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# Steering Troubleshooting Guide

Information from TRW Integral Power Steering Gear Maintenance Manual

## Normal Noises

- You or the driver may hear a hissing noise from the control valve when it is actuated during a steering maneuver
- You or the driver may hear a noise as fluid bypasses through the poppets at full turn.
- You or the driver may hear a noise from the system relief valve when it is required to actuate.
- You or the driver may hear pump growl from some types of power steering pumps.

## Abnormal Noises

- If the power steering pump is belt driven, a squealing noise may indicate that the belts should be tightened or replaced.
- A clicking noise heard during a turn, or when changing directions, may indicate that some component is loose and shifting under load.
- A change in the normal noise of the pump may indicate that air has been induced into the system or that fluid level is low.

## Possible Steering Problems and Causes

### Road Wander

- Tire pressure incorrect or unequal left to right.
- Components in steering linkage loose or worn (Steering wheel to road wheel)
- Wheel bearings improperly adjusted or worn.
- Front end alignment out of specification.
- Dry fifth wheel or poor finish on fifth wheel or trailer plate.
- Steering gear mounting bolts loose on frame.
- Steering gear improperly adjusted.
- Looseness in rear axle assemblies or trailer bogies.

### No Recovery

- Tire pressure low
- Front end components binding
- Tight front axle kingpins
- Dry fifth wheel or poor finish on fifth wheel or trailer plate
- Steering column binding
- Pump flow insufficient
- Steering gear improperly adjusted
- Steering gear control valve sticking
- Front end alignment incorrect

## Shimmy

- Badly worn or unevenly worn tires
- Improperly mounted tire or wheel
- Wheel bearings improperly adjusted or worn
- Components in steering linkage loose or worn
- Wheels or brake drums out of balance
- Front end alignment incorrect
- Air in the hydraulic system

## External Oil Leakage

- Finding the location of a leak may be difficult, since oil may run away from the leak source, the fittings, hoses, pump or gear to a low point on the gear or chassis.
- A leak from the vent plug at the side cover indicates failure of the sector shaft oil seal inside the side cover.

## Over steering or Darting

- Dry fifth wheel or poor finish on fifth wheel or trailer plate
- Front end components binding or loose
- Steering column binding
- Steering gear improperly adjusted
- Steering gear control valve sticking
- Rear axle mounts (rear steer)

## High Steering Effort in One Direction

- Unequal tire pressure
- Vehicle overloaded
- Inadequate hydraulic system pressure
- Excessive internal leakage in one direction of turn only (verify with internal leakage test)

## High Steering Effort in Both Directions

- Low tire pressure
- Vehicle overloaded
- Low hydraulic fluid level
- Low pressure or flow from pump
- Components of steering system binding
- Restriction in return line, or line to a small in diameter
- Excessive internal leakage (verify with internal leakage test)
- Oversize tires (check manufacturer's specifications)

## Lost Motion (Lash) at the Steering Wheel

- Steering wheel loose on the shaft
- Loose connection between the steering gear, intermediate column, and steering column.

- Steering gear loose on frame
- Pitman arm loose on output shaft .
- Components in steering linkage loose or worn
- Steering gear improperly adjusted

### **Excessive Heat Oil temperature not to exceed 120°C Continuously**

- Excessive pump flow
- Vehicle overloaded
- Undersized replacement hose or line
- Restricted hose or line that is kinked or severely bent or internally blocked
- Restricted re-entering of gear valve caused by column bind or side load on the input shaft
- Poppet not functioning properly
- Prolonged stationary vehicle operation



WARNING: IF THE HYDRAULIC SYSTEM FLUID BECOMES OVERHEATED, IT CAN CAUSE THE SEALS IN THE STEERING GEAR AND PUMP TO SHRINK, HARDEN, OR CRACK AND LOSE THEIR SEALING ABILITY

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