The exhaust valve opens 50° before the piston reaches the bottom dead centre, and closes 10° after the piston passes the upper dead centre which is exhaust closing lag. The exhaust duration is also 240°.

The above timing values are given for the theoretical clearance between the valve stem and the rocker end equal to 2 mm.

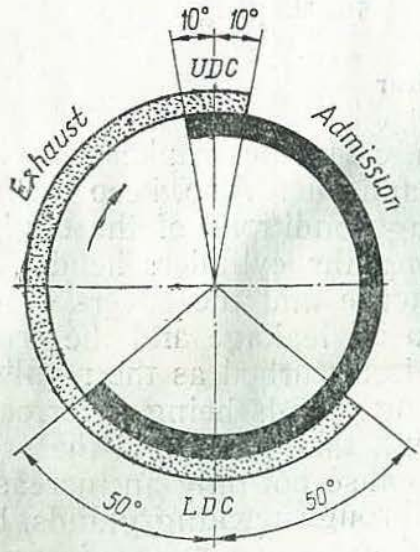

Fig. 8. Valve timing diagram

The correct valve timing is ensured by matching, during assembling, the marks on timing pinions *2* (Fig. 9) and *4*.

Valve Adjustment

The normal operation of the engine depends to a great extent on the size of the expansion clearance between the valve stem and the rocker end.

When checking or adjusting the clearance, place a tray under the cylinder head, remove the cylinder head cover and drain the oil that has accumulated. Set the piston to the upper dead centre of the compression stroke, turn the crankshaft so that the mark "B" on the flywheel is matched with the mark on the crankcase. In doing so, observe through a sight hole in the crankcase, after first removing the rubber plug. In this position, the both valves will be completely closed, whereas their rockers must freely swing on their pins. Then, using a flat feeler gauge, check the clearance between the both rockers and the valves.

If the clearance is found to be incorrect, slacken check nut *24* (Fig. 7) and, by rotating adjusting bolt *23* in one direction or the other, obtain the required clearance. This done, tighten up the check nut. The clearance is adjusted on a cold engine and must be equal to 0.07 mm. If the clearance is absent or too small, the valve will not fit closely to its seat at the moment of closing; if the clearance is too large, the valve opening will be delayed.

The clearance value should be checked whenever required when checking the clearance in the other cylinder turn the crankshaft through 360° and proceed with checking and adjusting as it is described above.

Care of Valve Timing Gear

In case knocking of the valves increases, check and adjust the clearances between the valve stem (cap) and the rocker end.

It must be borne in mind that on the air-cooled engine the operation of valve gear drive is well audible owing to the absence of a

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