



## Einbauanleitung für Überholsatz Ölpumpe

This information is a supplement to the factory workshop manual which covers all aspects of removal, disassembly and assembly. The information we have prepared focuses on the clearance between the ends of the gears and the body of the pump. It is imperative that the end-float of the oil pump gears be checked before you assemble the oil pump. Before you begin, read through this material and the material in the workshop manual sections A.3 through A.6. If you have any doubts, have this done by a mechanic with experience with T Series oil pumps.

### You will need:

- Eight 6 MM x 1.0 nuts to use with the original bolts. (You may substitute ¼" UNF nuts and bolts of the appropriate length)
- One packet of 0.001" to 0.003" Plastigauge, which is available at your local auto parts store.
- A suitable assortment of hand tools.

### Instructions:

1. Thoroughly clean all parts of the oil pump body.
2. The cover (N) is bolted directly to the pump body without a gasket. The condition of the mating surfaces is therefore critical. Inspect the face of the cover (N) and the top face of the body for wear marks, scratches and/or gouges. Resurface as necessary using fine emery cloth or 600 grit wet/dry sandpaper (nothing coarser than 600 grit) on a surface plate. Use WD40 to keep the sandpaper wet. The objective is to remove all the fine lines and scratches from the cap. Do the same to the top surface of the oil pump body. (The shaft must be out of the pump body.) An old mirror or a piece of plate glass will serve as a surface plate which is essentially a very smooth surface. Take care to wash away all debris from this surfacing operation.
3. Install the driving shaft and gear (G) without the woodruff key but using the circlip.
4. Check that the driving shaft rotates freely, but without excessive free play. Replace and/or ream the bushing to achieve the desired smooth rotation.
5. Remove the driven gear shaft (J) from the engine block. Place a piece of tubing 2 ½" long over the shaft, Thread an 8 MM x 1.0 bolt (like oil sump) through a stack of washers into the end of the shaft. Tightening the bolt will pull the driven gear shaft out.
6. Insert the new shaft for the driven gear (J) supplied in the rebuild kit into the base of the pump.
7. Install the driven gear (M) on this shaft. Lightly oil the gears.
8. Fit the cover (N) and secure it to the pump body using the original 6 MM x 1.0 bolts and the 6 MM X 1.0 nuts you have obtained for this purpose. If you do not have/cannot find 6 MM x 1.0 nuts, you may substitute ¼" UNF nuts and bolts of the appropriate length. Tighten the nuts/bolts (6 lbs/ft) that secure the cover to the body of the oil pump.

9. Check the pump gears for free rotation by rotating the driving gear shaft by hand.

9.1. **If the gears do not rotate:** The pump body has probably been shortened by having had the top face resurfaced numerous times as described in step 2 above. While the clearance can be anything from 0.0016" to 0.0035", we suggest you use 0.002" clearance or end-float between the gears and the oil pump cover. Reduce the height of the gears by sanding them on your surface plate until the clearance is correct as measured using Plastigauge. Care must be taken to remove metal evenly and frequent measurements should be taken all around the gears.

9.2. **If the gears rotate:** Remove the cap and check your clearance/end float with Plastigauge. If it exceeds 0.002" remove material from the pump body; if less than 0.002", remove material from the gears.

**NOTE: the clearance/end float must not be less than 0.002" or the oil pump may seize when the engine warms up. The end float should not be more than 0.004" or the pump may not generate sufficient oil pressure. Once the clearance between the gears and the cover is correct, you may continue.**

10. Radial clearance (gear teeth to pump body should be .003" to .005". Check by passing a feeler gauge around the gears.

11. Assemble the pump. Install the woodruff key in the driving shaft (G).

12. Install the driven gear shaft in the block being sure to seat it all the way down. It is possible for the driven gear shaft to be slightly off center. You will know it is incorrect if the oil pump body does not slide into place easily or if the driven gear (M) will not slide onto its shaft easily. If necessary, center the shaft by firmly tapping it sideways with a Compothane hammer (or other soft-but-heavy hammer). When the driven gear slips into place inside the pump body without resistance, again check the radial clearance between the gear and the body. When the clearance is a uniform .003" to .005", the pump is ready to have the cap bolted in place.

13. Pack the pump with Vaseline or assembly lube to assist in priming.

14. Put silicone sealer on the copper washers and on the threads of the 6MM bolts that will secure the cover to the oil pump body. Put the cover on the oil pump body and tighten the 6 MM bolts (6 lbs/Ft),

15. Prime the oil pump through the priming plug (P) if you have one. If you don't have a plug or way to prime the system with an external pressure tank: Leave pushrods and tappets out. Spin the engine with starter without the head on. Pour oil into exposed oil galleries. Install head. Spin engine again until you have oil coming out of the valve train (leave rocker cover off). Priming plugs were fitted to engines XPAG/TD2/20972 and later.

