

increasing the volume in the pressure adjusting chamber (L) the ball check valve (D) moves off its seat and oil from the supply chamber (J) flows in and fills chamber (L).

As the camshaft rotates, the cam pushes the lifter body outward, tending to decrease the volume of chamber (L) and forcing the ball check valve onto its seat. Further rotation of the camshaft moves the lifter body (A) outward and the confined body of oil in chamber (L) acts as a member in the valve operating mechanism, the engine valve being lifted on a column of oil. So long as the engine valve is off its seat, the load is carried by this column of oil.

During the interval when the engine valve is off its seat, a pre-determined slight leakage occurs between plunger and cylinder bore, which is necessary to compensate for any expansion or contraction occurring in the valve train. Immediately after the engine valve closes the amount of oil required to refill the adjusting chamber (L) flows in from the supply chamber (J) thus establishing the proper length of oil column to maintain zero lash during the next cycle.

The basic principle of the hydraulic lifter is that it provides, between the cam and the push rod, a column of oil which carries the load, while the engine valve is off its seat, and the length of which is automatically adjusted so that each camshaft cycle gives zero lash.

9. LUBRICATING SYSTEM

To reduce the number of external oil lines, an oil sump is attached directly to the crankcase. Oil is drawn from the oil sump through a suction screen in the lower left corner of the crankcase cover and through a cored passage to the oil pump. Oil is now delivered under pressure to a second screen from which it goes through drilled passages in the crankcase cover and crankcase to all drive bearings, through the crankshaft, to the crankpins. Engine oil from the pressure pump is carried through drilled passages in the crankcase to the hydraulic tappets. After entering the tappets, it travels out through the overhead mechanism through hollow push rods, and drilled rocker arms where it is spilled over the valve mechanism. As it drains away, it thoroughly oils the valve stems and valve guides. The oil is returned to the crankcase by way of the push rod housings, and drains back into the oil sump through openings in the crankcase. The cylinder walls and piston pins are lubricated by spray. All excess oil is scavenged from the crankcase and returned to the oil sump by gravity. The pressure relief valve is set to give 30 to 60 pounds of pressure per square inch at speeds ranging from 2100 to 2700 R. P. M. Refer to Section 13, Table of Limits for charts showing the lubrication system.

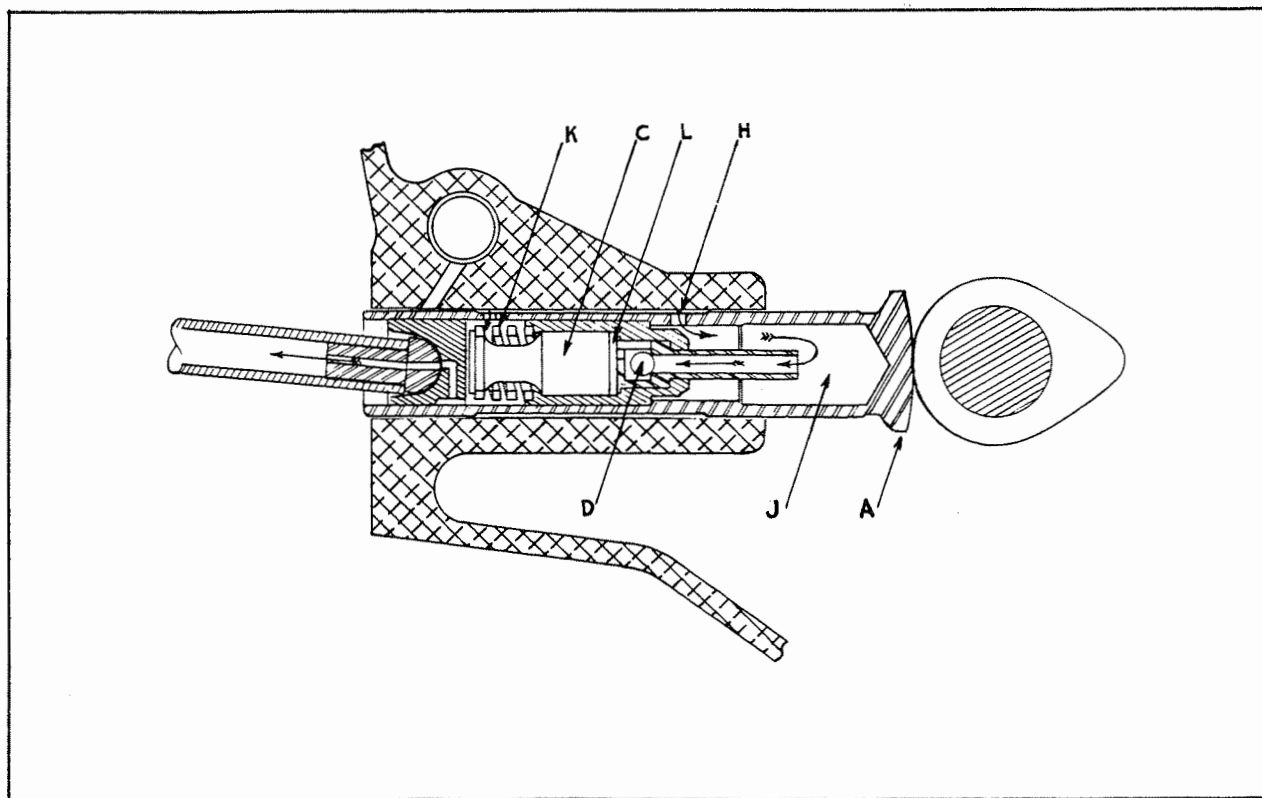


Figure 4. Section Through Hydraulic Tappet.