



***This part should only be installed by personnel who have the necessary skill, training and tools to do the job correctly and safely. Incorrect installation can result in personal injury, vehicle damage and / or loss of vehicle control.***

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.

***Important: After the first heat cycle of the pump over 210° F of oil temp the draw rod nuts may loosen. You can use light pressure with a wrench to see if they have, it will be obvious if they have. If you find any loose, retorque to 80 in-lbs (not 80 ft-lbs). They should stay tight after this first heat cycle but you should check periodically as normal maintenance on the car.***

## Dry Sump Oil Pump Plumbing Instructions

### 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 -16AN to keep flow up and the pump working efficiently.

#### B. Filters

Peterson recommends that you run a coarse screen filter (i.e. Peterson 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.

#### 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 2 to 5 of these depending on model of pump. You should plumb at least 2 lines to the oil pan to make certain you are efficiently removing the oil from the pan. If your pump has 3 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 motor this line must be plumbed to scavenge the lifter valley.

#### D. Plumbing the Scavenge Outlet Line

The Scavenge outlet line is located on top of the pump when it is mounted and 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 return line on your oil tank.

### 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.

\*Independent dyno testing has shown that a -12 AN line will flow up to 12 gallons per minute of oil before cavitation occurs in the oil pump. Switching to a -16 AN line will allow up to approximately 24 gallons per minute before cavitation occurs depending on brand of oil pump.

#### B. Filters

Peterson recommends at least a 60 Micron filter on the pressure outlet line to the motor (i.e. Peterson 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. It should be on the bottom of the pump and the furthest from the drive pulley when mounted. 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. It should be on top of the pump and furthest from the drive pulley when mounted. Connect this to the oil inlet of the motor. If you do not know where the inlet is contact your engine builder.

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## 2. Pressure Lines (Continued)

### 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.

## 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 (i.e. Part# 05-0394) 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 if you are using a screw on filter setup.

### B. Startup and Pressure Adjustment

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

## 4. Miscellaneous

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 you will need to contact us for an oil seal installation tool. Peterson uses a high tech Teflon seal which when installed properly provides excellent sealing with low drag on the shaft.
2. Place a small amount of oil into the o-ring channels to help hold them in place while assembling.
3. Torque draw rods to 80 in/lbs and lubricate thoroughly. Failure to do so can snap the draw rods and damage the pump.

### B. Rear Drive

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.
2. Select the correct adapter from the adapter list included with these instructions.

### 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 us 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 motor will see. Damage to the pump and motor can result from high pump RPM.

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

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*Final determination of the suitability of the parts for use contemplated by the buyer is the sole responsibility of the buyer. Specialty Products Company shall not be liable for any special, direct, indirect, incidental, or consequential damages that might be claimed as a result of the failure of any part, including claims for delay, loss of profits or labor. Specialty Products Company shall not be liable for any damage or injury to persons or property resulting from improper installation or misuse of any part .*



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