

1971-74 FORD MOTOR CO. NON-INTEGRAL POWER STEERING

"E" Models (1971-74)
F100/250 - 4WD (1974)

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 pump reservoir every 6,000 miles. Fluid must be at normal operating temperature. If necessary, add power steering fluid to bring level to proper mark on dipstick.

ADJUSTMENT

PITMAN ARM STOPS

"E" Models - Loosen lock nuts on both pitman arm stops, and turn adjusting screw in several turns. Turn steering wheel to right steering stop, then adjust forward pitman arm stop until it just contacts pitman arm and tighten lock nut. Repeat procedure for left turn, adjusting rear stop.

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.

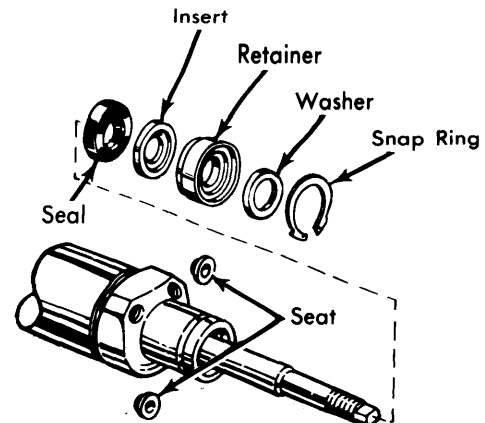
Installation - Rest control valve, power cylinder, hydraulic hoses, and idler arm assembly on engine crossmember. Attach idler arm bracket to frame crossmember, then connect hydraulic lines to power steering pump. Attach power cylinder to front bracket, and connect control valve to pitman arm. Connect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

OVERHAUL

POWER CYLINDER

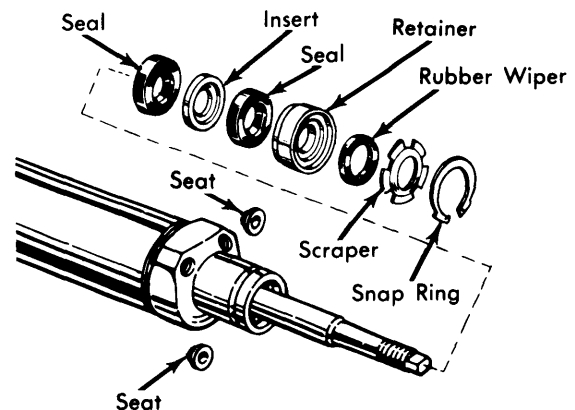
NOTE - Internal components, other than rod seals and tube seats, are serviced as a complete cylinder assembly only.

Disassembly & Reassembly - Clamp power cylinder in a vise, using care not to collapse cylinder tube. Remove snap ring from end of cylinder, and pull piston rod all of the way out. Remove scraper, bushing, and seals as necessary. To reassemble, reverse disassembly procedure.



4FO01

F100/250 POWER CYLINDER END



4FO02

"E" MODELS POWER CYLINDER END

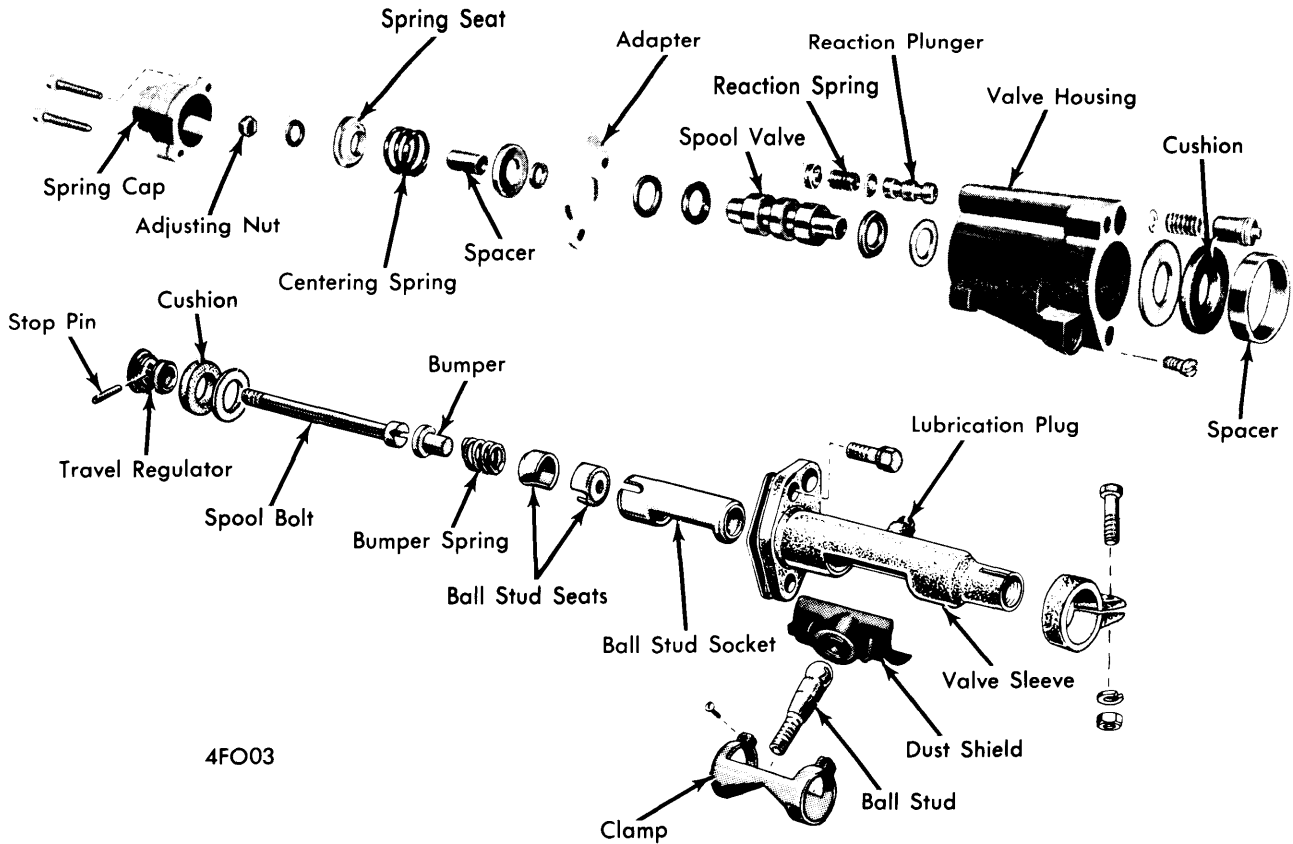
CONTROL VALVE

Disassembly ("E" Models) - 1) Disconnect fluid lines at control valve and drain lines. Loosen clamp bolt at end of sleeve, and remove roll pin from control valve. Remove control valve from link assembly. Remove centering spring cap from valve housing, and remove nut from end of spool valve bolt. Remove housing to sleeve attaching bolts, and separate housing and sleeve.

2) Remove plug from end of valve sleeve, and force spool valve out of housing. Remove spacer, bushing, and seal from sleeve end of housing. Pull head of spool valve bolt tightly against travel regulator, and drive stop pin out of stop. Remove stop from sleeve, then remove spool valve bolt, spacer, and rubber washer from regulator. Remove boot and clamp from valve sleeve. Remove bumper, spring, and ball stud seat from valve sleeve, then remove ball stud socket from sleeve.

Power Cylinders

1971-74 FORD MOTOR CO. NON-INTEGRAL POWER STEERING (Cont.)



CONTROL VALVE ASSEMBLY ("E" MODELS)

Reassembly (E Models) — 1 Coat all parts except seals with power steering fluid prior to assembly. Insert one ball stud seat, flat end first, into ball stud socket. Install ball stud in socket through window opening, then install second ball stud seat, flat end last. Install spring, spacer, and bumper into socket. Install travel regulator stop into socket until it is bottomed, then loosen stop just enough to align nearest hole in stop with slot in ball stud socket. Install stop pin and valve spool bolt.

2) Install rubber boot clamp and plug on control valve sleeve. Insert spool valve into valve housing using a rotating motion. Insert seal bushing and spacer in sleeve end of housing. Press spool valve against inner lip of seal, and carefully guide seal lip over valve using a small screwdriver. Place sleeve end of housing on a flat surface, and push valve down until it stops. Install valve seal and bushing in centering spring end of housing, press seal against end of valve, and guide seal over valve using a small screwdriver.

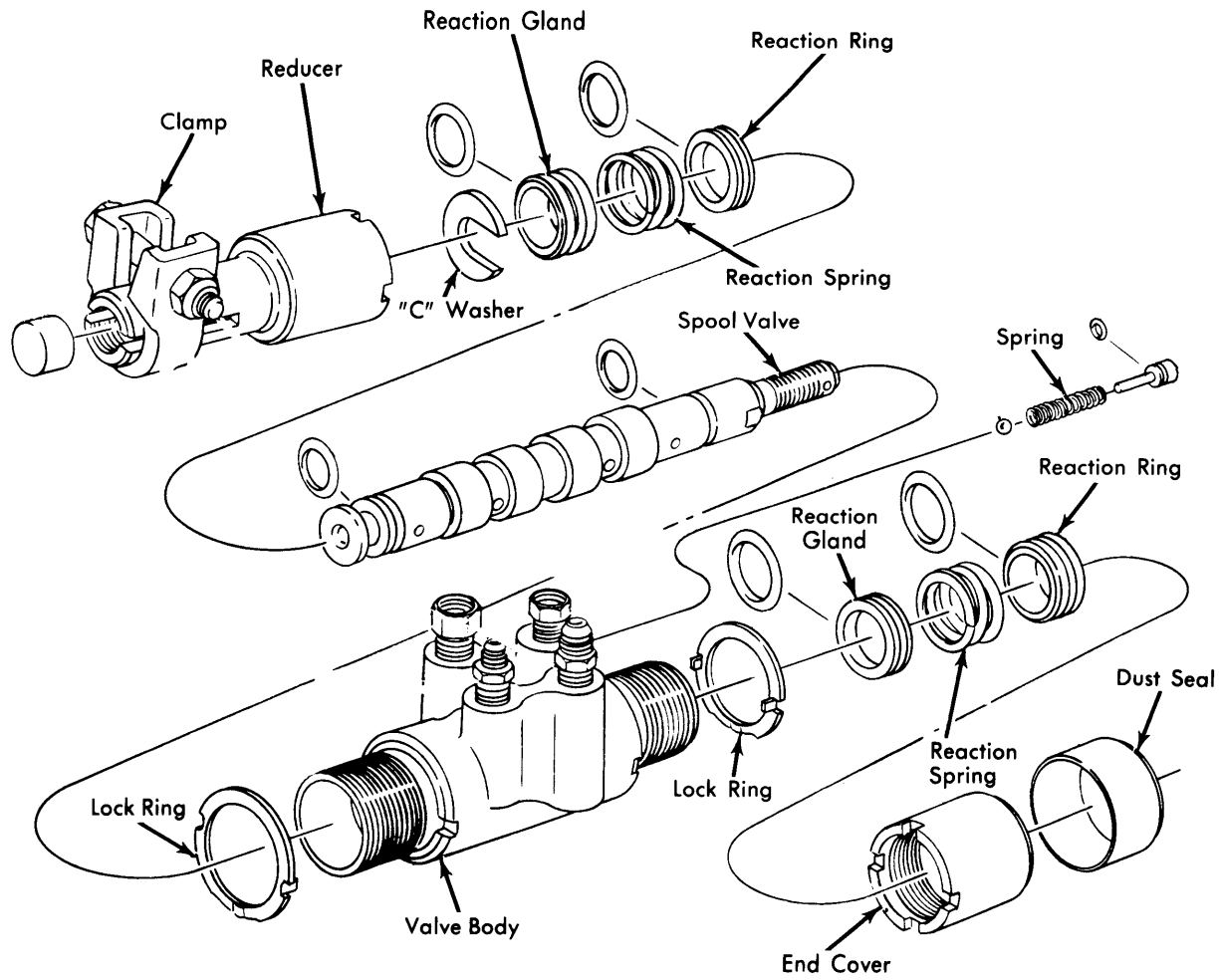
3) Place valve sleeve on housing so that ball stud is opposite hydraulic line fittings. Position adapter on centering spring end of housing, and install bushing, washers, spacers, and centering spring on spool valve bolt. Compress centering spring and install nut on bolt. Tighten nut until spacer is bottomed, then loosen it 1/4 turn. Install centering spring cap, and check operation of ball stud and spool valve.

Disassembly (F100/250) — 1 If drag links are connected to control valve assembly, remove links. Clamp control valve assembly, hydraulic fittings facing up, in a self-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.

1971-74 FORD MOTOR CO. NON-INTEGRAL POWER STEERING (Cont.)



4FO04

CONTROL VALVE ASSEMBLY (F100/250)

Reassembly (F100/250) - 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 damage to "O" ring.

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 se-

cond 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.