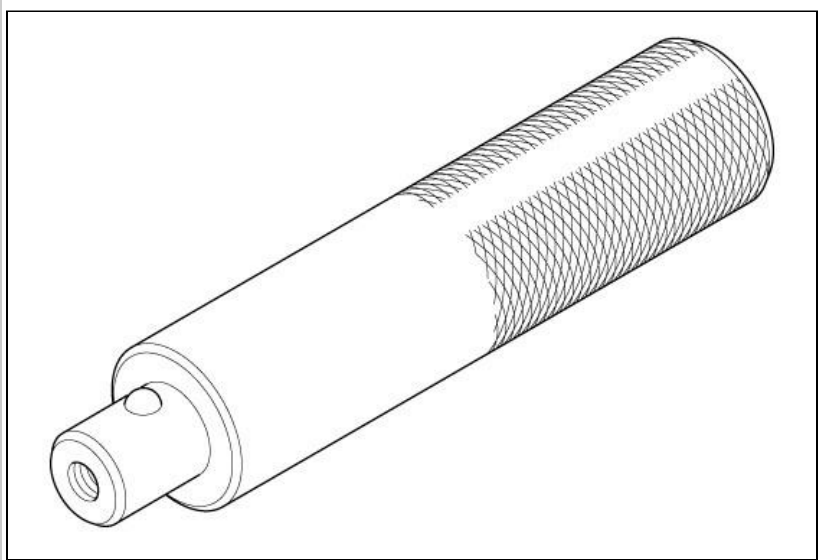
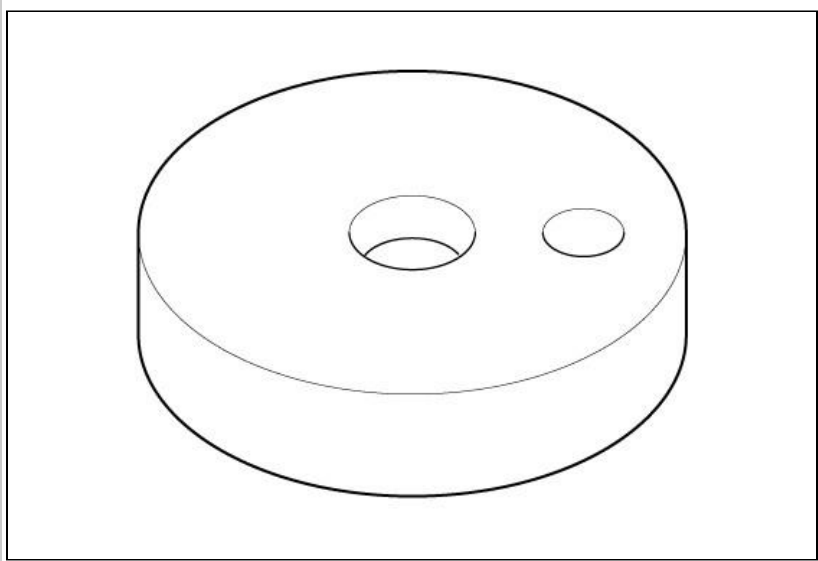


Crankshaft And CKP Pulse Plate Removal, Installation, And Inspection (2013-15) Special Tools Required

| Image | Description/Tool Number |
|--|--|
|  <p data-bbox="168 919 472 947">Courtesy of HONDA, U.S.A., INC.</p> | <p data-bbox="980 352 1391 422">Driver Handle, 15 x 135L 07749-0010000</p> |
|  <p data-bbox="168 1606 472 1633">Courtesy of HONDA, U.S.A., INC.</p> | <p data-bbox="980 1039 1433 1108">Oil Seal Driver Attachment, 106 mm 070AD-RCA0200</p> |

Removal

1. Cylinder Head - Remove

1. Remove the cylinder head .

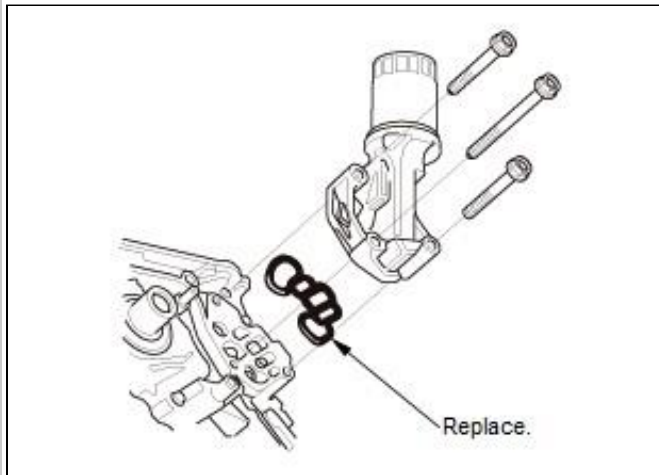
2. Timing Belt Drive Pulley- Remove

1. Remove the timing belt drive pulley from the crankshaft .

3. Oil Pan - Remove

1. Remove the oil pan .

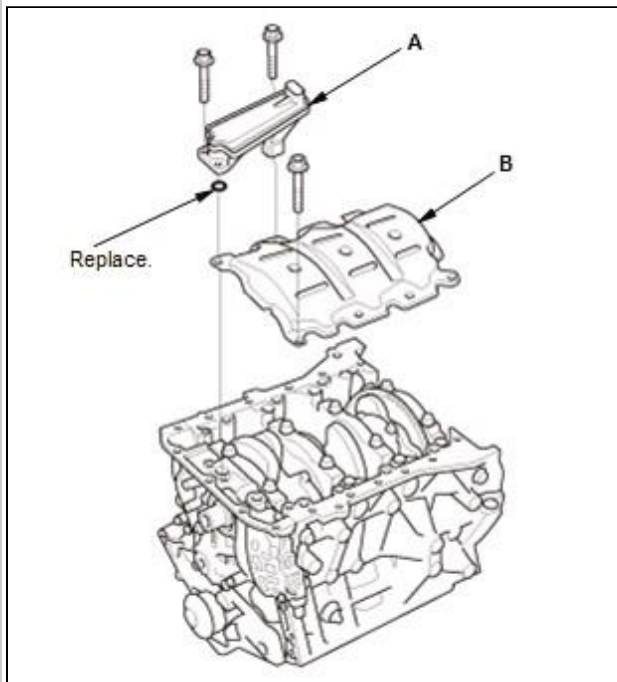
4. Oil Filter Base/Oil Filter Assembly - Remove



1. Remove the oil filter base/oil filter assembly.

Courtesy of HONDA, U.S.A., INC.

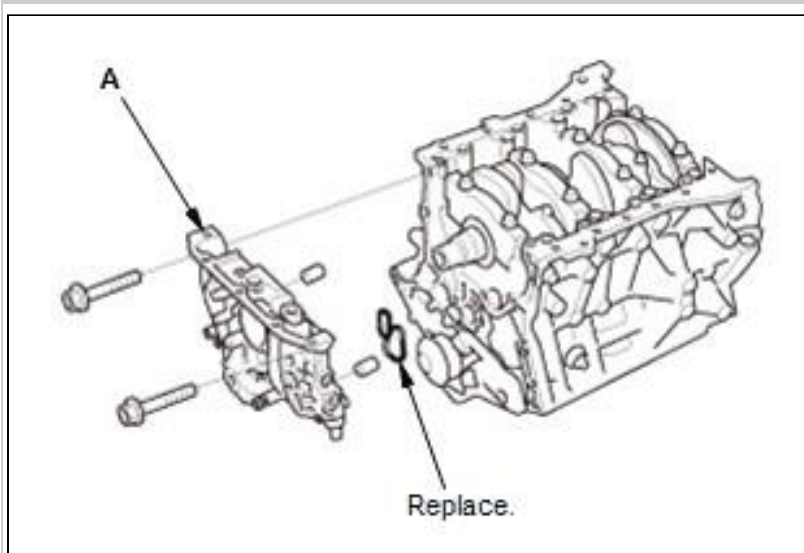
5. Engine Oil Strainer and Baffle Plate - Remove



1. Remove the oil strainer (A) and the baffle plate (B).

Courtesy of HONDA, U.S.A., INC.

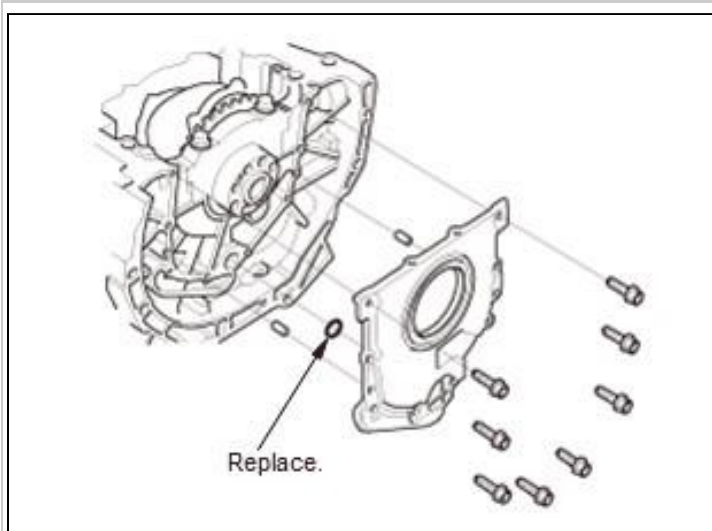
6. Oil Pump - Remove



Courtesy of HONDA, U.S.A., INC.

1. Remove the oil pump (A).

7. Engine Block End Cover - Remove



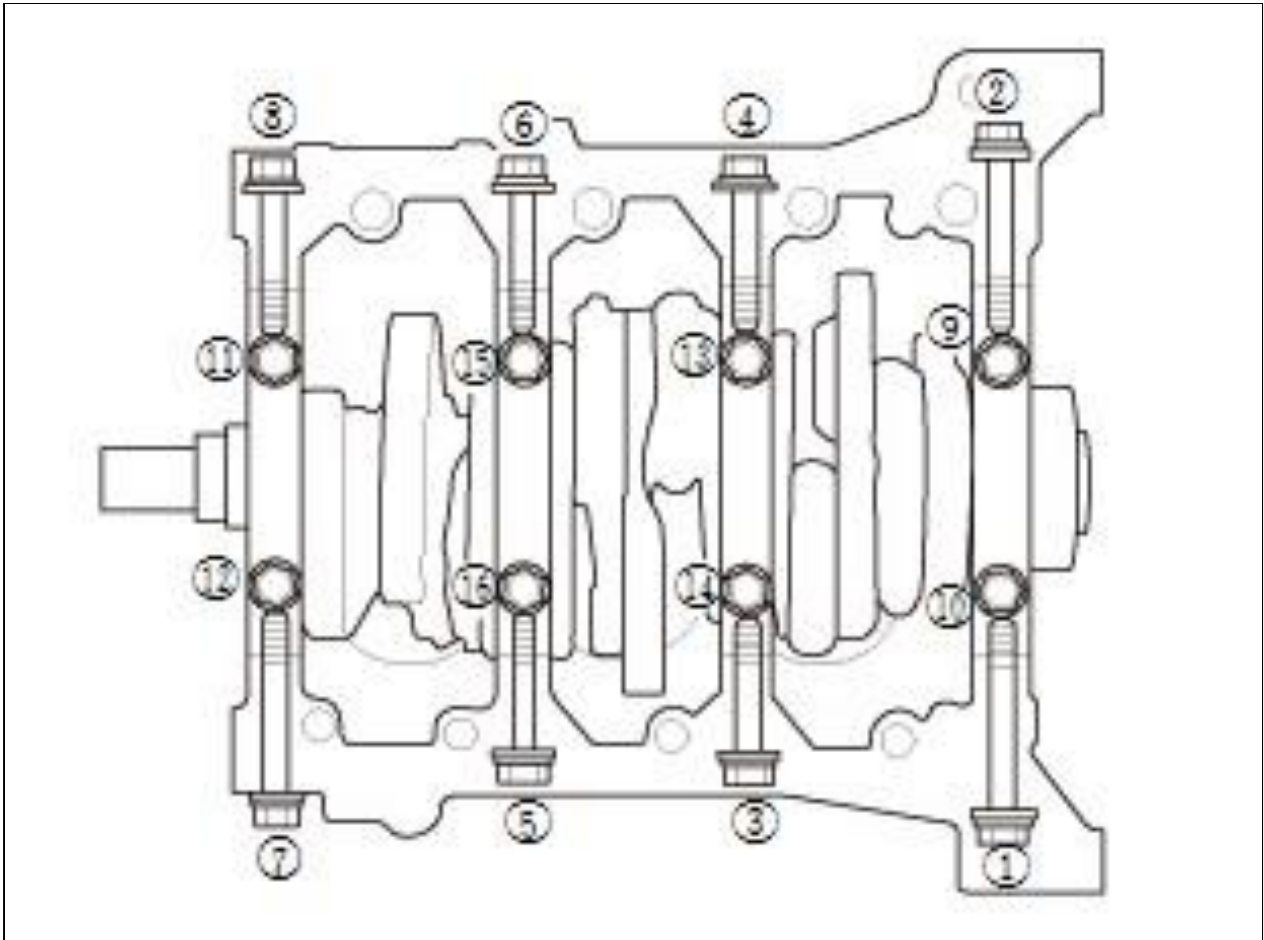
Courtesy of HONDA, U.S.A., INC.

1. Remove the engine block end cover.

8. Piston/Connecting Rod Assembly - Remove

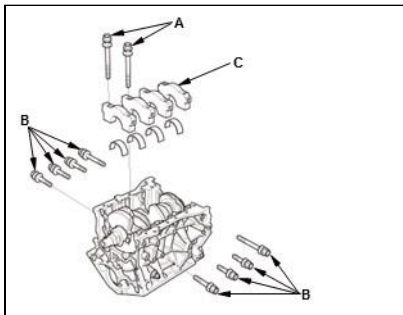
1. Remove the piston/connecting rod assembly .

9. Main Bearing Cap - Remove Fig 1: Main Bearing Cap And Side Bolt Loosening Sequence



Courtesy of HONDA, U.S.A., INC.

1. 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.

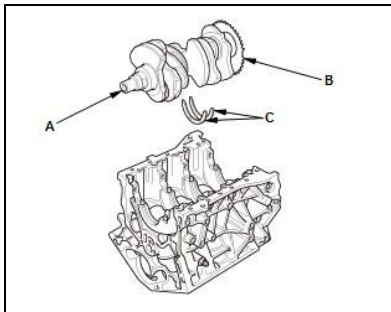


Courtesy of HONDA, U.S.A., INC.

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

10. Crankshaft - Remove

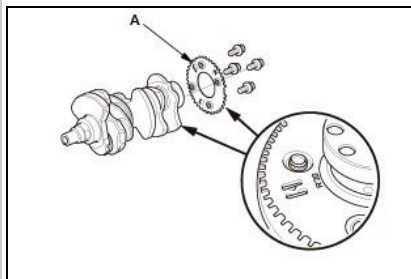
1. Lift the crankshaft (A) out of the engine block, being careful not to damage the journals and the CKP pulse plate (B)
2. Remove the thrust washers (C)



Courtesy of HONDA, U.S.A., INC.

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

11. CKP Pulse Plate - Remove

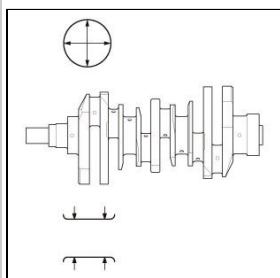


Courtesy of HONDA, U.S.A., INC.

1. Clean the crankshaft oil passages with pipe cleaners or a suitable brush
2. Check the keyway slot and the threaded holes for damage
3. Remove the CKP pulse plate (A). **NOTE** : Be careful not to damage the journals and the CKP pulse plate.

Inspection

1. Crankshaft - Inspect



Courtesy of HONDA, U.S.A., INC.

Out-of-Round and Taper

1. Clean the crankshaft oil passages with pipe cleaners or a suitable brush
2. Check the keyway slot and the threaded holes for damage
3. Measure the out-of-round at the middle of each rod and the 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)

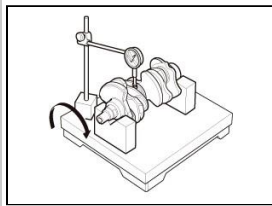
4. Measure the taper at the edges of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

Journal Taper

Standard (New):

0.005 mm (0.00020 in) max.

| | |
|-----------------------|------------------------------|
| Service Limit: | 0.010 mm (0.00039 in) |
|-----------------------|------------------------------|



Courtesy of HONDA, U.S.A., INC.

Straightness
 5. Place the V-blocks on a flat surface
 6. Check the total runout with the crankshaft supported on V-blocks
 7. 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) |
|-----------------------|------------------------------|

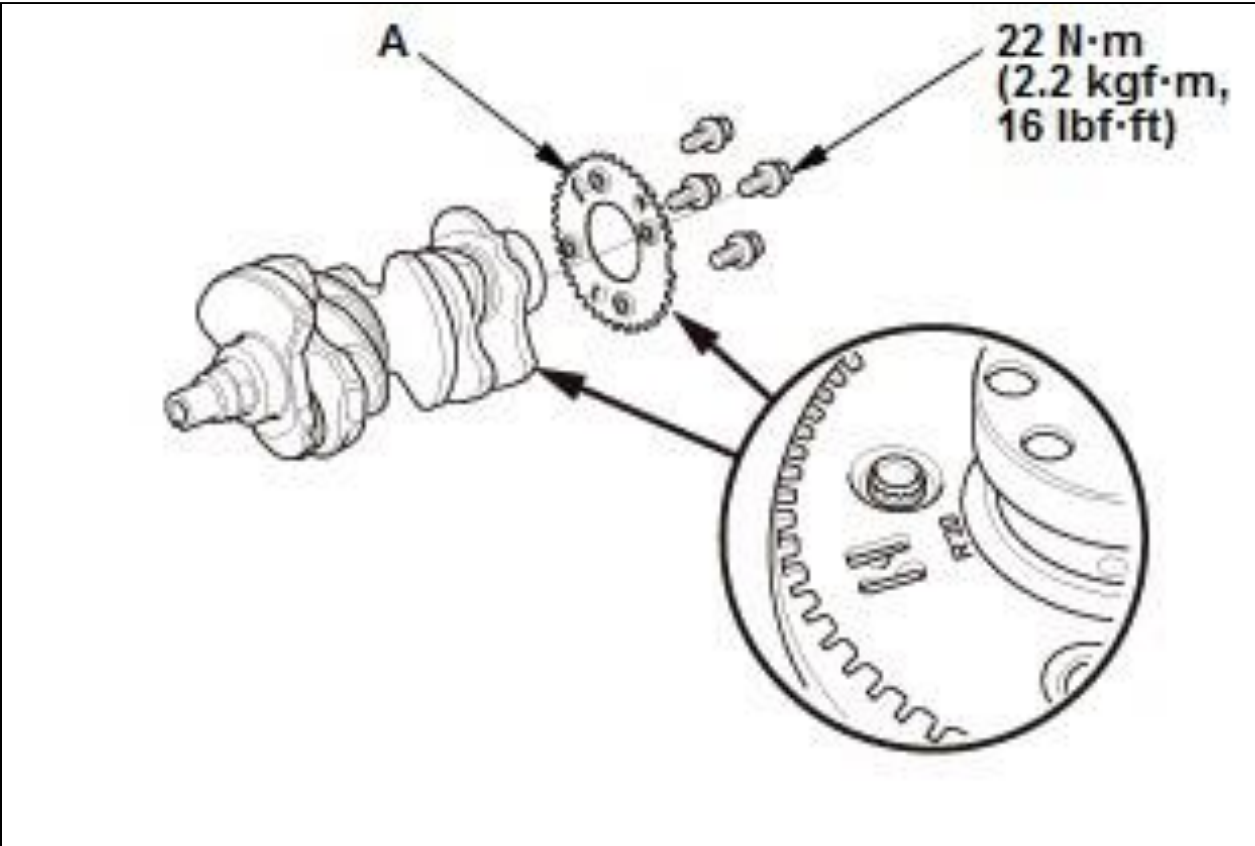
Installation

1. Main Bearing Clearance - Check

| |
|---|
| 1. Check the main bearing clearance with a plastigage . |
|---|

2. CKP Pulse Plate - Install

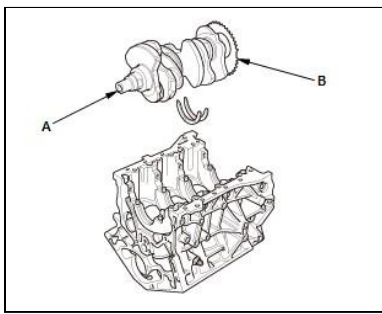
Fig 2: CKP Pulse Plate With Torque Specifications



Courtesy of HONDA, U.S.A., INC.

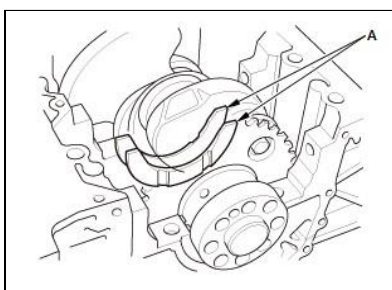
1. Install the CKP pulse plate (A). **NOTE:** Be careful not to damage the journals and the CKP pulse plate.

3. Crankshaft - Install



Courtesy of HONDA, U.S.A., INC.

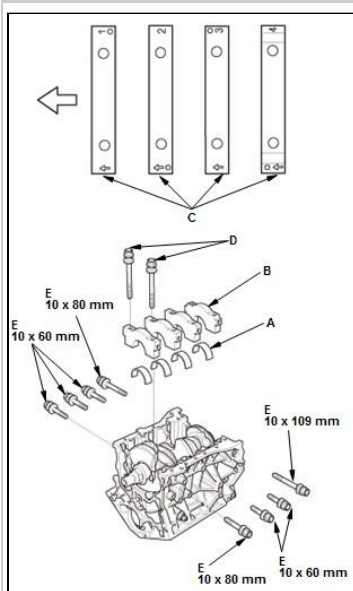
1. Lower the crankshaft (A) into the engine block, being careful not to damage the journals and the CKP pulse plate (B).



Courtesy of HONDA, U.S.A., INC.

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

4. Main Bearing Cap - Loosely Install



Courtesy of HONDA, U.S.A., INC.

1. Install the main bearings (A) and the main bearing caps (B) with the arrow (C) facing the timing belt side of the engine block
2. 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)
3. Set the crankshaft to bottom dead center (BDC) for the cylinder.

5. Connecting Rod Bearing Clearance - Check

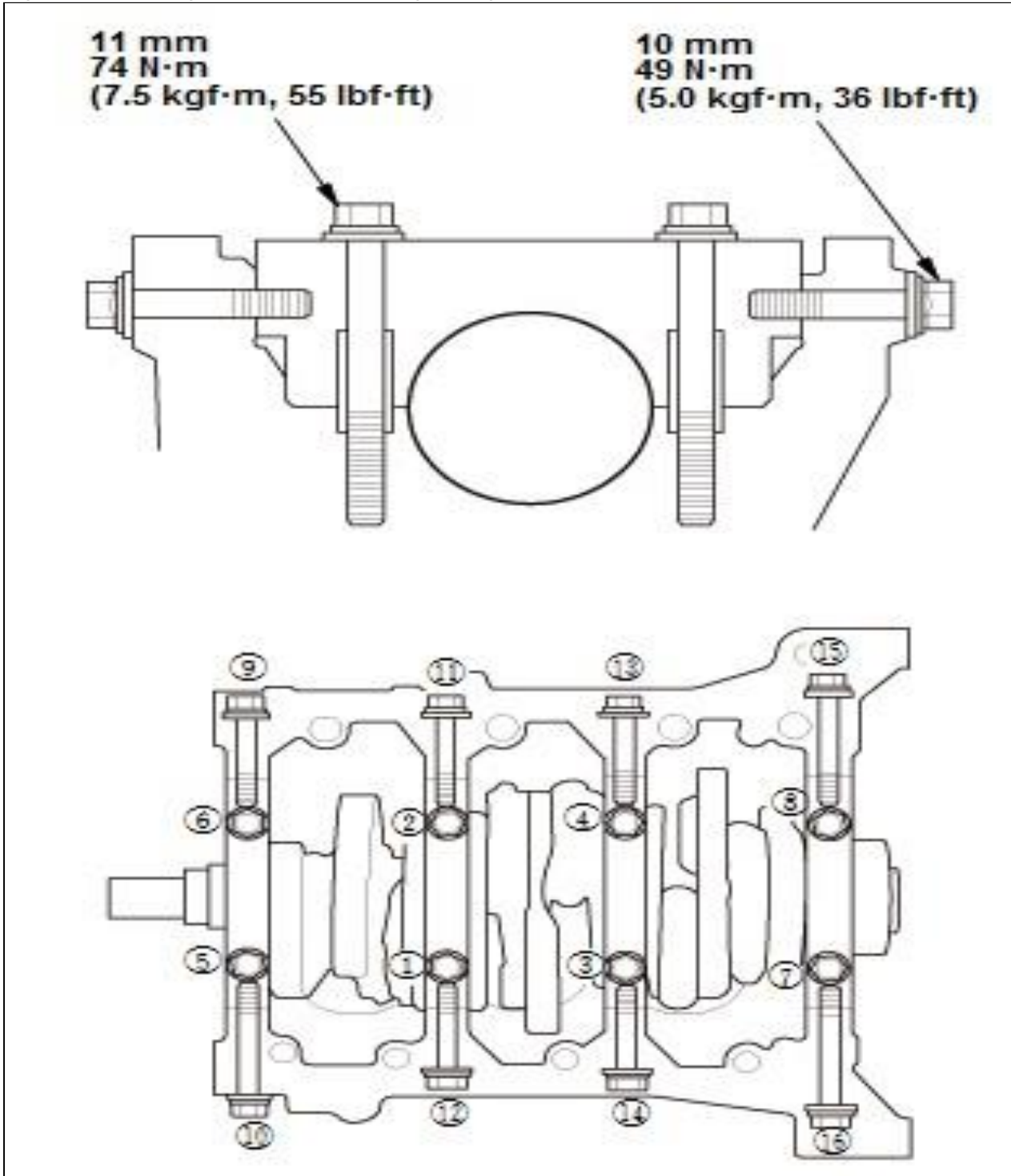
1. Check the connecting rod bearing clearance with a plastigage .

6. Piston/Connecting Rod Assembly - Install

1. Install the piston/connecting rod assembly .

7. Main Bearing Cap Bolt - Tighten

Fig 3: Main Bearing Cap And Side Bolt Tightening Sequence With Torque Specifications

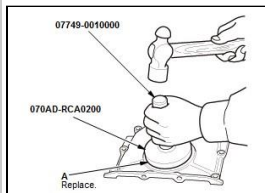


Courtesy of HONDA, U.S.A., INC.

1. Tighten the main bearing cap bolts, then tighten the main bearing cap side bolts to the specified torque in the sequence as shown. Repeat the torque sequence again to ensure the bolts are properly torqued
2. Remove all of the old liquid gasket from the engine block end cover mating surfaces, the bolts, and the bolt holes
3. Clean and dry the engine block end cover mating surfaces and the crankshaft oil seal housing

4. Apply a light coat of new engine oil to the lip of the crankshaft oil seal.

8. Crankshaft Oil Seal - Install (Engine Block End Cover)

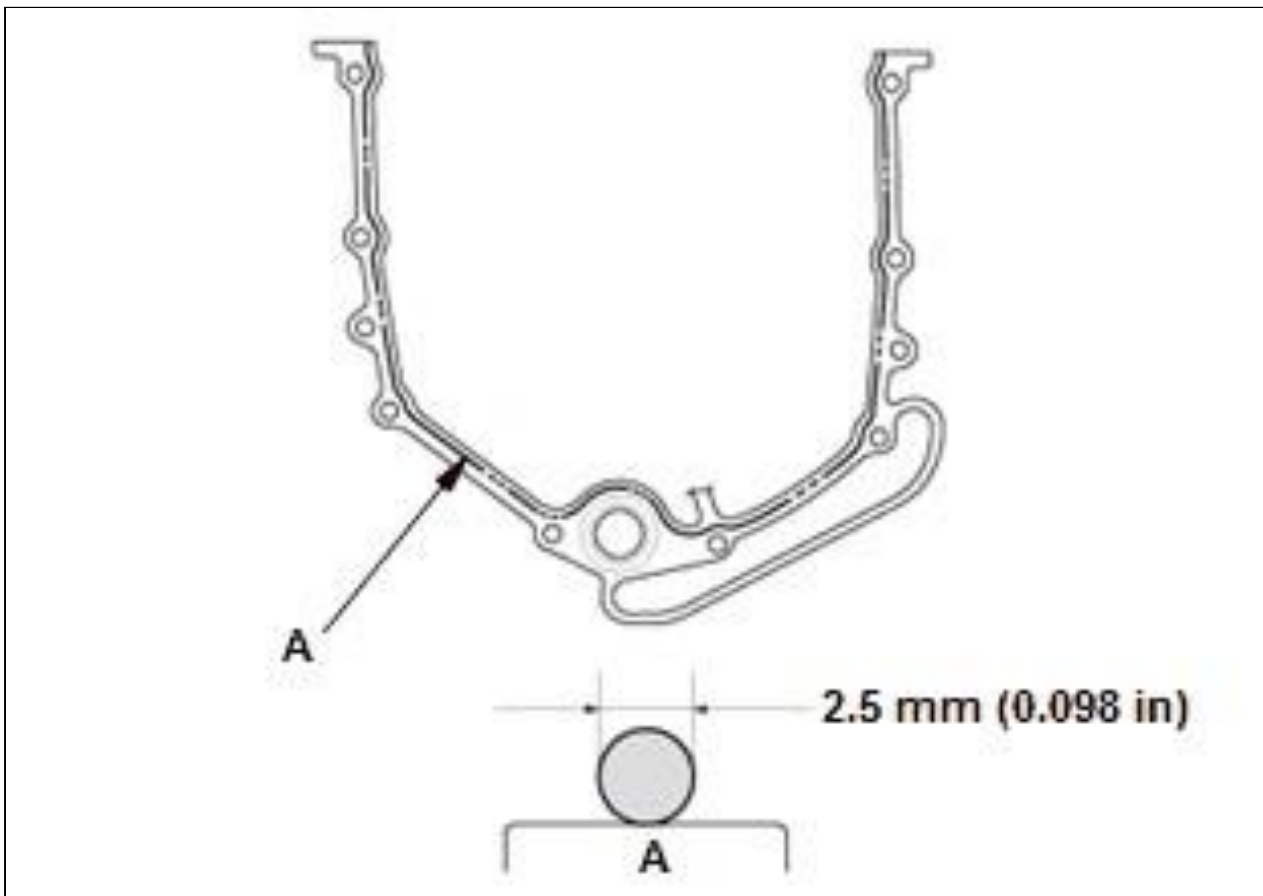
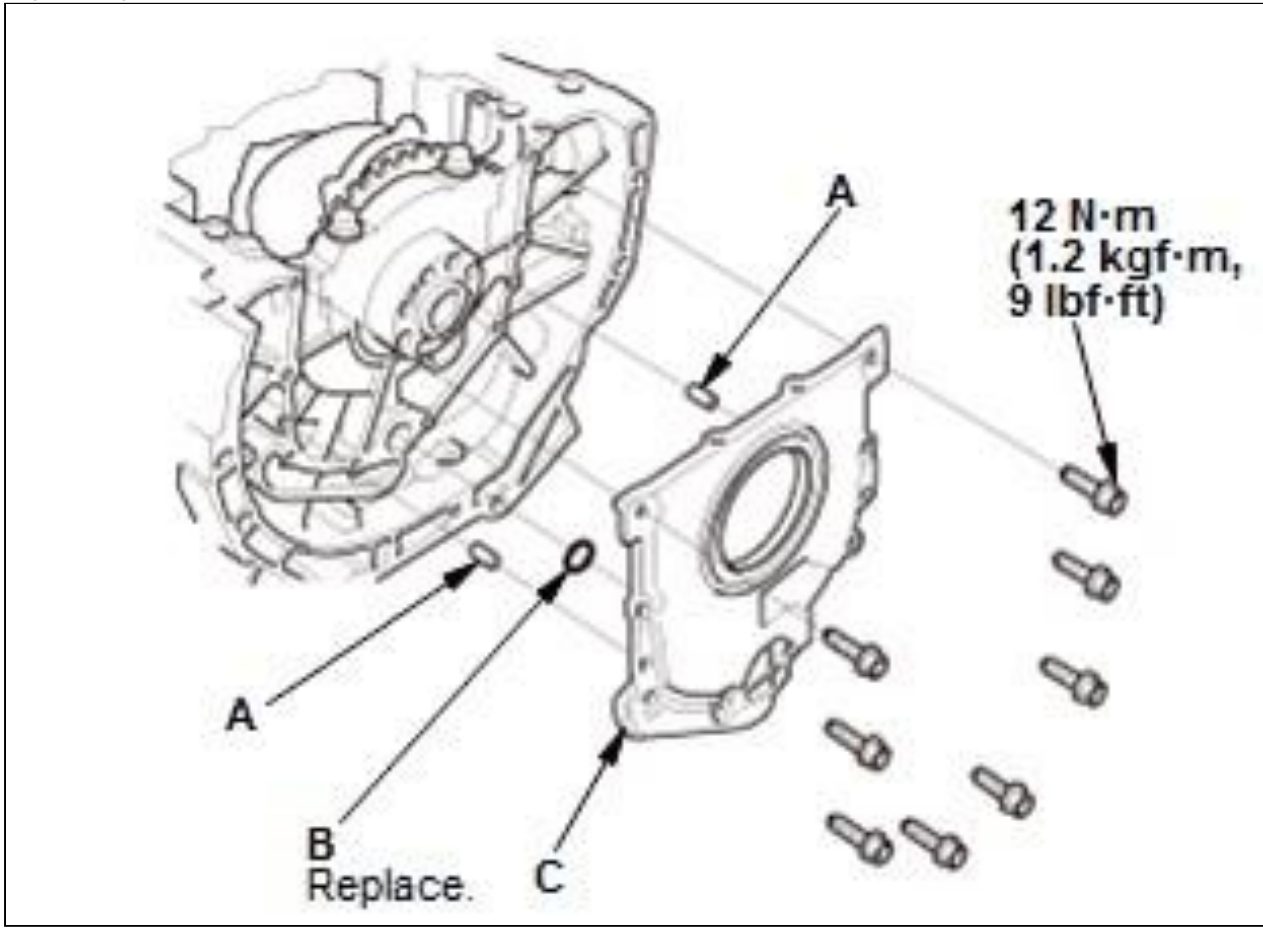


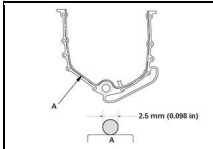
Courtesy of HONDA, U.S.A.,
INC.

1. 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.

9. Engine Block End Cover - Install

Fig 4: Engine Block End Cover With Torque Specifications



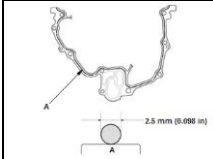
| | |
|---|---|
|  | <p>1. Apply liquid gasket (P/N 08717-0004, 08718-0003, 08718-0004, or 08718-0009) to the engine block mating surface of the engine block end cover and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.</p> |
| <p>Courtesy of HONDA, U.S.A., INC.</p> | <p>NOTE:</p> <ol style="list-style-type: none"> 1. Apply a 2.5 mm (0.098 in) diameter bead of liquid gasket along the broken line (A). 2. If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes. 3. If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply the new liquid gasket. |

| |
|---|
| <p>2. Install the dowel pins (A), a new O-ring (B), and the engine block end cover (C) on the engine block.</p> |
| <p>NOTE:</p> <ol style="list-style-type: none"> 1. Wait at least 30 minutes before filling the engine with oil. 2. Do not run the engine for at least 3 hours after installing the engine block end cover. |
| <p>3. Clean the excess oil off the crankshaft, and check that the oil seal lip is not distorted.</p> |

10. Crankshaft Oil Seal - Install (Oil Pump)

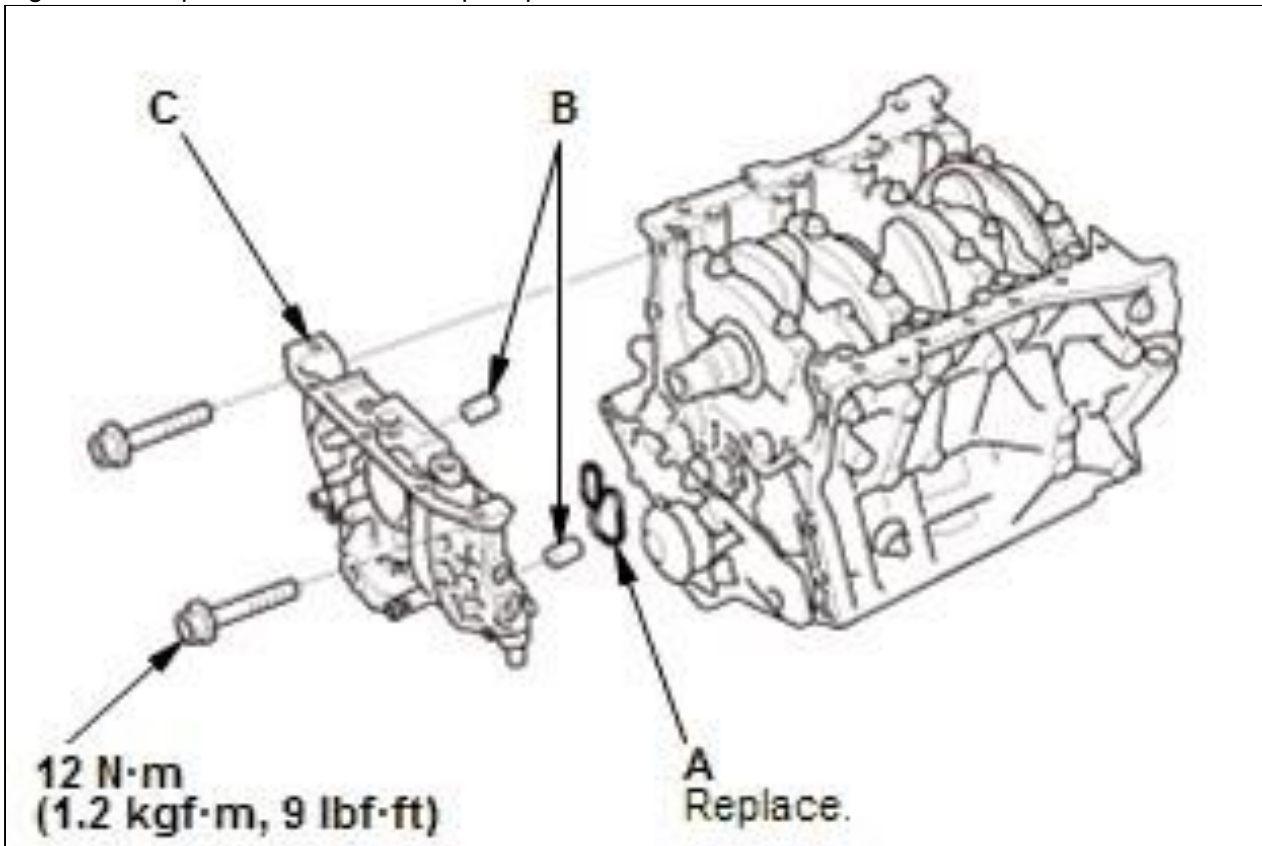
| |
|---|
| <p>1. Install a new crankshaft oil seal in the oil pump .</p> |
|---|

11. Oil Pump - Install

| | |
|---|---|
|  | <p>1. 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.</p> |
| <p>Courtesy of HONDA, U.S.A., INC.</p> | <p>NOTE:</p> <ol style="list-style-type: none"> 1. Apply a 2.5 mm (0.098 in) diameter bead of liquid gasket along the broken line (A). |

2. If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
3. 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 5: Oil Pump Installation With Torque Specifications



Courtesy of HONDA, U.S.A., INC.

2. Apply a light coat of new engine oil to the lip of the crankshaft oil seal, and to the new O-ring (A)
3. Install the dowel pins (B), then align the inner rotor with the crankshaft, and install the oil pump(C).

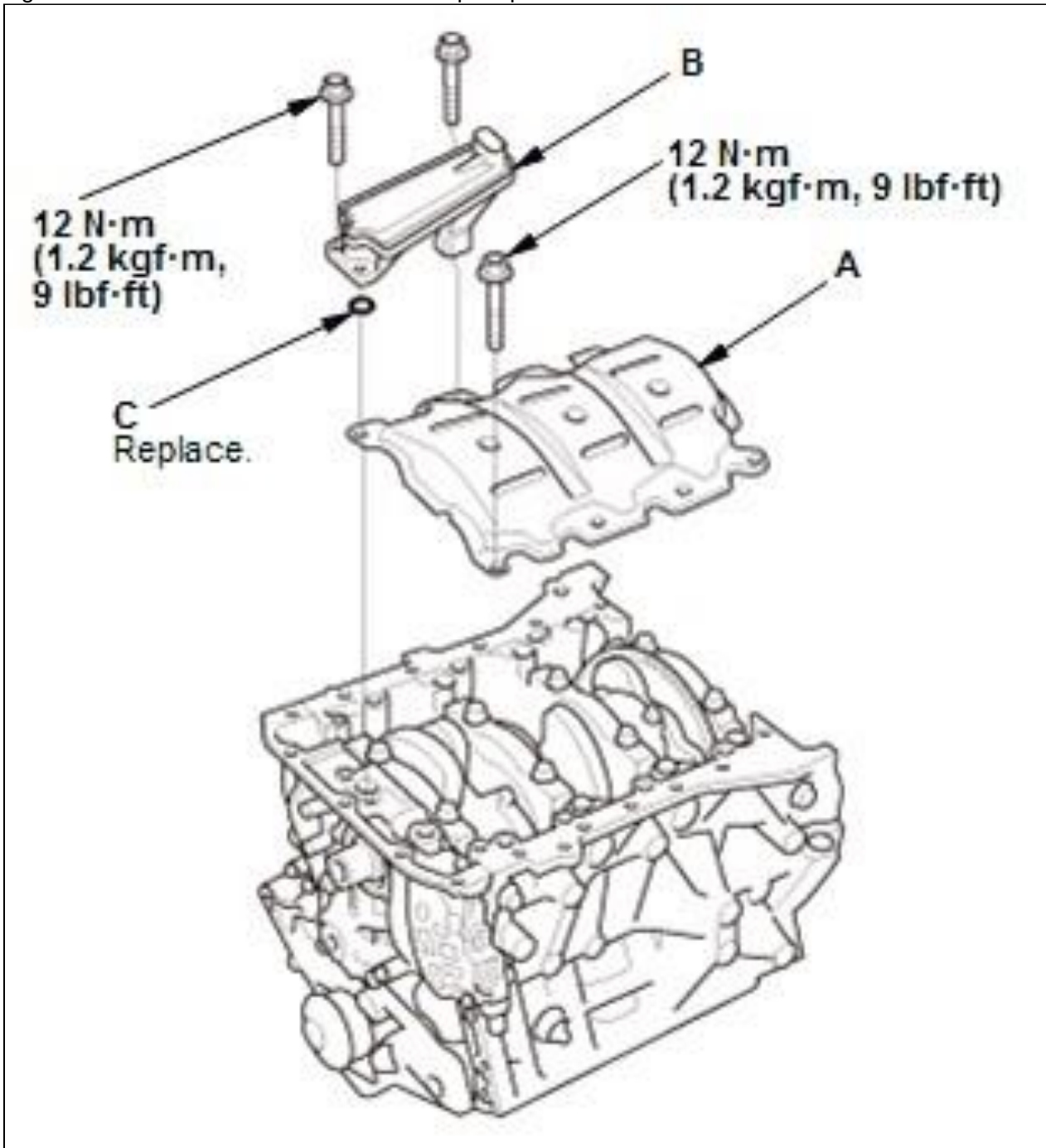
NOTE:

1. Wait at least 30 minutes before filling the engine with oil.
2. Do not run the engine for at least 3 hours after installing the engine block end cover and the oil pump.

4. Clean the excess oil off the crankshaft, and check that the oil seal lip is not distorted.

12. Engine Oil Strainer and Baffle Plate - Install

Fig 6: Baffle Plate And Oil Strainer With Torque Specifications

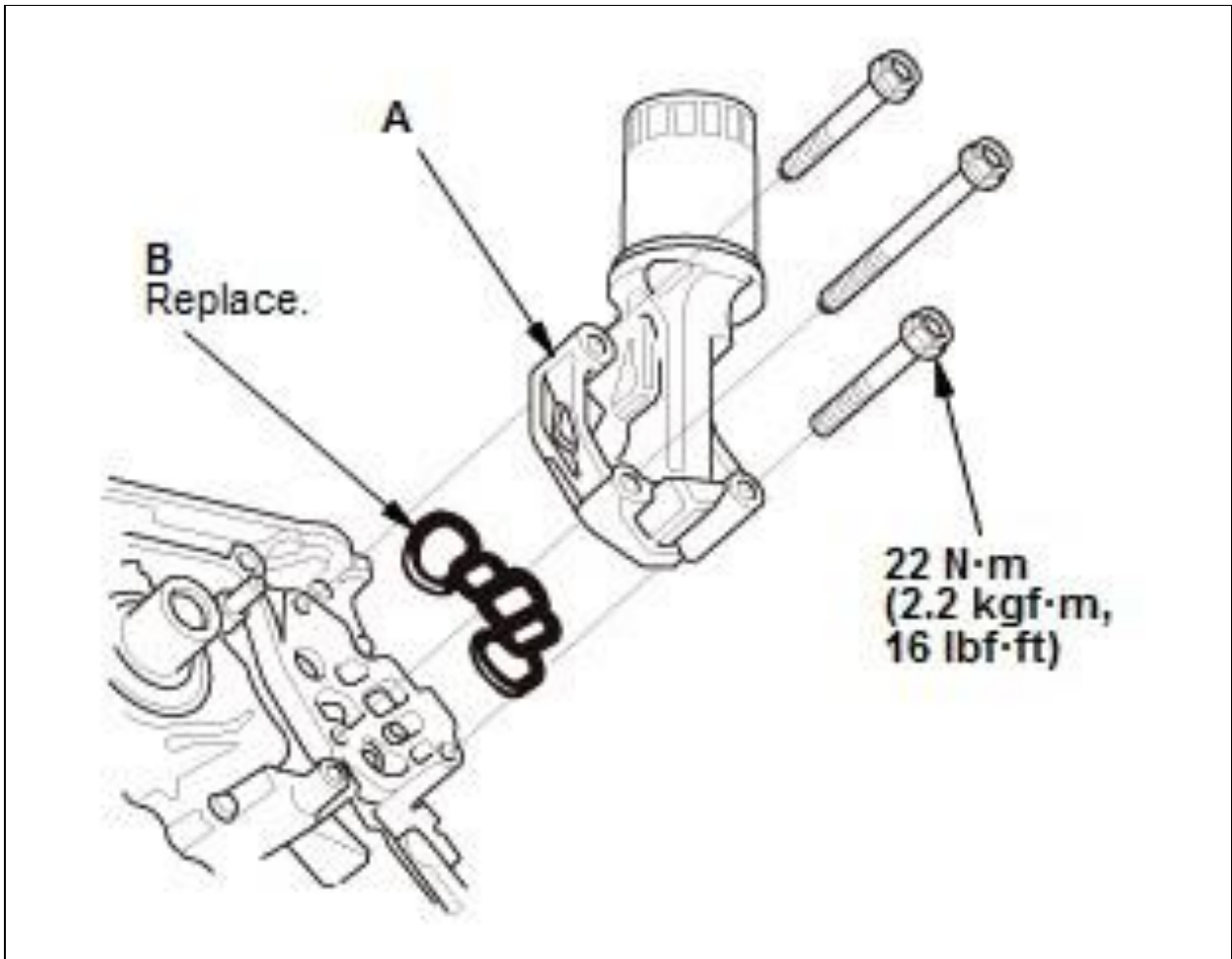


Courtesy of HONDA, U.S.A., INC.

1. Install the baffle plate (A)
2. Install the oil strainer (B) with a new O-ring (C).

13. Oil Filter Base/Oil Filter Assembly - Install

Fig 7: Oil Filter Base With Torque Specifications



Courtesy of HONDA, U.S.A., INC.

| |
|---|
| 1. Install the oil filter base/oil filter assembly (A) with a new O-ring (B). |
|---|

14. Oil Pan Assembly - Install

| |
|--------------------------|
| 1. Install the oil pan . |
|--------------------------|

15. Timing Belt Drive Pulley- Remove

| |
|--|
| 1. Remove the timing belt drive pulley from the crankshaft . |
|--|

16. Cylinder Head - Install

| |
|--------------------------------|
| 1. Install the cylinder head . |
|--------------------------------|