

CORVETTE LINKAGE

Corvette

DESCRIPTION

Linkage type with power cylinder mounted between steering relay rod and bracket on frame side rail. Control valve assembly is mounted on left side relay rod and is operated by pitman arm acting on spool valve assembly. Control valve assembly is adjustable to provide greater uniformity of operation and faster response. Power steering pump is mounted on engine and driven by belt from crankshaft pulley.

OPERATION

Hydraulic pressure is delivered through hose from the pump to a valve which senses requirements for power assistance and supplies power cylinder accordingly. Steering gear used with this system is the same basic unit used on manually steered vehicles.

ADJUSTMENT

CONTROL VALVE BALANCING

NOTE — This adjustment is required after valve overhaul or whenever steering effort is greater in one direction than in the other. Piston rod must be disconnected from frame bracket.

1) With car on a hoist, start engine. If piston rod remains retracted, turn adjusting nut clockwise until rod just begins to move out, then turn counterclockwise until rod just begins to move in. Now turn nut clockwise exactly one-half of rotation needed to change direction of piston rod movement. If rod extends upon starting engine, move nut counterclockwise until rod begins to retract, then clockwise until rod begins to move out again. Now position nut exactly one-half of rotation needed to change direction of piston rod movement.

CAUTION — Do not turn nut back and forth more than is absolutely necessary to balance valve since this is a special friction nut.

2) With valve balanced it should be possible to move the rod in and out manually. Turn off ignition and connect cylinder rod to frame bracket. Restart engine. If front wheels (still on hoist) do not turn in either direction from center the valve has been properly balanced. Grease end of valve and install dust cap.

LUBRICATION, TROUBLE SHOOTING & TESTING

See *Power Steering General Servicing* in this section.

REMOVAL & INSTALLATION

BALL STUD SEAL REPLACEMENT

Removal — Raise vehicle and remove pitman arm. Remove clamp by removing nut, bolt and spacer. If crimp type seal is used, straighten clamp end and pull clamp and seal off end of stud.

Installation — Install new seal and clamp over stud so lips on seal mate with clamp (a nut and bolt type clamp replaces the crimped type for service). Center ball stud, seal and clamp at opening in adapter housing, then install spacer, bolt and nut.

CONTROL VALVE

Removal — 1) Raise front of vehicle and support on stands. Remove relay rod-to-control valve clamp bolt. Disconnect the 2 pump-to-control valve hose connections and allow fluid to drain into container. Disconnect 2 remaining valve-to-power cylinder hoses.

2) Remove retaining nut from ball stud-to-pitman arm connection and disconnect control valve from pitman arm. Turn pitman arm to right to clear control valve and unscrew control valve from relay rod. Remove control valve.

Installation — To install, reverse removal procedure.

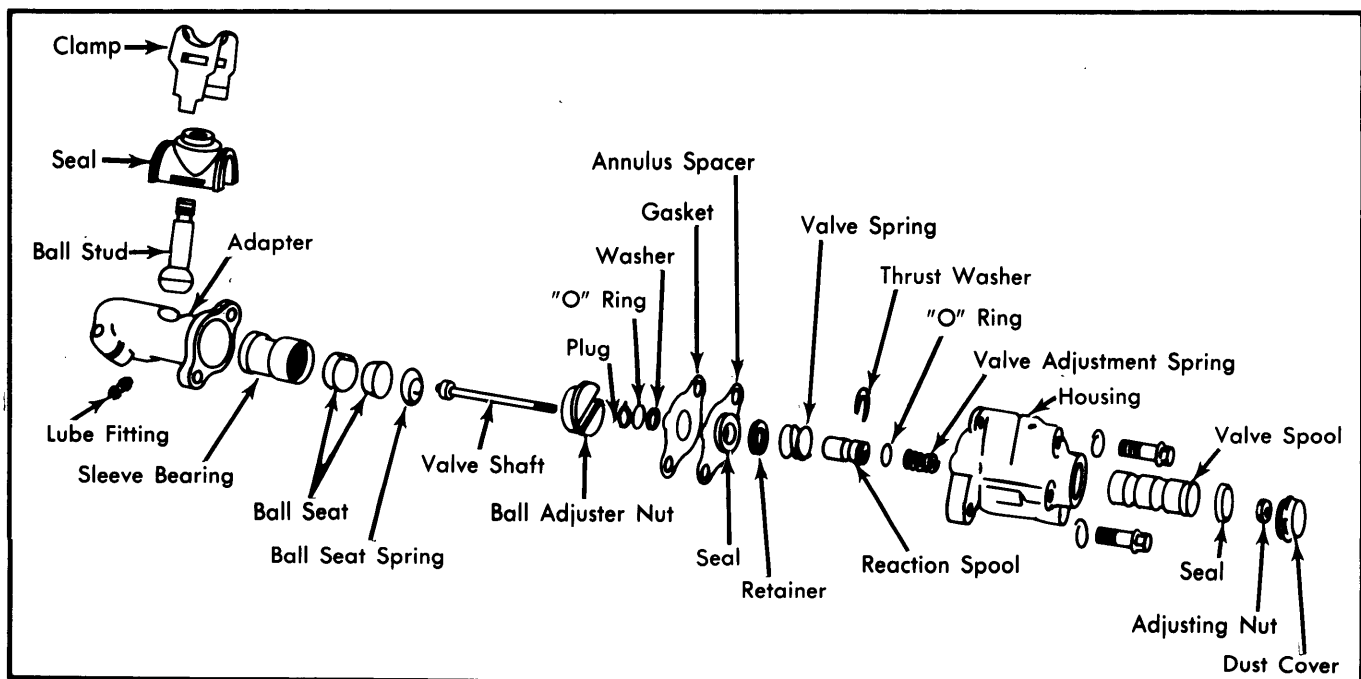


Fig. 1 Power Steering Control Valve Assembly

Power Steering

CORVETTE LINKAGE (Cont.)

POWER CYLINDER

Removal — 1) Raise vehicle and disconnect hydraulic lines to power cylinder. Drain and dispose of fluid. Remove cotter pin, nut, retainer and grommet from power cylinder rod attached to frame bracket.

2) Remove grommet and retainer from bracket if replacement parts are required. Remove power cylinder from vehicle. Inspect all parts for leaks, cracks or damage and replace as needed.

Installation — To install, reverse removal procedures.

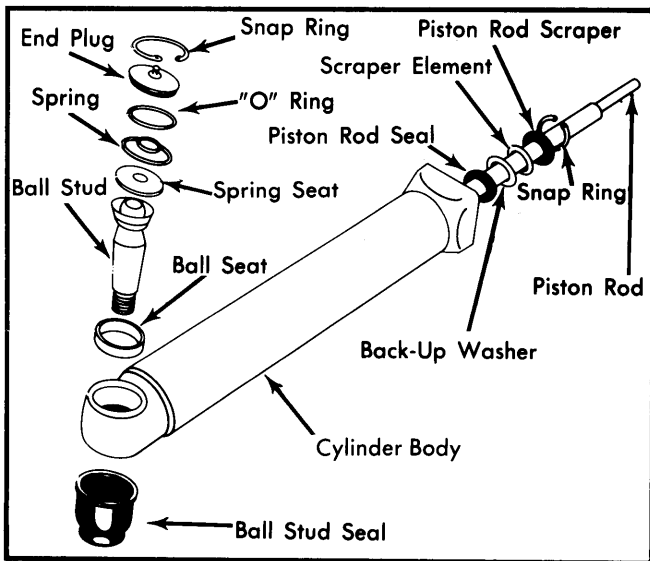


Fig. 2 Power Cylinder Assembly

POWER STEERING HOSES

When servicing power steering hoses be sure to align in correct position. Always make hose installations with wheels in straight ahead position.

CAUTION — Do not start engine with any power steering hose disconnected.

POWER STEERING PUMP

Removal & Installation — Disconnect hoses at pump or steering gear. Secure hose ends in raised position to prevent fluid drainage. Remove pump belt and pump from mounting brackets. Remove pulley with suitable removal tool (J-25034). To install, reverse removal procedure.

CAUTION — Do not hammer on puller to aid pulley removal or installation.

OVERHAUL

CONTROL VALVE

Disassembly — 1) Place valve in vise and remove dust cover. Remove adjusting nut, valve-to-adapter attaching bolts and valve housing and spool from adapter. Remove spool from housing.

2) Remove spring, reaction spool, washer reaction spring, spring retainer and seal. Remove "O" ring from spool. Remove annulus spacer valve shaft washer and plug to sleeve key. Remove clamp from stud.

3) Carefully turn adjuster plug out of sleeve. Remove adapter from vise and invert, permitting spring and one of 2 ball seats to fall free. Remove ball stud and other ball seat and sleeve will fall free.

Reassembly — 1) Replace sleeve and ball seat in adapter, then ball stud, and finally other ball seat and spring with small coil down. Clamp adapter in vise, put shaft through seat in adjuster plug and screw adjuster plug in sleeve.

2) Turn plug in until it is tight, then back off until slots line up with notches in sleeve. Install new seal and clamp over stud so lips on seal mate with clamp. Center ball stud, seal and clamp at opening in adapter housing, then install spacer, nut and bolt.

3) Insert key, making sure small tangs on key ends fit into notches in sleeve. Install valve shaft washer, annulus spacer, reaction seal (lip up) spring retainer, reaction spring, washer and adjustment spring. Install "O" ring seal on reaction spool.

4) Install spool in housing, then install housing and spool on adapter. Side ports should be on same side as ball stud. Bolt housing to adapter. Depress valve spool and turn new lock nut onto shaft 4 turns with clean wrench.

POWER CYLINDER

Disassembly — 1) With cylinder removed, remove snap ring, pull out piston rod and remove rod scraper and scraper element. Remove back-up washer and piston rod seal from rod.

2) Remove ball stud seal. Remove snap ring retaining end plug and lube fitting. Push on end of ball stud and remove end plug, spring, spring seat and ball stud. Remove "O" ring seal from top lip of ball stud opening. If ball seat must be replaced, it must be pressed out with tool (J-8937).

Reassembly — To reassemble, reverse disassembly procedure making sure to lubricate inner surfaces of seal and scraper before reassembly.

TIGHTENING SPECIFICATIONS

| Application | Ft. Lbs. |
|--|----------|
| Power Steering Pump Mounting Bolts | 25 |
| Power Steering Pump Mounting Stud Nut | 20 |
| Power Cylinder to Relay Rod Stud Nut | 45① |
| Power Cylinder to Frame Bracket Nut | 23② |
| Power Cylinder Frame Bracket to Frame Nuts | 17 |
| Control Valve and Adapter Assembly to Relay Rod Clamp Bolt | 25 |
| Control Valve and Adapter Assembly to Pitman Arm Nut | 45① |
| Power Steering Pump Hose Fittings | 25 |
| Power Cylinder Assembly Hose Fittings | 8 |
| Control Valve and Adapter Assembly Hose Fittings | |
| Outlet | 25 |
| Inlet | 8 |

- ① — Plus additional torque to align castellation with cotter pin hole (not to exceed 50 ft. lbs.)
- ② — Plus additional torque to align castellation with cotter pin hole (not to exceed 30 ft. lbs.)