

2010 Honda Accord LX

2008-12 ENGINE Engine Block - Accord V6

2008-12 ENGINE

Engine Block - Accord V6

SPECIAL TOOLS

Ref.No.	Tool Number	Description	Qty
①	070AD-RCA0200	Oil Seal Driver Attachment, 106 mm	1
②	07749-0010000	Driver Handle, 15 x 135L	1
③	07QAD-RCAA100	Oil Seal Driver, 64 mm	1

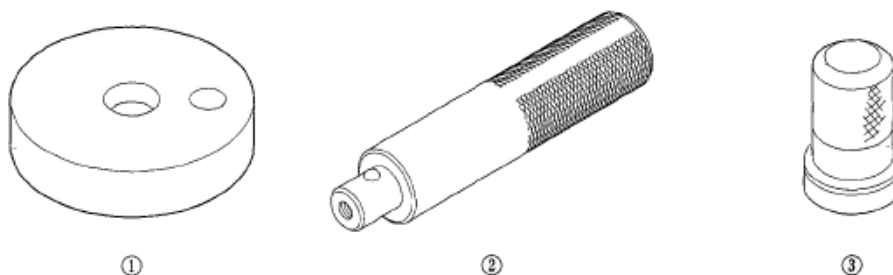


Fig. 1: Special Tools Chart

Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

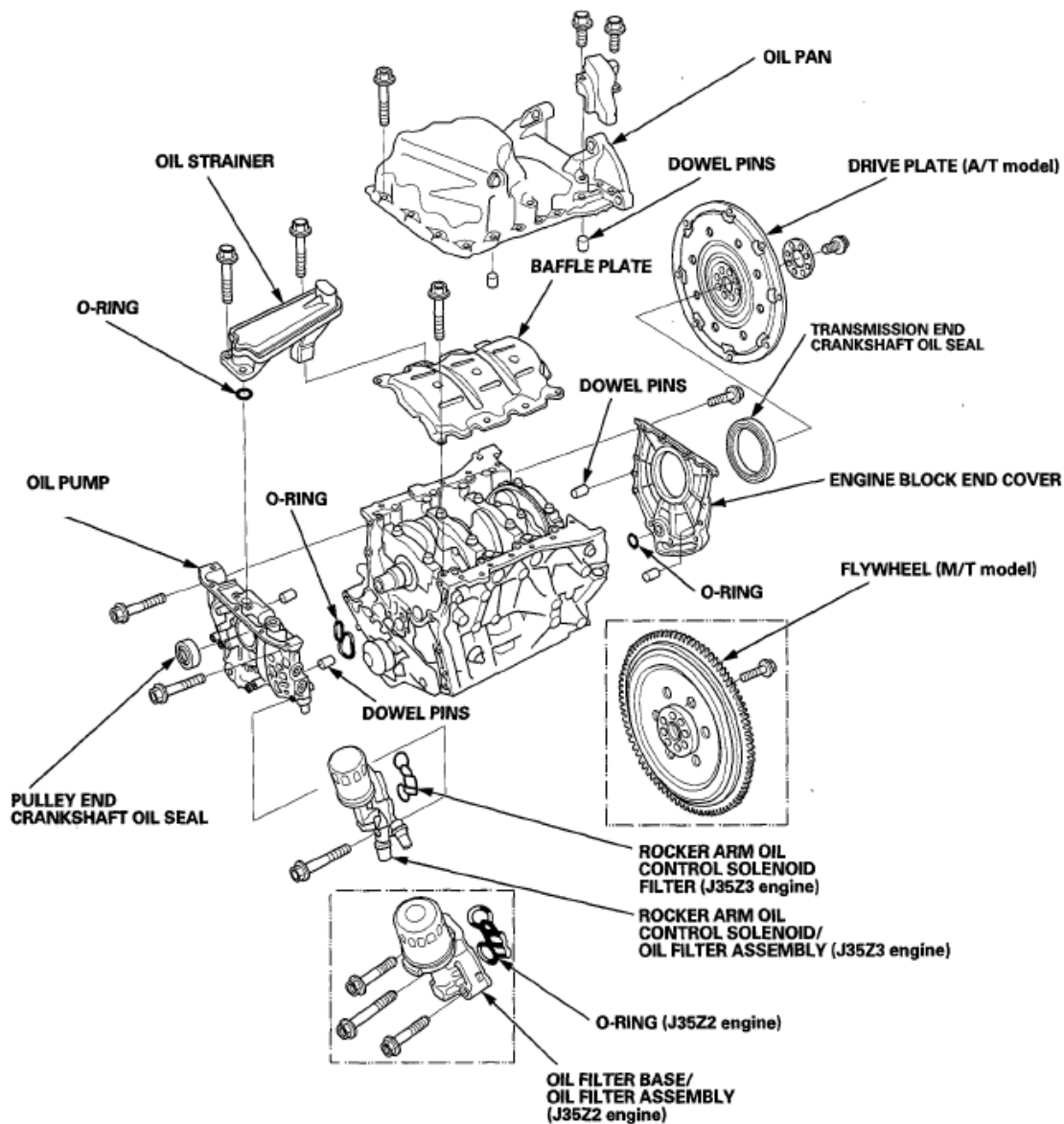


Fig. 2: Identifying Engine Block Component Location (1 Of 3)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

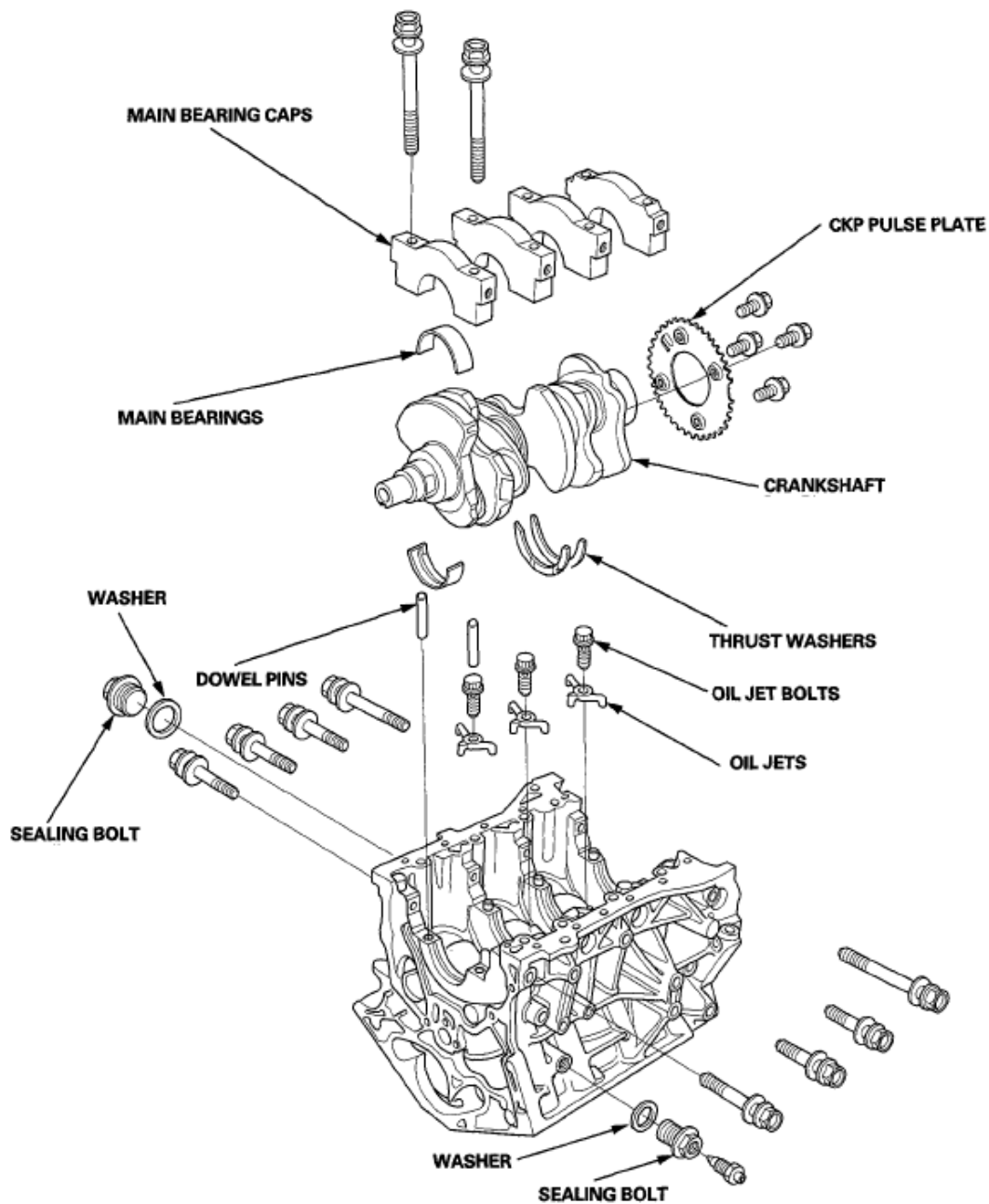


Fig. 3: Identifying Engine Block Component Location (2 Of 3)
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

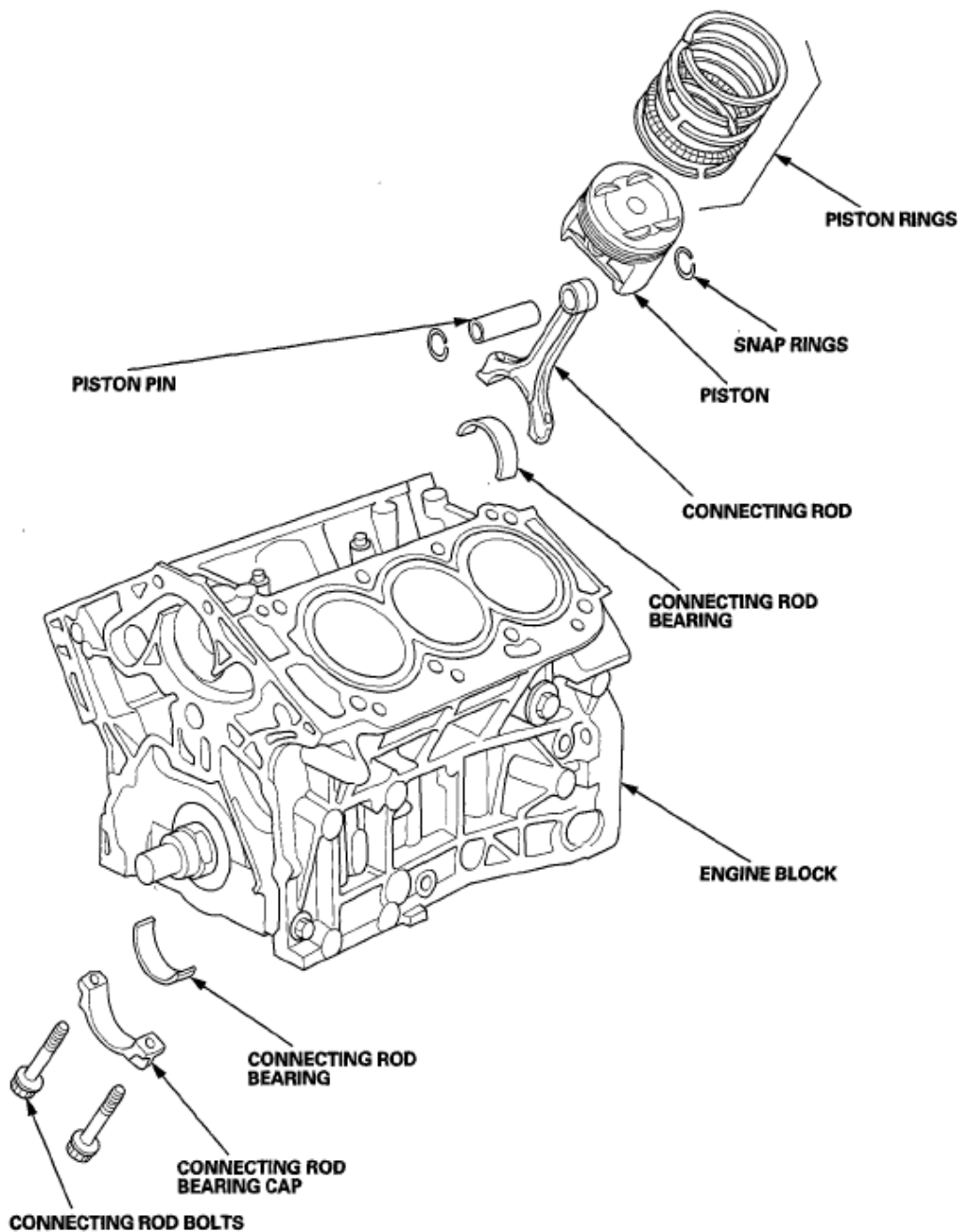


Fig. 4: Identifying Engine Block Component Location (3 Of 3)

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).
3. Measure the connecting rod end play with a feeler gauge (A) between the connecting rod (B) and the crankshaft (C).

Connecting Rod End Play

Standard (New): 0.15-0.35 mm (0.0059-0.0138 in)

Service Limit: 0.45 mm (0.0177 in)

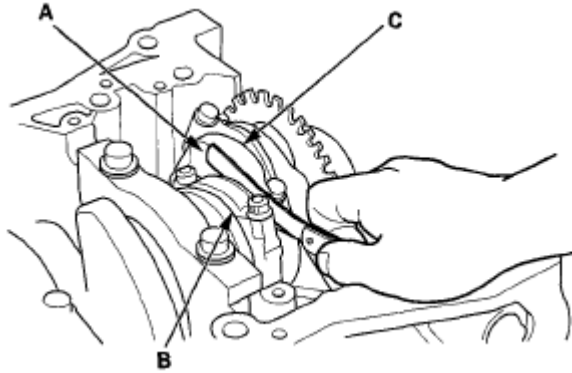


Fig. 5: Measuring Connecting Rod End Play With Feeler Gauge Between Connecting Rod And Crankshaft

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Crankshaft End Play

Standard (New): 0.10-0.35 mm (0.0039-0.0138 in)

Service Limit: 0.45 mm (0.0177 in)

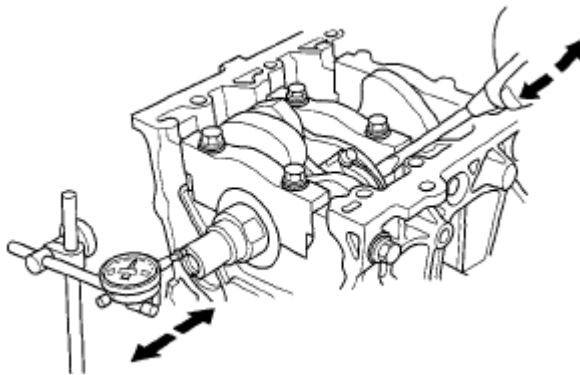


Fig. 6: Pushing Crankshaft Firmly Away From Dial Indicator By Prying And Zero Dial Against

End Of Crankshaft**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

CRANKSHAFT MAIN BEARING REPLACEMENT**MAIN BEARING CLEARANCE INSPECTION**

1. Remove the main bearing caps and the bearing halves (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Clean each main journal and the 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 the 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 the bearing caps, then torque the bearing cap bolts to 74 N.m (7.5 kgf.m, 54 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 23).

NOTE:

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

5. Remove the bearing caps and the bearing halves, and measure the widest part of the plastigage.

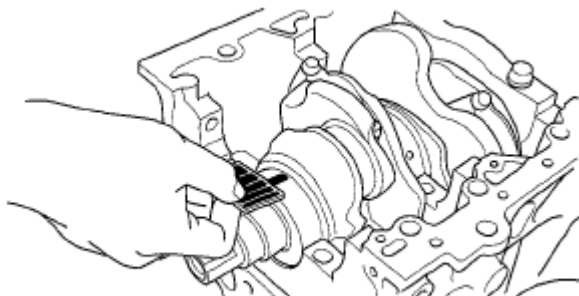
Main Bearing-to-Journal Oil Clearance**Standard (New): 0.019-0.045 mm (0.00075-0.00177 in)****Service Limit: 0.050 mm (0.00197 in)**

Fig. 7: Measuring Widest Part Of Plastigage

Courtesy of AMERICAN HONDA MOTOR CO., INC.

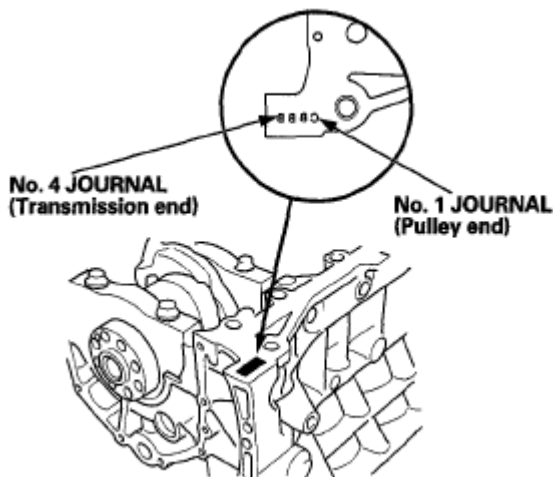
6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows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

MAIN BEARING SELECTION

Block Bore Code Locations

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

Use them, and the numbers or bars 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 Block Bore Code Locations**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Bearing Identification
Color code is on the edge of the bearing

1 or I	2 or II	3 or III	4 or IIII	5 or IIIII	6 or IIIIII
--------	---------	----------	-----------	------------	-------------

Smaller main journal Smaller bearing (Thicker)

Larger Block bore			
A or I	B or II	C or III	D or IIII
Smaller bearing (Thicker)			
Red/Pink	Pink	Pink/Yellow	Yellow
Pink	Pink/Yellow	Yellow	Yellow/Green
Pink/Yellow	Yellow	Yellow/Green	Green
Yellow	Yellow/Green	Green	Green/Brown
Yellow/Green	Green	Green/Brown	Brown
Green	Green/Brown	Brown	Brown/Black

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Fig. 9: Block Bore Codes Chart

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Main Journal Code Locations (Numbers or Bars)

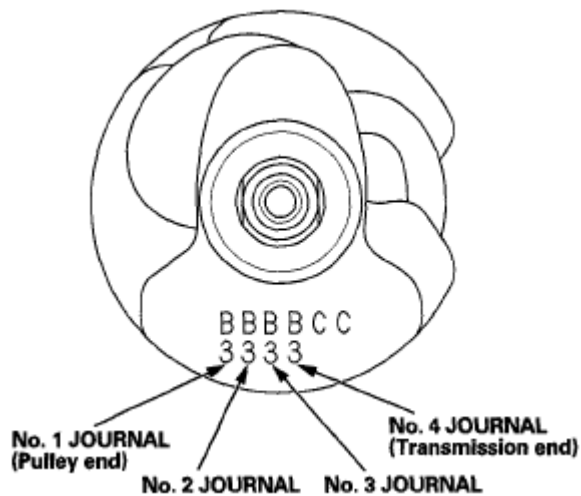


Fig. 10: Identifying Main Journal Code Locations (Numbers Or Bars)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTING ROD BEARING REPLACEMENT

CONNECTING ROD BEARING CLEARANCE INSPECTION

1. Remove the connecting rod cap and the bearing half (see CRANKSHAFT AND PISTON)

REMOVAL).

2. Clean the connecting rod journal and the bearing half with a clean shop towel.
3. Place one strip of plastigage across the rod journal.
4. Reinstall the bearing half and the rod cap, then torque the connecting rod bolt to 20 N.m (2.0 kgf.m, 14 lbf.ft) + 90°.

NOTE:

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

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

Connecting Rod Bearing-to-Journal Oil**Clearance**

Standard (New): 0.020-0.044 mm (0.00079-0.00173 in)

Service Limit: 0.050 mm (0.00197 in)

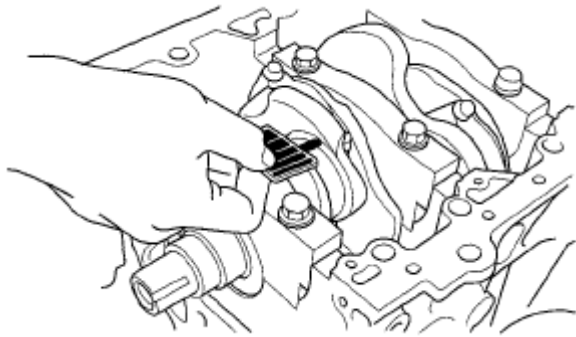


Fig. 11: Measuring Widest Part Of Plastigage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the plastigage measures too wide or too narrow, remove the upper half of the bearing. 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 the clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over (see **CRANKSHAFT AND PISTON REMOVAL**).

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

Big End Bore Size: 58.0 mm (2.283 in)

Inspect the connecting rod for cracks and heat damage.

Big End 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.

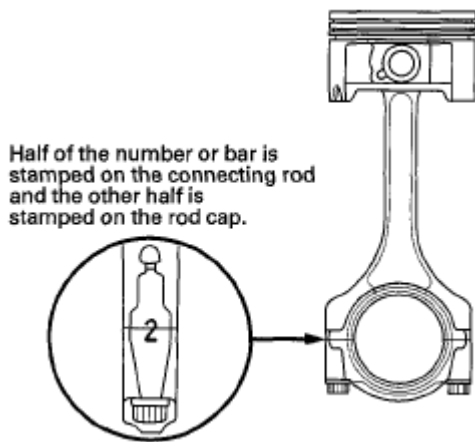


Fig. 12: Identifying Big End Bore Code Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Bearing Identification
Color code is on the edge of the bearing

→ Larger big end bore

1 or I	2 or II	3 or III	4 or IIII
--------	---------	----------	-----------

→ Smaller bearing (Thicker)

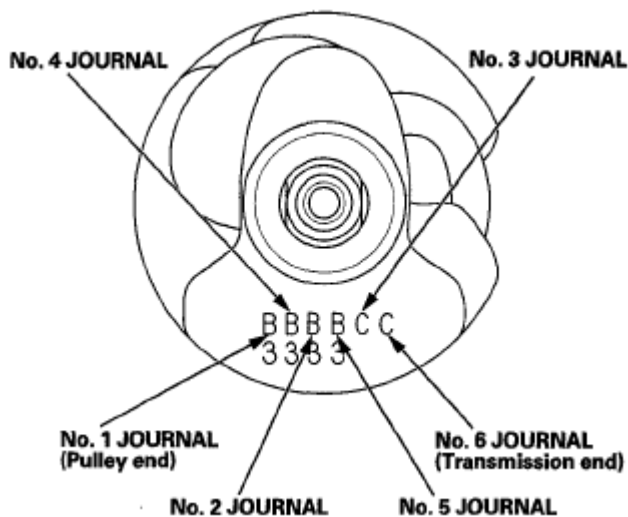
A or I	Pink	Pink/ Yellow	Yellow	Yellow/ Green
B or II	Pink/ Yellow	Yellow	Yellow/ Green	Green
C or III	Yellow	Yellow/ Green	Green	Green/ Brown
D or IIII	Yellow/ Green	Green	Green/ Brown	Brown
E or IIIII	Green	Green/ Brown	Brown	Brown/ Black
F or IIIII	Green/ Brown	Brown	Brown/ Black	Black

Smaller rod journal Smaller bearing (Thicker)

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Fig. 13: Big End Bore Codes 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

1. If the engine is already out of the vehicle, go to step 6.
2. Raise the vehicle on the lift.

3. Drain the engine oil (see **ENGINE OIL LEVEL CHECK**).
4. Remove the splash shield (see step 28 under **ENGINE REMOVAL**).
5. Remove exhaust pipe A (see step 32 under **ENGINE REMOVAL**).
6. Remove the rear warm up TWC bracket.

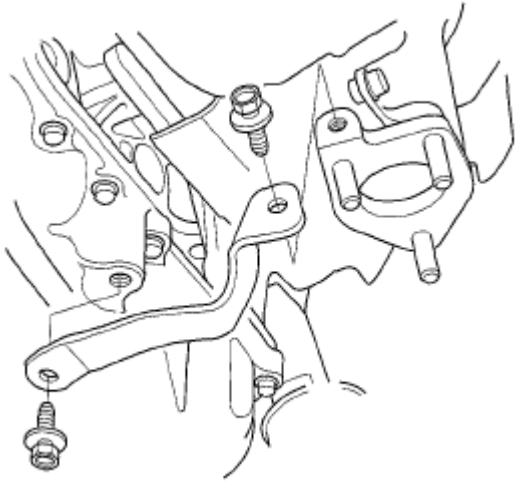


Fig. 15: Identifying Rear Warm Up TWC Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the CKP sensor cover (A) and the bolt (B), then disconnect the CKP sensor connector (C).

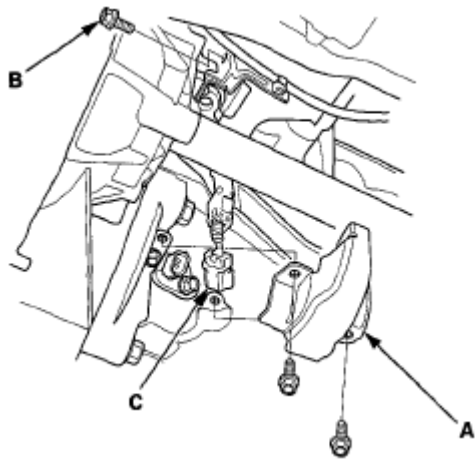


Fig. 16: Identifying CKP Sensor Cover, Bolt And CKP Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the torque converter case cover (A) and the four bolts (B) securing the transmission.

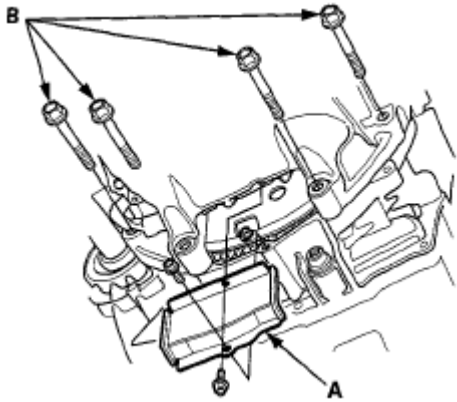


Fig. 17: Identifying Torque Converter Case Cover And Bolts
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the bolts securing the oil pan.
10. Using a flat blade screwdriver, separate the oil pan from the engine block in the places shown in illustration.

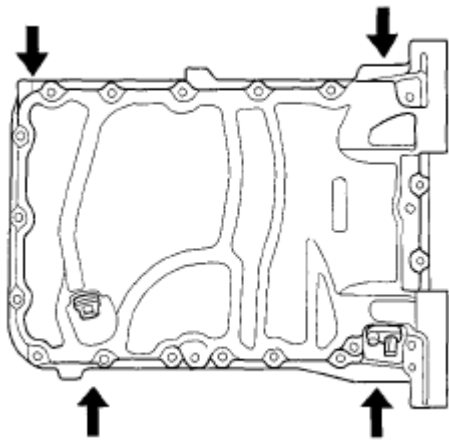


Fig. 18: Identifying Oil Pan Separating Points
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. 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 REPLACEMENT**)
4. A/T model: Remove the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**).

5. Remove the cylinder heads:
 - J35Z2 engine (see **CYLINDER HEAD REMOVAL**)
 - J35Z3 engine (see **CYLINDER HEAD REMOVAL**)
6. Remove the timing belt drive pulley from the crankshaft:
 - J35Z2 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)
 - J35Z3 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)
7. Remove the oil pan (see **OIL PAN REMOVAL**).
8. Remove the engine block end cover.

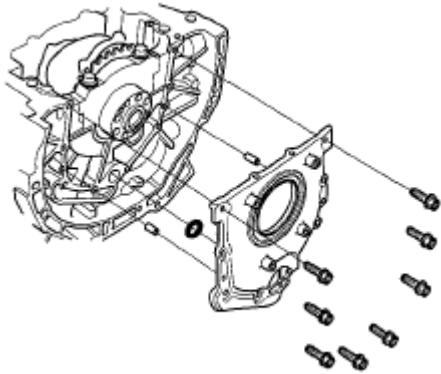


Fig. 19: Identifying Engine Block End Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. J35Z2 engine: Remove the oil filter base/oil filter assembly.

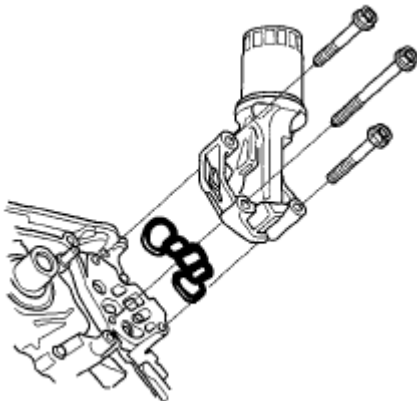


Fig. 20: Identifying Oil Filter Base/Oil Filter Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. J35Z3 engine: Remove the rocker arm oil control solenoid/oil filter assembly.

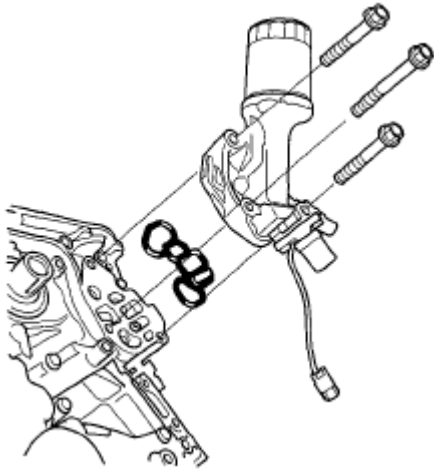


Fig. 21: Identifying Rocker Arm Oil Control Solenoid/Oil Filter Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

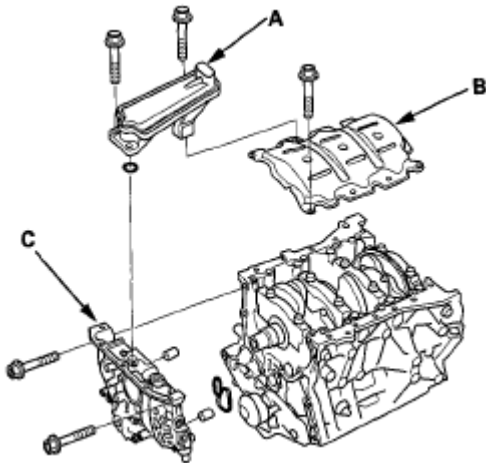


Fig. 22: Identifying Oil Strainer, Baffle Plate And Oil Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 is pushed out.

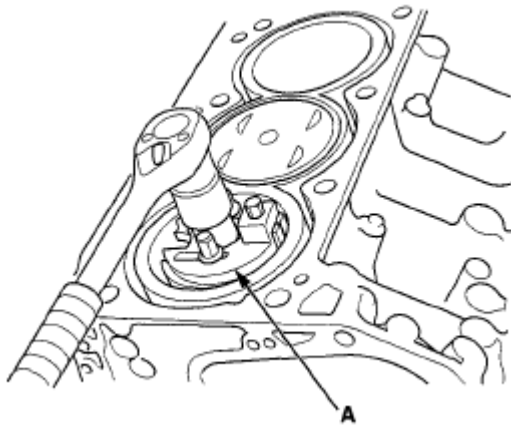


Fig. 23: Removing Metal Or Hard Carbon Around Top Of Any Cylinder With Ridge Reamer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the connecting rod caps after setting the connecting rod journal 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 oil jets, the connecting rod journal, or the cylinder with the connecting rod.

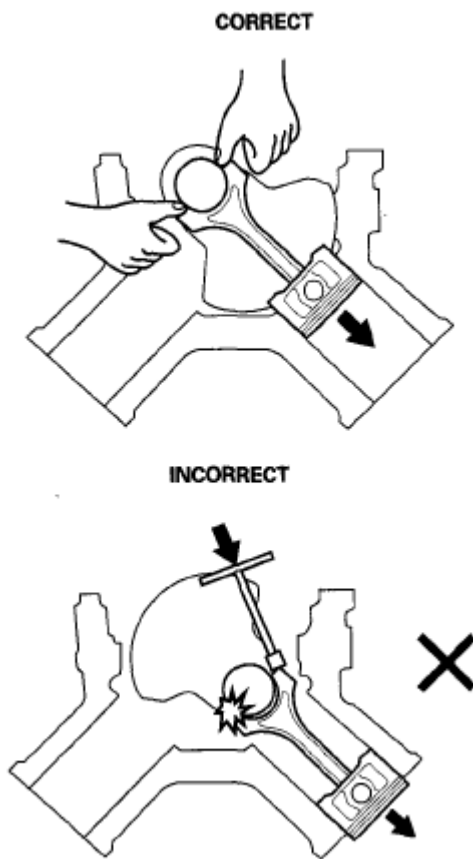


Fig. 24: Removing Piston/Connecting Rod Assembly By Pushing On Connecting Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the bearing from the rod 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 rod 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 the bearing cap side bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

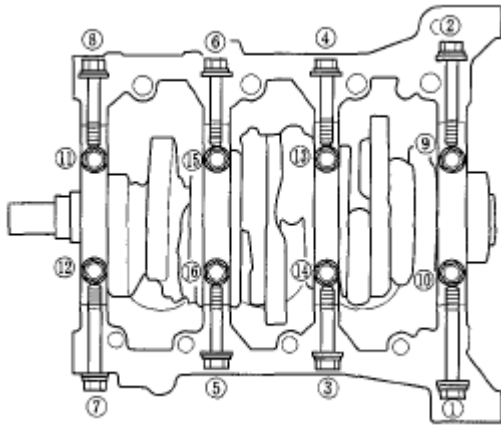


Fig. 25: Identifying Bearing Cap Bolts And Bearing Cap Side Bolts Loosening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

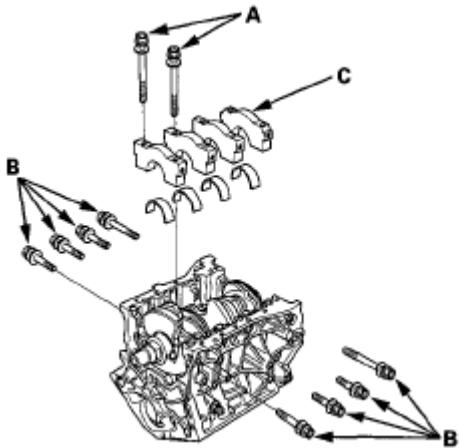


Fig. 26: Identifying Bearing Cap Bolts, Bearing Cap Side Bolts And Main Bearing Caps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Lift the crankshaft (A) out of the engine block, being careful not to damage the journals and the CKP pulse plate (B).

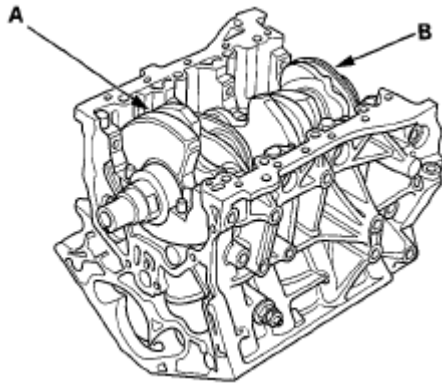


Fig. 27: Identifying Crankshaft And CKP Pulse Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Remove the CKP pulse plate from the crankshaft (see **CKP PULSE PLATE REPLACEMENT**).
22. Reinstall the main bearing 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. Remove the CKP pulse plate from the crankshaft (see **CKP PULSE PLATE REPLACEMENT**).
3. Clean the crankshaft oil passages with pipe cleaners or a suitable brush.
4. Check the keyway slot and the threaded holes for damage.
5. Measure the out-of-round at the middle of each rod and main journal in two places. The difference between measurements on each journal must not be more than the service limit.

Journal Out-of-Round

Standard (New): 0.005 mm (0.00020 in) max.

Service Limit: 0.010 mm (0.00039 in)

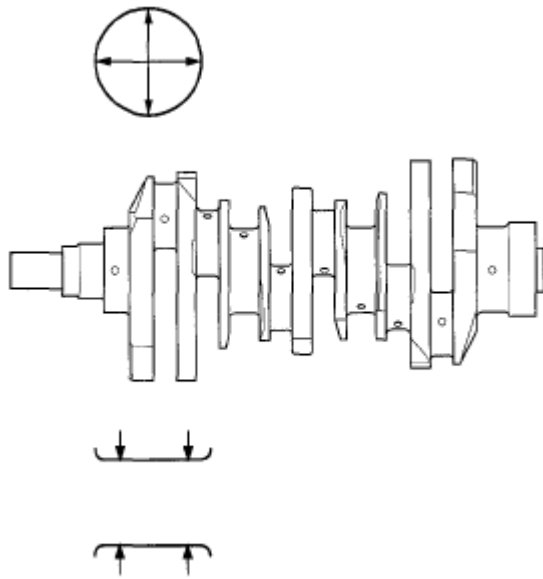


Fig. 28: Measuring Out-Of-Round At Middle Of Each Rod And Main Journal In Two Places
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Measure the 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 (0.00020 in) max.

Service Limit: 0.010 mm (0.00039 in)

Straightness

7. Place the V-blocks on a flat surface.
8. Check the total runout with the crankshaft supported on V-blocks.
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 (0.00098 in) max.

Service Limit: 0.030 mm (0.00118 in)

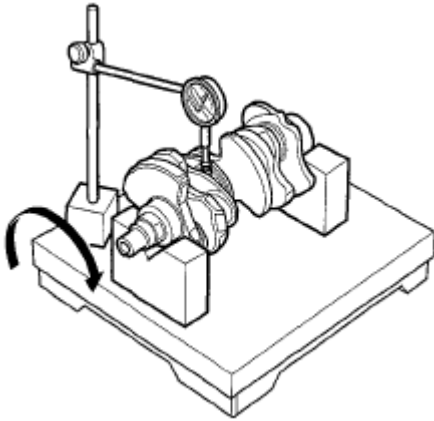


Fig. 29: Measuring Runout On Main Journals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 the piston skirt diameter at a point 16 mm (0.63 in) from the bottom of the skirt.

Piston Skirt Diameter

Standard (New): 88.975-88.985 mm (3.50295-3.50334 in)

Service Limit: 88.965 mm (3.50255 in)

Oversize Piston Skirt Diameter

0.25: 89.225-89.235 mm (3.51279-3.51318 in)

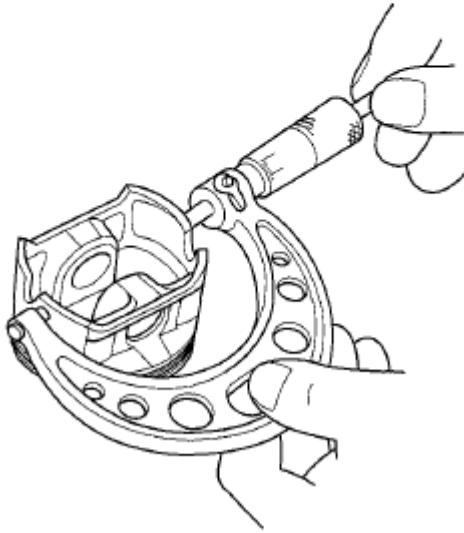
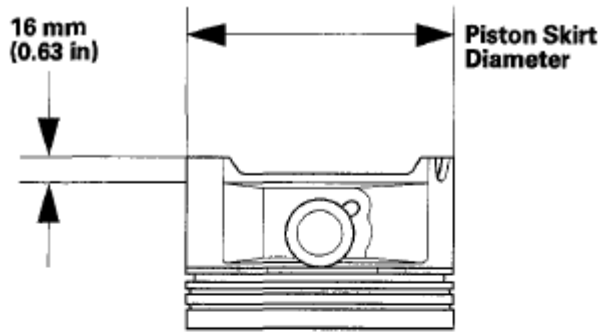


Fig. 30: Measuring Piston Skirt Diameter At Point 16 mm (0.63 in) From Bottom Of Skirt
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the wear and taper in direction X and Y at three levels in each cylinder as shown in illustration. 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 (3.50393-3.50452 in)

Service Limit: 89.065 mm (3.50649 in)

Oversize

0.25: 89.250-89.265 mm (3.51377-3.51436 in)

Reboring Limit: 0.25 mm (0.0098 in)

Bore Taper

Limit: (Difference between first and third measurement) 0.05 mm (0.0020 in)

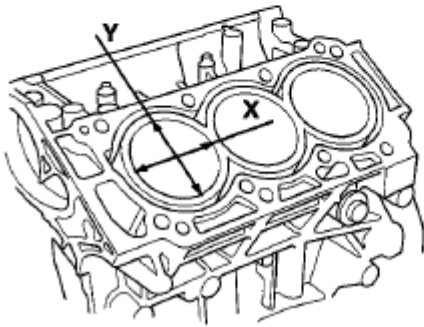
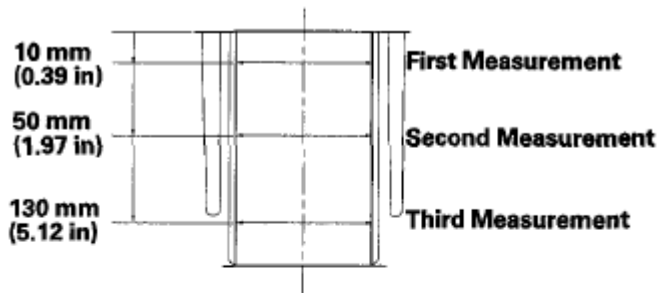


Fig. 31: Measuring Wear And Taper In Direction X And Y At Three Levels In Each Cylinder
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 in illustration.

Engine Block Warpage

Standard (New): 0.07 mm (0.002 in) max.

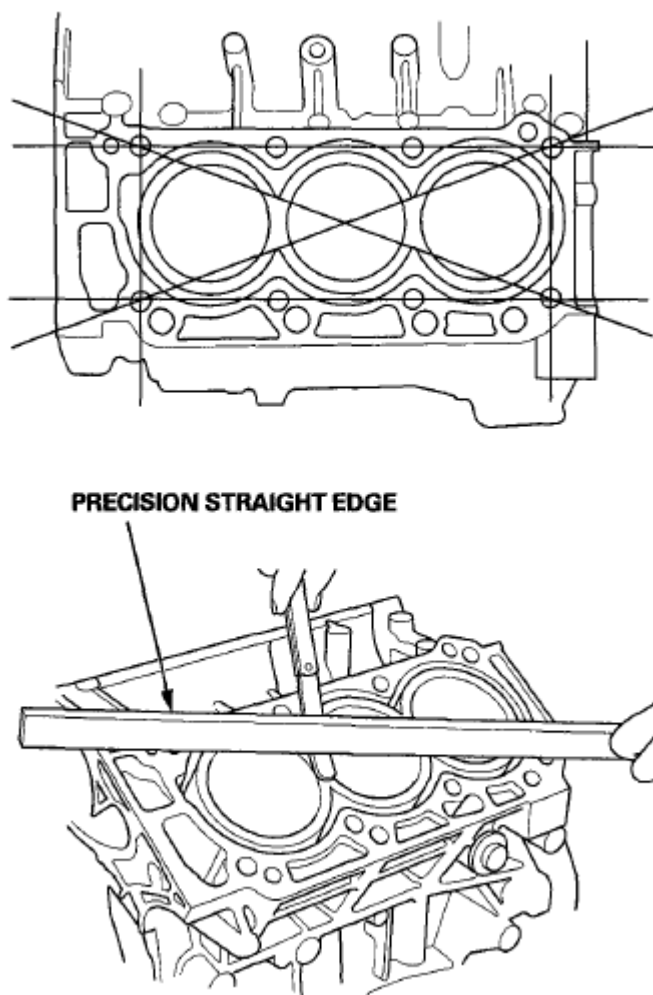


Fig. 32: Checking Top Of Engine Block For Warpage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Piston-to-Cylinder Bore Clearance

Standard (New): 0.015-0.040 mm (0.00059-0.00157 in)

Service Limit: 0.08 mm (0.0031 in)

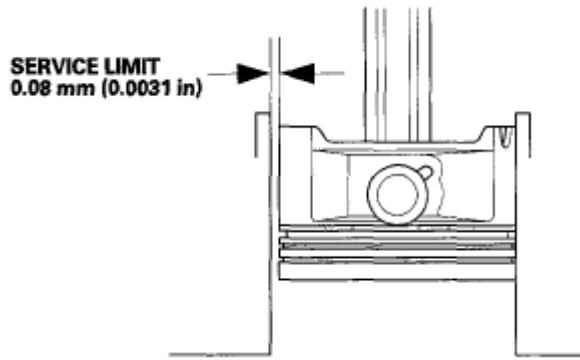


Fig. 33: Inspecting Piston And Cylinder Bore For Excessive Wear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER BORE HONING

1. Measure the cylinder bores (see step 4). 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. Remove the oil jets (see **OIL JET REPLACEMENT**).
3. 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.

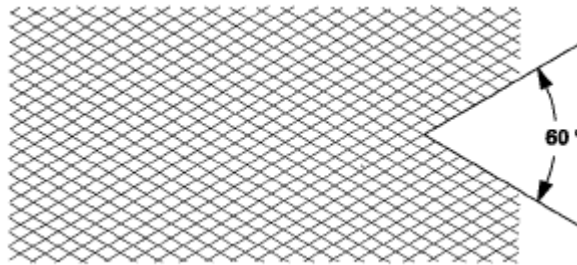


Fig. 34: Identifying Hone 60 Degree Crosshatch Pattern
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. 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.

NOTE: Never use solvent, it will only redistribute the grit on the cylinder walls.

5. 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.
6. Install the oil jets (see **OIL JET REPLACEMENT**).

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.

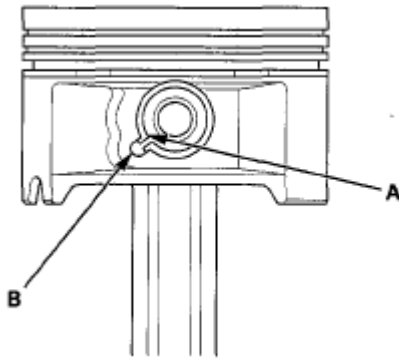


Fig. 35: Identifying Piston Pin Snap Rings And Piston Pin Bores
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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.

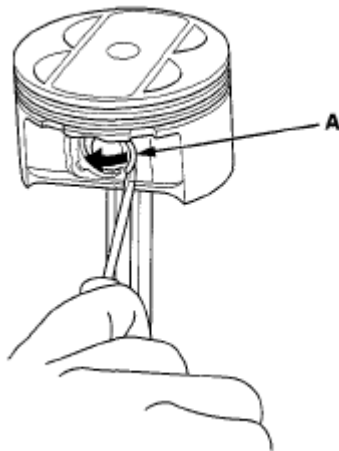


Fig. 36: Removing Snap Rings From Both Sides Of Each Piston
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

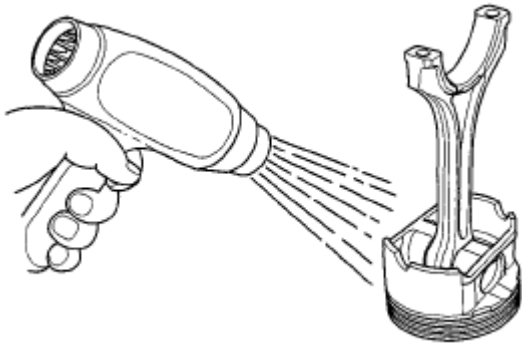


Fig. 37: Heating Piston And Connecting Rod Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSPECTION

NOTE: Inspect the piston, the piston pin, and the 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 (0.86464-0.86476 in)

Service Limit: 21.954 mm (0.86433 in)

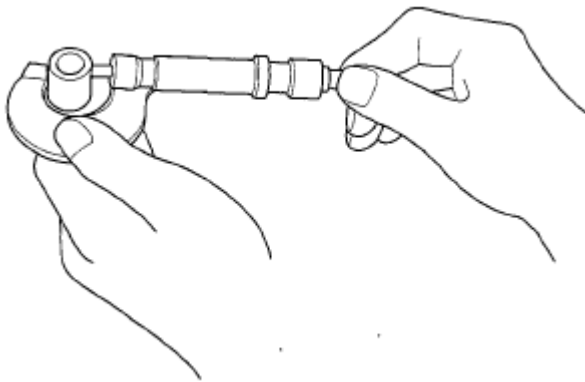


Fig. 38: Measuring Diameter Of Piston Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

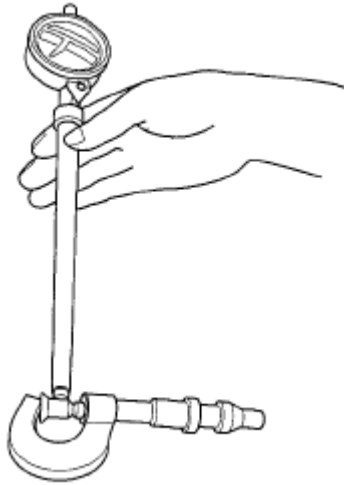


Fig. 39: Zero Dial Indicator To Piston Pin Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Piston Pin-to-Piston Clearance

Standard (New): -0.0050-0.0010 mm (-0.000197-0.000039 in)

Service Limit: 0.004 mm (0.00016 in)

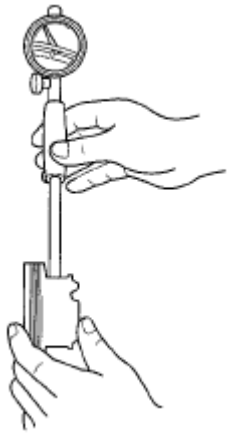


Fig. 40: Checking Difference Between Piston Pin Diameter And Piston Pin Hole Diameter On Piston

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 (0.00020-0.00055 in)

Service Limit: 0.019 mm (0.00075 in)

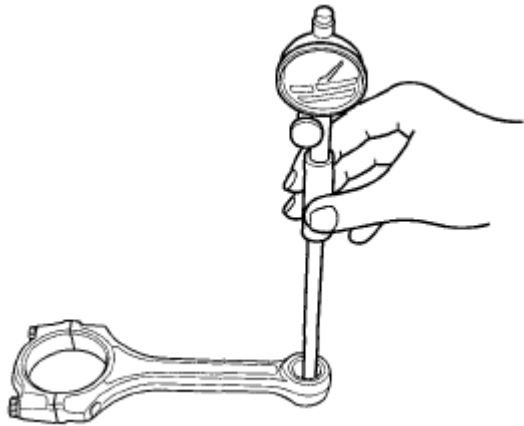


Fig. 41: Measuring Piston Pin-To-Connecting Rod Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REASSEMBLY

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

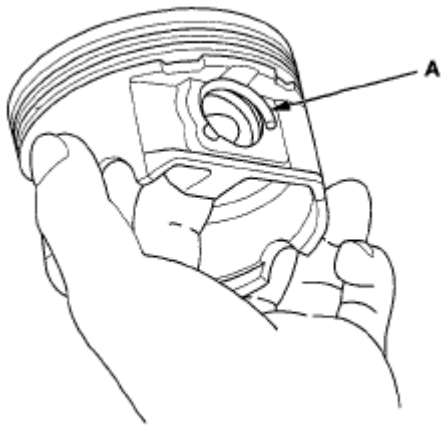


Fig. 42: Installing Piston Pin Snap Ring Only On One Side
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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).

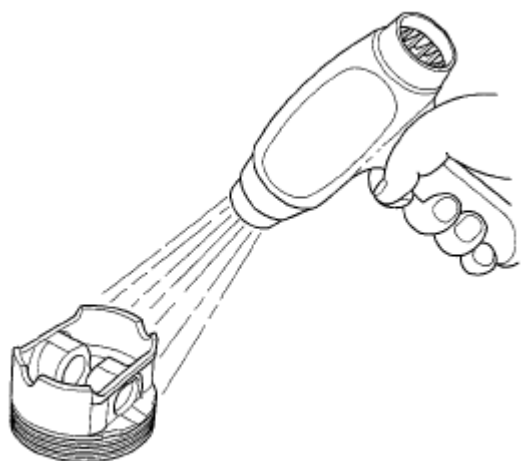


Fig. 43: Heating Piston To About 158°F (70°C)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Assemble the piston (A) and the 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.

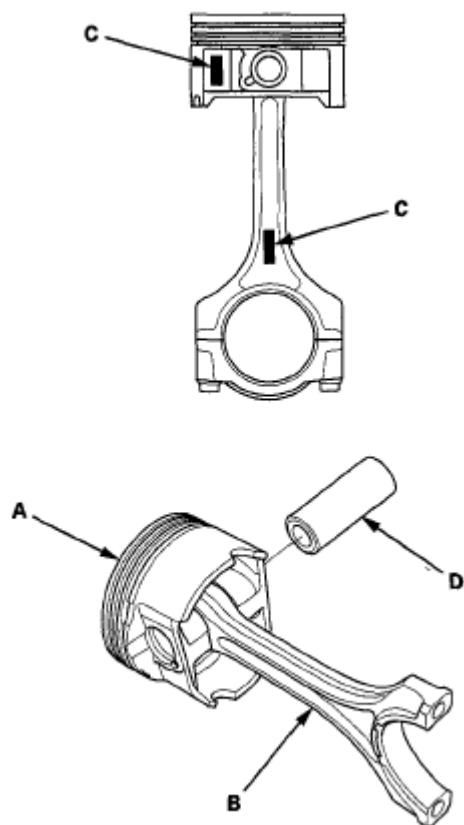


Fig. 44: Identifying Piston, Connecting Rod, Embossed Marks And Piston Pin

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).

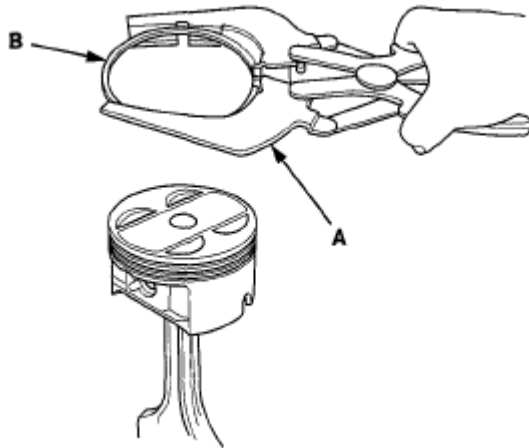


Fig. 45: Removing Old Piston Rings Using Ring Expander
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 (0.047 in) wide, and the oil ring groove is 2.8 mm (0.110 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 (0.59-0.79 in) from the bottom.

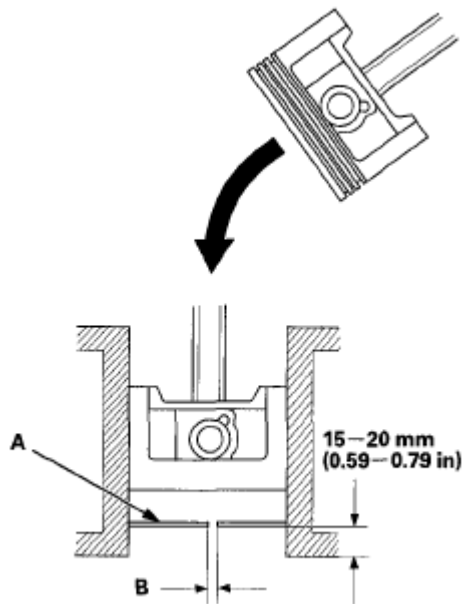


Fig. 46: Pushing Ring Into Cylinder Bore 15-20 mm (0.59-0.79 in) From Bottom Using Piston
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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). 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 (0.008-0.013 in)

Service Limit: 0.60 mm (0.023 in)

Second Ring

Standard (New): 0.40-0.55 mm (0.0157-0.0217 in)

Service Limit: 0.70 mm (0.027 in)

Oil Ring

Standard (New): 0.20-0.70 mm (0.008-0.027 in)

Service Limit: 0.80 mm (0.031in)

6. Install the rings as shown in illustration. The top ring (A) has a 1D mark and the second ring (B) has a 2X

mark. The manufacturing marks (C) must be facing upward.

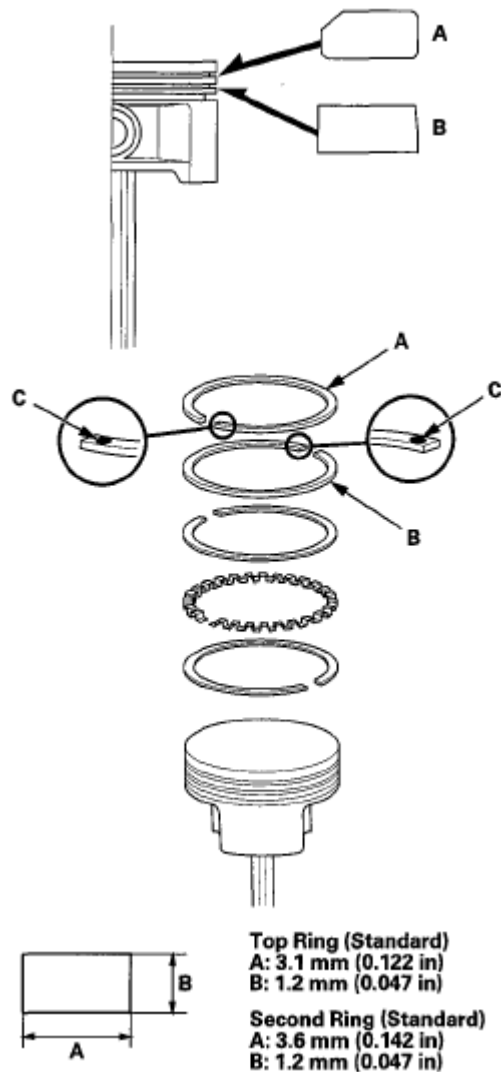


Fig. 47: Identifying Top Ring, Second Ring And Manufacturing Marks
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Top Ring Clearance

Standard (New): 0.055-0.080 mm (0.003-0.003 in)

Service Limit: 0.15 mm (0.005 in)

Second Ring Clearance

Standard (New): 0.030-0.055 mm (0.002-0.002 in)

Service Limit: 0.13 mm (0.005 in)



Fig. 48: Measuring Ring-To-Groove Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Rotate the rings in their grooves to make sure they do not bind.
9. Position the ring end gaps as shown in illustration. About 90°

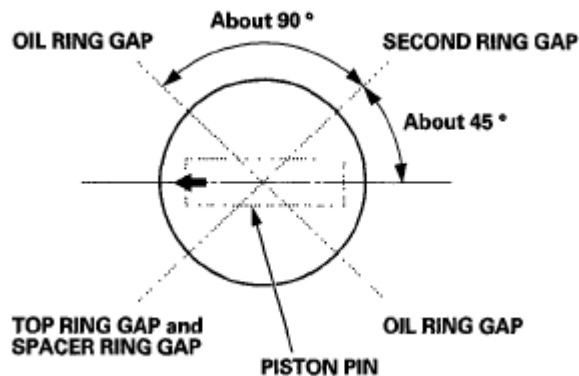


Fig. 49: Positioning Ring End Gaps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CRANKSHAFT AND PISTON INSTALLATION

Special Tools Required

- Driver Handle, 15 x 135L 07749-0010000
 - Oil Seal Driver Attachment, 106 mm 070AD-RCA0200
1. Check the main bearing clearance with plastigage (see **CRANKSHAFT MAIN BEARING REPLACEMENT**).
 2. Check the connecting rod bearing clearance with plastigage (see **CONNECTING ROD BEARING REPLACEMENT**).
 3. Install the bearing halves in the engine block and the connecting rods.

4. Apply new engine oil to the inside of the main bearings and the rod bearings.
5. Install the CKP pulse plate to the crankshaft (see **CKP PULSE PLATE REPLACEMENT**).
6. Lower the crankshaft (A) into the engine block, being careful not to damage the journals and the CKP pulse plate.

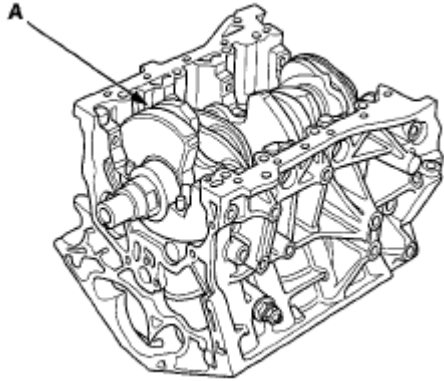


Fig. 50: Identifying Crankshaft

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

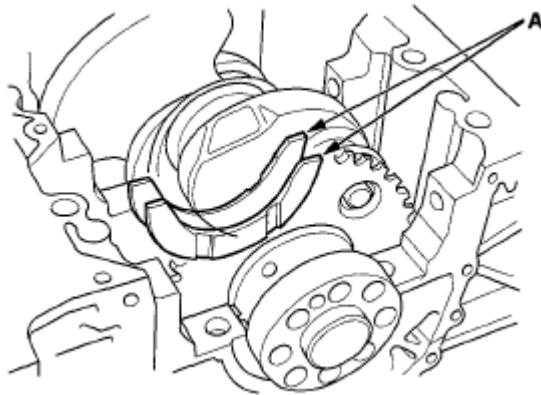


Fig. 51: Identifying Thrust Washers Of No. 3 Journal

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the bearings (A) and the main bearing caps (B) with the arrow (C) facing the timing belt side of the engine block.

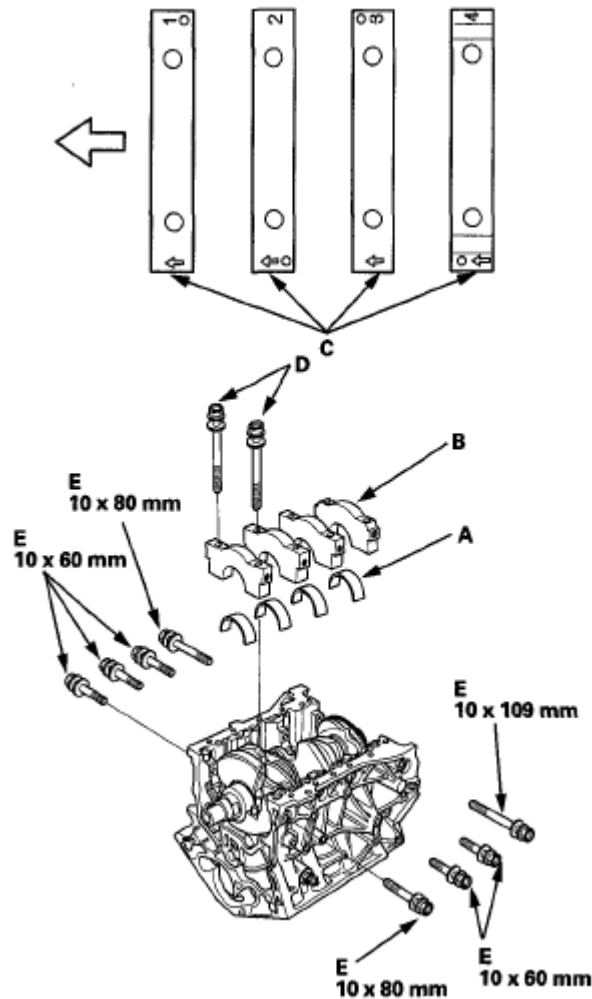


Fig. 52: Installing Bearings And Main Bearing Caps With Arrow Facing Timing Belt Side Of Engine Block

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

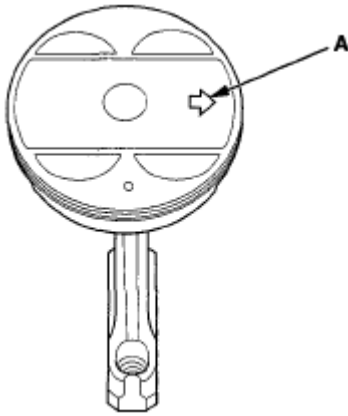


Fig. 53: Positioning Piston/Connecting Rod Assembly With Arrow Facing Timing Belt Side Of Engine Block

Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. 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.

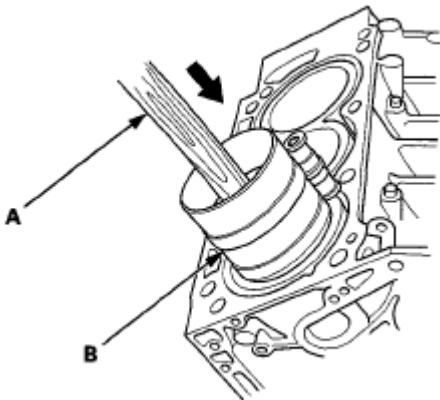


Fig. 54: Positioning Piston/Connecting Rod Assembly In Cylinder

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

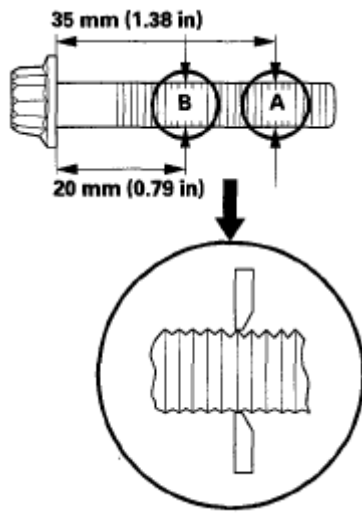


Fig. 55: Measuring Diameter Of Each Connecting Rod Bolt At Point A And Point B
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. 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)

18. If the difference in diameter is out of tolerance, replace the connecting rod bolt.
19. Install the bearing (A), then line up the mark (B) on the connecting rod (C) and the rod cap (D), then install the rod cap.

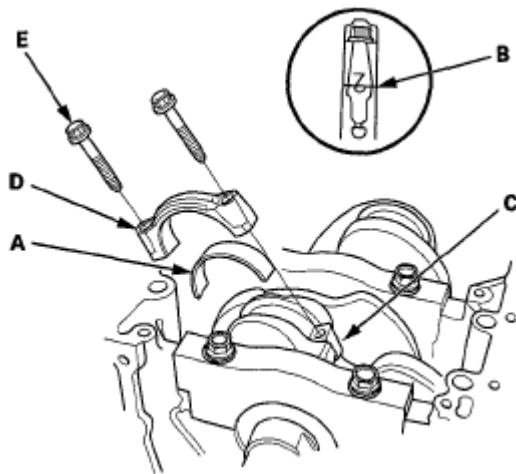


Fig. 56: Lining Up Mark On Connecting Rod And Rod Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Apply new engine oil to the bolt threads and flanges. Torque the bolts (E) to 20 N.m (2.0 kgf.m, 14 lbf.ft).
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 16 of the procedure. Do not loosen it back to the specified angle. Repeat steps 10 to 21 for the remaining cylinders.

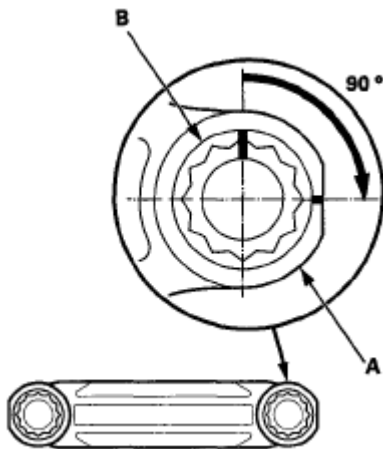


Fig. 57: Marking Connecting Rod And Bolt Head
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Tighten the bearing cap bolts and the bearing cap side bolts to the specified torque in the sequence as shown in illustration. Repeat the torque sequence again to ensure the bolts are properly torqued.

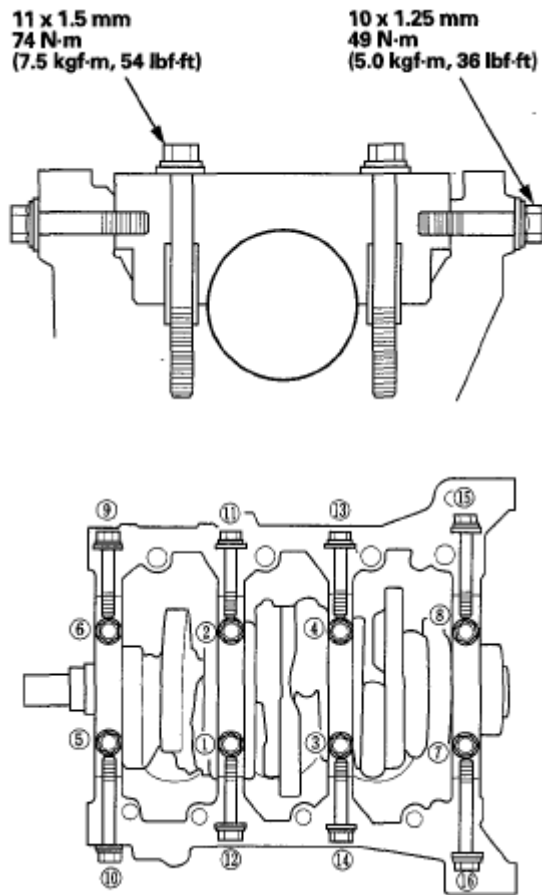


Fig. 58: Identifying Bearing Cap Bolts And Bearing Cap Side Bolts Tightening Sequence With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Remove all of the old liquid gasket from the engine block end cover mating surfaces, the bolts, and the bolt holes.
24. Clean and dry the engine block end cover mating surfaces and the crankshaft oil seal housing.
25. Apply a light coat of new engine oil to the lip of the crankshaft oil seal.
26. Using the driver handle, 15 x 135L and the oil seal driver attachment, 106 mm, drive in the new crankshaft oil seal (A) until the oil seal driver attachment bottoms on the engine block end cover.

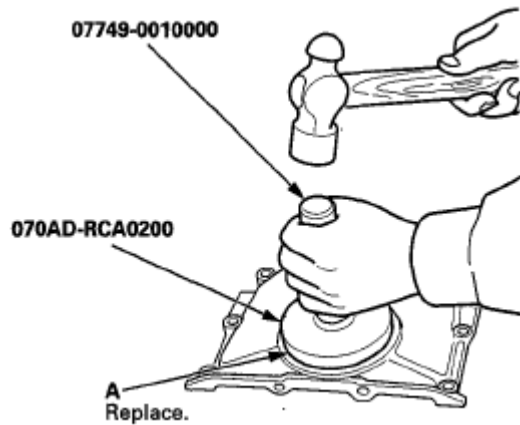


Fig. 59: Driving In Crankshaft Oil Seal Until Oil Seal Driver Attachment Bottoms On Engine Block End Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Apply liquid gasket (P/N 08717-0004, 08718-0003, 08718-0004, or 08718-0009) to the engine block mating surface of the engine block end cover and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- Apply a 2.5 mm (0.098 in) diameter bead of liquid gasket along the broken line (A).
- 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.

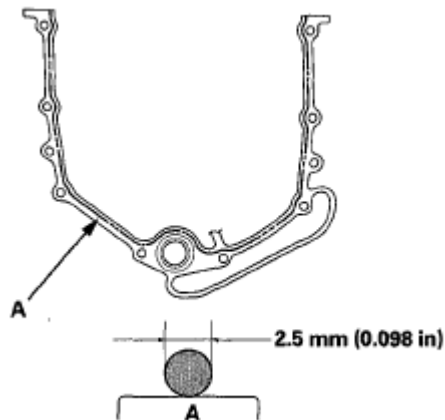


Fig. 60: Applying 2.5 mm (0.098 in) Diameter Bead Of Liquid Gasket Along Broken Line

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

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 engine block end cover.

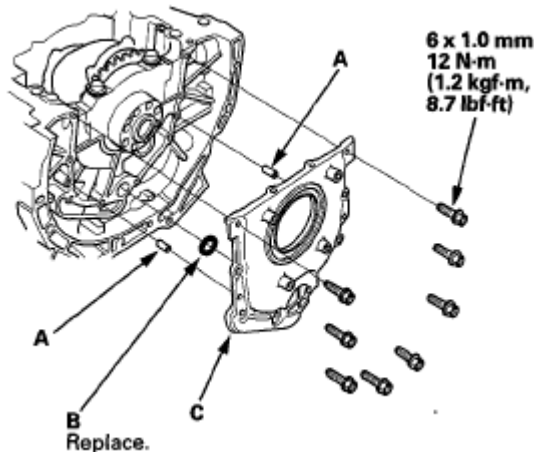


Fig. 61: Identifying Dowel Pins, O-Ring And Engine Block End Cover With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Clean the excess grease off the crankshaft, and check that the oil seal lip is not distorted.
30. Install a new crankshaft oil seal in the oil pump (see step 3 under **OIL PUMP OVERHAUL**).
31. Remove all of the old liquid gasket from the oil pump mating surfaces, the bolts, and the bolt holes.
32. Clean and dry the oil pump mating surfaces.
33. Apply liquid gasket (P/N 08717-0004, 08718-0003, 08718-0004, or 08718-0009) to the engine block mating surface of the oil pump and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- Apply a 2.5 mm (0.098 in) diameter bead of liquid gasket along the broken line (A).
- 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.

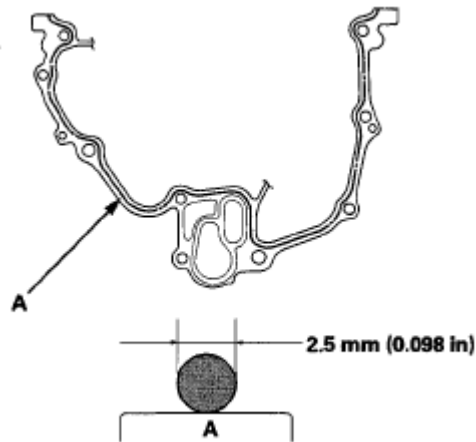


Fig. 62: Applying 2.5 mm (0.098 in) Diameter Bead Of Liquid Gasket Along Broken Line
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

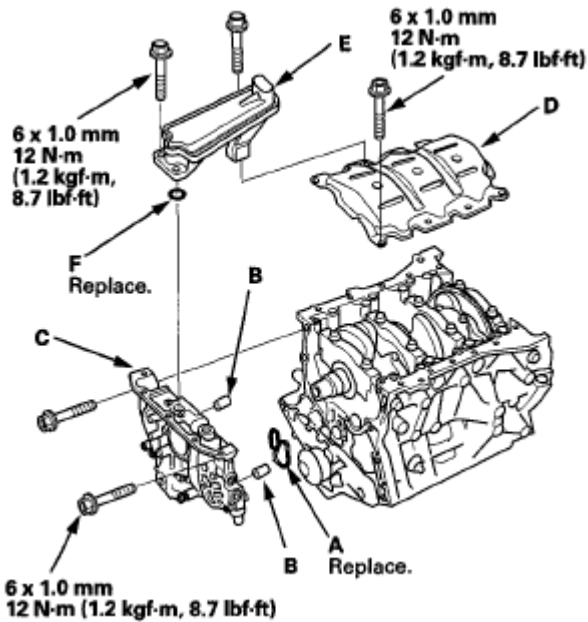


Fig. 63: Identifying Crankshaft Oil Seal And O-Ring, Dowel Pins And Oil Pump With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Install the dowel pins (B), then align the inner rotor with the crankshaft, and install the oil pump (C).

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 engine

block end cover and the oil pump.

36. Clean the excess grease off the crankshaft, and check that the oil seal lip is not distorted.
37. Install the baffle plate (D), then install the oil strainer (E) with a new O-ring (F).
38. J35Z2 engine: Install the oil filter base/oil filter assembly (A), with a new O-ring (B).

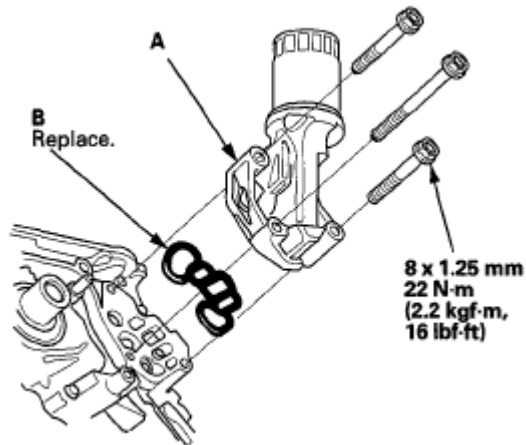


Fig. 64: Identifying Oil Filter Base/Oil Filter Assembly And O-Ring With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

39. J35Z3 engine: Install the rocker arm oil control solenoid/oil filter assembly (A), with a new rocker arm oil control solenoid filter (B).

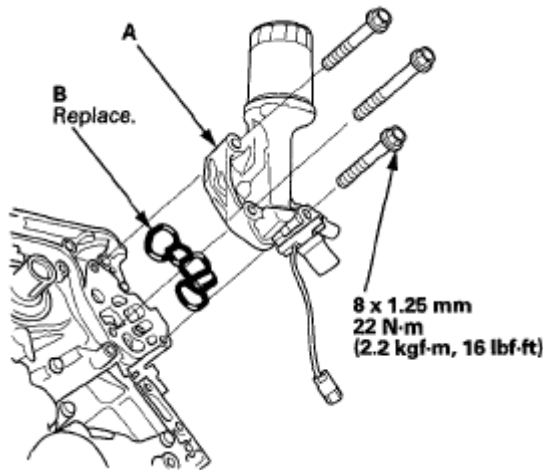


Fig. 65: Identifying Rocker Arm Oil Control Solenoid/Oil Filter Assembly And Rocker Arm Oil Control Solenoid Filter With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Install the oil pan (see **CKP PULSE PLATE REPLACEMENT**).
41. Install the timing belt drive pulley to the crankshaft:
 - J35Z2 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)

- J35Z3 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)
42. Install the cylinder heads:
 - J35Z2 engine (see **CYLINDER HEAD INSTALLATION**)
 - J35Z3 engine (see **CYLINDER HEAD INSTALLATION**)
 43. M/T model: Install the flywheel (see **CLUTCH REPLACEMENT**).
 44. A/T model: Install the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**).
 45. Install the transmission:
 - Manual transmission (see **TRANSMISSION INSTALLATION**)
 - Automatic transmission (see **TRANSMISSION INSTALLATION**)
 46. Install the engine/transmission (see **ENGINE INSTALLATION**).

NOTE: When any crankshaft main or connecting rod bearing is replaced, run the engine at idle until it reaches normal operating temperature, then continue to run it for about 15 minutes.

CKP PULSE PLATE REPLACEMENT

1. Remove the crankshaft from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Remove the CKP pulse plate (A).

NOTE: Be careful not to damage the journals and the CKP pulse plate.

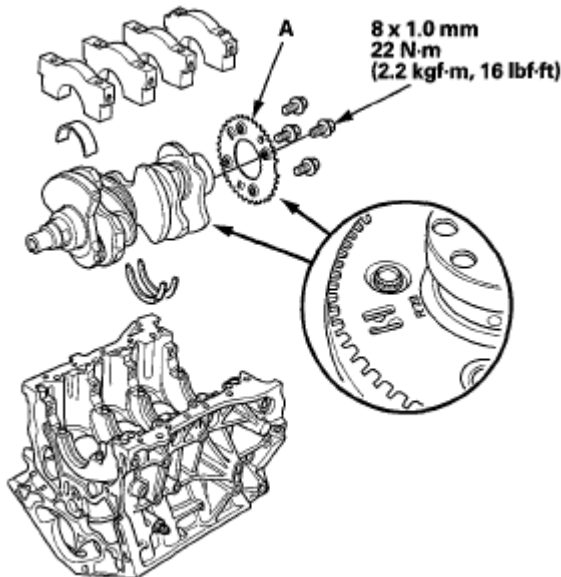


Fig. 66: Identifying CKP Pulse Plate With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the CKP pulse plate in the reverse order of removal.

NOTE: When installing the crankshaft, refer to the **CRANKSHAFT AND PISTON INSTALLATION PROCEDURE**.

OIL PAN INSTALLATION

1. Remove all of the old liquid gasket from the oil pan mating surfaces, the bolts, and the bolt holes.
2. Clean and dry the oil pan mating surfaces.
3. Apply liquid gasket (P/N 08717-0004, 08718-0003, 08718-0004, or 08718-0009) to the oil pan mating surface of the engine block and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

- NOTE:**
- Apply a 2.5 mm (0.098 in) diameter bead of liquid gasket along the broken line (A).
 - 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.

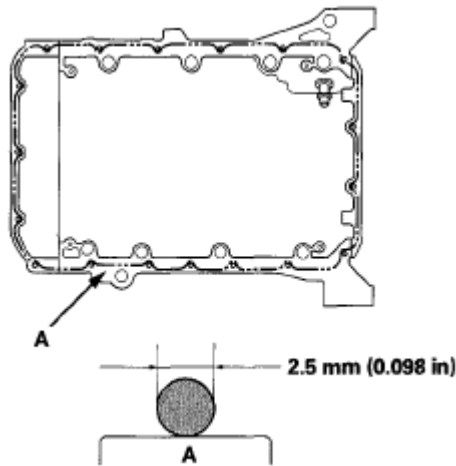


Fig. 67: Applying 2.5 mm (0.098 in) Diameter Bead Of Liquid Gasket Along Broken Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the oil pan on the engine block.
5. Tighten the bolts in three steps. In the final step, torque the bolts, in sequence, to 12 N.m (1.2 kgf.m, 8.7 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.

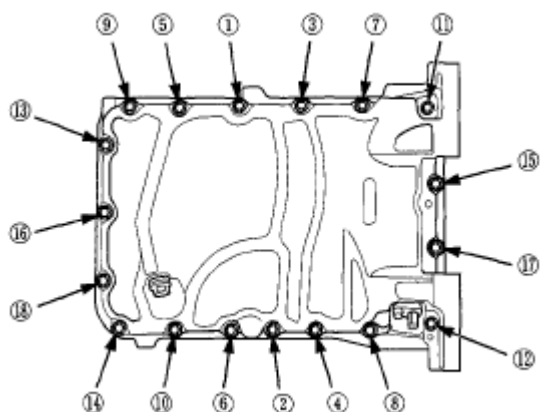


Fig. 68: Identifying Oil Pan Bolts Tightening Sequence
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Tighten the four bolts (A) securing the transmission, then install the torque converter case cover (B).

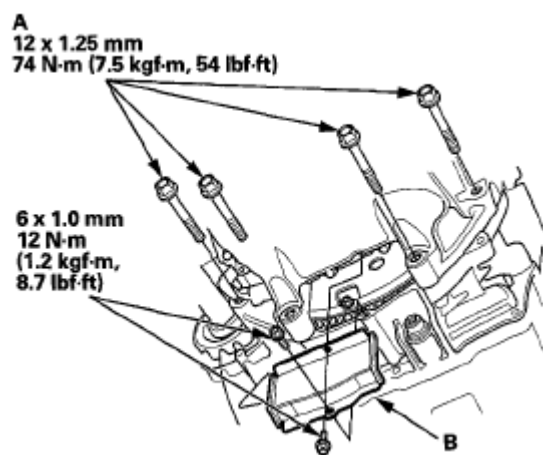


Fig. 69: Identifying Torque Converter Case Cover With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Connect the CKP sensor connector (A), then install the CKP sensor cover (B) and the bolt (C).

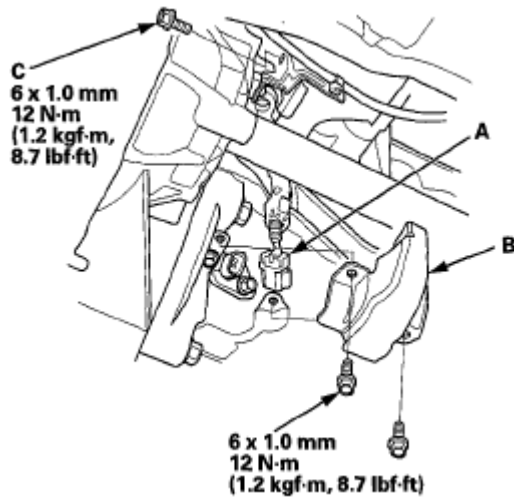


Fig. 70: Identifying CKP Sensor Connector, CKP Sensor Cover And Bolt With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the rear warm up TWC bracket.

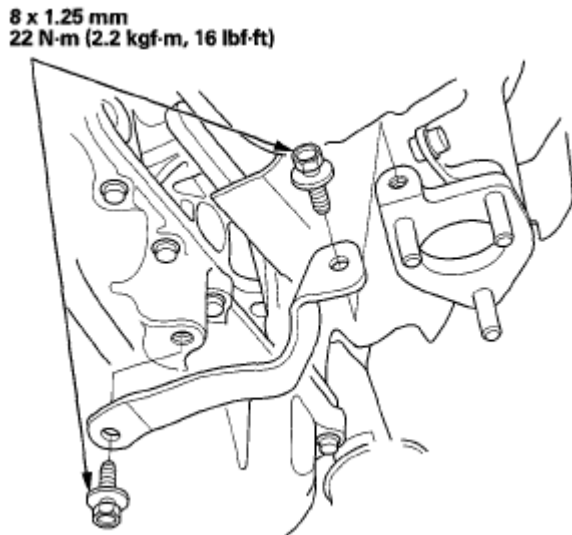


Fig. 71: Identifying Rear Warm Up TWC Bracket With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If the engine is still in the vehicle, do the following steps.
10. Install exhaust pipe A using new gaskets and new self-locking nuts (see step 48 under **ENGINE INSTALLATION**).
11. Install the splash shield (see step 49 under **ENGINE INSTALLATION**).
12. Refill the engine with engine oil (see step 4 under **ENGINE OIL LEVEL CHECK**).

PULLEY END CRANKSHAFT OIL SEAL INSTALLATION - IN CAR

Special Tools Required

Oil Seal Driver, 64 mm 07OAD-RCAA100

1. Remove the timing belt drive pulley:
 - J35Z2 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)
 - J35Z3 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)
2. Remove the pulley end crankshaft oil seal.
3. Clean and dry the crankshaft oil seal housing.
4. Apply a light coat of new engine oil to the lip of the crankshaft oil seal.
5. Using the oil seal driver, 64 mm, drive in the new crankshaft oil seal (A) until the oil seal driver bottoms on the oil pump.

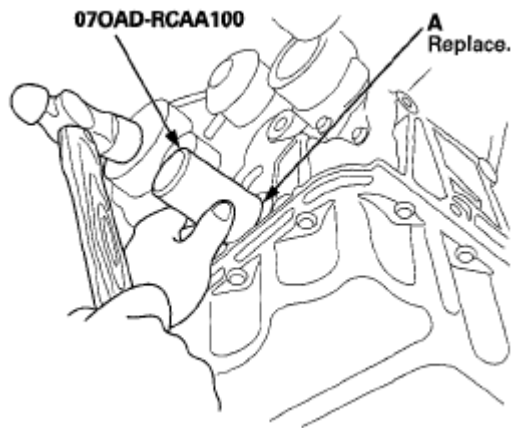


Fig. 72: Driving In Crankshaft Oil Seal Until Oil Seal Driver Bottoms On Oil Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Clean the excess grease off the crankshaft, and check that the oil seal lip is not distorted.
7. Install the timing belt drive pulley:
 - J35Z2 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)
 - J35Z3 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)

TRANSMISSION END CRANKSHAFT OIL SEAL INSTALLATION - IN CAR

Special Tools Required

- Driver Handle, 15 x 135L 07749-0010000
 - Oil Seal Driver Attachment, 106 mm 070AD-RCA0200
1. M/T model: Remove the transmission (see **TRANSMISSION REMOVAL**), and the flywheel (see **CLUTCH REPLACEMENT**).
 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 new engine oil to the lip of the crankshaft oil seal.
6. Using the driver handle, 15 x 135L and the oil seal driver attachment, 106 mm, drive in the new crankshaft oil seal (A) until the oil seal driver attachment bottoms on the engine block end cover. Align the hole in the oil seal driver attachment with the pin on the crankshaft.

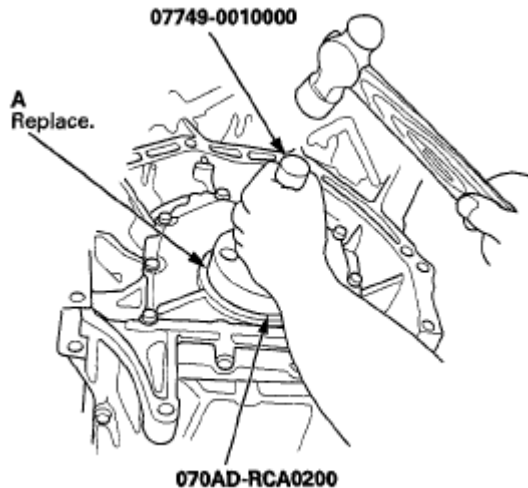


Fig. 73: Driving In Crankshaft Oil Seal Until Oil Seal Driver Attachment Bottoms On Engine Block End Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Clean the excess grease off the crankshaft, and check that the oil seal lip is not distorted.
8. M/T model: Install the flywheel (see **CLUTCH REPLACEMENT**), 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**).

SEALING BOLT INSTALLATION

NOTE: When installing the sealing bolts (A), always use new washers (B).

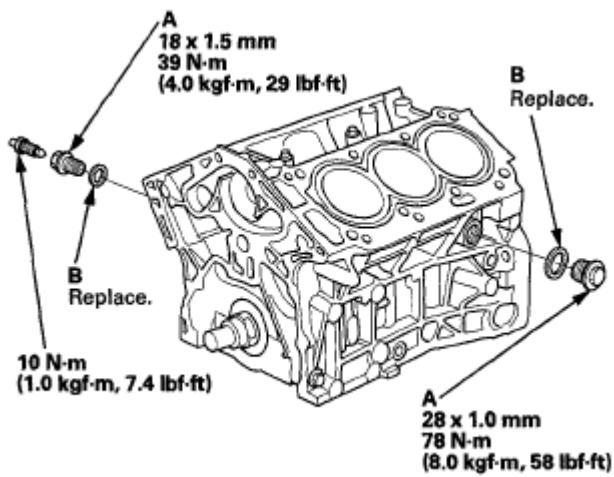


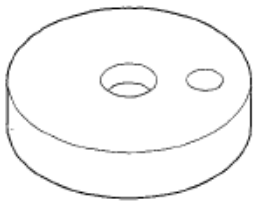
Fig. 74: Identifying Sealing Bolts And Washers With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2008-12 ENGINE

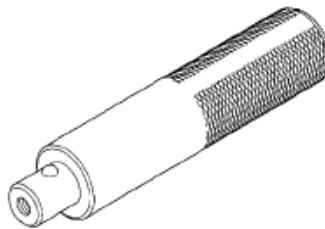
Engine Block - Accord V6

SPECIAL TOOLS

Ref.No.	Tool Number	Description	Qty
①	070AD-RCA0200	Oil Seal Driver Attachment, 106 mm	1
②	07749-0010000	Driver Handle, 15 x 135L	1
③	070AD-RCAA100	Oil Seal Driver, 64 mm	1



①



②



③

Fig. 1: Special Tools Chart

Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

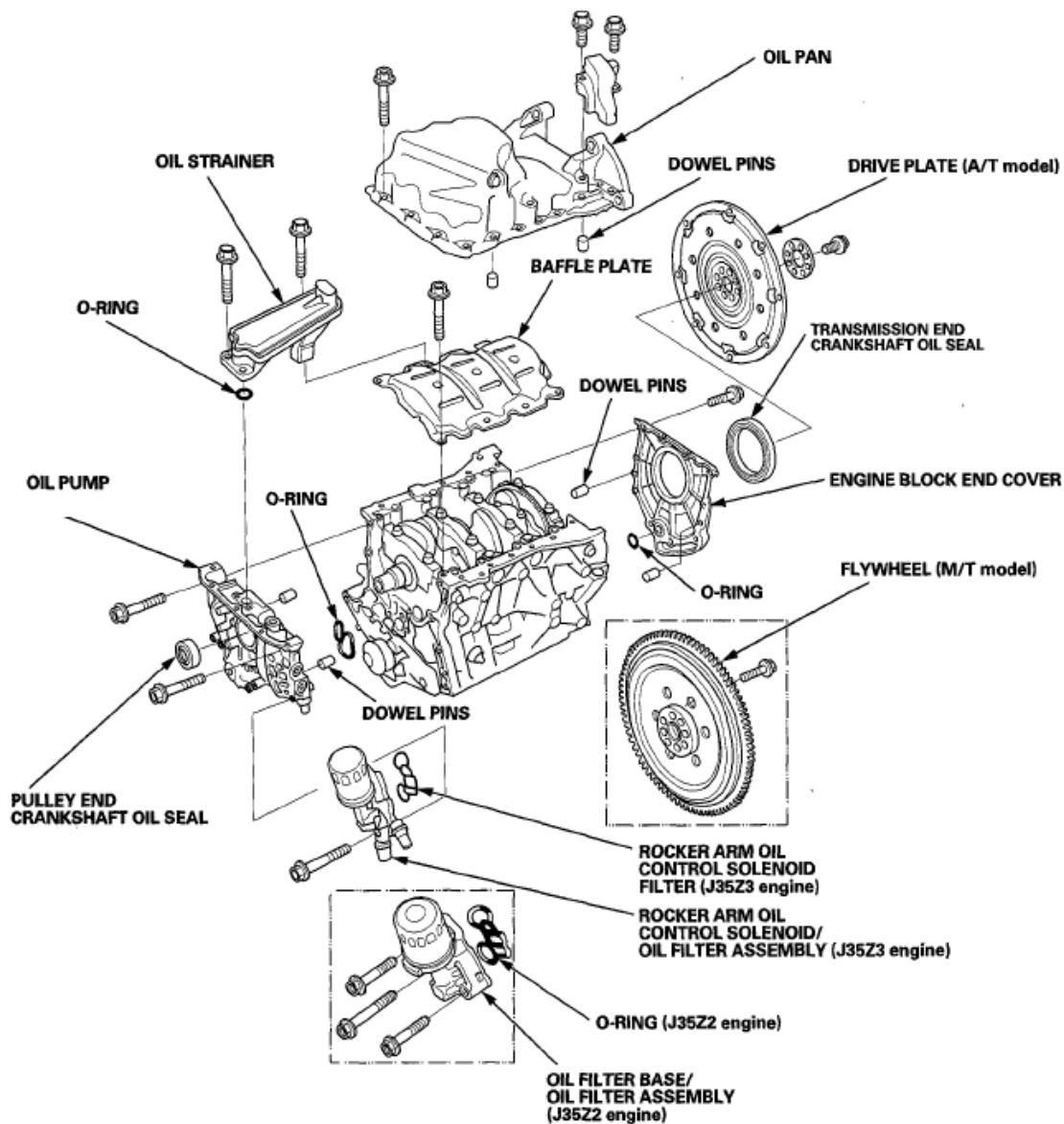


Fig. 2: Identifying Engine Block Component Location (1 Of 3)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

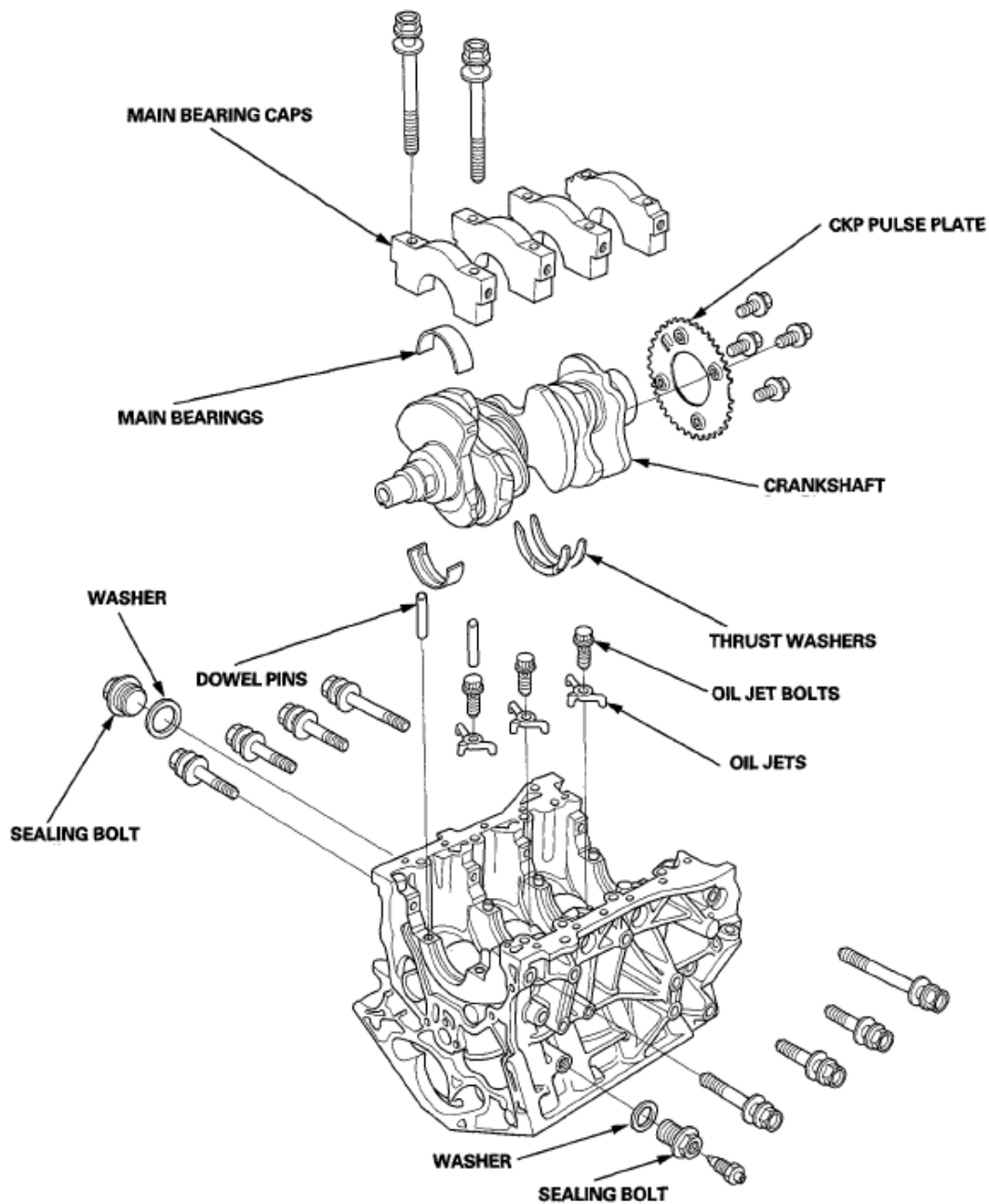


Fig. 3: Identifying Engine Block Component Location (2 Of 3)
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

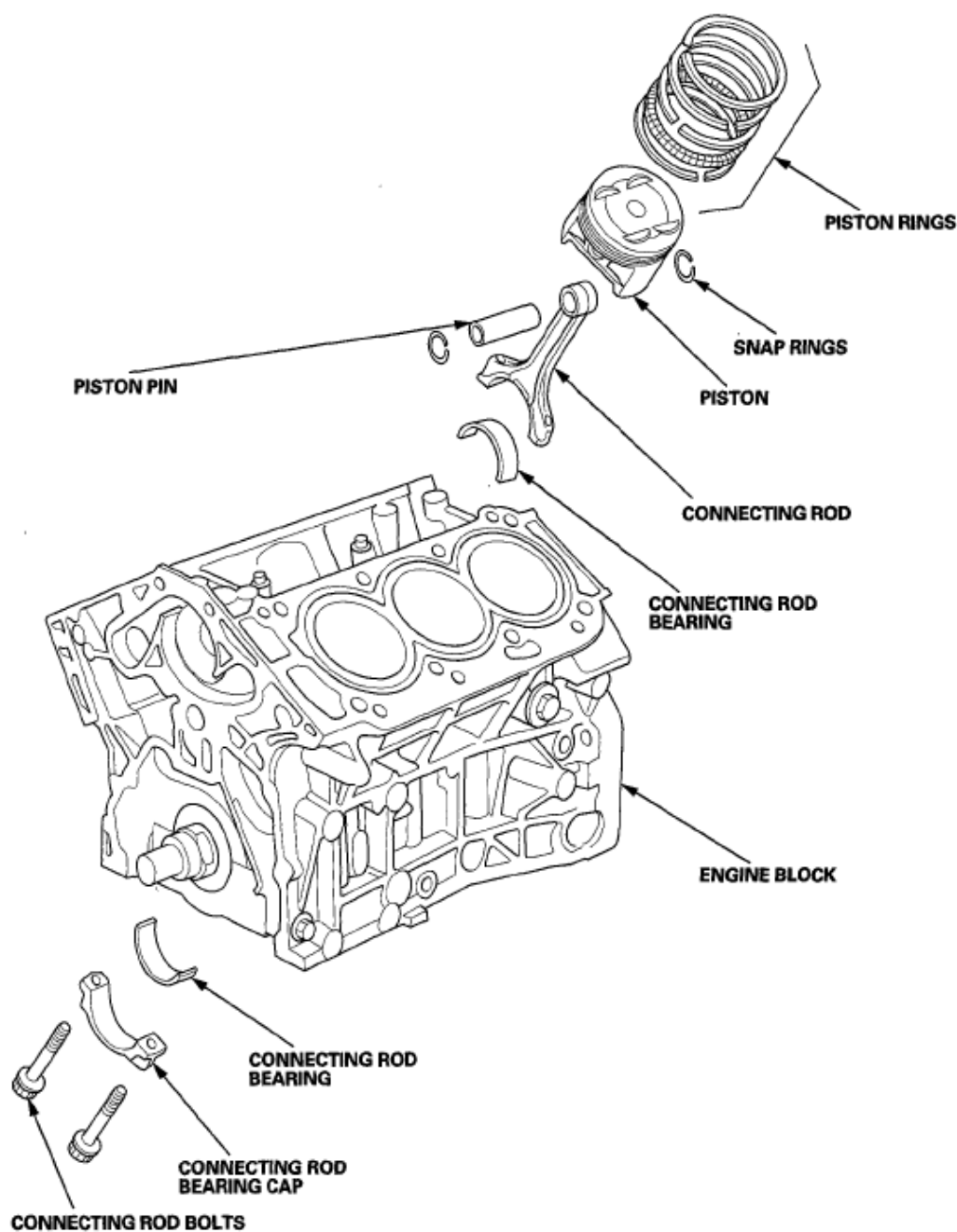


Fig. 4: Identifying Engine Block Component Location (3 Of 3)

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).
3. Measure the connecting rod end play with a feeler gauge (A) between the connecting rod (B) and the crankshaft (C).

Connecting Rod End Play

Standard (New): 0.15-0.35 mm (0.0059-0.0138 in)

Service Limit: 0.45 mm (0.0177 in)

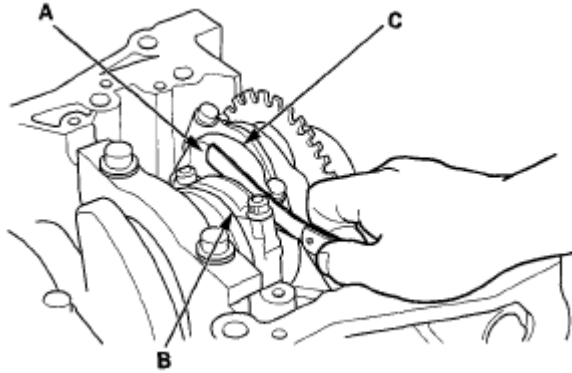


Fig. 5: Measuring Connecting Rod End Play With Feeler Gauge Between Connecting Rod And Crankshaft

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Crankshaft End Play

Standard (New): 0.10-0.35 mm (0.0039-0.0138 in)

Service Limit: 0.45 mm (0.0177 in)

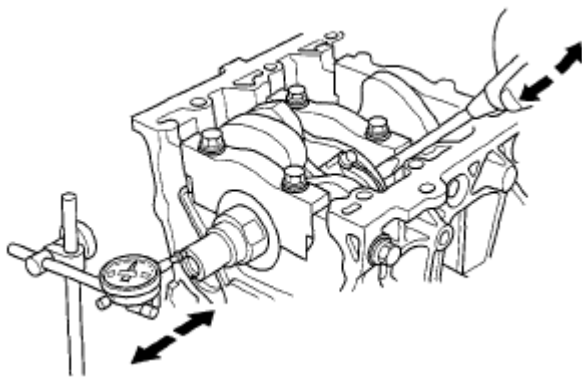


Fig. 6: Pushing Crankshaft Firmly Away From Dial Indicator By Prying And Zero Dial Against

End Of Crankshaft**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

CRANKSHAFT MAIN BEARING REPLACEMENT**MAIN BEARING CLEARANCE INSPECTION**

1. Remove the main bearing caps and the bearing halves (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Clean each main journal and the 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 the 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 the bearing caps, then torque the bearing cap bolts to 74 N.m (7.5 kgf.m, 54 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 23).

NOTE:

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

5. Remove the bearing caps and the bearing halves, and measure the widest part of the plastigage.

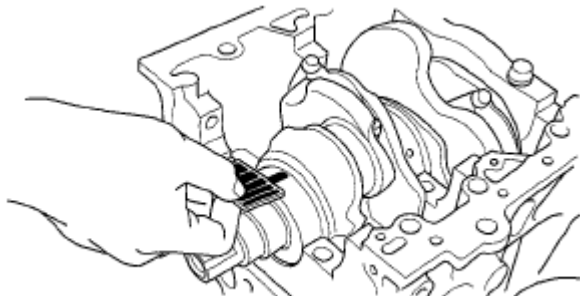
Main Bearing-to-Journal Oil Clearance**Standard (New): 0.019-0.045 mm (0.00075-0.00177 in)****Service Limit: 0.050 mm (0.00197 in)**

Fig. 7: Measuring Widest Part Of Plastigage

Courtesy of AMERICAN HONDA MOTOR CO., INC.

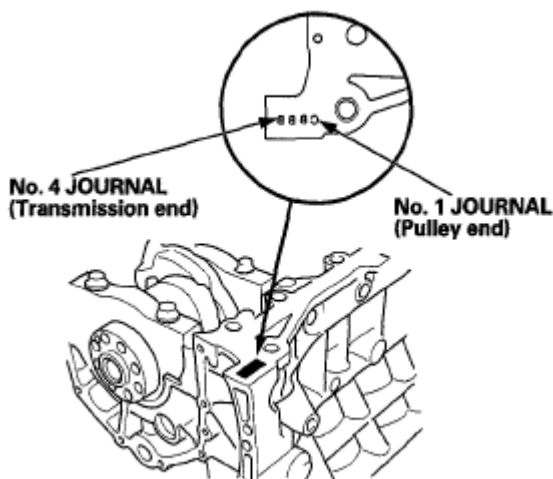
6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows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

MAIN BEARING SELECTION

Block Bore Code Locations

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

Use them, and the numbers or bars 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 Block Bore Code Locations**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Bearing Identification
Color code is on the edge of the bearing

1 or I	2 or II	3 or III	4 or IIII	5 or IIIII	6 or IIIIII
--------	---------	----------	-----------	------------	-------------

Smaller main journal Smaller bearing (Thicker)

Larger Block bore			
A or I	B or II	C or III	D or IIII
Smaller bearing (Thicker)			
Red/Pink	Pink	Pink/Yellow	Yellow
Pink	Pink/Yellow	Yellow	Yellow/Green
Pink/Yellow	Yellow	Yellow/Green	Green
Yellow	Yellow/Green	Green	Green/Brown
Yellow/Green	Green	Green/Brown	Brown
Green	Green/Brown	Brown	Brown/Black

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Fig. 9: Block Bore Codes Chart

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Main Journal Code Locations (Numbers or Bars)

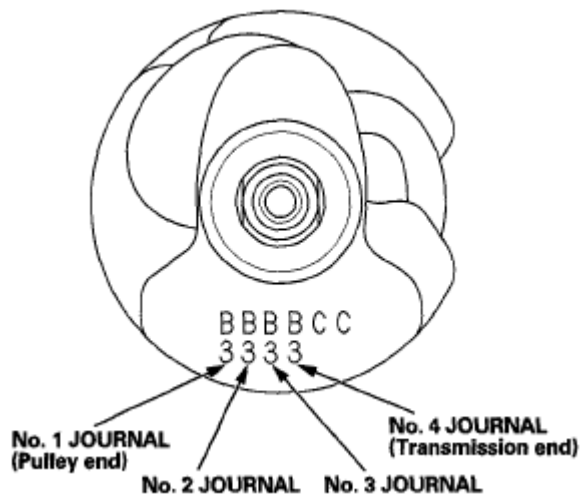


Fig. 10: Identifying Main Journal Code Locations (Numbers Or Bars)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTING ROD BEARING REPLACEMENT

CONNECTING ROD BEARING CLEARANCE INSPECTION

1. Remove the connecting rod cap and the bearing half (see CRANKSHAFT AND PISTON)

REMOVAL).

2. Clean the connecting rod journal and the bearing half with a clean shop towel.
3. Place one strip of plastigage across the rod journal.
4. Reinstall the bearing half and the rod cap, then torque the connecting rod bolt to 20 N.m (2.0 kgf.m, 14 lbf.ft) + 90°.

NOTE:

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

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

Connecting Rod Bearing-to-Journal Oil**Clearance**

Standard (New): 0.020-0.044 mm (0.00079-0.00173 in)

Service Limit: 0.050 mm (0.00197 in)

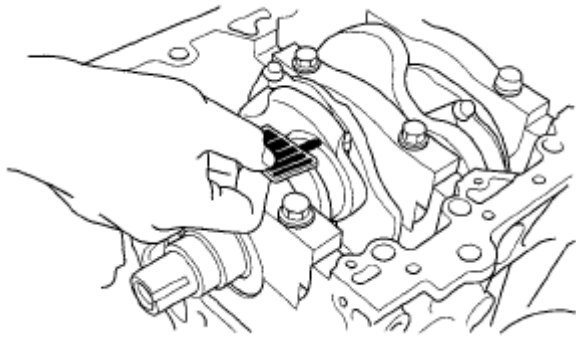


Fig. 11: Measuring Widest Part Of Plastigage

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the plastigage measures too wide or too narrow, remove the upper half of the bearing. 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 the clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over (see **CRANKSHAFT AND PISTON REMOVAL**).

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

Big End Bore Size: 58.0 mm (2.283 in)

Inspect the connecting rod for cracks and heat damage.

Big End 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.

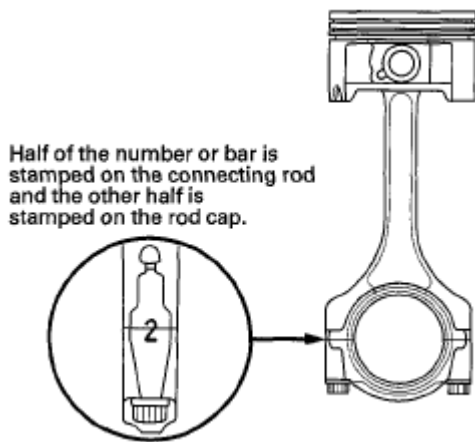


Fig. 12: Identifying Big End Bore Code Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Bearing Identification
Color code is on the edge of the bearing

→ Larger big end bore

1 or I	2 or II	3 or III	4 or IIII
--------	---------	----------	-----------

→ Smaller bearing (Thicker)

A or I	Pink	Pink/ Yellow	Yellow	Yellow/ Green
B or II	Pink/ Yellow	Yellow	Yellow/ Green	Green
C or III	Yellow	Yellow/ Green	Green	Green/ Brown
D or IIII	Yellow/ Green	Green	Green/ Brown	Brown
E or IIIII	Green	Green/ Brown	Brown	Brown/ Black
F or IIIII	Green/ Brown	Brown	Brown/ Black	Black

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Fig. 13: Big End Bore Codes Chart

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Connecting Rod Journal Code Locations (Letters or Bars)

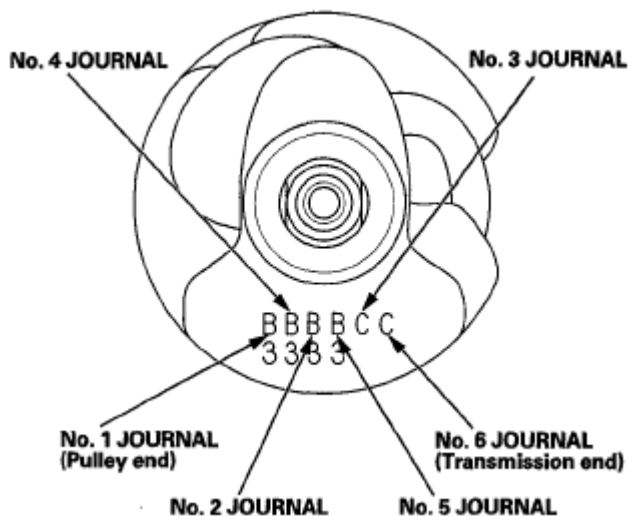


Fig. 14: Identifying Connecting Rod Journal Code Locations (Letters Or Bars)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL PAN REMOVAL

1. If the engine is already out of the vehicle, go to step 6.
2. Raise the vehicle on the lift.

3. Drain the engine oil (see **ENGINE OIL LEVEL CHECK**).
4. Remove the splash shield (see step 28 under **ENGINE REMOVAL**).
5. Remove exhaust pipe A (see step 32 under **ENGINE REMOVAL**).
6. Remove the rear warm up TWC bracket.

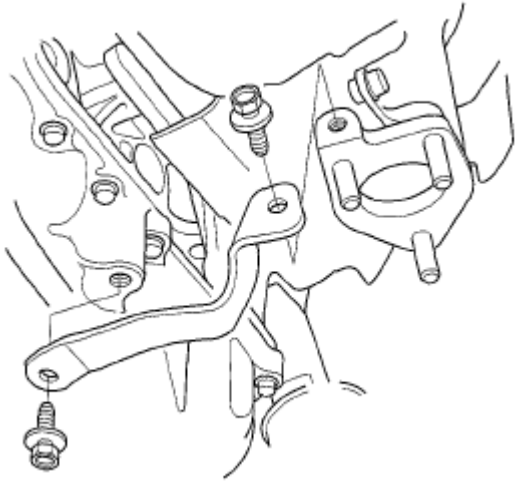


Fig. 15: Identifying Rear Warm Up TWC Bracket
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the CKP sensor cover (A) and the bolt (B), then disconnect the CKP sensor connector (C).

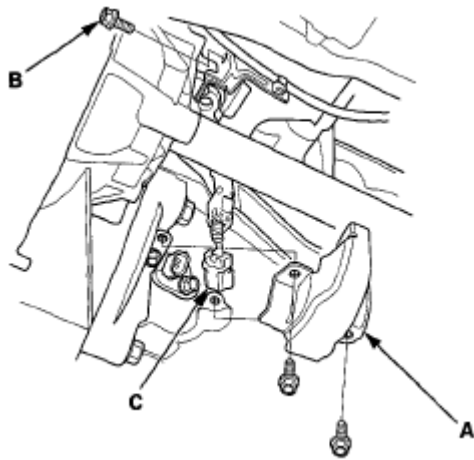


Fig. 16: Identifying CKP Sensor Cover, Bolt And CKP Sensor Connector
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the torque converter case cover (A) and the four bolts (B) securing the transmission.

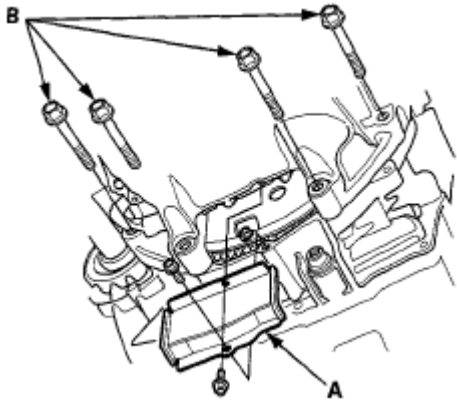


Fig. 17: Identifying Torque Converter Case Cover And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the bolts securing the oil pan.
10. Using a flat blade screwdriver, separate the oil pan from the engine block in the places shown in illustration.

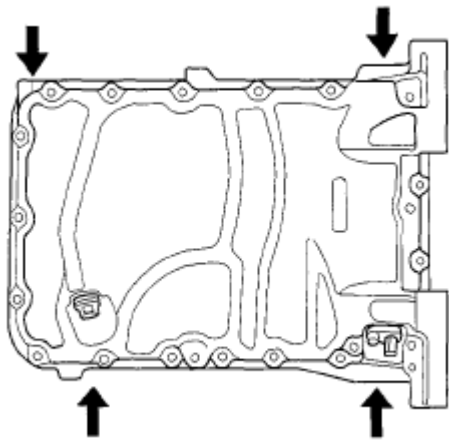


Fig. 18: Identifying Oil Pan Separating Points
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. 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 REPLACEMENT)
4. A/T model: Remove the drive plate (see DRIVE PLATE REMOVAL AND INSTALLATION).

5. Remove the cylinder heads:
 - J35Z2 engine (see **CYLINDER HEAD REMOVAL**)
 - J35Z3 engine (see **CYLINDER HEAD REMOVAL**)
6. Remove the timing belt drive pulley from the crankshaft:
 - J35Z2 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)
 - J35Z3 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)
7. Remove the oil pan (see **OIL PAN REMOVAL**).
8. Remove the engine block end cover.

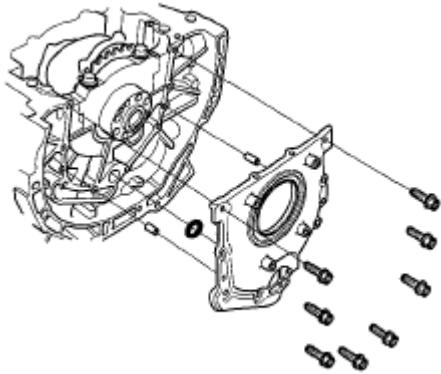


Fig. 19: Identifying Engine Block End Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. J35Z2 engine: Remove the oil filter base/oil filter assembly.

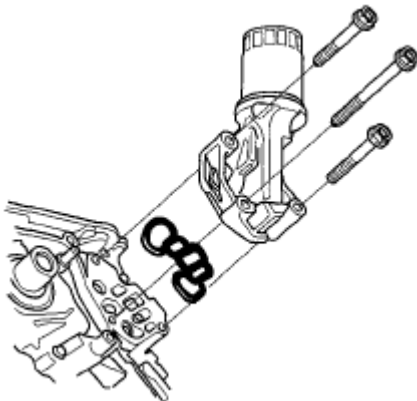


Fig. 20: Identifying Oil Filter Base/Oil Filter Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. J35Z3 engine: Remove the rocker arm oil control solenoid/oil filter assembly.

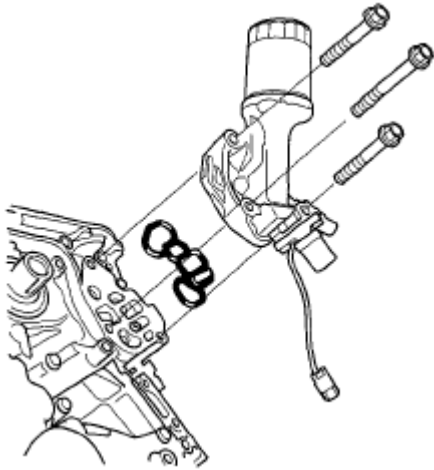


Fig. 21: Identifying Rocker Arm Oil Control Solenoid/Oil Filter Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

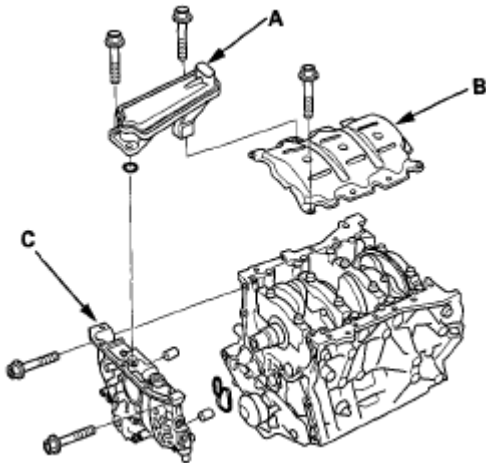


Fig. 22: Identifying Oil Strainer, Baffle Plate And Oil Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 is pushed out.

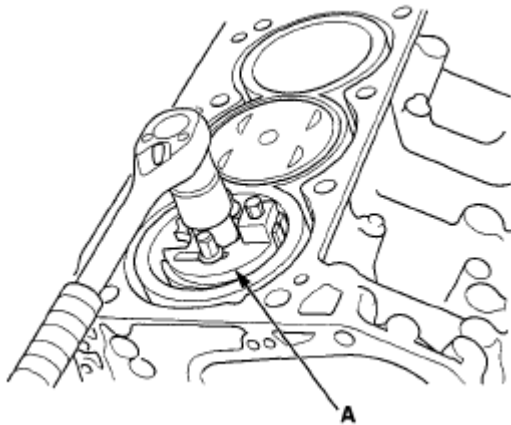


Fig. 23: Removing Metal Or Hard Carbon Around Top Of Any Cylinder With Ridge Reamer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the connecting rod caps after setting the connecting rod journal 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 oil jets, the connecting rod journal, or the cylinder with the connecting rod.

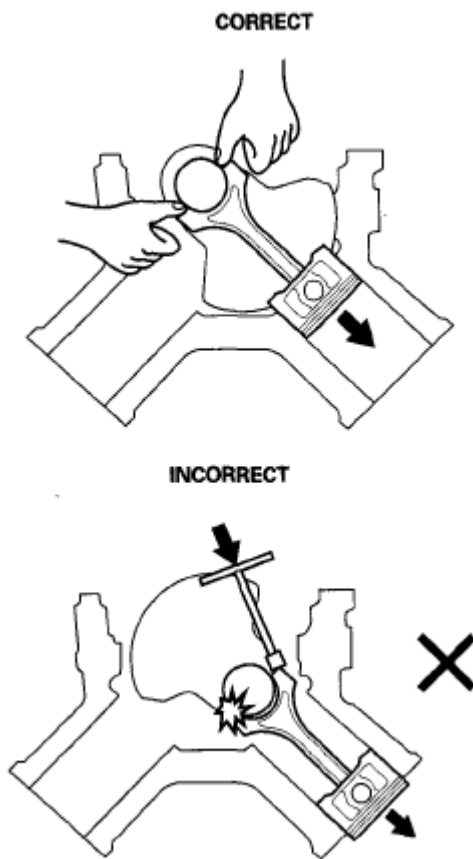


Fig. 24: Removing Piston/Connecting Rod Assembly By Pushing On Connecting Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the bearing from the rod 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 rod 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 the bearing cap side bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

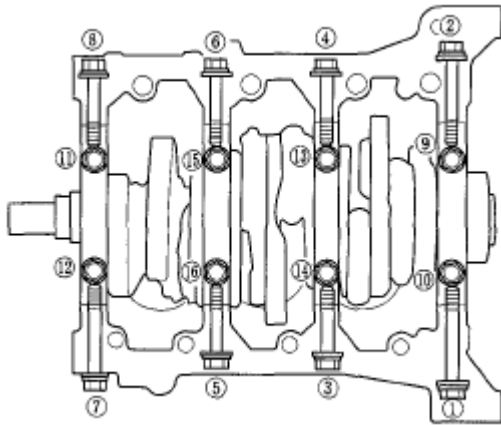


Fig. 25: Identifying Bearing Cap Bolts And Bearing Cap Side Bolts Loosening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

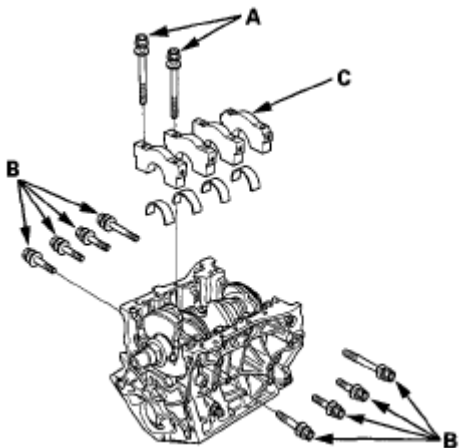


Fig. 26: Identifying Bearing Cap Bolts, Bearing Cap Side Bolts And Main Bearing Caps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Lift the crankshaft (A) out of the engine block, being careful not to damage the journals and the CKP pulse plate (B).

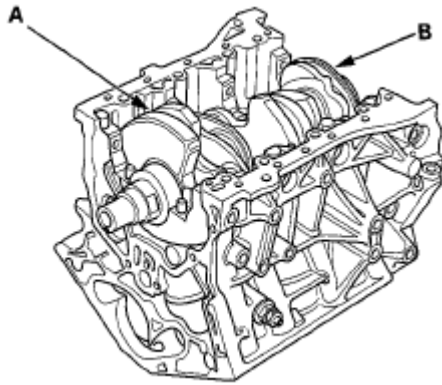


Fig. 27: Identifying Crankshaft And CKP Pulse Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Remove the CKP pulse plate from the crankshaft (see **CKP PULSE PLATE REPLACEMENT**).
22. Reinstall the main bearing 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. Remove the CKP pulse plate from the crankshaft (see **CKP PULSE PLATE REPLACEMENT**).
3. Clean the crankshaft oil passages with pipe cleaners or a suitable brush.
4. Check the keyway slot and the threaded holes for damage.
5. Measure the out-of-round at the middle of each rod and main journal in two places. The difference between measurements on each journal must not be more than the service limit.

Journal Out-of-Round

Standard (New): 0.005 mm (0.00020 in) max.

Service Limit: 0.010 mm (0.00039 in)

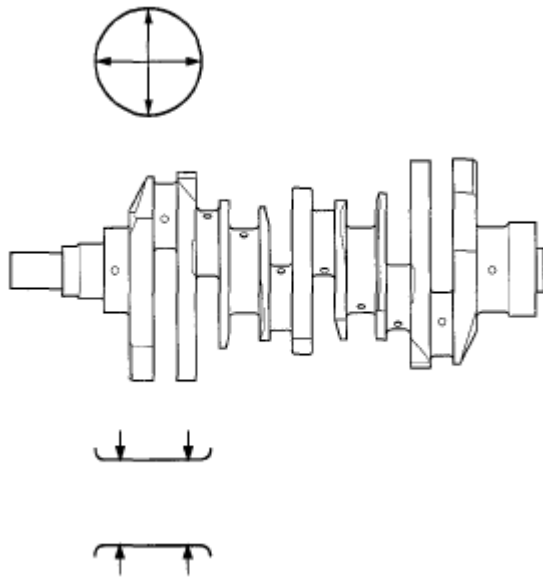


Fig. 28: Measuring Out-Of-Round At Middle Of Each Rod And Main Journal In Two Places
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Measure the 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 (0.00020 in) max.

Service Limit: 0.010 mm (0.00039 in)

Straightness

7. Place the V-blocks on a flat surface.
8. Check the total runout with the crankshaft supported on V-blocks.
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 (0.00098 in) max.

Service Limit: 0.030 mm (0.00118 in)

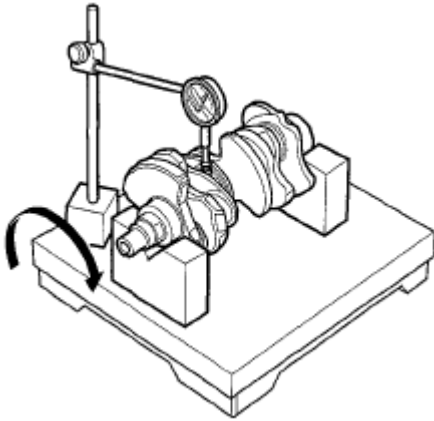


Fig. 29: Measuring Runout On Main Journals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 the piston skirt diameter at a point 16 mm (0.63 in) from the bottom of the skirt.

Piston Skirt Diameter

Standard (New): 88.975-88.985 mm (3.50295-3.50334 in)

Service Limit: 88.965 mm (3.50255 in)

Oversize Piston Skirt Diameter

0.25: 89.225-89.235 mm (3.51279-3.51318 in)

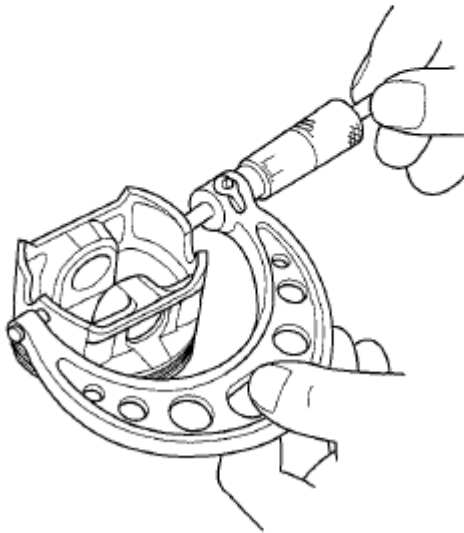
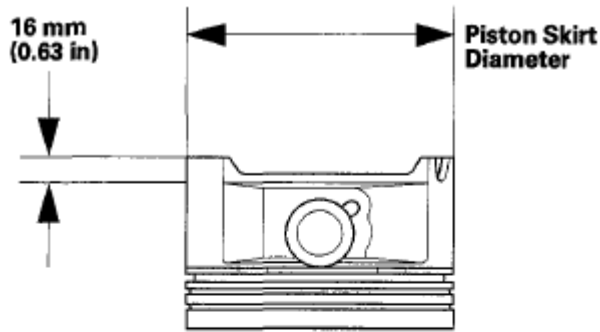


Fig. 30: Measuring Piston Skirt Diameter At Point 16 mm (0.63 in) From Bottom Of Skirt
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the wear and taper in direction X and Y at three levels in each cylinder as shown in illustration. 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 (3.50393-3.50452 in)

Service Limit: 89.065 mm (3.50649 in)

Oversize

0.25: 89.250-89.265 mm (3.51377-3.51436 in)

Reboring Limit: 0.25 mm (0.0098 in)

Bore Taper

Limit: (Difference between first and third measurement) 0.05 mm (0.0020 in)

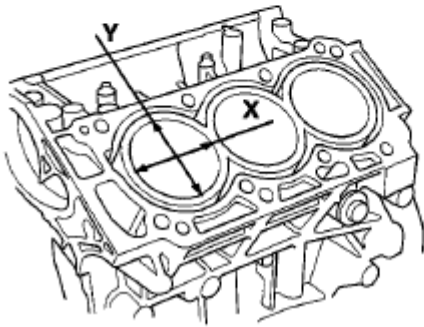
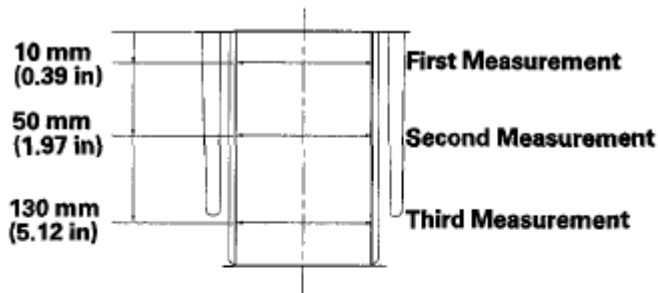


Fig. 31: Measuring Wear And Taper In Direction X And Y At Three Levels In Each Cylinder
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 in illustration.

Engine Block Warpage

Standard (New): 0.07 mm (0.002 in) max.

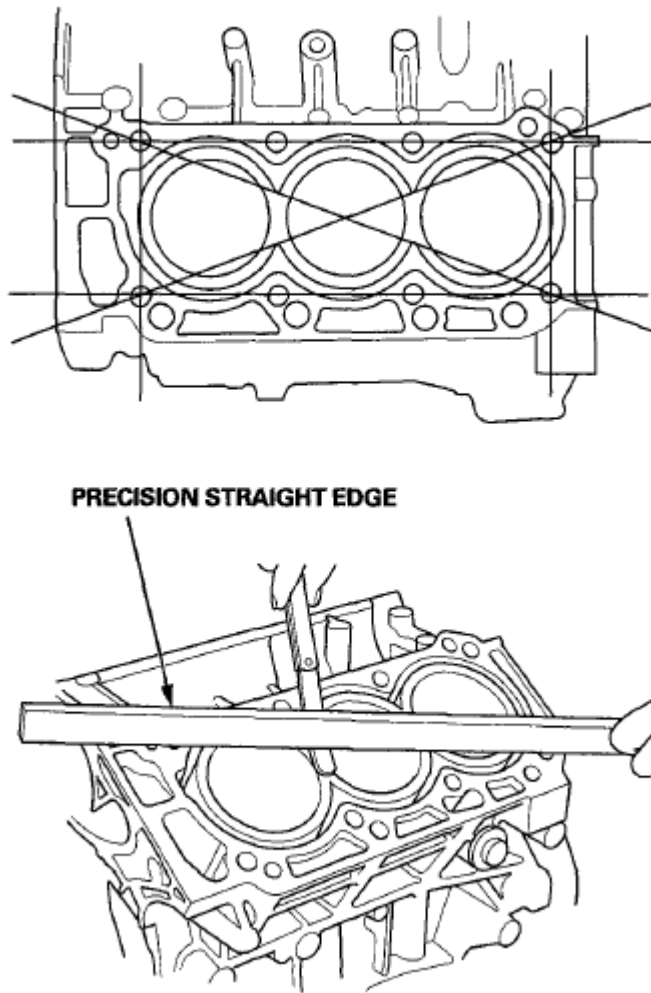


Fig. 32: Checking Top Of Engine Block For Warpage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Piston-to-Cylinder Bore Clearance

Standard (New): 0.015-0.040 mm (0.00059-0.00157 in)

Service Limit: 0.08 mm (0.0031 in)

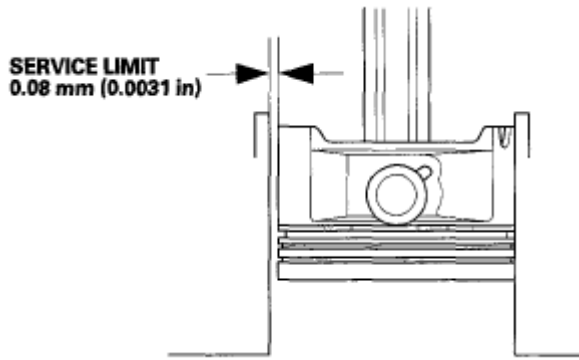


Fig. 33: Inspecting Piston And Cylinder Bore For Excessive Wear
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER BORE HONING

1. Measure the cylinder bores (see step 4). 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. Remove the oil jets (see **OIL JET REPLACEMENT**).
3. 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.

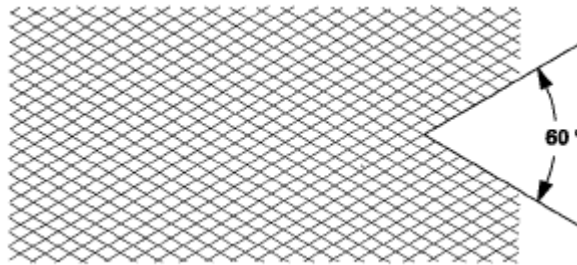


Fig. 34: Identifying Hone 60 Degree Crosshatch Pattern
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. 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.

NOTE: Never use solvent, it will only redistribute the grit on the cylinder walls.

5. 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.
6. Install the oil jets (see **OIL JET REPLACEMENT**).

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.

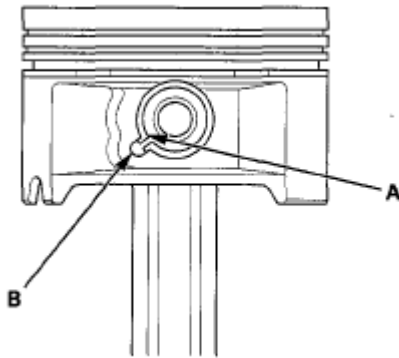


Fig. 35: Identifying Piston Pin Snap Rings And Piston Pin Bores
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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.

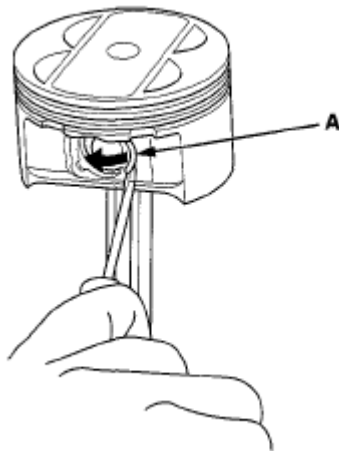


Fig. 36: Removing Snap Rings From Both Sides Of Each Piston
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

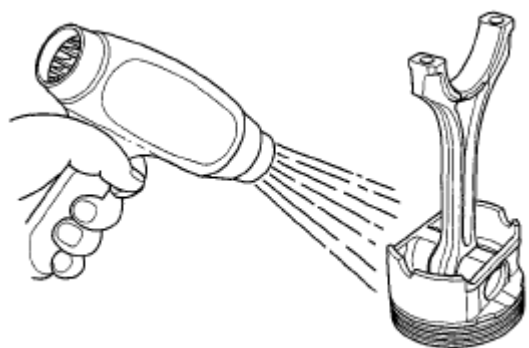


Fig. 37: Heating Piston And Connecting Rod Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSPECTION

NOTE: Inspect the piston, the piston pin, and the 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 (0.86464-0.86476 in)

Service Limit: 21.954 mm (0.86433 in)

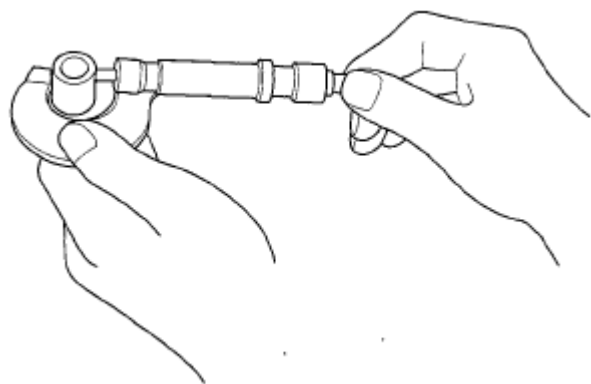


Fig. 38: Measuring Diameter Of Piston Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

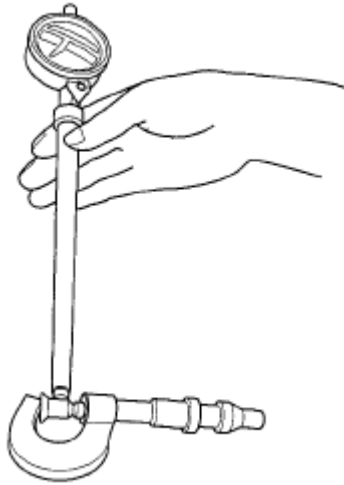


Fig. 39: Zero Dial Indicator To Piston Pin Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Piston Pin-to-Piston Clearance

Standard (New): -0.0050-0.0010 mm (-0.000197-0.000039 in)

Service Limit: 0.004 mm (0.00016 in)

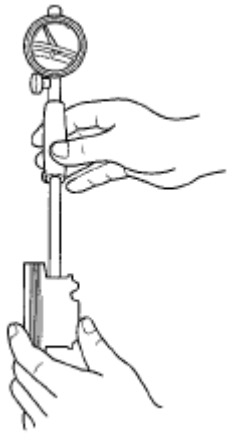


Fig. 40: Checking Difference Between Piston Pin Diameter And Piston Pin Hole Diameter On Piston

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 (0.00020-0.00055 in)

Service Limit: 0.019 mm (0.00075 in)

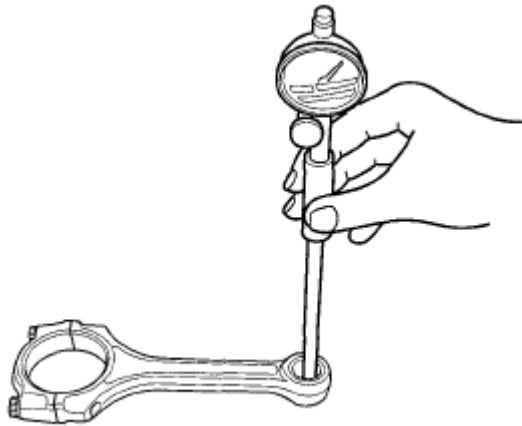


Fig. 41: Measuring Piston Pin-To-Connecting Rod Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REASSEMBLY

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

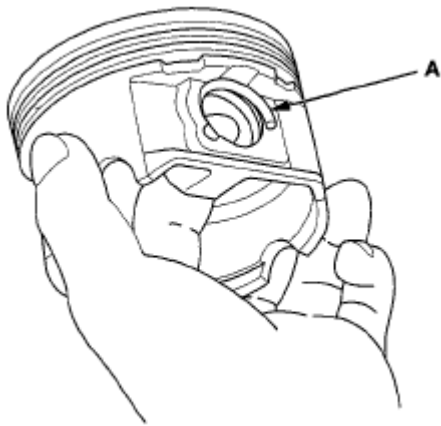


Fig. 42: Installing Piston Pin Snap Ring Only On One Side
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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).

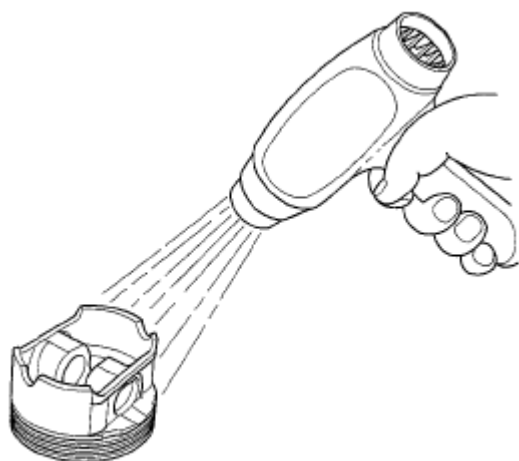


Fig. 43: Heating Piston To About 158°F (70°C)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Assemble the piston (A) and the 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.

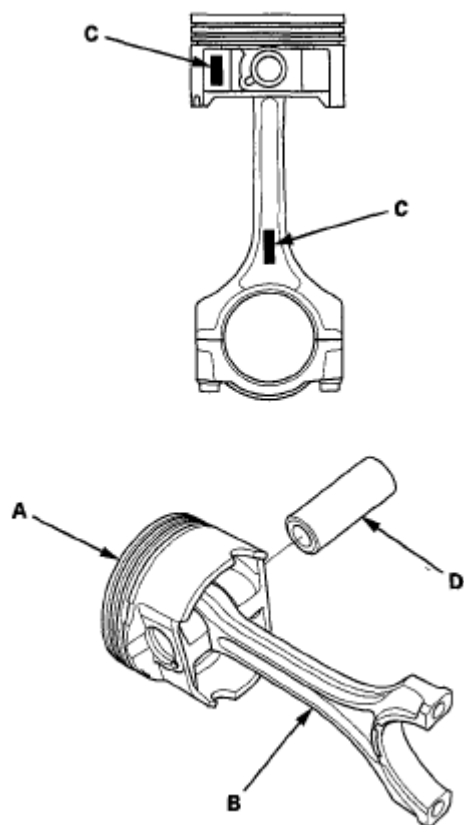


Fig. 44: Identifying Piston, Connecting Rod, Embossed Marks And Piston Pin

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).

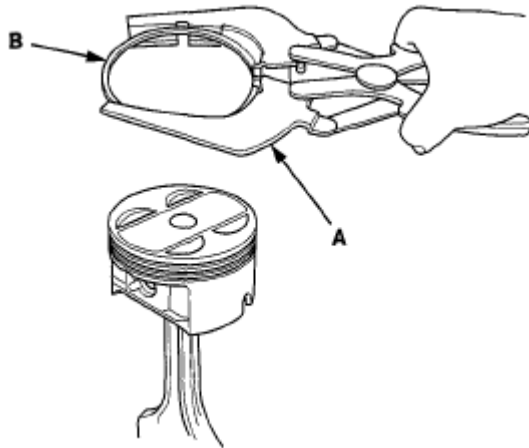


Fig. 45: Removing Old Piston Rings Using Ring Expander
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 (0.047 in) wide, and the oil ring groove is 2.8 mm (0.110 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 (0.59-0.79 in) from the bottom.

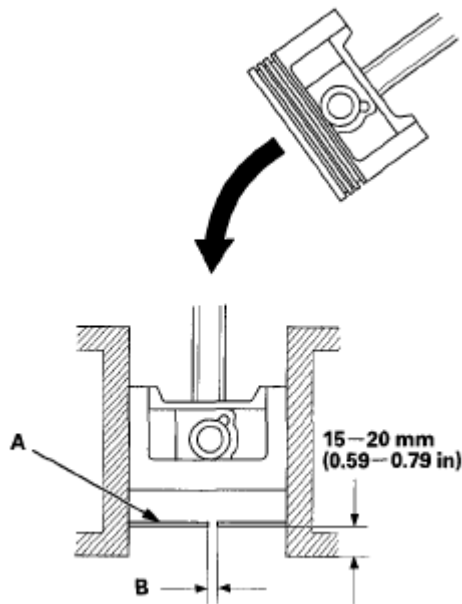


Fig. 46: Pushing Ring Into Cylinder Bore 15-20 mm (0.59-0.79 in) From Bottom Using Piston
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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). 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 (0.008-0.013 in)

Service Limit: 0.60 mm (0.023 in)

Second Ring

Standard (New): 0.40-0.55 mm (0.0157-0.0217 in)

Service Limit: 0.70 mm (0.027 in)

Oil Ring

Standard (New): 0.20-0.70 mm (0.008-0.027 in)

Service Limit: 0.80 mm (0.031in)

6. Install the rings as shown in illustration. The top ring (A) has a 1D mark and the second ring (B) has a 2X

mark. The manufacturing marks (C) must be facing upward.

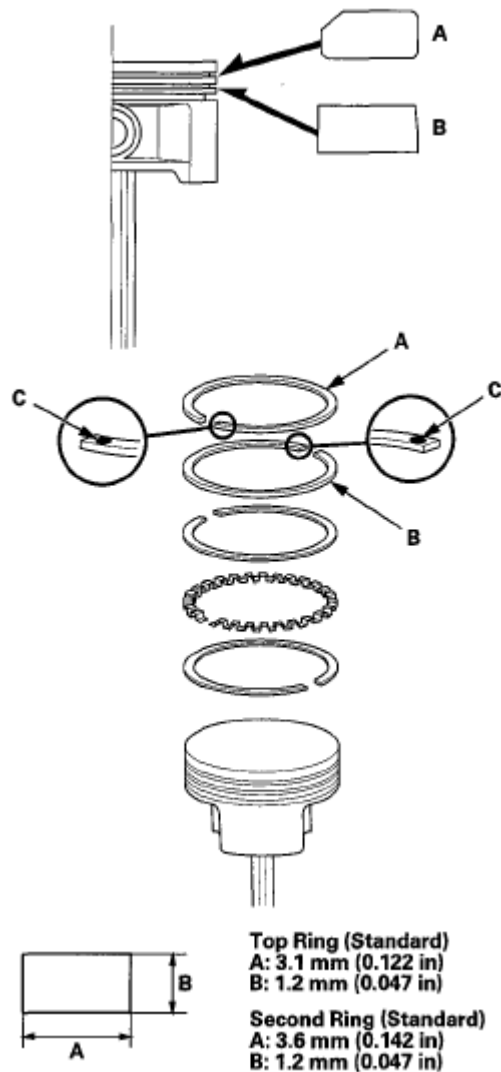


Fig. 47: Identifying Top Ring, Second Ring And Manufacturing Marks
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Top Ring Clearance

Standard (New): 0.055-0.080 mm (0.003-0.003 in)

Service Limit: 0.15 mm (0.005 in)

Second Ring Clearance

Standard (New): 0.030-0.055 mm (0.002-0.002 in)

Service Limit: 0.13 mm (0.005 in)



Fig. 48: Measuring Ring-To-Groove Clearance
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Rotate the rings in their grooves to make sure they do not bind.
9. Position the ring end gaps as shown in illustration. About 90°

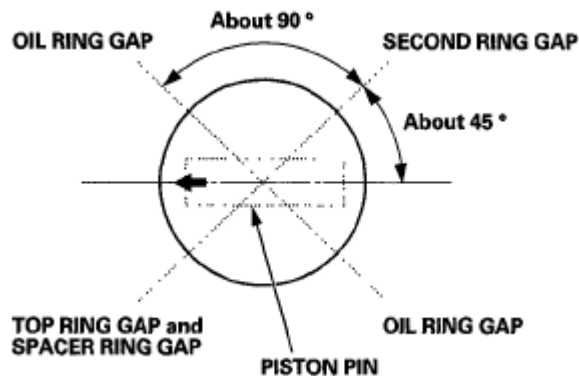


Fig. 49: Positioning Ring End Gaps
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

CRANKSHAFT AND PISTON INSTALLATION

Special Tools Required

- Driver Handle, 15 x 135L 07749-0010000
 - Oil Seal Driver Attachment, 106 mm 070AD-RCA0200
1. Check the main bearing clearance with plastigage (see **CRANKSHAFT MAIN BEARING REPLACEMENT**).
 2. Check the connecting rod bearing clearance with plastigage (see **CONNECTING ROD BEARING REPLACEMENT**).
 3. Install the bearing halves in the engine block and the connecting rods.

4. Apply new engine oil to the inside of the main bearings and the rod bearings.
5. Install the CKP pulse plate to the crankshaft (see **CKP PULSE PLATE REPLACEMENT**).
6. Lower the crankshaft (A) into the engine block, being careful not to damage the journals and the CKP pulse plate.

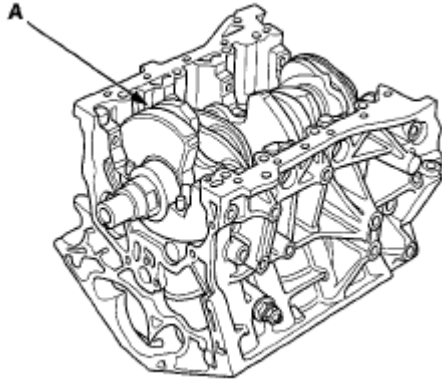


Fig. 50: Identifying Crankshaft

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

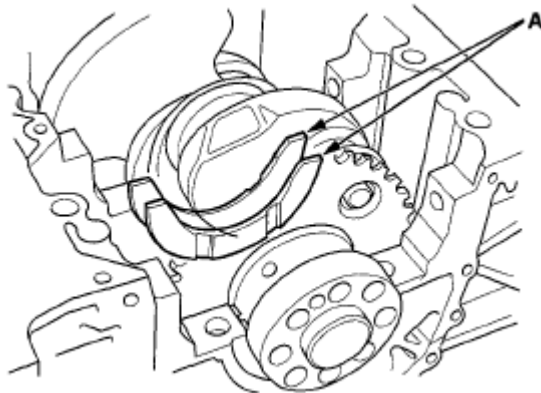


Fig. 51: Identifying Thrust Washers Of No. 3 Journal

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the bearings (A) and the main bearing caps (B) with the arrow (C) facing the timing belt side of the engine block.

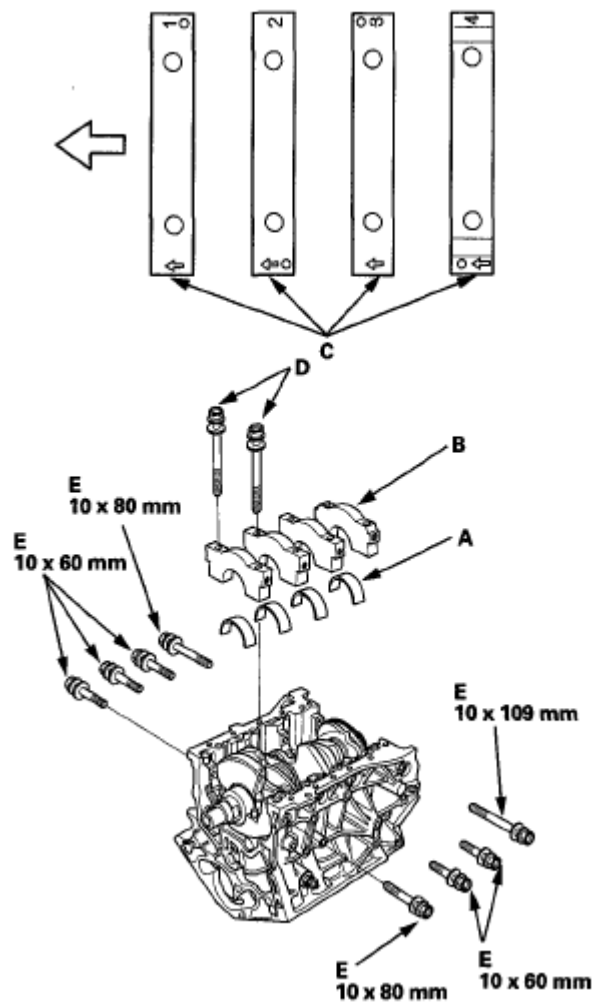


Fig. 52: Installing Bearings And Main Bearing Caps With Arrow Facing Timing Belt Side Of Engine Block

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

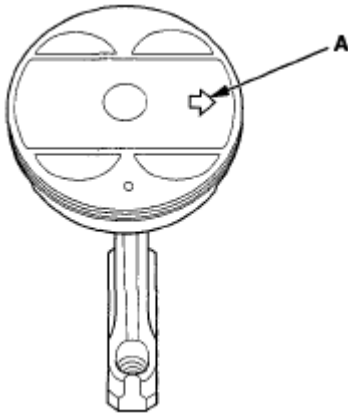


Fig. 53: Positioning Piston/Connecting Rod Assembly With Arrow Facing Timing Belt Side Of Engine Block

Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. 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.

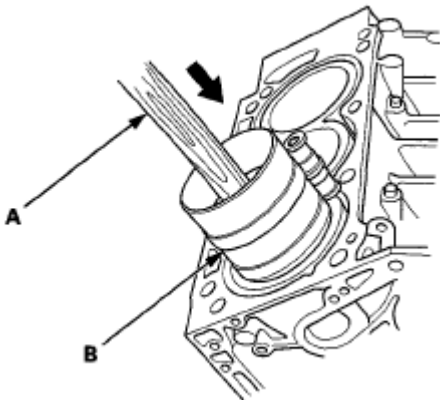


Fig. 54: Positioning Piston/Connecting Rod Assembly In Cylinder

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

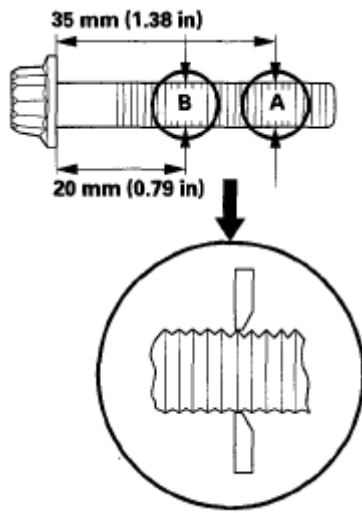


Fig. 55: Measuring Diameter Of Each Connecting Rod Bolt At Point A And Point B
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. 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)

18. If the difference in diameter is out of tolerance, replace the connecting rod bolt.
19. Install the bearing (A), then line up the mark (B) on the connecting rod (C) and the rod cap (D), then install the rod cap.

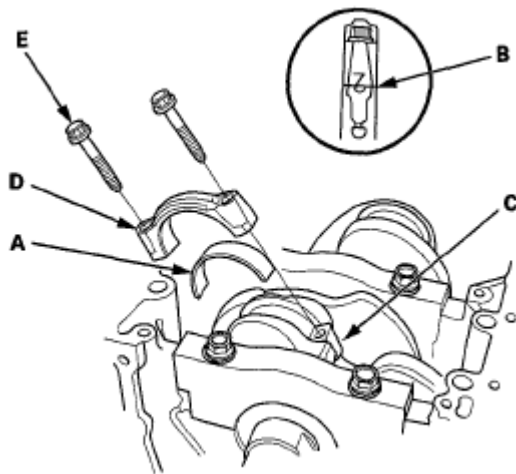


Fig. 56: Lining Up Mark On Connecting Rod And Rod Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Apply new engine oil to the bolt threads and flanges. Torque the bolts (E) to 20 N.m (2.0 kgf.m, 14 lbf.ft).
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 16 of the procedure. Do not loosen it back to the specified angle. Repeat steps 10 to 21 for the remaining cylinders.

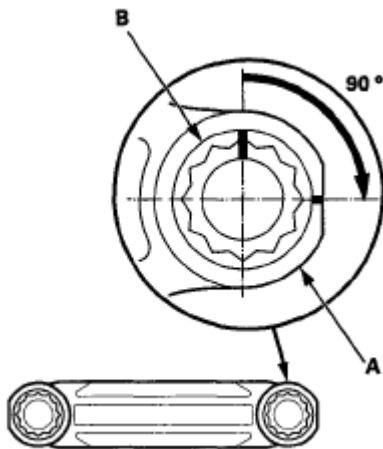


Fig. 57: Marking Connecting Rod And Bolt Head
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Tighten the bearing cap bolts and the bearing cap side bolts to the specified torque in the sequence as shown in illustration. Repeat the torque sequence again to ensure the bolts are properly torqued.

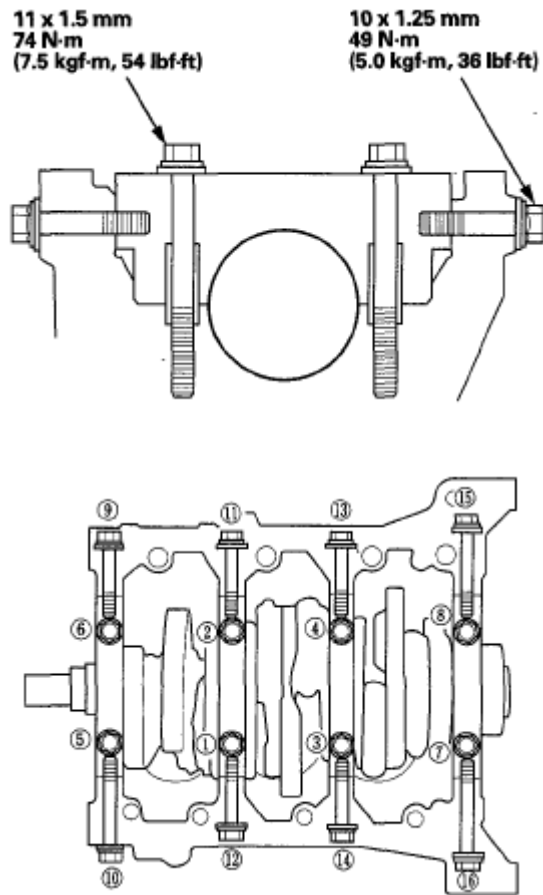


Fig. 58: Identifying Bearing Cap Bolts And Bearing Cap Side Bolts Tightening Sequence With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Remove all of the old liquid gasket from the engine block end cover mating surfaces, the bolts, and the bolt holes.
24. Clean and dry the engine block end cover mating surfaces and the crankshaft oil seal housing.
25. Apply a light coat of new engine oil to the lip of the crankshaft oil seal.
26. Using the driver handle, 15 x 135L and the oil seal driver attachment, 106 mm, drive in the new crankshaft oil seal (A) until the oil seal driver attachment bottoms on the engine block end cover.

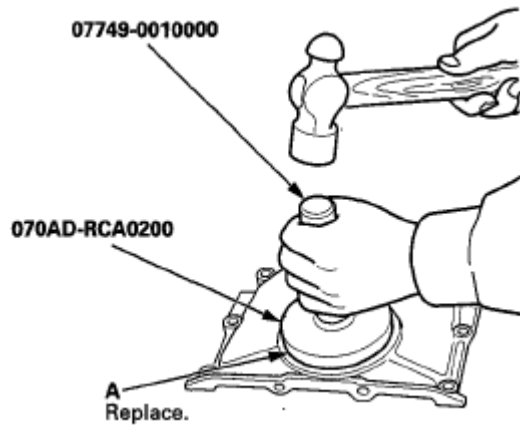


Fig. 59: Driving In Crankshaft Oil Seal Until Oil Seal Driver Attachment Bottoms On Engine Block End Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Apply liquid gasket (P/N 08717-0004, 08718-0003, 08718-0004, or 08718-0009) to the engine block mating surface of the engine block end cover and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- Apply a 2.5 mm (0.098 in) diameter bead of liquid gasket along the broken line (A).
- 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.

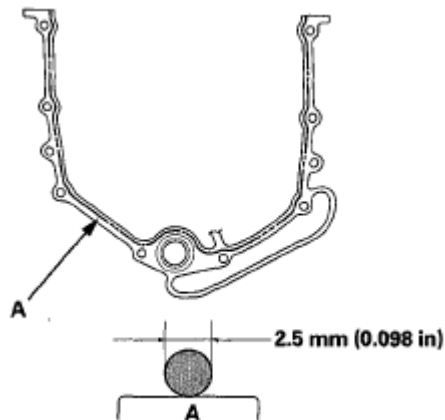


Fig. 60: Applying 2.5 mm (0.098 in) Diameter Bead Of Liquid Gasket Along Broken Line

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

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 engine block end cover.

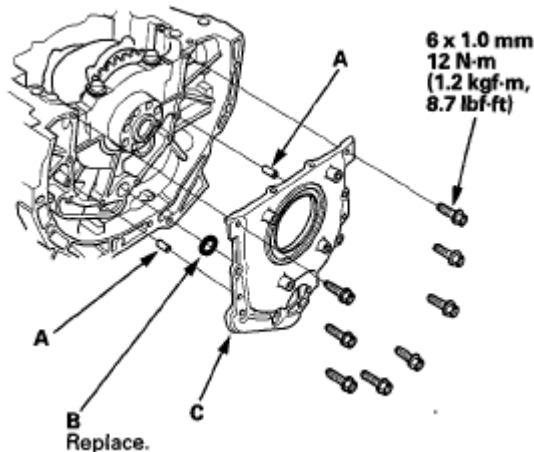


Fig. 61: Identifying Dowel Pins, O-Ring And Engine Block End Cover With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Clean the excess grease off the crankshaft, and check that the oil seal lip is not distorted.
30. Install a new crankshaft oil seal in the oil pump (see step 3 under **OIL PUMP OVERHAUL**).
31. Remove all of the old liquid gasket from the oil pump mating surfaces, the bolts, and the bolt holes.
32. Clean and dry the oil pump mating surfaces.
33. Apply liquid gasket (P/N 08717-0004, 08718-0003, 08718-0004, or 08718-0009) to the engine block mating surface of the oil pump and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- Apply a 2.5 mm (0.098 in) diameter bead of liquid gasket along the broken line (A).
- 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.

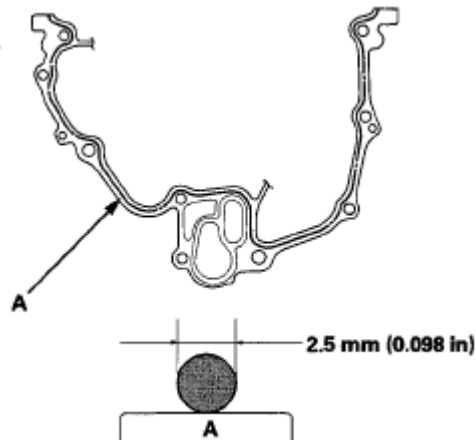


Fig. 62: Applying 2.5 mm (0.098 in) Diameter Bead Of Liquid Gasket Along Broken Line
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

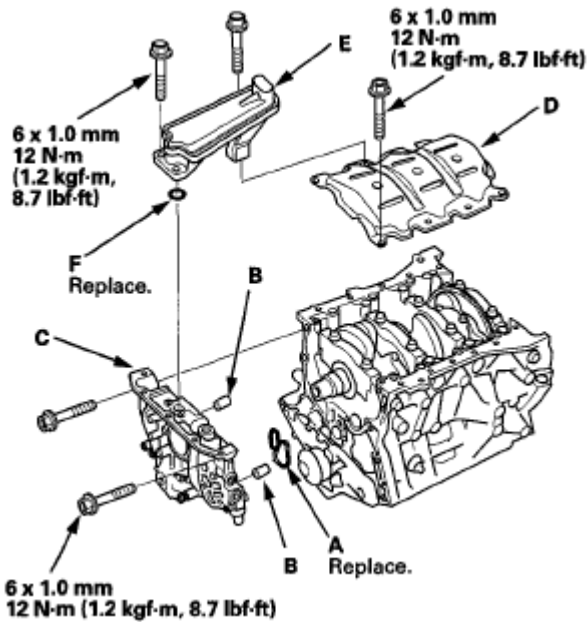


Fig. 63: Identifying Crankshaft Oil Seal And O-Ring, Dowel Pins And Oil Pump With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Install the dowel pins (B), then align the inner rotor with the crankshaft, and install the oil pump (C).

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 engine

block end cover and the oil pump.

36. Clean the excess grease off the crankshaft, and check that the oil seal lip is not distorted.
37. Install the baffle plate (D), then install the oil strainer (E) with a new O-ring (F).
38. J35Z2 engine: Install the oil filter base/oil filter assembly (A), with a new O-ring (B).

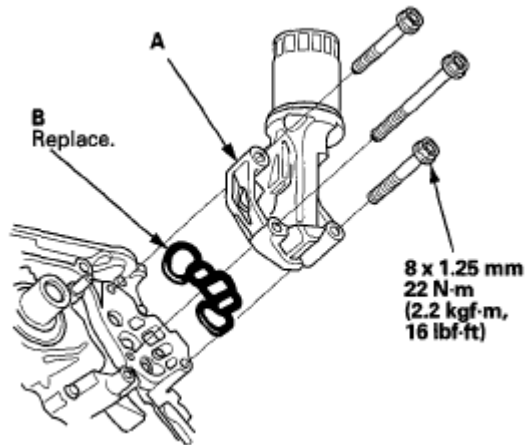


Fig. 64: Identifying Oil Filter Base/Oil Filter Assembly And O-Ring With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

39. J35Z3 engine: Install the rocker arm oil control solenoid/oil filter assembly (A), with a new rocker arm oil control solenoid filter (B).

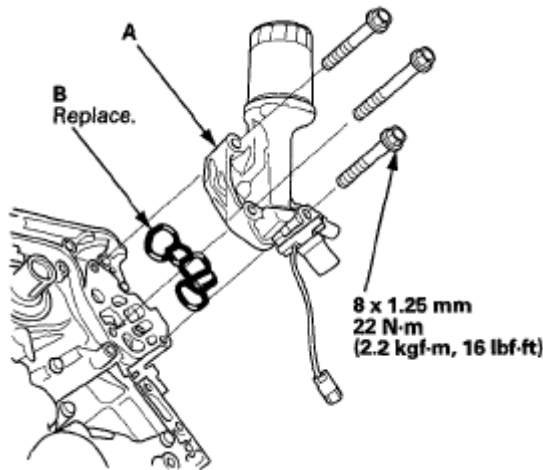


Fig. 65: Identifying Rocker Arm Oil Control Solenoid/Oil Filter Assembly And Rocker Arm Oil Control Solenoid Filter With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Install the oil pan (see **CKP PULSE PLATE REPLACEMENT**).
41. Install the timing belt drive pulley to the crankshaft:
 - J35Z2 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)

- J35Z3 engine (see **TIMING BELT ADJUSTER REPLACEMENT**)
42. Install the cylinder heads:
 - J35Z2 engine (see **CYLINDER HEAD INSTALLATION**)
 - J35Z3 engine (see **CYLINDER HEAD INSTALLATION**)
 43. M/T model: Install the flywheel (see **CLUTCH REPLACEMENT**).
 44. A/T model: Install the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**).
 45. Install the transmission:
 - Manual transmission (see **TRANSMISSION INSTALLATION**)
 - Automatic transmission (see **TRANSMISSION INSTALLATION**)
 46. Install the engine/transmission (see **ENGINE INSTALLATION**).

NOTE: When any crankshaft main or connecting rod bearing is replaced, run the engine at idle until it reaches normal operating temperature, then continue to run it for about 15 minutes.

CKP PULSE PLATE REPLACEMENT

1. Remove the crankshaft from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Remove the CKP pulse plate (A).

NOTE: Be careful not to damage the journals and the CKP pulse plate.

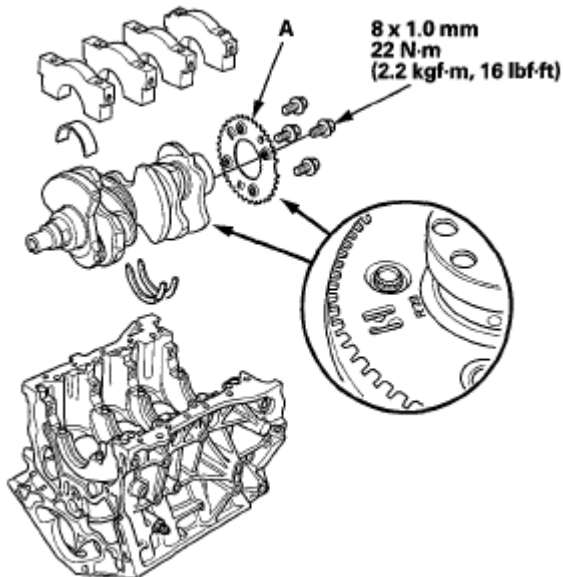


Fig. 66: Identifying CKP Pulse Plate With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the CKP pulse plate in the reverse order of removal.

NOTE: When installing the crankshaft, refer to the **CRANKSHAFT AND PISTON INSTALLATION PROCEDURE**.

OIL PAN INSTALLATION

1. Remove all of the old liquid gasket from the oil pan mating surfaces, the bolts, and the bolt holes.
2. Clean and dry the oil pan mating surfaces.
3. Apply liquid gasket (P/N 08717-0004, 08718-0003, 08718-0004, or 08718-0009) to the oil pan mating surface of the engine block and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

- NOTE:**
- Apply a 2.5 mm (0.098 in) diameter bead of liquid gasket along the broken line (A).
 - 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.

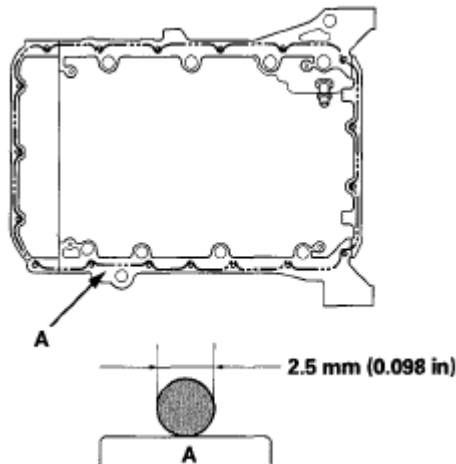


Fig. 67: Applying 2.5 mm (0.098 in) Diameter Bead Of Liquid Gasket Along Broken Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the oil pan on the engine block.
5. Tighten the bolts in three steps. In the final step, torque the bolts, in sequence, to 12 N.m (1.2 kgf.m, 8.7 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.

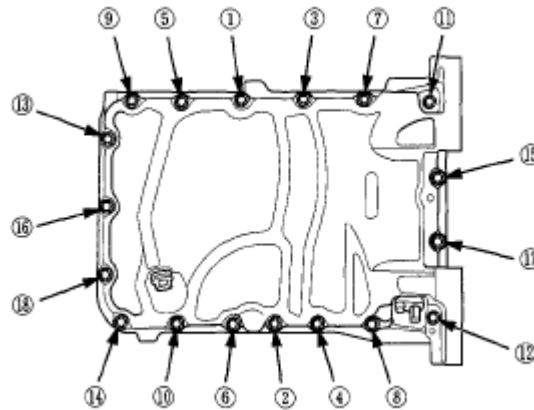


Fig. 68: Identifying Oil Pan Bolts Tightening Sequence
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Tighten the four bolts (A) securing the transmission, then install the torque converter case cover (B).

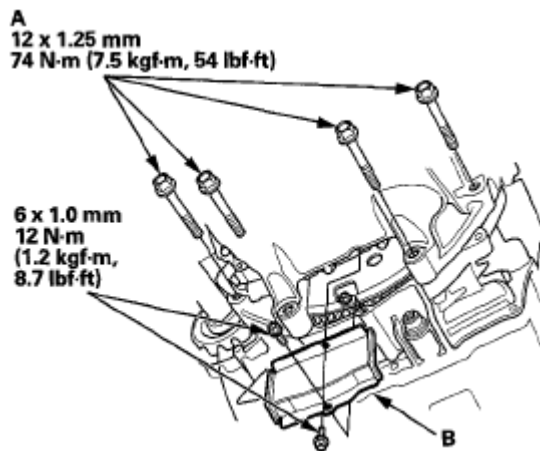


Fig. 69: Identifying Torque Converter Case Cover With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Connect the CKP sensor connector (A), then install the CKP sensor cover (B) and the bolt (C).

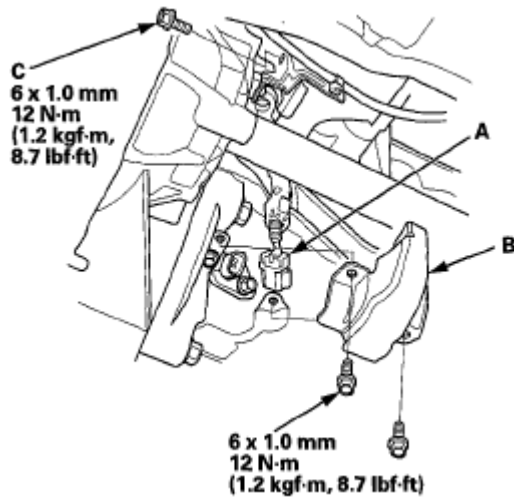


Fig. 70: Identifying CKP Sensor Connector, CKP Sensor Cover And Bolt With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the rear warm up TWC bracket.

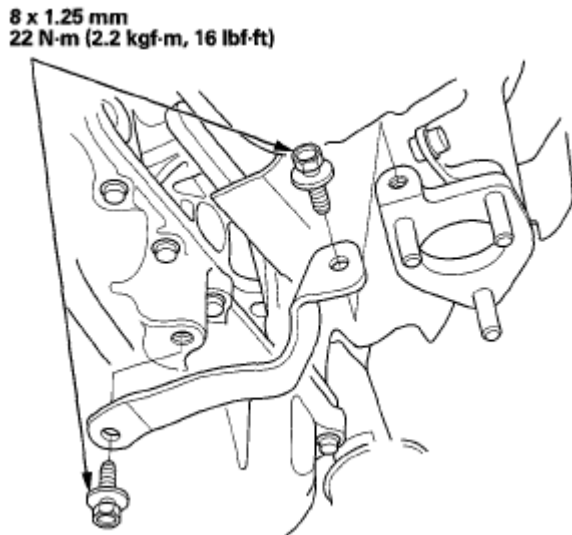


Fig. 71: Identifying Rear Warm Up TWC Bracket With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If the engine is still in the vehicle, do the following steps.
10. Install exhaust pipe A using new gaskets and new self-locking nuts (see step 48 under **ENGINE INSTALLATION**).
11. Install the splash shield (see step 49 under **ENGINE INSTALLATION**).
12. Refill the engine with engine oil (see step 4 under **ENGINE OIL LEVEL CHECK**).

PULLEY END CRANKSHAFT OIL SEAL INSTALLATION - IN CAR

Special Tools Required

Oil Seal Driver, 64 mm 07OAD-RCAA100

1. Remove the timing belt drive pulley:
 - J35Z2 engine (see [TIMING BELT ADJUSTER REPLACEMENT](#))
 - J35Z3 engine (see [TIMING BELT ADJUSTER REPLACEMENT](#))
2. Remove the pulley end crankshaft oil seal.
3. Clean and dry the crankshaft oil seal housing.
4. Apply a light coat of new engine oil to the lip of the crankshaft oil seal.
5. Using the oil seal driver, 64 mm, drive in the new crankshaft oil seal (A) until the oil seal driver bottoms on the oil pump.

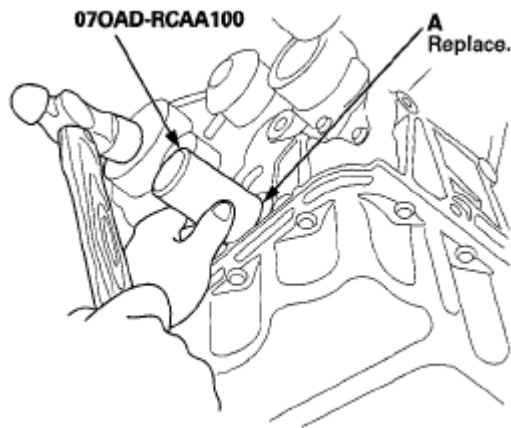


Fig. 72: Driving In Crankshaft Oil Seal Until Oil Seal Driver Bottoms On Oil Pump
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Clean the excess grease off the crankshaft, and check that the oil seal lip is not distorted.
7. Install the timing belt drive pulley:
 - J35Z2 engine (see [TIMING BELT ADJUSTER REPLACEMENT](#))
 - J35Z3 engine (see [TIMING BELT ADJUSTER REPLACEMENT](#))

TRANSMISSION END CRANKSHAFT OIL SEAL INSTALLATION - IN CAR

Special Tools Required

- Driver Handle, 15 x 135L 07749-0010000
 - Oil Seal Driver Attachment, 106 mm 070AD-RCA0200
1. M/T model: Remove the transmission (see [TRANSMISSION REMOVAL](#)), and the flywheel (see [CLUTCH REPLACEMENT](#)).
 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 new engine oil to the lip of the crankshaft oil seal.
6. Using the driver handle, 15 x 135L and the oil seal driver attachment, 106 mm, drive in the new crankshaft oil seal (A) until the oil seal driver attachment bottoms on the engine block end cover. Align the hole in the oil seal driver attachment with the pin on the crankshaft.

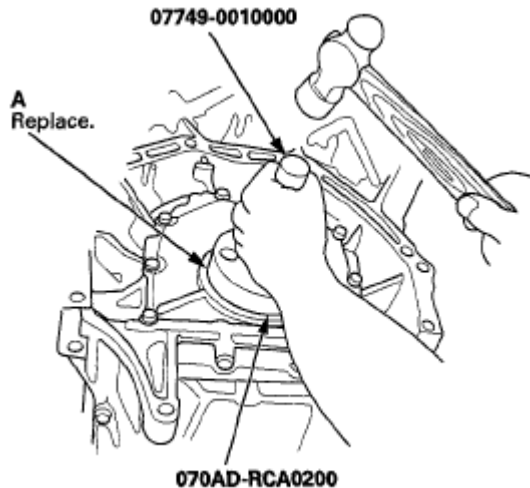


Fig. 73: Driving In Crankshaft Oil Seal Until Oil Seal Driver Attachment Bottoms On Engine Block End Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Clean the excess grease off the crankshaft, and check that the oil seal lip is not distorted.
8. M/T model: Install the flywheel (see **CLUTCH REPLACEMENT**), 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**).

SEALING BOLT INSTALLATION

NOTE: When installing the sealing bolts (A), always use new washers (B).

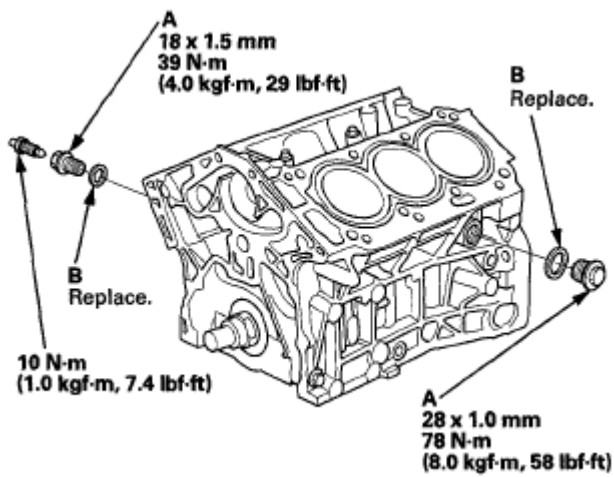


Fig. 74: Identifying Sealing Bolts And Washers With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.