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.

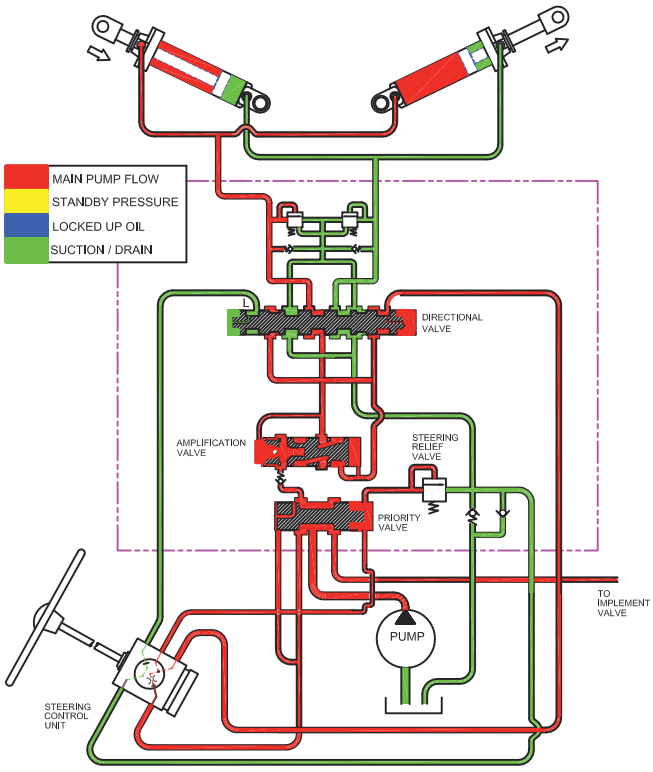


Figure 3-3-1 Steering System (Right Turn)

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.

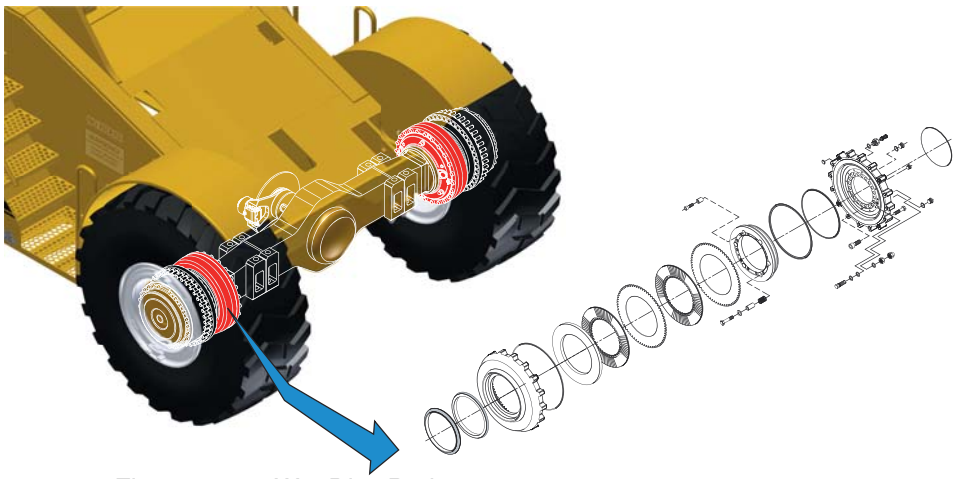


Figure 3-3-2 Wet Disc Brakes

Implements

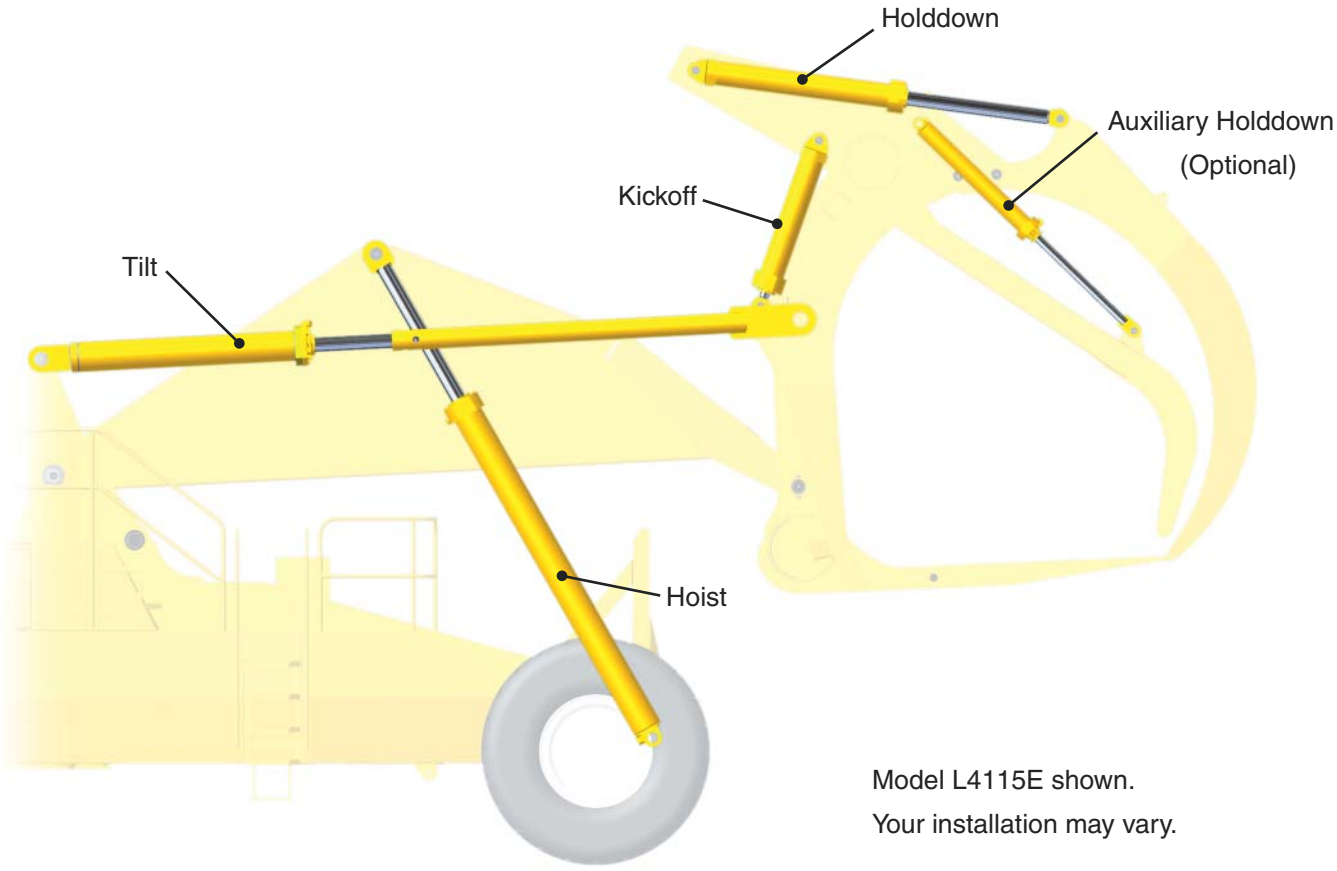
Implements on a Wagner Logstacker are defined as:

- Hoist - Raises and lowers Carriage
- Tilt - Tilts Carriage
- Holddown - Secures load
- Auxiliary Holddown (Optional) - Secures load
- Kickoff - Clears load from tines

When an implement function is actuated by the operator, one of three 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

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



Model L4115E shown.
Your installation may vary.

Figure 3-3-3 Implements

Load Dampening (Optional)

Load dampening allows the hoist cylinders to “float” a limited amount, absorbing some of the impact to the chassis from travelling over uneven or bumpy ground.

When the Load Dampening switch (located on overhead instrument panel) is turned on, the system will ‘dampen’ the effect from shock loading to the hoist cylinders when carrying loads over uneven or bumpy ground. The ride will be smoother when the operator is transferring loads from point to point. It is accomplished through the use of two accumulators, and a series of valves that are mounted forward of the transmission compartment.

Load Dampening will engage or disengage as soon as the switch in the overhead console is set.

Note: When Load Dampening is engaged, the carriage may drop up to 18”; this is normal. Conditions that increase the amount of carriage drop:

- Empty load dampening accumulators
- Accumulator nitrogen charge is set at minimum recommended pressure*
- Suspended load is close to rated load

* Accumulator charge pressure is set based on empty load and full rated load. It may be necessary to adjust this pressure higher or lower depending on your specific operating conditions and loads to improve operator comfort. Consult your service manual for accumulator charging instructions.

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.

Figure 3-3-4 Load Dampening

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