

Figure 3-29. Measuring valve stem diameter

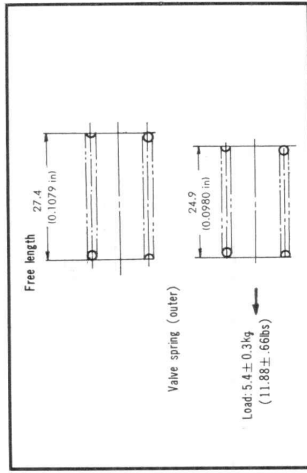


Figure 3-30. Outer valve spring

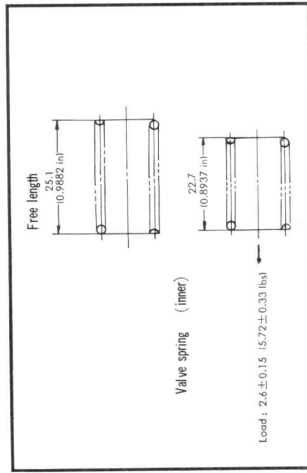


Figure 3-31. Inner valve spring



Figure 3-32. Camshaft

(3) Inlet valve, [] values are for C50, C50M, S50

	Standard Value	Serviceable Limit
Length	64.5 (2.540 in.)	Replace if under 64.1 (2.580 in.)
	[66] (2.600 in.)	[65.6] (2.593 in.)
Stem dia	5.5 mm (0.217 in.)	Replace if under 5.44 (0.214 in.)
	-0.035 (0.0014 in.)	-0.045 (0.0018 in.)
Head thickness	0.5 (0.020 in.)	Replace if under 0.2 (0.008 in.)
	±0.1 (0.004 in.)	

(4) Valve stem to guide clearance, inlet

Standard value → 0.010 ~ 0.030 (0.0004 ~ 0.0012 in.)
Serviceable limit → Replace if over 0.06 (0.0023 in.)

(5) Valve stem to guide clearance, exhaust

Standard value → 0.030 ~ 0.050 (0.0012 ~ 0.0020 in.)
Serviceable limit → Replace if over 0.08 (0.0032 in.)

(6) Outer valve spring (Fig. 3-30)

	Standard Value	Serviceable Limit
Free length	27.4 (1.080 in.)	Replace if under 26.2 (1.030 in.)
	[28.1] (1.110 in.)	[26.9] (1.060 in.)
Spring pressure	5.4 ± 0.30 kg/24.9 mm (11.9 ± 0.66 lbs/0.980 in.)	Replace if under 15.2 kg/19.7 mm (33.4 lb/0.780 in.)
	7.2 ± 0.55 kg/24.9 mm (16.0 ± 1.2 lb/0.980 in.)	
Spring pressure	6.4/24.9 mm (14.0 lb/0.98 in.)	Replace if under 16.8 ± 0.8 kg/19.7 mm (37.0 ± 1.76 lb/0.780 in.)
	19.0 ± 1.4 kg/19.7 mm (42.0 ± 3.1 lb/0.780 in.)	Replace if under 4.6 kg/24.9 mm (10.0 lb/0.980 in.)
Tilt	1°30'	Replace if over 2°
	25.1 (0.990 in.)	Replace if over 23.9 (0.940 in.)

(7) Inner valve spring (Fig. 3-31)

	Standard Value	Serviceable Limit
Spring pressure	2.6 ± 0.15 kg/22.7 mm (5.7 ± 0.33 lb/0.890 in.)	Replace if under 2.0 kg/22.7 mm (4.4 lb/0.890 in.)
	8.2 ± 0.4 kg/17.5 mm (18.0 ± 0.88 lb/0.690 in.)	Replace if under 7.2 kg/17.5 mm (15.8 lb/0.690 in.)
Tilt	1°30'	Replace if over 2°

4. CAMSHAFT

In a four stroke cycle engine, the camshaft makes one revolution for every two revolutions of the crankshaft. The power to drive the camshaft is through the cam chain driven by the crankshaft sprocket.

The lubricating oil is pressure-fed into the right side of the camshaft and is forced out of the holes in the cam to lubricate the cam surfaces, rocker arms and the slippers. The camshaft is made of special cast steel with the cam and the bearing area being precision ground after heat treatment. The camshaft is supported at both ends by the bearings in the cylinder head, a cam sprocket is installed on the left end of the camshaft with 6mm bolts and is driven at one half crankshaft speed by the timing sprocket pressed to the crankshaft end, by means of a light weight endless chain. (Fig. 3-23, 3-33)

3.2 CYLINDER HEAD

The standard tappet clearances measured cold are 0.05mm (0.002 in) for both the inlet and exhaust. This is the clearance measured when the rocker arm is against the heel of the cam lobe; in order to obtain this condition, the crankshaft must be rotated so that the "T" timing mark on the flywheel is in line with timing mark on the left crankcase cover, otherwise, the rocker arm may be on the lifting slope of the cam. (Fig. 3-34)

The opening and closing of the valve is determined by the piston stroke and is timed to the crankshaft rotation. During the inlet cycle, the inlet valve is opened and closed at the end of the inlet cycle. During the exhaust cycle, the same opening and closing sequence takes place with the exhaust valve. The open angle between the opening and closing is the same as the piston travel, however, since it is the same as the crankshaft angular rotation, it is expressed in terms of angular rotation.

When point "a" in the Fig. 3-34 passes beyond the rocker arm, the vertical movement of the valve increases, and at a certain point where the cam lobe comes to a peak, the movement of the valve slows down and comes to a halt at point "b" on the cam.

The tappet clearance is adjusted when the rocker arm is at the exposed section of the heel of the cam between points "c" and "a". The heel of the cam on the S50 and S65 differs from the other models in that it is comparatively larger, this is to decrease the unit load on the slipper surface on the rocker arm.

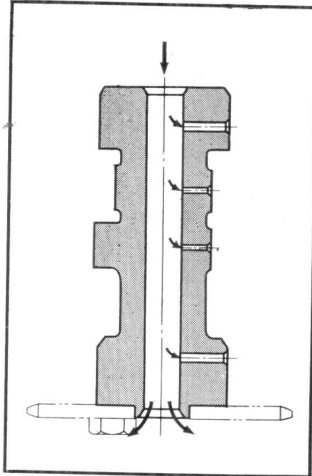


Figure 3-33. Camshaft construction (oil passage)

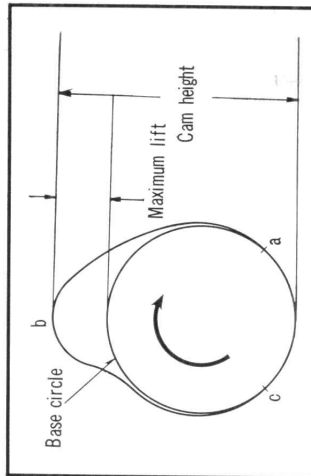


Figure 3-34. Cam contour

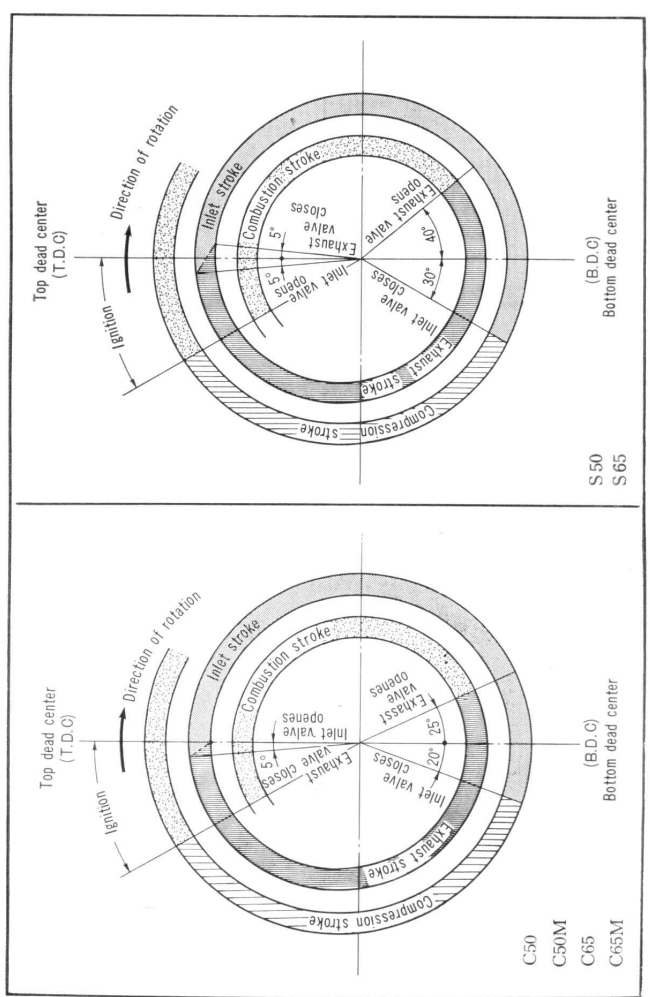


Figure 3-35. Valve timing diagram