August 12, 2016 03188 Version 8

Safety Recall: Piston Pin Snap Ring Inspection

Supersedes 16-017, dated March 11, 2016; See REVISION SUMMARY.

AFFECTED VEHICLES

Year	Model	Trim	VIN Range
2016	Civic with 2.0L engine	ALL	Check the iN VIN status for eligibility

REVISION SUMMARY

PARTS INFORMATION, WARRANTY CLAIM INFORMATION, and REPAIR PROCEDURES were added to replace the piston or short block.

BACKGROUND

A small number of engines were produced with piston pin snap rings that may not be completely seated. If the snap ring is not completely seated, the piston pin can move from its original location in the piston, resulting in engine failure.

CUSTOMER NOTIFICATION

Owners of affected vehicles will be sent a notification of this campaign.

Do an iN VIN status inquiry to make sure the vehicle is shown as eligible.

Some vehicles affected by this campaign may be in your used vehicle inventory. Failure to repair a vehicle subject to a recall or campaign may subject your dealership to claims or lawsuits from the customer or anyone else harmed as a result of such failure. In addition, state law may provide American Honda with the right to seek indemnification in any such claim or lawsuit. To see if a vehicle in inventory is affected by this recall, do a VIN status inquiry before selling it.

CORRECTIVE ACTION

Inspect the piston pin snap rings. If there are any that are not completely set or missing, replace the affected piston assembly and snap rings. In rare cases, the piston pin(s) may damage the engine block, requiring replacement of the engine short block. Replaced short blocks will be called into Warranty Inspection to confirm the damage.

REQUIRED MATERIALS

Part Name	Part Number	Quantity
Honda Bond HT (One tube repairs about four vehicles.)	08718-0004	1

CUSTOMER INFORMATION: The information in this bulletin is intended for use only by skilled technicians who have the proper tools, equipment, and training to correctly and safely maintain your vehicle. These procedures should not be attempted by “do-it-yourselfers,” and you should not assume this bulletin applies to your vehicle, or that your vehicle has the condition described. To determine whether this information applies, contact an authorized Honda automobile dealer.

PARTS INFORMATION

Inspection

Part Name	Part Number	Quantity
Exhaust Pipe Gasket	18303-TR0-A01	1
Exhaust Pipe Gasket	18302-SP0-003	1
Self-Locking Nut (10 mm)	90212-SA5-003	6
Flange Bolt (14 mm x 100 mm)	90161-T5A-000	1
Gear Box Mounting Bolt	90108-TL1-G00	1
Drain Plug Washer	94109-14000	1
Oil Pump O-Ring	91303-RPY-G01	1
Oil Strainer Gasket	15221-RPY-G01	1
SYNBLND (0W-20)	08798-9036	5

NOTE: It is okay to use bulk engine oil instead of bottles.

Common parts needed for Repair Procedure A & B

Part Name	Part Number	Quantity
Cylinder Head Gasket	12251-5BA-A01	1
Drain Plug Washer (14 mm)	94109-14000	1
Ex Pipe Gasket (To catalytic converter)	18302-SP0-003	1
Ex Pipe Gasket (To muffler)	18303-TR0-A01	1
Spool Valve Filter Assembly	15815-RPY-G01	1
VTC Filter Assembly	15845-RPY-G01	1
Flange Bolt (12 x 40 mm)	90162-T0A-A00	2
Flange Bolt (14 x 100 mm)	90161-T5A-000	1
Flange Bolt (14 x 33 mm)	90164-T6E-000	2
Flange Bolt (64 x 14 mm)	90166-TBA-A00	2
Flange Nut (14 mm)	90371-SJD-003	1
Flange Nut (8 mm)	94050-08080	2
Gear Box Mounting Bolt	90108-TL1-G00	1
Head Cover Gasket (A)	12341-RPY-G01	1
Head Cover Gasket (B)	12343-RPY-G01	1
Intake Manifold Gasket A	17115-5A2-A01	4
O-Ring (15 x 1.9 mm)	91333-PNA-003	2
O-Ring (31.2 X 4.1 mm)(NOK)	91314-PH7-003	2
O-Ring (A) (Cam chain cover)	91307-RPY-G01	1
O-Ring (B) (Cam chain cover)	91308-RPY-G01	1
O-Ring (VTC A/B solenoid)	15832-RPY-003	2
Primary Converter Gasket (Nippon Leakless)	18115-5A2-A01	1

Retainer - Green Tokai	17711-S0X-A31	1
Sealing Washer (20 mm)	11106-RNA-A00	1
Self-Locking Nut (10 mm)	90212-SA5-003	6
Thermostat Case Seal	19322-5A2-A00	1
Washer Bolt (Head bolt) (11 x 163 mm)	90005-5BA-A01	(As needed)

Additional parts needed for Repair Procedure A

Part Name	Part Number	Quantity
Connecting Rod Bolt	13204-RNA-A01	(As needed)
Piston Set A (STD)	13010-5BA-A00	(As needed)
Piston Set B (STD)	13020-5BA-A00	(As needed)
Piston Ring Set (RIKKEN)	13011-5BA-A11	(As needed)
Piston Pin Clip	13115-RNA-A00	2

Additional parts needed for Repair Procedure B

Part Name	Part Number	Quantity
Cylinder Block Assembly	10002-5BA-A00	1
Flange Bolt (14 x 35 mm)	90181-TBA-A00	2
Flange Bolt (14 x 45 mm)	90163-TBA-A00	2
Flange Bolt (14 x 90 mm)	90179-SDA-A00	4
Flange Nut (10 mm)	90002-S10-000	2
Self-Locking Nut (12 mm)	90215-SB0-003	6
Set Ring (26 x 128 mm)	44319-SR1-003	2
Spindle Nut	90305-692-010	2
Split Pin (3.0 x 22 mm)	94201-30220	2

TOOL INFORMATION

Tool Name	Tool Number	Quantity
Snap-on Borescope	BK5600	1

NOTE: The Tool Number for a replacement Snap-on 90° 8.5 mm Single Imager is BK5600-14.

WARRANTY CLAIM INFORMATION

NOTE:

- Contact Tech Line for additional information if you find a snap ring missing or misset as noted in step 19 in the INSPECTION PROCEDURE.
- For administrative compensation for the submission of photos, please select the **PH** drop-down in the sublet section of the warranty claim.

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1105B6	Remove the engine oil pan and inspect the piston pin snap rings. Includes inspection and photos.	2.5 hrs	6PC00	JX900	16-017A	13010-5BA-A00

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1111BT	Replace one affected piston, ring, pins, and snap ring. FRT includes inspection and photos.	10.4 hrs	6PC00	JX900	16-017B	13010-5BA-A00
A	Replace two affected pistons, rings, pins, and snap ring- add	0.4 hr			16-017C	
B	Replace three affected pistons, rings, pins, and snap rings- add	0.8 hr			16-017D	
C	Replace four affected pistons, rings, pins, and snap rings- add	1.2 hrs			16-017E	

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
1111BU	Replace the engine short block. FRT includes inspection, photos, and wheel alignment	11.3 hrs	6PC00	JX900	16-017F	13010-5BA-A00

Skill Level: Repair Technician

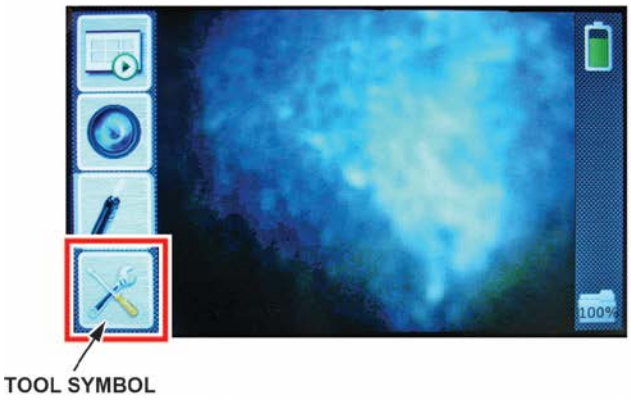
SETTING UP THE BORESCOPE

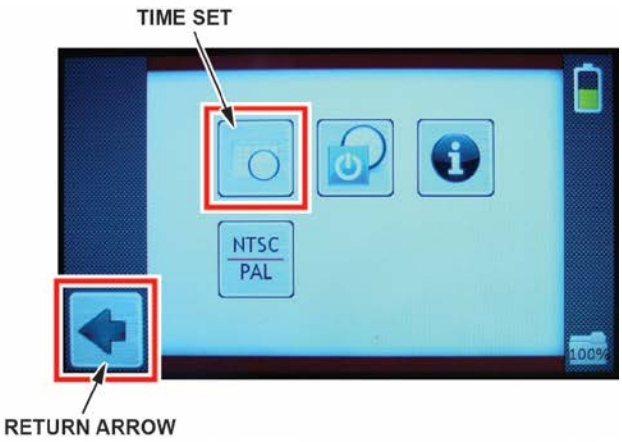
Before using the supplied borescope, insert the batteries, review the included instructions, and make sure you do the following:

1. Turn on the borescope and set the time and date. You only need to do this the first time you use the tool.

NOTE: The time and date will be lost if dead batteries are not immediately replaced.

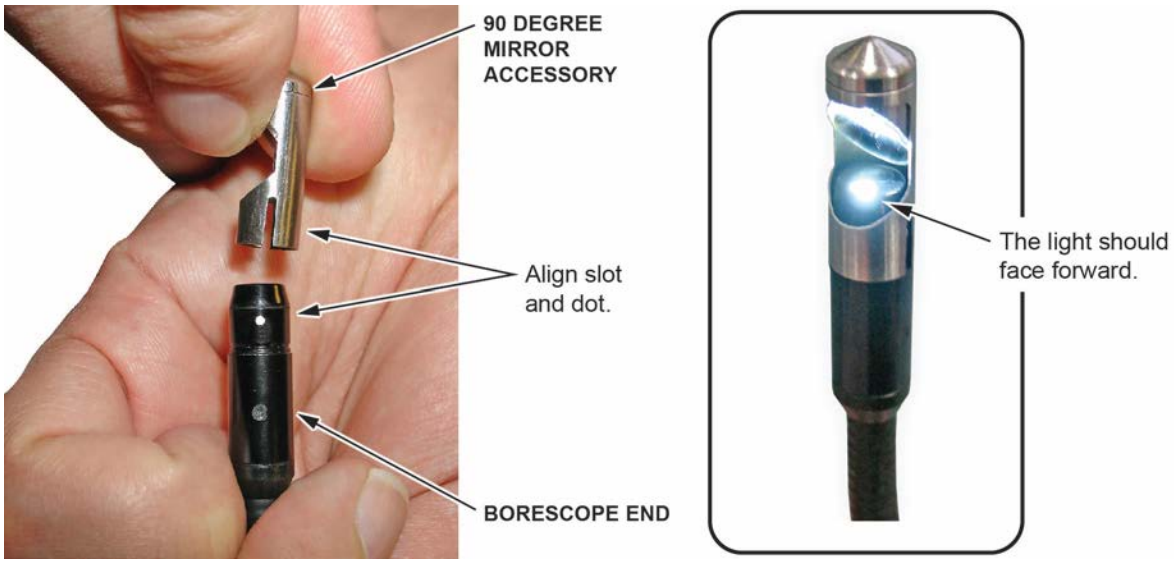
"SNAP RING INSPECTION"
VIDEO



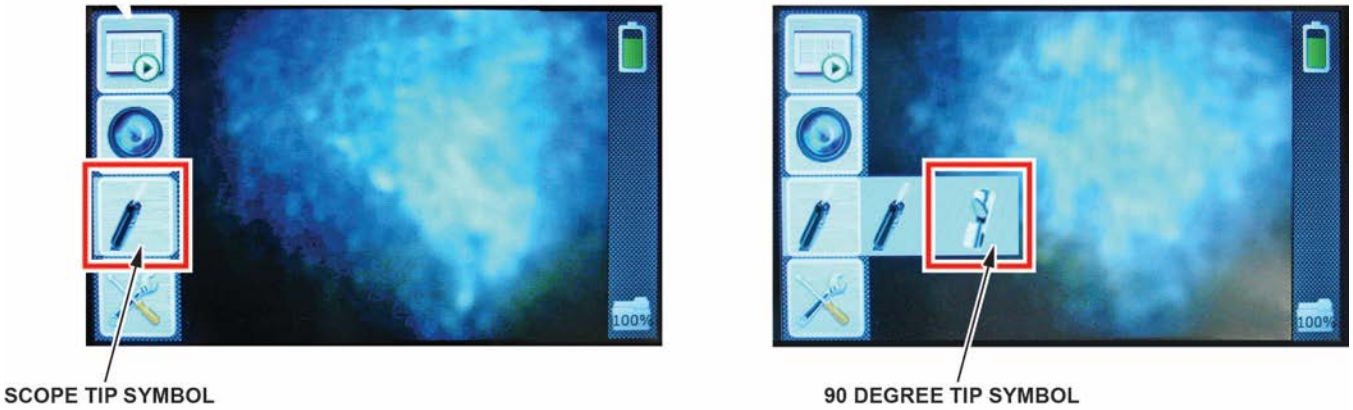


2. Install the 90-degree mirror accessory by aligning the alignment dot with the slot.

NOTE: Make sure the mirror tip is very clean before inspecting. A dirty mirror can give distorted images.

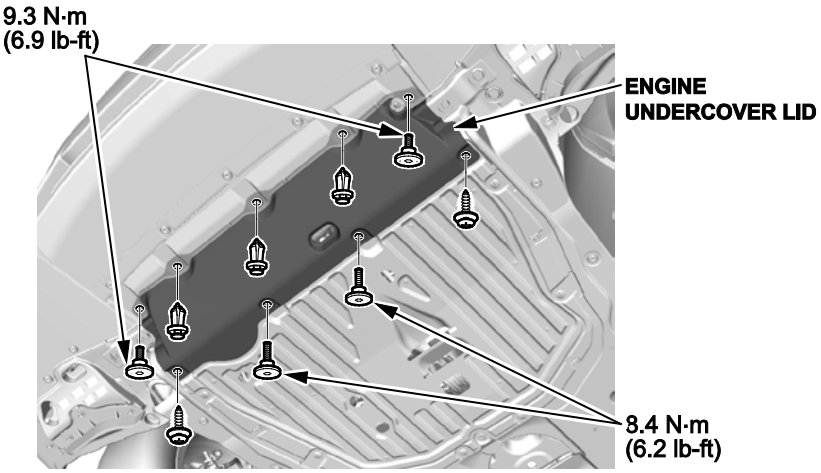


3. Set the borescope to use the 90-degree mirror accessory. You need to do this every time you turn on the borescope; otherwise, it will be difficult to maneuver the probe**.** Select the tip, then select the 90-degree tip icon**.**

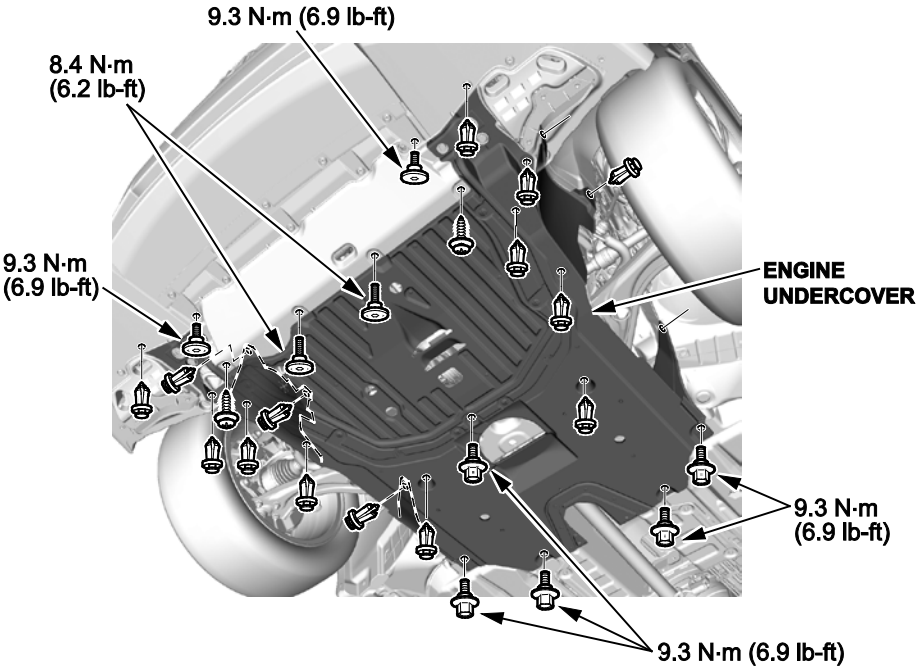


INSPECTION PROCEDURE

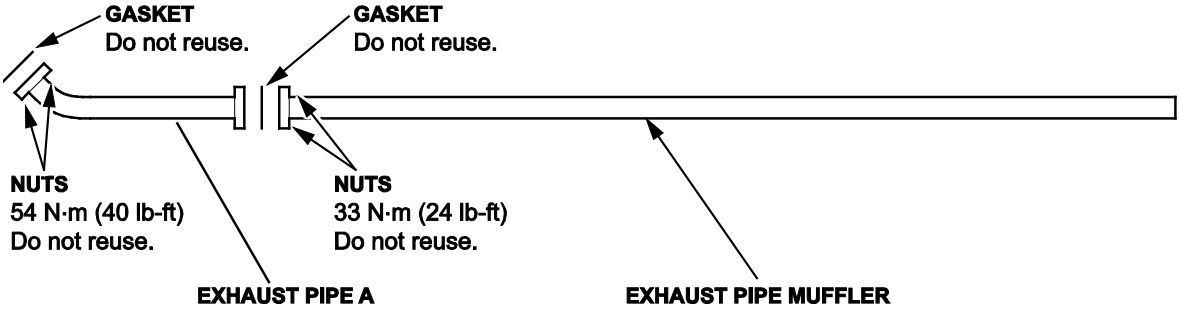
1. Remove the drive belt.
2. Remove the engine oil dipstick.
3. Raise the vehicle on a lift.
4. Remove the engine undercover lid.



5. Remove the engine undercover.



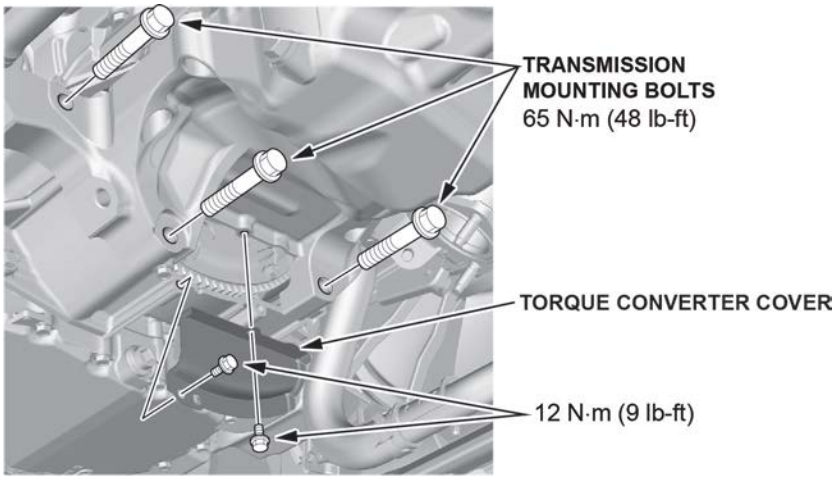
6. Drain the oil from the engine.
7. Remove exhaust pipe A.



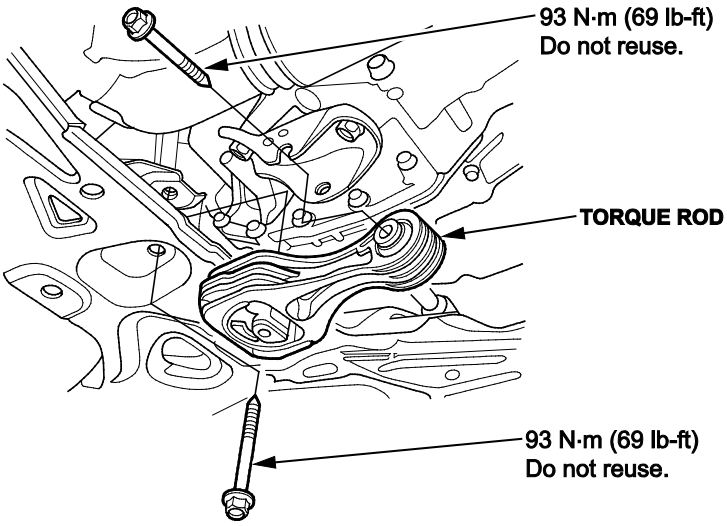
8. Remove the A/C compressor mounting bolts and move the compressor away from the oil pan bolts.

   NOTE:
   - Do not disconnect the suction hose and discharge hose.
   - Do not excessively bend the suction hose and discharge hose.
   - Hang the A/C compressor with a wire tie.

9. Remove the clutch cover (M/T) or the torque converter cover (CVT), then remove the transmission mounting bolts.

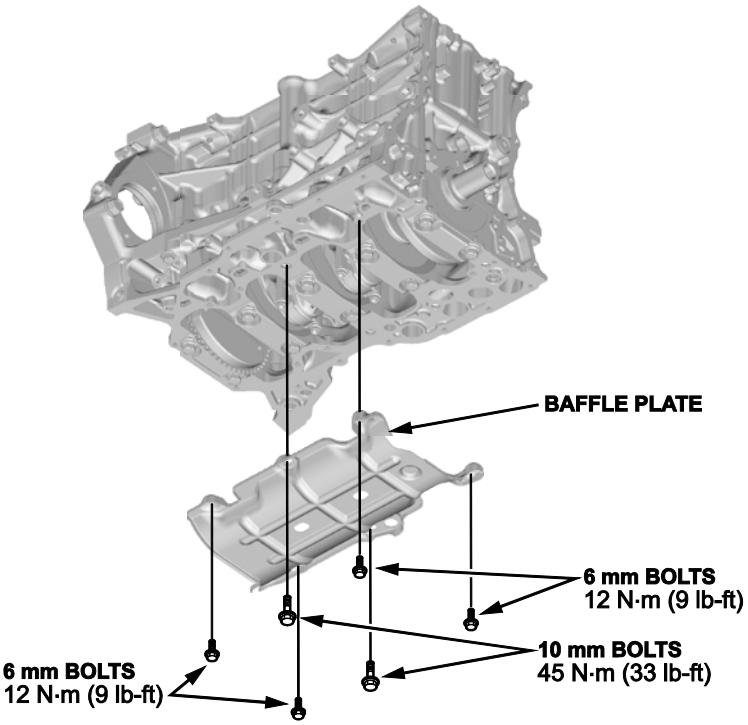


10. Remove the torque rod.

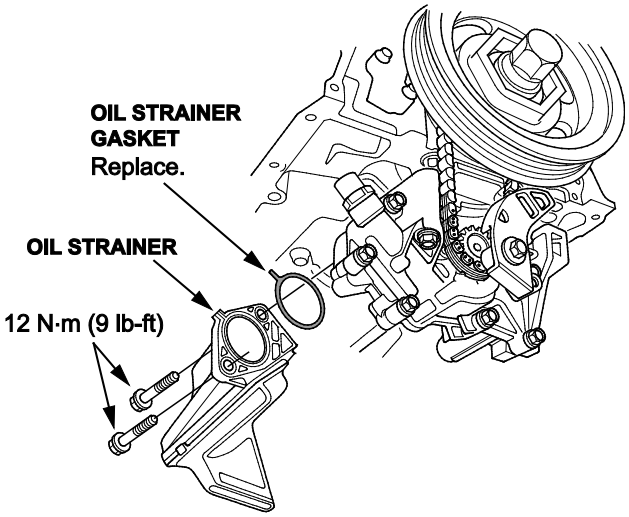


11. Remove the oil pan mounting bolts.
12. Using a flat-blade screwdriver, separate the oil pan from the lower block.
13. Remove the oil pan.

    NOTE: Replace the oil pump O-ring.
14. Remove the baffle plate.



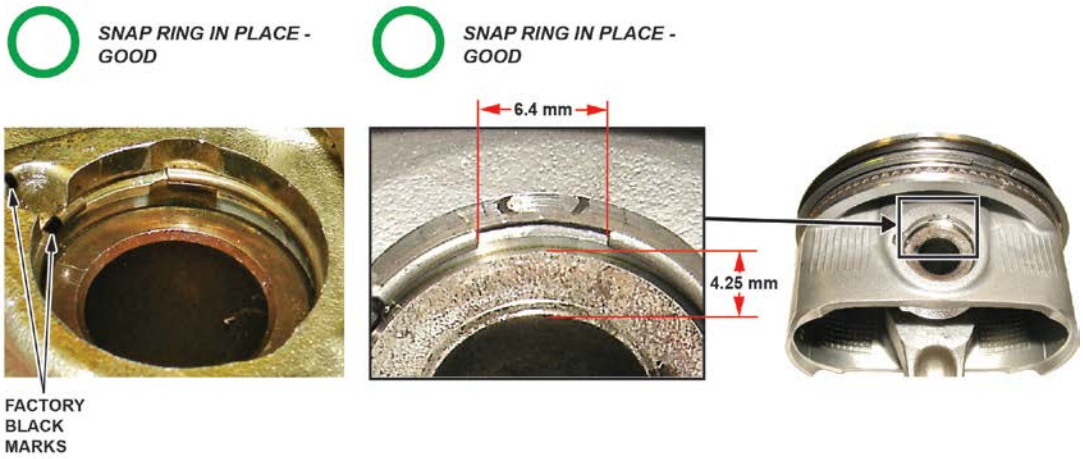
15. Remove the oil strainer.

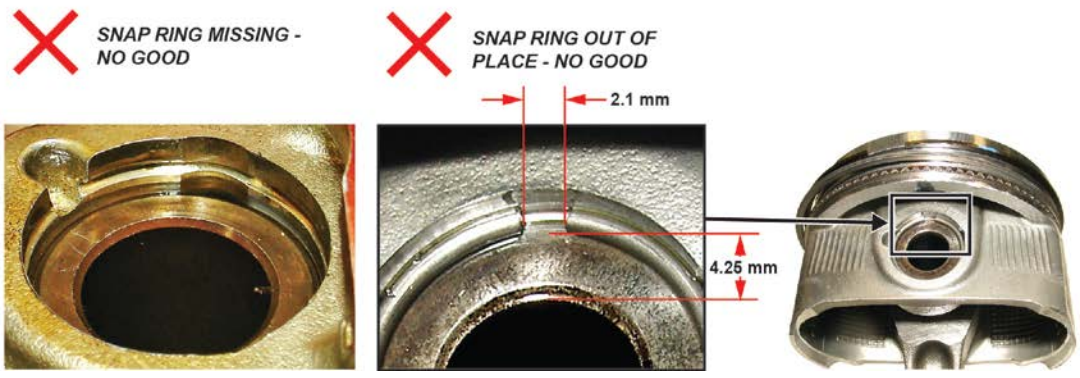


16. Using the Snap-on BK5600 with the 90-degree tip installed, rotate the engine so the No.1 cylinder is at TDC. Carefully insert the tip of the borescope and inspect cylinders No. 1 and No. 4. Then, rotate the engine so the No. 2 cylinder is at TDC and repeat the process with cylinders No. 2 and No. 3.

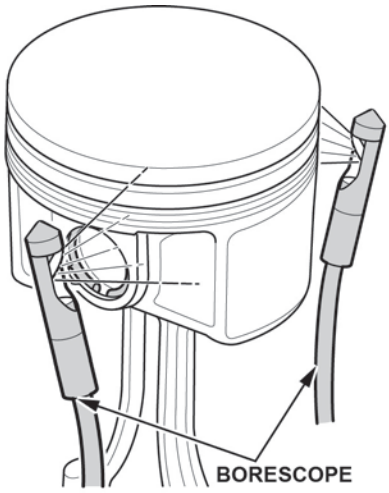
"SNAP RING INSPECTION"
VIDEO

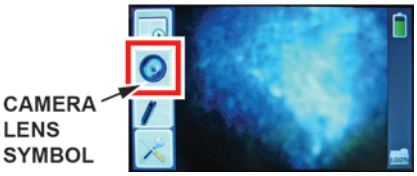
NOTE: You may notice a black mark on the snap ring and piston. This is a factory check mark and could be mistaken for the snap ring gap.





17. Rotate the probe to confirm that the snap ring is fully engaged in the piston pin groove. A properly seated snap ring will have a 6 mm gap at the ends of the snap ring as shown above. A misset snap ring will have a much smaller gap (around 2 mm.)
18. Take a photo of each snap ring. Focus on getting a clear shot of each snap ring gap. You will need to take a photo of each side of all four pistons for a total of eight photos.

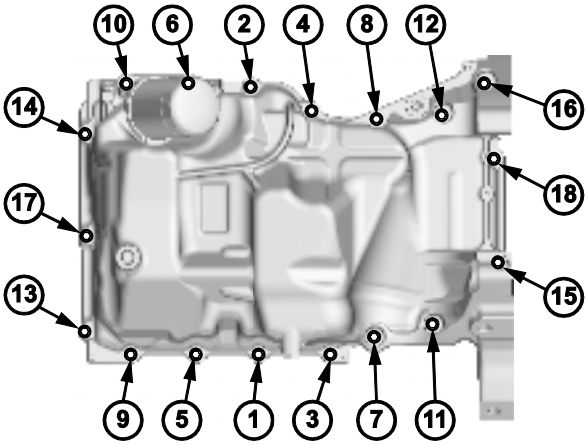




19. Repeat for the remaining three pistons.

- If all snap rings are installed properly, no further action is necessary. Reassemble in the reverse order of disassembly.

NOTE: When installing the oil pan, apply a 2.5 mm bead of Honda Bond HT to the mounting surface. Install the oil pan within 5 minutes and torque the bolts in three steps in the sequence shown below. In this specific application, no cure time is required.



Specified Torque
12 N·m (9 lb-ft)

- If the snap ring is misset, take a clear photo of the misset snap ring and go to REPAIR PROCEDURE A.
- If a snap ring is missing and the engine cylinder wall does not have any damage, take a clear photo of the piston pin with the missing snap ring and go to REPAIR PROCEDURE A.
- If the snap ring is missing and the engine has cylinder wall damage, take a clear photo of the block and damage, then go to REPAIR PROCEDURE B.

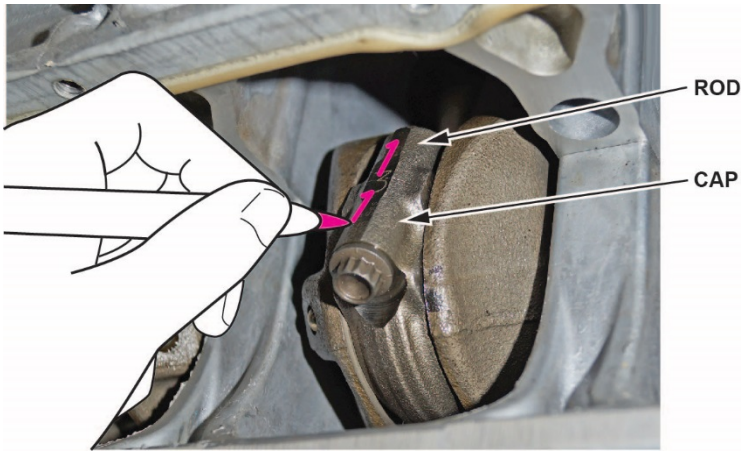
20. After all photos are taken, save them to your computer by connecting the borescope to it using the included USB cable. Give the photos to your warranty administrator for the warranty claim to be paid. Eight photos of the snap rings must be included in the warranty claim or it may be rejected.

REPAIR PROCEDURE A – PISTON REPLACEMENT

NOTE:

- This procedure is in an outline form that you can also use as a checklist for the repair. If you need more details on this procedure, refer to the service information.

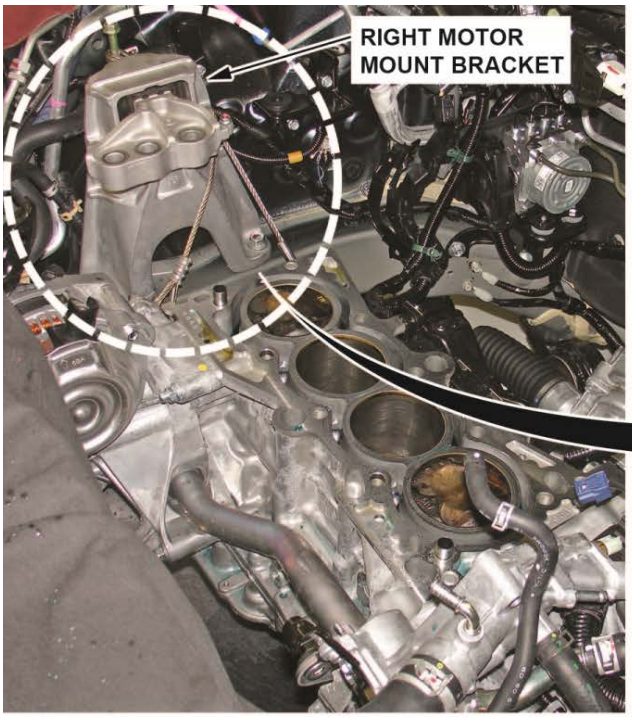
1. Mark the rod and rod cap of the affected piston with a paint stick.

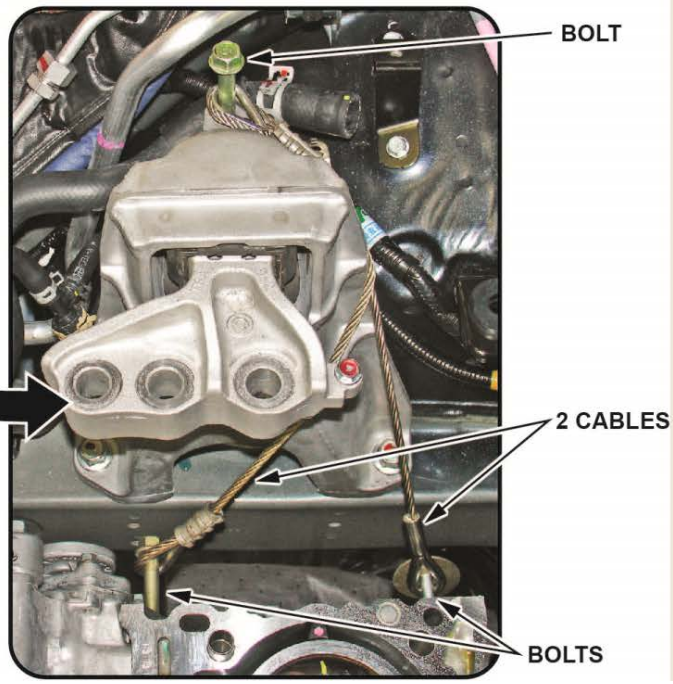


2. Remove the following items:
   - Catalytic converter
   - Air cleaner assembly
   - Intake air duct
   - Valve cover
   - Wire connectors from the alternator
3. Drain the coolant. Then, unbolt the reservoir tank and set it aside.
4. Disconnect all the connectors and hoses from the intake.
5. Temporarily install the engine oil pan using only four bolts (one on each corner) and install the dog bone mount with bolts to temporarily support the engine assembly to remove the crank pulley.
6. Remove the crank pulley.
7. Remove the drive belt tensioner pulley.
8. Support the engine with a floor jack on the oil pan to remove the engine end mount.

9. Remove the engine side mount.
10. Remove the solenoid body assembly from the front of the engine.
11. Remove the timing cover.
12. Remove the cam chain.
13. Remove the cylinder head.
14. Determine which piston is needed, A or B. This is determined by looking at the top of the piston at the center dished area as shown. Order needed parts.

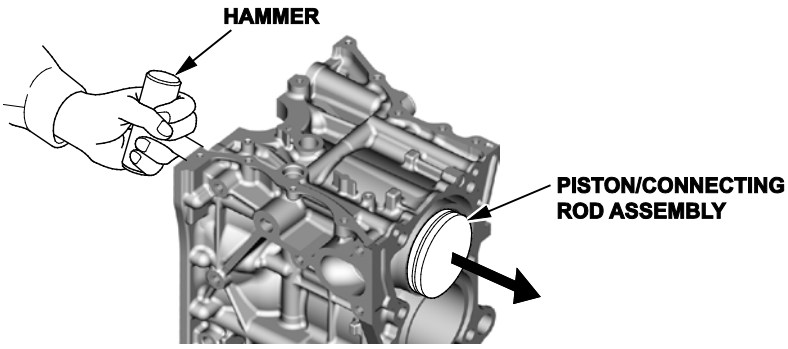
15. With the engine held up by the floor jack, use a heavy duty nylon strap or cable sling bolted to the block.





16. Remove the floor jack, Then, raise the vehicle on the lift and remove the oil pan.

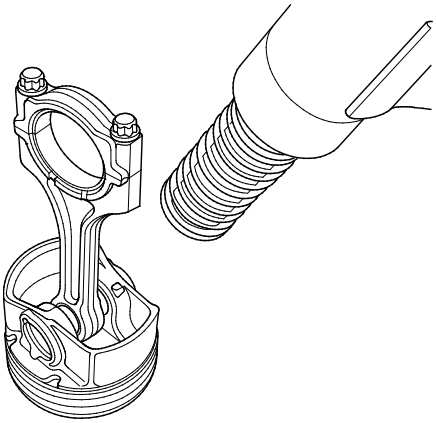
17. Use the wooden handle of a hammer to drive out the piston/connecting rod assembly. Make sure to not damage the oil jets or cylinder with the connecting rod.



18. Reinstall the connecting rod bearings and caps after removing each piston/connecting rod assembly.
19. Mark each connecting rod assembly with its cylinder number to make sure it is reinstalled in the original order.

    NOTE: The existing number on the connecting rod does not indicate its position in the engine; it indicates the rod bore size.

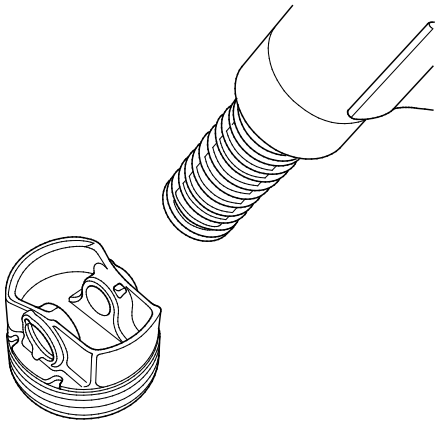
20. Remove the snap rings from both sides of each piston. Start at the cutout in the piston pin bore.
21. Heat the piston and connecting rod assembly to about 158°F (70°C).



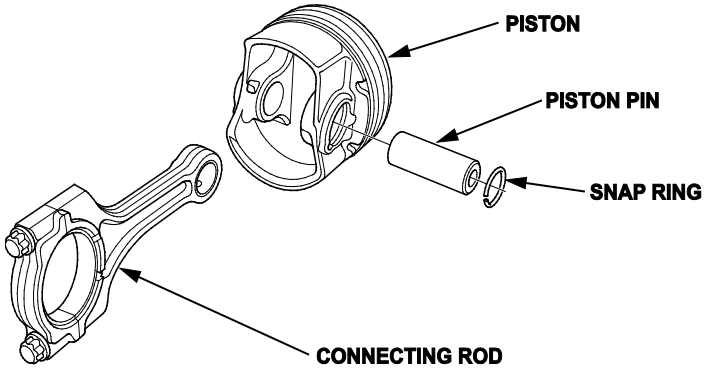
22. Remove the piston pin.
23. Install a snap ring only on one side of the new piston.

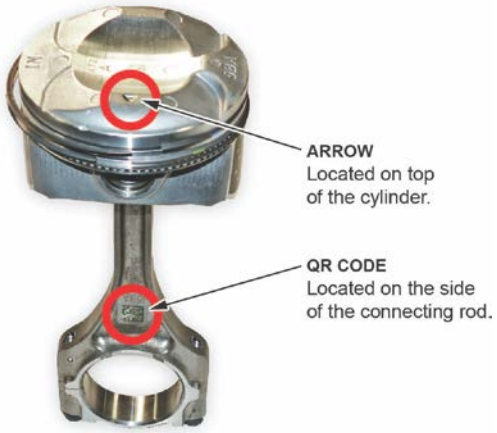
24. Coat with new engine oil the piston pin bore in the piston, the bore in the connecting rod, and the piston pin.

25. Heat the new piston to about 158°F (70°C).

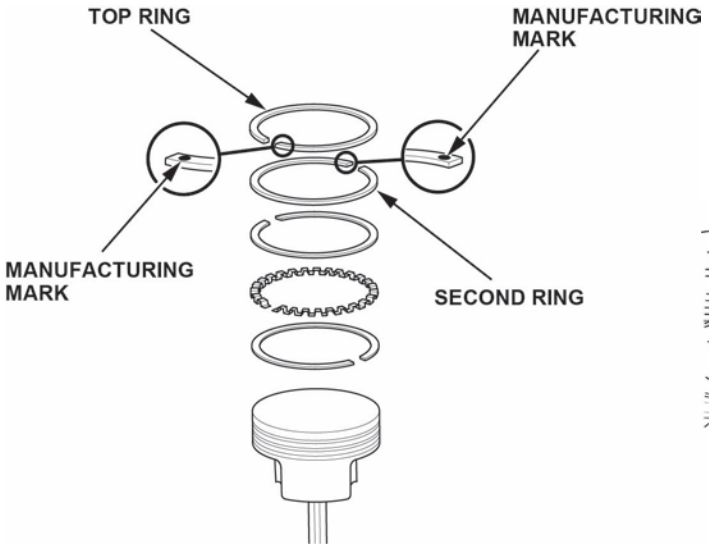


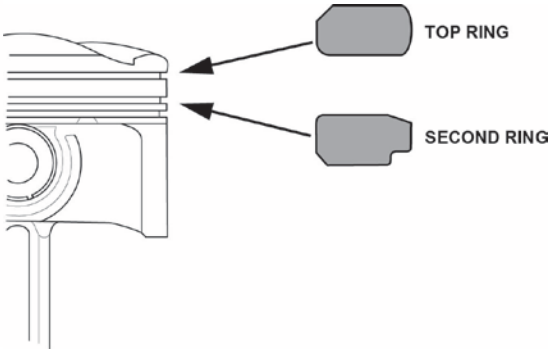
26. Assemble the piston and the connecting rod by aligning the mark (arrow) on the piston and the QR code on the connecting rod. Install the piston pin.





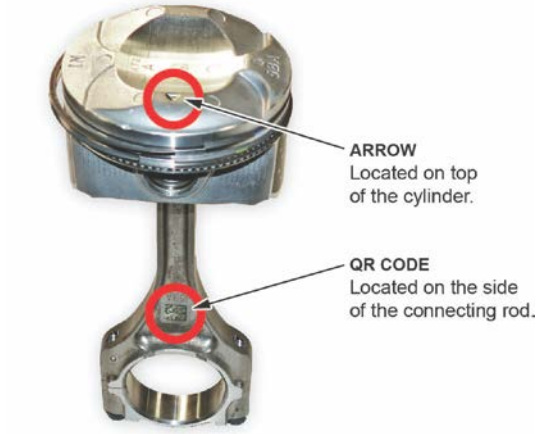
27. Install the remaining snap ring.
28. Turn the snap rings in the ring grooves until the end gaps are positioned towards the bottom of the piston.
29. Position the ring end gaps as shown.



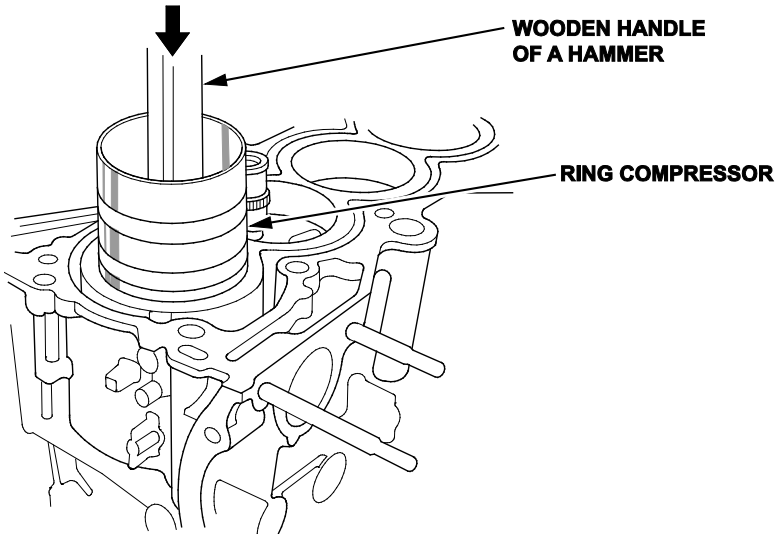


30. Remove the connecting rod bearing caps, then install the ring compressor. Check that the bearing is securely in place.

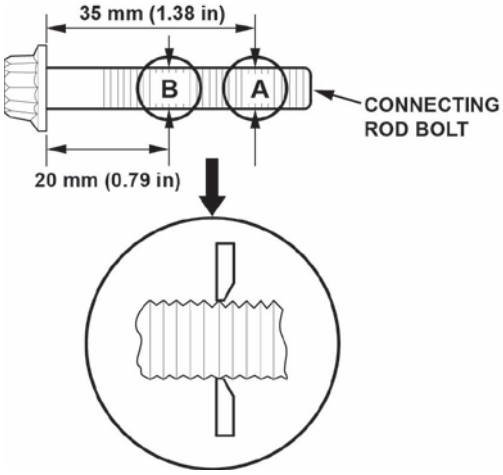
31. Apply new engine oil to the piston, the inside of the ring compressor, and the cylinder bore. Then attach the ring compressor to the piston/connecting rod assembly.
32. Position the mark on the piston to face the cam chain side of the engine.



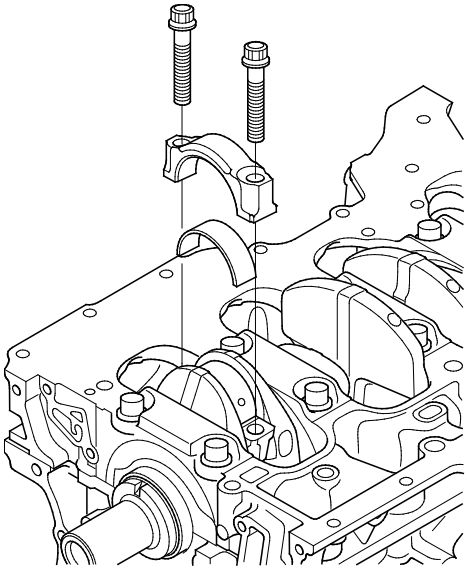
33. Position the piston/connecting rod assembly in the cylinder and tap it in using the wooden handle of a hammer. Push down on the ring compressor to prevent the rings from expanding before entering the cylinder bore.



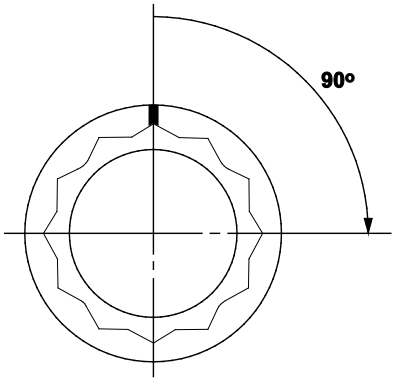
34. Stop pushing after the ring compressor pops free. Check the connecting rod-to-rod journal alignment before pushing the piston into place.
35. Measure and calculate the difference in diameter between point A and point B. If it exceeds the tolerance of 0 – 0.1 mm (0 – 0.004 in) replace the connecting rod.



36. Apply new engine oil to the threads of the connecting rod bolts.
37. Seat the rod journals to the crankshaft. Then, install the connecting rod bearing caps and the bolts finger tight.



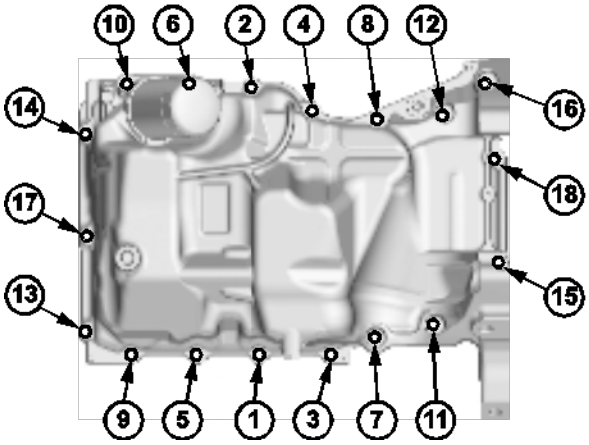
38. Torque the connecting rod bolts to **20 N·m (15 lb·ft).**
39. Tighten the connecting rod bolts an additional 90°.



NOTE: Remove the connecting rod bolt if you tightened it beyond the specified angle and inspect the connecting rod bolts. Do not loosen it back to the specified angle

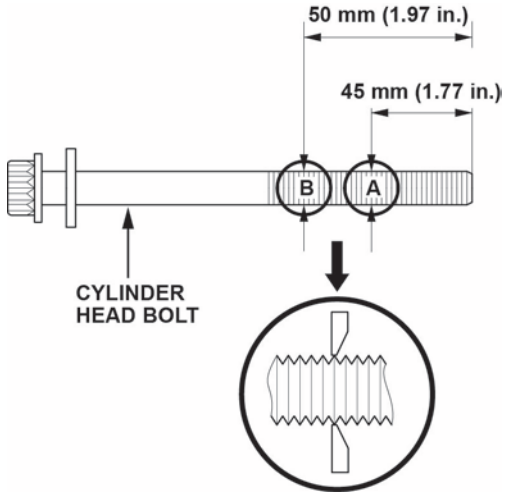
40. Install the engine oil pan using Honda Bond HT.

    NOTE:
    - Remove the old liquid gasket from all of the oil pan mating surfaces, bolts, and bolt holes before re-installing the oil pan.
    - **When installing the oil pan, apply a 2.5 mm bead of Honda Bond HT to the mounting surface. Install the oil pan within 5 minutes and torque the bolts in three steps in the sequence shown below. In this specific application, no cure time is required.**



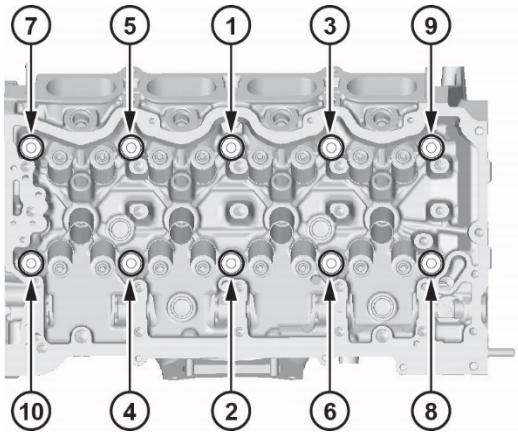
Specified Torque
12 N·m (9 lb-ft)

41. Clean the cylinder head and the engine block surface.
42. Install a new cylinder head gasket and the dowel pins on the engine block. Always use a new cylinder head gasket.
43. Set the crankshaft to top dead center (TDC). Align the TDC mark on the crankshaft sprocket with the pointer on the engine block.
44. Install the cylinder head on the engine block.
45. Measure the diameter of each cylinder head bolt at point A and point B. If either diameter is less than 10.6 mm (0.417 in), replace the cylinder head bolt.

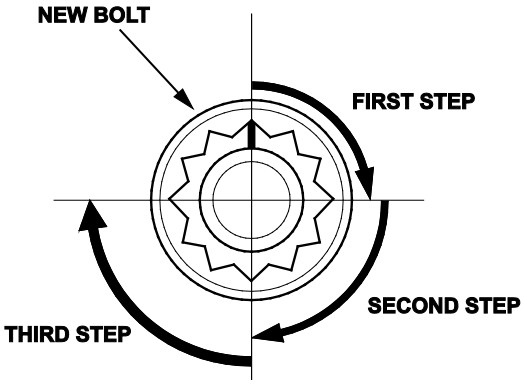


46. Apply new engine oil to the threads and under the bolt heads of all cylinder head bolts.

47. Torque the cylinder head bolts in sequence to **40 N·m (30 lb·ft).** When using a preset click-type torque wrench, be sure to tighten slowly and do not over tighten. If a bolt makes any noise while you are torqueing it, loosen the bolt and retighten it from the first step.



Specified Torque
40 N·m (30 lb-ft)



48. After torqueing, tighten all cylinder head bolts in two steps (90 ° per step) in the numbered sequence shown, If you are using a new cylinder head bolt, tighten the bolt an extra 90 °.

    NOTE: If you tightened the cylinder head bolt beyond the specified angle, remove it and go back to step 44 of the procedure. Do not loosen it back to the specified angle.

49. Install all other removed parts in the reverse order of disassembly.

REPAIR PROCEDURE B – REPLACE SHORT BLOCK

1. Replace the engine short block. Refer to the service information for more details.

END