SAGINAW VANE

American Motors
Chrysler Corp. (Model .94 Pump)
Ford Motor Co. (With 460" Engine)
General Motors
Jeep

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

DESCRIPTION

Pump can be identified as having pressure hose attachment at rear of reservoir and having pulley secured onto drive shaft by a large nut. Rectangular pumping vanes carried by a shaft driven rotor, move fluid from intake to pressure cavities of cam ring. As rotor begins to rotate, centrifugal force throws vanes against inside surface of cam ring to pick up residual oil, which is then forced into high pressure area. As more oil is picked up by vanes, oil is forced into cavities of thrust plate and 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 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.

ADJUSTMENT

PUMP BELT

Refer to individual vehicle in TUNE-UP section.

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. Turn wheels to left and right, contacting stops lightly. Check oil level and refill as necessary. Continue process as long as necessary to bleed all air from system.

REMOVAL & INSTALLATION

POWER STEERING PUMP

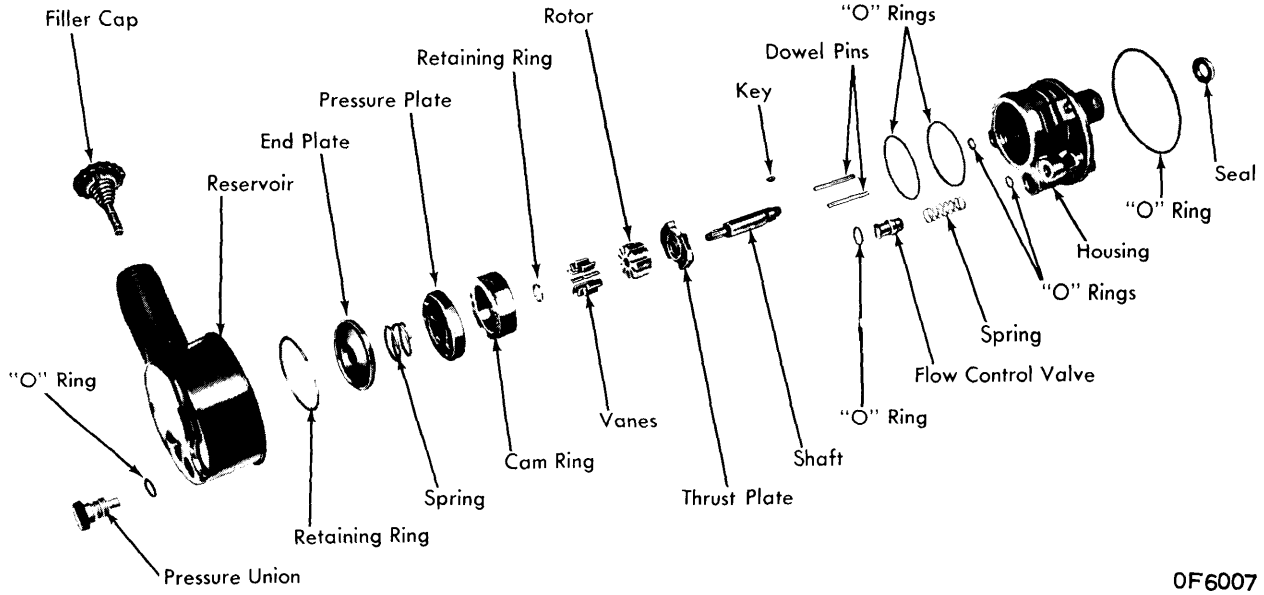
Remove pulley nut, belt and pulley. Disconnect and cap hoses. Remove pump-to-bracket attaching bolts, then remove pump. *NOTE – On some cars it may be necessary to remove pump rear bracket with pump; or bracket attaching bolts must be loosened to remove pump. Do not loosen bracket attaching bolts too 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 vehicle. Remove pulley using a suitable puller (Ford T-69L-10300A, Cadillac J-21883, Chevrolet J-21239-1, Chrysler C-4068); in some cases pulley will slide from shaft. Remove key from shaft. Remove brackets from pump, drain reservoir and clean exterior of pump. Using soft protective jaws, clamp pump (shaft down) in vise between square boss and shaft housing. Do not exert excessive force. Remove pressure union and "O" ring seal. Remove reservoir retaining studs. Tap filler tube back and forth with a plastic hammer to loosen and work reservoir off pump body. Discard all "O" rings. *NOTE – On Dodge models, pulley is pressed on shaft and an adapter (C-4068-1) must be used with puller (C-4068) to properly grip pulley for removal.*

2) Using a punch, tap end cover retaining ring around until one end of ring is near hole in pump body. Insert punch in hole far enough to disengage ring from groove in pump bore and pry ring out of pump body. Tap end cover with plastic hammer to jar it loose. Spring located under cover should push it up. Remove pump body from vise.



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SAGINAW VANE POWER STEERING PUMP (TYPICAL)

SAGINAW VANE (Cont.)

3) Place pump in inverted position on flat surface, and tap end of drive shaft with plastic hammer to loosen pressure plate, rotor, and thrust plate assembly from body. Lift pump body off rotor assembly. Flow control valve and spring should slide out of bore also. Remove and discard end plate and pressure plate 'O' rings. Remove drive shaft oil seal by prying out with screwdriver.

4) Inspect seal bore in housing for burrs, nicks or score marks that would allow oil to bypass outer seal surface. *NOTE – Flow Control Valve is serviced as a unit and should not be disassembled.* After lifting pressure plate and cam ring from rotor, remove vanes from rotor. Clamp drive shaft in soft jawed vise, with rotor and thrust plate facing up. Remove rotor lock ring, pry ring off drive shaft using a screwdriver. Use care to avoid nicking the rotor end face. Discard ring. Slide rotor and thrust plate off of shaft and remove shaft from vise.

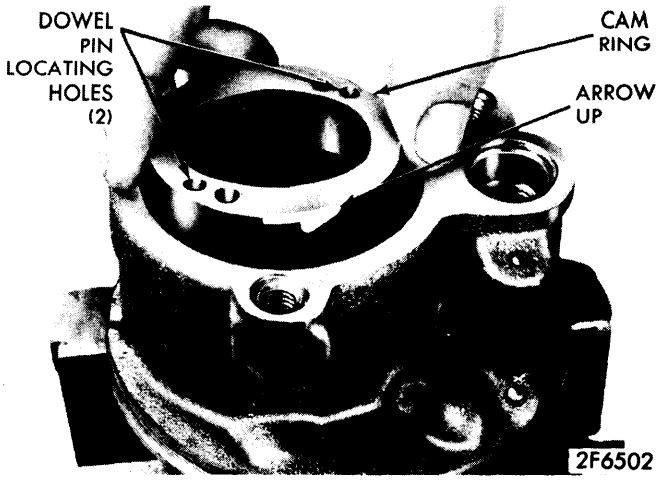
Cleaning and Inspection – Clean all pump parts in suitable solvent. *NOTE – Do not immerse drive shaft seal in solvent.* Replace any damaged or worn parts. Inspect flow control valve assembly for wear or damage. Inspect castings for cracks or other damage. Check all parts for score marks or burrs. *NOTE – 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) Place pump body on flat surface and drive new driveshaft seal into bore with a 7/8" or 15/16" socket until seal bottoms on shoulder. *CAUTION – Excessive force will distort the seal.* Lubricate seal with power steering fluid and clamp pump body in vise (shaft down). Install end cover and pressure plate 'O' rings in grooves in pump cavity. These rings are the same size.

2) With drive shaft clamped splined end up in a soft jawed vise, install thrust plate on drive shaft with smooth ported side up. Slide rotor over splines with the counterbore rotor facing down. Install rotor lock ring making sure ring is seated in groove. Install two dowel pins in holes in pump cavity. Carefully insert drive shaft, rotor and thrust plate assembly in pump cavity indexing locating holes with dowel pins.

3) Slide cam ring over rotor on dowel pins with arrow facing up. Install ten vanes in rotor slots with radius edge facing out towards cam ring inner surface. Position pressure plate on dowel pins. Place a 1¼" socket in groove of pressure plate and seat entire assembly on 'O' ring in pump cavity by pressing down with both thumbs.



INSTALLING CAM RING

4) Place spring in groove in pressure plate and position end cover lip edge up over spring. Press end cover down below retaining ring groove with thumb and install ring making sure it is seated in groove. Care should be exerted to prevent cocking the end cover in the bore or distorting the assembly.

5) Using a punch, tap retainer ring ends around in groove until opening is opposite flow control valve bore. This is important for maximum retention of retainer ring. Replace reservoir "O" ring seal, two mounting stud "O" ring seals and flow control valve "O" ring seal on pump body, then carefully position reservoir on pump body. Visually align mounting stud holes until studs can be started in threads.

6) Using a plastic hammer, tap reservoir down on pump and insert flow control valve spring and valve. Replace "O" ring seal on pressure hose fitting. *CAUTION – Be sure "O" ring is installed on upper groove.* Install pressure hose fitting and tighten mounting studs. Tighten pressure hose fitting to 30-40 ft. lbs. and rear mounting studs to 25-35 ft. lbs. Remove pump assembly from vise and install mounting brackets and drive shaft key. Install pulley and secure with nut, tighten to 45-55 ft. lbs.