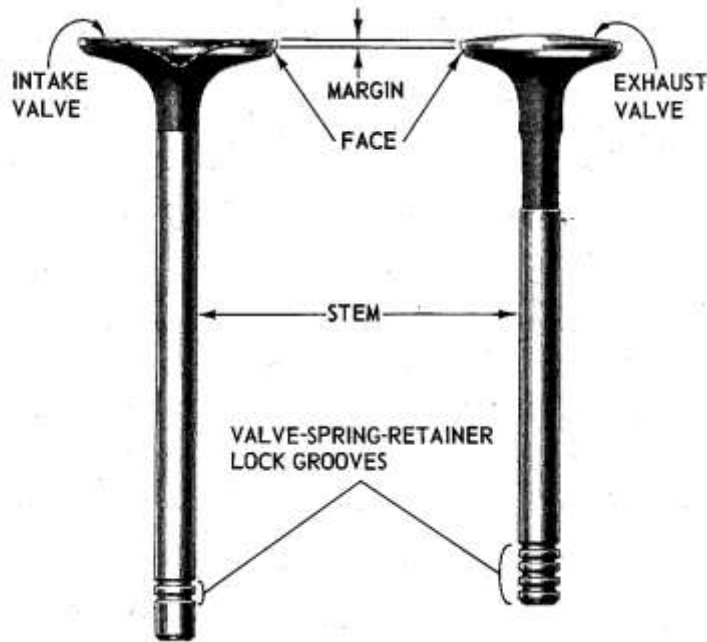
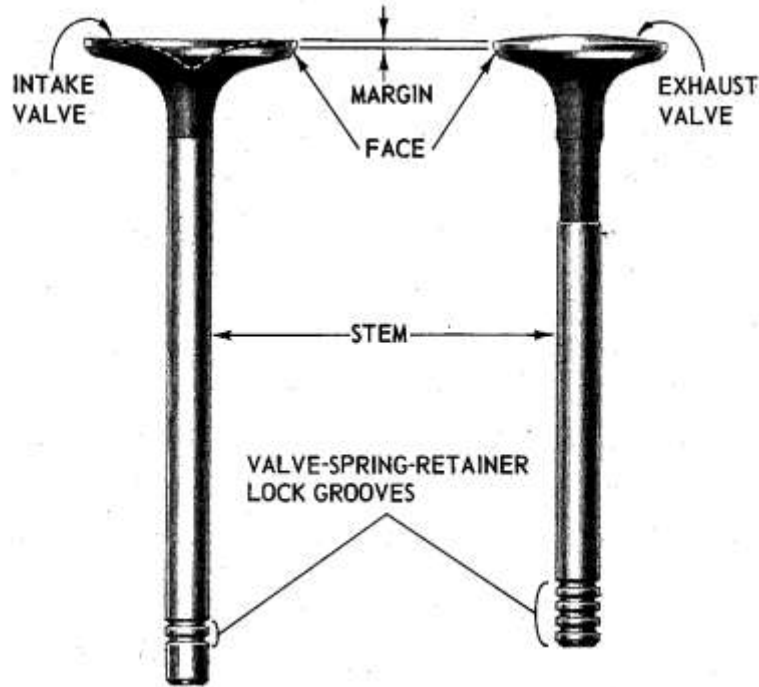


Four Stroke Cycle Valve Operation



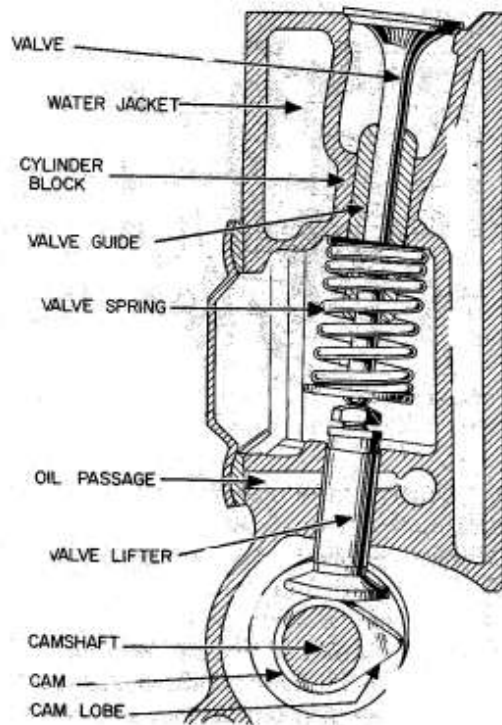
- This figure shows typical valves for a four stroke engine
- These valves operate by means of a gear-and-cam arrangement
- They move up and down in valve guides in the cylinder block.

Four Stroke Cycle Valve Operation



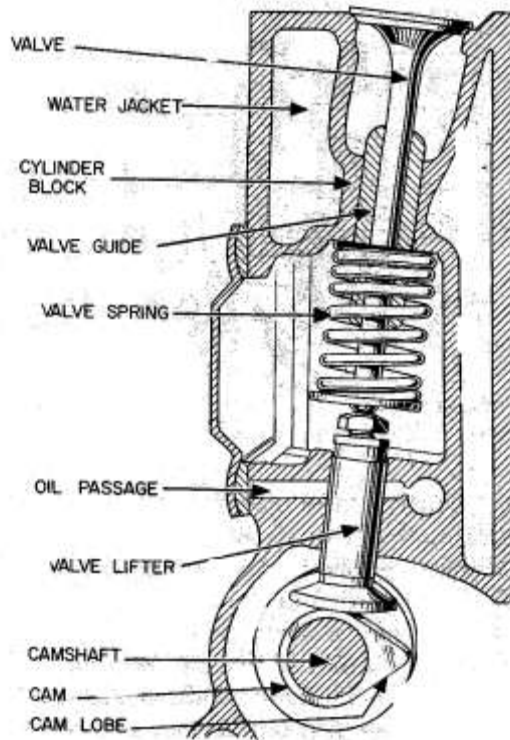
- One of the valves operates to allow air-fuel mixture to enter the cylinder
- The other operates to allow the burned gases to escape

Four Stroke Cycle Valve Operation



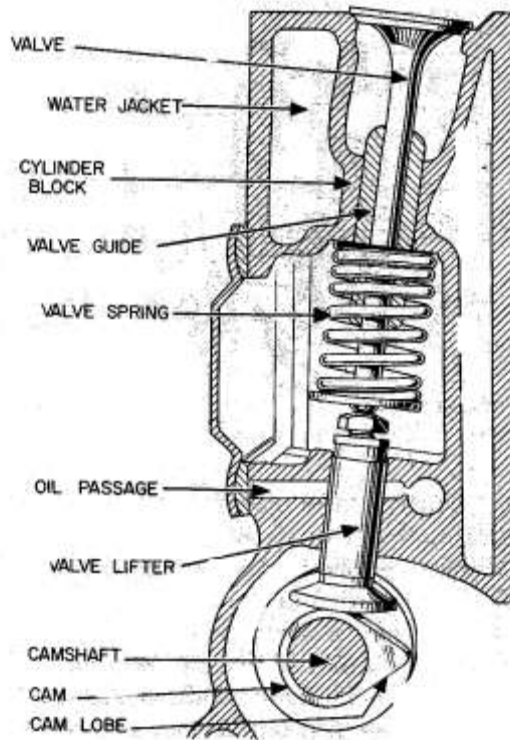
- This is a typical valve arrangement for a small gas engine. The valve moves up and down in a valve guide which is part of the cylinder block
- A valve spring puts tension on the valve and tries to keep it closed (seated). The valve spring is held between the cylinder block and the spring retainer.

Four Stroke Cycle Valve Operation



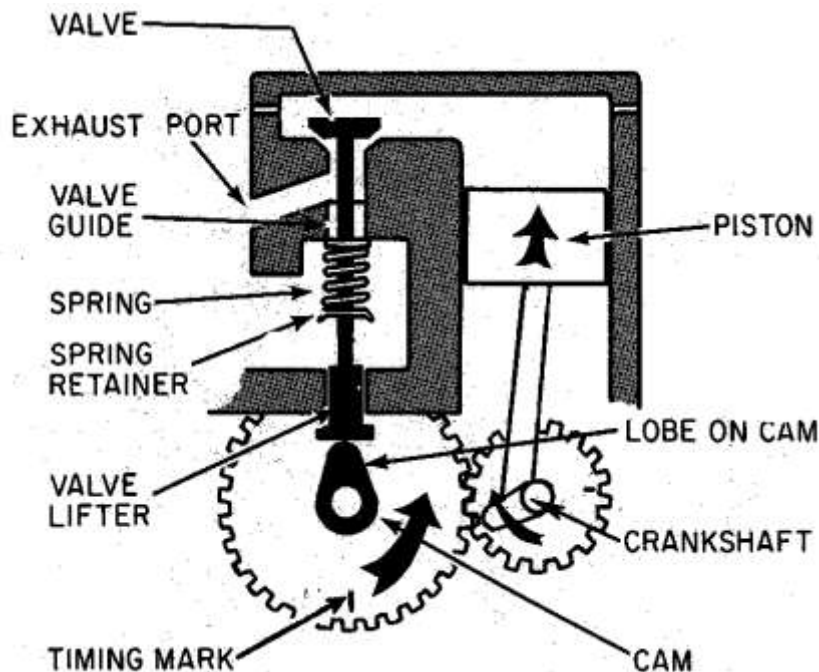
- Below the valve stem is a valve lifter or valve tappet. The valve lifter moves up and down in a bore, or hole, in the cylinder block.
- The valve lifter rests on a cam which has a high spot, or lobe.

Four Stroke Cycle Valve Operation



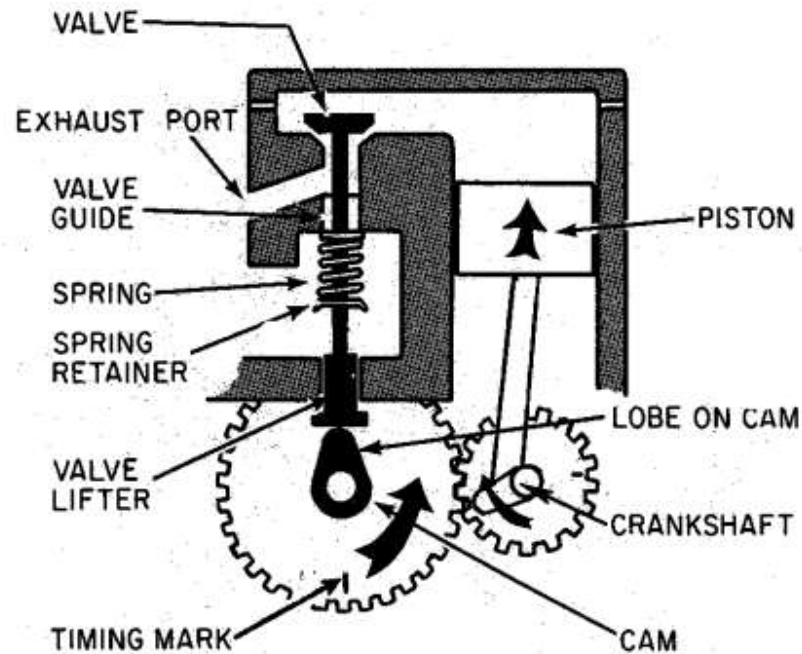
- The cam rotates as the crankshaft rotates.
- The two are geared together

Four Stroke Cycle Valve Operation



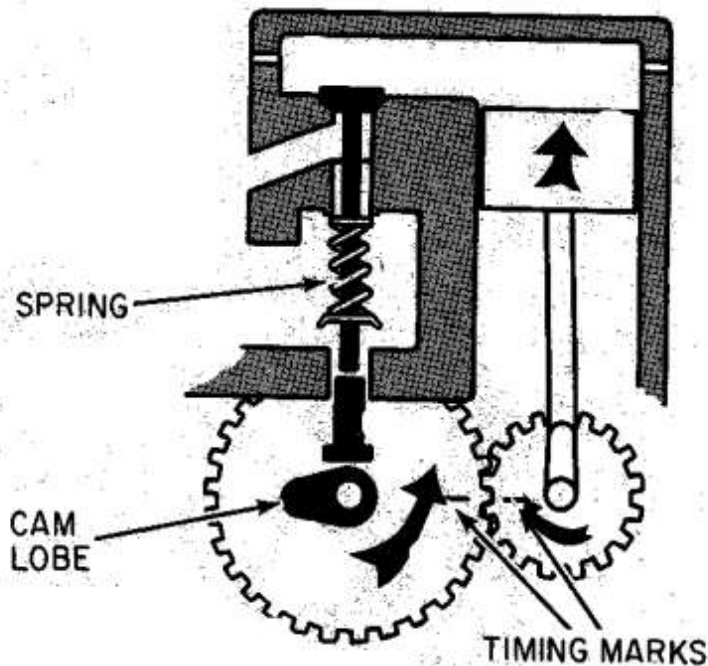
- As the camshaft rotates, the cam lobe moves around under the valve lifter, causing it to be moved upward.
- This upward push overcomes the valve-spring tension so that the valve is raised off the valve seat.

Four Stroke Cycle Valve Operation



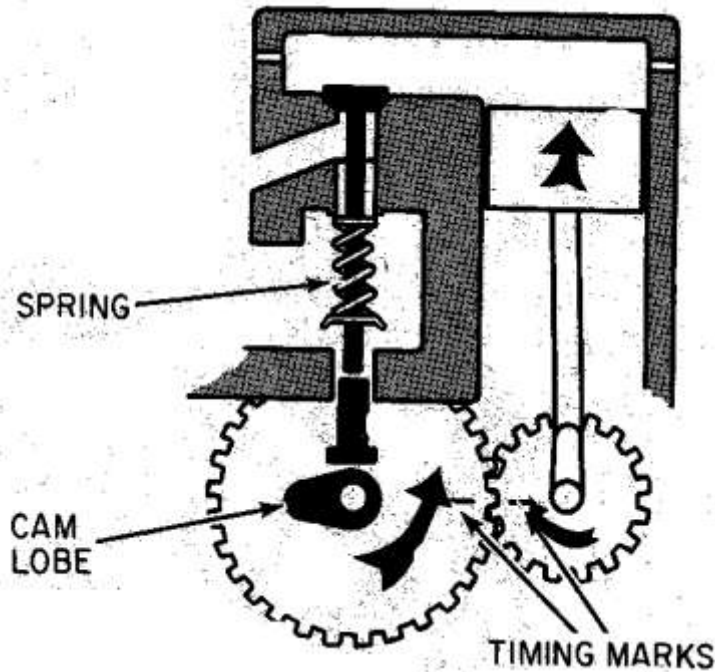
- The valve is then open, and gas can pass through the opening between the valve seat and the valve.
- If the valve is the intake valve, it is air-fuel mixture from the carburetor that passes through the valve opening on its way to the cylinder. If it is the exhaust valve then it is burned exhaust gases.

Four Stroke Cycle Valve Operation



- As the piston continues its movement and the crankshaft continues to rotate, the gears on the crankshaft rotate the camshaft so that the lobe on the cam moves out of the way of the valve lifter.
- Now the spring on the valve forces the valve to close so the opening is sealed off as it is shown here.

Four Stroke Cycle Valve Operation



- Notice that the gear on the camshaft is twice as large as the gear on the crankshaft.
- The reason for this is that the camshaft should rotate just half as fast as the crankshaft.
- This make the camshaft rotate once for every two times the crankshaft turns. Each valve must open once while the crankshaft is turning two times.

Four Stroke Cycle Valve Operation

