

Trouble Shooting Tech Tips

Operation

1. Manual steering gear
 - A. A mechanical means of steering control.
 1. The steering wheel turns a shaft attached to the input shaft, which turns a spiral worm gear. The spiral worm gear turns an output shaft, which horizontally moves the pitman arm, drag link and steering arms, turning the front wheels.
2. Manual steering gear with valve-in-linkage assist.
 - A. A mechanical means of steering with a hydraulic control valve and a cylinder.
 1. The hydraulic control valve is installed in the vehicle drag link.
 2. Turning effort applied to the steering wheel actuates the valve, which, in turn, directs hydraulic fluid from the pump to the power cylinder located in the steering linkage.
3. Semi-Integral steering gear
 - A. A mechanical means of steering with a hydraulic control valve and a cylinder.
 1. The hydraulic control valve is attached to the steering gear.
 2. Ross hydropower steering gear
 - a. Turning effort applied to the steering wheel overcomes the valve centering spring and hydraulic reaction which moves the valve spool, restricting the return port. This increases the flow to one of the cylinder ports, actuating one end of the piston giving hydraulic power to the linkage where the cylinder is attached.
 3. Saginaw steering gear
 - a. Turning effort applied to the steering wheel turns the input shaft attached to a torsion bar. When receiving resistance from the wheels the torsion bar is twisted actuating the control valve. This directs fluid to one end of the piston in the cylinder giving hydraulic power to the linkage.
4. Integral steering gear
 - A. A mechanical means of steering with a hydraulic control valve and a cylinder combined into one component.
 1. Turning effort applied to the steering wheel overcomes the valve centering springs or torsion bar. The hydraulic reaction restricts the return port, increasing the flow to one end of the piston giving hydraulic power to the steering gear.

5. Power steering pump
 - A. Pressure means work. Flow means speed
 1. The steering pump produces flow (gallons per minute).
 - a. The faster or slower the steering wheels turn will determine how much fluid is required.
 2. The steering pump relieves pressure.
 - a. The higher the pressure the steering gear can withstand the more work it can perform.
6. Power steering reservoir
 - A. Cooling, supply, and filtration
7. Power steering hoses
 - A. A means of transporting fluid