

Power Steering Pumps

1961-73 SAGINAW VANE

American Motors (1969-73)
 Chrysler Corp. Model .94 (1968-73)
 General Motors (1961-73)
 Ford Motor Co. (1972-73)
 Jeep Corp. (1969-73)

NOTE - Chrysler Corp. Roller, Model 1.06 used on some Chrysler Corp. models.

DESCRIPTION

Pump can be identified by long oval shape of filler neck and a drive pulley secured to drive shaft by a large nut. Rectangular pumping vanes carried by a shaft driven rotor, moves fluid from intake to pressure cavities of cam ring. As rotor begins to rotate, centrifugal force throws the vanes against inside surface of cam ring to pick up residual oil which is forced into high pressure area. As more oil is picked up by the vanes, oil is forced into the cavities of the thrust plate, through two cross-over holes in the cam ring and pressure plate which empty into high pressure area between pressure plate and housing end plate. Filling high pressure area causes oil to flow under vanes in slots of rotor, forcing vanes to follow inside oval surface of cam ring. As vanes rotate to small area of cam ring, oil is forced out from between the vanes.

LUBRICATION

Check fluid level on dipstick with fluid at normal operating temperature. Maintain level at indicated mark on dipstick using only Power Steering Fluid.

Hydraulic Pressure Test

Refer to "Saginaw Rotary Valve Power Steering", "Corvette Linkage Power Steering", or "Chrysler Corp. Constant Control Power Steering" in this section for test procedure and pump pressure specifications.

Bleeding Hydraulic System

Fill reservoir to proper level and let oil remain undisturbed for at least two minutes. Start engine and run at idle speed for a short time, add necessary oil to maintain fluid at proper level. Raise front wheels off floor, increase engine speed to approximately 1500 RPM and turn wheels full right and left, contacting stops lightly. Lower car and turn wheels right and left. Check oil level and refill as necessary. Continue process as long as necessary to bleed all air from system.

REMOVAL & INSTALLATION

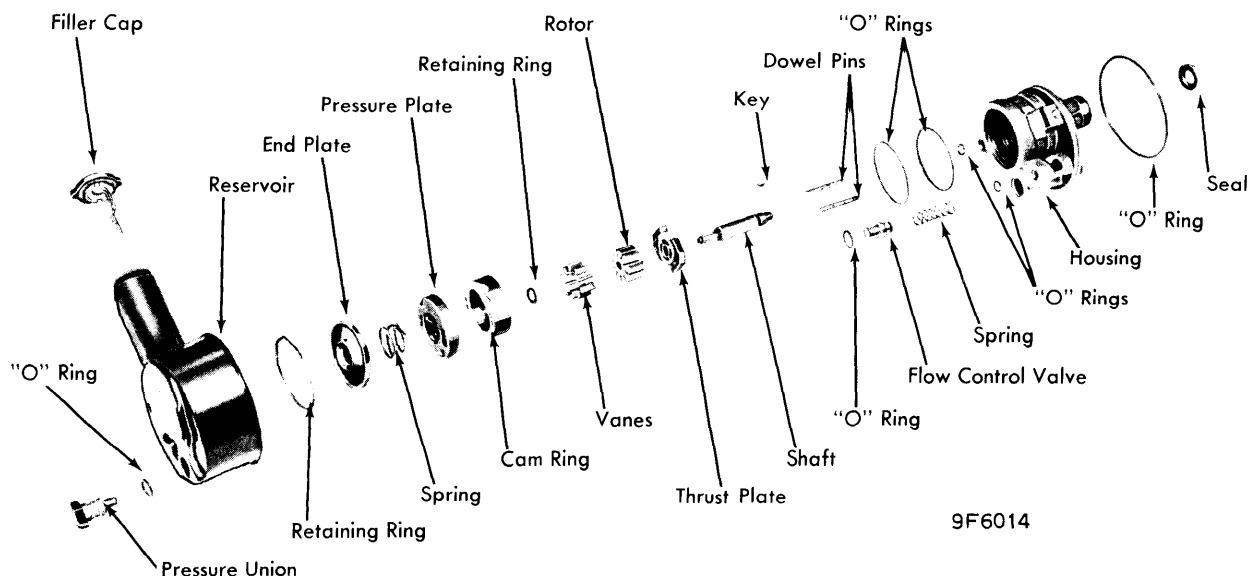
Power Steering Pump

Remove pulley nut, belt and pulley. Disconnect and cap hoses. Remove pump-to-bracket attaching bolts, then remove pump. NOTE - On some cars it may be necessary to remove pump rear bracket with pump; or bracket attaching bolts must be loosened to remove pump. Do not loosen bracket attaching bolts too much as they extend into water jacket. To install, reverse removal procedure.

OVERHAUL

Disassembly - CAUTION - When clamping pump in vise, be careful not to exert excessive force on front hub of pump as bushing may be distorted.

1) Remove pump from car, drain fluid by inverting pump so that fluid drains through filler pipe. Clamp pump mounting bracket in a vise, remove pump pulley using suitable puller (CAUTION - Never remove pulley by pounding on shaft, this would cause internal damage to pump). Remove woodruff key from shaft. Remove bracket from pump.



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2) Place pump assembly in vise, shaft down, using flat on housing for clamping surface. Remove pressure union and "O" ring seal from rear of pump assembly, discard "O" ring seal. **CAUTION** – *Spring loaded flow control valve tends to "pop" out when pressure union is removed.* Lift reservoir from pump housing. Remove and discard outer pump housing "O" ring seal, mounting bolt "O" ring seals and flow control valve opening "O" ring seal.

3) Rotate end plate retaining ring so that one end of ring is over hole in housing. Spring one end of ring with punch to allow screwdriver to be inserted to lift ring out. Remove end plate. Remove pressure plate spring, pressure plate, cam ring and dowel pins from pump housing. Remove pump from vise and remove flow control valve and spring. **NOTE** – *Flow control valve is serviced as a unit and should not be disassembled.*

4) Tap end of shaft lightly until shaft is free from pump housing. Remove shaft with rotor and vanes, and thrust plate attached. Remove vanes from rotor, then remove retaining ring from splined end of shaft and remove rotor and thrust plate front shaft. Discard retaining ring. **NOTE** – *To remove retaining ring, clamp shaft in soft jawed vise, and using a screwdriver, pry retaining ring off shaft. Be careful not to damage shaft.*

5) Remove pressure plate "O" ring seal and end plate "O" ring seal from bore of housing and discard. Remove shaft seal from housing by prying out with a screwdriver.

Cleaning and Inspection – Clean all pump parts in suitable solvent. **NOTE** – *Do not immerse drive shaft seal in solvent.* Replace any damaged or worn parts. Inspect flow control valve assembly for wear or damage. Inspect castings for cracks or other damage. Check all parts for score marks or burrs. **NOTE** – *Cam ring is treated with "Lubrite" which leaves a dull gray-black finish on wear surface. Wavy grain appearance inside cam ring is normal.*

Reassembly – **NOTE** – *Lubricate all "O" ring seals and seal areas with power steering fluid.*

1) Using suitable tool, install new shaft seal in pump housing with metal back upward (do not use more force than necessary to seat seal in housing). Install new pressure plate and end plate "O" ring seals in grooves in pump housing. Install thrust plate on drive shaft with ported face toward splined end of shaft. Install rotor on shaft with counterbored end toward thrust plate.

2) Clamp shaft in soft jawed vise and install new retaining ring on splined end of shaft by prying ring open and sliding it down over shaft until it seats itself in ring groove. Insert drive shaft with thrust plate and rotor into housing. Make sure shaft is properly seated. Place pump housing in vise, hub down, using flat on hub for clamping surface.

3) Install dowel pins through thrust plate into pump housing. Install cam ring on dowel pins with rotation arrow toward rear of pump housing and pointing in direction of pump rotation. Install vanes in slots of rotor, with radius edges toward outside of rotor, so they ride on cam ring. Install pressure plate on dowel pins with ported face toward cam ring. Install plate so that narrow slots in plate engage dowel pins. Install pressure plate spring.

4) Lubricate outside diameter of end plate with vaseline and install end plate in pump housing. Place pump housing in arbor press, depress end plate below retaining ring groove, and install end plate retaining ring. **NOTE** – *Make sure ring is completely seated.* Install new outer pump housing "O" ring seal, flow control valve opening "O" ring seal and mounting bolt "O" ring seals in pump housing.

5) Install reservoir on pump housing. Install flow control valve spring. Install flow control valve, hex head screw goes into bore first. Install pressure union using a new "O" ring seal and tighten to 30 ft. lbs. Install mounting studs on pump and tighten studs to 25-35 ft. lbs. Install pump mounting bracket loosely. Position woodruff key in pump shaft, slide pulley on shaft as far as possible (**CAUTION** – *Do not drive on pulley*), install new pulley nut finger tight, then tighten nut to 60 ft. lbs. (50-70 ft. lbs.).

6) Connect hose fittings and torque to 35 ft. lbs. Fill pump reservoir with power steering gear fluid, then turn pulley backward (counterclockwise) until air bubbles stop appearing in reservoir.