

Measuring and Adjusting Valve Clearance

Measure and adjust while the engine is cold.

Notes:

- The No. 1 piston position is on the flywheel end of the engine, opposite end of the radiator. The firing order is 1-3-2 for 3-cylinder engines and 1-2 for 2-cylinder engines.
- 3-cylinder engines fire every 240° of crankshaft rotation.
- 2-cylinder engines are an uneven firing engine. No. 2 cylinder fires 180° after No. 1. The crankshaft then rotates 540° before No. 1 cylinder fires again.
- Valve clearance of both the intake and exhaust valves can be checked with the piston for that cylinder at top dead center (TDC) of the compression stroke. When a piston is at TDC of the compression stroke, both rocker arms will be loose and the cylinder TDC mark on the flywheel will be visible in the timing port of the flywheel housing.

- If there is no valve clearance, and the piston is at TDC of the compression stroke, extreme wear or damage to the cylinder head or valves may be possible.
- If adjusting each cylinder individually, the cylinder to be adjusted first does not have to be the No. 1 cylinder. Select and adjust the cylinder where the piston is nearest to the top dead center after turning. Adjust the remaining cylinders in the order of firing by turning the crankshaft each time.
- To decrease the number of rotations required to check all cylinders of a 3-cylinder engine, other cylinders can also be checked as indicated in the chart below. 2-cylinder engines must have each cylinder adjusted when the piston is at TDC.

Example: On a 3-cylinder engine, with the No. 1 piston at TDC on the compression stroke (both valves closed), the valves indicated on the top line of the chart can be adjusted without rotating the crankshaft. To adjust the remaining two valves, rotate the crankshaft until the No. 1 piston is at TDC on the exhaust stroke (exhaust valve only open).

3-Cylinder Engines

Cylinder No.	1		2		3	
	Intake	Exhaust	Intake	Exhaust	Intake	Exhaust
No. 1 Cylinder at TDC Compression	•	•	•			•
No. 1 Cylinder at TDC Exhaust				•	•	

1. Remove the intake manifold / valve cover. See *Removal of Intake Manifold / Valve Cover on page 6-20*.
2. Rotate the crankshaft clockwise as seen from the coolant pump end, to bring No. 1 piston to TDC of the compression stroke while watching the rocker arm motion and timing grid on the flywheel. (Position so both the intake and exhaust valves are closed.)
3. Insert a feeler gauge (**Figure 6-35, (1)**) between rocker arm and valve cap and record the measured valve clearance. (Use the data for estimating wear.)