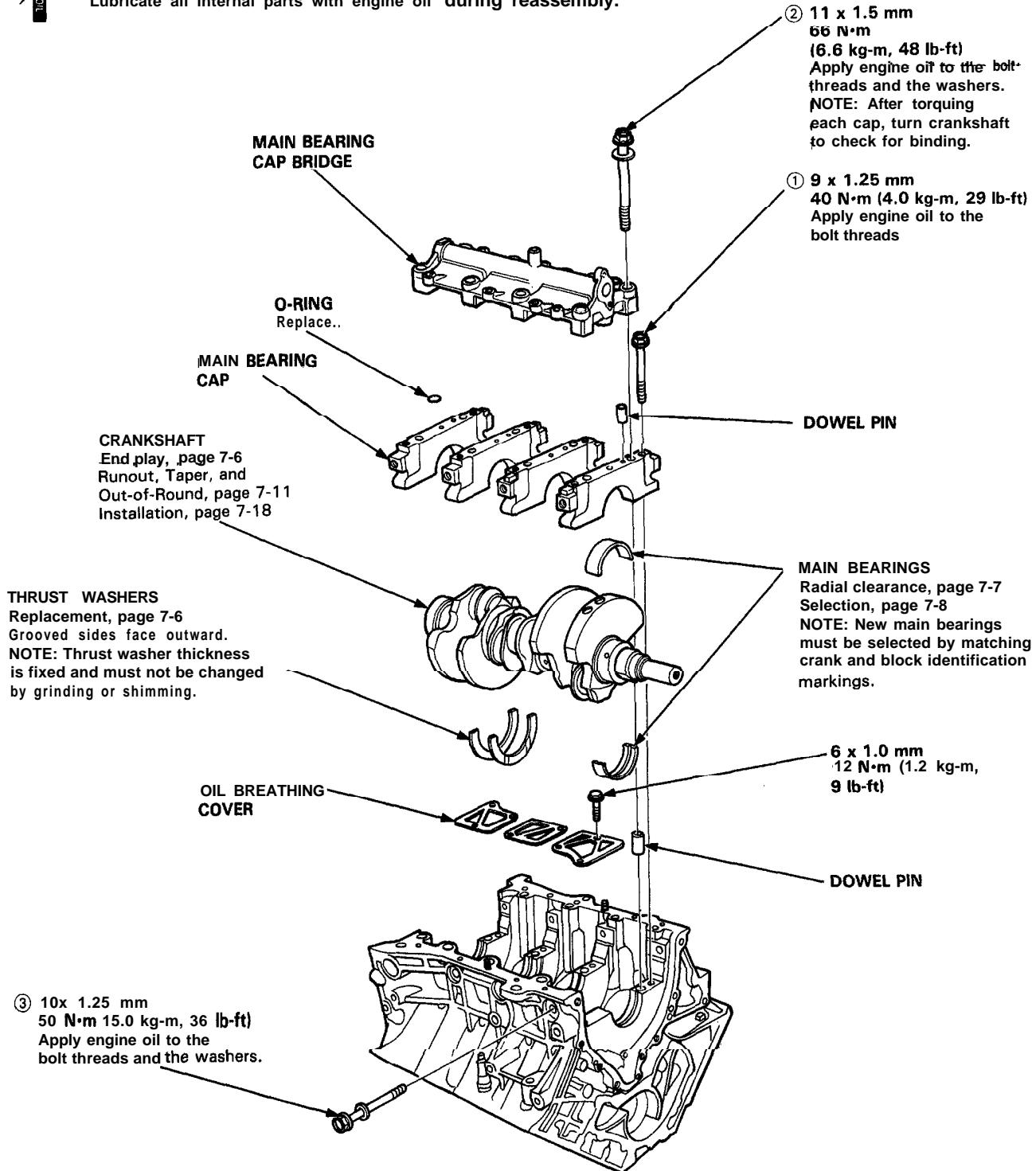


Engine Block

Illustrated Index (cont'd)



Lubricate all internal parts with engine oil during reassembly.

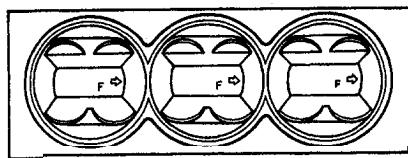




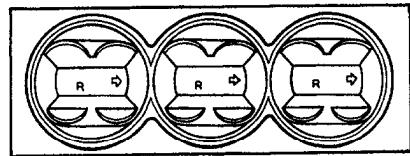
NOTE: New rod bearings must be selected by matching connecting rod assembly and crankshaft identification markings (page 7-7).

FRONT

No.6 No.5 No.4



TIMING
BELT
SIDE



REAR

CAUTION:

- The piston skirt is coated with molybdenum; handle the piston carefully to prevent any damage.
- The connecting rods are made of titanium. Attempting to remove the piston pin with conventional shop equipment will damage the connecting rod.
- If the piston, connecting rod, or piston pin require replacement, all three must be replaced as an assembly.

PISTON

Inspection, page 7-I 2

NOTE:

- Before removing piston, inspect the top of the cylinder bore for carbon build-up or ridge. Remove ridge if necessary, page 7-9.
- To maintain proper piston clearance, match the letter on the piston top (No letter denotes A.) with the letter for each cylinder stamped on the block.

CONNECTING ROD ASSEMBLY
End play, page 7-6
Selection, oaae 7-I 4

CONNECTING ROD BEARINGS

Clearance, page 7-7
Selection, page 7-8

CONNECTING ROD WASHER

CONNECTING ROD CAP NUT

8 x 0.75 mm
20 N·m (2.0 kg-m, 14 lb-ft)
then turn 95°

After torquing each bearing cap, rotate crankshaft to check for binding.

CYLINDER BORE SIZES

NOTE: To maintain proper piston clearance, match these letters with the letters on the pistons. The letters on the block read from left to right, No. 1 through No. 3 cylinders on the first line and No. 4 through No. 6 cylinders on the second line.

No.1 No.3
No.4 No.6

CONNECTING ROD BEARING CAP

Installation, page 7-18
NOTE: Install caps so the bearing recess is on the same side as the recess in the rod.

PISTON RINGS

Replacement, page 7-I 5
Measurement, pages 7-I 5 and 16
Alignment, page 7-I 6

CONNECTING ROD BOLT

Inspect top of each cylinder bore for carbon build-up or ridge before removing piston.
Remove ridge if necessary, page 7-9

ENGINE BLOCK

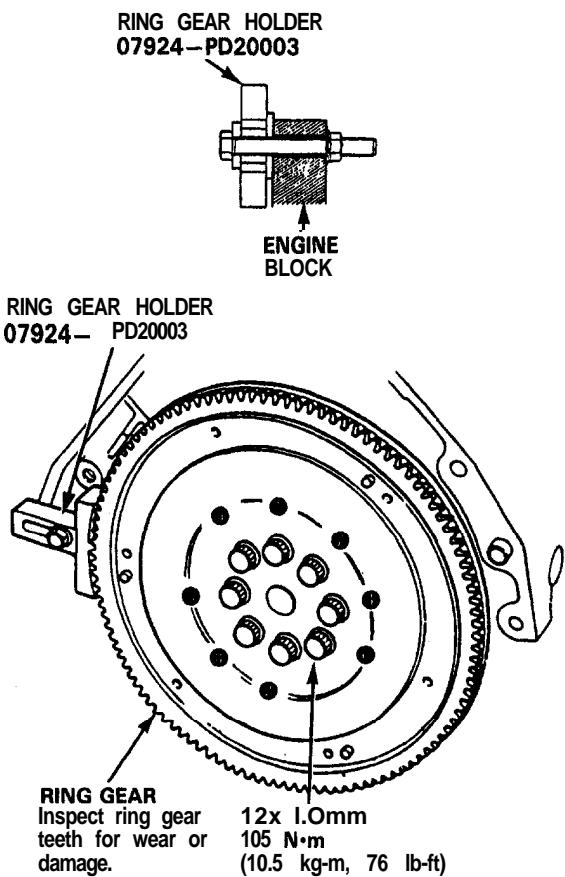
Cylinder bore inspection, page 7-13
Warpage inspection, page 7-13
Cylinder bore honing, oaae 7-14

Flywheel and Drive Plate

- Replacement

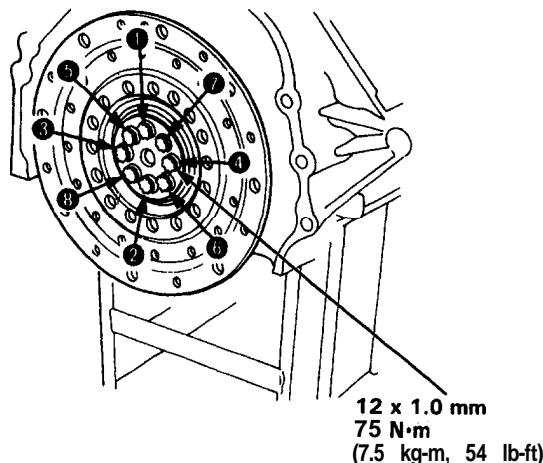
Manual Transmission:

Remove the eight flywheel bolts, then separate the flywheel from the crankshaft flange. After installation, tighten the bolts in the sequence shown.



Automatic Transmission:

Remove the eight drive plate bolts, then separate the drive plate from the crankshaft flange. After installation, tighten the bolts in the sequence shown.



Connecting Rod and Crankshaft

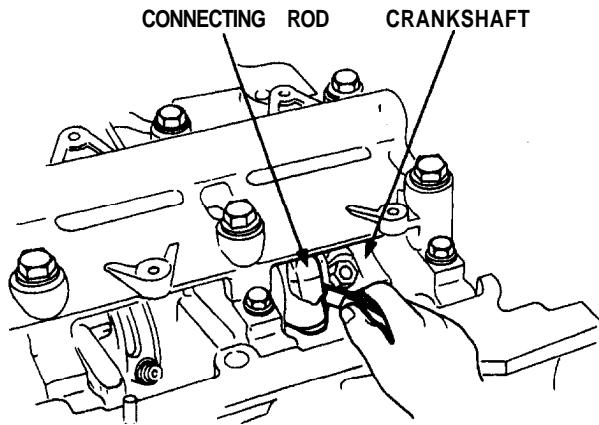
- End Play

Connecting Rod End Play:

Standard (New): 0.15-0.30 mm

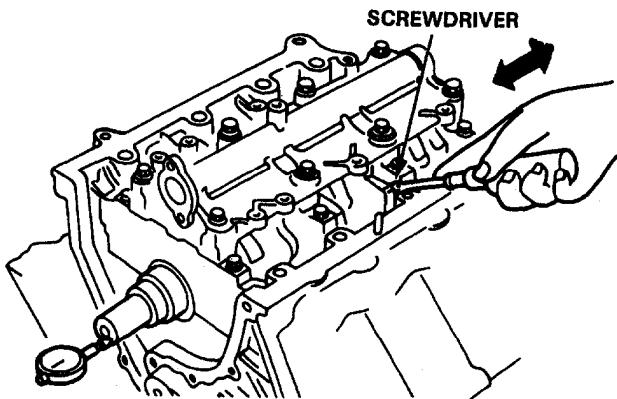
(0.006-0.012 in)

Service Limit: 0.40 mm (0.016 in)



- if out-of-tolerance, install a new connecting rod.
- if still out-of-tolerance, replace the crankshaft (pages 7-9, 10 and 7-I 8).

Push the crank firmly away from the dial indicator, and zero the dial against the end of the crank. Then pull the crank firmly back toward the indicator; dial reading should not exceed service limit.



Crankshaft End Play:

Standard (New): 0.10-0.35 mm

(0.004-0.014 in)

Service Limit: 0.46 mm (0.018 in)

- if end play is excessive, inspect the thrust washers and thrust surface on the crankshaft. Replace parts as necessary.

NOTE: Thrust washer thickness is fixed and must not be changed either by grinding or shimming. Thrust washers are installed with grooved side facing outward.



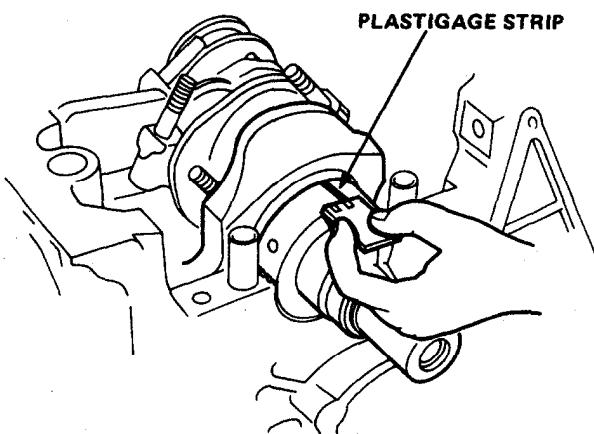
Main Bearings

Clearance

- To check main bearing clearance, remove the main caps and bearing halves.
 - Clean each main journal and bearing half with a clean shop rag.
 - Place one strip of plastigage across each main journal.
- NOTE:** If the engine is still in the car when you bolt the main cap down to check clearance, the weight of the crank and flywheel will flatten the plastigage further than just the torque on the cap bolts, 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.
- Reinstall the bearings, caps and cap bridge, then torque the 9 mm bridge bolts to 40 N·m (4.0 kg-m, 29 lb-ft). Torque the 11 mm cap bolts to 66 N·m (6.6 kg-m, 48 lb-ft).
 - Torque the side bolts to 50 N·m (5.0 kg-m, 36 lb-ft).
 - Remove the bridge, caps and bearings, and measure the widest part of the plastigage.

Main Bearing Clearance:

Standard (New): 0.024-0.048 mm
(0.0009-0.0019 in)
Service Limit: 0.05 mm (0.002 in)



If the plastigage measures too wide or too narrow, (remove the engine if it's still in the car), remove the crank, remove the upper half of the bearing, then install a new, complete bearing with the same color code (select the color as shown on next page), and recheck the clearance.

CAUTION: Do not file, shim, or scrape the bearings or the caps to adjust clearance.

If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check again.

NOTE: If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crank and start over.

Rod Bearings

Clearance

- Remove the connecting rod cap and bearing half.
- Clean the crankshaft rod journal and bearing half with a clean shop rag.
- Place plastigage across the rod journal.

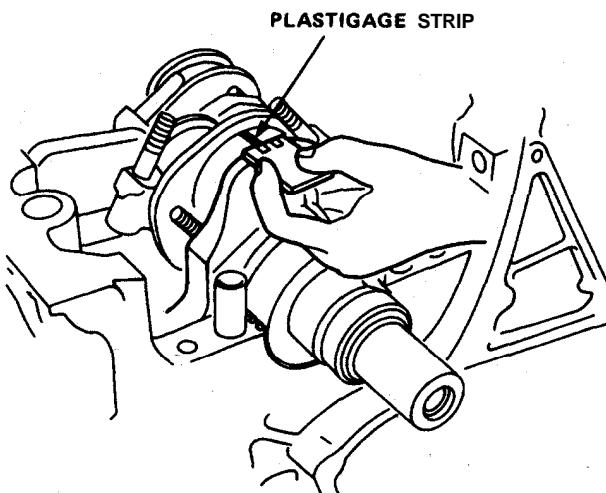
- Reinstall the bearing half and cap, and torque the nuts to 20 N·m (2.0 kg-m, 14 lb-ft), then turn 95° (page 7-I 9).

NOTE: Do not rotate the crank during inspection.

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

Connecting Rod Bearing Clearance:

Standard (New): 0.04-0.06 mm
10.0016-10.0024 in
Service Limit: 0.06 mm (0.0024 in)



- 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 (select color as shown on next page), and recheck the clearance.

CAUTION: Do not file, shim, or scrape the bearing or the caps to adjust clearance.

- If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check clearance again.

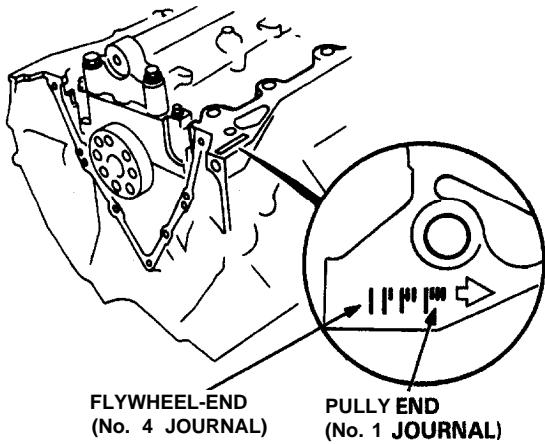
NOTE: If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crank and start over.

Main Bearings

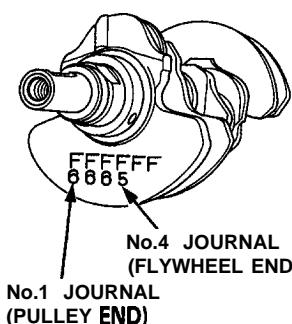
Selection

Crank Bore Code Locations (Letters)

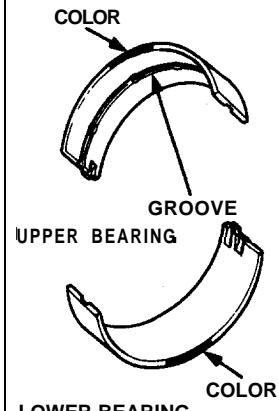
Letters have been stamped on the end of the block as a code for the size of each of the 4 main journal bores. Use them, and the numbers stamped on the crank (codes for main journal size), to choose the correct bearings.



Main Journal Code Locations (Numbers)



Bearing Design



Bearing Identification

Color code is on the edge of the bearing

Smaller main journal

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

Smaller bearing (thinner)

Larger crank bore

A or I	B or II	C or III	D or IIII
--------	---------	----------	-----------

-Small bearing (thicker)

Pink	Pink	Yellow	Yellow
Pink	Yellow	Yellow	Green
Yellow	Yellow	Green	Green
Yellow	Green	Green	Brown
Green	Green	Brown	Brown
Green	Brown	Brown	Black

NOTE: When the different color bearing in top and bottom are mated, the color is irrespective of top or bottom.

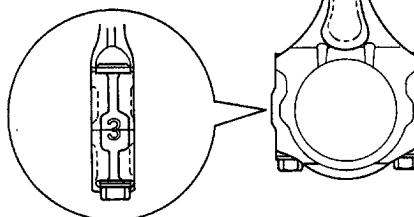
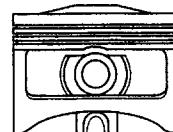
Rod Bearings

Selection

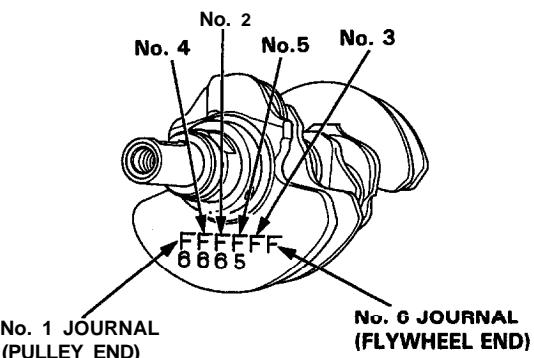
Rod Code Location (Numbers)

Numbers 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 stamped on the crank (codes for rod journal size), to choose the correct bearings.

Half of number is stamped on bearing cap and the other half is stamped on rod.



Rod Journal Code Locations (Letters)



No. 2
No. 4
No. 5
No. 3

No. 1 JOURNAL (PULLEY END)
No. 6 JOURNAL (FLYWHEEL END)

Bearing Identification

Color code is on the edge of the bearing

Smaller rod journal

Smaller bearing (thicker)

Larger big end bore

1	2	3	4
---	---	---	---

-Small bearing (thicker)

Red	Red	Pink	Yellow
Red	Pink	Yellow	Yellow
Pink	Yellow	Yellow	Green
Yellow	Yellow	Green	Brown
Yellow	Green	Brown	Brown
Yellow	Green	Brown	Black
Green	Brown	Brown	Black

NOTE: When the different color bearing in top and bottom are mated, the color is irrespective of top or bottom.