

Replace all gaskets (6, 12 and 17), retaining ring (7), lock pin (18) and oil pump seal (15) when reassembling. Be sure to always install new "factory made" gaskets. Never use "homemade" gaskets because they are a specified thickness with holes especially located for oil passages.

Carefully examine the pump body (16) for any wear. See "Cleaning and Inspecting Oil Pump Check Valve."

Examine gears (8, 9, 13 and 14) and oil pump breather shaft (19) and idler gear shaft (21) for damage or wear. If the breather valve key (10) is excessively worn and loose on shaft or gear, replace with a new one. Inspect pump body plate (5) and cover (11). If they are worn or damaged, replace them. Examine breather valve (19) and oil pump cover for any wear or damage that might affect its operation. Insert breather valve (19) in oil pump cover (11). Make sure valve turns freely in cover and does not bind.

ASSEMBLING OIL PUMP (Fig. 3D-10)

Reassembly of the oil pump is essentially the reverse order of disassembly.

Apply a light coating of engine oil to all moving parts before assembling.

Reassemble check valve. See "Assembling Oil Pump Check Valve."

Position breather valve screen (20) in crankcase using grease to hold in place. Insert breather valve gear and shaft (19) in oil pump cover (11). Press a new drive lock pin (18) into breather valve shaft. Lock pins are often damaged when removed; therefore, install new ones when reassembling pump.

Press a new idler gear shaft (21) into pump body if the old one was removed. Place gears (13 and 14) in pump body and install a new gasket (12) being very careful to correctly align the oil holes of the gasket with the pump body. Use a non-hardening gasket sealer.

Install oil pump breather valve gear, shaft and cover assembly on pump body (16). Place a very thin strip of acetate (Scotch) tape over shaft lock ring groove to avoid damaging new oil seal (15). Install seal carefully over shaft with lip side facing pump body, then remove tape from shaft. Press seal into body counterbore flush with surface.

Install gear key (10) and gears (8 and 9). Install retaining ring (7 or 7A) in breather valve shaft groove. Assemble a new gasket (6) in place using a non-hardening gasket sealer. (If gasket is exceptionally dry and curled up, soak in water for a few minutes to soften before applying gasket sealer.) Position oil pump body plate (5) and install assembled pump in place on engine crankcase studs. Snug up the oil pump stud nuts evenly. Then, working opposite one another, tighten to ensure correct alignment of the oil pump.

Before installing gears on pinion shaft, make sure pump gears turn with little or no binding. While a very slight bind or drag is permissible, gears should turn freely as possible. Binding is caused by slight misalignment of pump. If there is more than just noticeable bind, loosen five mounting stud nuts and shift pump as needed by tapping lightly with a soft mallet. It will not be possible to determine before hand in which direction pump must be shifted and it may require several attempts from different angles before alignment is attained.

After the oil pump is completely assembled to the crankcase and correctly aligned, it is necessary to open gearcase in order to time the breather valve. Disassemble timing gears, gearcase cover, circuit breaker and push rods; and time breather as described subsequently under Heading "Gearcase and Timing Gears." Install engine in chassis as described in "Installing Engine in Chassis," Section 3A.

VALVE TAPPETS AND GUIDES

Tappets and tappet guides are normally long-life parts that seldom require replacement. Primarily, they are only removed for the purpose of checking end play of the cam gears, when reassembling an engine.

DISASSEMBLY (Fig. 3D-11)

Clean all dirt from around crankcase and blow loose particles from the area with compressed air. Remove push rods. This procedure is covered under "Removing and Installing Push Rods," Section 3B.

Remove tappet guide screw (1) and tappet adjusting screw (2) and slide Tappet Guide Puller, Part No. 95724-57, in mating grooves of tappet guide (3). Before turning tappet guide (3) from crankcase, be sure cam gear is installed in case for tappet to butt against when using puller (see Fig. 3D-12). Mark valve tappets in some manner to identify them as to location.

It is good practice to reassemble valve tappets and valve tappet guides in the same place from which they were removed. This will ensure an even wear pattern between tappet, guide and cam surface.

CLEANING AND INSPECTION

Clean all parts thoroughly in gasoline or cleaning solvent and blow dry with compressed air. Inspect valve tappets for excessive clearance in guides. Valve tappets should be .0005 to .001 in. loose in tappet guides. Guides are .0005 to .001 in. press fit in crankcase. Excessive tappet-guide clearance is serviced by fitting new tappet, and/or new guide. It is recommended practice to replace complete tappet when only the roller is excessively loose or badly worn; however, it is possible to replace tappet roller kit (6) individual parts. If this is done, roller must turn freely (.0005 to .001 in. loose on needle bearings) and have about .008 in. sideplay after new roller pin is securely riveted to tappet.