



Fig. 64 ① Cylinder ② Cylinder groove

14. Remove the cylinder.
If the cylinder is tightly stuck pry the cylinder loose with a screwdriver placed in the groove at the base of the cylinder.



Fig. 65 ① Piston pin clip

15. Remove the piston pin clip, piston pin, and the piston.

Note:

When removing the pin clip, exercise care not to drop the clip into the crankcase.

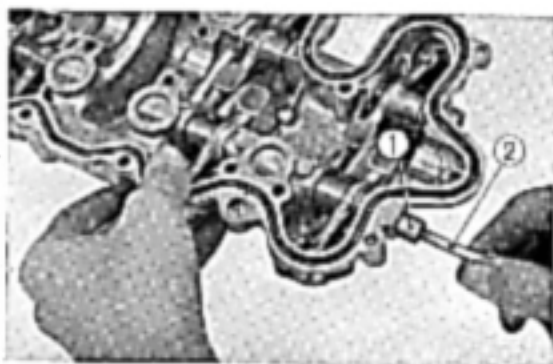


Fig. 66 ① Rocker arm shaft ② 6mm bolt

16. Remove the piston rings.
17. Screw a 6mm bolt into the rocker arm shaft and remove the rocker arm shaft from the cylinder head cover.

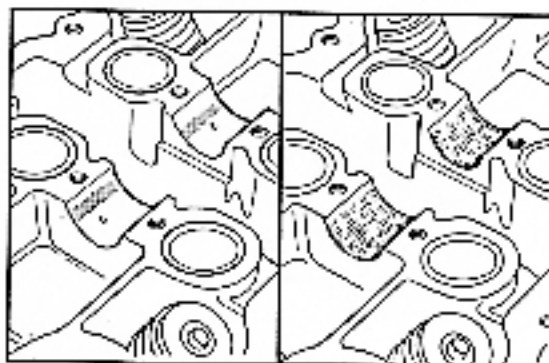


Fig. 67 Good No good

B. Inspection

1. Inspect the camshaft bearing surfaces.
Camshaft bearing surfaces should be smooth and shiny. If it is scratched or excessively worn, it should be replaced.

2. Measure the height of the cam with a micrometer.
Replace the camshaft if beyond the serviceable limit.

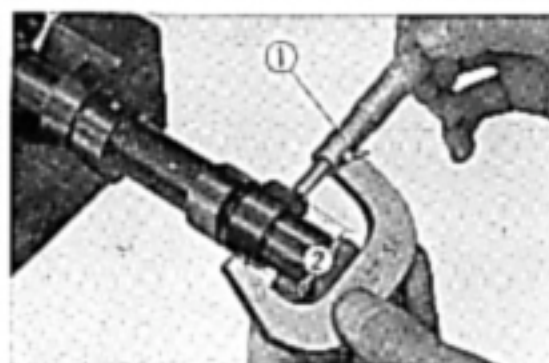


Fig. 68 ① Micrometer ② Cam height

3. Measure camshaft runout.
Support level both ends of the camshaft on V-blocks and with a dial gauge measure radial runout by rotating the shaft. Replace the camshaft if beyond the serviceable limit.
4. Also check the camshaft for scratch, wear and replace if necessary.

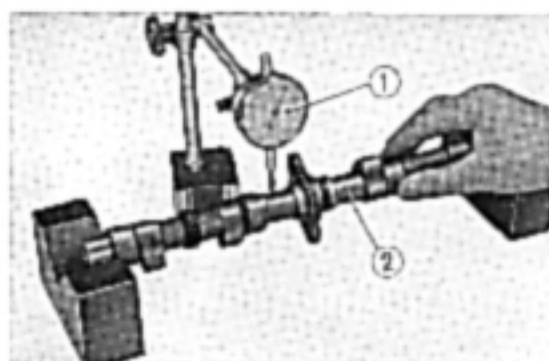


Fig. 69 ① Dial gauge ② Camshaft

5. Measure cylinder diameter at the top, center and bottom in both the X and Y axes. Rebore the cylinder if beyond the serviceable limit at any point.
When reboring the cylinder, rebores it to fit one of the four standard oversize pistons available.
Standard oversizes are 0.25, 0.50, 0.75 and 1.00 mm (0.009, 0.019, 0.029 and 0.039 in.).

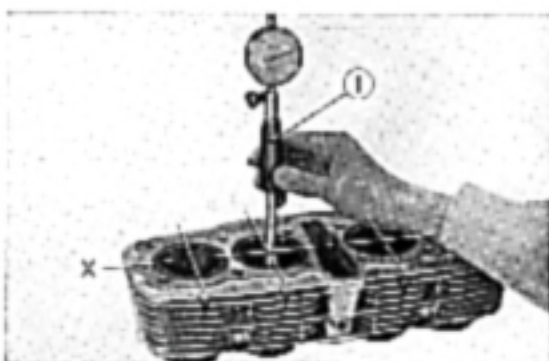


Fig. 70 ① Cylinder gauge

6. Measure piston diameter.
Measure the diameter at the piston skirt, 90° to the piston pin with a micrometer. Replace the piston if the diameter beyond the serviceable limit.



Fig. 71 ① Micrometer

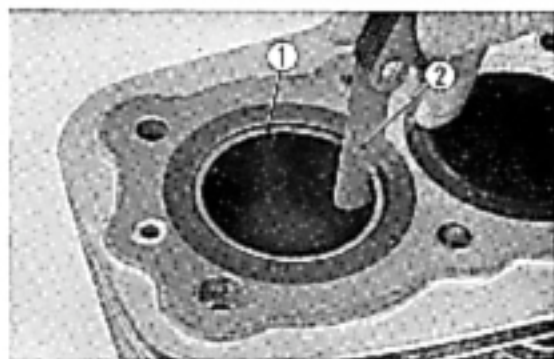


Fig. 72 ① Piston ring ② Feeler gauge

7. Measure piston ring end gap.
Insert the piston ring into the skirt of the cylinder so that it is squarely positioned, and measure the gap with a feeler gauge.

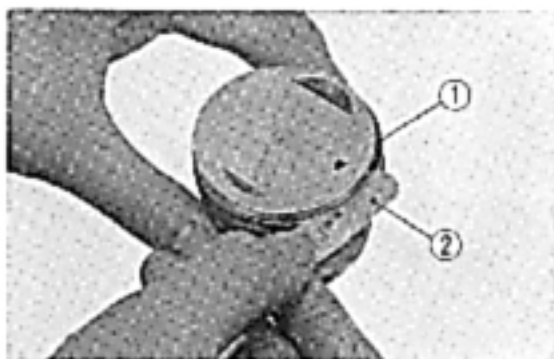


Fig. 73 ① Piston ring ② Feeler gauge

8. Measure piston ring side clearance.
Install the rings on the piston and measure the side clearance of the piston ring in the ring groove with a feeler gauge.

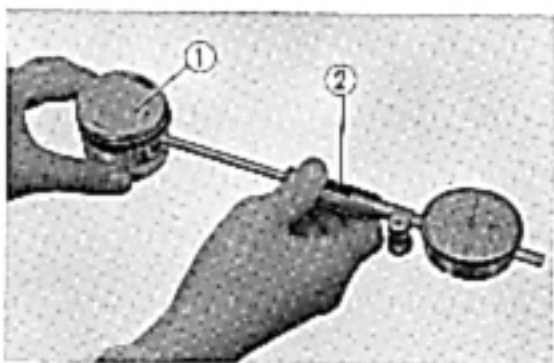


Fig. 74 ① Piston ② Cylinder gauge

9. Measure the piston pin hole using an inside micrometer or cylinder gauge.
10. Inspect the piston for damage, distortion and excessive wear.

C. Reassembly

1. Install the rocker arm and the rocker arm shaft in the cylinder head cover.
2. Install the piston rings on the piston with the marking on the rings toward the top.

Note:

When installing new rings on the piston, roll the rings in the ring grooves to assure proper clearance. If the rings roll smoothly, the clearance is satisfactory.

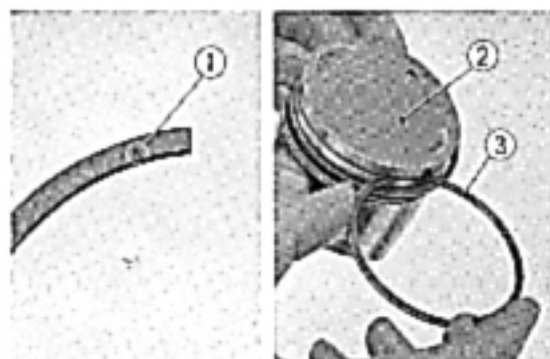


Fig. 75 (1) Marks (2) Piston (3) Piston ring

3. Install the piston on the connecting rod with the piston pin and clips so that the ▲ mark on the piston head points toward the front (exhaust side) as shown in the figure.

Note:

Always use new pin clips.



Fig. 76 (1) ▲ marks

4. Stagger the end gaps of the top, 2nd and oil rings 120° apart. Install so that none of the gaps are on the piston boss axis or 90° away from it.

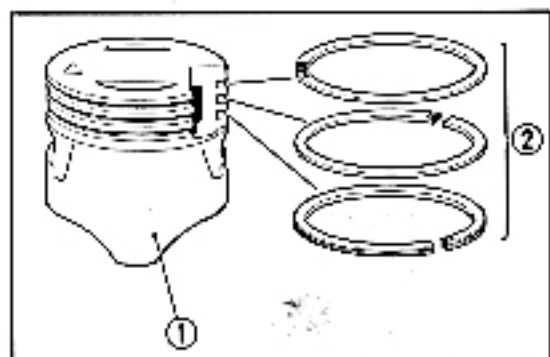


Fig. 77 (1) Piston (2) Rings

5. Install the cylinder gasket, two dowel pins (orifice valve) and two O-rings on the upper crankcase.

Note:

Before installing the dowel pin, blow compressed air through the hole to assure that it is not clogged.

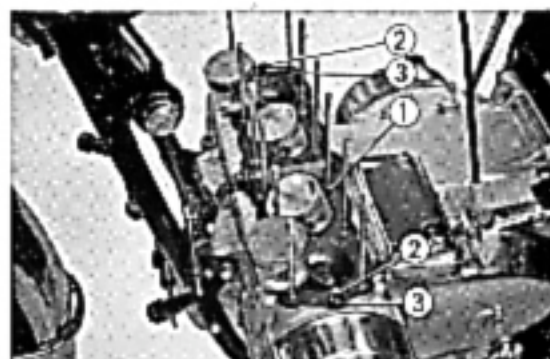


Fig. 78 (1) Cylinder gasket (2) Dowel pins (3) O-rings



Fig. 79 ① Piston bases ② Piston ring compressors



Fig. 80 ① Cam chain tensioner ② Lock nut

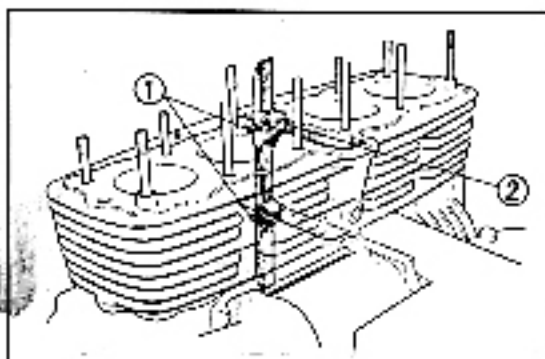


Fig. 81 ① Pins ② "UP" mark

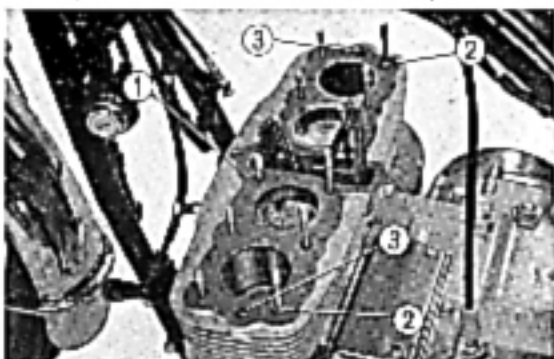


Fig. 82 ① Cylinder head gasket ② Dowel pins ③ O-rings

6. Turn the crankshaft and place the piston base (Tool No. 07033-55102) under No. 2 and 3 pistons, and install the piston ring compressors (Tool No. 07032-30001) on the piston rings, and insert the pistons into the cylinder. When the No. 2 and 3 pistons have entered the cylinder, remove the bases and piston ring compressors. Next turn the crankshaft slightly and install the No. 1 and 4 pistons being careful not to expose the rings of the No. 2 and 3 pistons. Raise the cam chain at the same time.

7. With the cylinder held approx. 20 mm from the crankcase, install the cam chain tensioner in the cylinder, hold the tensioner down by hand and install the O ring, steel washer, and tighten the lock nut.

8. Insert the cam chain guide into the cylinder as shown in Fig. 81.

9. Install the cylinder head gasket, two dowel pins and two O-rings on the cylinder.

10. Place the cylinder head and hold the cam chain with a screw driver to prevent cam chain from dropping.
11. Tighten the twelve 8 mm nuts uniformly with the special tool (Tool No. 07078-32301) to a torque of **2.0~2.2 kg-m** (14.46~16.63 ft-lbs) in the sequence shown in Fig. 83.
Next, install and torque two 6 mm flange bolts.
Mount the cam chain tensioner on the cylinder head with the aluminum washer and 6 mm bolt.

Note:

Exercise care not to drop nuts or washers into the cylinder head as it will be difficult to remove them.

12. Hold the cam chain sprocket and cam chain together and slide the camshaft through them from the right side, and set it on the bearings in the cylinder head. Install the cam chain on the cam sprocket.

13. Remove the point cover, rotate the crankshaft in the clockwise direction and align the "T" (1.4) mark of the spark advancer to the timing mark. Next, position the camshaft so that the center of the cutout notch on the right end of the camshaft is aligned to the cylinder head flange surface.

14. Mount the cam sprocket on the camshaft with two 7 mm bolts.
15. Mount the carburetor assembly on the cylinder head.
16. Install the two dowel pins and six sealing rubbers on the cylinder head.

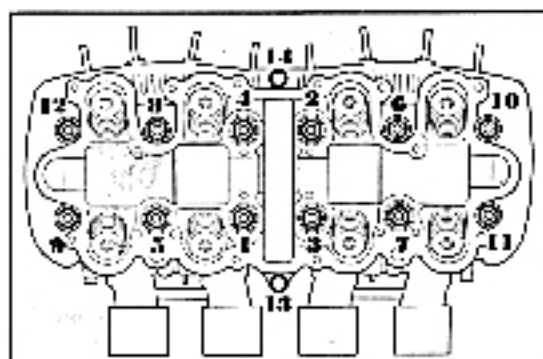


Fig. 83



Fig. 84 ① Cam sprocket ② Cam chain ③ Camshaft

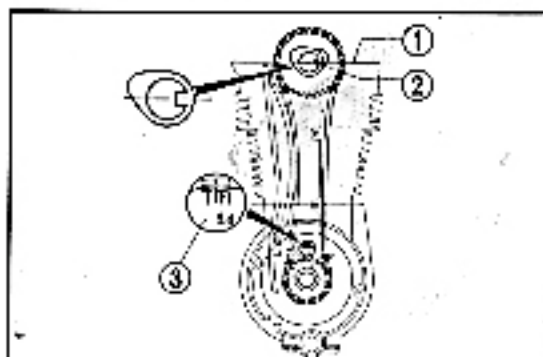


Fig. 85 ① Cylinder head flange surface ② Cutout notch ③ Spark advancer

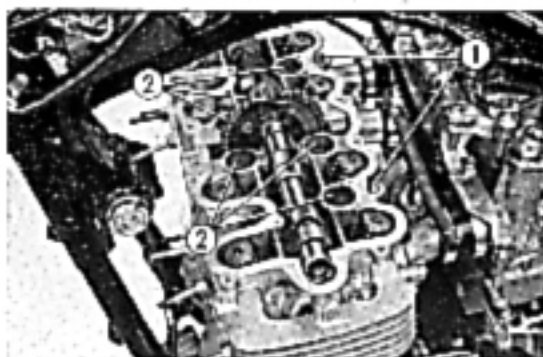


Fig. 86 ① Dowel pins ② Sealing rubbers

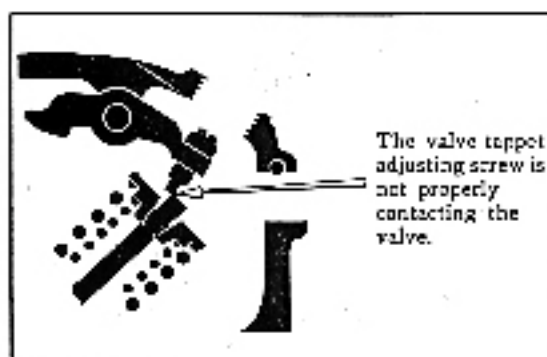


Fig. 87

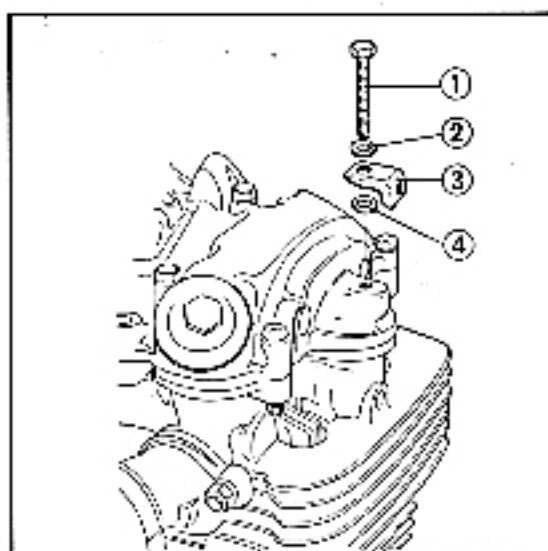


Fig. 88 ① 6 mm screw
② Chromium-plated copper washer
③ Head side cover set plate
④ Aluminum washer

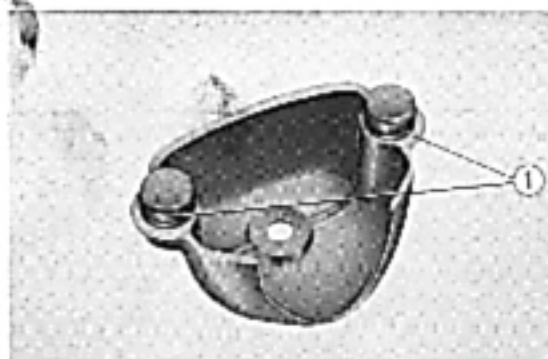


Fig. 89 ① O-ring

17. Install the cylinder head cover with twelve 6 mm screws and six 6 mm bolts, and torque to 0.8~1.2 kg-m (5.78~8.67 lbs-ft) so that torque difference is not over 0.2 kg-m (1.44 lbs-ft).

Note:

- Insert fingers into the tappet hole cap opening and lift the valve tappet adjusting screw to check that they are properly meeting the valves.
- Use the six 6 mm copper washers as shown in Fig. 57.
- Install the head side cover set plate with washers mounted on both sides of the 6 mm screws (Chromium-plated copper washer on top and aluminum washer on bottom).

18. Install O-rings on the dowel pins of the the left and right side covers, and install the side covers on the cylinder head.
19. Install the breather cover with six 6 mm screws.

Note:

- High tension cord clips are mounted on both sides with the clips facing forward.
20. Adjust the cam chain by referring to page 12.
21. Adjust the tappets by referring to page 7.



4. VALVES AND VALVE SPRINGS

A. Disassembly

1. Remove the cylinder head by referring to section 3. A.
2. Compress the valve spring with a valve spring compressor (Tool No. 07031-30011), remove the valve cotters, and the valves.

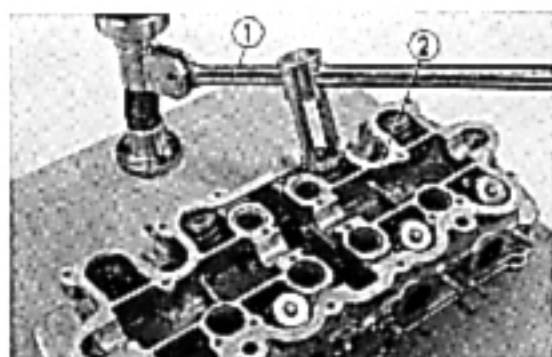


Fig. 90 ① Valve spring compressor
② Cylinder head

3. Drive the valve guide out of the cylinder head using the valve guide remover (Tool No. 07046-32901).
4. Remove the valve guide cap from the valve guide.



Fig. 91 ① Valve guide remover

B. Inspection

1. Measure valve stem clearance.
Insert the valve into the guide and measure the clearance in both the X and Y directions using a dial gauge. Replace the valve and guide in set if clearance beyond the serviceable limit.
Drive the guide into the cylinder head using a valve guide driver and finish ream the guide to the proper size. Standard valve guide inside diameter for both the inlet and exhaust is 5.475~5.485 mm (0.2153 in.~0.2157 in.)

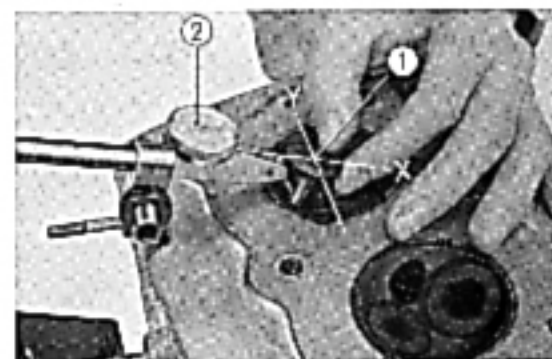


Fig. 92 ① Valve ② Dial gauge



Fig. 93 ① Valve seat width

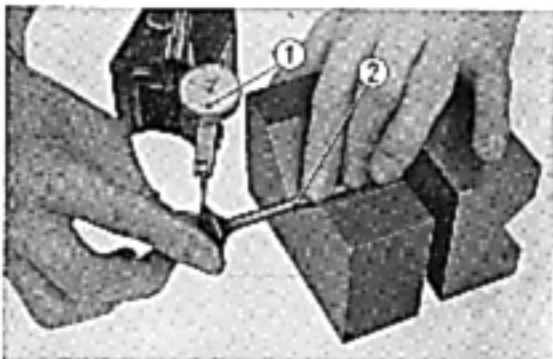


Fig. 94 ① Dial gauge ② Valve

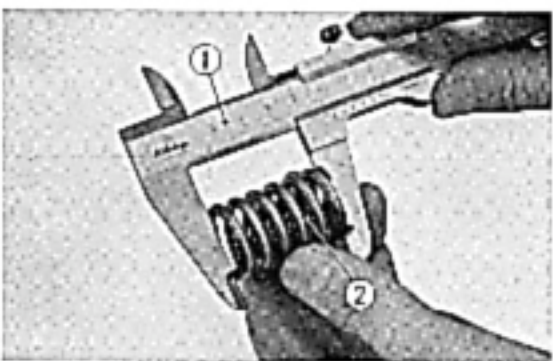


Fig. 95 ① Vernier caliper ② Valve spring

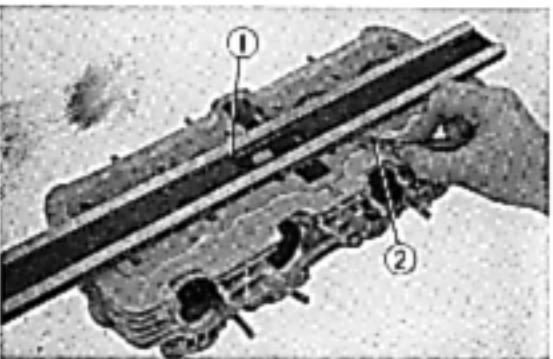


Fig. 96 ① Straight edge ② Feeler gauge

2. Measure the valve seat contact area. Apply a thin coat of bluing or red lead on the valve face, press the valve against the seat and turn. The imprint of the valve seat should be continuous around the face of the valve; if not, lap the valve and reinspect. If still unsatisfactory, recut the valve seat with a valve seat cutter. First, cut the inside seat with an inside cutter, the top seat with a top cutter, and finally make the finish cut with a 90° cutter to produce a seat width of 1.0~1.5 mm (0.039~0.059 in.).

3. Measure valve runout. Place the valve on V-block and measure the runout of the valve with a dial gauge applied to the face of the valve while turning the valve. Replace the valve if the runout beyond the serviceable limit.
4. Measure the valve spring. Measure the free length of the valve spring with a vernier caliper.

5. Measure the flatness of the cylinder head. Place a straight edge on the cylinder head surface and measure the clearance at several points with a feeler gauge. If there is a clearance of over the serviceable limit, lap the cylinder head surface on the surface plate using lapping compound or replace the head if it cannot be repaired.