SAGINAW VANE

American Motors
Chrysler Corp.
General Motors

DESCRIPTION

Pump can be identified by having pressure hose attachment at rear of oval shaped reservoir. 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. Oil is forced into cavities of thrust plate and through two cross-over holes in cam ring and pressure plate. This empties oil 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, TROUBLE SHOOTING & TESTING

See Power Steering General Servicing in this section.

REMOVAL & INSTALLATION

POWER STEERING PUMP

Disconnect hoses at pump or steering gear and plug fittings to prevent entry of dirt. Loosen pump belt tension and remove belt. Remove pump-to-bracket attaching bolts, then remove pump. NOTE — *With some models, it may be necessary to remove pump bracket with pump. If bracket bolts extend into water jacket, use a drain pan to catch coolant.* Remove pump attaching parts and remove pump from vehicle. To install, reverse removal procedure.

POWER STEERING PUMP PULLEY

Pump pulley is a press fit on shaft and must be removed and installed with suitable puller tools. NOTE — *Do Not hammer on pulley or shaft or damage to internal pump components may result.* Clamp pump in vise at mounting bracket or front hub. Avoid clamping front hub too tight with vise. Install suitable pulley remover tool making sure tool is aligned with shaft, and remove pulley. To install pulley, use suitable puller installer tool to press pulley onto shaft.

Pump Pulley Service Tools

Application	Remover Tool No.	Installer Tool No.
American Motors	J-25034	J-25033
Chrysler Corp.	C-4068A	C-4063
General Motors	BT-7515	BT-7515

OVERHAUL

POWER STEERING PUMP

Disassembly – 1) CAUTION — *When clamping pump in vise, be careful not to exert excessive force on front hub as housing may be distorted.* Remove pulley as previously outlined and remove key from shaft. Remove brackets from pump, drain reservoir and clean exterior of pump. Using a vise with soft protective jaws, clamp pump (shaft down) between square boss and shaft housing. 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 old "O" rings.

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

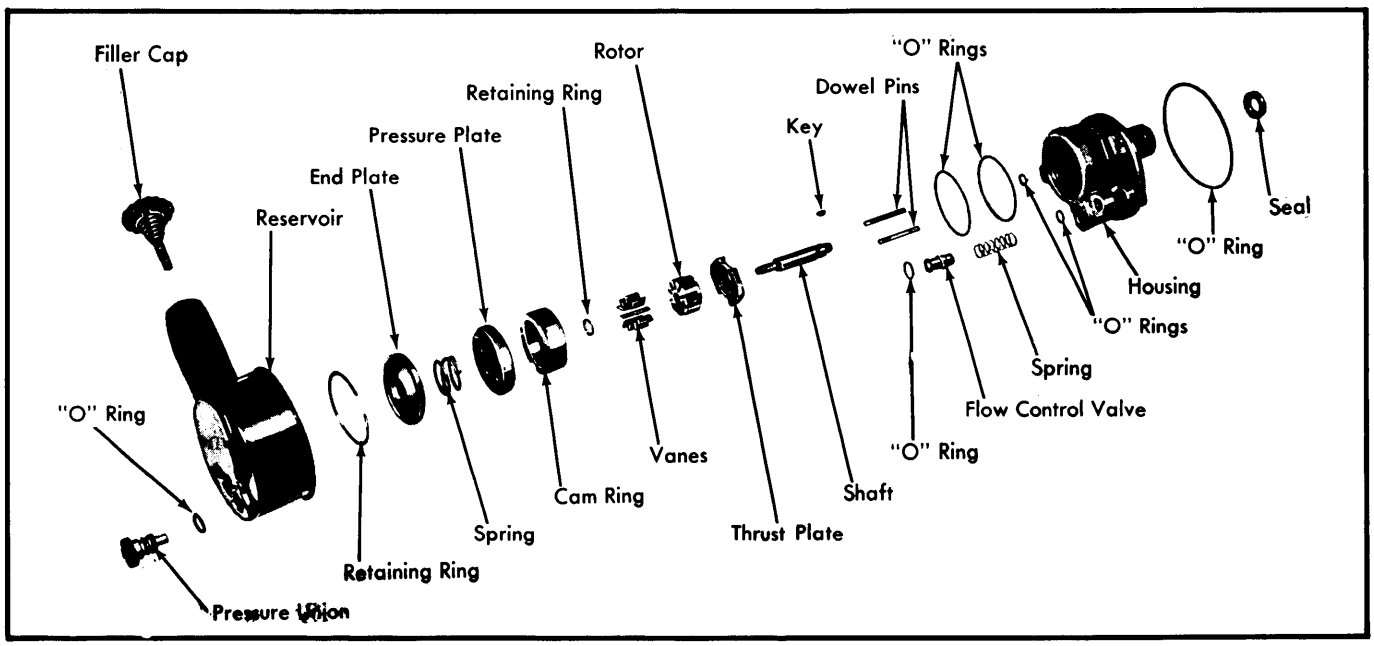

Fig. 1 Saginaw Vane Power Steering Pump

SAGINAW VANE (Cont.)

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.

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 a screwdriver.

4) Inspect seal bore in housing for burrs, nicks or score marks that would allow oil to by-pass outer seal surface. NOTE – *Flow control valve is serviced as an assembly and should not be disassembled, however, if pump is being overhauled because of dirt in system, valve can be disassembled for cleaning.* Lift pressure plate and cam ring from rotor, then remove vanes from rotor. Clamp drive shaft in soft jawed vise with rotor and thrust plate up. Remove rotor lock ring by prying it off with a screwdriver; use care to avoid nicking rotor end face. Discard ring and slide rotor and thrust plate off shaft. Remove shaft from vise.

Cleaning & Inspection – Clean all pump parts in suitable solvent. Replace any damaged or worn parts. Inspect flow control valve for wear or damage. Inspect fit of vanes in rotor, excessively loose vanes require replacement of rotor and/or vanes. Examine inner surface of cam ring for heavy scuff or chatter marks. Replace if necessary. Inspect flat surfaces of pressure and thrust plates for wear or scoring. Light scoring can be removed by lapping on a flat surface.

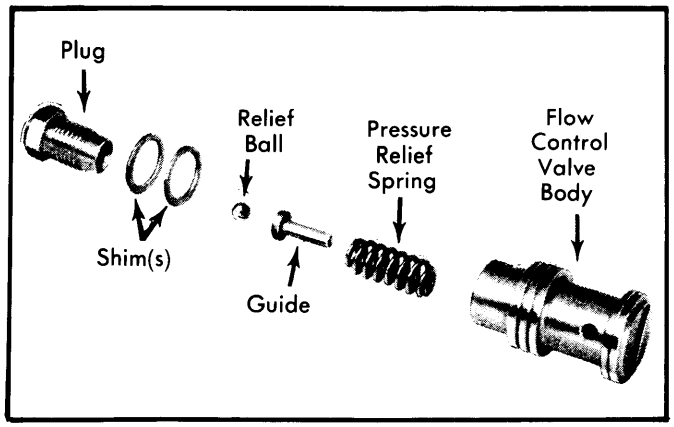

Fig. 2 Exploded View of Flow Control Valve

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.

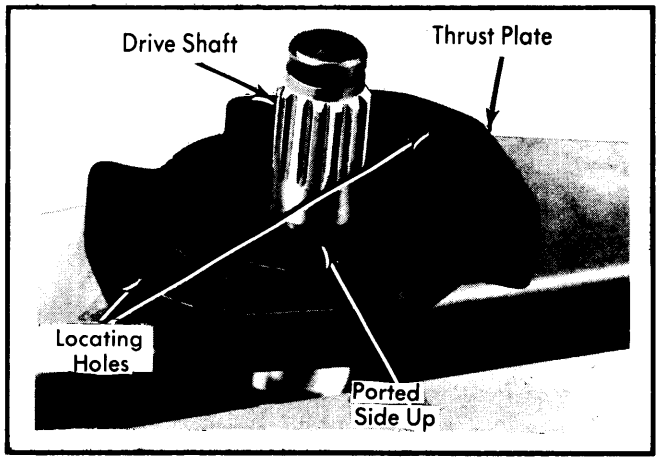

Fig. 3 Installing Thrust Plate

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. Align locating holes with dowel pins. Carefully insert drive shaft, rotor and thrust plate assembly into pump cavity.

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 1 1/4" socket in groove of pressure plate. Seat entire assembly on "O" ring in pump cavity by pressing down with both thumbs.

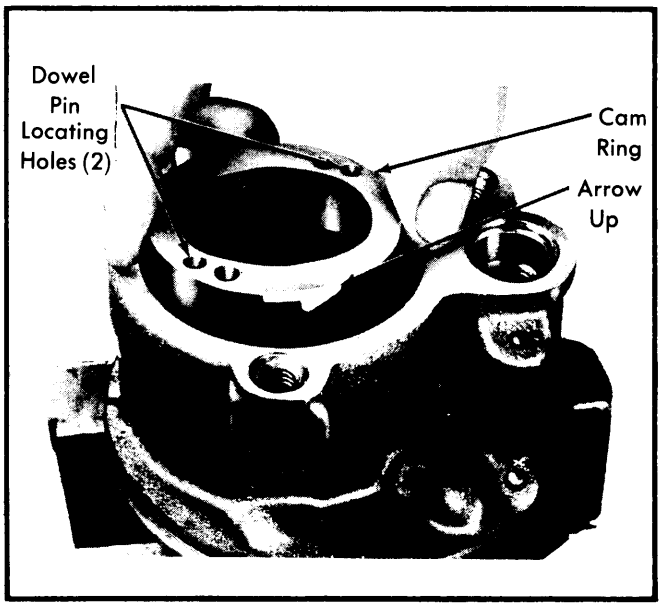

Fig. 4 Installing Cam Ring

4) Place spring in groove in pressure plate and position end cover lip edge up over spring. Press end cover down below

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retaining ring groove with thumb. 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.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Reservoir Mounting Bolt	35
Flow Control Valve Fitting	35
High Pressure Union	35
High Pressure Line-to-Union	25-35
Flow Control Valve Plug	4
Bracket Bolts	30-45