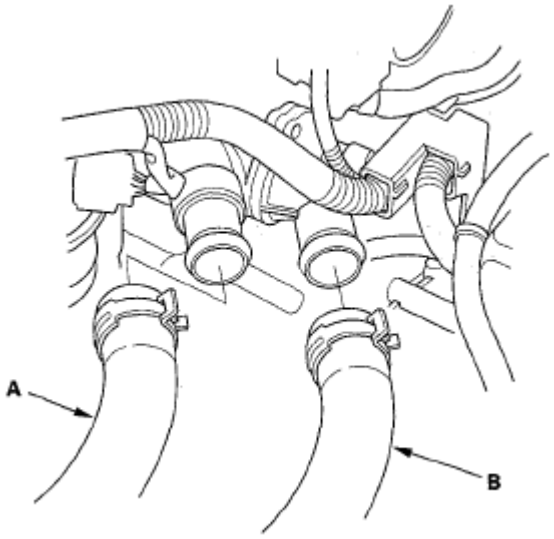

Fig. 82: Identifying Upper Radiator Hose And Lower Radiator Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Disconnect the heater hose (A), water bypass hose (B), and remove the ground cable (C).

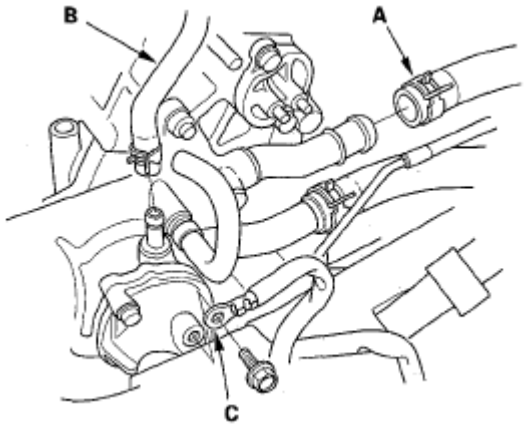

Fig. 83: Identifying Heater Hose, Water Bypass Hose, And Ground Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (B) (see **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).

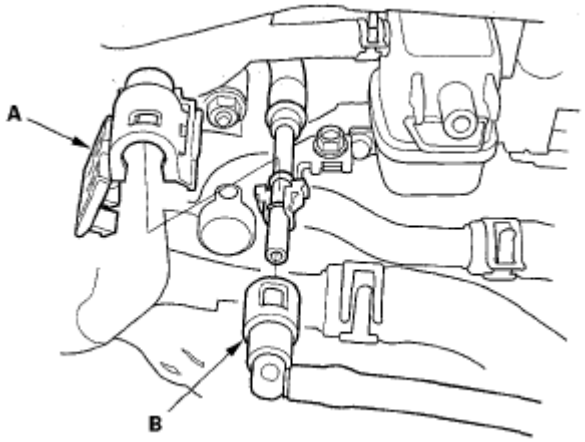

Fig. 84: Identifying Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the fuel rails (see **INJECTOR REPLACEMENT**).
17. Remove the bolt securing the connector bracket.

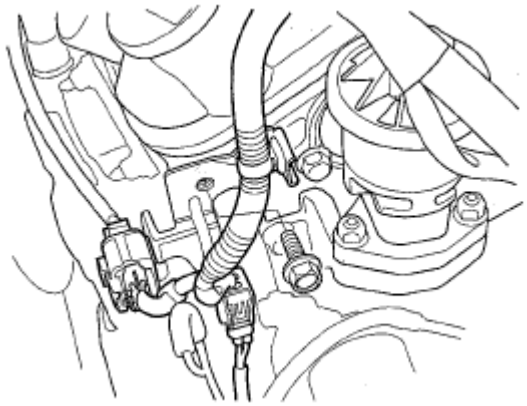

Fig. 85: Identifying Connector Bracket Bolts And Fuel Rails
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Remove the bolt securing the harness clamp bracket.

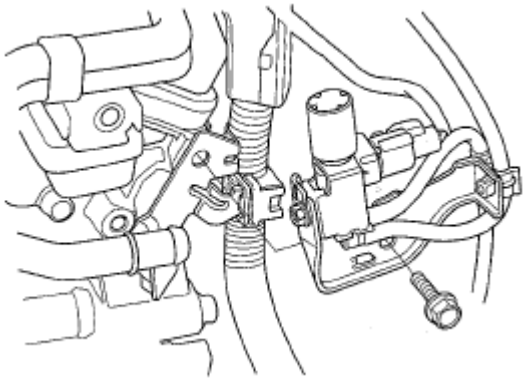

Fig. 86: Identifying Harness Clamp Bracket Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Remove the water passage.

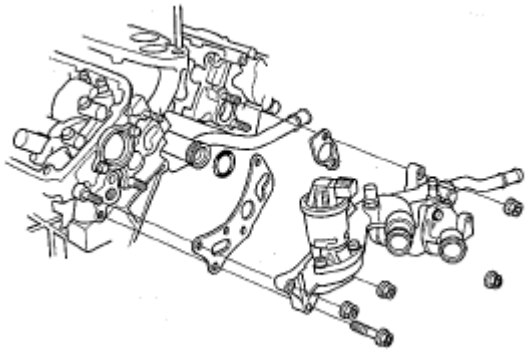

Fig. 87: Identifying Water Passage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Remove the front and rear camshaft pulleys (A) and front and rear back covers (B).

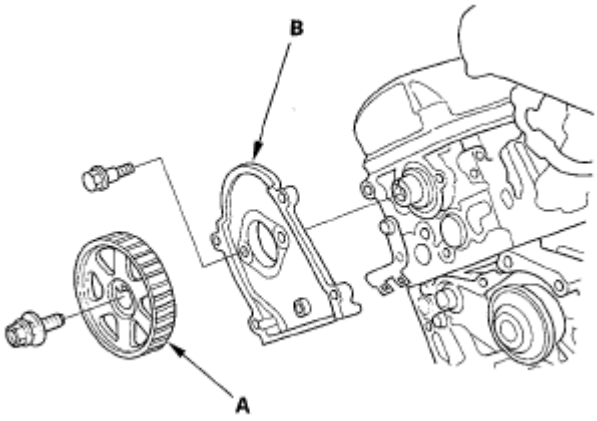

Fig. 88: Identifying Front And Rear Camshaft Pulleys
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Remove the cylinder head covers (see **CYLINDER HEAD COVER REMOVAL**).
22. Remove the cylinder head bolts. To prevent warpage, loosen the bolts in sequence 1/3 turn at a time; repeat the sequence until all the bolts are loose.

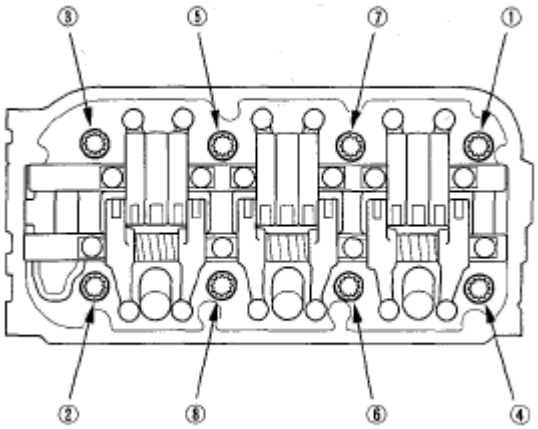

Fig. 89: Identifying Cylinder Head Covers Bolts Loosening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Remove the cylinder heads.

CAMSHAFT REPLACEMENT

FRONT

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped). Make sure the ignition switch is OFF.
2. Remove the left side engine compartment cover (see step 3 on **ENGINE REMOVAL**).
3. Disconnect the negative cable from the battery, then disconnect the positive cable.
4. Remove the battery.
5. Drain the engine coolant (see **COOLANT CHECK**).
6. Remove the upper radiator hose.

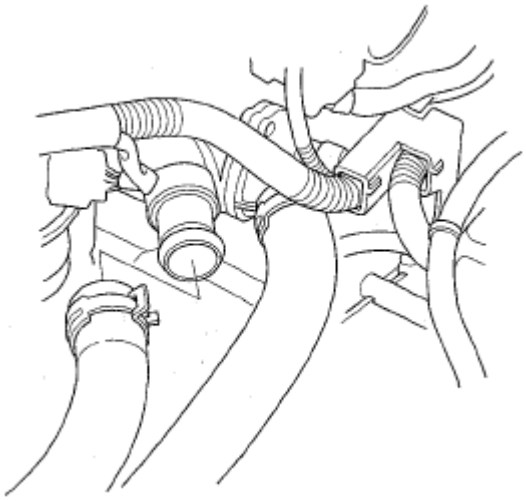

Fig. 90: Identifying Upper Radiator Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the exhaust gas recirculation (EGR) valve (see **EGR VALVE REPLACEMENT**).
8. Remove the timing belt (see **TIMING BELT REMOVAL**).
9. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
10. Remove the front camshaft pulley (see step 20 on **CYLINDER HEAD REMOVAL**).
11. Remove the thrust cover (A), then remove the front camshaft (B).

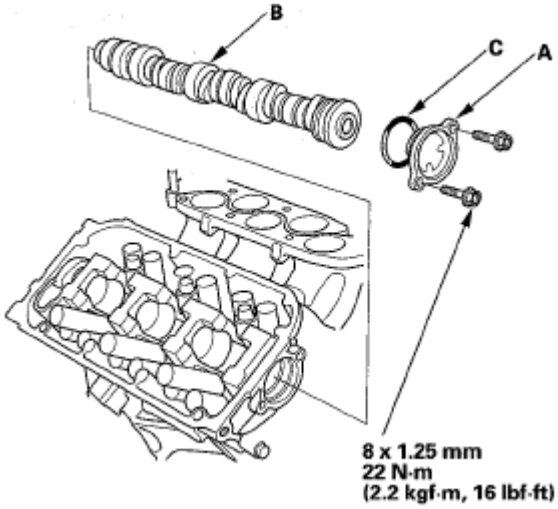

Fig. 91: Identifying Thrust Cover And Front Camshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the front camshaft in the reverse order of removal. Always use a new O-ring (C). Apply new engine oil to the journals and cam lobes.
13. Apply new engine oil to the threads of the camshaft pulley mounting bolt, then install the front camshaft pulley (see step 10 on **CAMSHAFT, ROCKER ARM ASSEMBLY, CAMSHAFT SEAL, AND**

PULLEY INSTALLATION).

14. Install the rocker arm assembly, then tighten the mounting bolts (see step 8 on **CAMSHAFT, ROCKER ARM ASSEMBLY, CAMSHAFT SEAL, AND PULLEY INSTALLATION**).
15. Install the timing belt (see **TIMING BELT INSTALLATION**).
16. Adjust the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).
17. Install the EGR valve (see **EGR VALVE REPLACEMENT**), then install the upper radiator hose.
18. Install the battery. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.
19. Fill the radiator with engine coolant and bleed the air out (see step 8 on **COOLANT REPLACEMENT**).
20. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
21. Enter the anti-theft codes for the audio system and the navigation system (if equipped).
22. Set the clock (on vehicles without navigation).

REAR

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped). Make sure the ignition switch is OFF.
2. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
3. Disconnect the negative cable from the battery.
4. Remove the under-hood fuse/relay box (see step 15 on **ENGINE REMOVAL**).
5. Drain the engine coolant (see **COOLANT CHECK**).
6. Disconnect the heater hose (A) and evaporative emission (EVAP) canister purge valve joint (B).

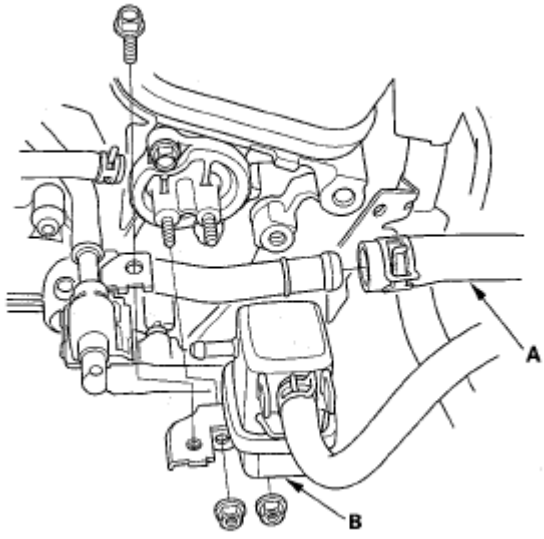

Fig. 92: Identifying Heater Hose And Evaporative Emission (EVAP) Canister Purge Valve Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the quick-connect fitting cover, then disconnect the fuel feed hose (see step 18 on **ENGINE REMOVAL**).
8. Remove the timing belt (see **TIMING BELT REMOVAL**).
9. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
10. Remove the rear camshaft pulley (see step 20 on **CYLINDER HEAD REMOVAL**).
11. Remove the thrust cover (A), then remove the rear camshaft (B).

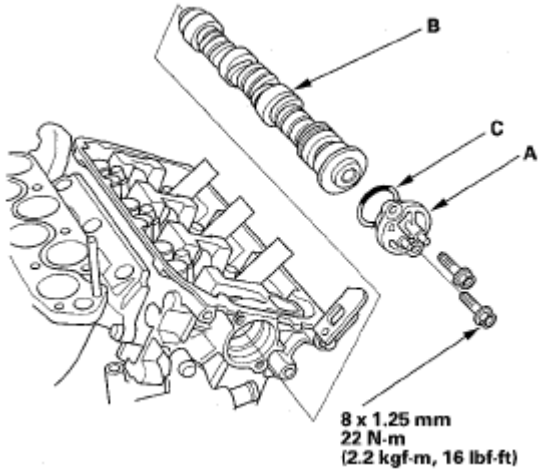

Fig. 93: Identifying Thrust Cover And Rear Camshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the rear camshaft in the reverse order of removal. Always use a new O-ring (C). Apply new engine oil to the journals and cam lobes.
13. Apply new engine oil to the threads of the camshaft pulley mounting bolt, then install the rear camshaft pulley (see step 10 on **CAMSHAFT, ROCKER ARM ASSEMBLY, CAMSHAFT SEAL, AND PULLEY INSTALLATION**).
14. Install the rocker arm assembly, then tighten the mounting bolts (see step 8 on **CAMSHAFT, ROCKER ARM ASSEMBLY, CAMSHAFT SEAL, AND PULLEY INSTALLATION**).
15. Install the timing belt (see **TIMING BELT INSTALLATION**).
16. Adjust the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).
17. Connect the fuel feed hose, then install the quick-connect fitting cover (see step 57 on **ENGINE INSTALLATION**).
18. Install the heater hose and EVAP canister purge valve joint.
19. Install the under-hood fuse/relay box (see step 60 on **ENGINE INSTALLATION**).
20. Connect the negative cable to the battery.
21. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.
22. Fill the radiator with engine coolant and bleed the air out (see step 8 on **COOLANT REPLACEMENT**).

23. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
24. Enter the anti-theft codes for the audio system and the navigation system (if equipped).
25. Set the clock (on vehicles without navigation).

CYLINDER HEAD INSPECTION FOR WARPAGE

1. Remove the cylinder head (see **CYLINDER HEAD REMOVAL**).
2. Inspect the camshaft (see **CAMSHAFT INSPECTION**).
3. Check the cylinder head for warpage. Measure along the edges, and three ways across the center.
    - If warpage is less than 0.05 mm (0.002 in.), cylinder head resurfacing is not required.
    - If warpage is between 0.05 mm (0.002 in.) and 0.2 mm (0.008 in.), resurface the cylinder head.
    - Maximum resurface limit is 0.2 mm (0.008 in.) based on a height of 121 mm (4.76 in.).

    Cylinder Head Height

    Standard (New): 120.95-121.05 mm (4.762-4.766 in.)

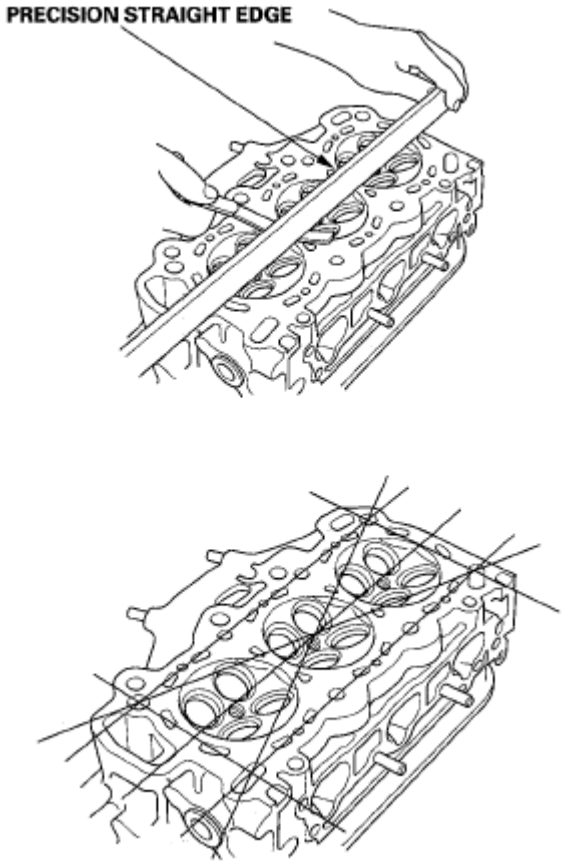

Fig. 94: Measuring Cylinder Head Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROCKER ARM ASSEMBLY REMOVAL

1. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
2. Loosen the adjusting screws (A).

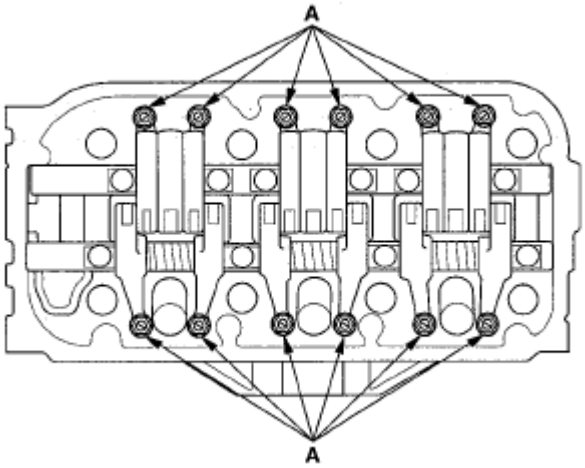

Fig. 95: Identifying Rocker Arm Assembly Adjusting Screws
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bolts and the rocker arm assembly.
    1. Loosen the rocker shaft mounting bolts in sequence two turns at a time, to prevent damaging the valves or rocker arm assembly.
    2. When removing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and the rocker arms on the shafts.

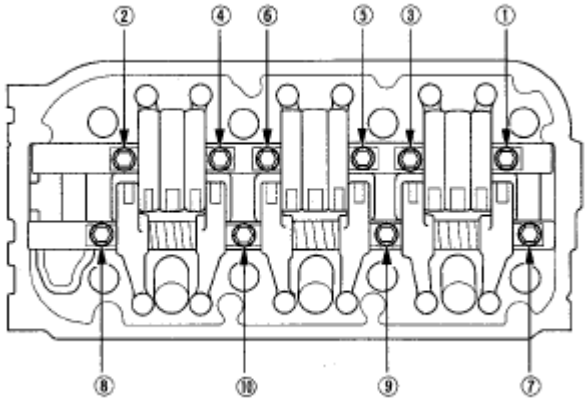

Fig. 96: Identifying Rocker Shaft Mounting Bolts Loosening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY

NOTE:

- **Identify parts as they are removed so they can be reinstalled in their original locations.**
- **Inspect the rocker shafts and rocker arms (see ROCKER ARM AND SHAFT INSPECTION).**
- **If reused, the rocker arms must be installed in their original locations.**
- **When removing or installing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and rocker arms on the shaft.**
- **Bundle the intake rocker arms with rubber bands to keep them together as a set.**
- **Prior to reassembling, clean all the parts in solvent, dry them and apply new engine oil to any contact points.**
- **When replacing the intake rocker arm assembly, remove the fastening hard wear from the new intake rocker arm assembly.**

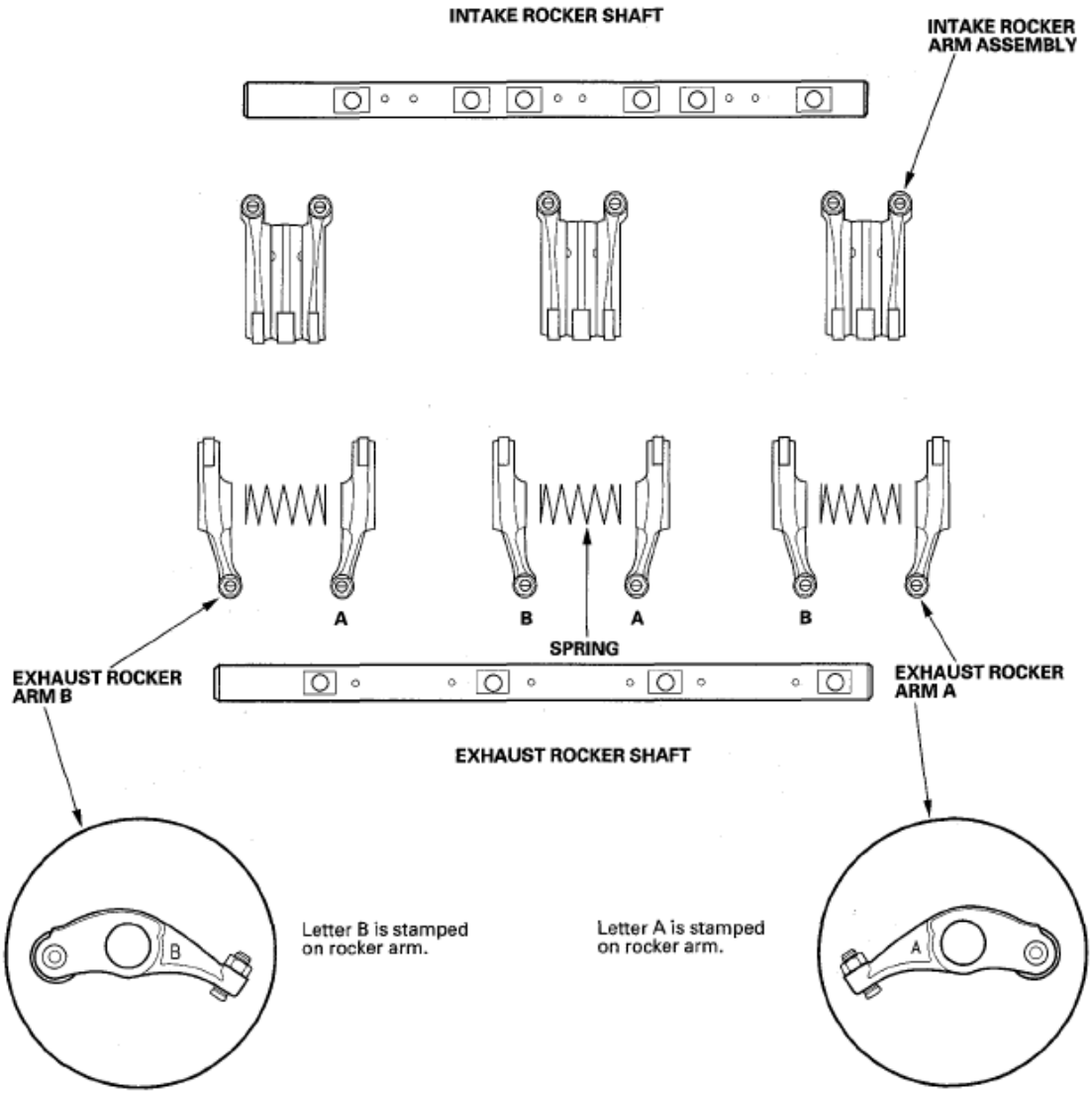

Fig. 97: Assembling/Disassembling View Of Rocker Arm And Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROCKER ARM AND SHAFT INSPECTION

1. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
2. Disassemble the rocker arm assembly (see **ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY**).
3. Measure the diameter of the shaft at the first rocker location.

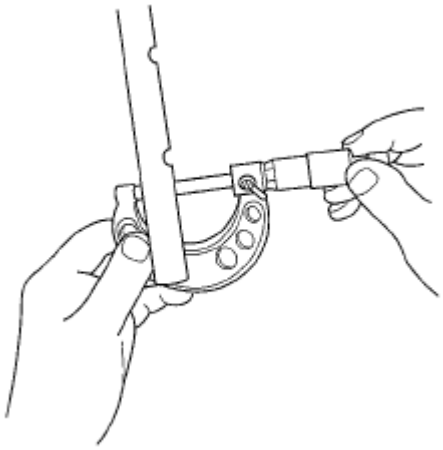

Fig. 98: Measuring Diameter Of Rocker Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Zero the gauge (A) to the shaft diameter.

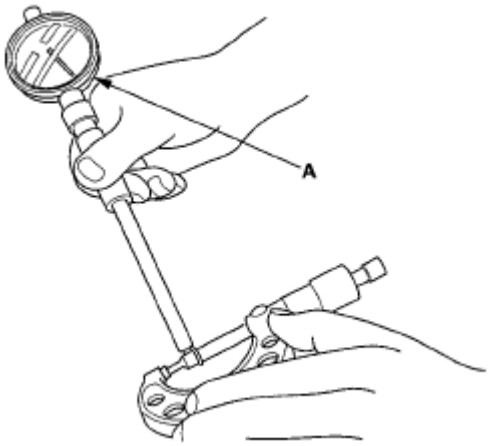

Fig. 99: Checking Shaft Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

M/T model

Intake Rocker Arm-to-Shaft Clearance

Standard (New): 0.026-0.067 mm (0.0010-0.0026 in.)

Service Limit: 0.067 mm (0.0026 in.)

Exhaust Rocker Arm-to-Shaft Clearance

Standard (New): 0.026-0.067 mm (0.0010-0.0026 in.)

Service Limit: 0.067 mm (0.026 in.)

A/T model

Intake Rocker Arm-to-Shaft Clearance

Standard (New): 0.026-0.067 mm (0.0010-0.0026 in.)

Service Limit: 0.067 mm (0.0026 in.)

Exhaust Rocker Arm-to-Shaft Clearance

Standard (New): 0.026-0.077 mm (0.0010-0.0030 in.)

Service Limit: 0.077 mm (0.0030 in.)

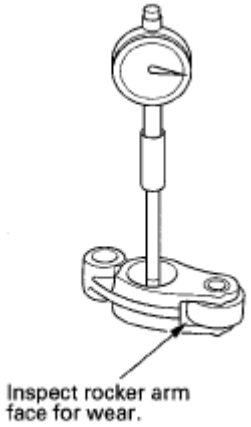

Fig. 100: Measuring Inside Diameter Of Rocker Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Repeat for all rockers and both shafts. If the clearance is over the limit, replace the rocker shaft and all over-tolerance rocker arms. If any intake rocker arm needs replacement, replace all three rocker arms in that set (primary, mid, and secondary).

VTEC Rocker Arms

7. Inspect the rocker arm rocker arm pistons (A). Push them manually. If they do not move smoothly, replace the rocker arm set.

NOTE:

- **Apply new engine oil to the rocker arm pistons when reassembling.**
- **When reassembling the primary rocker arm (B), carefully apply air pressure to the oil passage of the rocker arm.**

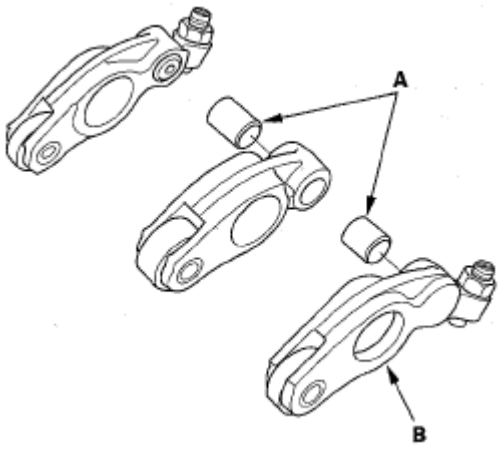

Fig. 101: Identifying Rocker Arm Rocker Arm Pistons
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Reassemble the rocker arm assembly (see **ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY**).
9. Install the rocker arm assembly (see **CAMSHAFT, ROCKER ARM ASSEMBLY, CAMSHAFT SEAL, AND PULLEY INSTALLATION**).

CAMSHAFT INSPECTION

1. Remove the cylinder head (see **CYLINDER HEAD REMOVAL**).
2. Remove the rocker arms (see **ROCKER ARM ASSEMBLY REMOVAL**).
3. Put the rocker shafts on the cylinder head, then tighten the bolts to the specified sequence.

NOTE: Apply new engine oil to the threads and flange of the exhaust rocker shaft mounting bolts.

Specified Torque 8 x 1.25 mm: 24 N.m (2.4 kgf.m, 18 lbf.ft)

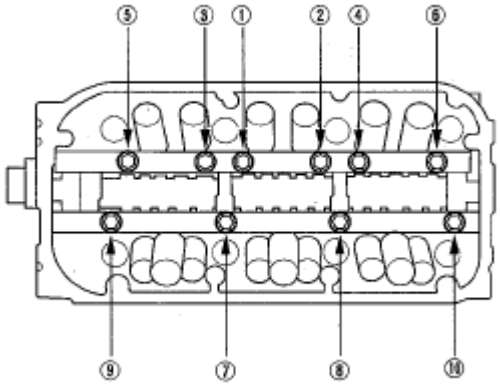

Fig. 102: Identifying Exhaust Rocker Shaft Mounting Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Seat the camshaft by pushing it toward the rear of the cylinder head.
5. Zero the dial indicator against the end of the camshaft. Push the camshaft back and forth and read the end play. If the end play is beyond the service limit, replace the thrust cover and recheck. If it is still beyond the service limit, replace the camshaft.

   Camshaft End Play

   Standard (New): 0.05-0.20 mm (0.002-0.008 in.)

   Service Limit: 0.20 mm (0.008 in.)

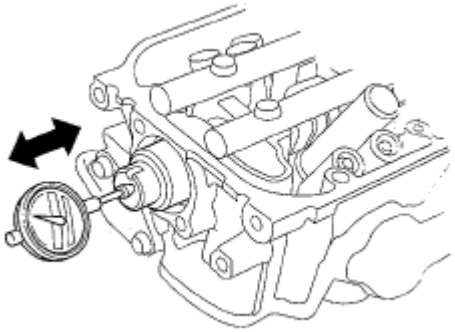

Fig. 103: Checking Camshaft End Play
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the camshaft thrust cover (A), then pull out the camshaft (B).

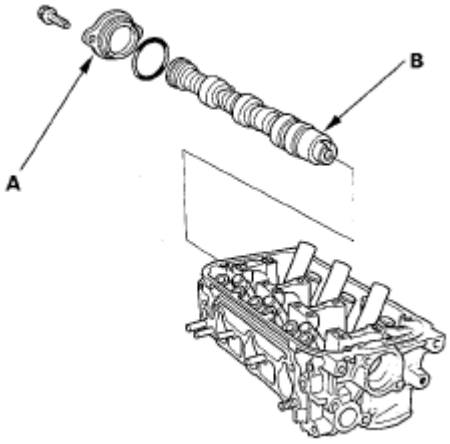

Fig. 104: Identifying Camshaft Thrust Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Wipe the camshaft clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.
8. Measure the diameter of each camshaft journal.

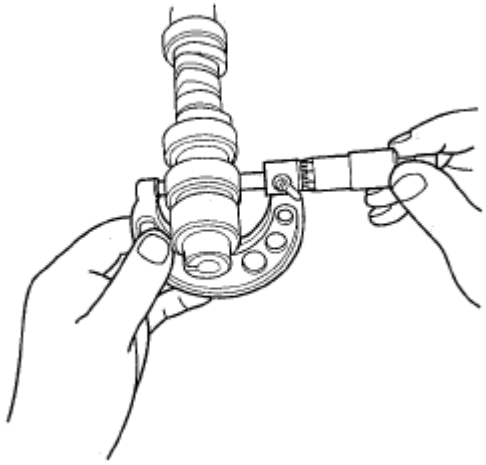

Fig. 105: Measuring Diameter Of Camshaft Journal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Zero the gauge to the camshaft journal diameter.

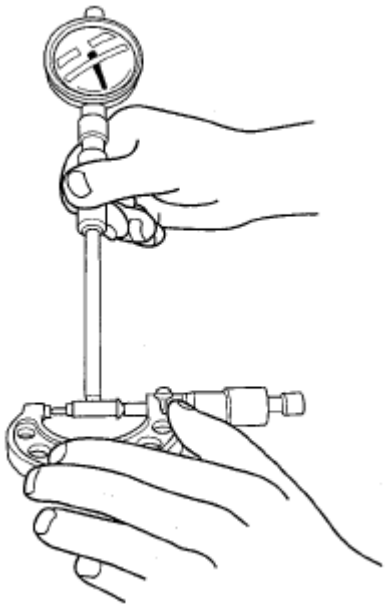

Fig. 106: Checking Camshaft Journal Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Clean the camshaft bearing surfaces in the cylinder head. Measure the inside diameter of each camshaft bearing surface, and check for an out-of-round condition.
    - If the camshaft-to-holder clearance is within limits, go to step 12.
    - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has been replaced, replace the cylinder head.
    - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has not been replaced, go to step 11.

Camshaft-to-Holder Oil Clearance

Standard (New): 0.050-0.089 mm {0.0020-0.0035 in.)

Service Limit: 0.15 mm (0.006 in.)

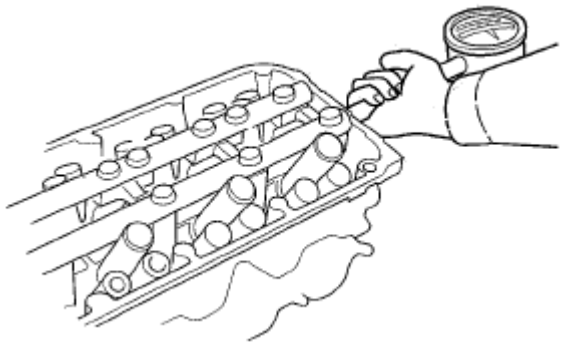

Fig. 107: Measuring Camshaft-To-Holder Oil Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check total runout with the camshaft supported on V-blocks.
    - If the total runout of the camshaft is within the service limit, replace the cylinder head.
    - If the total runout is beyond the service limit, replace the camshaft and recheck the oil clearance. If the oil clearance is still out of tolerance, replace the cylinder head.

    Camshaft Total Runout

    Standard (New): 0.03 mm (0.001 in.) max.

    Service Limit: 0.04 mm (0.002 in.)

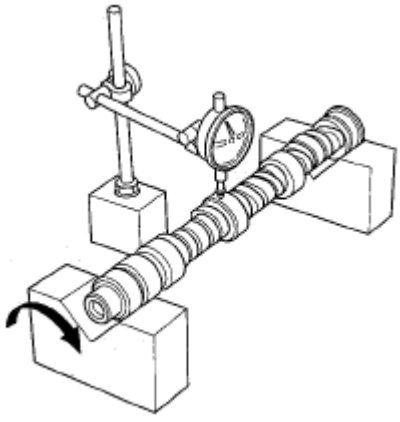

Fig. 108: Checking Camshaft Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Measure cam lobe height.

J32A3 engine

Cam Lobe Height Standard (New):

CAM LOBE HEIGHT SPECIFICATIONS CHART

	INTAKE	EXHAUST
PRI	35.041 mm (1.3796 in.)	
MID	36.445 mm (1.4348 in.)	36.326 mm (1.4302 in.)
SEC	35.284 mm (1.3891 in.)	

PRI: Primary

IN: Intake

MID: Mid

EX: Exhaust

SEC: Secondary

T/B: Timing belt

J35A8 engine

Cam Lobe Height Standard (New):

CAM LOBE HEIGHT SPECIFICATIONS CHART

	INTAKE	EXHAUST
PRI	35.112 mm (1.3824 in.)	
MID	36.394 mm (1.4328 in.)	36.389 mm (1.4326 in.)
SEC	35.112 mm (1.3824 in.)	

PRI: Primary

IN: Intake

MID: Mid

EX: Exhaust

SEC: Secondary

T/B: Timing belt

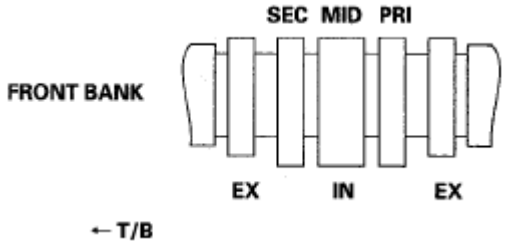

Fig. 109: Identifying Cam Lobe Positions - Front Bank
Courtesy of AMERICAN HONDA MOTOR CO., INC.

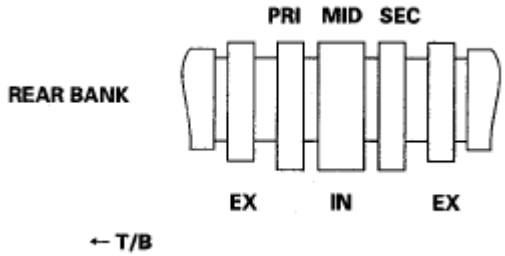

Fig. 110: Identifying Cam Lobe Positions - Rear Bank
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE, SPRING, AND VALVE SEAL REMOVAL

Special Tools Required

Valve spring compressor attachment 07757-PJ1010A

Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see **CYLINDER HEAD REMOVAL**).
2. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the spring retainer to loosen the valve cotters.

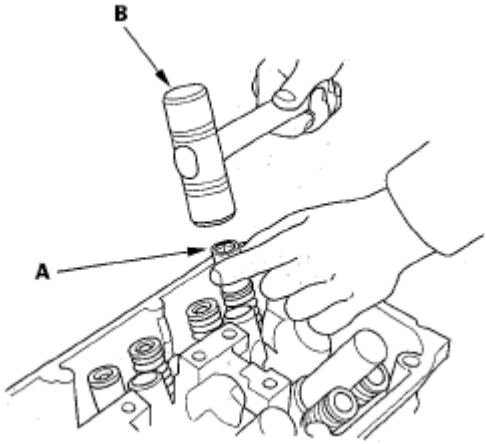

Fig. 111: Tapping Spring Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the valve spring compressor attachment and valve spring compressor. Compress the spring and remove the valve cotters.

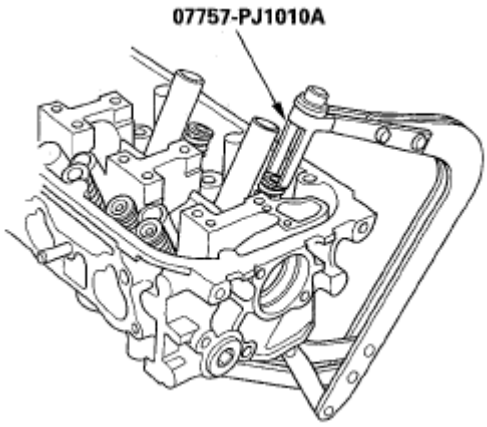

Fig. 112: Compressing Spring And Valve Cotters
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the valve spring compressor, valve spring compressor attachment, spring retainer, and spring.
5. Install the valve guide seal remover (A).

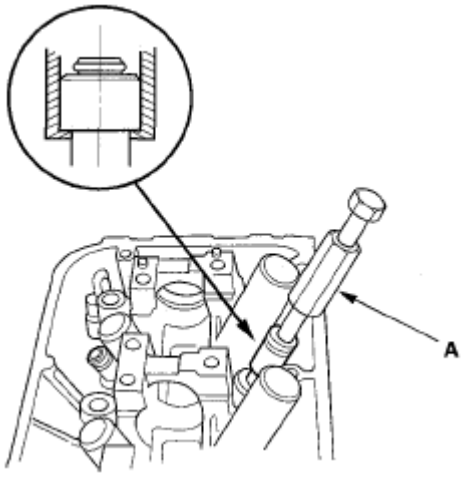

Fig. 113: Identifying Valve Guide Seal Remover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the valve seal.

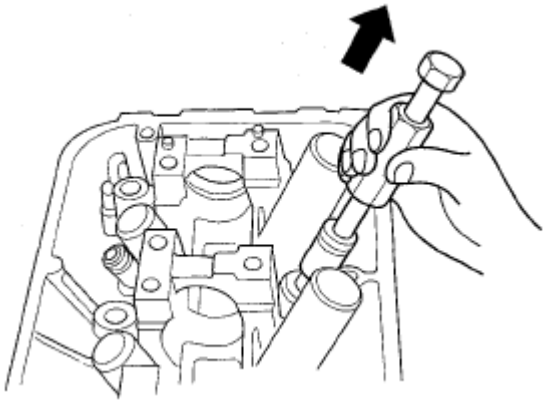

Fig. 114: Identifying Valve Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the valve spring seat and valve.

VALVE INSPECTION

1. Remove the valves (see **VALVE, SPRING, AND VALVE SEAL REMOVAL**).
2. Measure the valve in these areas.

J32A3 engine

Intake Valve Dimensions

A Standard (New): 34.90-35.10 mm (1.374-1.382 in.)

B Standard (New): 115.70-116.30 mm (4.555-4.579 in.)

C Standard (New): 5.485-5.495 mm (0.2159-0.2163 in.)

C Service Limit: 5.455 mm (0.2148 in.)

Exhaust Valve Dimensions

A Standard (New): 29.90-30.10 mm (1.177-1.185 in.)

B Standard (New): 113.90-114.50 mm (4.484-4.508 in.)

C Standard (New): 5.450-5.460 mm (0.2146-0.2150 in.)

C Service Limit: 5.420 mm (0.2134 in.)

J35A8 engine

Intake Valve Dimensions

A Standard (New): 35.90-36.10 mm (1.413-1.421 in.)

B Standard (New): 116.55-117.15 mm (4.589-4.612 in.)

C Standard (New): 5.485-5.495 mm (0.2159-0.2163 in.)

C Service Limit: 5.455 mm (0.2148 in.)

Exhaust Valve Dimensions

A Standard (New): 29.90-30.10 mm (1.177-1.185 in.)

B Standard (New): 113.90-114.50 mm (4.484-4.508 in.)

C Standard (New): 5.450-5.460 mm (0.2146-0.2150 in.)

C Service Limit: 5.420 mm (0.2134 in.)

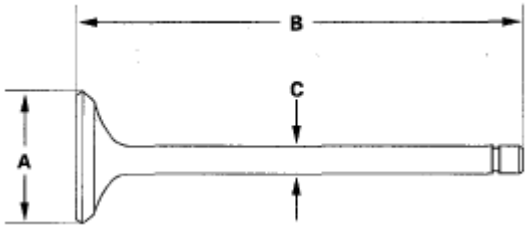

Fig. 115: Measuring Valve Dimension
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE STEM-TO-GUIDE CLEARANCE INSPECTION

1. Remove the valves (see **VALVE, SPRING, AND VALVE SEAL REMOVAL**).
2. Slide the valve out of its guide about 10 mm (0.39 in.), then measure the guide-to-stem clearance with a dial indicator while rocking the stem in the direction of normal thrust (wobble method).
   - If the measurement exceeds the service limit, recheck it using a new valve.
   - If the measurement is now within the service limit, reassemble using a new valve.
   - If the measurement with a new valve still exceeds the service limit, go to step 3.

   Intake Valve Stem-to-Guide Clearance

   Standard (New): 0.04-0.09 mm (0.002-0.004 in.)

   Service Limit: 0.16 mm (0.006 in.)

   Exhaust Valve Stem-to-Guide Clearance

   Standard (New): 0.11-0.16 mm (0.004-0.006 in.)

   Service Limit: 0.22 mm (0.009 in.)

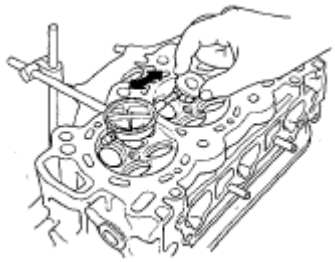

Fig. 116: Measuring Guide-To-Stem Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Subtract the valve stem O.D. (measured with a micrometer) from the valve guide I.D. (measured with an inside micrometer or ball gauge). Take the measurements in three places along the valve stem and three places inside the valve guide. The difference between the largest guide measurement and the smallest stem measurement should not exceed the service limit.

   Intake Valve Stem-to-Guide Clearance

   Standard (New): 0.020-0.045 mm (0.0008-0.0018 in.)

   Service Limit: 0.08 mm (0.003 in.)

   Exhaust Valve Stem-to-Guide Clearance

   Standard (New): 0.055-0.080 mm (0.0022-0.0031 in.)

Service Limit: 0.11 mm (0.004 in.)

VALVE GUIDE REPLACEMENT

Special Tools Required

- Valve guide driver, 5.5 mm 07742-0010100
- Valve guide reamer, 5.5 mm 07HAH-PJ7A100

1. Inspect valve stem-to-guide clearance (see **VALVE STEM-TO-GUIDE CLEARANCE INSPECTION**).
2. As illustrated, use a commercially available air-impact valve guide driver (A) modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the special tool and a conventional hammer.

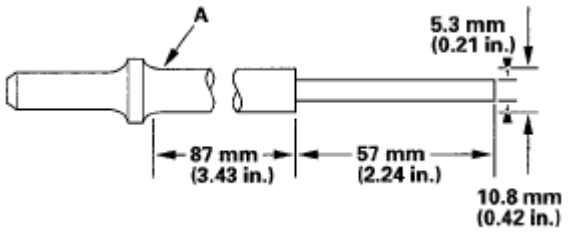

Fig. 117: Inspecting Valve Stem-To-Guide Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for about an hour.
4. Use a hot plate or oven to evenly heat the cylinder head to 300°F (150°C). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 300°F (150°C); excessive heat may loosen the valve seats.

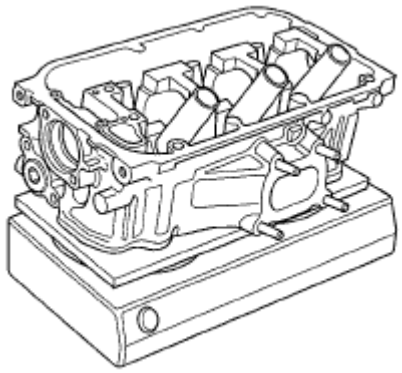

Fig. 118: Heating Cylinder Head
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Working from the camshaft side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.)

towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver. Wear safety goggles or a face shield.

6. Turn the head over, and drive the guide out toward the camshaft side of the head.

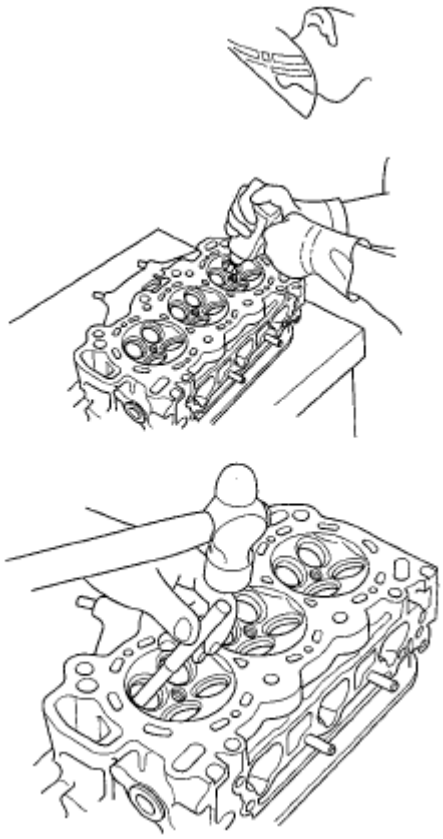

Fig. 119: Turning Head Over
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. If a valve guide still won't move, drill it out with a 8 mm (5/16 in.) bit, then try again.

NOTE: Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.

8. Take out the new guide(s) from the freezer, one at a time, as you need them.
9. Apply a thin coat of new engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head; use the special tool to drive the guide to the specified installed height (A) of the guide (B). If you have all 12 guides to do, you may have to reheat the head.

Valve Guide Installed Height

Intake: 21.20-22.20 mm (0.835-0.874 in.)

Exhaust: 20.60-21.60 mm (0.811-0.850 in.)

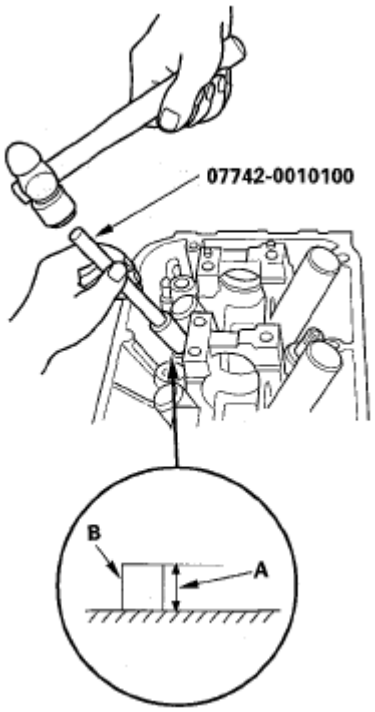

Fig. 120: Installing Guide From Camshaft Side Of Head
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Coat both the reamer and the valve guide with cutting oil.
11. Rotate the reamer clockwise the full length of the valve guide bore.

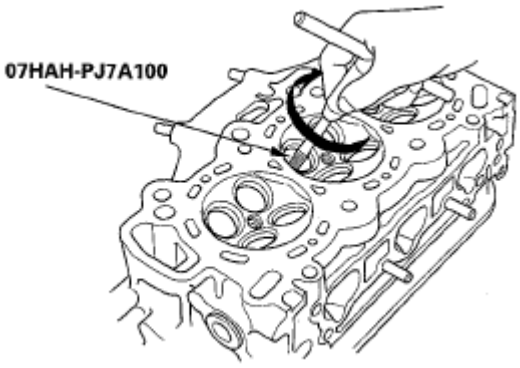

Fig. 121: Rotating Reamer Clockwise
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Continue to rotate the reamer clockwise while drawing it from the bore.
13. Thoroughly wash the guide in detergent and water to remove any cutting residue.
14. Check the clearance with a valve (see **VALVE STEM-TO-GUIDE CLEARANCE INSPECTION**). Verify that a valve slides in the intake and exhaust valve guides without sticking.

15. Inspect the valve seating, if necessary renew the valve seat using a valve seat cutter (see **VALVE SEAT RECONDITIONING**).

VALVE SEAT RECONDITIONING

1. Inspect valve stem-to-guide clearance (see **VALVE STEM-TO-GUIDE CLEARANCE INSPECTION**). If the valve guides are worn, replace them (see **VALVE GUIDE REPLACEMENT**) before cutting the valve seats.
2. Renew the valve seats in the cylinder head using a valve seat cutter.

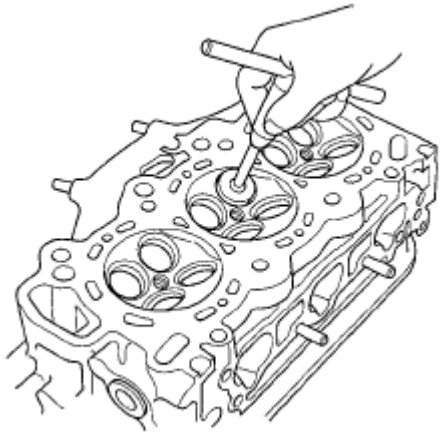

Fig. 122: Inspecting Valve Stem-To-Guide Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Carefully cut a 45 ° seat, removing only enough material to ensure a smooth and concentric seat.
4. Bevel the upper edge of the seat with the 30 ° cutter and the lower edge of the seat with the 67.5 ° cutter (intake seat) or the 60 ° cutter (exhaust seat). Check the width of the seat and adjust accordingly.

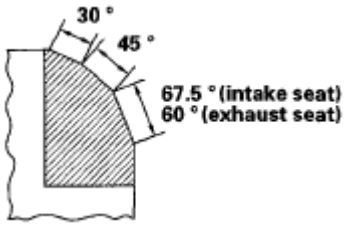

Fig. 123: Identifying Upper Edge Seat Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Make one more very light pass with the 45 ° cutter to remove any possible burrs caused by the other cutters.

Valve Seat Width

Standard (New): 1.25-1.55 mm (0.049-0.061 in.)

Service Limit: 2.00 mm (0.079 in.)

6. After resurfacing the seat, inspect it for even valve seating. Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.

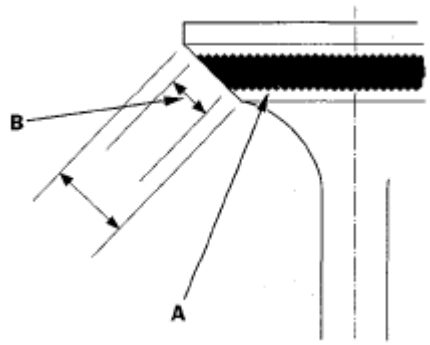

Fig. 124: Applying Prussian Blue Compound To Valve Face
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. The actual valve seating surface (B), as shown by the blue compound, should be centered on the seat.
   - If it is too high (closer to the valve stem), you must make a second cut with the 67.5 ° cutter (intake seat) or the 60 ° cutter (exhaust seat) to move it down, then one more cut with the 45 ° cutter to restore seat width.
   - If it is too low (closer to the valve edge), you must make a second cut with the 30 ° cutter to move it up, then one more cut with the 45 ° cutter to restore seat width.

   NOTE: The final cut should always be made with the 45 ° cutter.

8. Insert the intake and exhaust valves in the head, and measure the valve stem installed height (A).

   Intake Valve Stem Installed Height

   Standard (New): 46.75-47.55 mm (1.841-1,872 in.)

   Service Limit: 47.80 mm (1.882 in.)

   Exhaust Valve Stem Installed Height

   Standard (New): 46.68-47.48 mm (1.838-1.869 in.)

   Service Limit: 47.73 mm (1.879 in.)

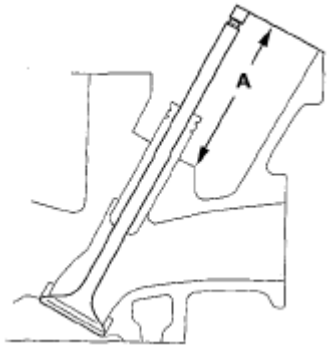

Fig. 125: Measuring Valve Stem Height
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If the valve stem installed height is over the service limit, replace the valve and recheck. If it is still over the service limit, replace the cylinder head; the valve seat in the head is too deep.

VALVE, SPRING, AND VALVE SEAL INSTALLATION

Special Tools Required

- Stem seal driver 07PAD-0010000
- Valve spring compressor attachment 07757-PJ1010A

1. Coat the valve stems with new engine oil. Install the valves in the valve guides.
2. Check that the valves move up and down smoothly.
3. Install the spring seats on the cylinder head.
4. Install the new valve seals (A) using the stem seal driver (B).

NOTE: Exhaust valve seals (C) have a black spring (D) and intake valve seals (E) have a white spring (F); they are not interchangeable.

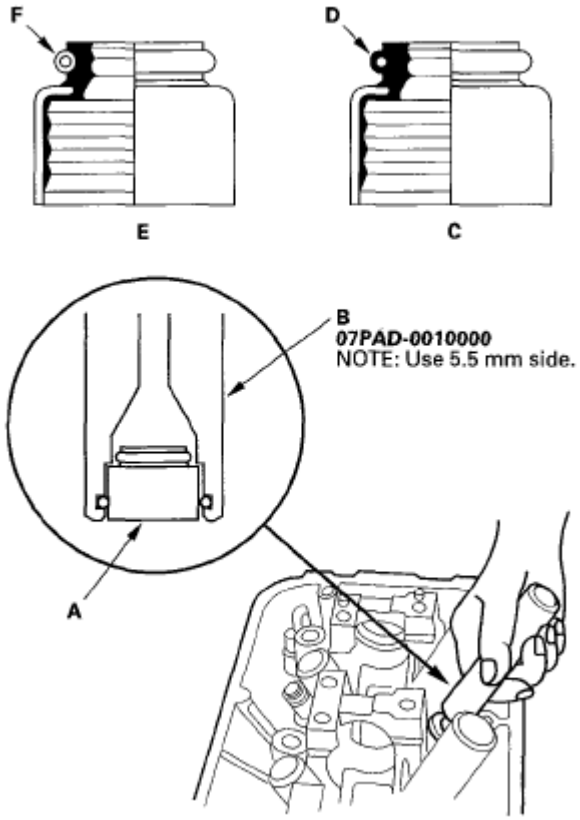

Fig. 126: Installing Valves In Valve Guides
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the valve spring and spring retainer. Place the end of the valve spring with closely wound coils toward the cylinder head.
6. Install the valve spring compressor attachment and valve spring compressor. Compress the spring and install the valve cotters.

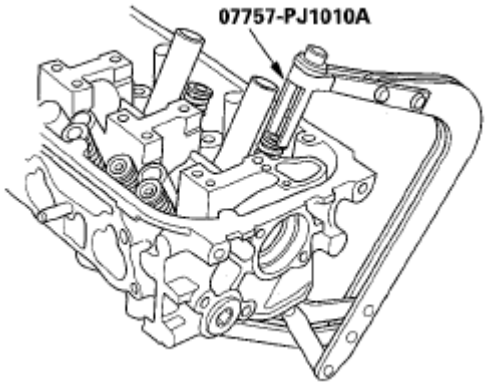

Fig. 127: Compressing Spring And Install Valve Cotters
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the valve spring compressor and valve spring compressor attachment.

8. Lightly tap the end of each valve stem two or three times with a plastic mallet (A) to ensure proper seating of the valve and valve cotters. Tap the valve stem only along its axis so you do not bend the stem.

Fig. 128: Tapping End Of Valve Stem
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CAMSHAFT, ROCKER ARM ASSEMBLY, CAMSHAFT SEAL, AND PULLEY INSTALLATION

1. Apply a light coat of new engine oil around the camshaft oil seal.
2. Gently tap the new camshaft oil seal (A) into the cylinder head using a seal driver.
    1. Tap the camshaft oil seal in squarely.
    2. Install the oil seal about 0.5 -1.5 mm (0.02-0.06 in.) below the surface of the cylinder head.

FRONT:

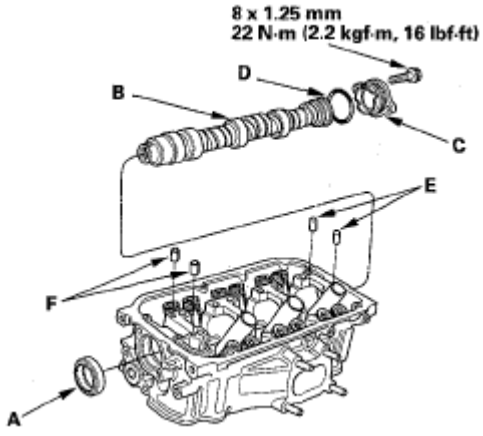

Fig. 129: Identifying Camshaft Components - Front With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR:

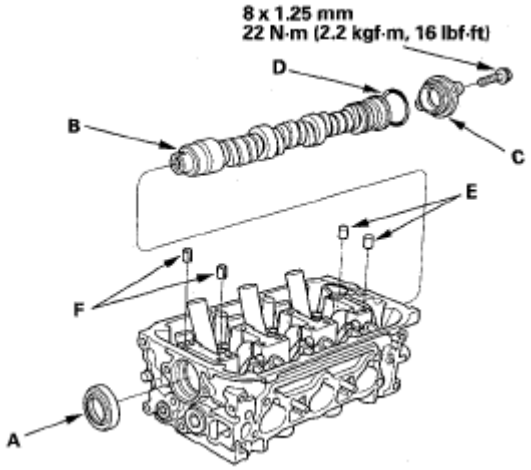

Fig. 130: Identifying Camshaft Components - Rear With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Insert the camshaft (B) into the cylinder head, then install the camshaft thrust cover (C). Always use a new O-ring (D). Apply new engine oil to the journals and cam lobes.
4. Check that the oil seal lips are not distorted.
5. Install the solid dowel pins (E) and the hollow dowel pins (F).
6. Loosen the valve adjusting screws.
7. If the rocker arm assembly is disassembled, reassemble the rocker arm assembly (see **ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY**).
8. Set the rocker arm assembly in place, and loosely install the bolts. Make sure the rocker arms are properly positioned on the valve stems.
9. Tighten each bolt two turns at a time in the sequence shown to ensure that the rockers do not bind on the valves.

NOTE: Apply new engine oil to the threads and flange of the exhaust rocker shaft mounting bolts.

Specified Torque 8 x 1.25 mm: 24 N.m (2.4 kgf.m, 18 lbf.ft)

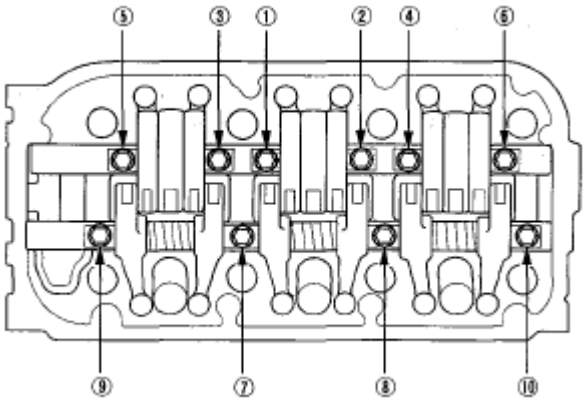

Fig. 131: Identifying Rocker Shaft Assembly Mounting Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Apply new engine oil to the threads of the camshaft pulley mounting bolt (A). Install the back cover (B), then install the camshaft pulley (C).

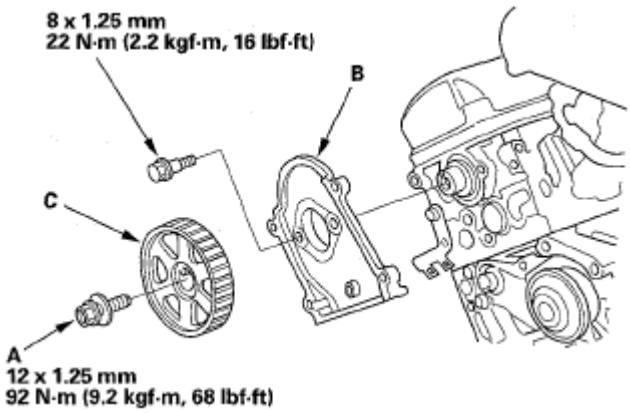

Fig. 132: Identifying Camshaft Pulley Mounting Bolt With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Set the camshaft pulleys to top dead center (TDC) before bolting them onto the engine block (see step 7 on **CYLINDER HEAD INSTALLATION**).

CYLINDER HEAD INSTALLATION

1. Clean the cylinder head and block surface.
2. Clean and install the oil control orifices (A) with new O-rings (B).

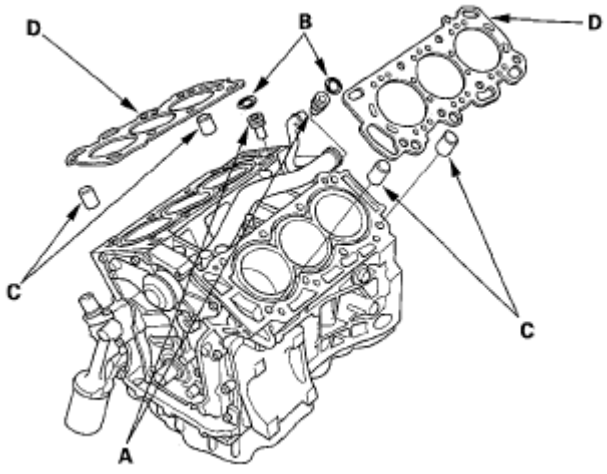

Fig. 133: Identifying Oil Control Orifices
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the dowel pins (C) and new cylinder head gaskets (D).

4. Install the cylinder heads onto the engine block.
5. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
6. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

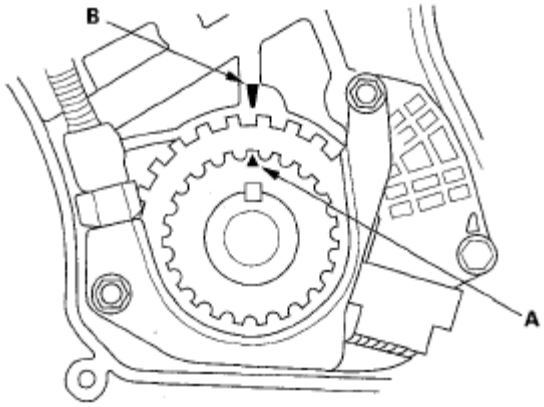

Fig. 134: Identifying Dowel Pins And Cylinder Head Gaskets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT:

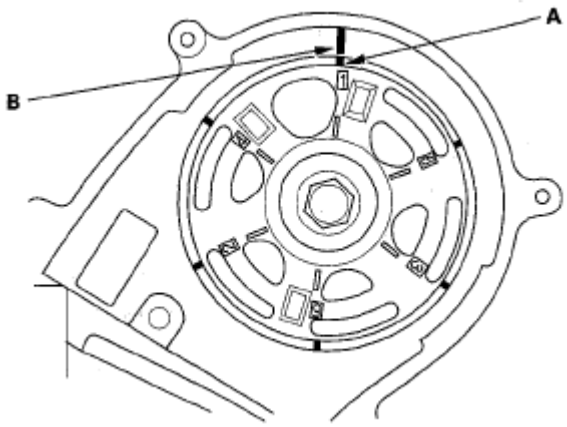

Fig. 135: Aligning TDC Marks On Camshaft Pulleys - Front
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR:

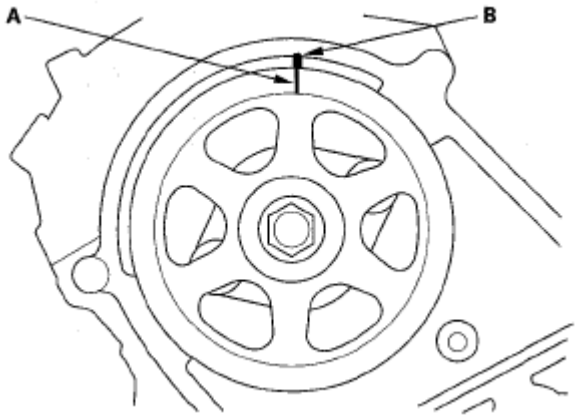

Fig. 136: Aligning TDC Marks On Camshaft Pulleys - Rear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Measure the diameter of each cylinder head bolt at point A and point B.

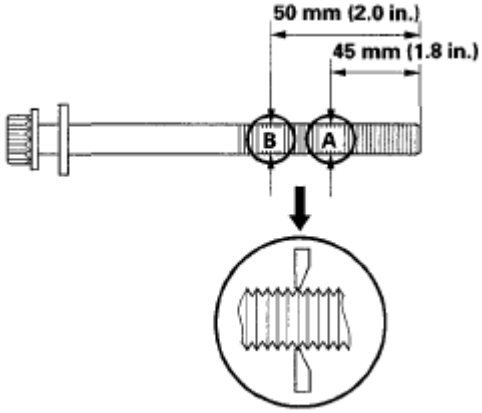

Fig. 137: Measuring Diameter Of Cylinder Head Bolt At Point A And Point B
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If either diameter is less than 11.3 mm (0.44 in.), replace the cylinder head bolt.
10. Apply new engine oil to the threads and under the bolt heads of all cylinder head bolts.
11. Torque the cylinder head bolts in sequence to 30 N.m (3.0 kgf.m, 22 lbf.ft). Use a beam-type torque wrench. When using a preset-type torque wrench, be sure to tighten slowly and do not overtighten. If a bolt makes any noise while you are torquing it, loosen the bolt and retorque it from the first step.

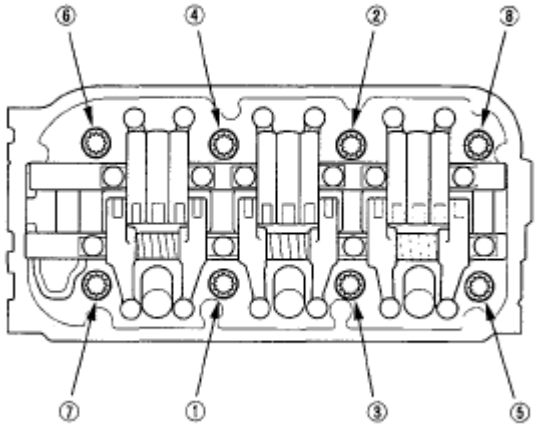

Fig. 138: Identifying Cylinder Head Bolts Loosening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. After torquing, tighten all cylinder head bolts in two steps (90 ° per step). If you are using a new cylinder head bolt, tighten the bolt an extra 90 °.

NOTE: Remove the cylinder head bolt if you tightened it beyond the specified angle, and go back to step 8 of the procedure. Do not loosen it back to the specified angle.

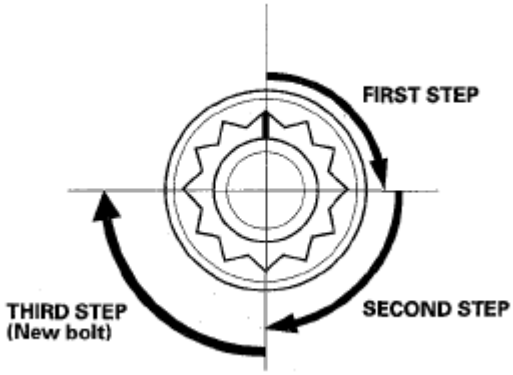

Fig. 139: Identifying Cylinder Head Bolts Tightening Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the timing belt (see **TIMING BELT INSTALLATION**).
14. Adjust the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).
15. Install the cylinder head covers (see **CYLINDER HEAD COVER INSTALLATION**).
16. Install the water passage (A). Always use a new O-ring (B) and new gaskets (C).

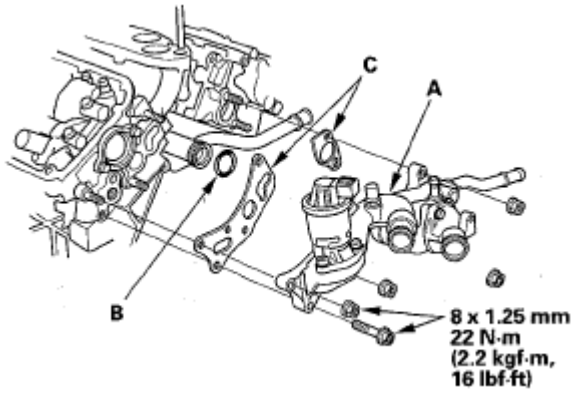

Fig. 140: Identifying Water Passage, O-Ring And Gaskets With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Install the front and rear warm up three way catalytic converters (WU-TWC) (see **WARM UP TWC REMOVAL/INSTALLATION**).
18. Tighten the bolt securing the connector bracket.

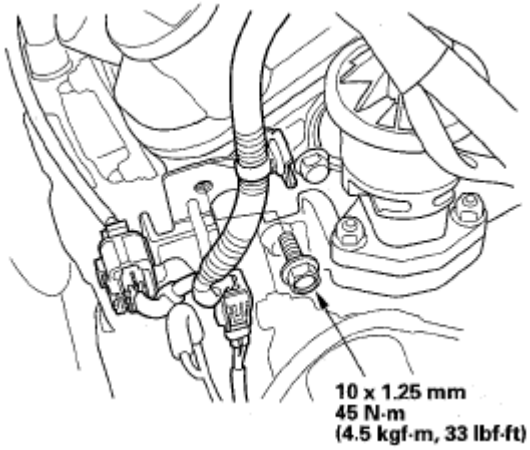

Fig. 141: Identifying Connector Bracket Bolt With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Tighten the bolt securing the harness clamp bracket.

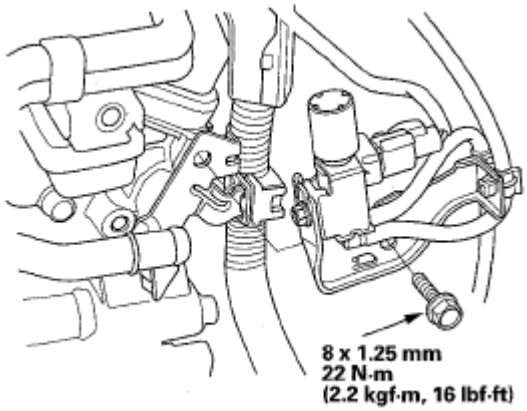

Fig. 142: Identifying Harness Clamp Bracket Bolt With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the fuel rails (see **INJECTOR REPLACEMENT**).
21. Connect the fuel feed hose (A) (see **FUEL LINE/QUICK-CONNECT FITTING INSTALLATION**), then install the quick-connect fitting cover (B).

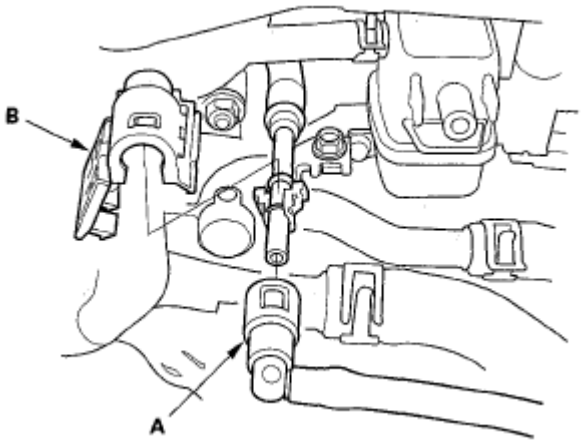

Fig. 143: Identifying Fuel Feed Hose And Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Install the heater hose (A), water bypass hose (B), and ground cable (C).

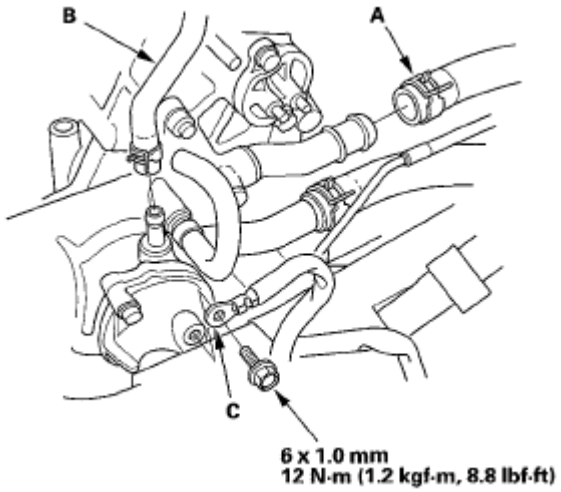

Fig. 144: Identifying Heater Hose, Water Bypass Hose, And Ground Cable With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Install the upper radiator hose (A) and lower radiator hose (B).

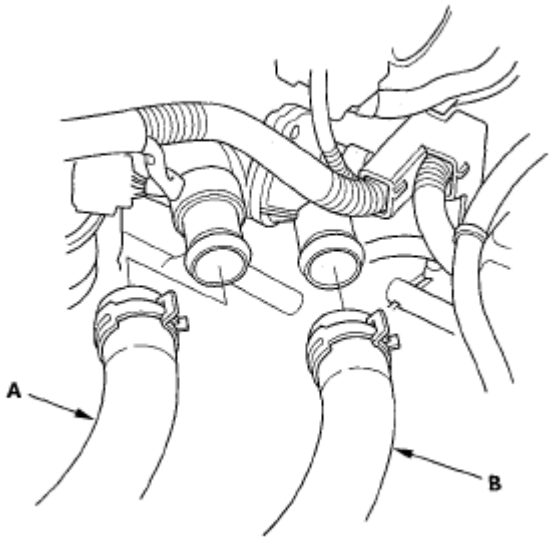

Fig. 145: Identifying Upper Radiator Hose And Lower Radiator Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Install these engine wire harness connectors and their clamps to the cylinder head:
    - Six injector connectors
    - Engine coolant temperature (ECT) sensor 1 connector
    - Camshaft position (CMP) sensor connector
    - Crankshaft position (CKP) sensor connector
    - Exhaust gas recirculation (EGR) valve connector

- Rocker arm oil control solenoid connector
- Rocker arm oil pressure switch connector
- Oil pressure switch connector
- Two air fuel ratio (A/F) sensor connectors
- Two secondary heated oxygen sensor (secondary HO2S) connectors

25. Install the power steering (P/S) pump (A) and P/S hose bracket (B).

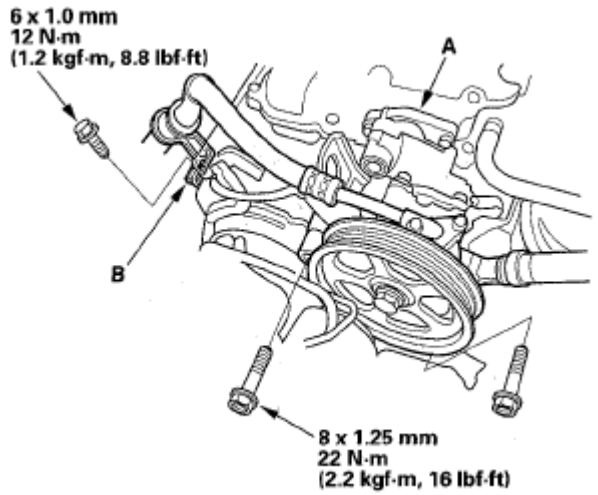

Fig. 146: Identifying Power Steering (P/S) Pump And P/S Hose Bracket Bolts With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Install the six ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
27. Install the intake manifold (see **INSTALLATION**).
28. Install the alternator (see **INSTALLATION**).
29. Install the drive belt (see **DRIVE BELT INSPECTION**).
30. Clean the battery posts and cable terminals. Assemble them and apply grease to prevent corrosion.
31. After installation, check that all tubes, hoses, and connectors are installed correctly.
32. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.
33. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on **COOLANT REPLACEMENT**).
34. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
35. Inspect the idle speed (see **IDLE SPEED INSPECTION**).
36. Inspect the ignition timing (see **IGNITION TIMING INSPECTION**).
37. Enter the anti-theft codes for the audio system and the navigation system (if equipped).
38. Set the clock (on vehicles without navigation).

CAMSHAFT OIL SEAL INSTALLATION - IN CAR

Special Tools Required

Camshaft oil seal driver 07GAF-SD40330

1. Remove the timing belt (see **TIMING BELT REMOVAL**).
2. Remove the camshaft pulley and back cover (see step 20 on **CYLINDER HEAD REMOVAL**).
3. Remove the camshaft oil seal.
4. Dry the camshaft oil seal housing.
5. Apply a light coat of multipurpose grease to the lip of the camshaft oil seal.
6. Using the special tool (A), washer (B), and a 12 x 75 x 1.25 mm bolt (C), press in the camshaft oil seal (D) about 0.5-1.5 mm (0.02-0.06 in.) below the surface of the cylinder head.

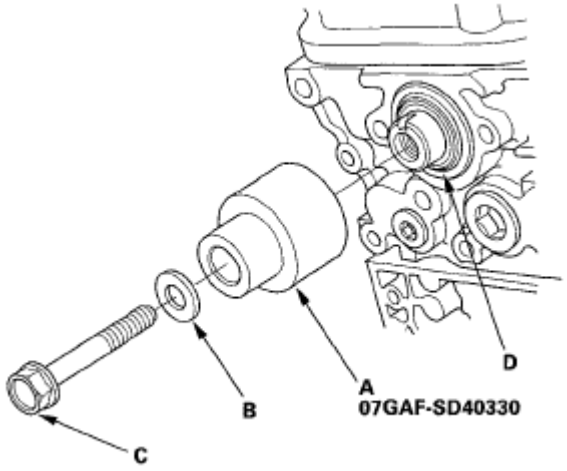

Fig. 147: Pressing Camshaft Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Apply new engine oil to the threads of the camshaft pulley mounting bolt. Install the back cover, then install the camshaft pulley (see step 10 on **CAMSHAFT, ROCKER ARM ASSEMBLY, CAMSHAFT SEAL, AND PULLEY INSTALLATION**).
8. Install the timing belt (see **TIMING BELT INSTALLATION**).

SEALING BOLT INSTALLATION

NOTE: When installing the sealing bolt, always use a new washer.

FRONT:

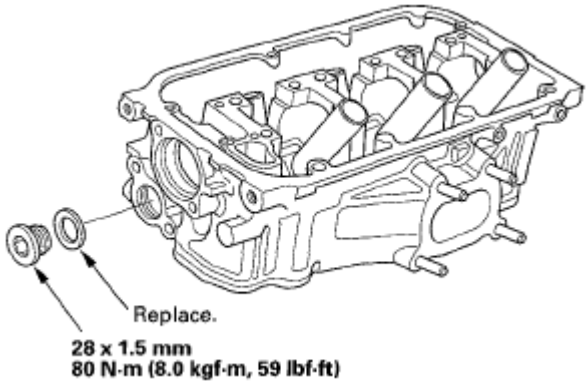

Fig. 148: Identifying Sealing Bolt Washer - Front With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REAR:

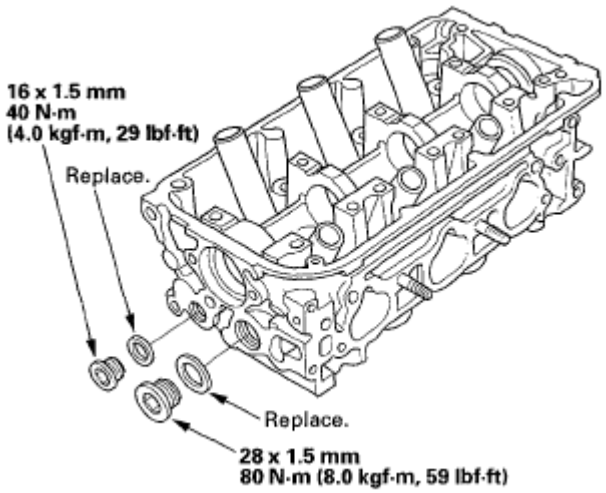

Fig. 149: Identifying Sealing Bolt Washer - Rear With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2007-08 ENGINE

Engine Block - TL

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	070AD-RCAA100	Oil Seal Driver, 64 mm	1
②	070AD-RCAA200	Driver Attachment, 106 mm	1
③	07749-0010000	Driver	1

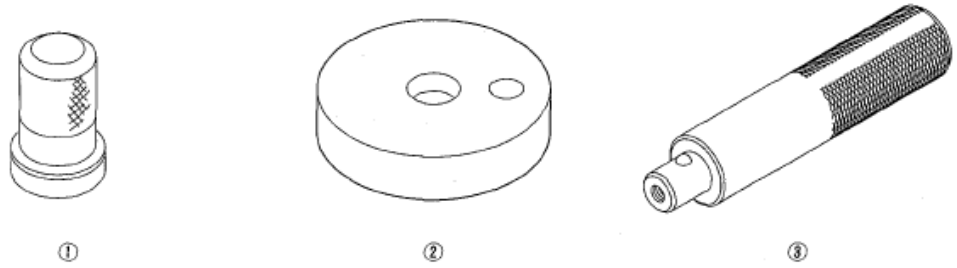

Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

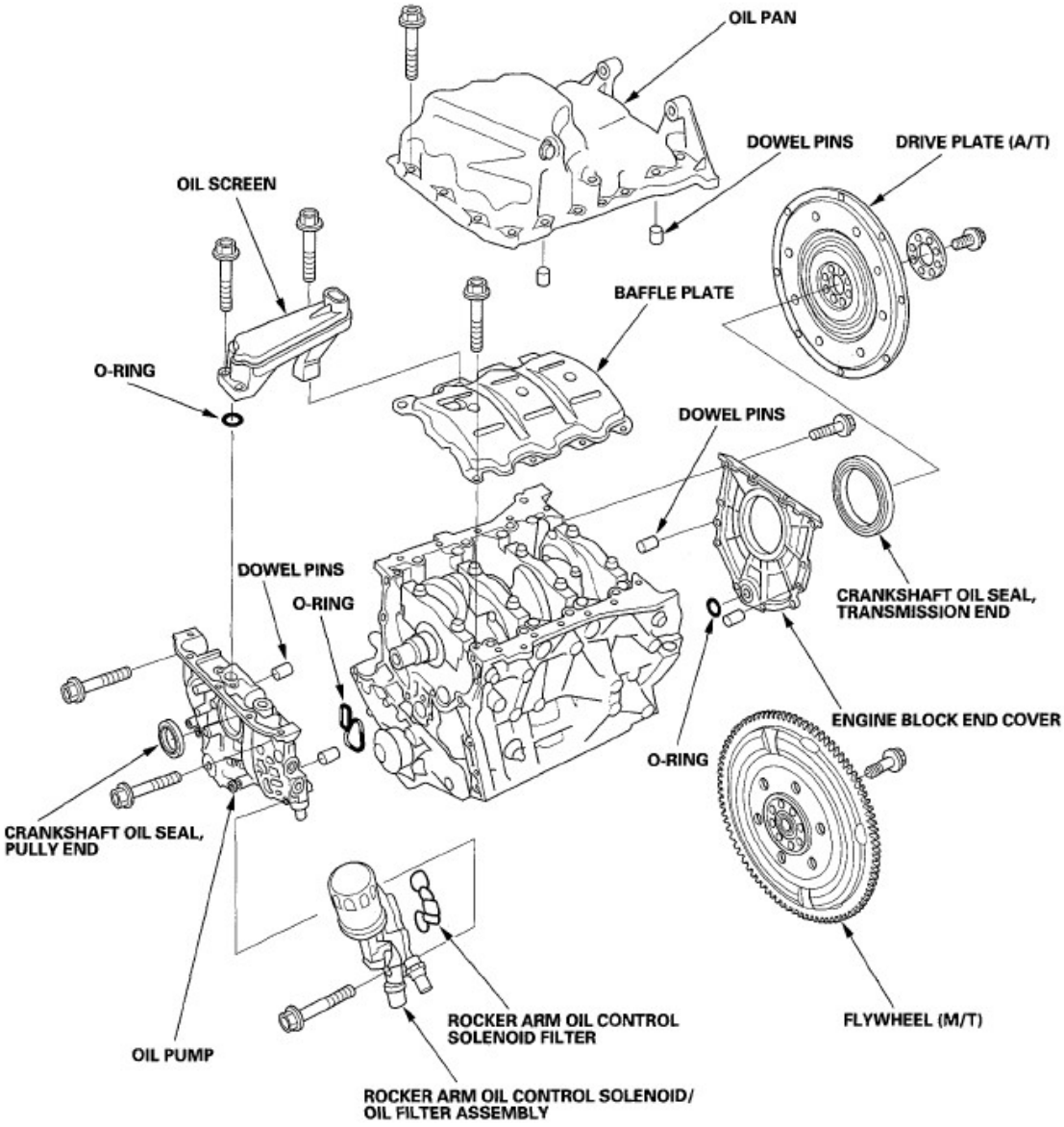

Fig. 2: Identifying Engine Block Component Location (1 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

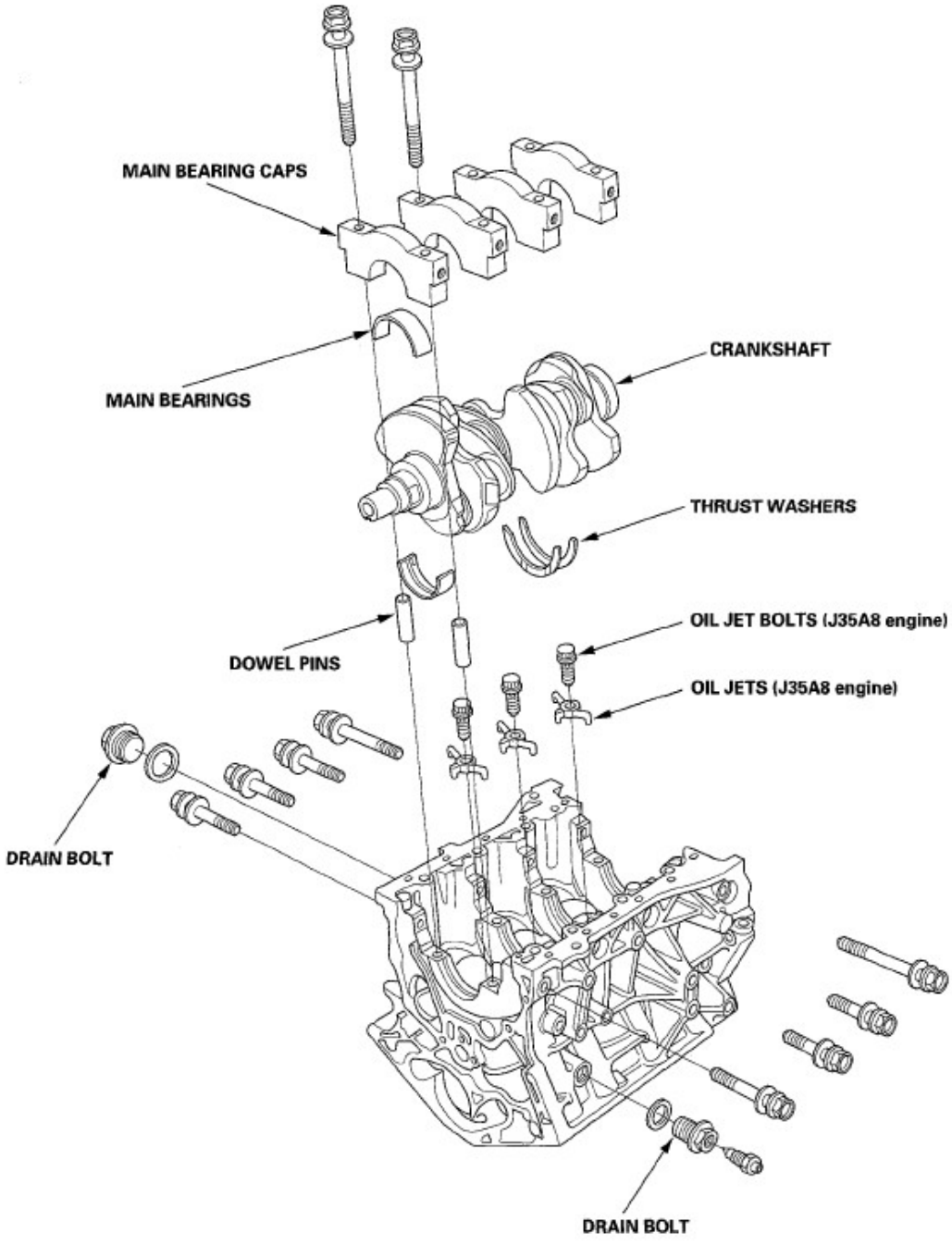

Fig. 3: Identifying Engine Block Component Location (2 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

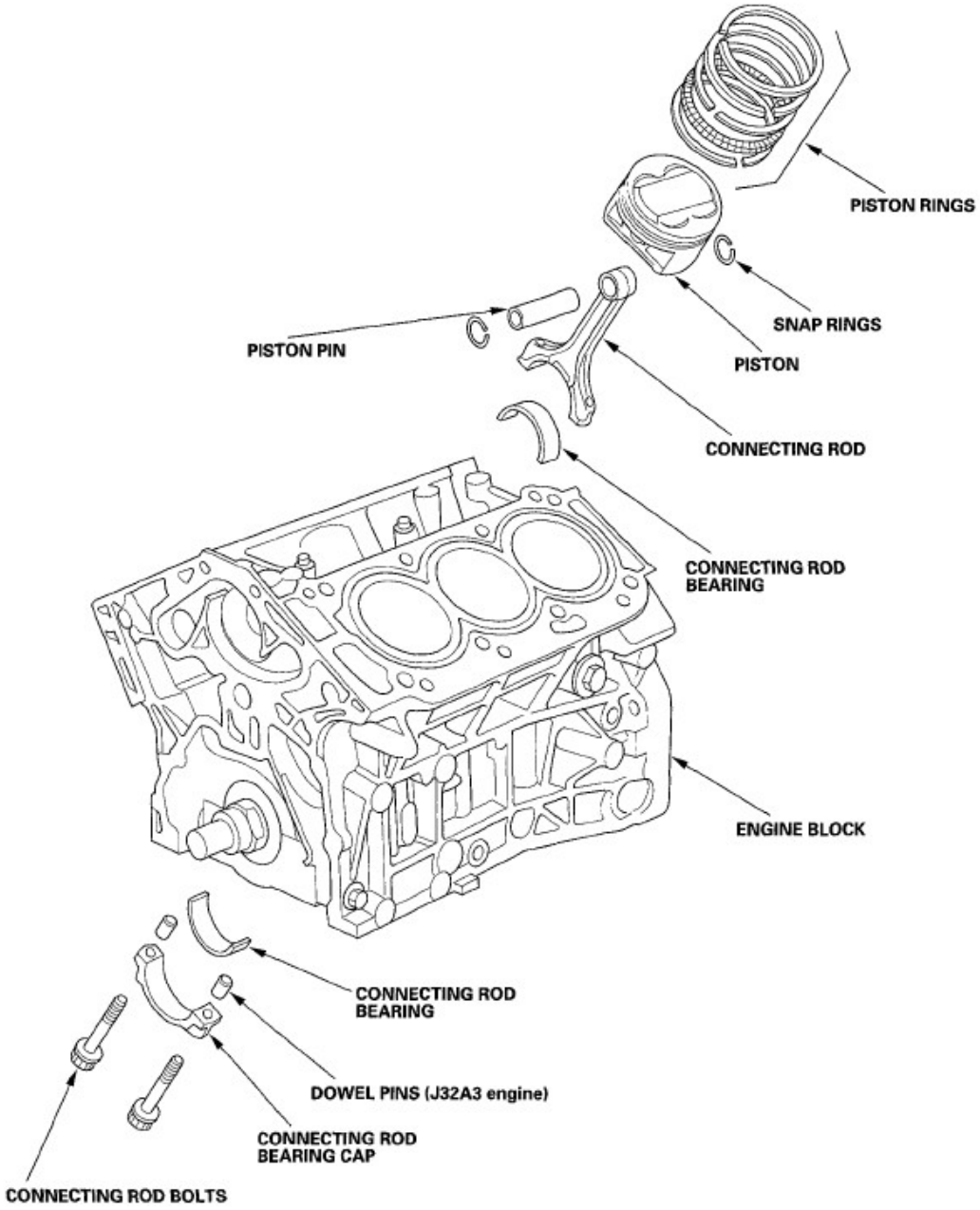

Fig. 4: Identifying Engine Block Component Location (3 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTING ROD AND CRANKSHAFT END PLAY INSPECTION

1. Remove the oil pump (see **REMOVAL**).
2. Remove the baffle plate (see step 11 on **CRANKSHAFT AND PISTON REMOVAL**).
3. Measure the connecting rod end play with a feeler gauge (A) between the connecting rod (B) and crankshaft (C).

Connecting Rod End Play

Standard (New): 0.15-0.35 mm (0.006-0.014 in.)

Service Limit: 0.45 mm (0.018 in.)

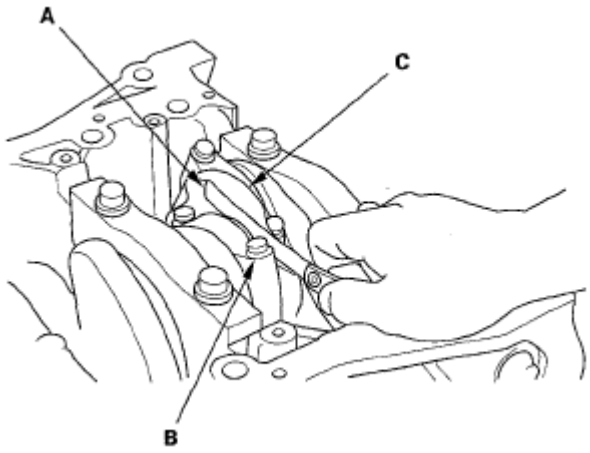

Fig. 5: Measuring Connecting Rod End Play
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the connecting rod end play is out-of-tolerance, install a new connecting rod and recheck. If it is still out-of-tolerance, replace the crankshaft (see **CRANKSHAFT AND PISTON REMOVAL**).
5. Push the crankshaft firmly away from the dial indicator, and zero the dial against the end of the crankshaft. Then pull the crankshaft firmly back toward the indicator; the dial reading should not exceed the service limit.

Crankshaft End Play

Standard (New): 0.10-0.35 mm (0.004-0.014 in.)

Service Limit: 0.45 mm (0.018 in.)

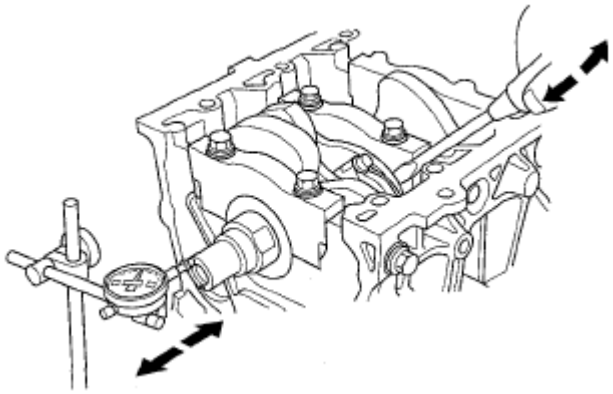

Fig. 6: Measuring Crankshaft End Play

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the end play is excessive, replace the thrust washers and recheck. If it is still out-of-tolerance, replace the crankshaft (see **CRANKSHAFT AND PISTON REMOVAL**).

CRANKSHAFT MAIN BEARING REPLACEMENT

MAIN BEARING CLEARANCE INSPECTION

1. Remove the main bearing caps and bearing halves (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Clean each main journal and bearing half with a clean shop towel.
3. Place one strip of plastigage across each main journal.

NOTE: If the engine is still in the vehicle when you bolt the main cap down to check the clearance, the weight of the crankshaft and drive plate will flatten the plastigage further than just the torque on the cap bolt, and give you an incorrect reading. For an accurate reading, support the crank with a jack under the counterweights, and check only one bearing at a time.

4. Reinstall the bearings and caps, then torque the bearing cap bolts to 74 N.m (7.5 kgf.m, 55 lbf.ft), and the bearing cap side bolts to 49 N.m (5.0 kgf.m, 36 lbf.ft) in the proper sequence (see step 22 on **CRANKSHAFT AND PISTON INSTALLATION**).

NOTE:
- **Apply new engine oil to the bolt threads and flanges.**
- **Do not rotate the crankshaft during inspection.**

5. Remove the cap and bearing half, and measure the widest part of the plastigage.

J32A3 engine

Main Bearing-to-Journal Oil Clearance

Standard (New): 0.020-0.044 mm (0.0008-0.0017 in.)

Service Limit: 0.050 mm (0.0020 in.)

J35A8 engine

Main Bearing-to-Journal Oil Clearance

Standard (New): 0.019-0.045 mm (0.0007-0.0018 in.)

Service Limit: 0.050 mm (0.0020 in.)

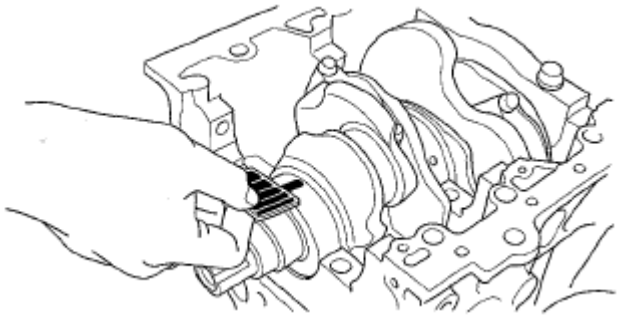

Fig. 7: Measuring Widest Part Of Plastigage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft (see **CRANKSHAFT AND PISTON REMOVAL**) and start over.

MAIN BEARING SELECTION

Crankshaft Bore Code Location

Letters or bars have been stamped on the end of the block as a code for the size of each of the four main journal bores.

Use them, and the numbers stamped on the crankshaft (codes for main journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.

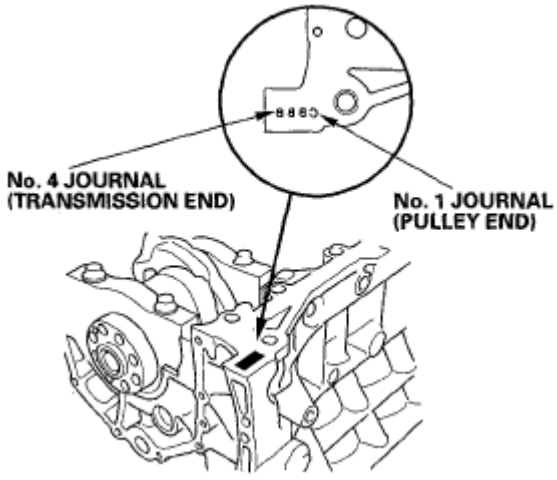

Fig. 8: Identifying Crankshaft Bore Code Location

Courtesy of AMERICAN HONDA MOTOR CO., INC.

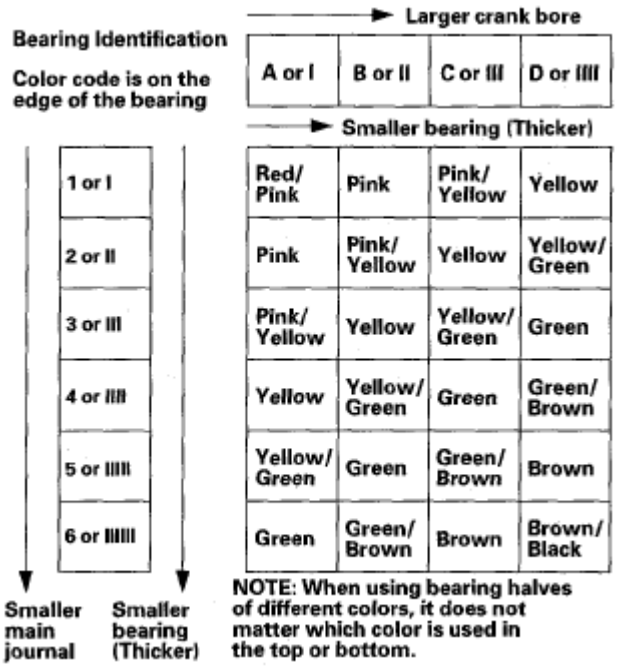

Fig. 9: Crankshaft Main Bearing Reference Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Main Journal Code Locations (Numbers or Bars)

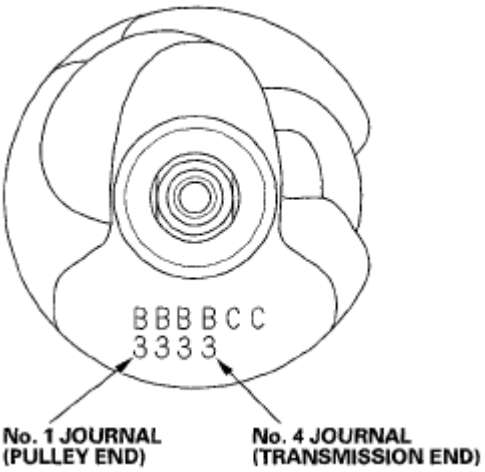

Fig. 10: Identifying Main Journal Code Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTING ROD BEARING REPLACEMENT

CONNECTING ROD BEARING CLEARANCE INSPECTION

1. Remove the connecting rod cap and bearing half (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Clean the crankshaft rod journal and bearing half with a clean shop towel.
3. Place a strip of plastigage across the rod journal.
4. Reinstall the bearing half and cap, and torque the bolts.

NOTE:
- **Apply new engine oil to the bolt threads and flanges.**
- **Do not rotate the crankshaft during inspection.**

Tightening Torque: 20 N.m (2.0 kgf.m, 15 lbf.ft) + 90°

5. Remove the rod cap and bearing half and measure the widest part of the plastigage.

Connecting Rod Bearing-to-Journal Oil Clearance

Standard (New): 0.020-0.044 mm (0.0008-0.0017 in.)

Service Limit: 0.050 mm (0.0020 in.)

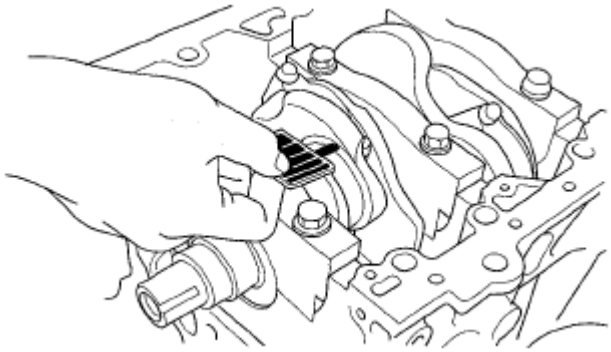

Fig. 11: Measuring Widest Part Of Plastigage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the plastigage measures too wide or too narrow, remove the upper half of the bearing, then install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft (see **CRANKSHAFT AND PISTON REMOVAL**) and start over.

CONNECTING ROD BEARING SELECTION

Each connecting rod falls into one of four tolerance ranges from 0 to 0.024 mm (0.0009 in.), in 0.006 mm (0.0002 in.) increments, depending on the size of its big end bore.

It's then stamped with a number or bar (1, 2, 3, or 4/ I, II, III, or IIII) indicating the range. You may find any combination of 1, 2, 3, or 4/ I, II, III, or IIII in any engine.

Normal Bore Size: 58.0 mm (2.28 in.)

Inspect the connecting rod for cracks and heat damage.

Connecting Rod Bore Code Locations

Numbers or bars have been stamped on the side of each connecting rod as a code for the size of the big end. Use them, and the letters or bars stamped on the crank (codes for rod journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.

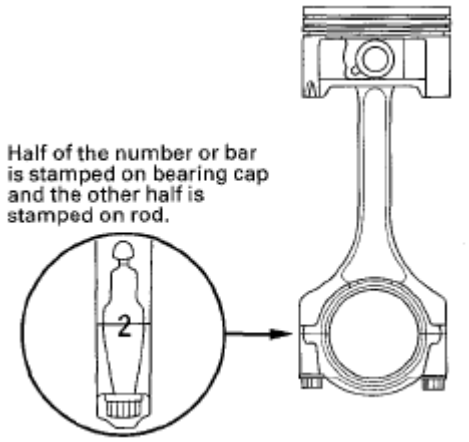

Fig. 12: Identifying Connecting Rod Bore Code Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

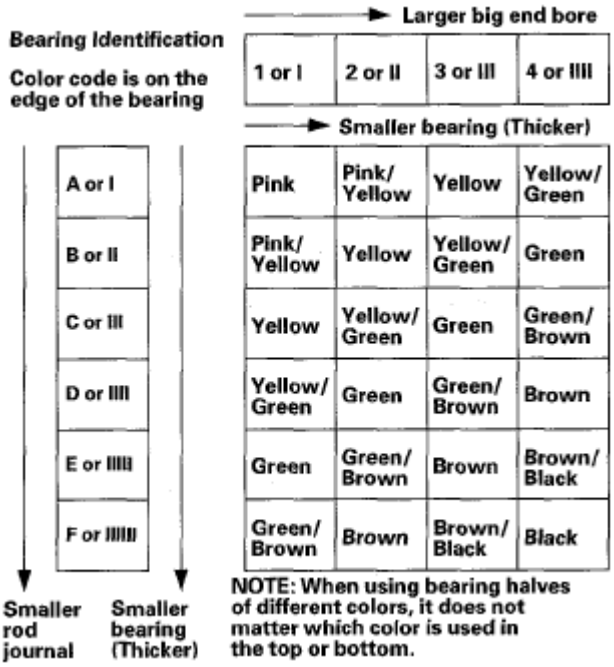

Fig. 13: Connecting Rod Bearing Selection Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Connecting Rod Journal Code Locations (Letters or Bars)

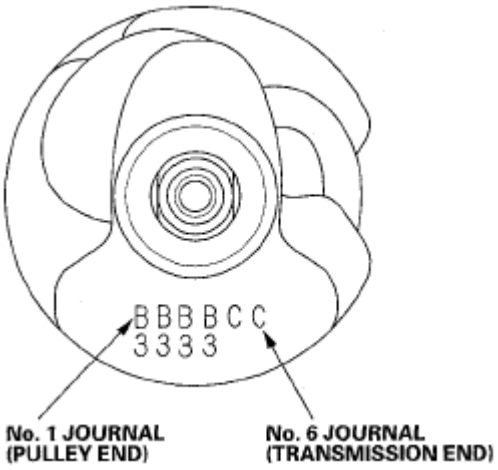

Fig. 14: Identifying Connecting Rod Journal Code Locations (Letters Or Bars)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL PAN REMOVAL

Special Tools Required

- Front subframe adapter VSB02C000016
- Engine support hanger, A and Reds AAR-T-12566

- Engine hanger balance bar VSB02C000019

These special tools are available through Honda Tool and Equipment Program, 1-888-424-6857

1. If the engine is out of the vehicle, go to step 44.
2. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
3. Remove the left side engine compartment cover and the left rear engine compartment cover (see step 3 on **ENGINE REMOVAL**).
4. Remove the right side engine compartment cover, then remove the right rear engine compartment cover (see step 4 on **ENGINE REMOVAL**).
5. Remove the engine cover (see step 5 on **ENGINE REMOVAL**).
6. Drain the power steering system fluid, then plug the fluid reservoir and return hose (see **FLUID CHECK/REPLACEMENT**).
7. Disconnect the negative cable from the battery, then disconnect the positive cable.
8. Remove the battery.
9. Remove the breather pipe, then remove the intake air duct (see step 10 on **ENGINE REMOVAL**).
10. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
11. Remove the battery base (see step 13 on **ENGINE REMOVAL**).
12. Remove the under-hood fuse/ relay box (see step 15 on **ENGINE REMOVAL**).
13. Remove the strut brace (see step 16 on **ENGINE REMOVAL**).
14. Remove the power steering (P/S) pump outlet line from the P/S pump, then plug the outlet line and the P/S pump (see step 23 on **ENGINE REMOVAL**).
15. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
16. Make a reference mark across the steering joint and steering gearbox pinion shaft. Remove the steering joint bolt, and disconnect the steering joint from the steering gearbox pinion shaft (see step 28 on **ENGINE REMOVAL**).
17. Raise the vehicle on the lift to full height.
18. Remove the front wheels.
19. Remove the engine under cover (see step 32 on **ENGINE REMOVAL**).
20. Remove the splash shield (see step 33 on **ENGINE REMOVAL**).
21. Drain the engine oil (see **ENGINE OIL REPLACEMENT**).
22. Disconnect the stabilizer links (see **STABILIZER LINK REMOVAL/INSTALLATION**).
23. Remove the damper fork (see step 5 on **DAMPER/SPRING REMOVAL AND INSTALLATION**).
24. Separate the tie-rod end ball joints from the knuckles (see step 11 on **KNUCKLE/HUB/WHEEL BEARING REPLACEMENT**).
25. Separate the knuckles from the lower arms (see step 5 on **LOWER ARM REMOVAL/INSTALLATION**).
26. Remove the exhaust pipe A (see step 42 on **ENGINE REMOVAL**).
27. Remove the P/S hose, then plug the line and the hose (see step 43 on **ENGINE REMOVAL**).
28. Disconnect the power steering pressure switch connector (see step 44 on **ENGINE REMOVAL**).

29. M/T model: Remove the transmission lower front mount and transmission lower rear mount (see step 45 on **ENGINE REMOVAL**).
30. A/T model: Remove the transmission lower mount (see step 46 on **ENGINE REMOVAL**).
31. Lower the vehicle.
32. A/T model: Remove the shift cable bracket from the front subframe (see step 55 on **ENGINE REMOVAL**).
33. Install the engine support hanger and engine hanger balance bar (see step 56 on **ENGINE REMOVAL**).
34. Remove the front engine mount stop, then remove the front engine mount bolt and vacuum hose (see step 57 on **ENGINE REMOVAL**).
35. M/T model: Remove the rear engine damper (see step 58 on **ENGINE REMOVAL**).
36. Remove the rear engine mount stop, then remove the rear engine mount bolt (see step 59 on **ENGINE REMOVAL**).
37. Remove the vacuum hose (see step 60 on **ENGINE REMOVAL**).
38. M/T model: Remove the shift cable bracket (see step 61 on **ENGINE REMOVAL**).
39. Raise the vehicle on the lift to full height.
40. Make the appropriate reference lines at both ends of the subframe that line up with the edge of the stiffeners (see step 63 on **ENGINE REMOVAL**).
41. Attach the front subframe adapter to the subframe (see step 64 on **ENGINE REMOVAL**).
42. Remove the subframe middle mount (see step 66 on **ENGINE REMOVAL**).
43. Remove the mounting bolts securing the subframe stiffeners and front subframe (see step 67 on **ENGINE REMOVAL**).
44. Remove the rear warm up three way catalytic converter (rear WU-TWC) bracket.

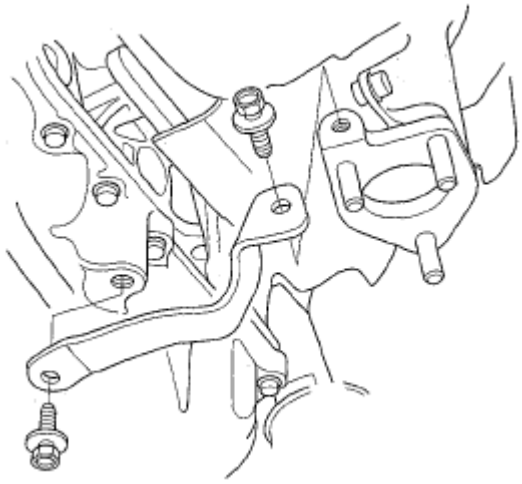

Fig. 15: Identifying Three Way Catalytic Converter Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Remove the torque converter cover (A/T) or clutch cover (M/T) (A) and the four bolts (B) securing the transmission.

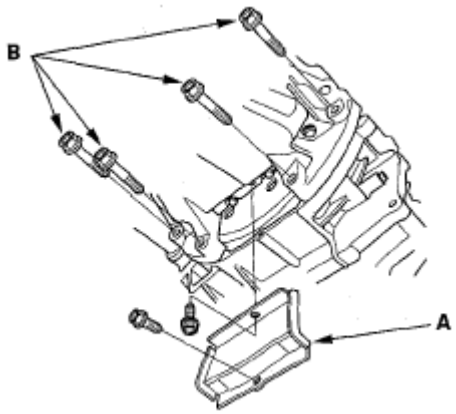

Fig. 16: Identifying Torque Converter Cover Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

46. Remove the bolts securing the oil pan.
47. Using a flat-tip screwdriver, separate the oil pan from the block in the places shown.

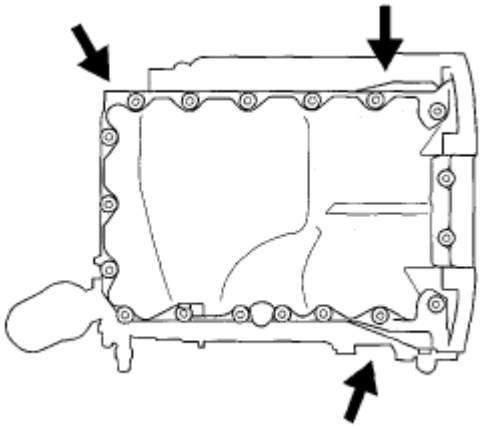

Fig. 17: Identifying Oil Pan
Courtesy of AMERICAN HONDA MOTOR CO., INC.

48. Remove the oil pan.

CRANKSHAFT AND PISTON REMOVAL

1. Remove the engine/ transmission (see **ENGINE REMOVAL**).
2. Remove the transmission:
   - Manual transmission (see **TRANSMISSION REMOVAL**)
   - Automatic transmission (see **TRANSMISSION REMOVAL**)
3. M/T model: Remove the flywheel (see **CLUTCH DISC AND PRESSURE PLATE INSTALLATION**).
4. A/T model: Remove the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**).

5. Remove the cylinder heads (see **CYLINDER HEAD REMOVAL**).
6. Remove the crankshaft position (CKP) sensor (see **CKP SENSOR REPLACEMENT**).
7. Remove the timing belt drive pulley from the crankshaft.
8. Remove the oil pan (see **OIL PAN REMOVAL**).
9. Remove the engine block end cover.

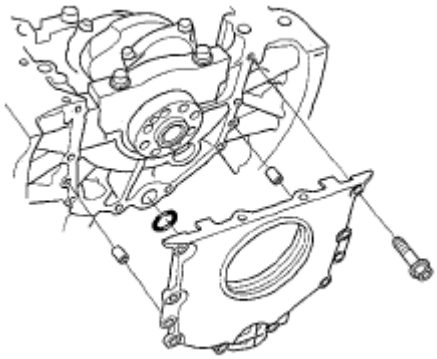

Fig. 18: Identifying Engine Block End Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the rocker arm oil control solenoid/ oil filter assembly.

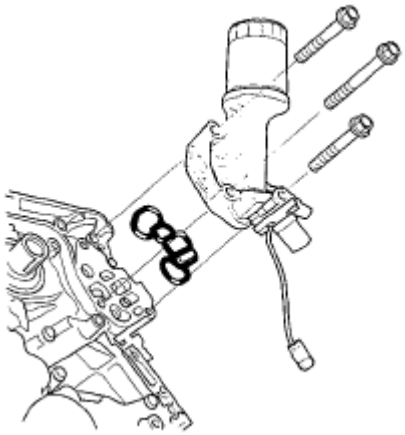

Fig. 19: Identifying Rocker Arm Oil Control Solenoid/ Oil Filter Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the oil screen (A), baffle plate (B), and oil pump (C).

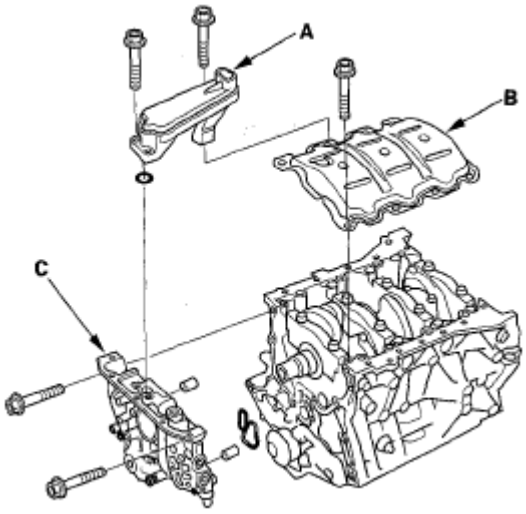

Fig. 20: Identifying Oil Screen, Baffle Plate And Oil Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. If you can feel a ridge of metal or hard carbon around the top of any cylinder, remove it with a ridge reamer (A). Follow the reamer manufacturer's instructions. If the ridge is not removed, it may damage the piston as it's pushed out.

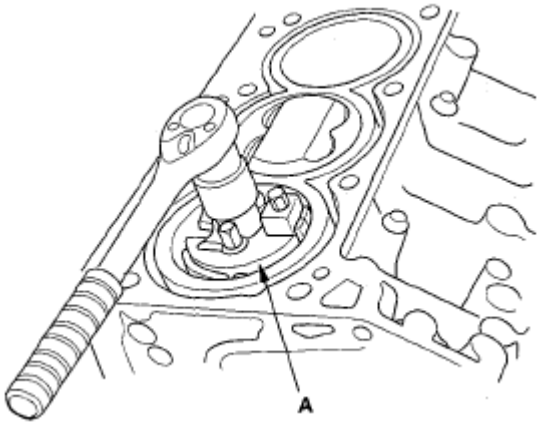

Fig. 21: Identifying Ridge Reamer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the connecting rod caps after setting the crank pin at bottom dead center (BDC) for each cylinder. Remove the piston/ connecting rod assembly by pushing on the connecting rod. Take care not to damage the crank pin or cylinder with the connecting rod.

CORRECT

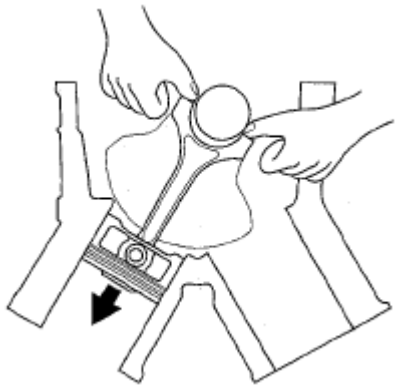

Fig. 22: Removing Piston/ Connecting Rod Assembly (Correct Position)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INCORRECT

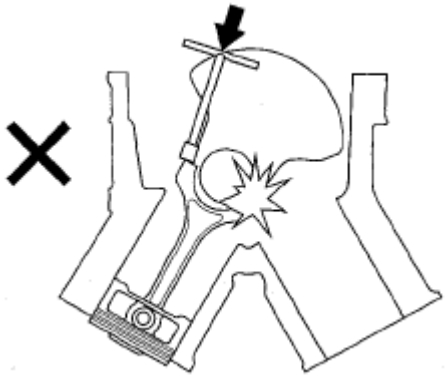

Fig. 23: Removing Piston/ Connecting Rod Assembly (Incorrect Position)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the bearing from the cap. Keep all caps/ bearings in order.
15. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.
16. After removing a piston/ connecting rod assembly, reinstall the cap on the rod.
17. To avoid confusion during reassembly, mark each piston/ connecting rod assembly with its cylinder number.
18. Loosen the bearing cap bolts and bearing cap side bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

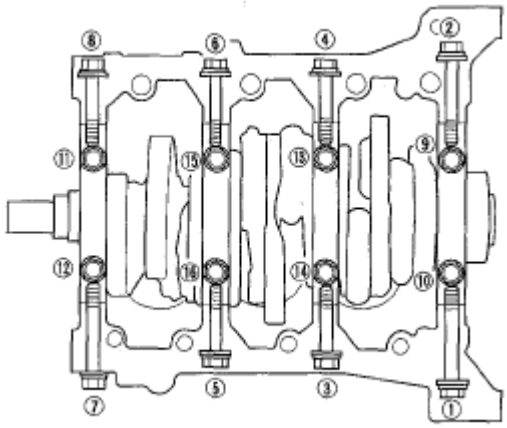

Fig. 24: Identifying Bearing Cap Bolts And Bearing Cap Side Bolts Loosening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Remove the bearing cap bolts (A) and bearing cap side bolts (B), then remove the bearing caps (C).

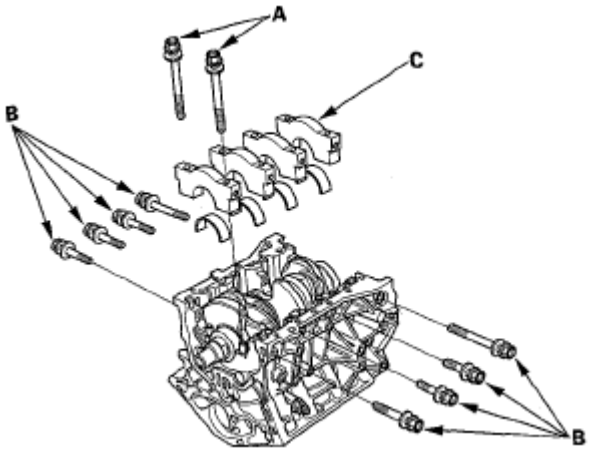

Fig. 25: Identifying Bearing Cap Bolts And Bearing Cap Side Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Lift the crankshaft (A) out of the engine block, being careful not to damage the journals.

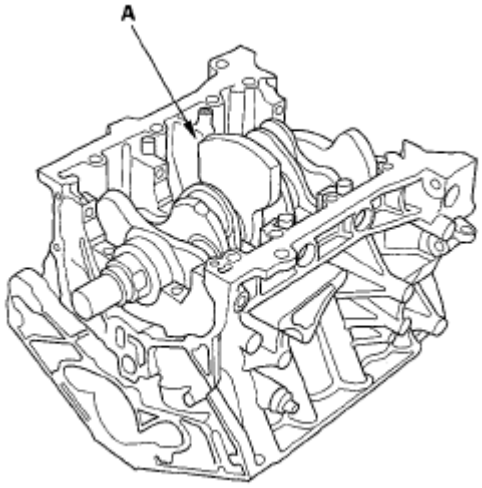

Fig. 26: Identifying Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Reinstall the main caps and bearings on the engine block in the proper order.

CRANKSHAFT INSPECTION

OUT-OF-ROUND AND TAPER

1. Remove the crankshaft from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Clean the crankshaft oil passages with pipe cleaners or a suitable brush.
3. Check the keyway and threads.
4. Measure out-of-round at the middle of each rod and main journal in two place. The difference between measurements on each journal must not be more than the service limit.

   Journal Out-of-Round

   Standard (New): 0.005 mm (0.0002 in.) max.

   Service Limit: 0.010 mm (0.0004 in.)

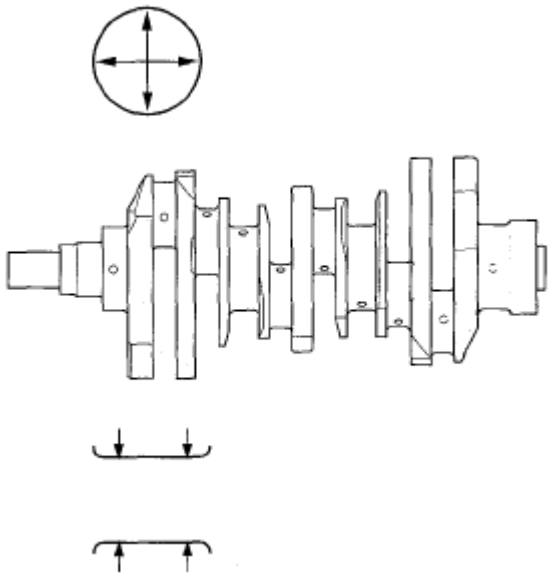

Fig. 27: Measuring Out-Of-Round At Middle Of Rod And Main Journal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure taper at the edges of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

   Journal Taper

   Standard (New): 0.005 mm (0.0002 in.) max.

   Service Limit: 0.010 mm (0.0004 in.)

   Straightness

6. Place the engine block on a flat surface, crankshaft side up.
7. Clean and install the bearings on the No. 1 and No. 4 journal of the engine block.
8. Lower the crankshaft into the engine block.
9. Measure the runout on all of the main journals. Rotate the crankshaft two complete revolutions. The difference between measurements on each journal must not be more than the service limit.

   Crankshaft Total Runout

   Standard (New): 0.025 mm (0.0010 in.) max.

   Service Limit: 0.030 mm (0.0012 in.)

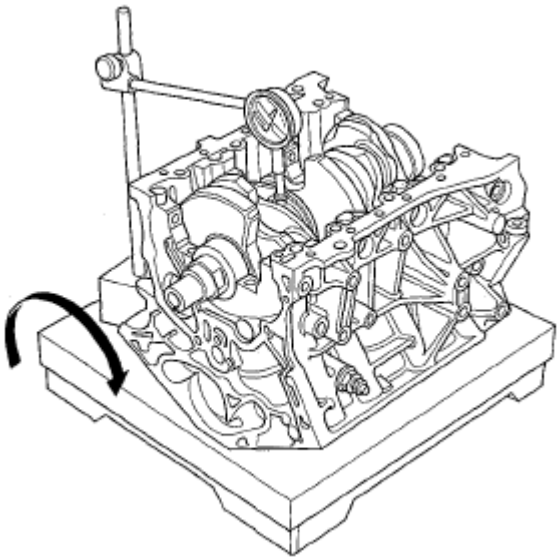

Fig. 28: Measuring Runout On All Of Main Journals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BLOCK AND PISTON INSPECTION

1. Remove the pistons from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Check the pistons for distortion or cracks.
3. Measure each piston diameter at a point 16.0 mm (0.63 in.) from the bottom of the skirt.

Piston Diameter

Standard (New): 88.975-88.985 mm (3.5029-3.5033 in.)

Service Limit: 88.965 mm (3.5026 in.)

Oversize Piston Diameter 0.25: 89.225-89.235 mm (3.5128-3.5132 in.)

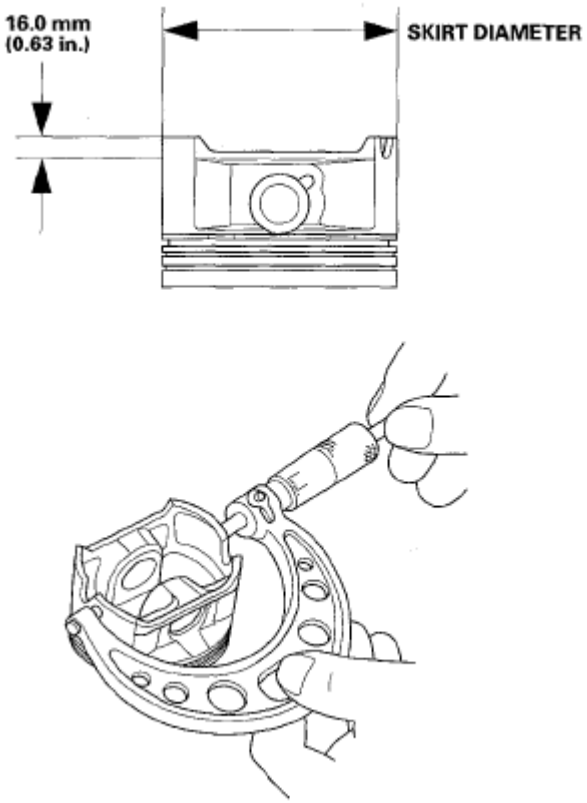

Fig. 29: Measuring Piston Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure wear and taper in direction X and Y at three levels in each cylinder as shown. If measurements in any cylinder are beyond the oversize bore service limit, replace the engine block. If the engine block has to be rebored, refer to step 7 after reboring.

   Cylinder Bore Size

   Standard (New): 89.000-89.015 mm (3.5039-3.5045 in.)

   Service Limit: 89.065 mm (3.5065 in.)

   Oversize 0.25: 89.250-89.265 mm (3.5138-3.5144 in.)

   Reboring Limit: 0.25 mm (0.01 in.)

   Bore Taper Limit: (Difference between first and third measurement) 0.05 mm (0.002 in.)

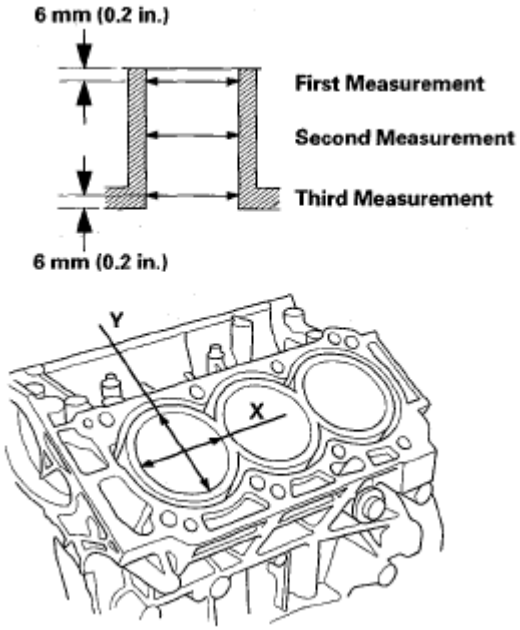

Fig. 30: Measuring Cylinder Bore Size
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Hone any scored or scratched cylinder bores (see **CYLINDER BORE HONING**).
6. Check the top of the engine block for warpage. Measure along the edges and across the center as shown.

Engine Block Warpage

Standard (New): 0.07 mm (0.003 in.) max.

Service Limit: 0.10 mm (0.004 in.)

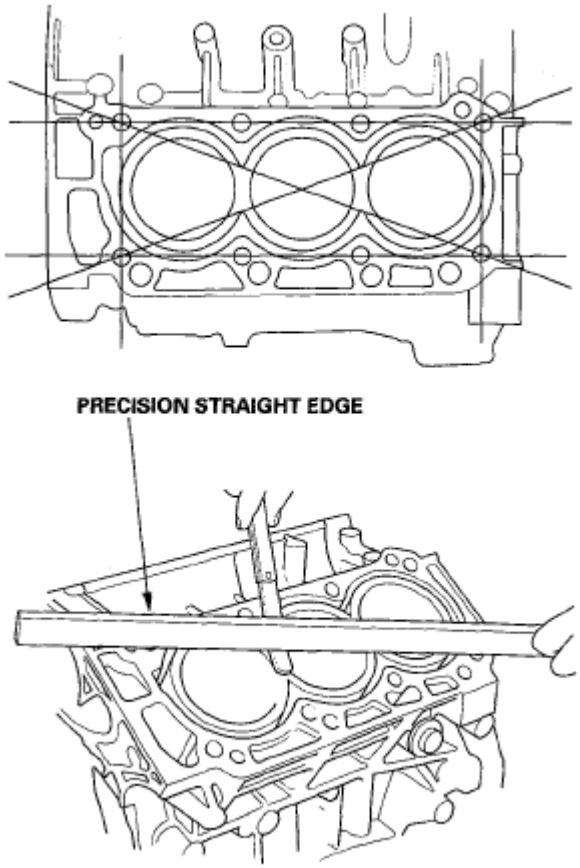

Fig. 31: Measuring Engine Block Warpage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Calculate the difference between cylinder bore diameter and piston diameter. If the clearance is near or exceeds the service limit, inspect the piston and cylinder bore for excessive wear.

   Piston-to-Block Clearance

   Standard (New): 0.015-0.040 mm (0.0006-0.0016 in.)

   Service Limit: 0.08 mm (0.003 in.)

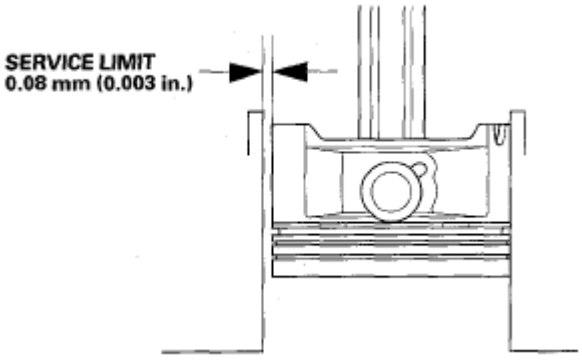

Fig. 32: Measuring Piston-To-Block Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER BORE HONING

1. Measure the cylinder bores (see step 4 on **BLOCK AND PISTON INSPECTION**). If the engine block is to be reused, hone the cylinders and remeasure the bores. Only scored or scratched cylinder bores must be honed.
2. Hone the cylinder bores with honing oil and a fine (400 grit) stone in a 60 degree crosshatch pattern.

NOTE:

- **Use only a rigid hone with 400 grit or finer stone, such as Sunnen, Ammco, or equivalent.**
- **Do not use stones that are worn or broken.**

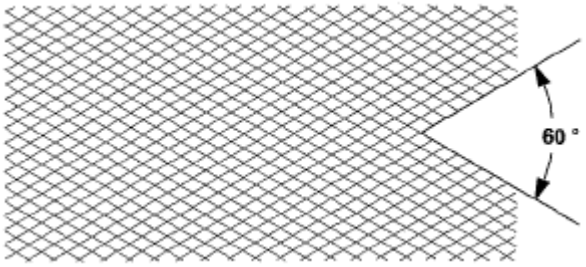

Fig. 33: Measuring Cylinder Bores
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. When honing is complete, thoroughly clean the engine block of all metal particles. Wash the cylinder bores with hot soapy water, then dry and oil them immediately to prevent rusting. Never use solvent, it will only redistribute the grit on the cylinder walls.
4. If scoring or scratches are still present in the cylinder bores after honing to the service limit, rebore the engine block. Some light vertical scoring and scratching is acceptable if it is not deep enough to catch your fingernail and does not run the full length of the bore.

PISTON, PIN, AND CONNECTING ROD REPLACEMENT

DISASSEMBLY

1. Remove the pistons from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Apply new engine oil to the piston pin snap rings (A) and turn them in the ring grooves until the end gaps are lined up with the cutouts in the piston pin bores (B).

NOTE: Take care not to damage the ring grooves.

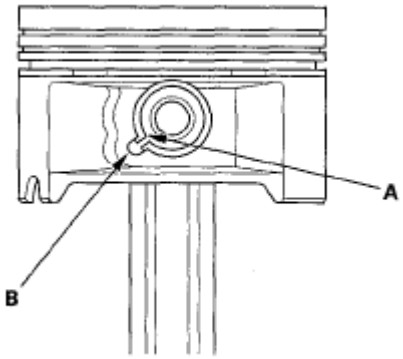

Fig. 34: Identifying Piston Pin Snap Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the snap rings (A) from both sides of each piston. Start at the cutout in the piston pin bore. Remove the snap rings carefully so they do not go flying or get lost. Wear eye protection.

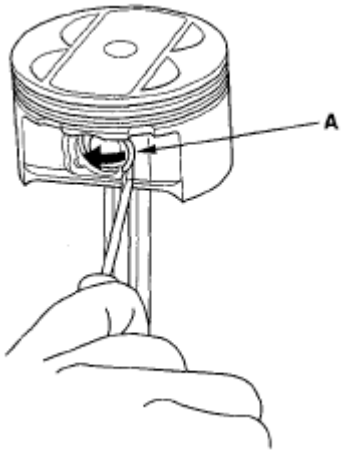

Fig. 35: Removing Snap Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Separately heat each piston and connecting rod assembly to about 158°F (70°C), then remove the piston pin.

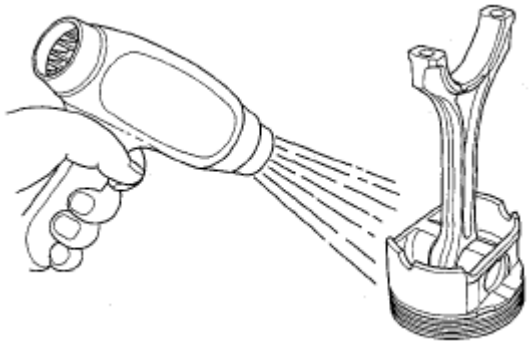

Fig. 36: Heating Piston And Connecting Rod Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSPECTION

NOTE: Inspect each piston, piston pin, and connecting rod when they are at room temperature.

1. Measure the diameter of the piston pin.

   Piston Pin Diameter

   Standard (New): 21.962-21.965 mm (0.8646-0.8648 in.)

   Service Limit: 21.954 mm (0.8643 in.)

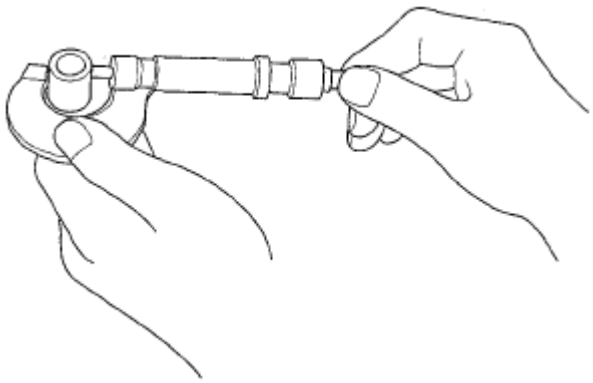

Fig. 37: Measuring Diameter Of Piston Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Zero the dial indicator to the piston pin diameter.

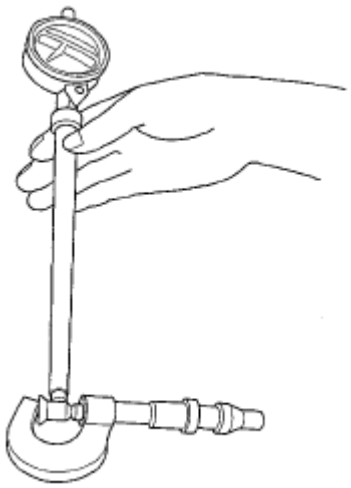

Fig. 38: Measuring Piston Pin Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check the difference between the piston pin diameter and piston pin hole diameter on the piston.

   Piston Pin-to-Piston Clearance

   Standard (New): -0.0050 to +0.0010 mm (-0.00020 to +0.00004 in.)

   Service Limit: 0.004 mm (0.0002 in.)

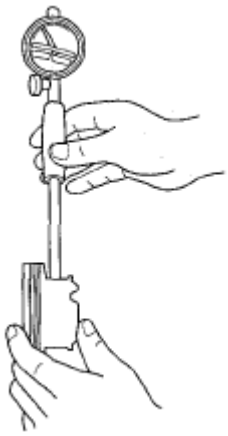

Fig. 39: Measuring Difference Between Piston Pin Diameter And Piston Pin Hole Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the piston pin-to-connecting rod clearance.

   Piston Pin-to-Connecting Rod Clearance

   Standard (New): 0.005-0.014 mm (0.0002-0.0006 in.)

   Service Limit: 0.019 mm (0.0007 in.)

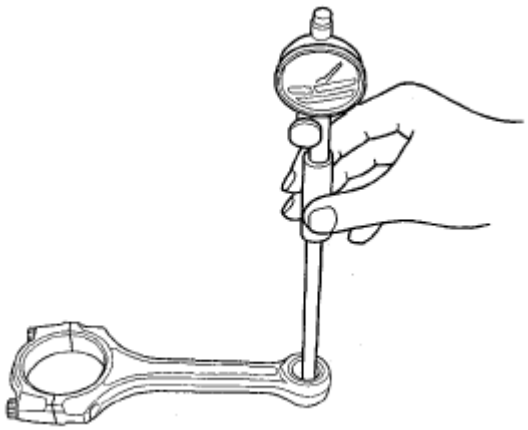

Fig. 40: Measuring Piston Pin-To-Connecting Rod Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REASSEMBLY

1. Install a piston pin snap ring (A) only on one side.

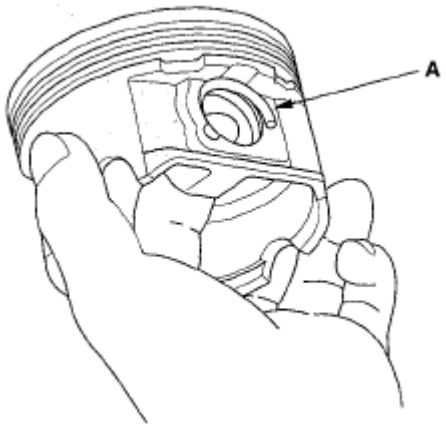

Fig. 41: Installing Piston Pin Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Coat the piston pin bore in the piston, the bore in the connecting rod, and the piston pin with new engine oil.
3. Heat the piston to about 158°F (70°C).

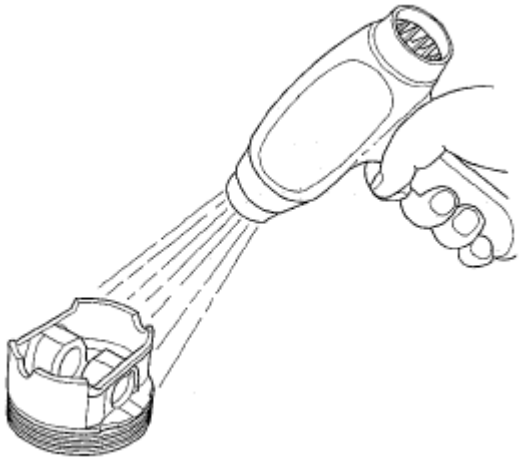

Fig. 42: Heating Piston
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Assemble the piston (A) and connecting rod (B) with the embossed marks (C) on the same side. Install the piston pin (D).

NOTE: Apply new engine oil to the piston pin.

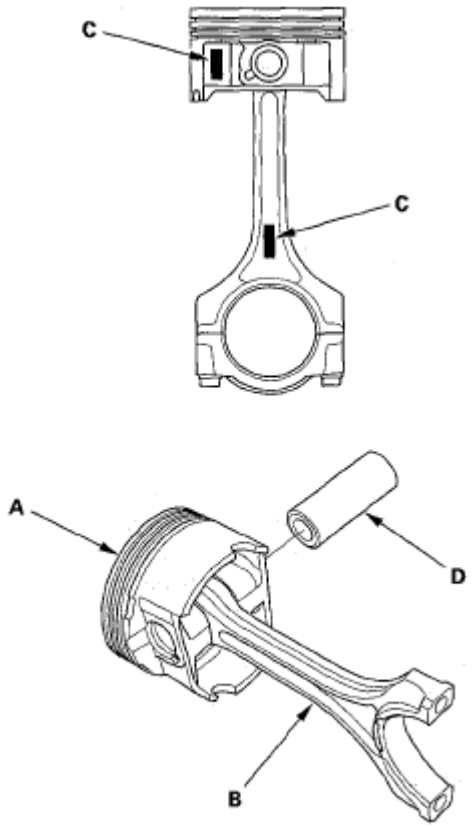

Fig. 43: Identifying Piston And Connecting Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the remaining snap ring.
6. Reassemble the other pistons the same way.

PISTON RING REPLACEMENT

1. Remove the pistons from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Using a ring expander (A), remove the old piston rings (B).

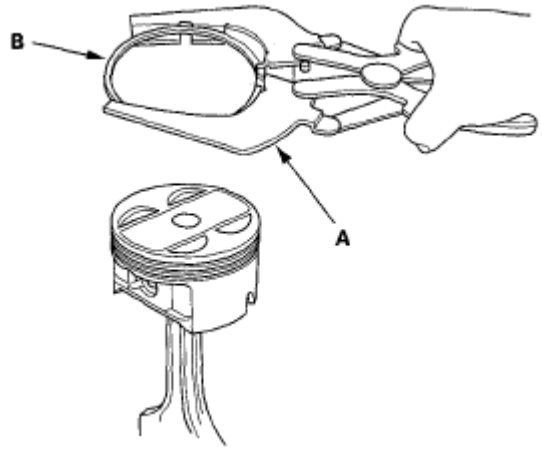

Fig. 44: Removing Piston Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Clean all the ring grooves thoroughly with a squared-off broken ring, or a ring groove cleaner with a blade to fit the piston grooves. File down the blade, if necessary. The top ring and second ring grooves are 1.2 mm (0.05 in.) wide, and the oil ring groove is 2.8 mm (0.11 in.) wide. Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with the cleaning tool.

NOTE: If the piston is to be separated from the connecting rod, do not install new rings yet.

4. Using a piston, push a new ring (A) into the cylinder bore 15-20 mm (0.6-0.8 in.) from the bottom.

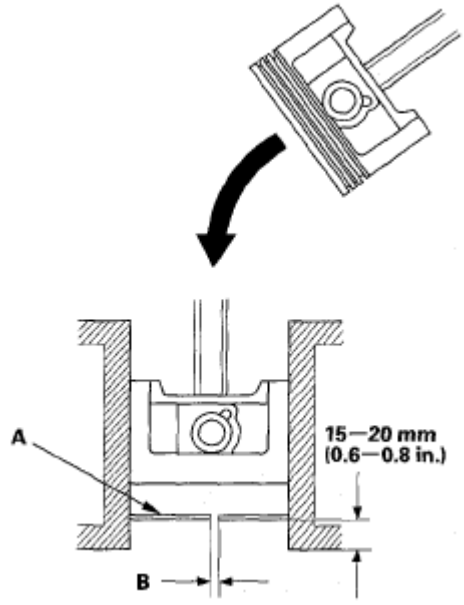

Fig. 45: Pushing Ring Into Cylinder Bore
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the piston ring end-gap (B) with a feeler gauge:
   - If the gap is too small, check to see if you have the proper rings for your engine.
   - If the gap is too large, recheck the cylinder bore diameter against the wear limits (see step 4 on **BLOCK AND PISTON INSPECTION**). If the bore is over the service limit, the engine block must be rebored.

   Piston Ring End-Gap

   Top Ring:

   Standard (New): 0.20-0.35 mm (0.008-0.014 in.)

   Service Limit: 0.60 mm (0.024 in.)

   Second Ring:

   Standard (New): 0.40-0.55 mm (0.016-0.022 in.)

   Service Limit: 0.70 mm (0.028 in.)

   Oil Ring:

   Standard (New): 0.20-0.70 mm (0.008-0.028 in.)

   Service Limit: 0.80 mm (0.031 in.)

6. Install the rings as shown. The top ring (A) has a 1D mark and the second ring (B) has a 2C mark. The manufacturing marks (C) must be facing upward.

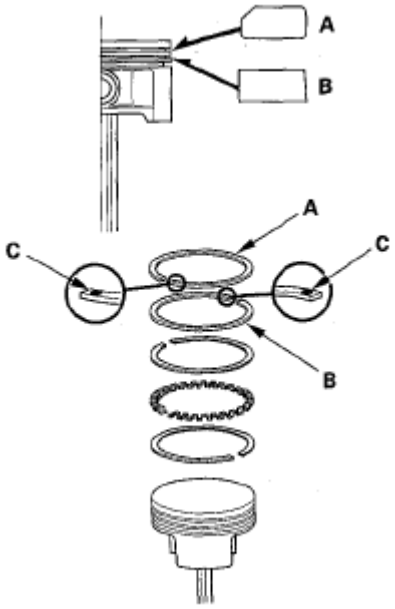

Fig. 46: Installing Piston Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Piston Ring Dimensions:

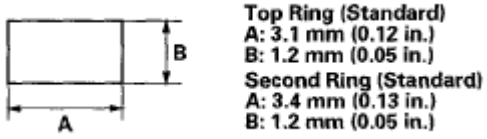

Fig. 47: Identifying Piston Ring Dimensions
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Rotate the rings in their grooves to make sure they do not bind.
8. Position the ring end gaps as shown:

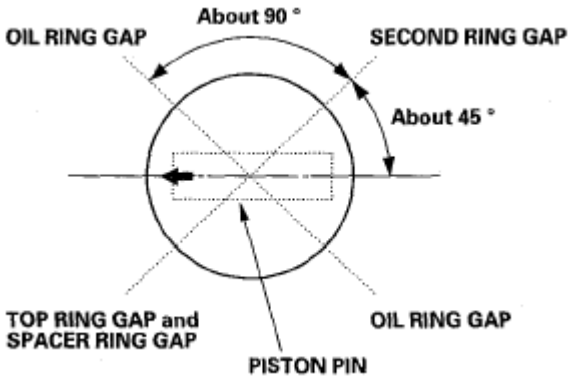

Fig. 48: Positioning Ring End Gaps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. After installing a new set of rings, measure the ring-to-groove clearance:

NOTE: After the inspection, make sure each ring is in proper position as step 7.

J32A3 engine

Top Ring Clearance

Standard (New): 0.055-0.080 mm (0.0022-0.0031 in.)

Service Limit: 0.15 mm (0.006 in.)

Second Ring Clearance

Standard (New): 0.030-0.055 mm (0.0012-0.0022 in.)

Service Limit: 0.13 mm (0.005 in.)

J35A8 engine

Top Ring Clearance

Standard (New): 0.065-0.090 mm (0.0026-0.0035 in.)

Service Limit: 0.15 mm (0.006 in.)

Second Ring Clearance

Standard (New): 0.030-0.055 mm (0.0012-0.0022 in.)

Service Limit: 0.13 mm (0.005 in.)

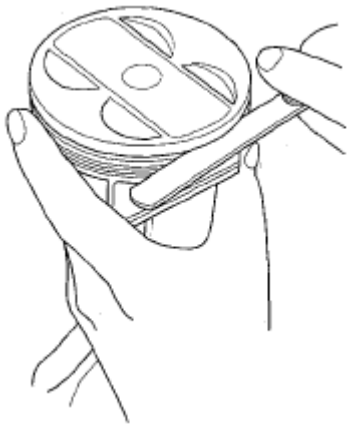

Fig. 49: Measuring Ring Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CRANKSHAFT AND PISTON INSTALLATION

Special Tools Required

- Driver 07749-0010000
- Driver attachment, 106 mm 070AD-RCAA200

1. Check the connecting rod bearing clearance with plastigage (see **CONNECTING ROD BEARING REPLACEMENT**).
2. Check the main bearing clearance with plastigage (see **CRANKSHAFT MAIN BEARING REPLACEMENT**).
3. Install the bearing halves in the engine block and connecting rods.
4. Apply new engine oil to the main bearings and rod bearings.
5. Lower the crankshaft (A) into the engine block.

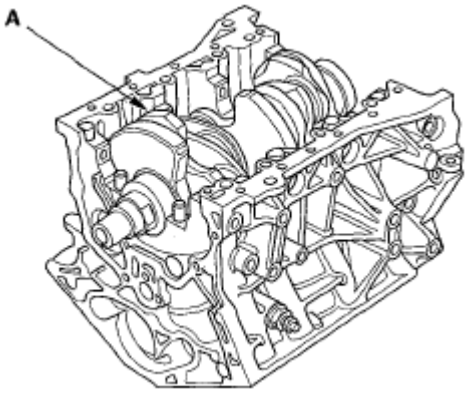

Fig. 50: Identifying Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Apply new engine oil to the side with the thrust washer groove. Install the thrust washers (A) in the No. 3 journal.

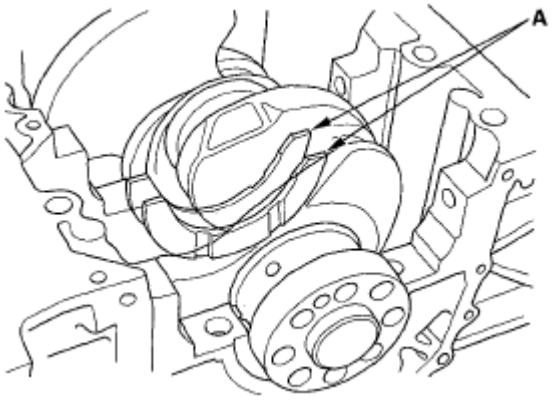

Fig. 51: Identifying Thrust Washers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the bearings (A) and bearing caps (B) with the arrow (C) facing the timing belt end of the engine.

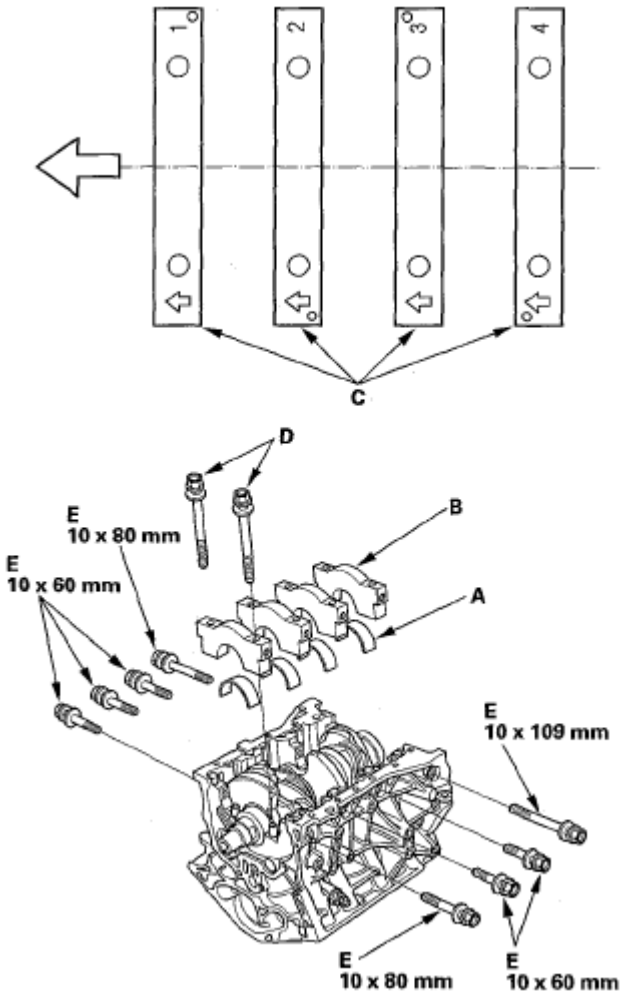

Fig. 52: Identifying Bearings And Bearing Caps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Apply new engine oil to the bolt threads and flanges, then loosely install the bearing cap bolts (D) and bearing cap side bolts (E).
9. Set the crankshaft to bottom dead center (BDC) for the cylinder you are installing the piston in.
10. Apply new engine oil to the piston, inside of the ring compressor, and the cylinder bore.
11. Attach the ring compressor to the piston/ connecting rod assembly, and check that the bearing is securely in place.
12. Position the piston/ connecting rod assembly with the arrow (A) facing the timing belt side of the engine.

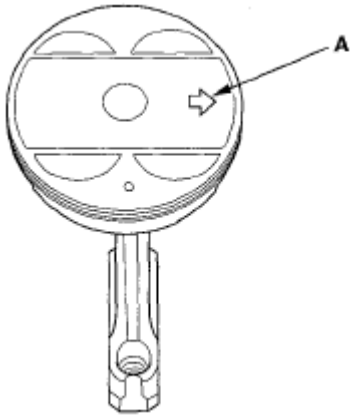

Fig. 53: Positioning Piston/ Connecting Rod Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Position the piston/ connecting rod assembly in the cylinder, and tap it in using the wooden handle of a hammer (A). Maintain downward force on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.

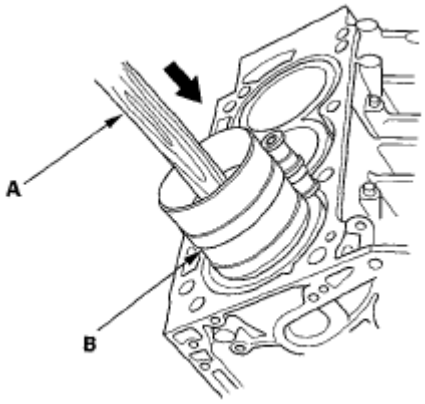

Fig. 54: Positioning Piston/ Connecting Rod Assembly In Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Stop after the ring compressor pops free, and check the connecting rod-to-crank journal alignment before pushing the piston into place.
15. Measure the diameter of each connecting rod bolt at point A and point B.

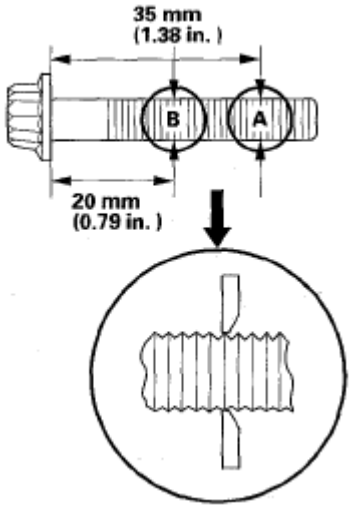

Fig. 55: Measuring Diameter Of Connecting Rod Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Calculate the difference in diameter between point A and point B.

    Point A-Point B = Difference in Diameter

    Difference in Diameter Specification: 0-0.1 mm (0-0.004 in.)

17. If the difference in diameter is out of tolerance, replace the connecting rod bolt.
18. Line up the mark (A) on the connecting rod and cap, then install the cap.

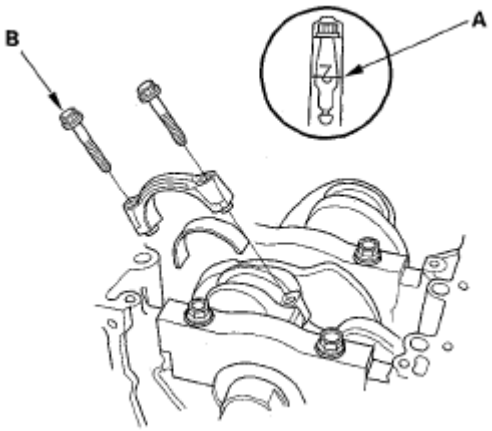

Fig. 56: Identifying Connecting Rod And Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Apply new engine oil to the bolt threads and flanges. Torque the bolts (B) to 20 N.m (2.0 kgf.m, 15 lbf.ft).
20. Mark the connecting rod (A) and bolt head (B) as shown.

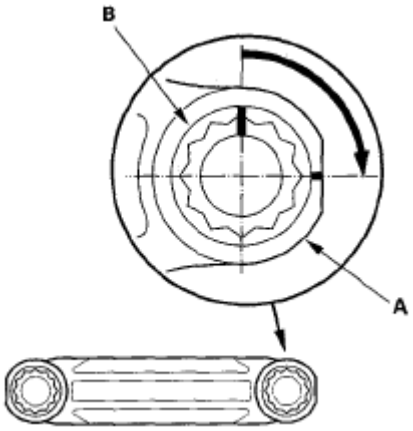

Fig. 57: Identifying Connecting Rod Bolt Tightening Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Tighten the bolt until the mark on the bolt head lines up with the mark on the connecting rod (turn the bolt 90°).

NOTE: Remove the connecting rod bolt if you tightened it beyond the specified angle, and go back to step 15 of the procedure. Do not loosen it back to the specified angle.

22. Tighten the bearing cap bolts, and then the bearing cap side bolts to the specified torque in the sequence shown. Repeat the torque sequence again to make sure the bolts are properly torqued.

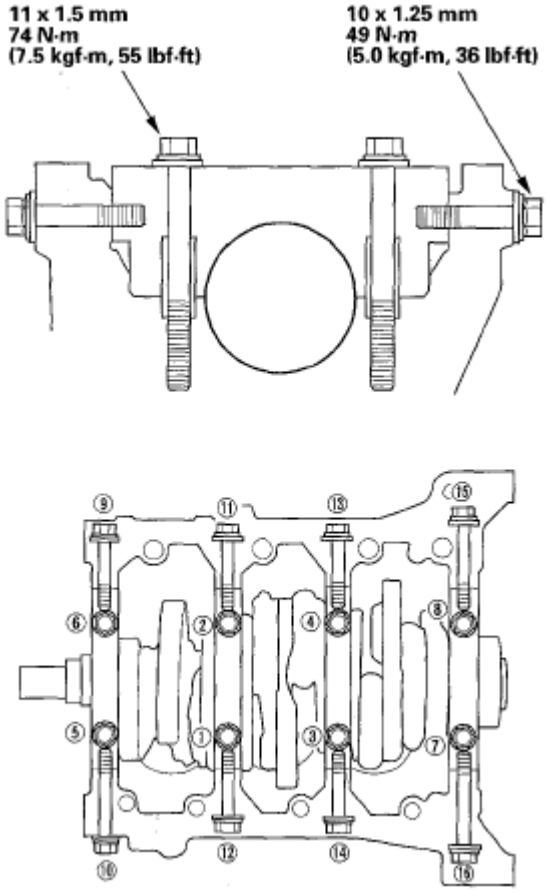

Fig. 58: Identifying Bearing Cap Bolts Tightening Sequence With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Remove any old liquid gasket from the engine block end cover mating surfaces, bolts, and bolt holes.
24. Clean and dry the engine block end cover mating surfaces.
25. The seal mating surface on the engine block end cover should be dry. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
26. Drive the new crankshaft oil seal until the special tool bottoms on the engine block end cover.

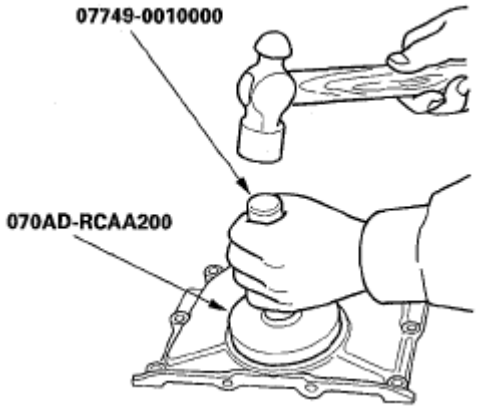

Fig. 59: Driving Crankshaft Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the engine block end cover. 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 the new liquid gasket.**

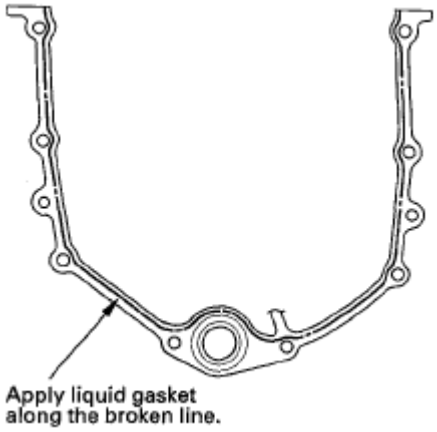

Fig. 60: Identifying Liquid Gasket Applying Points
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Install the dowel pins (A), new O-ring (B), and the engine block end cover (C) on the engine block.

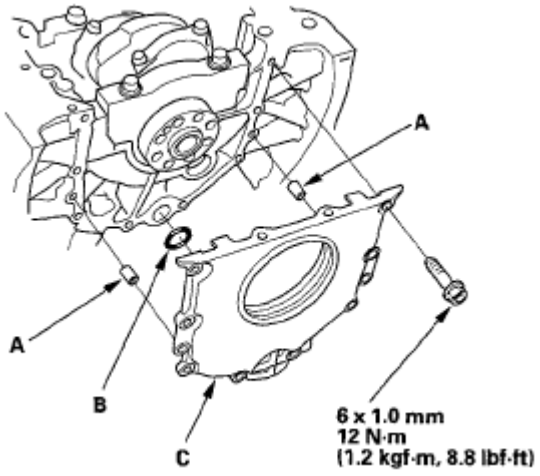

Fig. 61: Identifying Engine Block End Cover, Dowel Pins And O-Ring With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Clean the excess grease off the crankshaft, and check the seal for distortion.
30. Install a new crankshaft oil seal in the oil pump (see step 2 on **INSTALLATION**).
31. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.
32. Clean and dry the oil pump mating surfaces.
33. 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 the new liquid gasket.**

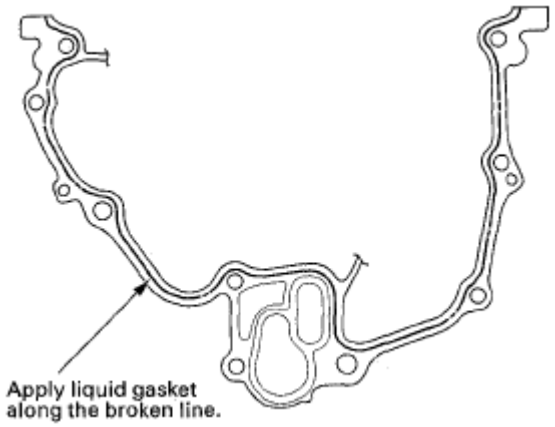

Fig. 62: Identifying Liquid Gasket Applying Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

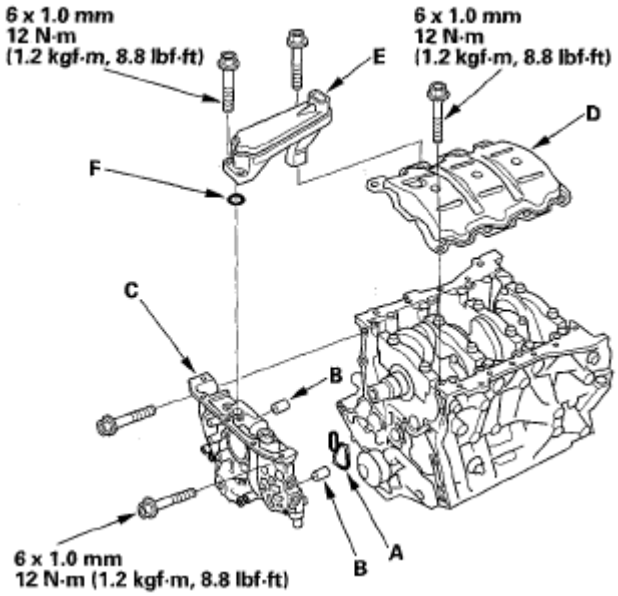

Fig. 63: Identifying Engine Block Components With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Install the dowel pins (B), then align the inner rotor with the crankshaft and install the oil pump (C).
36. Clean the excess grease off the crankshaft, and check the seal for distortion.
37. Install the baffle plate (D), then install the oil screen (E) with a new O-ring (F).
38. Install the rocker arm oil control solenoid/ oil filter assembly (A), with a new rocker arm oil control solenoid filter (B).

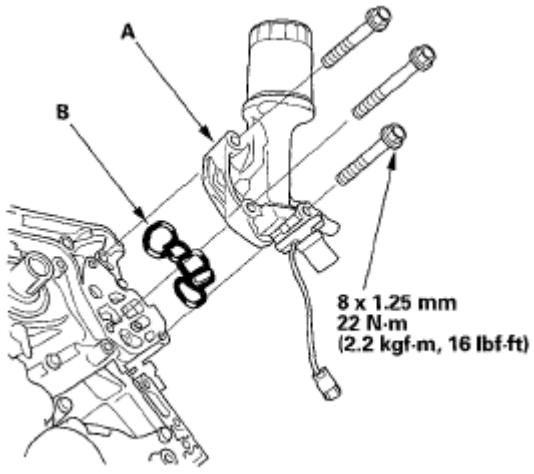

Fig. 64: Identifying Rocker Arm Oil Control Solenoid/ Oil Filter Assembly With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

39. Install the oil pan (see **OIL PAN INSTALLATION**).
40. Install the crankshaft position (CKP) sensor (see **CKP SENSOR REPLACEMENT**).

41. Install the cylinder heads (see **CYLINDER HEAD INSTALLATION**).
42. M/T model: Install the flywheel (see **CLUTCH DISC AND PRESSURE PLATE INSTALLATION**).
43. A/T model: Install the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**).
44. Install the transmission:
    - Manual transmission (see **TRANSMISSION INSTALLATION**)
    - Automatic transmission (see **TRANSMISSION INSTALLATION**)
45. Install the engine/ transmission (see **ENGINE INSTALLATION**).

NOTE: **After you replace any crankshaft or connecting rod bearings, run the engine at idle until it reaches normal operating temperature, then continue to run it for about 15 minutes.**

OIL PAN INSTALLATION

Special Tools Required

- Front subframe adapter VSB02C000016
- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balance bar VSB02C000019

These special tools are available through Acura Tool and Equipment Program, 1-888-424-6857

1. Remove all of the old liquid gasket from the oil pan mating surfaces, bolts, and bolt holes.
2. Clean and dry the oil pan mating surfaces.
3. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the oil pan mating surface of the engine block. 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 the new liquid gasket.**

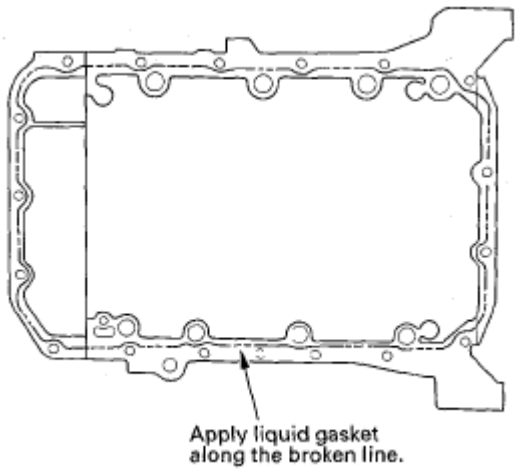

Fig. 65: Identifying Liquid Gasket Applying Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the oil pan on the engine block.
5. Tighten the bolts in three steps. In the final step, tighten all bolts, in sequence, to 12 N.m (1.2 kgf.m, 8.8 lbf.ft).

NOTE:

- **Wait at least 30 minutes before filling the engine with oil.**
- **Do not run the engine for at least 3 hours after installing the oil pan.**

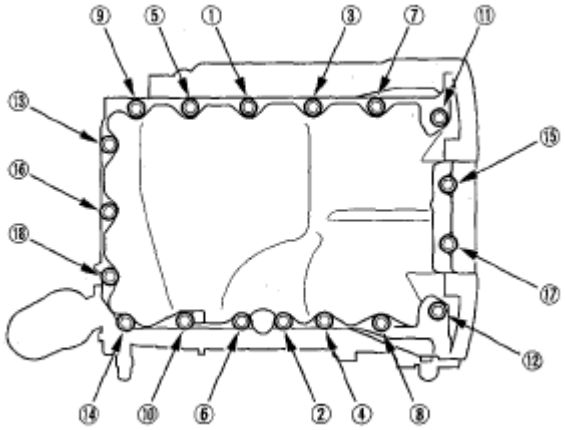

Fig. 66: Identifying Oil Pan Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Tighten the four bolts (A) securing the transmission, then install the torque converter cover (A/T) or clutch cover (M/T) (B).

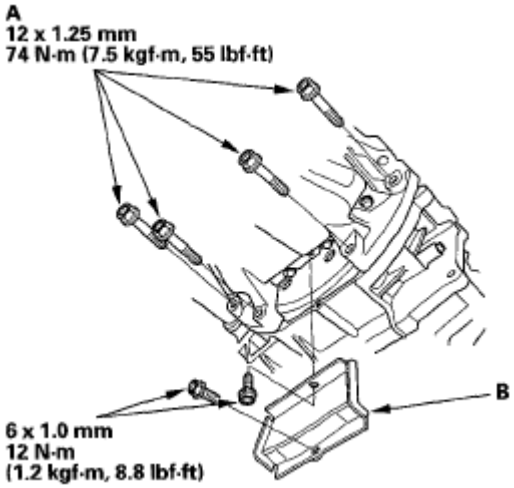

Fig. 67: Identifying Torque Converter Cover Bolts With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the rear warm up three way catalytic converter (rear WU-TWC) bracket.

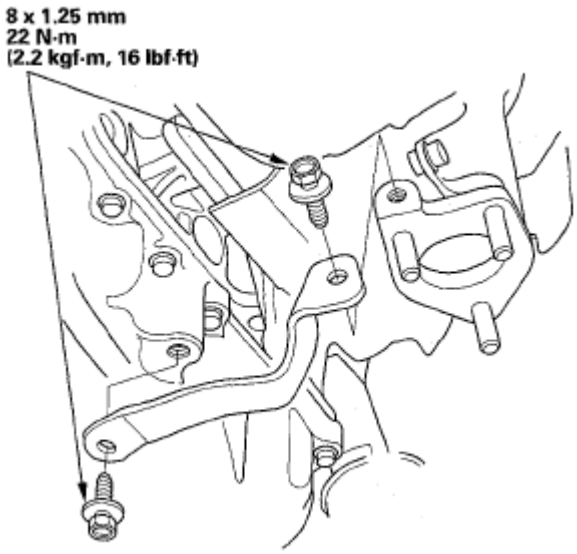

Fig. 68: Identifying Three Way Catalytic Converter Bracket And Bolts With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. If the engine is still in the vehicle, do the following steps.
9. Using the subframe adapter and a jack, loosely install the new front subframe bolts and the stiffeners (see step 9 on **ENGINE INSTALLATION**).
10. Loosely install the subframe middle mount (see step 10 on **ENGINE INSTALLATION**).
11. Remove the jack and front subframe adapter.
12. Align the reference marks with the edge of both rear stiffeners, and tighten the rear subframe mounting bolts, then the front bolts, and finally the stiffener bolts to the specified torque (see step 12 on **ENGINE INSTALLATION**).

13. Tighten the bolts securing the subframe middle mounts (see step 10 on **ENGINE INSTALLATION**).
14. M/T model: Tighten the nuts securing the transmission lower front mount and transmission lower rear mount (see step 14 on **ENGINE INSTALLATION**).
15. A/T model: Tighten the bolts securing the transmission lower mount (see step 15 on **ENGINE INSTALLATION**).
16. Lower the vehicle.
17. M/T model: Install the shift cable bracket (see step 17 on **ENGINE INSTALLATION**).
18. Install the vacuum hose (see step 18 on **ENGINE INSTALLATION**).
19. Tighten the rear engine mount bolt, then install the rear engine mount stop (see step 19 on **ENGINE INSTALLATION**).
20. M/T model: Install the rear engine damper (see step 20 on **ENGINE INSTALLATION**).
21. Tighten the front engine mount bolt, then install the front engine mount stop and vacuum hose (see step 21 on **ENGINE INSTALLATION**).
22. Remove the engine support hanger and engine hanger balance bar.
23. A/T model: Install the shift cable bracket to the front subframe (see step 29 on **ENGINE INSTALLATION**).
24. Raise the vehicle on the lift to full height.
25. Connect the power steering pressure switch connector (see step 35 on **ENGINE INSTALLATION**).
26. Install the power steering (P/S) hose (see step 36 on **ENGINE INSTALLATION**).
27. Install exhaust pipe A using new gaskets and new self locking nuts (see step 37 on **ENGINE INSTALLATION**).
28. Connect the suspension lower arm ball joints (see step 5 on **LOWER ARM REMOVAL/INSTALLATION**).
29. Connect the tie-rod end ball joints (see step 11 on **KNUCKLE/HUB REPLACEMENT**).
30. Install the damper fork (see step 2 on **INSTALLATION**).
31. Connect the stabilizer links (see **STABILIZER LINK REMOVAL/INSTALLATION**).
32. Install the splash shield (see step 43 on **ENGINE INSTALLATION**).
33. Install the engine under cover (see step 44 on **ENGINE INSTALLATION**).
34. Install the front wheels.
35. Lower the vehicle.
36. Align the reference mark on the steering joint and steering gearbox pinion shaft. Connect the steering joint to the steering gearbox pinion shaft. Tighten the steering joint bolt (see step 47 on **ENGINE INSTALLATION**).
37. Install the steering wheel (see **STEERING WHEEL INSTALLATION**).
38. Install the P/S pump outlet hose with a new O-ring (see step 50 on **ENGINE INSTALLATION**).
39. Install the strut brace (see step 59 on **ENGINE INSTALLATION**).
40. Install the under-hood fuse/ relay box (see step 60 on **ENGINE INSTALLATION**).
41. Install the battery base (see step 62 on **ENGINE INSTALLATION**).
42. Install the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
43. Install the intake air duct, then install the breather pipe (see step 64 on **ENGINE INSTALLATION**).

44. Install the battery. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.
45. Install the engine cover (see step 65 on **ENGINE INSTALLATION**).
46. Refill the engine with engine oil (see **ENGINE OIL REPLACEMENT**).
47. Refill the power steering reservoir with the power steering fluid (see **FLUID CHECK/REPLACEMENT**).
48. Bleed air from the P/S system, if necessary, add more fluid (see **FLUID CHECK/REPLACEMENT**).
49. Check the wheel alignment (see **WHEEL ALIGNMENT**).
50. Install the right rear engine compartment cover, then install the right side engine compartment cover (see step 81 on **ENGINE INSTALLATION**).
51. Install the left rear engine compartment cover and the left side engine compartment cover (see step 82 on **ENGINE INSTALLATION**).
52. Enter the anti-theft codes for the audio system and the navigation system (if equipped).
53. Set the clock (on vehicles without navigation).

PULLEY END CRANKSHAFT OIL SEAL INSTALLATION - IN CAR

Special Tools Required

Oil seal driver, 64 mm 070AD-RCAA100

1. Remove the crankshaft position (CKP) sensor, the timing belt, and the timing belt drive pulley (see **TIMING BELT DRIVE PULLEY REPLACEMENT**).
2. Remove the crankshaft pulley end crankshaft oil seal.
3. Clean and dry the crankshaft oil seal housing.
4. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
5. Using the oil seal driver, drive in the crankshaft oil seal until the oil seal driver bottoms against the oil pump. When the seal is in place, clean any excess grease off the crankshaft, and check that the oil seal lip is not distorted.

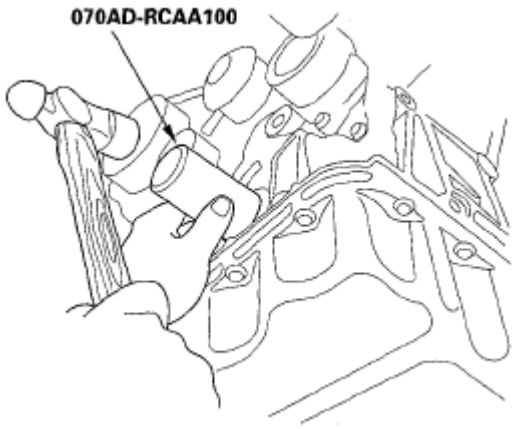

Fig. 69: Driving In Crankshaft Oil Seal

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the timing belt drive pulley, CKP sensor, and timing belt (see **TIMING BELT DRIVE PULLEY REPLACEMENT**).

TRANSMISSION END CRANKSHAFT OIL SEAL INSTALLATION - IN CAR

Special Tools Required

- Driver 07749-0010000
- Driver attachment, 106 mm 070AD-RCAA200

1. M/T model: Remove the transmission (see **TRANSMISSION REMOVAL**), the clutch disc and pressure plate (see **PRESSURE PLATE AND CLUTCH DISC REMOVAL**), and the flywheel (see **CLUTCH DISC AND PRESSURE PLATE INSTALLATION**).
2. A/T model: Remove the transmission (see **TRANSMISSION REMOVAL**) and the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**).
3. Remove the transmission end crankshaft oil seal.
4. Clean and dry the crankshaft oil seal housing.
5. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
6. Using the driver and driver attachment, drive in the crankshaft oil seal until the driver attachment bottoms against the engine block end cover. Align the hole in the driver attachment with the pin on the crankshaft.

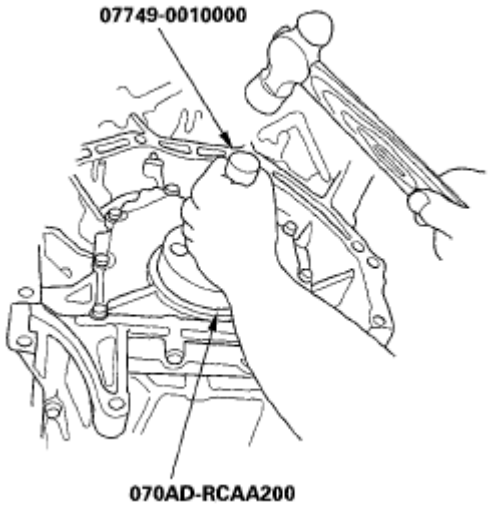

Fig. 70: Driving In Crankshaft Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Clean any excess grease off the crankshaft, and check that the oil seal lip is not distorted.
8. M/T model: Install the flywheel (see **CLUTCH DISC AND PRESSURE PLATE INSTALLATION**), the clutch disc and pressure plate (see **CLUTCH DISC AND PRESSURE PLATE INSTALLATION**), and the transmission (see **TRANSMISSION INSTALLATION**).

9. A/T model: Install the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**), and the transmission (see **TRANSMISSION INSTALLATION**).

DRAIN BOLT INSTALLATION

NOTE: When installing the drain bolts, always use new washers.

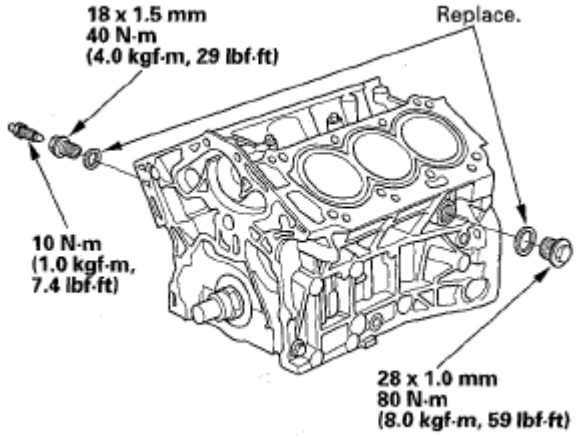

Fig. 71: Identifying Drain Bolt With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

