2007-11 ENGINE

Cylinder Head (K24Z1) - CR-V

CYLINDER HEAD

SPECIAL TOOLS

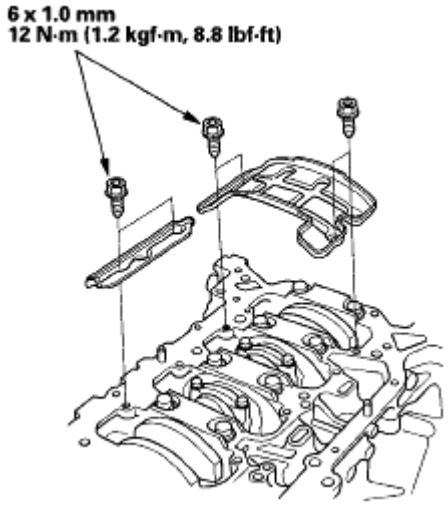

Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

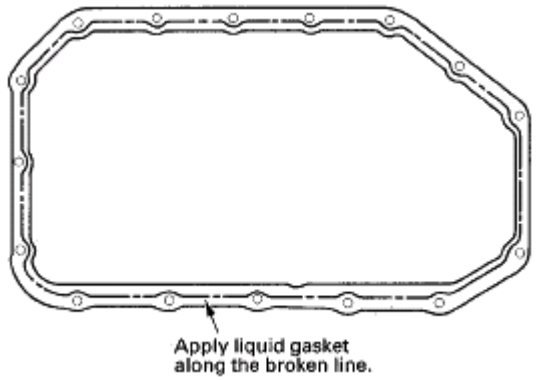

Fig. 2: Identifying Cylinder Head Component Location (1 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Ref. No.	Tool Number	Description	Qty
①	07AAB-RJAA100	Crankshaft Pulley Holder	1
②	07AAJ-PNAA101	Air Pressure Regulator	1
③	07HAH-PJ7A100	Valve Guide Reamer, 5.5 mm	1
④	07JAA-001020A	Socket, 19 mm	1
⑤	07JAB-001020B	Holder Handle	1
⑥	07PAD-0010000	Stem Seal Driver	1
⑦	070AJ-001A101	VTEC Air Adapter	1
⑧	07742-0010100	Valve Guide Driver, 5.35 mm	1
⑨	07746-0010400	Attachment, 52 x 55 mm	1
⑩	07749-0010000	Driver Handle	1
⑪	07757-PJ1010A	Valve Spring Compressor Attachment	1

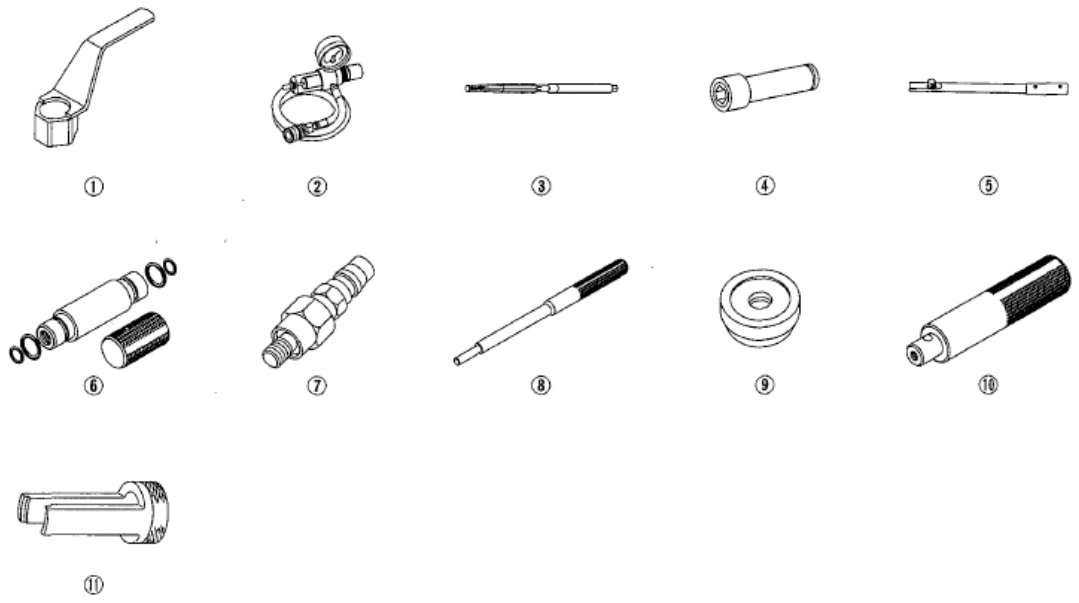

Fig. 8: Identifying Intake Primary Rocker Arm And Secondary Rocker Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the special tools.
14. Tighten the camshaft holder mounting bolts to 22 N.m (2.2 kgf.m, 16 lbf.ft).
15. Tighten the sealing bolt to 20 N.m (2.0 kgf.m, lbf.ft).
16. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).

VTC ACTUATOR INSPECTION

1. Remove the cam chain (see **CAM CHAIN REMOVAL**).
2. Loosen the rocker arm adjusting screws (see step 2).
3. Remove the camshaft holder (see step 3).
4. Remove the intake camshaft.
5. Check that the variable valve timing control (VTC) actuator is locked by turning the VTC actuator counterclockwise. If not locked, turn the VTC actuator clockwise until it stops, then recheck it. If it is still not locked, replace the VTC actuator.
6. Seal the advance holes (A) in the No. 1 camshaft journal with tape and a wire tie.

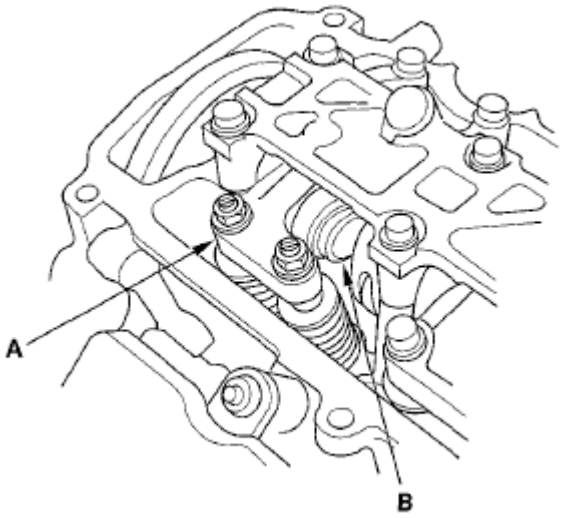

Fig. 13: Identifying Punch Mark On Variable Valve Timing Control Actuator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

   Valve Clearance

   Intake: 0.21-0.25 mm (0.008-0.010 in)

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

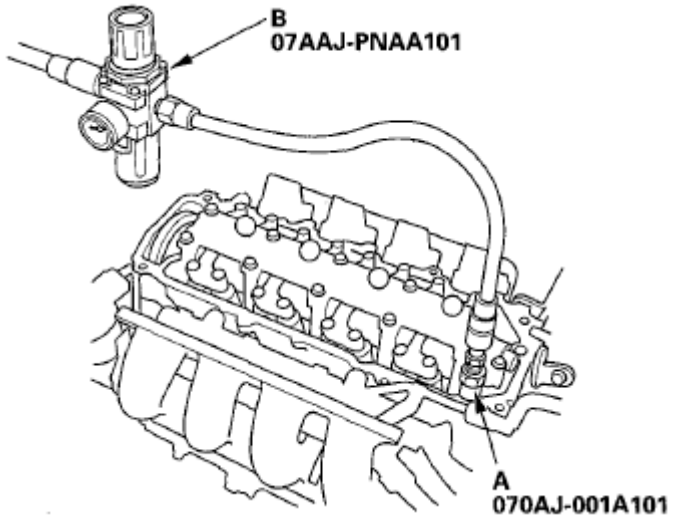

Fig. 14: Identifying Intake And Exhaust Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Insert the feeler gauge (A) between the adjusting screw (B) and the end of the valve stem, and slide it back and forth; you should feel a slight amount of drag.

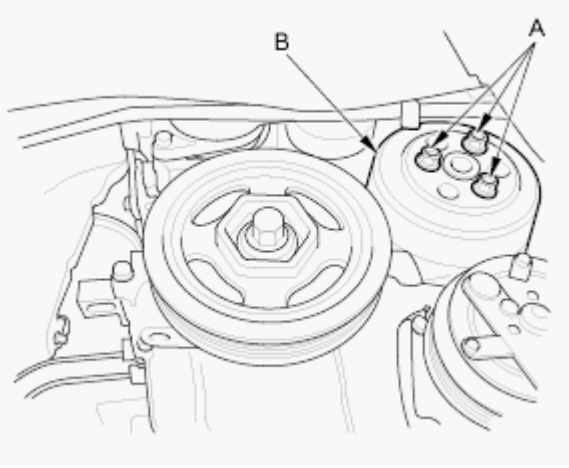

Fig. 29: Identifying Cam Chain Case And Side Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Loosely install the crankshaft pulley.
15. Turn the crankshaft counterclockwise to compress the auto-tensioner.

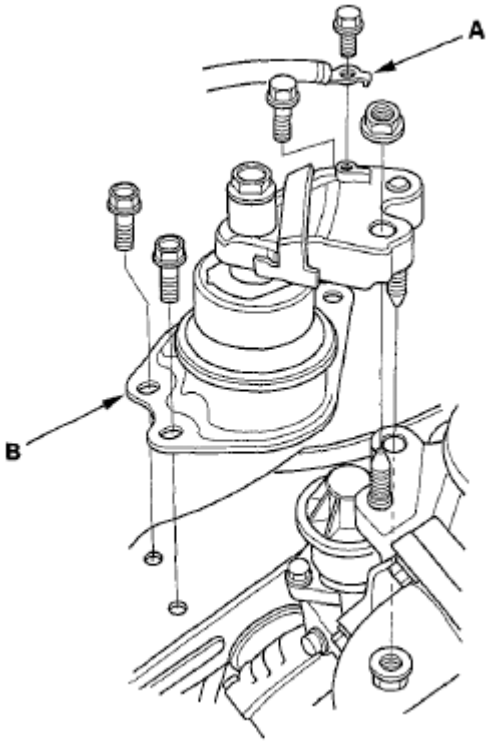

Fig. 30: Turning Crankshaft Counterclockwise
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Align the holes on the lock (A) and the auto-tensioner (B), then insert a 1.2 mm (0.05 in) diameter pin or lock pin (P/N 14511-PNA-003) (C) into the holes. Turn the crankshaft clockwise to secure the pin.

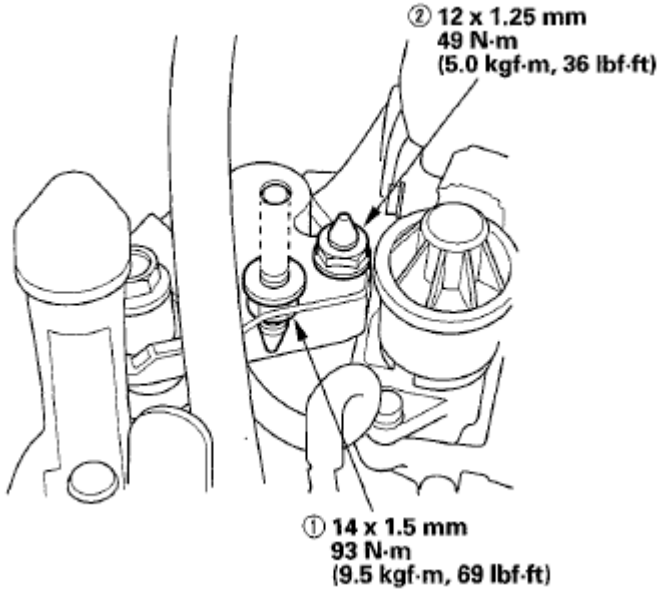

Fig. 52: Identifying Transmission Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Raise the vehicle on the lift.
27. Loosen the lower torque rod mounting bolt (A).

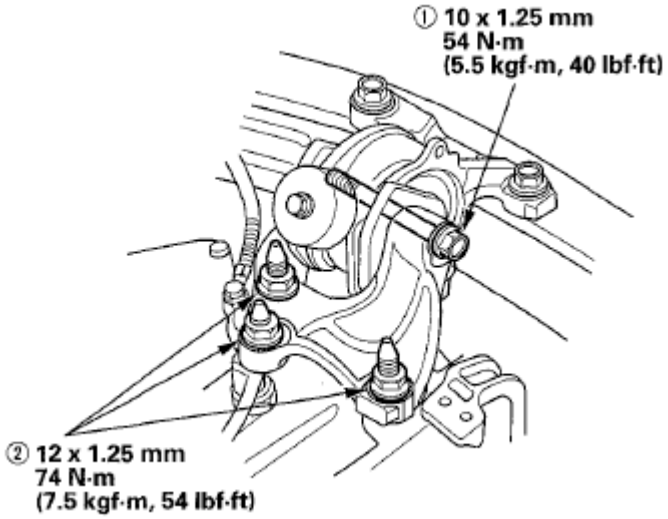

Fig. 53: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Lower the vehicle on the lift.
29. Tighten the side engine mount mounting bolts and nut.

43. Do the CKP pattern clear/CKP learn procedure (see **CKP PATTERN CLEAR/CKP PATTERN LEARN**).

CKP PULSE PLATE REPLACEMENT

1. Raise the vehicle on the lift, and remove the front wheels.
2. Remove the front splash shield (see **FRONT SPLASH SHIELD REPLACEMENT**).
3. Remove the drive belt (see **DRIVE BELT REMOVAL/INSTALLATION**).
4. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
5. Set the No. 1 piston at top dead center (TDC). The punch mark on the variable valve timing control (VTC) actuator and the punch mark on the exhaust camshaft sprocket should be at the top. Align the TDC marks on the VTC actuator and exhaust camshaft sprocket (see step 5).
6. Disconnect the crankshaft position (CKP) sensor connector and VTC oil control solenoid valve connector (see step 6).
7. Remove the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).
8. Remove the crankshaft pulley (see **CRANKSHAFT PULLEY REMOVAL AND INSTALLATION**).
9. Support the engine with a jack and a wood block under the oil pan.
10. Remove the upper torque rod (see step 10).
11. Remove the ground cable, then remove the side engine mount bracket (see step 11).
12. Remove the side engine mount bracket mounting bolts (see step 12).
13. Remove the cam chain case and side engine mount bracket (see step 13).
14. Remove the CKP pulse plate.

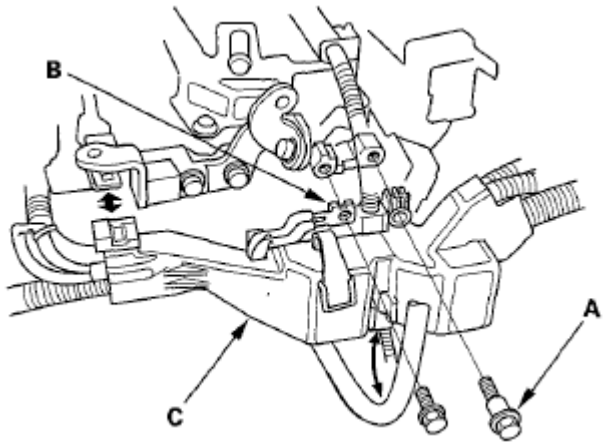

Fig. 70: Identifying CKP Pulse Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the CKP pulse plate.
16. Check the chain case oil seal for damage. If the oil seal is damaged, replace the chain case oil seal (see **CAM CHAIN CASE OIL SEAL INSTALLATION**).

5. Install CMP pulse plate B in the reverse order of removal.

VTC ACTUATOR, EXHAUST CAMSHAFT SPROCKET REPLACEMENT

1. Remove the cylinder head cover **Cylinder Head Cover Removal**.
2. Hold the camshaft with an open-end wrench, then loosen the VTC actuator mounting bolt and the exhaust camshaft sprocket mounting bolt.

NOTE: Do not remove the VTC actuator and the exhaust camshaft sprocket mounting bolts.

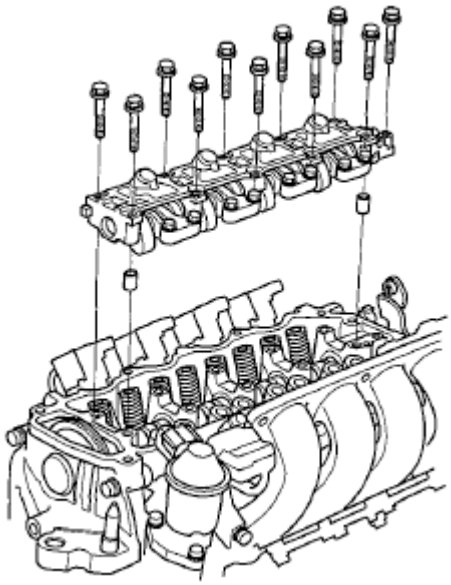

Fig. 91: Holding Camshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Set the No. 1 piston at top dead center (TDC). The punch mark (A) on the VTC actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and the exhaust camshaft sprocket.

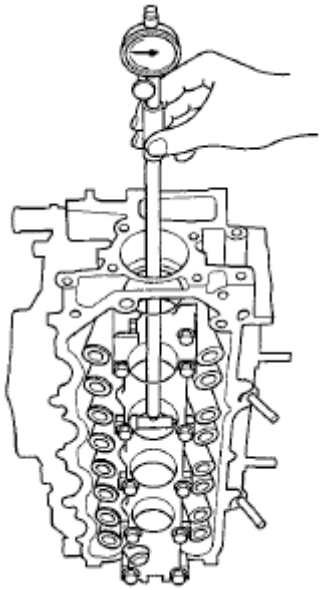

Fig. 102: Identifying Rocker Arm Assembly And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY

NOTE:

- **Identify each part as it is removed so that each item can be reinstalled in its original locations.**
- **Inspect the rocker arm shaft and rocker arms (see ROCKER ARM AND SHAFT INSPECTION).**
- **If reused, the rocker arms must be installed in the original locations.**
- **When removing, or installing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the holders and rocker arms on the shaft.**
- **Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to any contact points.**
- **Bundle the intake rocker arms with rubber bands to keep them together as a set.**
- **When replacing the intake rocker arm assembly, remove the fastening hardware from the new intake rocker arm assembly.**

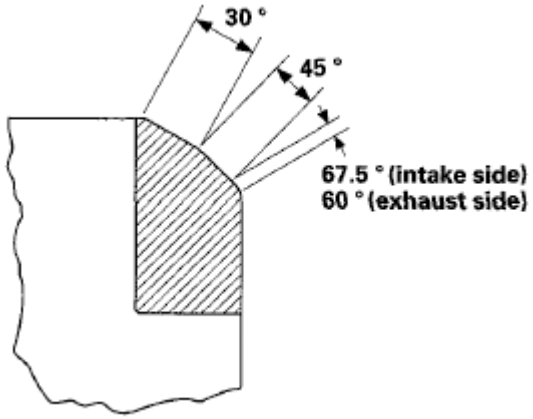

Fig. 117: Identifying Valve Dimension
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE STEM-TO-GUIDE CLEARANCE INSPECTION

1. Remove the valves (see **VALVE, SPRING, AND VALVE SEAL REMOVAL**).
2. Subtract the O.D. of the valve stem, measured with a micrometer, from the I.D. of the valve guide, 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): 0.030-0.055 mm (0.0012-0.0022 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)

NOTE: If the engine does not have bolt (21), skip it and continue the torque sequence.

Specified Torque

8 x 1.25 mm

22 N.m (2.2 kgf.m, 16 lbf.ft)

6 x 1.0 mm

12 N.m (1.2 kgf.m, 8.8 lbf.ft)

6 x 1.0 mm Bolts: (21), (22), (23)

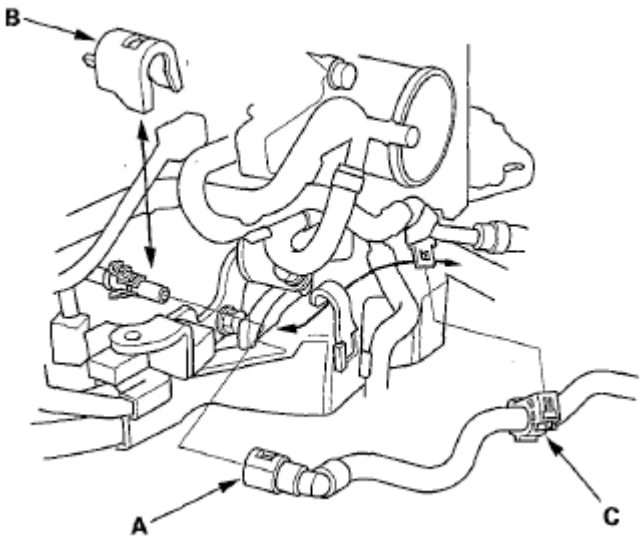

Fig. 134: Identifying Camshaft Bolts Tighten Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the cam chain (see **CAM CHAIN INSTALLATION**), and adjust the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).

CYLINDER HEAD INSTALLATION

1. Clean the cylinder head and block surface.
2. Install a new coolant separator (A) in the engine block whenever the engine block is replaced.

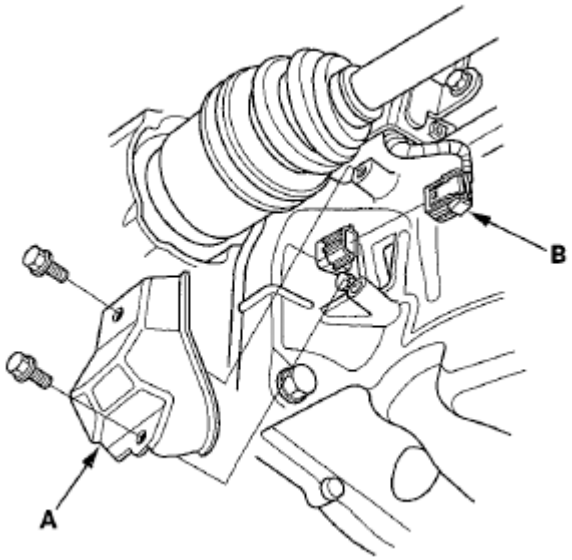

Fig. 5: Measuring Crankshaft End Play
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the end play is beyond service limit, replace the thrust washers and recheck, if it is still beyond service limit, replace the crankshaft (see **CRANKSHAFT AND PISTON REMOVAL**).

CRANKSHAFT MAIN BEARING REPLACEMENT

MAIN BEARING CLEARANCE INSPECTION

1. To check main bearing-to-journal oil clearance, remove the lower block 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.
4. Reinstall the bearings and lower block, then torque the bolts to 29 N.m (3.0 kgf.m, 22 lbf.ft).

NOTE:

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

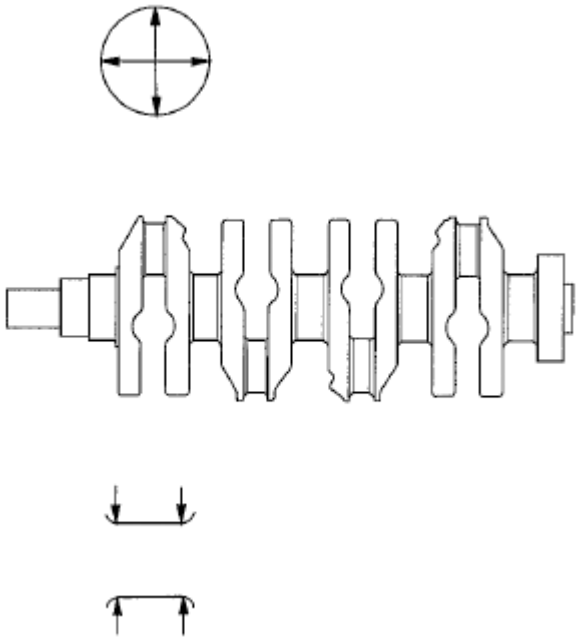

Fig. 16: Identifying Lower Torque Rod Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Remove the torque converter cover.

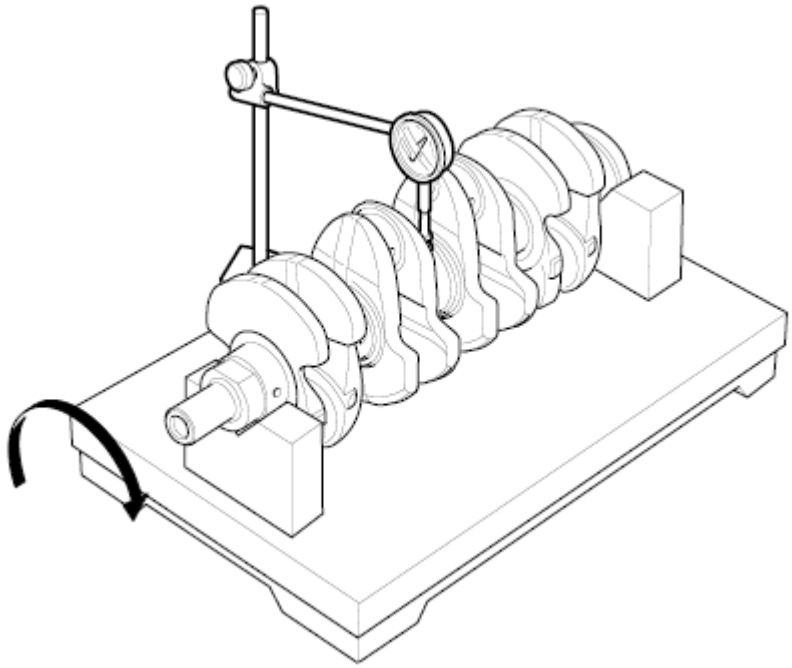

Fig. 17: Identifying Torque Converter Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Remove the bolts securing the oil pan.

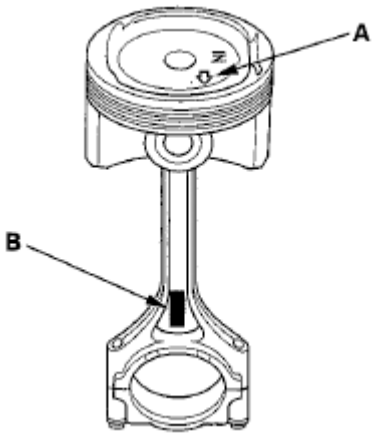

Fig. 31: Checking Engine Block Warpage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Piston-to-Cylinder Bore Clearance

Standard (New): 0.020-0.040 mm (0.0008-0.0016 in)

Service Limit: 0.05 mm (0.002 in)

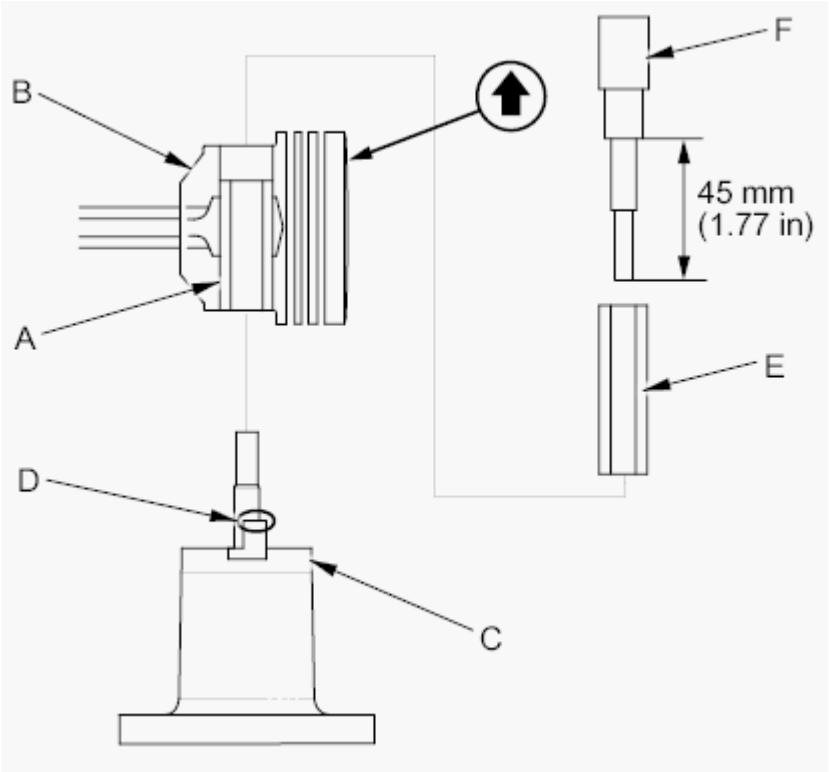

Fig. 32: Identifying Piston-To-Cylinder Bore Clearance

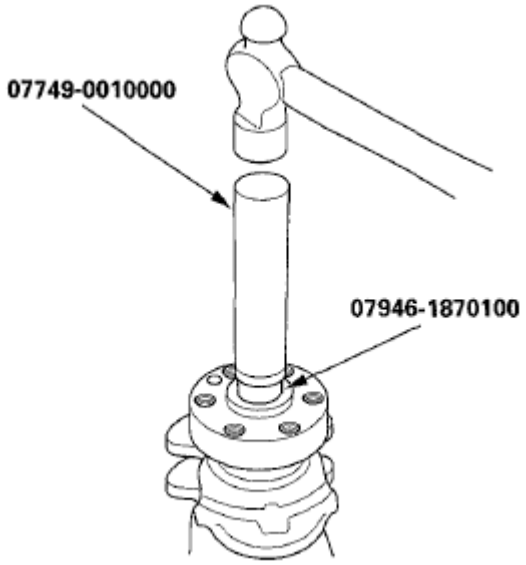

Fig. 44: Removing Piston Using Ring Expander
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Clean all ring grooves thoroughly with a squared-off broken ring or ring groove cleaner with a blade that fits the piston grooves.

   The top and 2nd ring grooves are 1.2 mm (0.05 in) wide. The oil ring groove is 2.0 mm (0.08 in) wide.

   File down a blade if necessary.

   Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with the cleaning tools.

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

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

19. Tighten the bearing cap bolts an additional 56°.

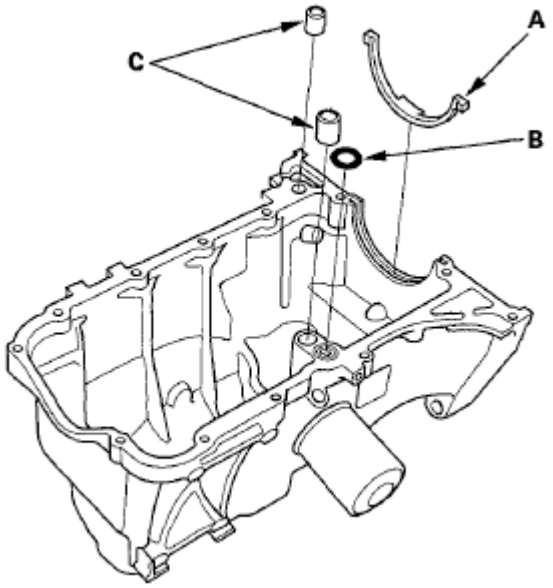

Fig. 59: Tightening Bearing Cap Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Torque the 8 mm bolts, in sequence, to 22 N.m (2.2 kgf.m, 16 lbf.ft).

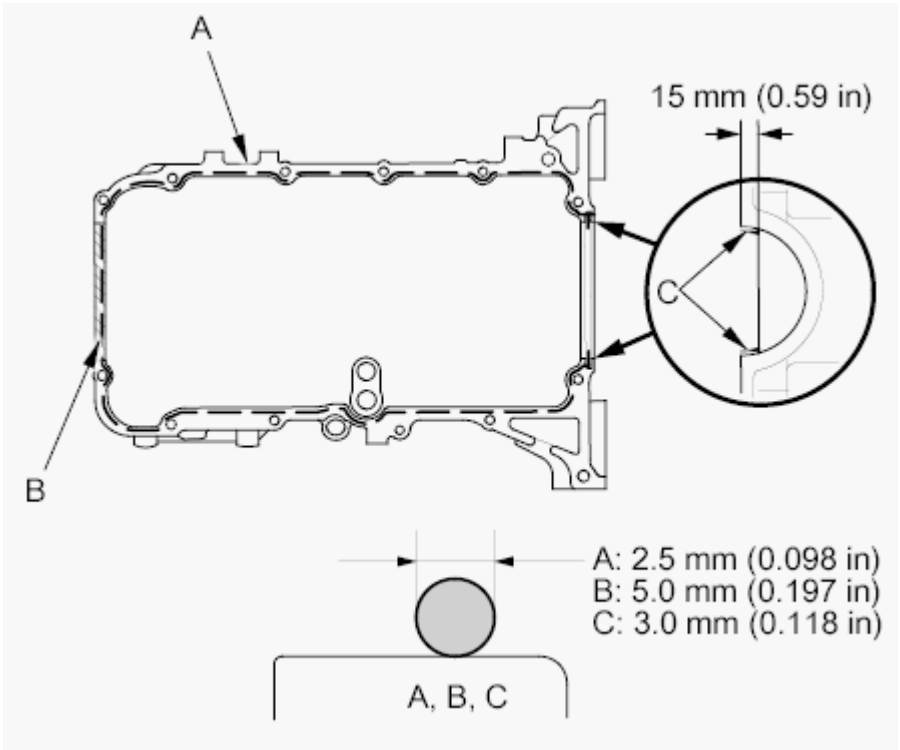

Fig. 60: Identifying Bearing Cap Bolts Tighten Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.