

1968-73 CORVETTE LINKAGE

Corvette (1968-73)

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 a belt from crankshaft pulley.

OPERATION

Hydraulic pressure is delivered through a 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.

Pump Belt Tension

Loosen nut on pivot bolt and pump brace adjusting nut. **CAUTION** - Do not move pump by prying against reservoir or by pulling on filler neck. Adjust belt tension to 75 ± 5 lbs. (used) and to 125 ± 5 lbs. (new) using a standard tension gauge. Tighten pump brace adjusting nut and pivot bolt nut.

Control Valve Balancing

NOTE - If a hard steering effort is required (in one direction), balance control valve as follows:

1) With car on a hoist, start engine. If piston rod remains retracted, turn adjusting nut clockwise until rod begins to

move out. Then turn nut counterclockwise until rod just begins to move in. Now turn nut clockwise to exactly one-half rotation needed to change direction of piston rod movement. If rod extends upon starting the pump, move nut counterclockwise until rod begins to retract, then clockwise until rod begins to move out again. Now position rod to exactly one-half 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, as this is a special friction nut.

2) With valve balanced, it should be possible to move the rod in and out manually. Turn off engine 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.

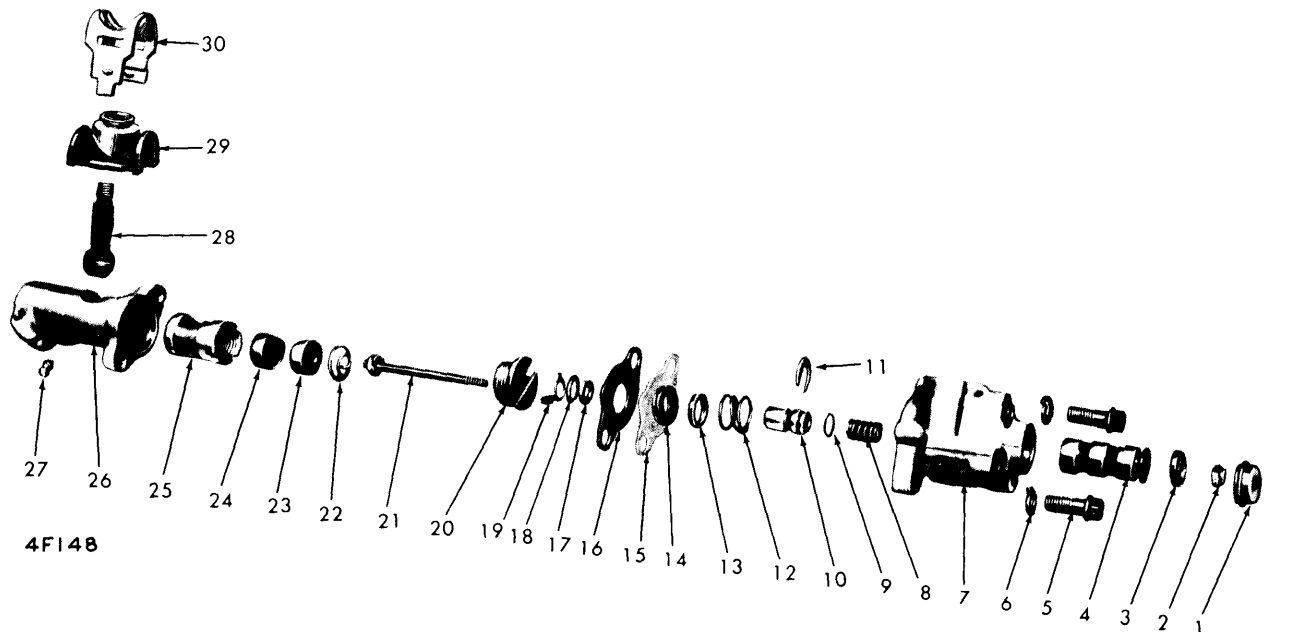
LUBRICATION

Checking Fluid Level

With oil at normal operating temperature, check fluid level on dipstick. Fill to proper level with GM Power Steering Fluid or, if not available, automatic transmission fluid "Type A" bearing the mark "AQ-ATF" followed by a number and the suffix letter "A".

Bleeding Hydraulic System

NOTE - Low oil level and/or air in the oil are the most frequent causes of objectionable pump noise. Fill reservoir to proper level and let oil remain undisturbed for at least two minutes, then start engine and run at idle speed for two seconds. Add oil if necessary, and repeat until oil level remains constant after running engine. Raise front of car so wheels are off ground. Increase engine



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| 1. Dust Cover | 8. Valve Adjustment Spring | 15. Annulus Spacer | 23. Ball Seat |
| 2. Adjusting Nut | 9. "O" Ring Seal | 16. Gasket | 24. Ball Seat |
| 3. Vee Block Seal | 10. Valve Reaction Spool | 17. Valve Shaft Washer | 25. Sleeve Bearing |
| 4. Valve Spool | 11. Spring Thrust Washer | 18. "O" Ring Seal | 26. Adapter Housing |
| 5. Valve Mounting Bolts | 12. Valve Spring | 19. Plug to Sleeve Key | 27. Lubrication Fitting |
| 6. Lock Washer | 13. Spring Retainer | 20. Ball Adjuster Nut | 28. Ball Stud |
| 7. Valve Housing | 14. Annulus Seal | 21. Valve Shaft | 29. Seal |
| | | 22. Ball Seat Spring | 30. Clamp |

POWER STEERING CONTROL VALVE ASSEMBLY

1968-73 CORVETTE LINKAGE (Cont.)

speed to 1500 RPM, and turn wheels to full right and full left, contacting stops lightly. Lower car and turn wheels right and left on ground. Check oil level and fill if necessary. Continue procedure until oil level remains constant.

TESTING

Hydraulic Pressure

Disconnect pressure hose at pump. Using a suitable pressure gauge connected to pump, start engine and warm fluid to a temperature of 150-170°F, (checked with thermometer in reservoir). Idle engine at 500 RPM, turn wheels all the way to stop and note pressure (pressure should be between 870-1000 lbs.). If pressure is under specified rating, close valve momentarily and note pressure; if pressure is less than maximum, pump is faulty. If pressure is below minimum with valve closed, steering gear is faulty.

Power Steering Hoses

When servicing power steering hoses be sure to align hoses in their correct position. Always make hose installations on Corvette with front wheels in straight ahead position. **CAUTION** - Do not start engine with any power steering hose disconnected.

Power Steering Pump

Disconnect hoses at pump or steering gear. Secure hose ends in raised position to prevent drainage of oil. Remove pump belt. On Corvettes with 427 & 454 engines, loosen alternator adjustment and remove pump to alternator belt. Remove pump from attaching parts and remove pump from vehicle. Remove drive pulley attaching nut. Using a suitable puller, remove pulley from shaft. **CAUTION** - Do not hammer pulley off of shaft. To install, reverse removal procedure, and bleed pump by turning pulley backward,

counterclockwise as viewed from front, until air bubbles cease to appear. **CAUTION** - Do not hammer on pump shaft. Use pulley nut to pull pulley onto shaft.

REMOVAL & INSTALLATION

Ball Stud Replacement

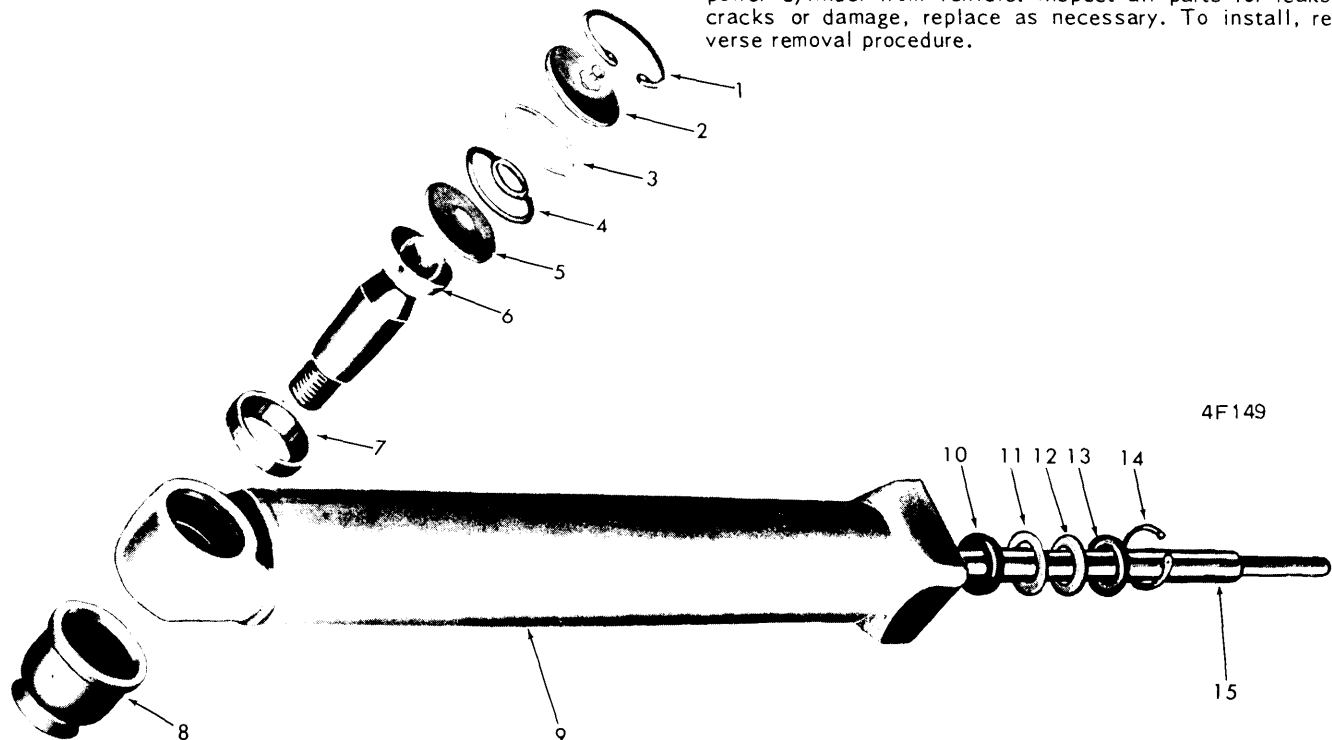
Remove pitman arm. Remove clamp by removing nut, bolt and spacer or, if crimped type clamp is used, straighten clamp end and pull clamp and seal off end of stud. Install new seal and clamp over stud so lips on seal mate with clamp (a nut and bolt attachment type clamp replaces the crimped type for service). Center ball stud, seal and clamp at opening in adapter housing, then install spacer, bolt and nut.

Control Valve

Raise front of car and support on stands. Remove relay rod to control valve clamp bolt. Disconnect the two pump-to-control valve hose connections and allow fluid to drain into a container, then disconnect the two remaining valve-to-power cylinder hoses. Remove retaining nut from ball stud to pitman arm connection and disconnect control valve from pitman arm. Turn pitman arm to the right to clear the control valve and unscrew the control valve from the relay rod. Remove control valve from vehicle. To install, reverse removal procedure.

Power Cylinder

Disconnect hydraulic lines connected to power cylinder and drain fluid into a container (do not reuse). Remove cotter pin, nut, retainer and grommet from power cylinder rod attached to frame bracket. Remove grommet and retainer from bracket if replacement parts are required. Remove cotter pin, nut and ball stud at relay rod. Remove power cylinder from vehicle. Inspect all parts for leaks, cracks or damage, replace as necessary. To install, reverse removal procedure.



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| 1. Snap Ring | 6. Ball Stud | 11. Backup Washer |
| 2. End Plug and Lube Fitting | 7. Ball Seat | 12. Scraper Element |
| 3. "O" Ring | 8. Ball Stud Seal | 13. Piston Rod Scraper |
| 4. Spring | 9. Piston Body | 14. Snap Ring |
| 5. Spring Seat | 10. Piston Rod Seal | 15. Piston Rod |

POWER CYLINDER ASSEMBLY