Peterson FLUID SYSTEMS

made in USA

Any Questions? Call our Tech Line:
1-800-926-7867

DRY SUMP OIL PUMP PLUMBING INSTRUCTIONS

THANK YOU!

Thank you for purchasing what is arguably the most advanced oil pump ever created. Please find below instructions for plumbing and care of your new R4 pump. Make sure you save the box that your pump came in to safely ship it back to us in case you need to return it for rebuild. In addition to this oil pump you will need the correct mounting blades for your style of engine. Please make sure you have those before continuing.

1. Scavenge Lines

A. Line Type and Size

The scavenge inlet lines coming from the pan must be a minimum of -12 AN to maintain efficiencies and to limit cavitation. Line needs to be rated for vacuum such as most popular stainless braided hoses on the market. Lines from the lifter valley must be at least -10 AN and rated for vacuum. Scavenge outlet line from the pump to the tank should be at least a -16 AN to keep flow up and the pump working efficiently.

B. Filters

Peterson recommends that you run a coarse screen filter **(Part# 09-0404)** on all scavenge inlet lines to reduce major pump damage in case of engine failure. Use of filters will usually make the difference between a rebuild of the pump or a costly replacement. A finer filter can be placed on the Scavenge outlet line on the way to the oil tank to keep the oil tank free of particles. Peterson recommends a 75-100 Micron filter for the scavenge outlet line. **(Part #09-0439)**

C. Plumbing the Scavenge Inlet Lines

Locate Scavenge Inlet fittings on oil pump. They are labeled Scavenge In and are located on the bottom of the pump when mounted on the engine. You will find 1 to 7 of these depending on model of pump and oil system design. For pumps with two or more scavenge sections, plumb at least two lines to the oil pan to make certain you are efficiently removing the oil from the pan. If your pump has three or more scavenge lines you may run one scavenge line to the lifter valley if your engine is setup for valley scavenging. If you have an engine with no drain back from the top of the engine this line must be plumbed to scavenge the lifter valley.

WARNING: All suction side lines should be rated for 28 in Hg

D. Plumbing the Scavenge Outlet Line

The Scavenge outlet line is marked as Scavenge Out. There may be two of these depending on which pump you have ordered. This line needs to be plumbed to the inlet on your oil tank.

IMPORTANT!

After the first heat cycle of the pump, loosen draw rod nuts and re-torque in star pattern to 80 in-lbs (not ft-lbs!) using the following sequence:

1. **Seat draw rod nuts against pump housings.**
2. **In a star pattern, tighten nuts 1/4 to 1/2 turn.**
3. **After each cycle, rotate pump shaft 1-2 revolutions.**
4. **Continue until 80 in-lbs is reached.**

If proper sequence is not followed, the pump may become difficult to turn. Draw rod nuts should be checked as part of normal maintenance.

2. Pressure Lines

A. Line Type and Size

The pressure inlet line should be -12 AN if the oil tank is less than 3' from the pump or if you have an iron block motor. If the tank is further or you have an aluminum motor and accessory oiling (i.e. valve train sprayers) a -16 AN line is recommended to maintain efficiency and limit pump cavitation. Inlet line should be vacuum rated such as braided stainless line from any major brand. Pressure outlet line should be at least a -10 AN line.

B. Filters

Peterson recommends at least a 60 Micron filter on the pressure outlet line to the motor (**Part # 09-0451**). We also recommend that this filter contains a bypass in case of cold oil starts or filter clog. Pressure inlet line from the tank should not contain any filter. A filter in this line will cause a restriction and can introduce cavitation which will hurt the pump and can damage your engine.

C. Plumbing the Pressure Inlet Line

Find the Pressure Inlet fitting marked Pressure In on the pump. Connect this to the outlet on your oil tank.

D. Plumbing the Pressure Outlet Line

Find the Pressure Outlet fitting marked Pressure Out on the pump. Connect this to the oil inlet of the engine. If you do not know where the inlet is contact your engine builder.

E. Oil Coolers

Oil coolers should be placed on the Pressure outlet line after the oil filter. The oil filter will dampen the pulsing of the oil pump so that it does not damage the oil cooler.

Continued....

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3. Priming and Startup

A. Priming

First remove belt from crank pulley if installed. Priming can be done in one of two ways. It may be spun utilizing a spud in the end of the pump shaft **(Part # 05-0395)** by a hand drill or the belt can be placed around the pump pulley and the collet of a hand drill. Make sure you have the drill set for speed instead of torque as the pump needs 400 RPM or more to prime. Once you see oil pressure on the gauge, reattach drive belt on crank. An alternative to using the oil pump to prime is our remote filter primer.

B. Startup and Pressure Adjustment

Once pump has been primed and all lines have been checked, it is safe to start the engine. Pressure on the pump is set at a safe level for basic startup and idling. To adjust the oil pressure to your engine's needs find the oil pressure adjuster located on the relief body directly adjacent to the pressure section. Loosen the lock nut and use an Allen key to adjust the adjustment screw. Screw in (clockwise) to raise oil pressure and screw out (counter-clockwise) to reduce oil pressure. If adjuster screw runs out of adjustment, the speed of the pump may need to be altered.

4. Miscellaneous

You may find it necessary to disassemble the oil pump for maintenance. The location of the pressure section in the pump assembly will determine the best method for disassembling the pump. Start disassembly at the end of the pump that is farthest from the pressure section. When the pressure section is at the back of the pump assembly, start from the front and work your way to the back. Conversely, when the pressure section is at the front of the pump assembly, start at the back and work towards the front. If you find it necessary to disassemble the oil pump, please be aware of the following on reassembly:

A. Pump Reassembly

1.) File down any burrs on the pump shaft around keyways or where the pulley set screws contacted the shaft. To change the shaft seal, it is recommended to use a seal installation tool. **(Part # 14-2500)**

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2.) Place a small amount of oil into the o-ring channels to help hold the o-rings in place while assembling.

3.) Lubricate draw rod threads and torque to 80 in-lbs. Failure to adequately lubricate draw rods can cause them to snap and damage the pump. **(See torque sequence on pg 1)**

B. Rear Drive

Peterson pumps provide rear drive capability. When using the rear drive option on Peterson pumps please follow these rules:

1.) Grease the female hex on the pump before installing rear driven pump. This will reduce wear and protect the pump shaft. Re-grease shaft periodically.
2.) Contact Peterson customer service for list of adapters to ensure correct selection.

C. Fittings

The fittings in the R4 pump are a full -16 AN port size. However, to save weight and create a lower profile we have used a finer thread than standard AN port fittings where they screw into the pump. Please contact the Peterson Tech Department or your Peterson dealer to obtain different sized fittings if needed.

D. Pump Speed

Speed of the pump must not exceed 6000 RPM. Please adjust the speed with your drive pulley selection based on what RPM the engine will see. Damage to the pump and engine can result from high pump RPM. Ideal pump speed is 4,500 - 4,800 RPM.

If you have any questions or concerns please feel free to call the Peterson Tech Department directly at (800) 926-7867.

For examples of plumbing diagrams & more, see the Peterson Fluid Systems website: www.petersonfluidsys.com

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