

## FORD MOTOR CO.

Ford F100/250 (4WD Only)

### DESCRIPTION

Non-Integral power steering assist system, used with standard steering gear, consists of a pump, hydraulic hoses, a control valve, and a linkage mounted power cylinder. Power cylinder is mounted between front axle assembly and a tie rod. Control valve is mounted between pitman arm and steering knuckle arm, allowing it to act as a drag link. Movement of the pitman arm actuates the control valve, which in turn directs fluid pressure to the spool valve in the power cylinder. This fluid flow provides unequal pressures on the two sides of the piston within the power cylinder, thus creating a hydraulic assist to manual steering effort.

### LUBRICATION

Check fluid level in power steering pump reservoir at each engine oil change period. Add power steering fluid only as necessary to bring fluid level to proper mark on pump dipstick.

### ADJUSTMENT

See Gemmer/Ross Worm & Roller manual steering gear article in this section.

### REMOVAL & INSTALLATION

#### CONTROL VALVE/POWER CYLINDER

**Removal** — Remove cotter pins and castellated nuts from ball studs which attach control valve to pitman arm, and the tie rods to idler arm. Remove control valve from pitman arm, and tie rods from idler arm. Remove power cylinder-to-bracket attaching hardware. Disconnect hydraulic lines at power steering pump, and mark for reassembly reference. Remove idler arm bracket attaching bolts, and remove idler arm, hoses, power cylinder, and control valve from vehicle as an assembly.

**Installation** — Rest control valve, power cylinder, hydraulic hoses, and idler arm assembly on engine crossmember. Attach idler arm bracket to frame crossmember, then connect hydraulic lines to power steering pump. Attach power cylinder to front bracket, and connect control valve to pitman arm. Connect tie rods to idler arm. Tighten all nuts, bolts, and fittings securely, and bleed system.

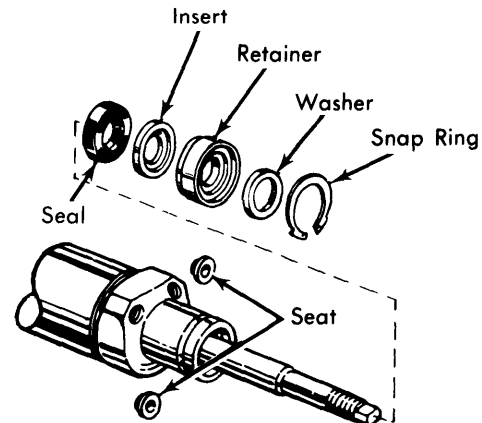
### OVERHAUL

#### POWER CYLINDER

**NOTE** — Internal components, other than rod seals and tube seats, are serviced as a complete cylinder assembly only.

**Disassembly & Reassembly** — Drain fluid from cylinder and remove snap ring using snap ring pliers. Clamp cylinder in a vise and apply air pressure to one fluid port while covering other port with a finger. At the same time, hold a towel around rod to prevent washer and seal from coming free.

Remove the neoprene seal from bore of cylinder cap with two small screwdrivers. To reassemble, reverse disassembly procedure, making sure snap ring is firmly seated.



4FO01

F100/250 POWER CYLINDER END

#### CONTROL VALVE

**Disassembly** — 1) If drag links are connected to control valve assembly, remove links. Clamp control valve assembly (with hydraulic fittings facing upward) in a soft-jawed vise. Straighten lock ring retaining tangs, then remove reducer from one end of valve, and loosen end cover on opposite end. Remove valve from vise.

2) Hold valve in vertical position, with threaded end of spool valve down. Lightly tap end of spool valve on a wooden block, until spool valve is forced free of valve body, and remove spool valve from body. Remove "C" washer, "O" ring, and outer reaction ring. Remove reaction spring, "O" ring, and inner reaction ring.

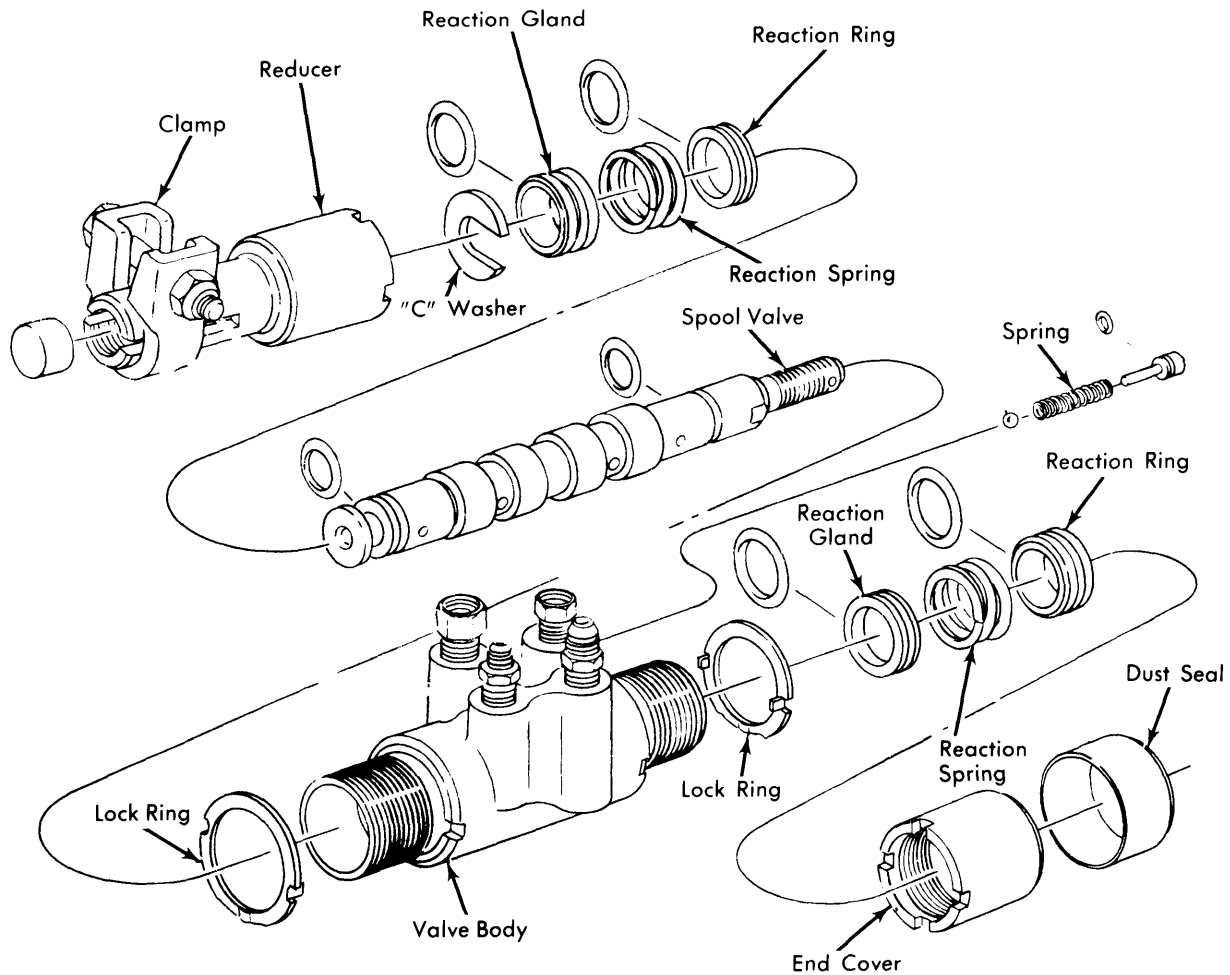
3) Remove valve body end cover, dust seal, and lock ring. Hold valve body in a vertical position, with cover end down, and carefully insert spool valve in body with threaded end down. Invert valve body so that "C" washer end is down, and lightly tap spool valve on a wooden block until both reaction rings and spring are forced out of valve body. Remove remaining parts from valve body.

**Reassembly** — 1) Lubricate all parts with power steering fluid prior to assembly. Install "O" rings on the two reaction rings, and install inner reaction ring on spool valve. Install spool valve "O" ring, then carefully install reaction spring on spool valve using a twisting motion to prevent damaging "O" ring.

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2) With spool valve on bench, threaded end down, install outer reaction ring, and "C" washer. Hold valve body in vertical position, "C" washer end up, and install spool valve, NEW lock ring, and reducer. Invert valve body assembly, and install second reaction ring. Install last reaction ring, without an "O" ring, and install end cover to force reaction ring into proper position. Remove end cover.

3) Install last spool valve "O" ring on spool valve, then remove outer reaction ring. Install reaction spring, then install "O" ring on reaction ring and place on spool valve. Install NEW lock ring, and end cover. Clamp control valve assembly in a soft-jawed vise, and stake lock ring to end cover. Install dust seal, and reducer clamp. Stake reducer end lock ring into reducer, and install drag link.



4FO04

**CONTROL VALVE ASSEMBLY**