Thank you for purchasing one of TP Engineering’s billet aluminum oil pumps featuring our patented three-valve technology.

**CRITICAL:** Do not use any type of plumbing tape (such as Teflon) for this installation! Catastrophic engine failure will result. We recommend Permatex High-Temp Thread Sealant, Part No. 59235 for pipe fitting assembly.

**CRITICAL:** All oil lines and fittings must have an inside diameter of no less than 0.300 inches. **CRITICAL:** IF OIL PUMP IS INSTALLED INCORRECTLY, OR ANY KEYS ARE FORGOTTEN, CATASTROPHIC ENGINE FAILURE WILL OCCUR. ALWAYS REFER TO YOUR SHOP MANUAL OR CALL TP ENGINEERING FOR ASSISTANCE.

**CRITICAL:** If your oil pump is designed to use o-rings, discard included paper gaskets. Never use both.

**Note:** Lightly lubricate all internal parts during assembly process. Use Torco Engine Assembly Lube, Part No. A550055K or equiv.

**Note:** Basic installation procedures are shared by Classic and Smart TP Oil Pumps. Some photos may show Classic or Smart pump applications.

### Removal of Old Oil Pump

1. Remove oil lines from oil pump. Plug and drain oil from feed line.
2. Remove oil pump cover bolts, cover and gasket.
3. Remove lock clip from the end of the oil pump drive shaft. Pull both gears from pump body and remove the oil pump drive shaft key from the drive shaft.
4. Remove two top bolts from the oil pump main body.
5. Slide pump body off of oil pump drive shaft.
6. Slide the remaining return gear off the oil pump drive shaft and remove the drive shaft key.

There is no need to remove the existing oil pump drive shaft unless it is damaged. Proceed to Step 13 unless you intend to replace the drive shaft.

7. Remove cam cover.
8. Remove snap ring from end of oil pump drive shaft holding on the drive gear inside the cam chest. Slide drive gear from the end of the drive shaft and remove drive shaft key from keyway.
9. Slide drive shaft out of engine case.
10. Hold the oil pump drive gear against drive shaft bushing inside cam chest, as shown in Figure 1. Make sure the keyway in the drive gear is positioned so that it is visible (for later key installation.) Slide the oil pump drive shaft into the engine case drive-gear-end first (Identify the drive gear end using Figure 2 – it has a single open-ended keyway) through the drive gear you are holding (see Figure 3)
11. Hold the drive gear key with a pair of needle-nose pliers and work the key into the keyway of the drive shaft and drive gear. Key must be inserted past the retaining groove for the snap ring.
12. Install the snap ring on the end of the oil pump drive shaft (Figure 4).
13. Install new key in drive shaft for return drive gear. This key fits in the slot nearest the engine case.
14. Slide the 0.625" oil return drive gear (larger of the set) on drive shaft and over key (Figure 5.) Make sure key stays in place and locks gear to shaft.
15. Lubricate idler shafts in both sides of the oil pump body with assembly lube (Figure 6.)
16. Install new 0.625" return idler gear onto idle shaft in pump housing (Figure 7)

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17. Apply one drop of Locktite Blue thread locker to each of the supplied bolts prior to assembly.

18. Install new gasket making sure all holes line up with pump. Use two hex-head top bolts to hold gasket in place on pump body.

19. Lightly snug top two bolts to hold pump in place (Figure 10)

20. Install new key in drive shaft for feed drive gear (Figure 11)

21. While holding end of drive shaft on the inside of the cam chest, slide 0.500” feed drive gear (thinner of set) on drive shaft aligning the key with the cutout in the gear (Figure 12)

22. Install 0.500” pump feed idler gear onto idle shaft in pump body (see Figure 13).

23. Install retaining clip on end of drive shaft (Figure 14)

24. Clean gasket surface of oil pump cover. Install cover gasket (non-o-ring pumps only) and cover using 4 allen head bolts. Lightly snug bolts (see Figure 15).

25. Torque bolts to 110 in lbs using criss-cross pattern (Figure 16)

26. Install cam cover (if removed)

27. Fill oil tank to recommended capacity.

28. Verify all fittings and clamps are properly tightened.

29. Immediately before initial startup, connect a section of 3/8” hose to the feed line inlet fitting on the oil pump cover (Figure 17.) TP oil pumps are not self-priming and will not gravity bleed.

FAILURE TO PROPERLY PRIME YOUR OIL PUMP WILL RESULT IN CATASTROPHIC ENGINE FAILURE.

To prime the pump, you must fill it’s supply-side

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using a squirt can. Insert the squirt can’s spout into the hose and pump motor oil into the oil pump until resistance is felt. Connect the feed line from the oil tank to the oil pump.

30. Start engine. Allow the engine to run at idle speed only while developing oil pressure — this may take up to 25 seconds. If normal oil pressure is not developed within 25 seconds, shut off engine and verify the proper connection of oil lines. Call TP Engineering for assistance, if necessary. DO NOT run engine longer than a total of 60 seconds without oil pressure, or serious damage will occur and will not be eligible for any warranty coverage.

31. Check for oil leaks. Any oil leaks are extremely dangerous and if not immediately corrected may result in severe injury or death.
Clean oil leaves through the center of the oil filter. It flows from the filter housing back to the oil tank return line.

After lubricating the engine, oil is pumped out through the return side of the pump to be filtered. It enters the inlet side of the filter housing.

Oil filters allow oil to flow in ONLY ONE DIRECTION. You must examine the filter housing and connect the oil lines to ensure that oil is allowed to exit via the center of the filter.

Oil Tank

**Vent Line**  Tallest tube in the oil tank. Used to provide positive pressure when engine is running to help feed oil to the oil pump.

**Feed Line**  Used to feed the oil pump. Allows oil to pulled from the bottom of the oil tank.

**Return Line**  Taller than the feed line; connected to the oil filter housing output to return clean oil to the oil tank.

**Oil Filter**  (Use only 40 micron filter -- H-D Part #63796-77A)

Oil Tank

Oil leaves the oil tank via the feed line. The oil pump pulls the oil through the feed side from where it is sent to lubricate the engine.
Pro-Series® Billet Oil Pump Connection

Do Not Remove

Feed (From Oil Tank)

Alternate Feed

Alternate Return

Return (to Oil Filter)

Notes

- All gasket surfaces should be clean and dry.
- Never use teflon tape.
- Tighten all oil pump bolts to 110 in lbs.