INSTALLATION INSTRUCTIONS

MOROSO PART NO. 22600 - ROTOR AND SCROLL EXTERNAL OIL PUMP SINGLE STAGE SMALL OR BIG BLOCK CHEVROLET 90(V-6 WITH DRIVER'S SIDE MOUNTING PROVISION

Before installing your pump, be sure you have the proper Moroso components to go with it. Using our matched components will ensure a simple, yet professional, installation.

	90 V-6		SBC	
BBC	MARK V			
DRIVE KIT	23600, 23660		23600, 23660	
23610, 23670	23672			
OIL PUMP BLOCK OFF	23790	23790	23790	
OIL FILTER BLOCK OFF		23780	23780	
23840				
IN-LINE FILTERS	23850, 23860	23850, 23860		23850,
23860				
OIL PAN PICKUP	24840	24840	24840	
OIL PREHEATER	23980, 23990	23980, 23990		23980,
23990				HEATING
PADS	23995, 23996, 23997	23995, 23996, 23997	23995, 23996, 23997	

>From time to time these instructions will refer to the exploded diagram, so at this time, it would be wise to study the diagram carefully.

MOUNTING
The Moroso External Oil Pump is designed to fit either 90(V-6, small or big block Chevrolets, the only difference is
the mounting holes. You can see that there are two sets of slotted holes on the mounting bracket which attaches the
pump to the engine block.

Before installing the pump on a small block Chevrolet, install the bushing with the 3/8" I.D. into mounting bracket #5.
When installing the pump on big block Chevrolets, use the 7/16" I.D. bushing. The bushing is marked #4 on the
exploded view.

The pump mounts on the driver's side of the engine from the two mounting holes near the side of the timing chain
cover.

To attach the pump to the small block Chevrolet or 90(V-6, use a 3/8-16 x 1-1/2" bolt and washer in the slotted
adjustment hole. Use a 3/8-16 x 1-1/2" bolt through the top hole in bracket #5.

For installation on a big block Chevrolet, follow the above instructions substituting 7/16" - 14 bolts for the 3/8" - 16
bolts called out.

OIL LINE ROUTING
Now that the pump is installed on the engine, you are ready to add fittings and lines. On Moroso Rotor & Scroll
External oil pumps, the inlet is on the bottom and the outlet is on the top. Both inlet and outlet are tapped for -10AN

thread. For -12AN oil lines, use a -10AN to -12AN fitting.

The bottom hole or inlet is connected to a line running from the oil pan pick-up tube. The top hole feeds oil to the motor. It should be attached by a line to a remote oil filter and then to the appropriate oil filter block-off plate. BE SURE TO USE AN OIL PUMP BLOCK-OFF PLATE WHEN REMOVING THE OLD INTERNAL OIL PUMP. Refer to our matched components parts list at the beginning of these instructions.

PRESSURE ADJUSTMENT

The Moroso Rotor & Scroll external pumps have an externally adjustable oil pressure relief valve at the bottom rear of the pump. This valve is pre-set at 50 psi. To increase the pressure, loosen the locknut and turn the Allen set screw clockwise (tighten). Do the opposite to decrease oil pressure. Remember to tighten the locknut after adjusting the pressure.

NOTE: Due to varying engines, types of oil restrictors viscosity and temperature of oil, some adjustment in oil pressure will be required to suit your particular engine.

This pump is a precision engineered, ruggedly built integral part of the Moroso Dry Sump Oiling System. With minimal care it will give years of reliable service. Under certain circumstances it can be damaged. When oil pressure rises, the excess pressure opens the pressure by-pass valve (normally set at 50 psi) and the by-passed oil is re-circulated within the pump. Small particles of metal or dirt can cause the valve to stick open, resulting in erratic oil pressure. Should this condition present itself, the by-pass system should be disassembled, cleaned, and inspected. This can be done without disassembling the rest of the pump. To remove the by-pass system, loosen the locknut and back off the Allen screw all the way. Then unscrew the valve assembly from the pump housing. Next, remove the spring and ball from the pump body. Inspect for metal chips, burrs or wear. The ball must move freely in the valve body.

The pump itself will pump oil as long as the gears will turn, but an accident such as a blown engine is likely to put bits and pieces of metal into the oil lines, which, if allowed to get into the pump, will eventually damage some of the working parts. In the event of such an accident, the pump should immediately be disassembled and thoroughly cleaned and inspected to avoid any possible trouble. If parts are damaged, they can be replaced, but quick action will probably save the expense of replacement parts. If parts are damaged, Moroso can supply parts for complete rebuilding.

DISASSEMBLY

Pump disassembly and reassembly is not difficult but it is very important to read all of the directions and study the

exploded diagram very carefully before attempting to disassemble the pump.

Provide yourself with a clean work area where parts may be inspected and cleaned.

First, remove the drive pulley and use a very fine sand paper or emery cloth to remove and set screw burrs from the shaft #13, which will prevent possible damage to the front seal. Extreme care should be taken not to scratch the shaft.
Next, loosen and remove the three long bolts #12, which hold the pump together.

Gently lift off the front cap #3 and mounting bracket #5 and scroll housing #6. Note the O-rings #10 on either side of the housing. Then carefully remove the scroll #8 first and then the rotor #7. The rotor is attached to the shaft with a grooved pin #14 and should not be separated from the shaft unless the pin is to be replaced.

To disassemble the by-pass valve #16, simply unscrew it from the pressure section #11 then loosen the locknut #21 and back off the pressure adjustment screw #19 and remove it. Next, remove the pressure spring #18 and steel piston #17.

Bearing #2 and #22 and seal #1 should not be removed unless they are damaged and need to be replaced.

INSPECTION

Clean all parts thoroughly and dry them well. Do not soak the O-rings in solvents as this could tend to make them swell. Rather, simply wipe them with a clean cloth, being careful not to stretch them oversize. Inspect bearing to be sure that they turn freely.

Look for high spots on Rotor & Scroll and remove with a fine toothed file. If not removed they will cause circular grooves on the face of the sections.

Examine the Rotor & Scroll housing for damage caused by the introduction of foreign matter into the pump. You will find that most soft foreign material that has worked its way into the pump has embedded itself into the housing rather than scratching or scoring the bore. Measure the I.D. of the housing in three places to check for an out of roundness condition.

Inspect the pressure stage for wear marks on the Rotor & Scroll mating surfaces. Grooves are evidence of foreign matter, but do not be concerned unless there are high spots on each side of the groove. If high spots exist, they must be removed with a small file or emery cloth.

PUMP ASSEMBLY

Providing yourself with a clean work area will ensure a professional assembly job.

Re-examine all parts and clean again if necessary.

We have found that petroleum jelly is an excellent assembly lubricant if used SPARINGLY. Engine oil will do if petroleum jelly is not available.

The pump is assembled from back to front.

Begin by laying the pressure stage #11 on its back with the kidney shaped ports facing up.

Put a dab of petroleum jelly on six places around the O-ring step on the bearing plate #9. Put the O-ring in place making sure it is completely seated in the groove. Carefully place the bearing plate into the step in the pressure section, being sure not to upset the O'ring. Make sure the flats on the exterior line up with the flats on the exterior of the pressure section. Also put a dab of petroleum jelly on six places around the O-ring step on the Rotor & Scroll housing #6. Put the O'rings in place making sure they are completely seated in their grooves. Carefully place the housing into the step in the pressure section being sure not to upset the O'ring. Make sure the flats on the exterior line up with the flats on the exterior of the pressure section. Coat all surfaces that the rotor & Scroll will touch SPARINGLY with petroleum jelly.

Carefully insert the scroll and make sure it turns freely. Situate the next O'ring on the exposed side of the Rotor & Scroll housing. Again, use petroleum jelly to hold it in place. Place the shaft with the Rotor attached in place and lubricate the face of the gears.

Slide mounting bracket #5 into place over the shaft.

Install the last O'ring as before on the step in the front cap.

Carefully slide the front cap over the shaft as far as the seal will allow. Push the rubber lip of the seal outward with your thumbnail or a similar object and spin the section slowly. This will allow the seal to slide over the shaft without damaging it. Again position it properly making sure the O-ring has not moved out of position.

Put a small amount of Loctite on the threads of the three long bolts and insert them in the bores. These bolts should be tightened evenly - gradually working your way to 80 inch pounds of torque.

To assemble the by-pass valve #16, first drop the ball #17 into the bore followed by the pressure spring #18.

Slide O-ring #20 over pressure adjustment screw #19. Thread the adjustment screw in the by-pass valve with the

stepped end fitting in the I.D. of the pressure spring. Screw the adjustment screw in until only 3/4" remains showing.
This will put you in the ballpark for oil pressure on initial startup. Screw on the locknut and tighten it.

Make sure the O-ring #15 is in place between the threads and the head of the by-pass valve and screw it into place in
the pressure section.

Turn the shaft using the drive pulley and key. Your pump should turn smoothly and evenly. If you notice a slight tight
spot, do not worry, as the Rotor has to seat itself along the shaft and will do so when running. Also, uneven tightening
of the bolts will most likely cause tight spots.

The pump is now ready to put back on your engine.

Refer to the sections on mounting, oil line routing and pressure adjustment for reinstallation.

Maintenance is an important aspect of any racing components. Regular disassembly and inspection of this pump should
become part of your regular maintenance schedule and will ensure its longevity, resulting in a trouble free component.

Treat it well and it will reward you with many trouble free racing miles.

HINTS FOR BETTER INSTALLATION

1. Use Moroso #23850 or #23860 inline filters between the pick-ups in the pan and the inlets of the pump. These
filters will remove metal chips from the oil before it can get to and damage the pump.

2. Before starting a new engine, it is wise to prime the oiling system until oil pressure is shown on the gauge and
oil has circulated the system and returned to the pan. Do this by adding two quarts of oil to the pan, removing
the drive belt and inserting a 1/4-28 x 1" bolt in the threaded end of the shaft. Now spin the pump in a
clockwise direction (with an electric drill) while watching an oil pressure gauge. Maintain pressure for one
minute.

3. Avoid 90(fittings if possible.

4. For additional chassis clearance around pump, use Moroso #23490 Mounting Bracket.

5. Two extra pressure relief springs are also supplied. One medium pressure spring measuring 1.875" long with a
white stripe. One high pressure spring measuring 2.125" long with a red stripe. A standard pressure spring is
supplied in the pump measuring 1.75" long with no color identification. The engine builder can change springs

to get the desired oil pressure vs. RPM curve. These springs are available separately.

PARTS LIST

2 BUSING-PLATED BLACK ZINC
1 RELIEF SPRING 1.875 ROCKWELL
1 RELIEF SPRING 2.125 ROCKWELL
1 EXT. OIL PUMP 1 STG-S&(BBC ASSEMBLY

22600 SINGLE STAGE EXTERNAL OIL PUMP - SMALL OR BIG BLOCK CHEVROLETS

1	FRONT SEAL	14	GROOVED PIN
2	BEARING .500 WIDE	15	O-RING
3	FRONT CAP	16	BY-PASS VALVE BODY
4	BUSHING	17	STEEL PISTON
5	MOUNTING BRACKET	18	PRESSURE SPRING
6	ROTOR & SCROLL HOUSING 1.100	19	PRESSURE ADJUSTMENT SCREW
7	ROTOR 1.100	20	O-RING
8	SCROLL 1.100	21	LOCKNUT
9	BEARING PLATE	22	BEARING .300 WIDE
10	O-RING (4 REQUIRED)	23	SNAP RING
11	PRESSURE SECTION		
12	BOLT (3 REQUIRED)		
13	SHAFT		

REPLACEMENT PARTS

P/N	DESCRIPTION	CONTENTS INCLUDE #'S
97660	Replacement Rotor & Scroll Housing 1.100	(6)
97670	Replacement Rotor & Scroll 1.100	(7 & 8)
97680	By-pass valve parts kit	(15, 16, 17, 18, 19, 20, 21)
97690	Replacement small parts kit	(1, 2, 10, 14, 15, 20, 22)