Hydraulic System

Steering

The steering system consists of the steering control unit and a flow amplifier valve.

When the steering unit is activated, a controlled oil flow is directed to the flow amplifier valve. This oil flow is amplified and the total flow is directed to the steering cylinders.

The steering unit provides a fixed displacement of oil per revolution of the steering wheel and the amplification factor of the flow divider valve is 8. Therefore, total oil output is eight times the output of the steering control unit.

With this system it is possible to combine the steering and working hydraulics. The priority valve ensures that the steering has first priority on oil flow from the hydraulic pump. The oil flow not used for steering is then sent via the “EF” line (excess flow) to the working hydraulics. If the steering wheel is not turned, the entire oil flow is directed to the working hydraulics with minimal pressure loss.

The principle applied to the controlled operation of this system is called “load sensing.” As the name suggests, it is a system in which the load is sensed or registered. The sensed signal is used, in this example, to control the priority valve in the flow amplifier valve so that oil flow and oil pressure precisely match momentary demands.

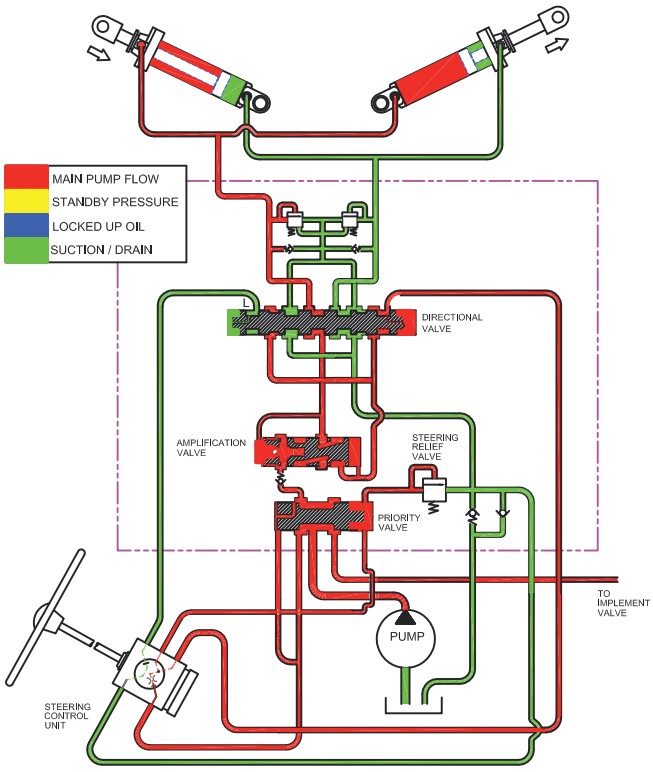

Figure 3-3-1 Steering System (Right Turn)

Brakes

The wet disc brake is applied with hydraulic pressure and released when that pressure tapers off. This system is known as a “wet” system because the discs are cooled by being submerged in a sump filled with hydraulic fluid.

Two types of discs are in each housing; stationary discs and friction discs. The stationary discs are locked to the brake housing. The friction discs rotate with the disc driver. Each friction disc is between stationary discs. Hydraulic pressure pushes a piston against the first stationary disc. The piston pushes all of the discs together to stop the rotating of the wheel assembly.

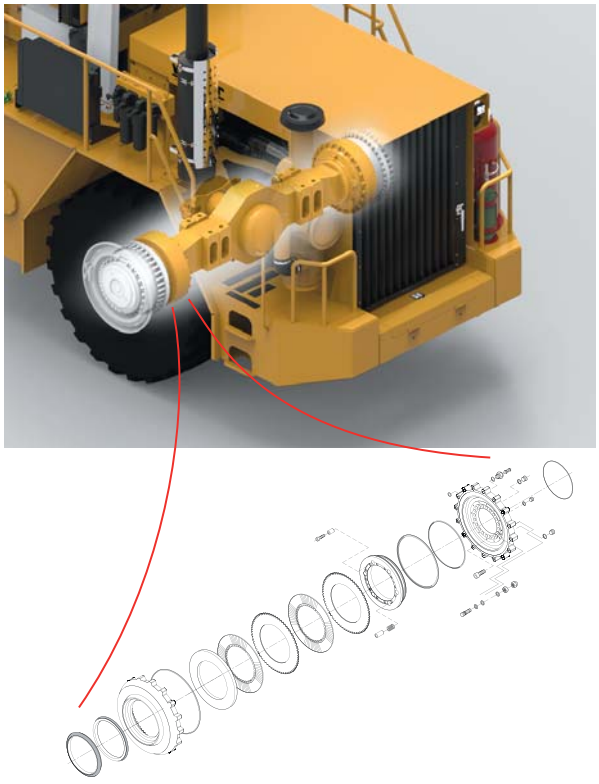

Figure 3-3-2 Wet Disc Brakes

Implements

Implements on a Wagner Carrydozer are defined as:

- Hoist - Raises and lowers bucket
- Side Tilt - Tilts bucket left/right
- Dump - Rolls the bucket in/out
- Steering - Turns the machine right/left

When an implement function is actuated by the operator, control valves allows hydraulic oil under pressure to flow to the appropriate hydraulic cylinder. Flow in one direction causes the hydraulic cylinder to extend, flow in the other direction causes the hydraulic cylinder to retract.

NOTICE

Designs vary, and your machine may not have all of the functions listed here.

Declutch

The Declutch system, when engaged, automatically shifts the transmission into neutral when the brakes are applied. This allows more power to be provided to the implements (hoist, tilt, etc). Because the power is not being unnecessarily shared, it allows the machine to be more productive. It is controlled by a pressure switch in the brake line which sends an electronic signal to the transmission. The transmission then shifts into neutral, and will return to normal operation when the brake pedal is released.

Parking Brake

The parking brake is a spring applied, and hydraulically released dry disk brake. In the event of loss of hydraulic pressure, immediate application of the parking brake occurs. Oil pressure is required to release the parking brake. It is not required to apply it.

The parking brake system begins with the hydraulic tank oil flow to a pump. The pump sends oil to a high pressure filter. After the high pressure filter, oil is sent through a charge valve to an accumulator. From there, oil is supplied to the parking brake manifold, through a solenoid valve, which opens when energized, and on to the parking brake.

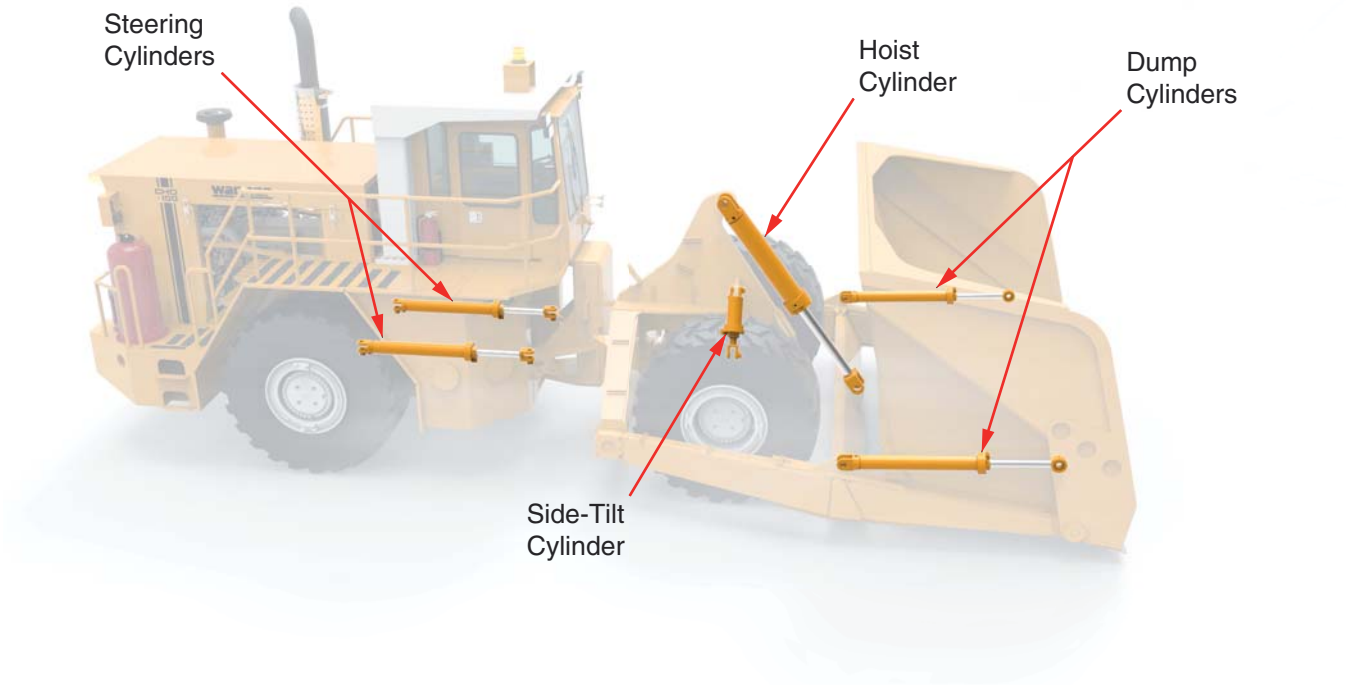

Figure 3-3-3 Implements