

10. CAM PULLEY/CRANKSHAFT/ PISTON/CYLINDER BARREL

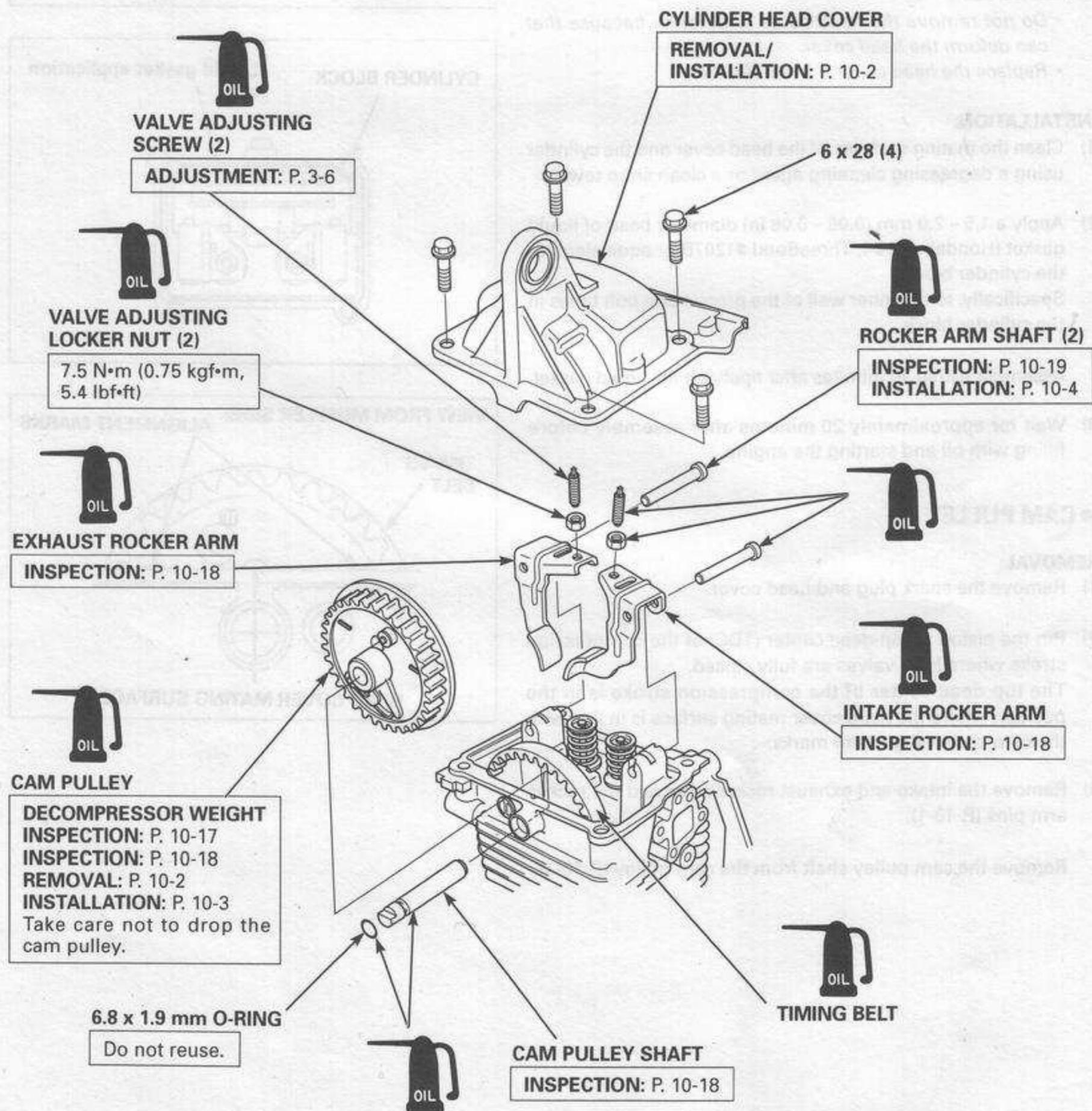
EU2000i

1. CAM PULLEY
2. CRANKCASE COVER/CRANKSHAFT/
CYLINDER BARREL
3. PISTON
4. VALVES

5. GOVERNOR
6. INSPECTION
7. VALVE GUIDE REPLACEMENT
8. VALVE SEAT RECONDITIONING

1. CAM PULLEY

a. REMOVAL/INSTALLATION



• HEAD COVER

REMOVAL:

- 1) Remove the four 6 x 28 mm flange bolts.
- 2) To remove the head cover, insert a screwdriver or equivalent tool into the cylinder recess as shown. Remove the head cover slowly.

- Clean up any spilled engine oil with a shop towel when removing the head cover.

NOTICE

- Do not remove the head cover with force, because that can deform the head cover.
- Replace the head cover if it is deformed.

INSTALLATION:

- 1) Clean the mating surfaces of the head cover and the cylinder using a degreasing cleaning agent or a clean shop towel.
- 2) Apply a 1.5 – 2.0 mm (0.06 – 0.08 in) diameter bead of liquid gasket (Hondabond #4, ThreeBond #1207B or equivalent) to the cylinder block. Specifically, to the inner wall of the groove and bolt holes in the cylinder block.

Assemble within 10 minutes after applying the liquid gasket.

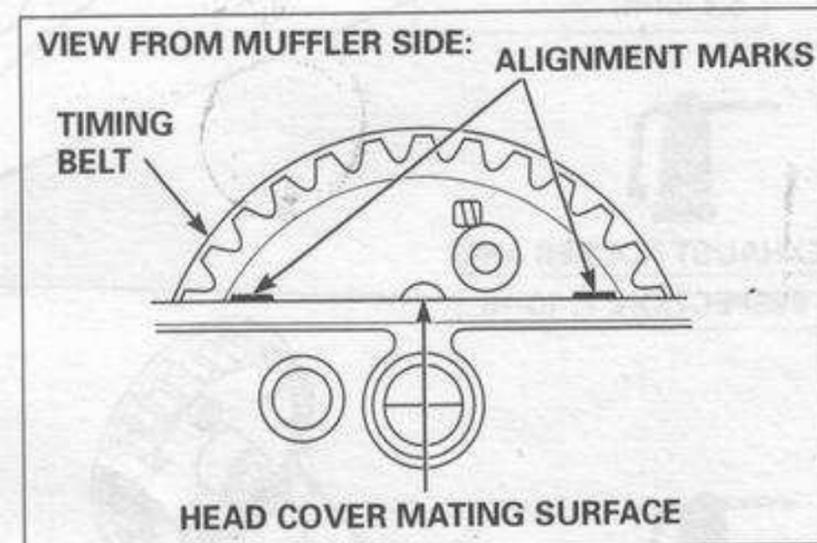
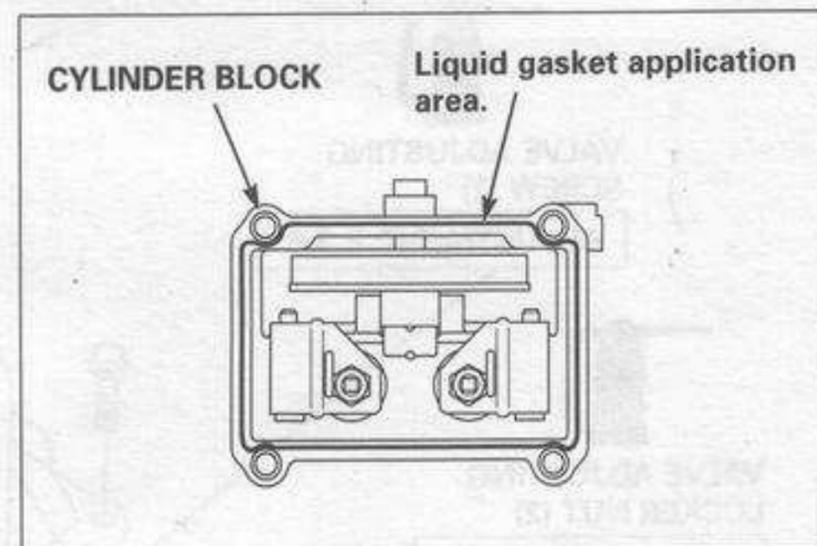
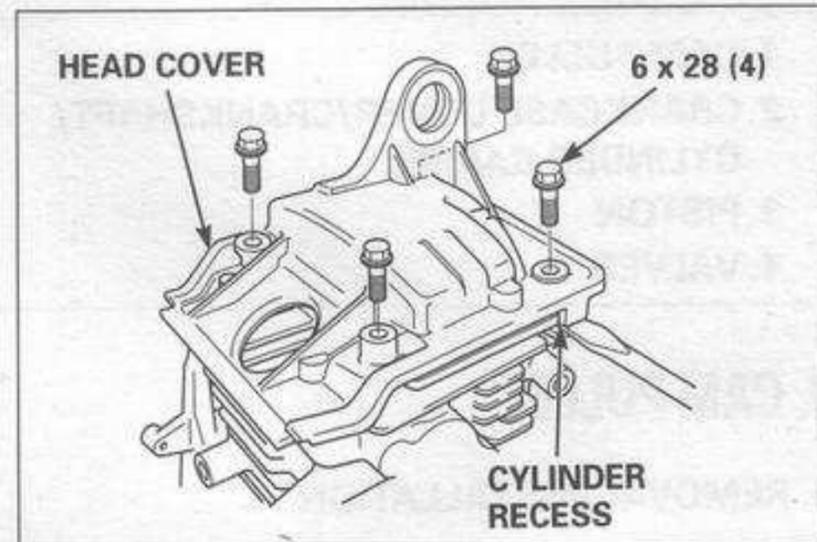
- 3) Wait for approximately 20 minutes after assembly before filling with oil and starting the engine.

• CAM PULLEY

REMOVAL:

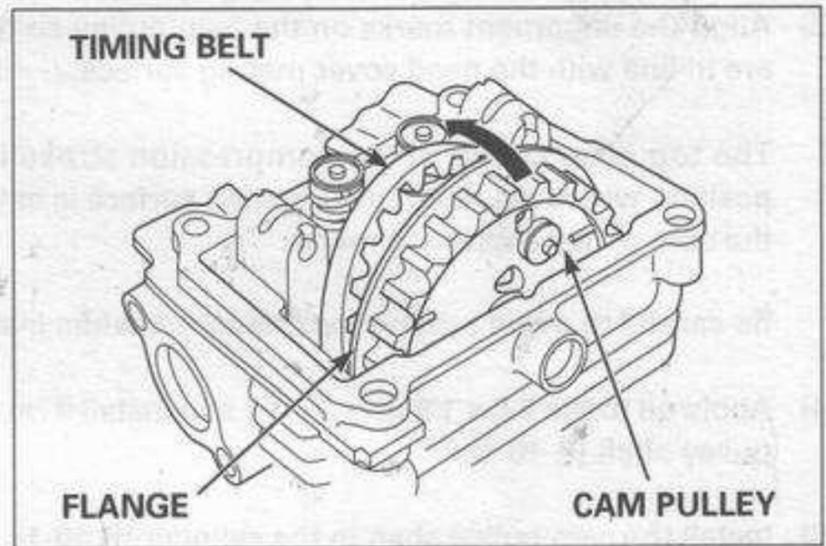
- 1) Remove the spark plug and head cover.
- 2) Put the piston at top dead center (TDC) of the compression stroke where both valves are fully closed. The top dead center of the compression stroke is in the position where the head cover mating surface is in line with the cam pulley alignment marks.
- 3) Remove the intake and exhaust rocker arms and the rocker arm pins (P. 10-1).

Remove the cam pulley shaft from the cam pulley (P. 10-1).



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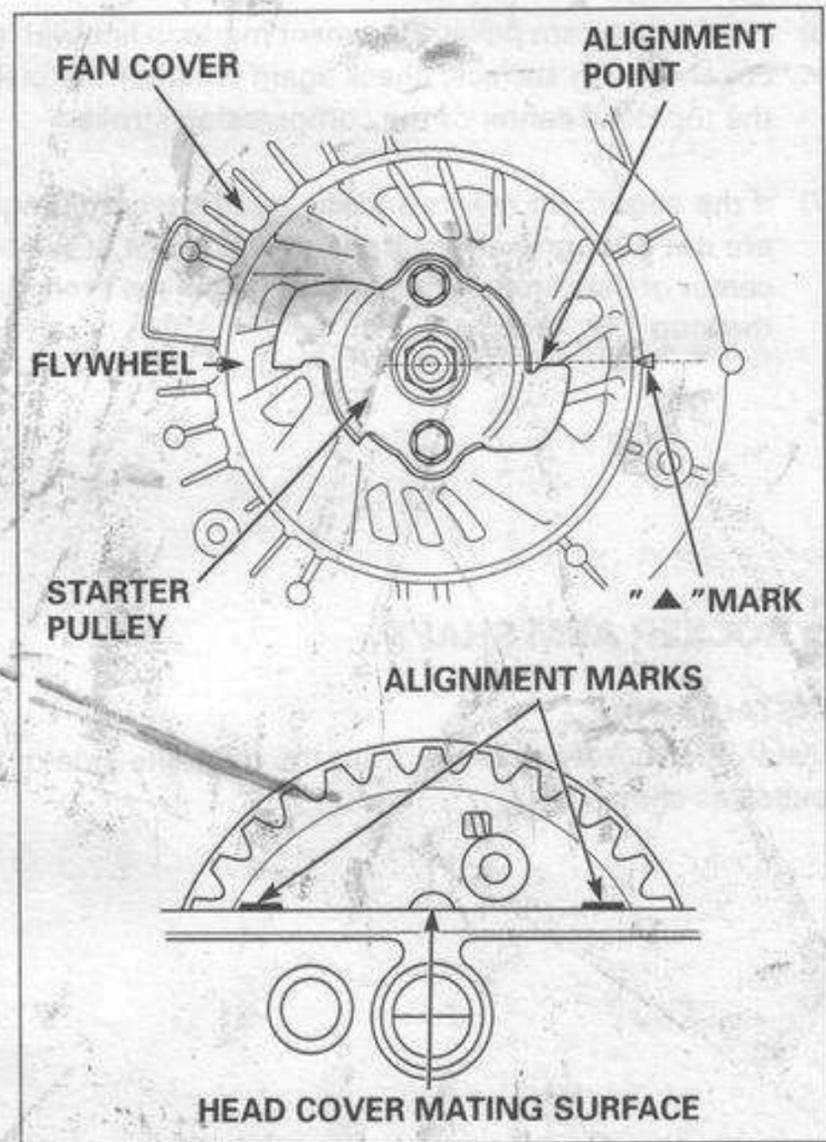
- 4) Push the cam pulley into the cylinder a little. Detach the timing belt from the flange side of the cam pulley as shown, and remove the cam pulley.



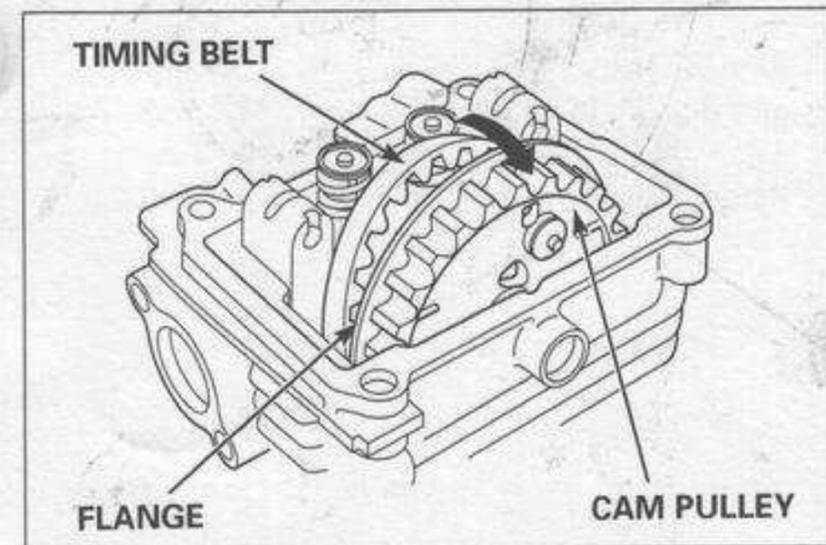
INSTALLATION:

- 1) Put the piston at top dead center (TDC) of the compression stroke where both valves are fully closed. Align the starter pulley alignment point with the fan cover "▲" mark.

The top dead center of the compression stroke is in the position where the head cover mating surface is in line with the cam pulley alignment marks.



- 2) Set the timing belt on the cam pulley from the flange side of the cam pulley.

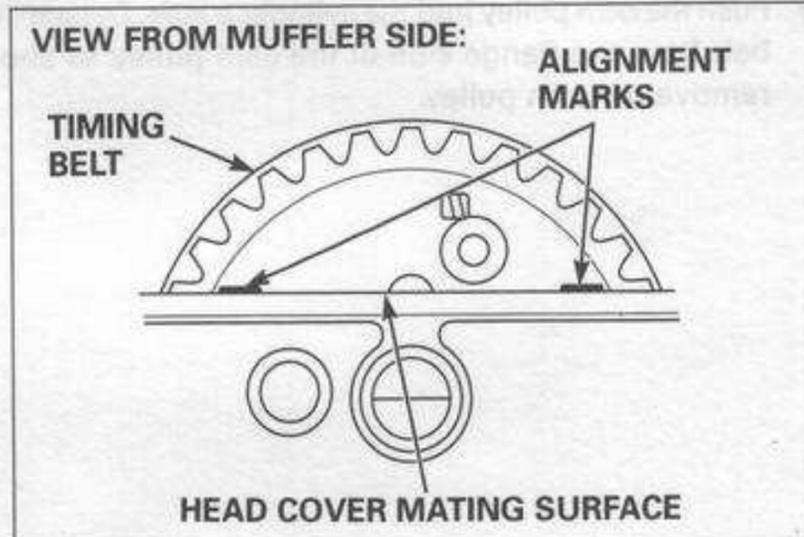


- 3) Align the alignment marks on the cam pulley so that they are in line with the head cover mating surface.

The top dead center of the compression stroke is in the position where the head cover mating surface is in line with the cam pulley alignment marks.

Be careful to avoid turning the crankshaft when installing.

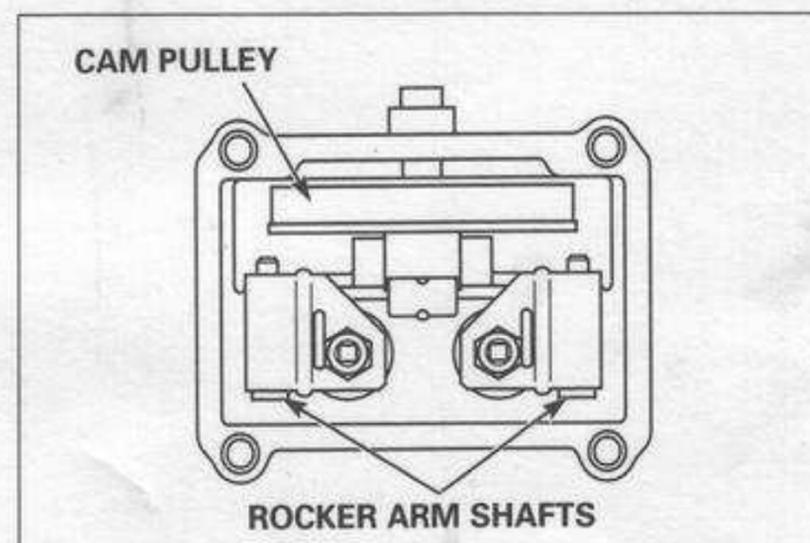
- 4) Apply oil to the 6.8 x 1.9 mm O-ring and install it on the cam pulley shaft (P. 10-1).
- 5) Install the cam pulley shaft in the cylinder (P. 10-1).
- 6) Holding the cam pulley alignment marks in line with the head cover mating surface, check again whether the piston is at the top dead center of the compression stroke.
- 7) If the alignment marks and the head cover mating surface are out of alignment or if the piston is not at the top dead center of the compression stroke, repeat the procedure from the step 1 (P. 10-3).



● ROCKER ARM SHAFT

INSTALLATION:

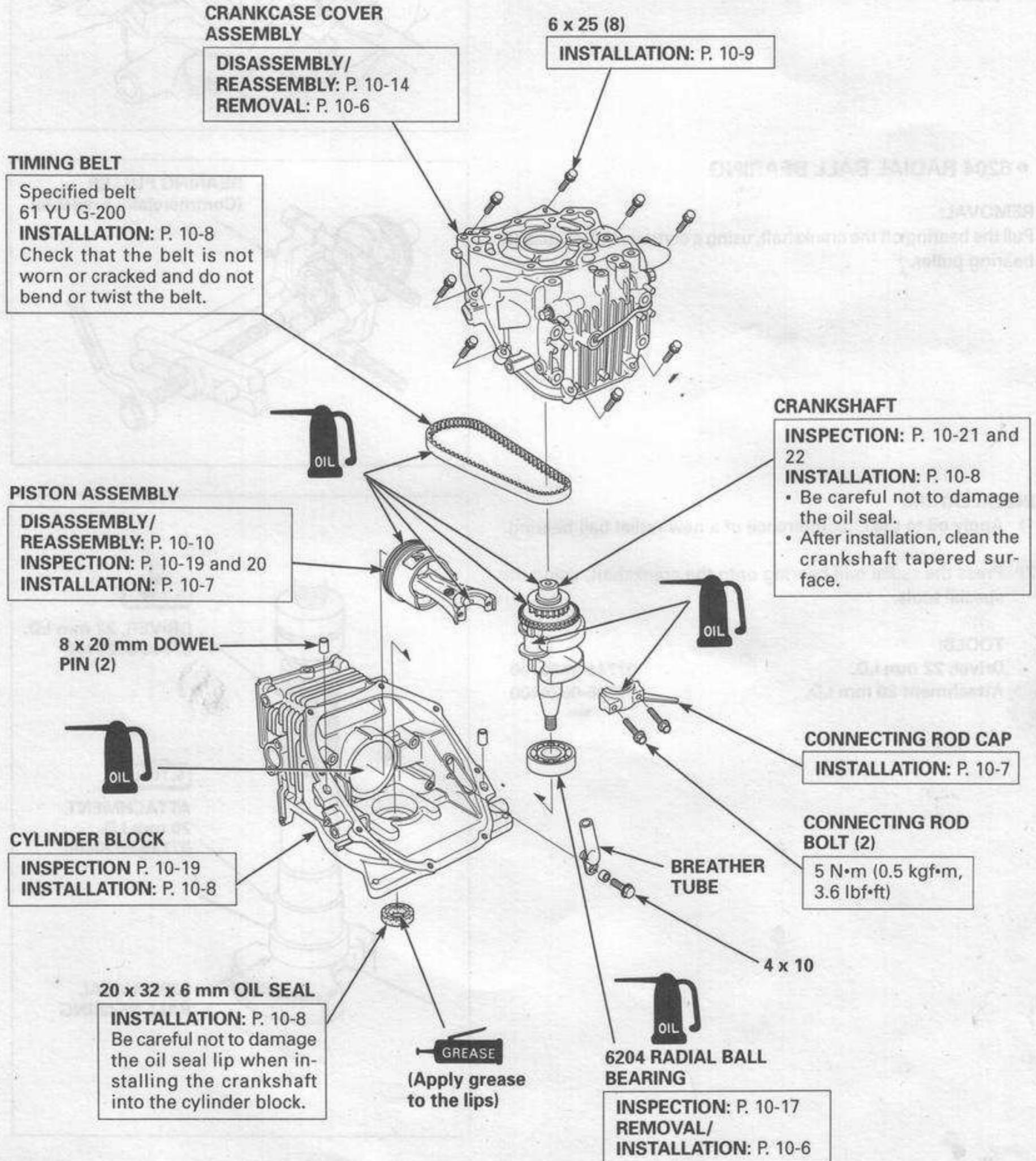
Install the rocker arm shaft from the opposite side of the cam pulley as shown.



2. CRANKCASE COVER/CRANKSHAFT/CYLINDER BLOCK

a. REMOVAL/INSTALLATION

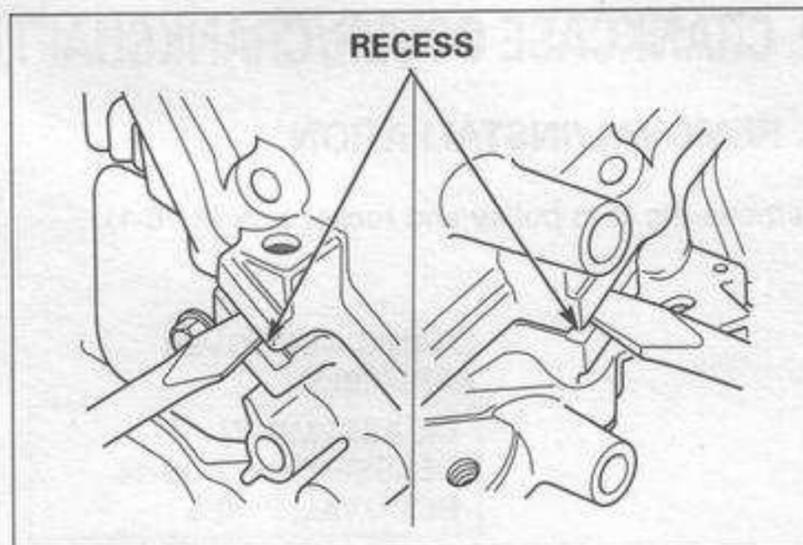
Remove the cam pulley and rocker arm (P. 10-1).



● **CRANKCASE COVER ASSEMBLY**

REMOVAL:

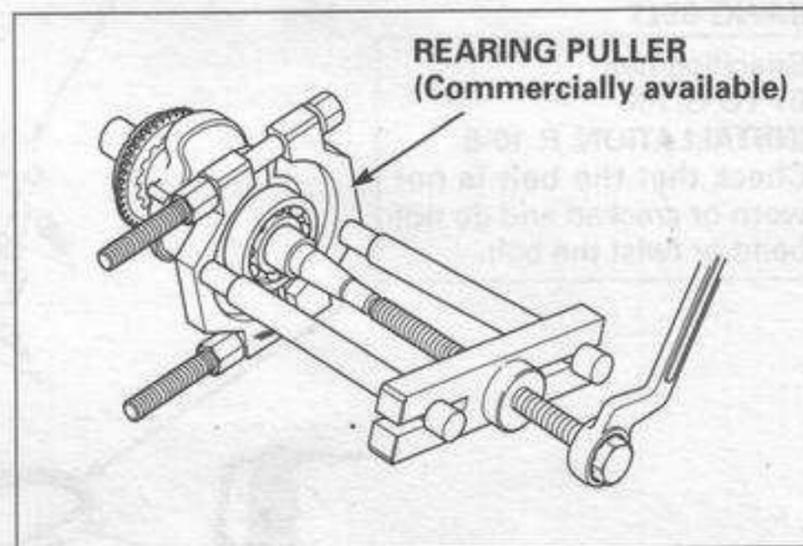
- 1) Remove the eight 6 x 25 mm flange bolts.
- 2) Insert a screw driver or equivalent tool into the recess as shown, and remove the crankcase cover from the cylinder block.



● **6204 RADIAL BALL BEARING**

REMOVAL:

Pull the bearing off the crankshaft, using a commercially available bearing puller.

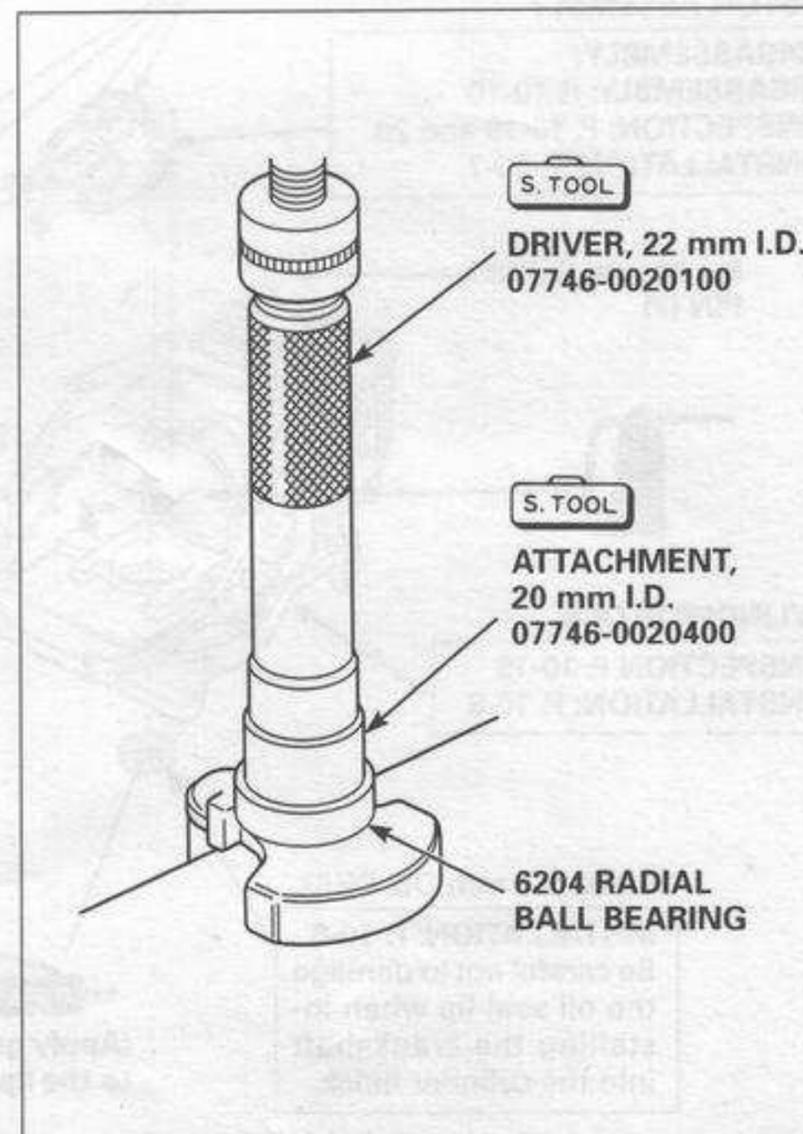


INSTALLATION:

- 1) Apply oil to the circumference of a new radial ball bearing.
- 2) Press the radial ball bearing onto the crankshaft, using the special tools.

TOOLS:

Driver, 22 mm I.D. 07746-0020100
Attachment 20 mm I.D. 07746-0020400



● PISTON ASSEMBLY/CONNECTING ROD CAP

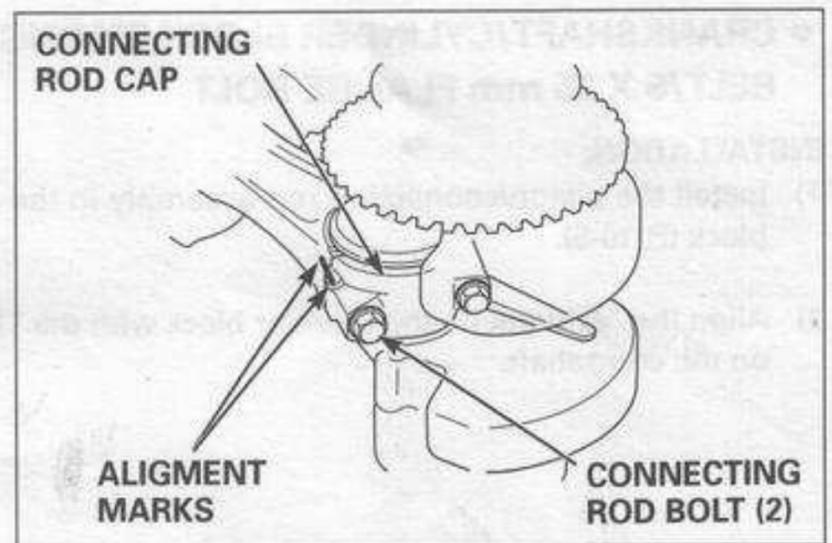
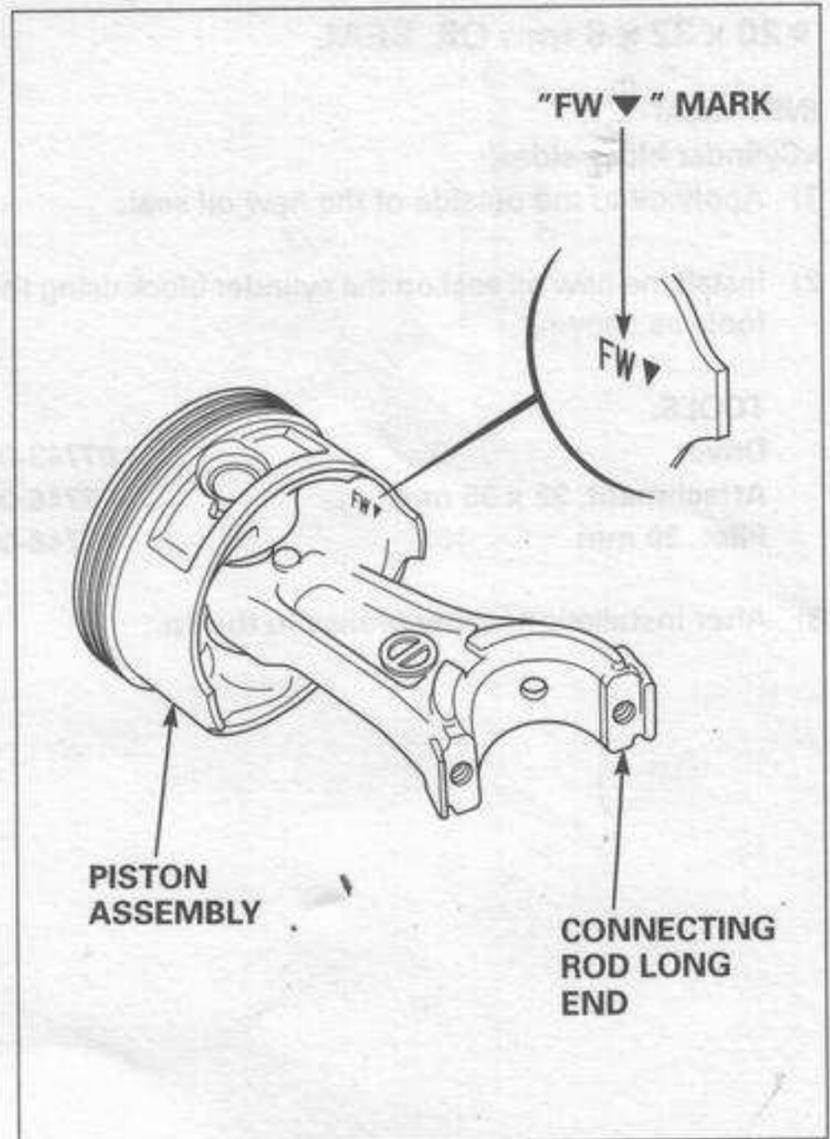
INSTALLATION:

- When the piston and connecting rod are disassembled, check that the piston is properly assembled with the connecting rod. Assemble the piston and connecting rod properly if necessary (P. 10-11).
 - Perform the following after checking that the piston and connecting rod are installed properly.
- 1) Apply oil to the inner wall of the cylinder, outer surface of the piston and to the inner wall of the connecting rod big end.
 - 2) Install the piston assembly in the cylinder block with the cam pulley mounting part toward up. Be sure that the "▼" mark of the "FW ▼" mark on the piston skirt inside points down (toward the flywheel) when the longer side of the connecting rod long end is facing to the right as shown.

The piston must be at the top dead center of the compression stroke.

- Take care not to break the piston ring when installing the piston assembly in the cylinder.
- 3) Apply oil to the crank pin and journal.
 - 4) Install the crankshaft in the cylinder block (P. 10-5).
 - 5) Apply oil to the connecting rod cap bearing.
 - 6) Install by aligning the alignment marks on the connecting rod big end and connecting rod cap.
 - 7) Apply oil to the threaded part and seat of the connecting rod bolts. Tighten the connecting rod bolts to the specified torque.

TORQUE: 5 N·m (0.5 kgf·m, 3.6 lbf·ft)



● 20 x 32 x 6 mm OIL SEAL

INSTALLATION:

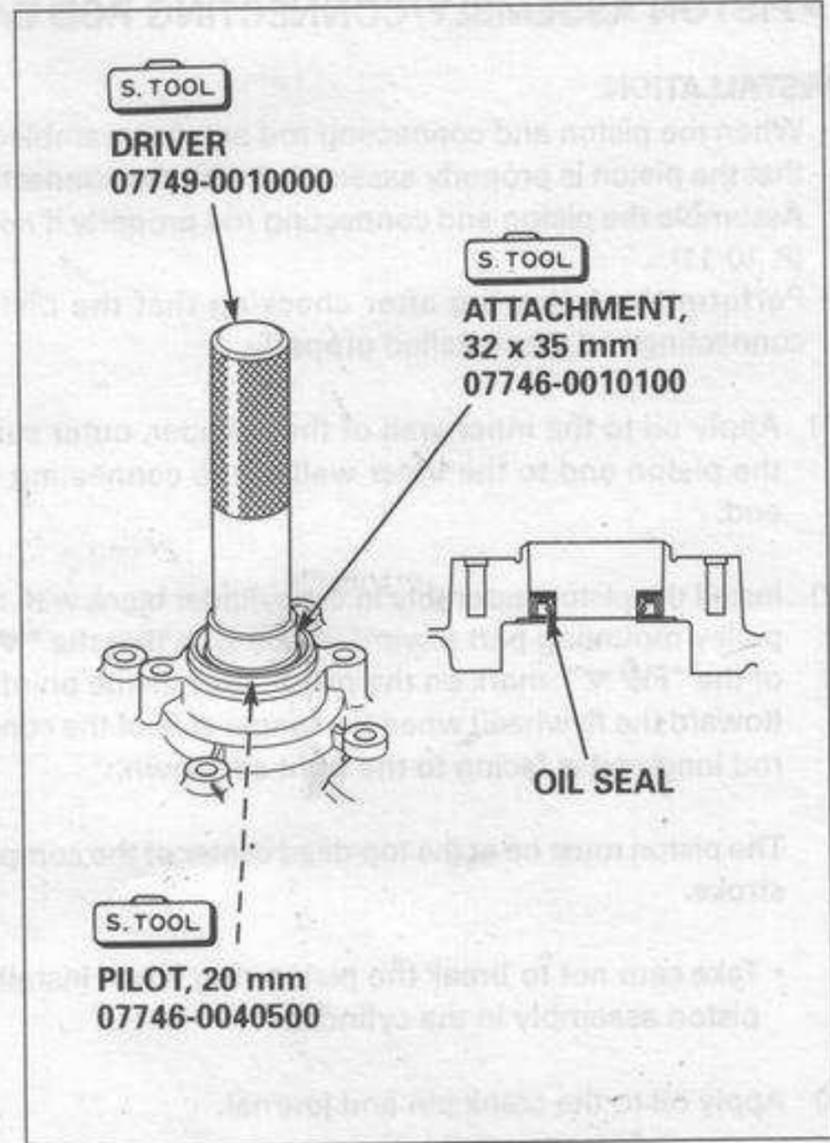
<Cylinder block side>

- 1) Apply oil to the outside of the new oil seal.
- 2) Install the new oil seal on the cylinder block using the special tools as shown.

TOOLS:

Driver	07749-0010000
Attachment, 32 x 35 mm	07746-0010100
Pilot, 20 mm	07746-0040500

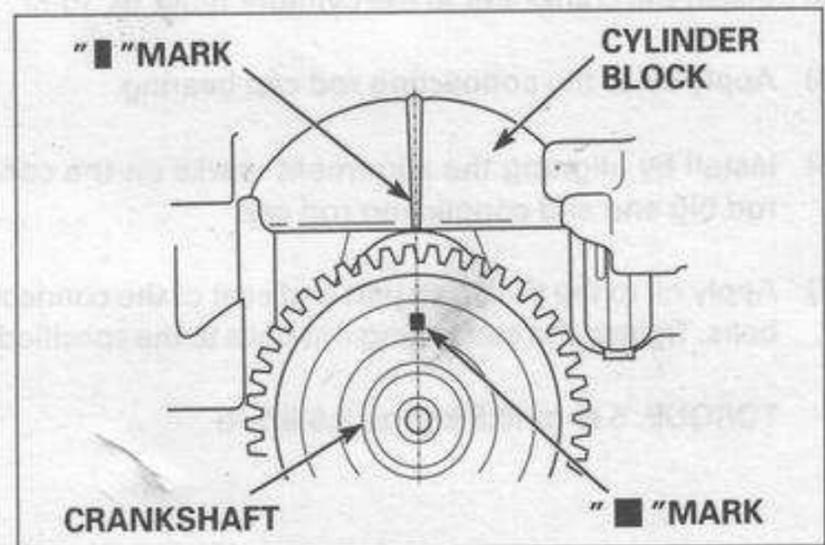
- 3) After installation, apply grease to the lip.



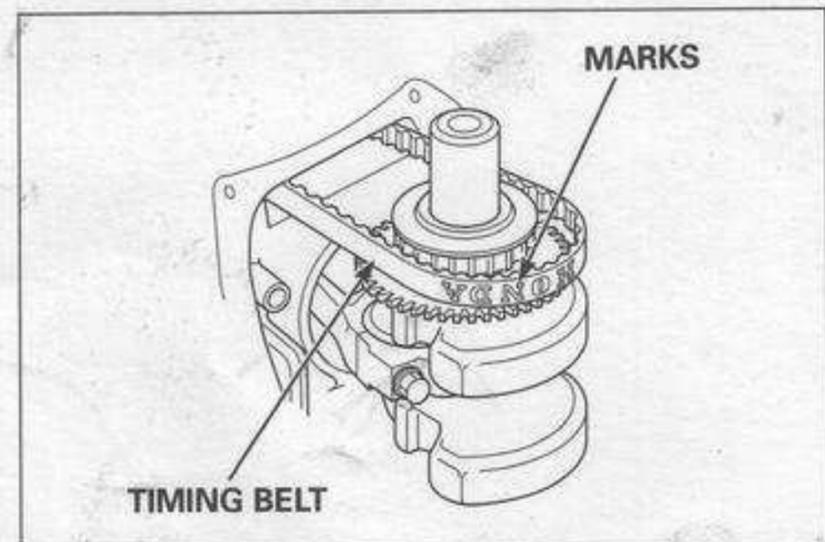
● CRANKSHAFT/CYLINDER BLOCK/TIMING BELT/6 X 25 mm FLANGE BOLT

INSTALLATION:

- 1) Install the piston/connecting rod assembly in the cylinder block (P. 10-5).
- 2) Align the "■" mark on the cylinder block with the "■" mark on the crankshaft.

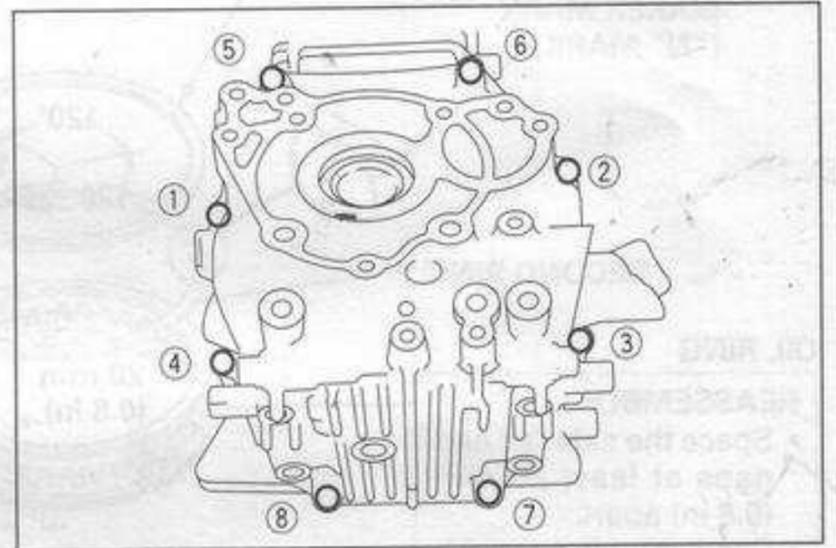
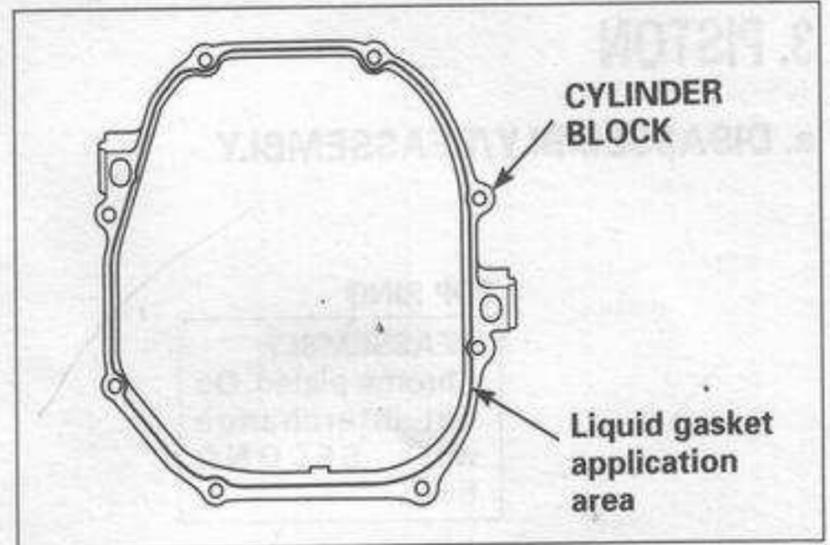


- 3) Set the timing belt on the timing belt drive pulley so that the marks on the timing belt is upside down as shown.
- 4) After installing the timing belt, install the respective cam pulley (P. 10-3).



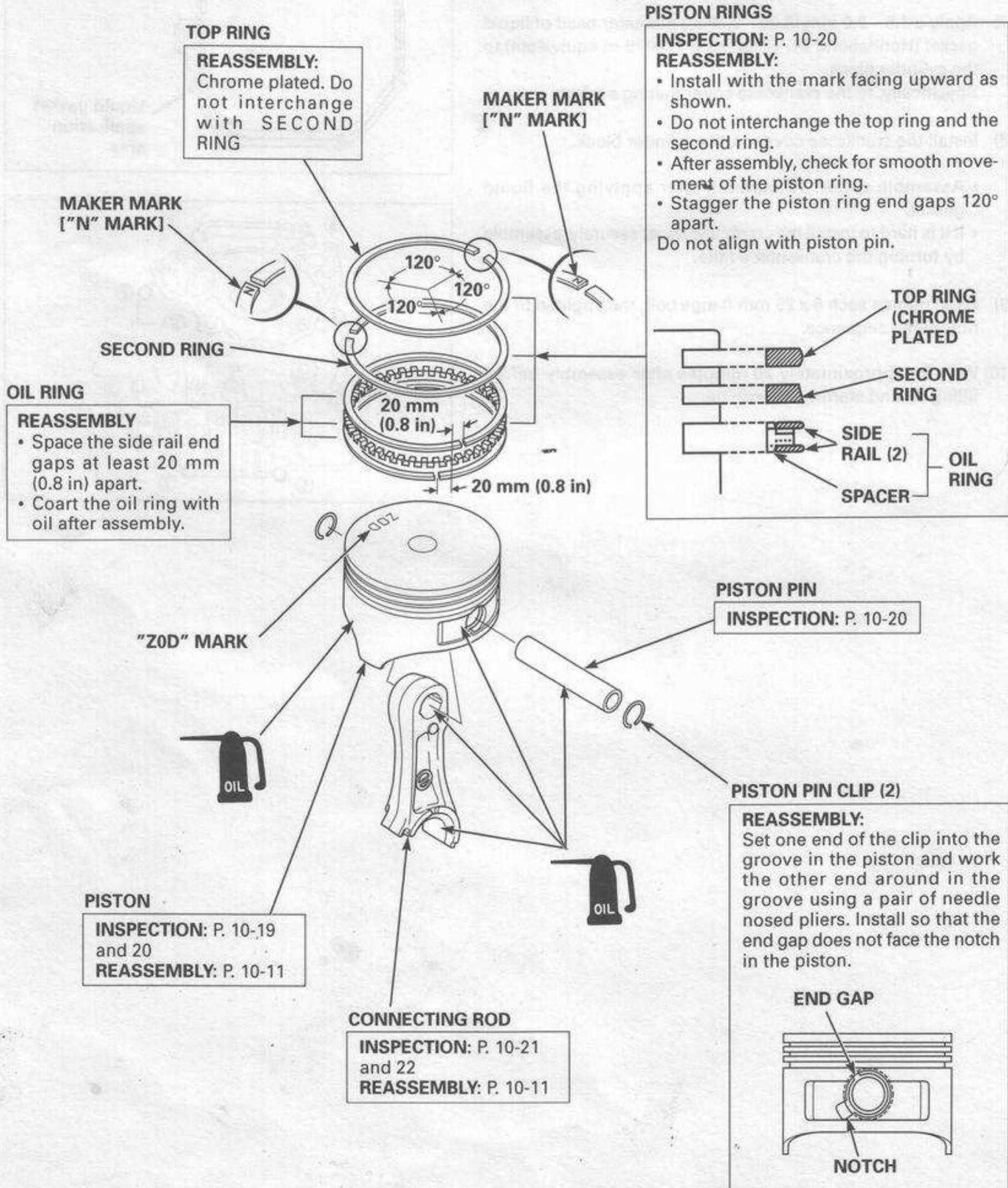
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- 5) Clean the mating surface of the cylinder block and the crankcase cover using a degreasing cleaning agent or a clean shop towel.
- 6) Set the 8 x 20 mm dowel pins on the cylinder block.
- 7) Apply a 1.5 – 2.0 mm (0.06 – 0.08 in) diameter bead of liquid gasket (Hondabond #4, ThreeBond #1207B or equivalent) to the cylinder block.
Specifically, to the crankcase cover mating surface.
- 8) Install the crankcase cover on the cylinder block.
 - Assemble within 10 minutes after applying the liquid gasket.
 - If it is hard to install the crankcase cover securely, assemble by turning the crankshaft a little.
- 9) Hand tighten each 6 x 25 mm flange bolt, then tighten to the numbered sequence.
- 10) Wait for approximately 20 minutes after assembly before filling oil and starting the engine.



3. PISTON

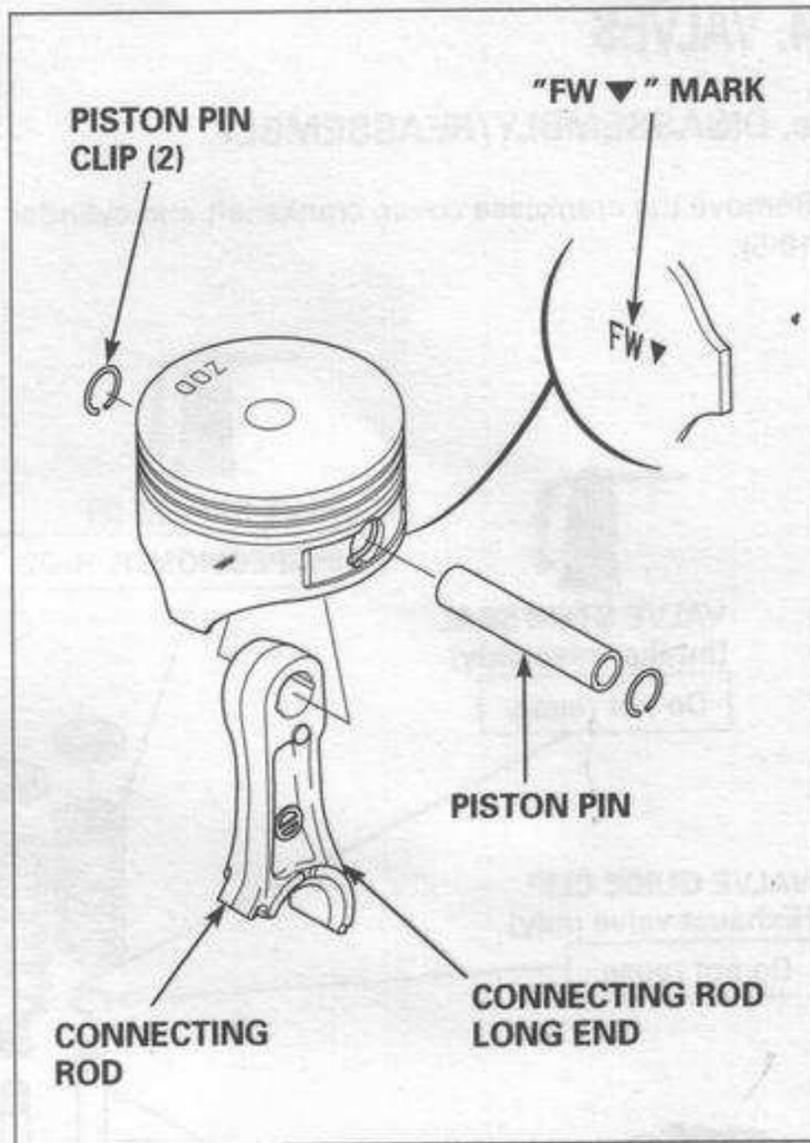
a. DISASSEMBLY/REASSEMBLY



• PISTON/CONNECTING ROD

REASSEMBLY:

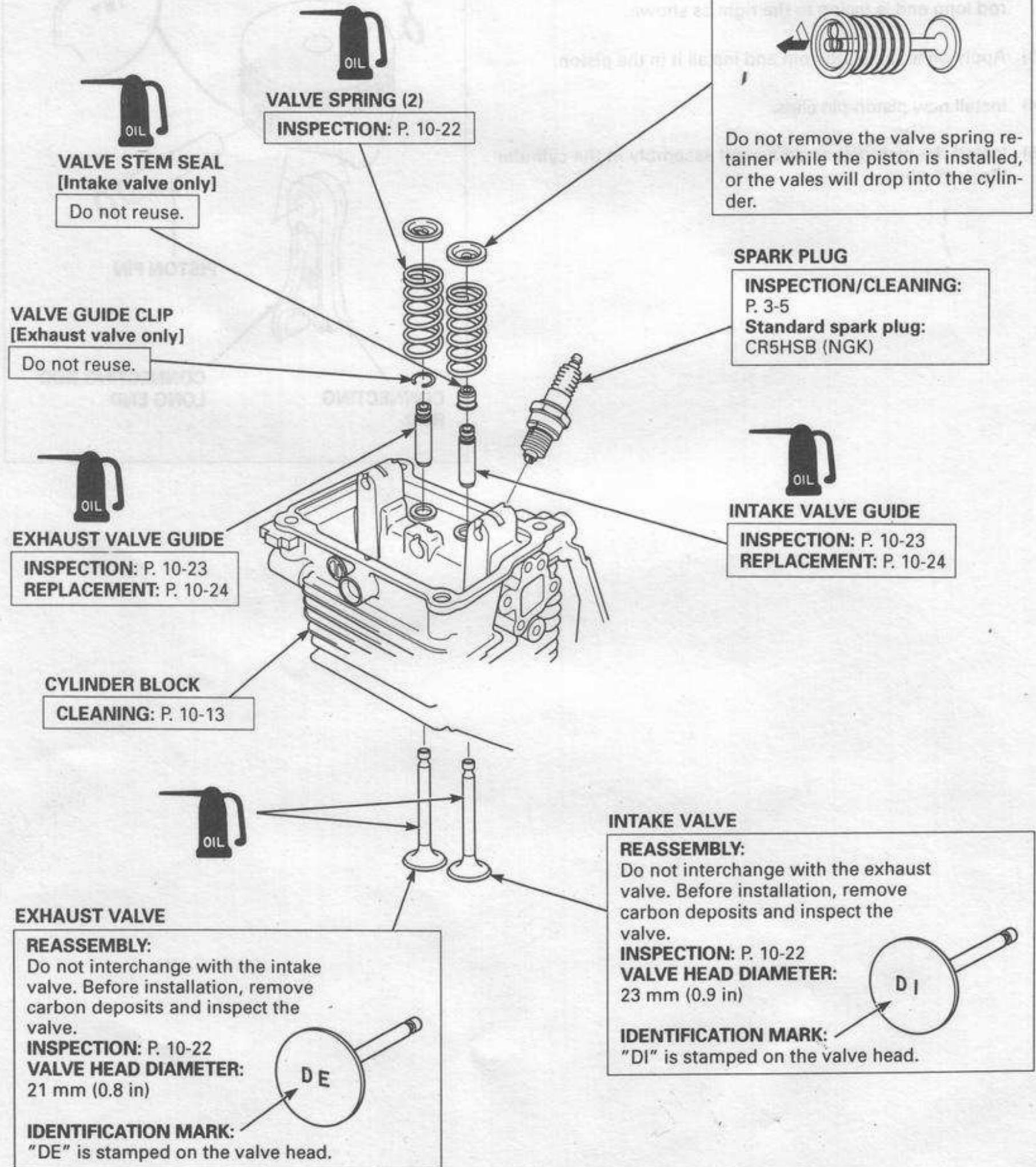
- 1) Apply oil to the piston pin hole and the connecting rod small hole.
- 2) Install the connecting rod in the piston so that the "Z0D" mark on the piston head points down when the connecting rod long end is facing to the right as shown.
- 3) Apply oil to the piston pin and install it in the piston.
- 4) Install new piston pin clips.
- 5) Install the piston/connecting rod assembly in the cylinder block. (P. 10-7).



4. VALVES

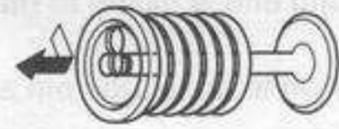
a. DISASSEMBLY/REASSEMBLY

Remove the crankcase cover, crankshaft and cylinder barrel (P. 10-5).



VALVE SPRING RETAINER

DISASSEMBLY:
Push down and slide the retainer to the side, so the valve stem slips through the hole at the side of the retainer.



Do not remove the valve spring retainer while the piston is installed, or the valves will drop into the cylinder.

SPARK PLUG

INSPECTION/CLEANING:
P. 3-5
Standard spark plug:
CR5HSB (NGK)

INTAKE VALVE GUIDE

INSPECTION: P. 10-23
REPLACEMENT: P. 10-24

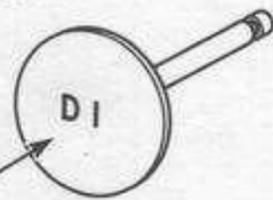
EXHAUST VALVE

REASSEMBLY:
Do not interchange with the intake valve. Before installation, remove carbon deposits and inspect the valve.
INSPECTION: P. 10-22
VALVE HEAD DIAMETER:
21 mm (0.8 in)
IDENTIFICATION MARK:
"DE" is stamped on the valve head.



INTAKE VALVE

REASSEMBLY:
Do not interchange with the exhaust valve. Before installation, remove carbon deposits and inspect the valve.
INSPECTION: P. 10-22
VALVE HEAD DIAMETER:
23 mm (0.9 in)
IDENTIFICATION MARK:
"DI" is stamped on the valve head.



• **CYLINDER BLOCK**

COMBUSTION CHAMBER CLEANING:

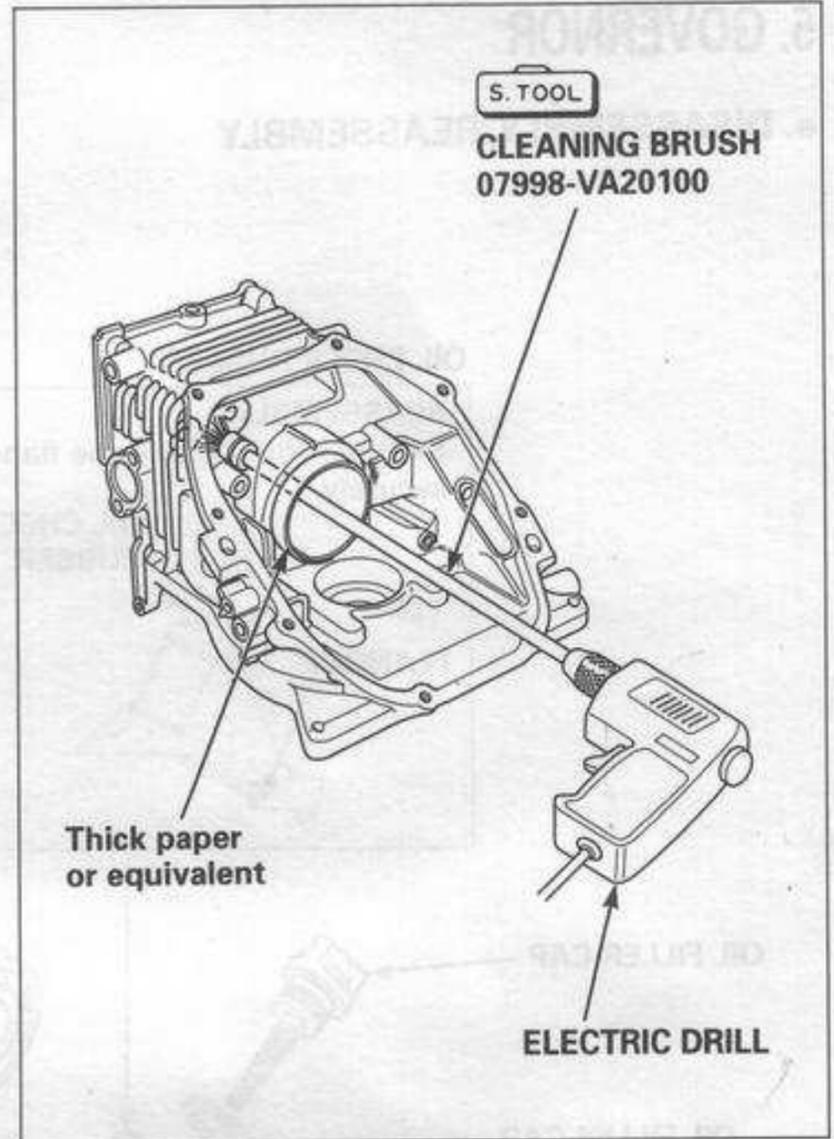
- 1) Prepare a cylinder of thick paper or equivalent material, with a diameter large enough to fit against the inner wall of the cylinder, and insert it into the cylinder for protection.
- 2) Attach the cleaning brush (special tool) to an electric drill and clean the combustion chamber.

TOOL:

Cleaning brush **07998-VA20100**

NOTICE

- Be sure to insert thick paper into the cylinder to protect the inner wall of the cylinder during cleaning of the combustion chamber.
- Do not press the cleaning brush with force against the combustion chamber.



5. GOVERNOR

a. DISASSEMBLY/REASSEMBLY

300 634
1054

OIL CHECK RUBBER

REASSEMBLY:
Set the rubber along the flange securely.

OIL CHECK RUBBER
FLANGE

6204 RADIAL BALL BEARING

INSPECTION: P. 10-17
INSTALLATION: P. 10-15

16512ZL8000

CRANKCASE COVER

OIL FILLER CAP

OIL FILLER CAP PACKING

GROOVE

GOVERNOR HOLDER SHAFT

OIL LEVEL SWITCH

INSPECTION: P. 10-17
INSTALLATION: P. 10-16

6 x 14

6.6 x 13.8 x 14.5 mm COLLAR

6 mm WASHER

GOVERNOR HOLDER CLIP

REASSEMBLY:
Insert firmly into the shaft groove.

GOVERNOR WEIGHT HOLDER

REASSEMBLY
• Before installing, check for wear and damage of the gear.

O-RING

Do not reuse.

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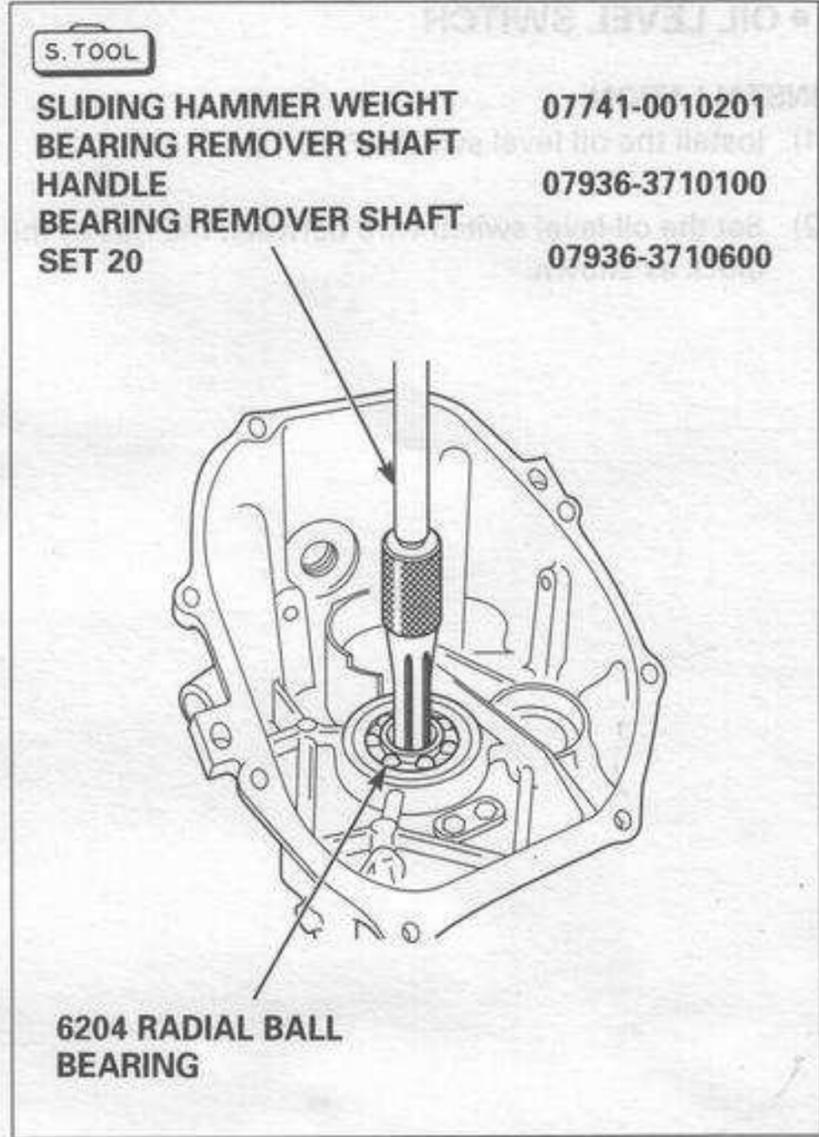
• 6204 RADIAL BALL BEARING

REMOVAL:

Removal the radial ball bearing from the crankcase cover using the special tools.

TOOLS:

SLIDING HAMMER WEIGHT	07741-0010201
BEARING REMOVER SHAFT HANDLE	07936-3710100
BEARING REMOVER SHAFT SET 20	07936-3710600

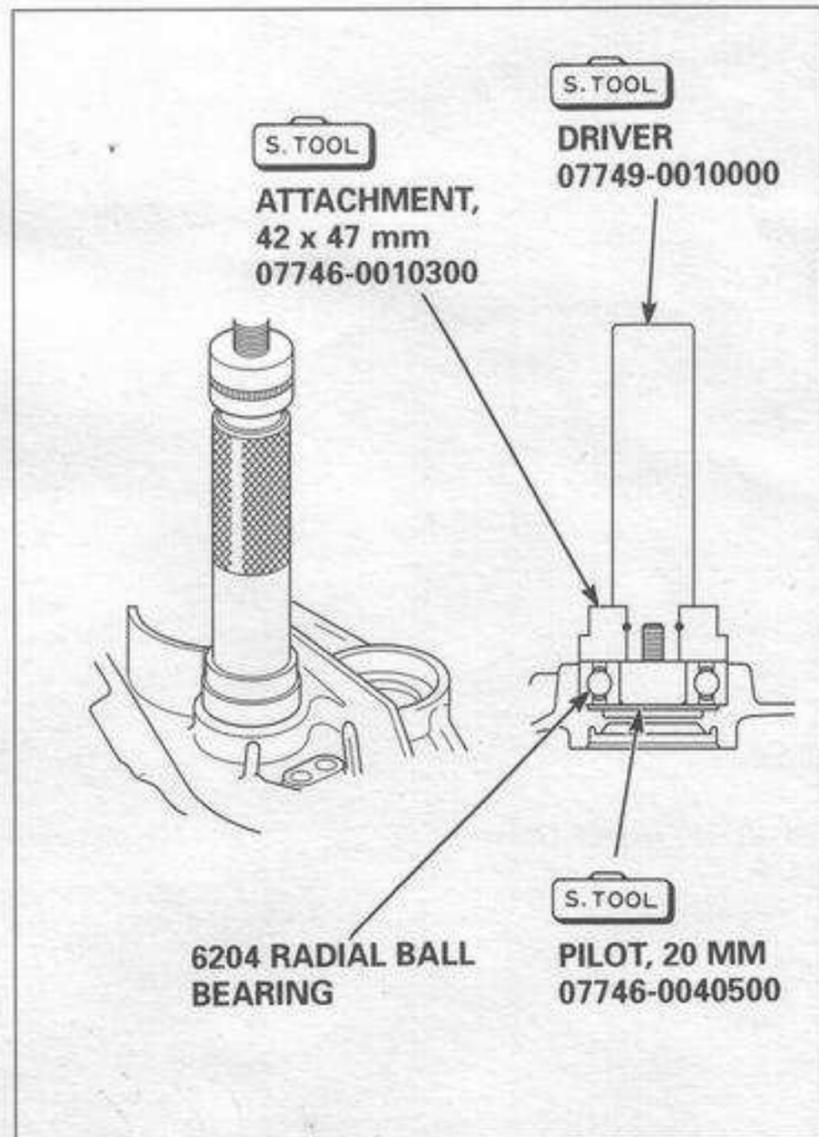


INSTALLATION:

- 1) Apply oil to the circumference of a new radial ball bearing.
- 2) Press the radial ball bearing in the crankcase cover using the special tools and hydraulic press.

TOOLS:

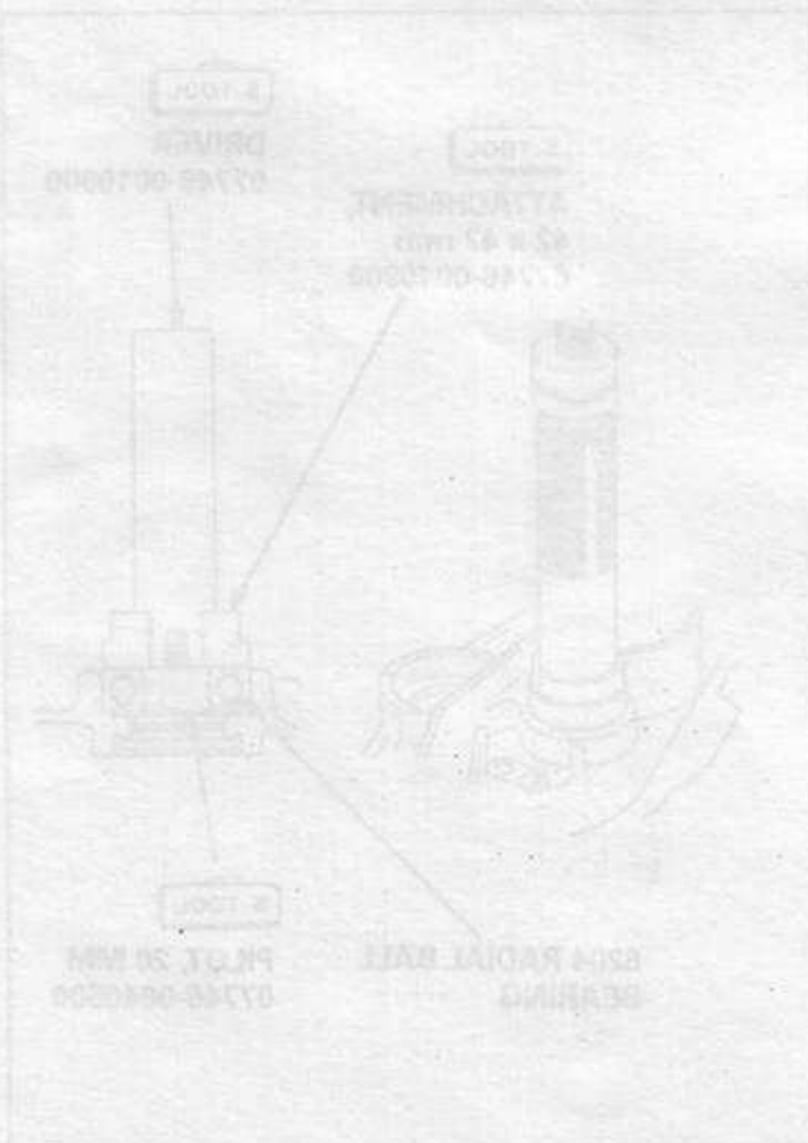
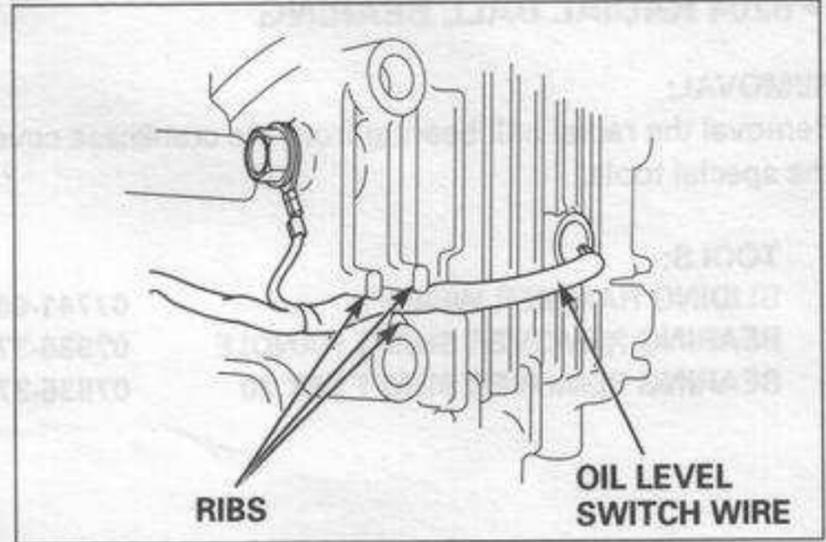
Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 20 mm	07746-0040500



• OIL LEVEL SWITCH

INSTALLATION:

- 1) Install the oil level switch (P. 10-14).
- 2) Set the oil level switch wire between the ribs of the cylinder block as shown.

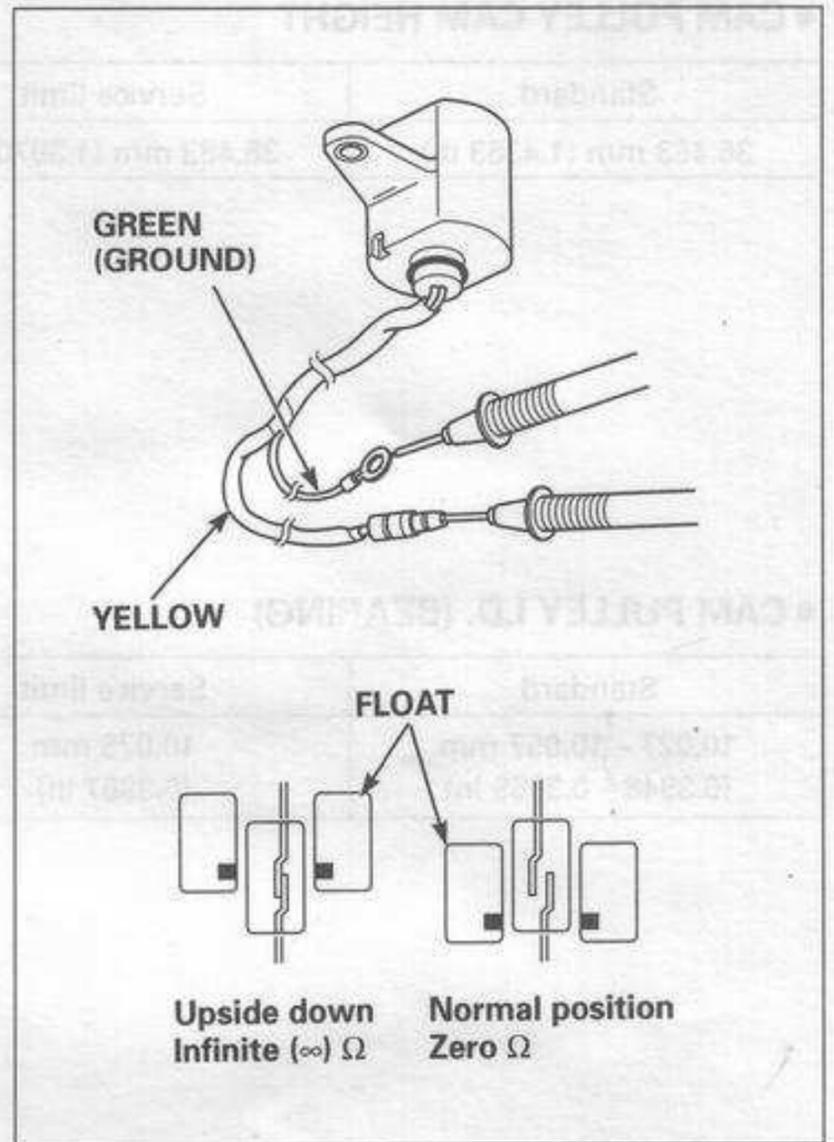


6. INSPECTION

• OIL LEVEL SWITCH

Check continuity between the yellow wire and ground with an ohmmeter.

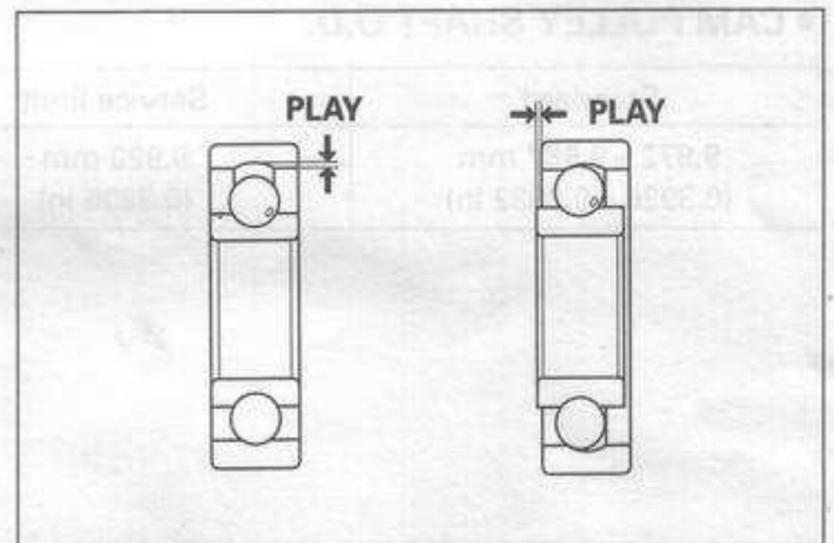
- 1) Hold the switch in its normal position. The ohmmeter should read zero resistance.
- 2) Hold the switch upside down. The ohmmeter should read infinite (∞) resistance.
- 3) Inspect the float by dipping the switch into a container of oil. The ohmmeter reading should go from zero to infinity as the switch is lowered.



• 6204 RADIAL BALL BEARING

Turn the inner race of the bearing with your finger. The bearing should turn smoothly and quietly. Also check that the bearing outer race fits in place.

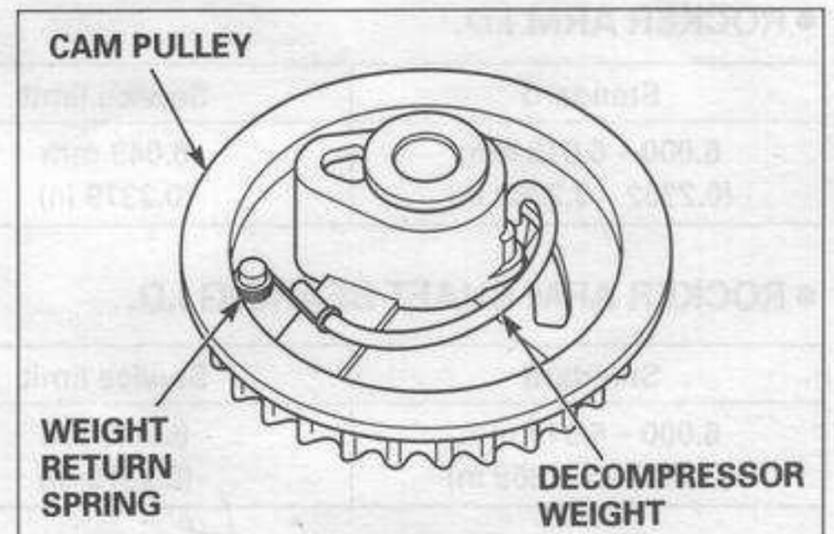
Replace the bearing if the inner race does not turn smoothly, quietly, or if it fits very loosely.



• CAM PULLEY

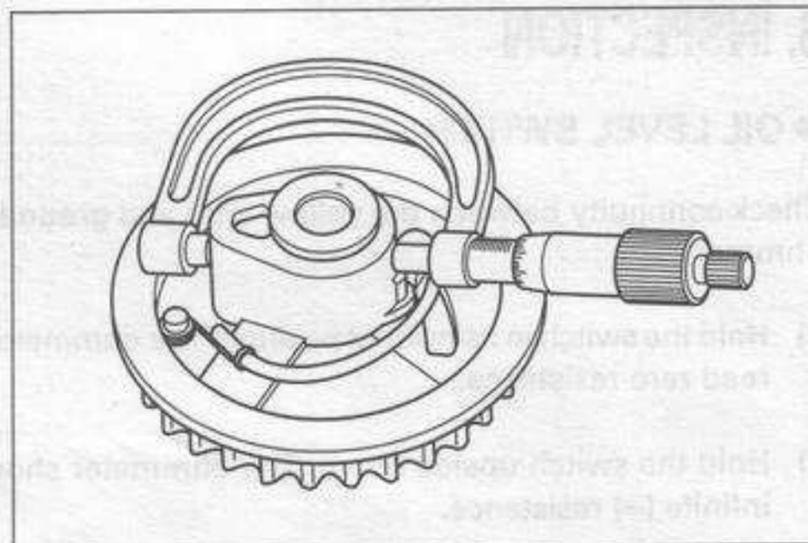
DECOMPRESSOR WEIGHT INSPECTION:

Before installing, inspect for a worn or weakened spring, and check that the decompressor weight moves smoothly.



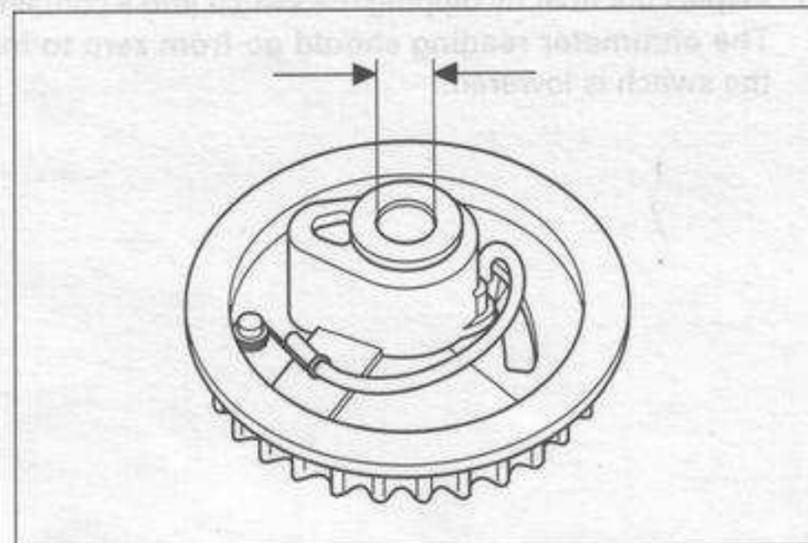
● CAM PULLEY CAM HEIGHT

Standard	Service limit
36.483 mm (1.4363 in)	35.483 mm (1.3970 in)



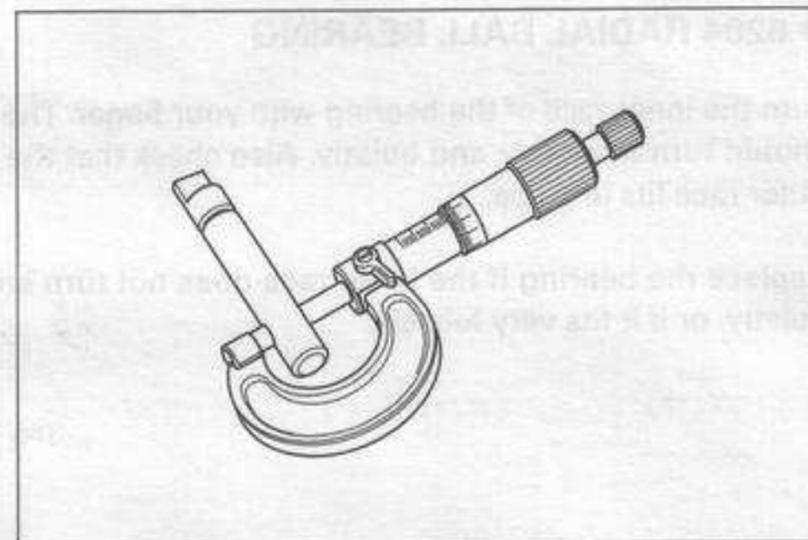
● CAM PULLEY I.D. (BEARING)

Standard	Service limit
10.027 – 10.057 mm (0.3948 – 0.3959 in)	10.075 mm (0.3967 in)



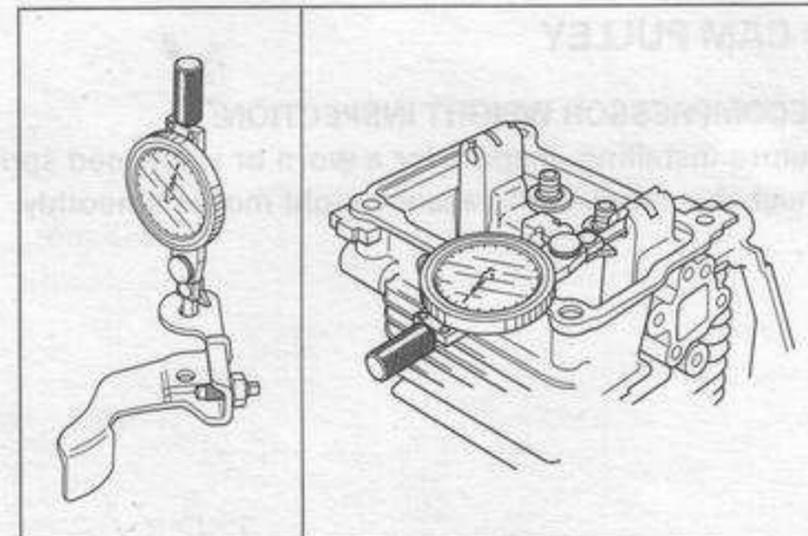
● CAM PULLEY SHAFT O.D.

Standard	Service limit
9.972 – 9.987 mm (0.3926 – 0.3932 in)	9.920 mm (0.3906 in)



● ROCKER ARM I.D.

Standard	Service limit
6.000 – 6.018 mm (0.2362 – 0.2369 in)	6.043 mm (0.2379 in)



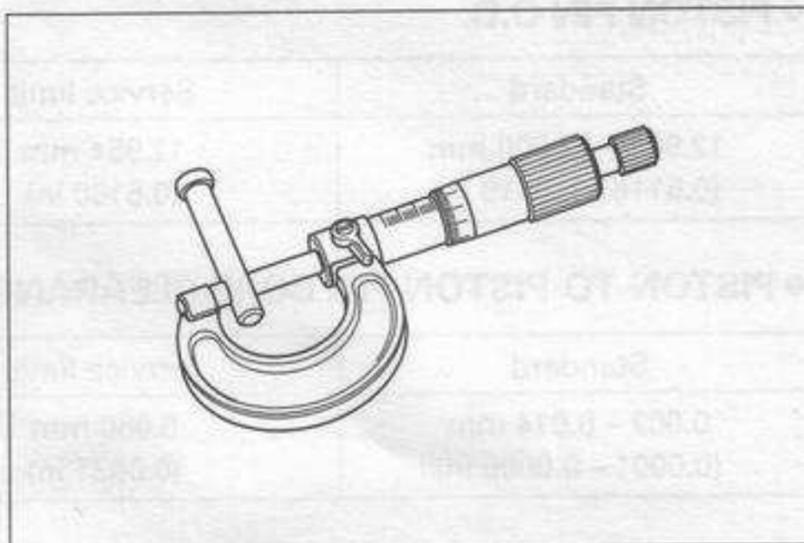
● ROCKER ARM SHAFT BEARING I.D.

Standard	Service limit
6.000 – 6.018 mm (0.2362 – 0.2369 in)	6.043 mm (0.2379 in)

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● ROCKER ARM SHAFT O.D.

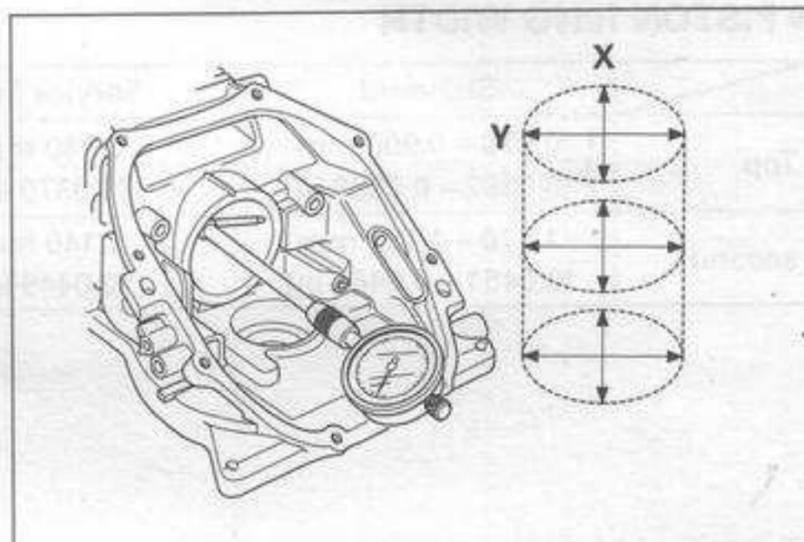
Standard	Service limit
5.960 – 5.990 mm (0.2346 – 0.2358 in)	5.953 mm (0.2344 in)



● CYLINDER I.D.

Measure and record the cylinder I.D. at three levels in both the "X" axis (perpendicular to crankshaft) and the "Y" axis (parallel to crankshaft). Take the maximum reading to determine cylinder wear and taper.

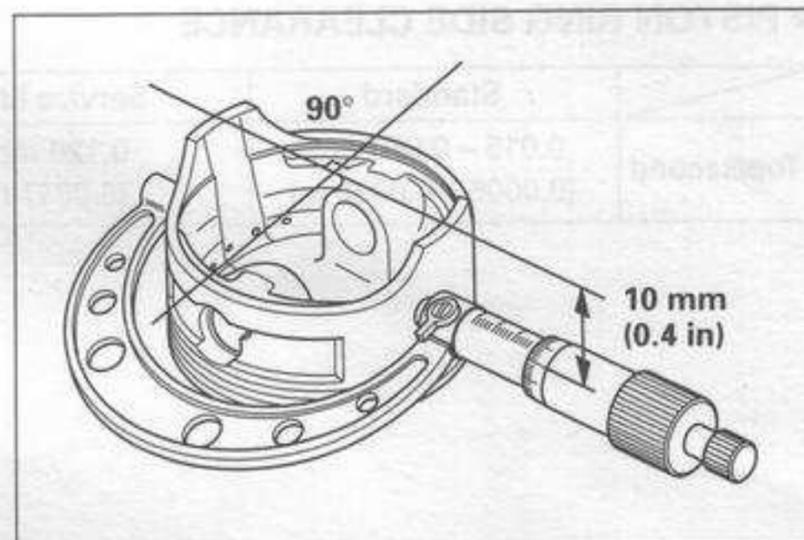
Standard	Service limit
56.000 – 56.015 mm (2.2047 – 2.2053 in)	56.165 mm (2.2112 in)



● PISTON SKIRT O.D.

Measure and record the piston O.D. at a point 10 mm (0.4 in) from the bottom of the skirt and 90° to the piston pin bore.

Standard	Service limit
55.965 – 55.985 mm (2.2033 – 2.2041 in)	55.85 mm (2.199 in)

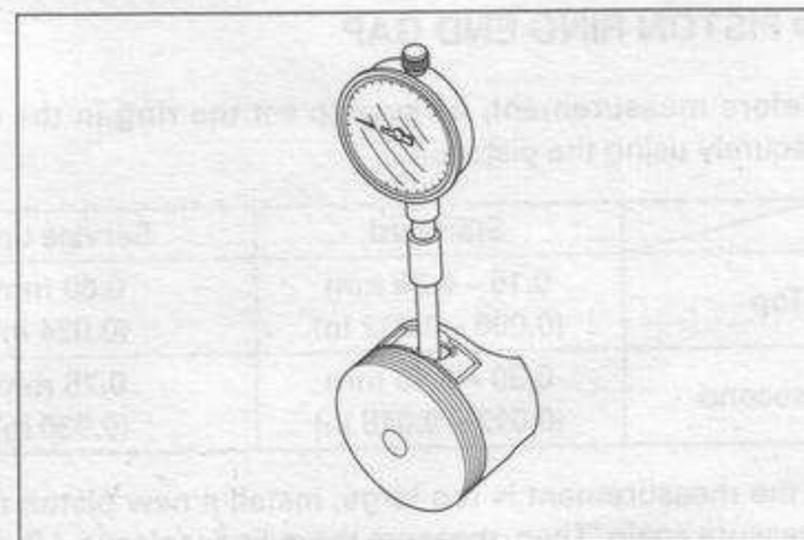


● PISTON-TO-CYLINDER CLEARANCE

Standard	Service limit
0.015 – 0.050 mm (0.0006 – 0.0020 in)	0.120 mm (0.0047 in)

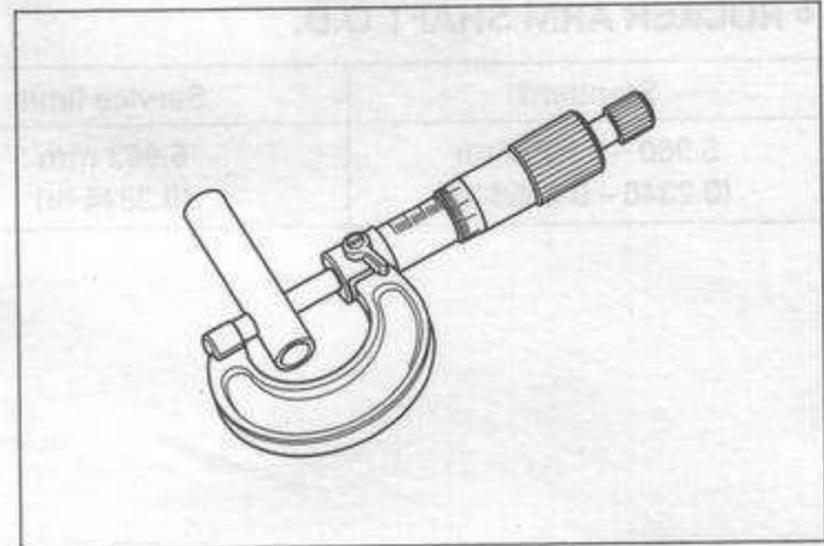
● PISTON PIN BORE I.D.

Standard	Service limit
13.002 – 13.008 mm (0.5119 – 0.5121 in)	13.048 mm (0.5137 in)



● PISTON PIN O.D.

Standard	Service limit
12.994 – 13.000 mm (0.5116 – 0.5118 in)	12.954 mm (0.5100 in)

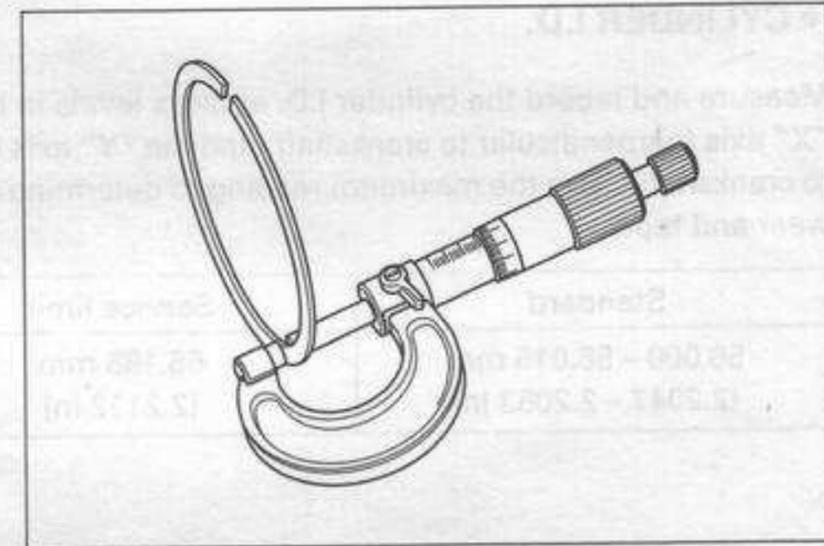


● PISTON-TO-PISTON PIN BORE CLEARANCE

Standard	Service limit
0.002 – 0.014 mm (0.0001 – 0.0006 in)	0.080 mm (0.0031 in)

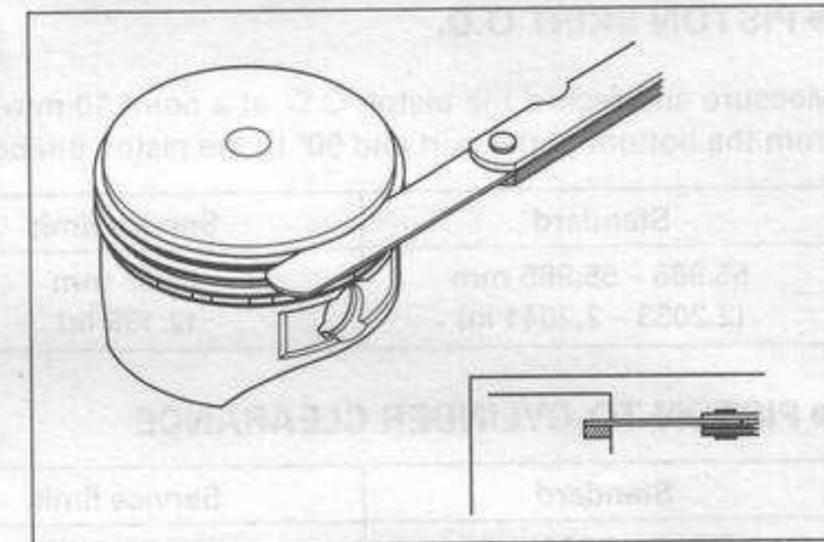
● PISTON RING WIDTH

	Standard	Service limit
Top	0.970 – 0.990 mm (0.0382 – 0.0390 in)	0.940 mm (0.0370 in)
second	1.170 – 1.190 mm (0.0461 – 0.0469 in)	1.140 mm (0.0449 in)



● PISTON RING SIDE CLEARANCE

	Standard	Service limit
Top/second	0.015 – 0.050 mm (0.0006 – 0.0020 in)	0.120 mm (0.0047 in)

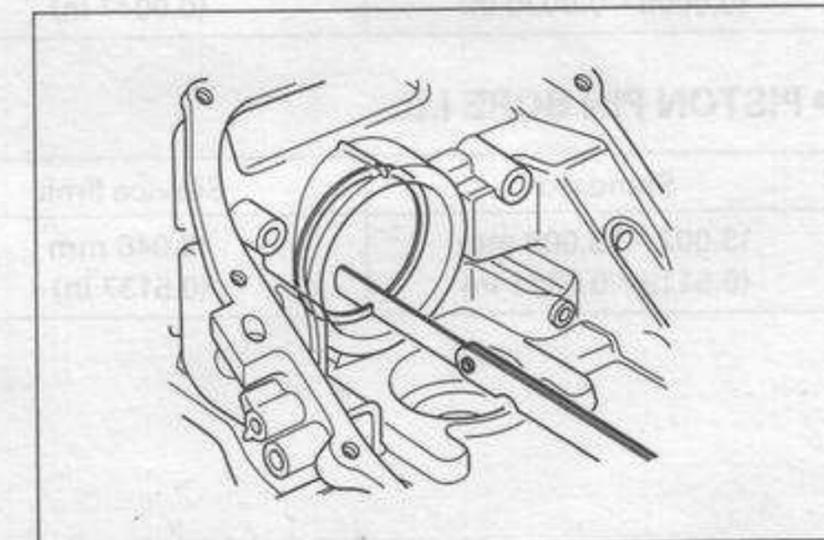


● PISTON RING END GAP

Before measurement, be sure to set the ring in the cylinder securely using the piston.

	Standard	Service limit
Top	0.15 – 0.30 mm (0.006 – 0.012 in)	0.60 mm (0.024 in)
second	0.30 – 0.45 mm (0.012 – 0.018 in)	0.75 mm (0.030 in)

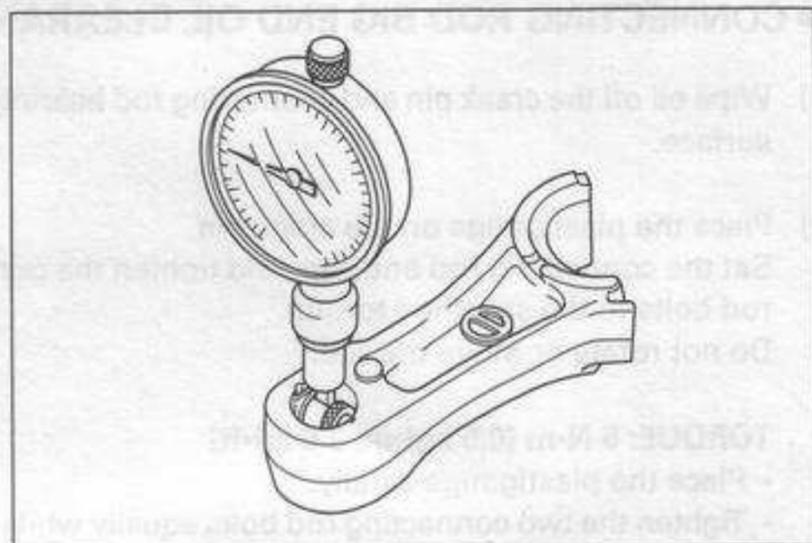
If the measurement is too large, install a new piston ring and measure again. Then, measure the cylinder sleeve. I.D. (P. 9-20).



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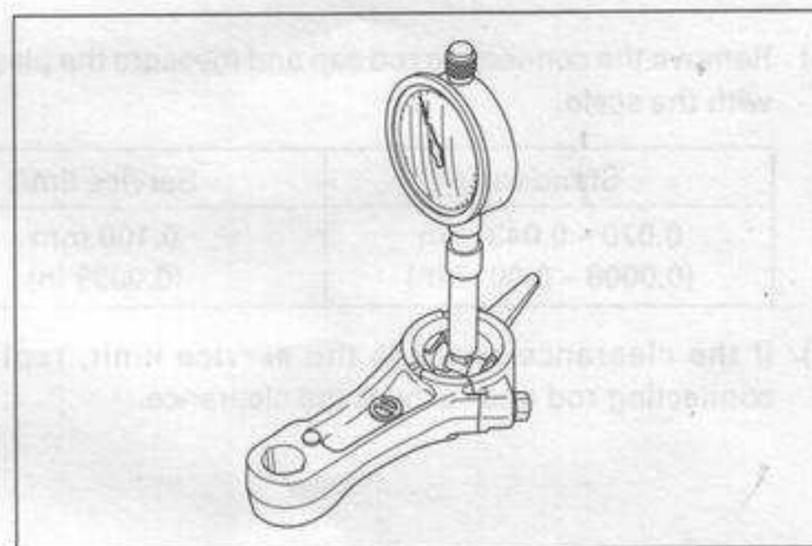
• CONNECTING ROD SMALL END I.D.

Standard	Service limit
13.005 – 13.020 mm (0.5120 – 0.5126 in)	13.070 mm (0.5146 in)



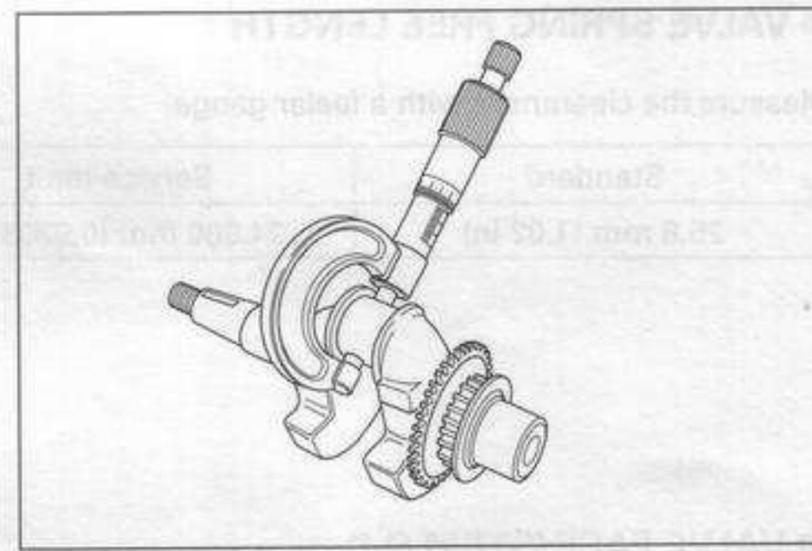
• CONNECTING ROD BIG END I.D.

Standard	Service limit
24.000 – 24.013 mm (0.9449 – 0.9454 in)	24.040 mm (0.9465 in)



• CRANK PIN O.D.

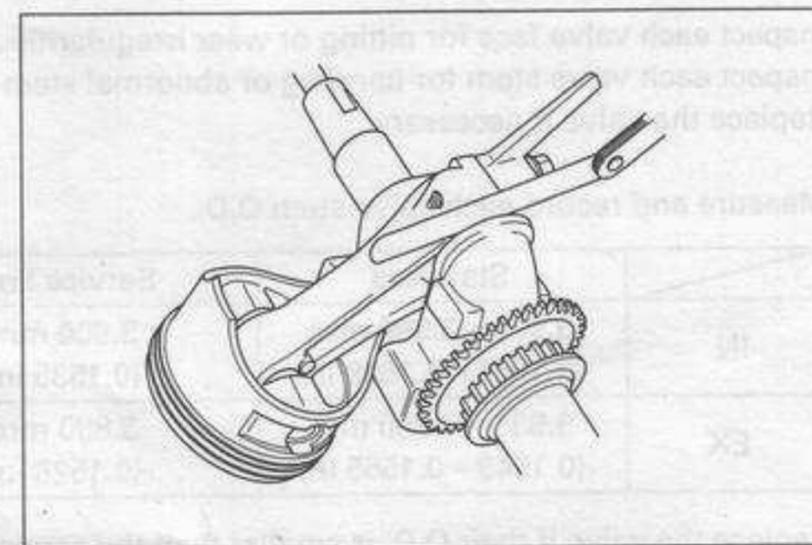
Standard	Service limit
23.970 – 23.980 mm (0.9437 – 0.9441 in)	23.920 mm (0.9417 in)



• CONNECTING ROD BIG END AXIAL CLEARANCE

Measure the clearance with a feeler gauge.

Standard	Service limit
0.1 – 0.4 mm (0.004 – 0.016 in)	0.800 mm (0.0315 in)



● **CONNECTING ROD BIG END OIL CLEARANCE**

- 1) Wipe oil off the crank pin and connecting rod bearing mating surface.
- 2) Place the plastigauge on the crank pin. Set the connecting rod and cap, and tighten the connecting rod bolts to the specified torque. Do not rotate or move the rod.

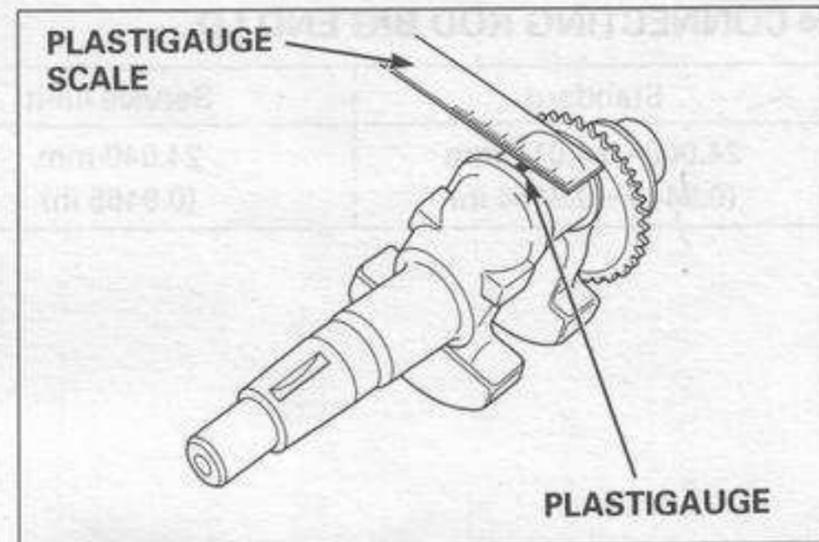
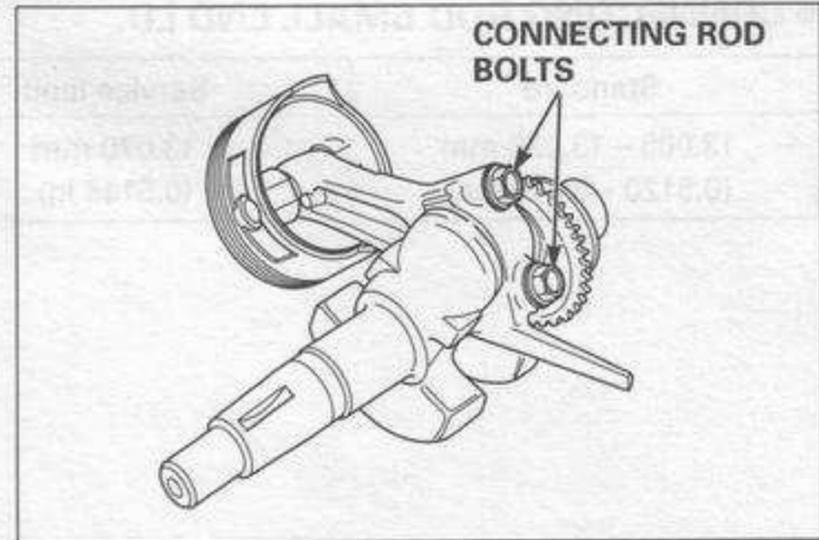
TORQUE: 5 N·m (0.5 kgf·m, 3.6 lbf·ft)

- Place the plastigauge axially.
- Tighten the two connecting rod bolts equally while holding the crankshaft to keep it from turning.

- 3) Remove the connecting rod cap and measure the plastigauge with the scale.

Standard	Service limit
0.020 – 0.043 mm (0.0008 – 0.0017 in)	0.100 mm (0.0039 in)

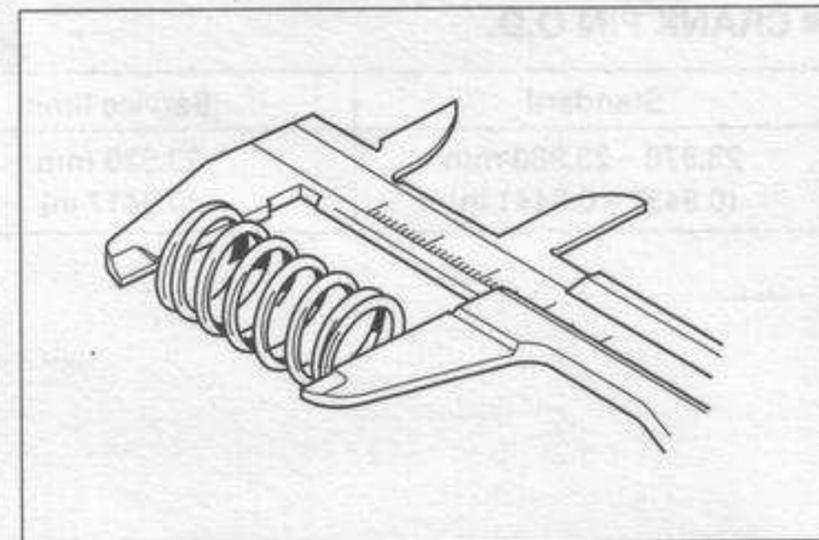
- 4) If the clearance exceeds the service limit, replace the connecting rod and recheck the clearance.



● **VALVE SPRING FREE LENGTH**

Measure the clearances with a feeler gauge.

Standard	Service limit
25.8 mm (1.02 in)	24.900 mm (0.9803 in)



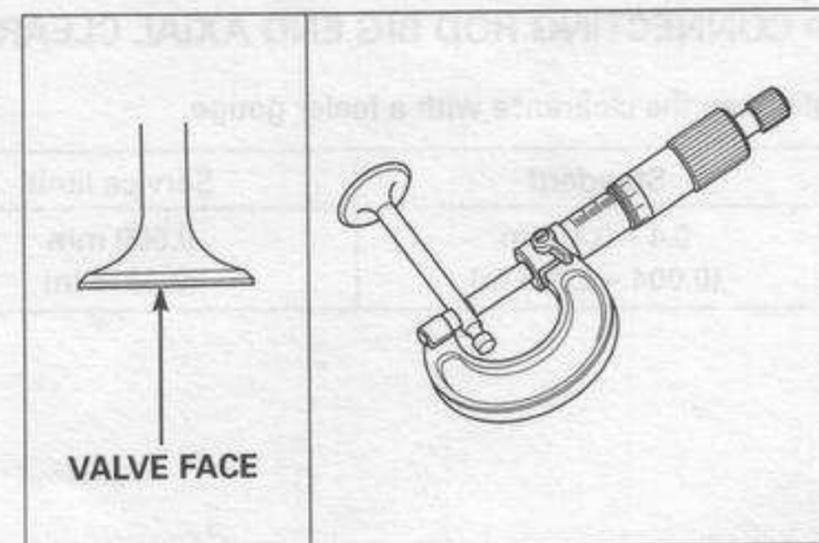
● **VALVE FACE/STEM O.D.**

Inspect each valve face for pitting or wear irregularities. Inspect each valve stem for bending or abnormal stem wear. Replace the valve if necessary.

Measure and record each valve stem O.D..

	Standard	Service limit
IN	3.970 – 3.985 mm (0.1563 – 0.1569 in)	3.900 mm (0.1535 in)
EX	3.935 – 3.950 mm (0.1549 – 0.1555 in)	3.880 mm (0.1528 in)

Replace the valve if their O.D. is smaller than the service limit.



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• VALVE GUIDE I.D.

Using the valve guide reamer (special tool), ream the valve guides to remove any carbon deposits before measuring.

Measure and record each valve guide I.D..

	Standard	Service limit
IN/EX	4.000 – 4.018 mm (0.1575 – 0.1582 in)	4.060 mm (0.1598 in)

Replace the valve guides if they are over the service limit (P. 10-24).

• VALVE STEM-TO-VALVE GUIDE CLEARANCE

Subtract each valve stem O.D. from the corresponding guide I.D. to find the clearance.

	Standard	Service limit
IN	0.015 – 0.048 mm (0.0006 – 0.0019 in)	0.098 mm (0.0039 in)
EX	0.050 – 0.083 mm (0.0020 – 0.0033 in)	0.120 mm (0.0047 in)

If the stem-to-guide clearance exceeds the service limit, determine if the new guide with standard dimensions would bring the clearance within tolerance. If so, replace any guide as necessary and ream to fit. If the stem-to-guide clearance exceeds the service limit with new guides, replace the valves as well.

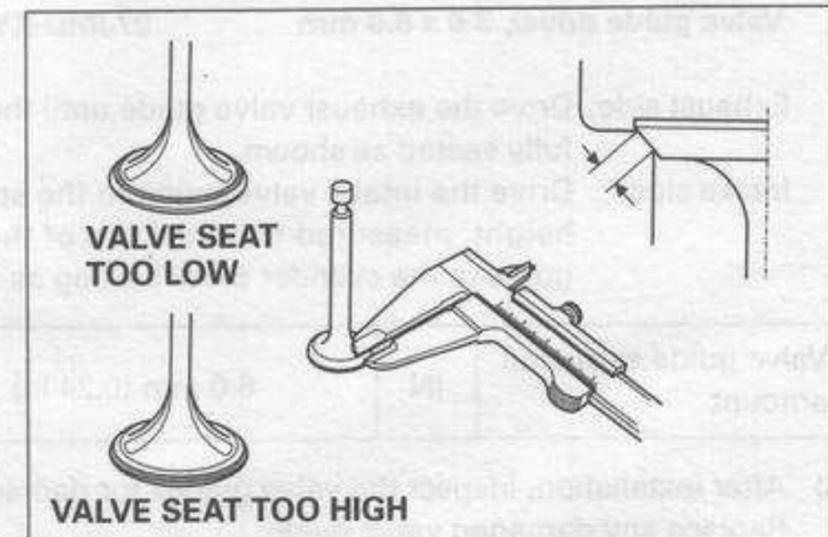
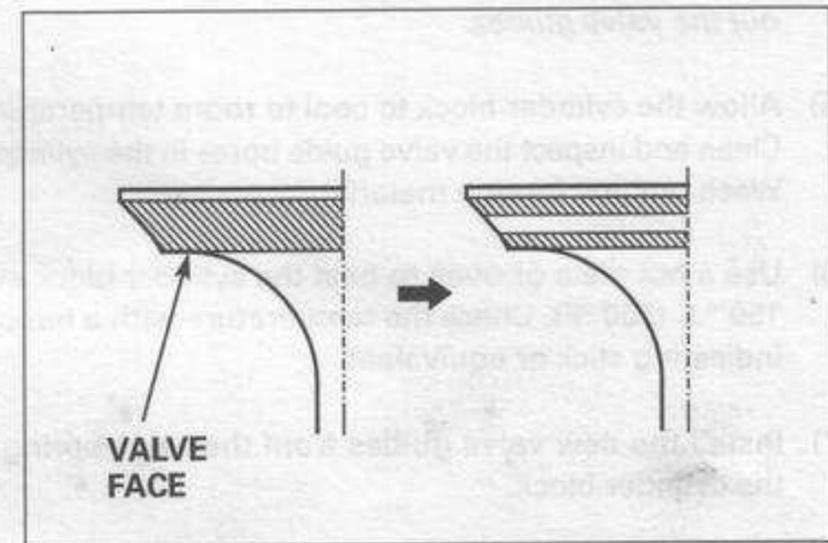
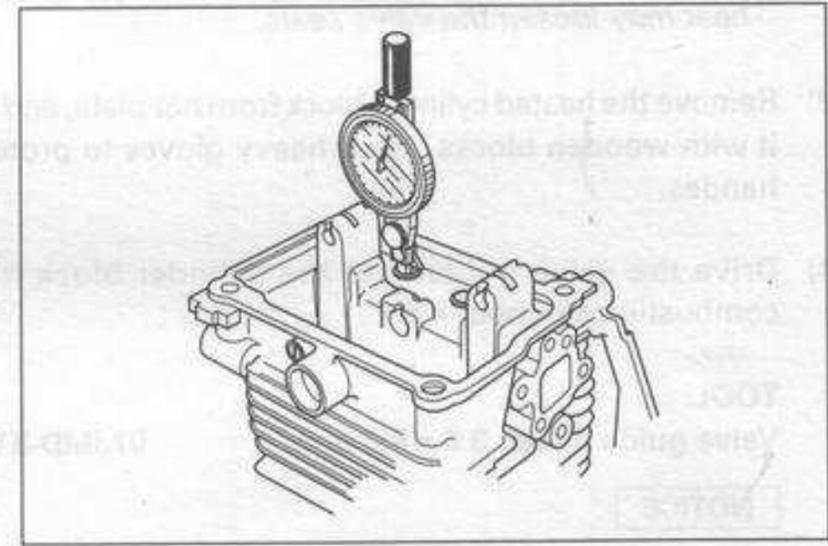
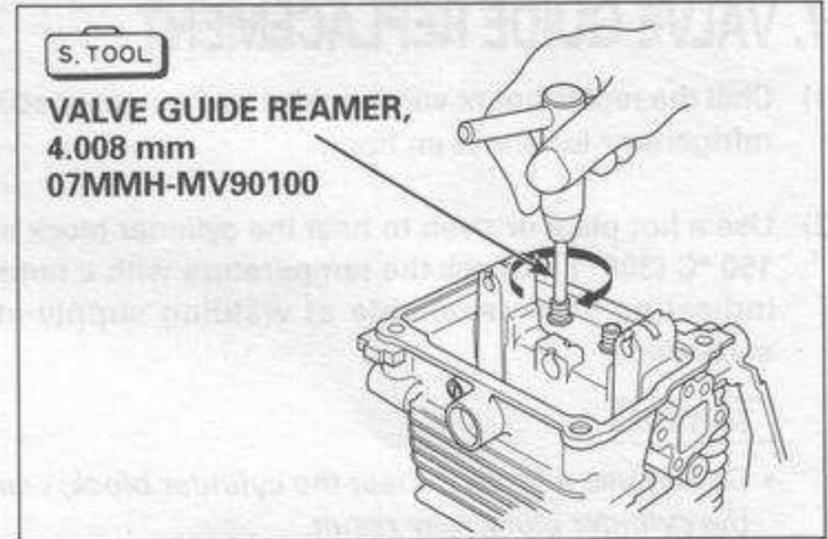
Recondition the valve seats whenever the valve guides are replaced (P. 10-26).

• VALVE SEAT WIDTH

Measure the valve seat width. Apply Prussian Blue compound or erasable felt-tipped marker ink to the valve faces. Insert the valves, and then lift them and snap them closed against their seats several times. Be sure the valve does not rotate on the seat. The seating surface, as shown by the transferred marking compound, should have good contact all the way around.

	Standard	Service limit
IN/EX	0.7 mm (0.028 in)	1.800 mm (0.0709 in)

If the valve seat width is under the standard, or over the service limit, or if the valve seat is too high/low, recondition the valve seat (P. 10-26).



7. VALVE GUIDE REPLACEMENT

- 1) Chill the replacement valve guides in the freezer section of a refrigerator for about an hour.
- 2) Use a hot plate or oven to heat the cylinder block evenly to 150 °C (300 °F). Check the temperature with a temperature indicating stick (available at welding supply store) or equivalent.

NOTICE

- Do not use a torch to heat the cylinder block; warpage of the cylinder block may result.
- Do not get the heat hotter than 150 °C (300 °F); excessive heat may loosen the valve seats.

- 3) Remove the heated cylinder block from hot plate, and support it with wooden blocks. Wear heavy gloves to protect your hands.
- 4) Drive the valve guides out the cylinder block from the combustion chamber side.

TOOL:

Valve guide driver, 3.6 x 8.0 mm 07JMD-KY20100

NOTICE

Be careful to avoid damaging the cylinder block when driving out the valve guides.

- 5) Allow the cylinder block to cool to room temperature. Clean and inspect the valve guide bores in the cylinder block. Wash out any foreign material.
- 6) Use a hot plate or oven to heat the cylinder block evenly to 150 °C (300 °F). Check the temperature with a temperature indicating stick or equivalent.
- 7) Install the new valve guides from the valve spring side of the cylinder block.

TOOL:

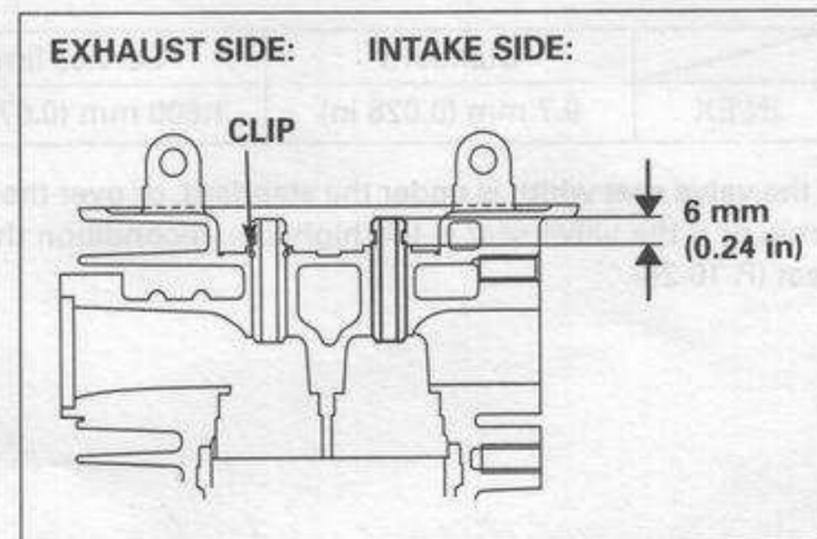
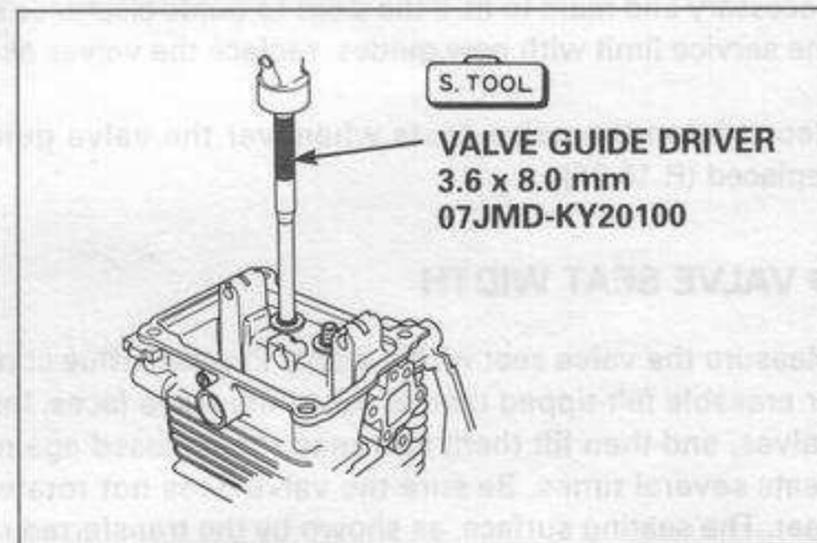
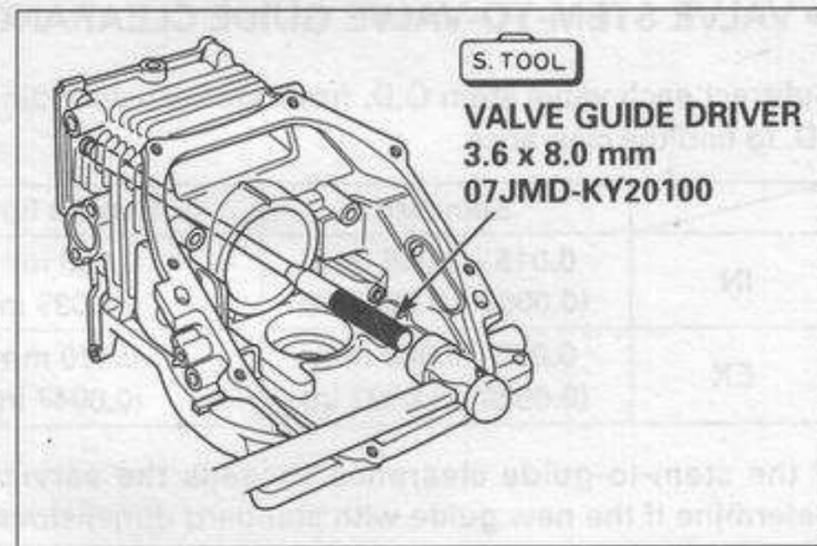
Valve guide driver, 3.6 x 8.0 mm 07JMD-KY20100

Exhaust side: Drive the exhaust valve guide until the clip is fully seated as shown.

Intake side: Drive the intake valve guide to the specified height, measured from the top of the valve guide to the cylinder block casting as shown.

Valve guide extrusion amount	IN	6.0 mm (0.24 in)
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- 8) After installation, inspect the valve guides for damage. Replace any damaged valve guide.



• VALVE GUIDE REAMING

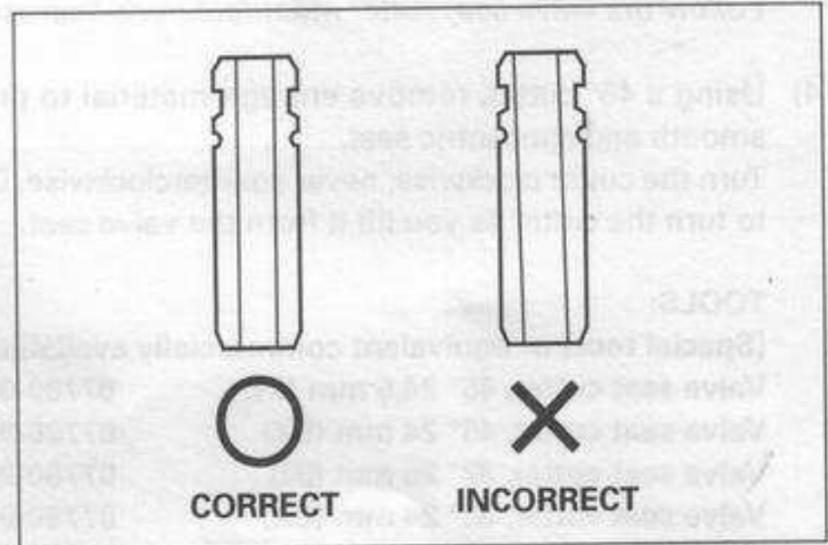
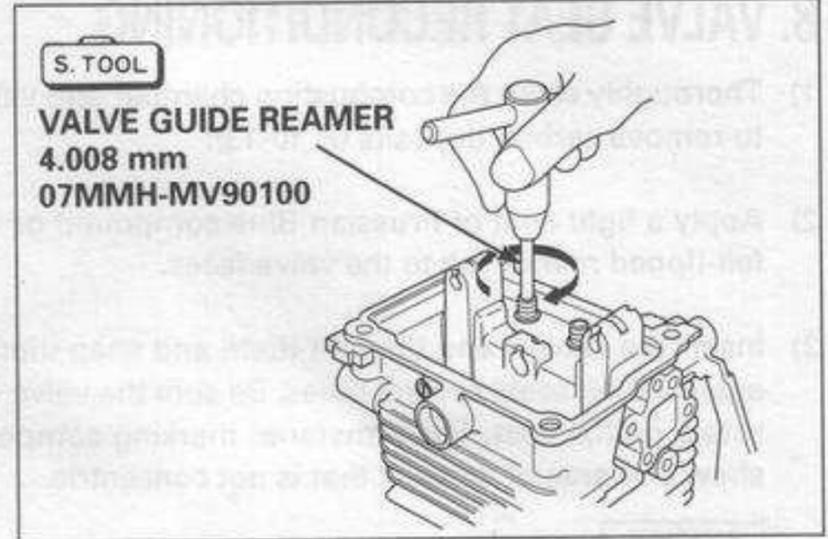
For best results, be sure the cylinder block is at room temperature before reaming valve guides.

- 1) Coat the reamer and valve guide with cutting oil.
- 2) Rotate the reamer clockwise through the valve guide for the full length of the reamer.
- 3) Continue to rotate the reamer clockwise while removing it from the valve guide.

TOOL:

Valve guide reamer, 4.008 mm 07MMH-MV90100

- 4) Thoroughly clean the cylinder block to remove any cutting residue.
- 5) Check the valve guide bore; it should be straight, round and centered in the valve guide, insert the valve and check operation. If the valve does not operate smoothly, the guide may have been bent during installation. Replace the valve guide if it is bent or damaged.
- 6) Check the valve guide-to-stem clearance (P. 10-23).



8. VALVE SEAT RECONDITIONING

- 1) Thoroughly clean the combustion chamber and valve seats to remove carbon deposits (P. 10-13).
- 2) Apply a light coat of Prussian Blue compound or erasable felt-tipped marker ink to the valve faces.
- 3) Insert the valves, and then lift them and snap them closed against their seats several times. Be sure the valve does not rotate on the seat. The transferred marking compound will show any area of the seat that is not concentric.

NOTICE

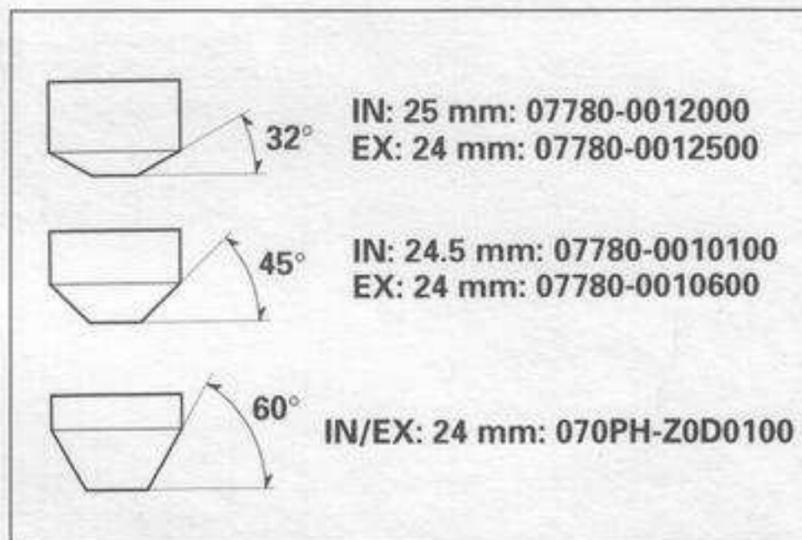
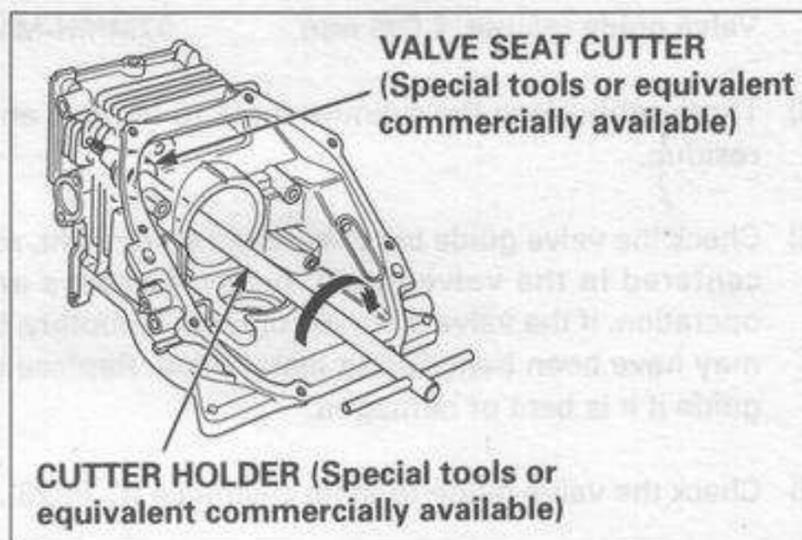
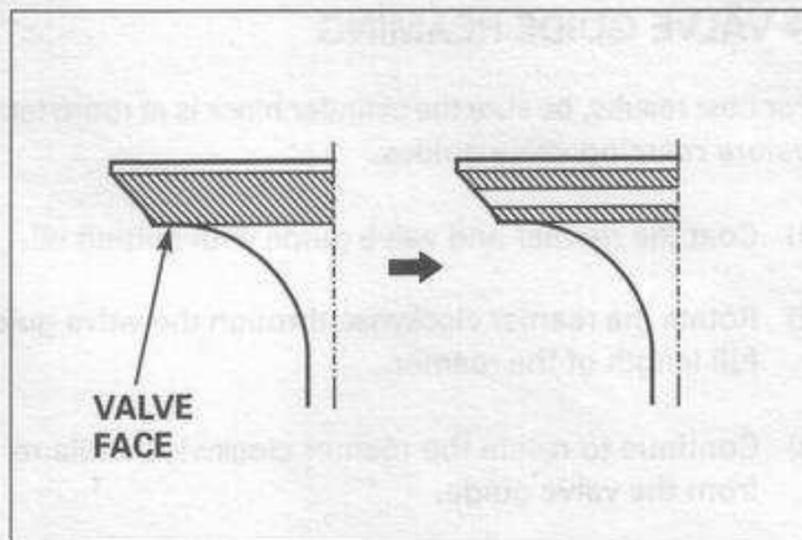
Follow the valve seat cutter manufacturer's Instructions.

- 4) Using a 45° cutter, remove enough material to produce a smooth and concentric seat. Turn the cutter clockwise, never counterclockwise. Continue to turn the cutter as you lift it from the valve seat.

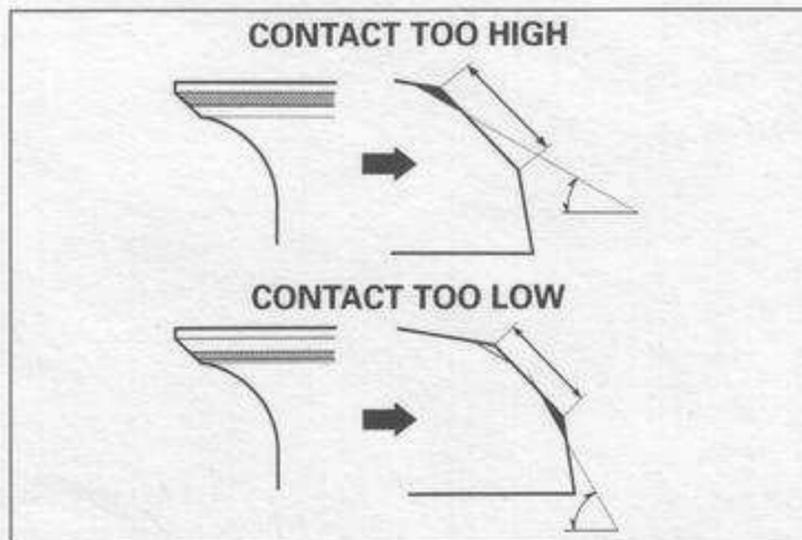
TOOLS:

(Special tools or equivalent commercially available)

Valve seat cutter, 45° 24.5 mm (IN)	07780-0010100
Valve seat cutter, 45° 24 mm (EX)	07780-0010600
Valve seat cutter, 32° 25 mm (IN)	07780-0012000
Valve seat cutter, 32° 24 mm (EX)	07780-0012500
Valve seat cutter, 60° 24 mm (IN/EX)	070PH-Z0D0100
Cutter holder, 4.0 x 400 mm	070PH-Z0D0200



- 5) Use the 32° and 60° cutters to narrow and adjust the valve seat so that it contacts the middle of the valve face. The 32° cutter removes material from the top edge. The 60° cutter removes material from the bottom edge. Be sure that the width of the finished valve seat is within specification (P. 10-27).



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	Standard	Service limit
IN/EX	0.7 mm (0.028 in)	1.800 mm (0.0709 in)

- 6) Make a light pass with 45° cutter to remove any possible burrs at the edges of the seat.
- 7) After resurfacing the seat, inspect for even valve seating. Apply Prussian Blue compound or erasable felt-tipped marker ink to the valve faces. Insert the valves, and then lift them and snap them closed against their seats several times. Be sure the valve does not rotate on the seat. The seating surface, as shown by the transferred marking compound, should have good contact all the way around.
- 8) Lap the valves into their seats, using a 4 mm tube as shown and lapping compound (commercially available).

NOTICE

To avoid severe engine damage, be sure to remove all lapping compound from the combustion chamber before assembly.

- 9) Check valve clearance after assembly (P. 3-5).

