

*What about  
Valve timing?*

## *Answer No. 22*

In timing the engine the points of opening and closing of the valves are, of course, what should be considered. As the valves are properly timed when the engine is built at the factory the necessity for retiming would occur only when such parts as the cam shaft, time gears, or valves were removed in overhauling the engine.

In fitting the large time gear to the cam shaft it is important to see that the first cam points in a direction opposite to the zero mark (see Cut No. 5). The time gears must also mesh so that the tooth marked zero (0) on the small time gear will come between the two teeth on the large gear at the zero point. The time gears now being properly set, the exhaust valve on No. 1 cylinder is open and the intake valve closed, the other valves being in the position indicated in Cut No. 5. The opening and closing of the valves being as follows: The exhaust valve opens when the piston reaches  $\frac{5}{16}$ " of bottom center, the distance from the top of the piston head to the top of the cylinder casting measuring  $3\frac{3}{8}$ ". The exhaust valve will close on top center, the piston being  $\frac{5}{16}$ " above the cylinder casting. The intake valve opens  $\frac{1}{8}$ " after top center (the piston then being  $\frac{1}{4}$ " above the top of the cylinder) and closes  $\frac{9}{16}$ " after bottom center, the distance from the top of the piston to the top of the cylinder casting measuring  $3\frac{1}{8}$ ".

The clearance between the push rod and valve stem should never be greater than  $\frac{1}{32}$ " nor less than  $\frac{1}{64}$ ". The correct clearance is naturally half way between these two measurements. The gap should be measured when the push rod is on the heel of the cam.

*What about the  
care of the Valves?*

## *Answer No. 23*

They seldom get out of order—but they may get dirty, as a result of carbon collecting on the valve seats. These carbon deposits, by preventing proper closing of the valves, permit the gases under compression to escape, resulting in loss of power and uneven running of the motor. If, when turning the engine over slowly, there is a lack of resistance in one or more cylinders, it is probable that the valves need re-grinding. As the "life" of the engine depends largely upon the proper seating of the valves, it is necessary that they be ground occasionally.

*How are the Valves  
removed for grinding?*

## *Answer No. 24*

(1) Drain radiator; (2) remove cylinder head; (3) remove the two valve covers on the right side of engine; (4) raise the valve spring with lifting tool (see Cut No. 6) and pull out the little pin under the valve seat. The valve may then be lifted out by the head—preparatory to grinding.

IMPORTANT—Read carefully chapter on Lubrication, page 53