PART NO. TONSA60-EN-00

HITACHI

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Technical Manual
Operational Principle

ZW

120-6
Wheel Loader

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TONSA60-EN
Technical Manual (Troubleshooting)	: Vol. No.TTNSA60-EN
Workshop Manual	: Vol. No.WNSA60-EN
Engine Manual	: Vol. No.ETLADA0-EN

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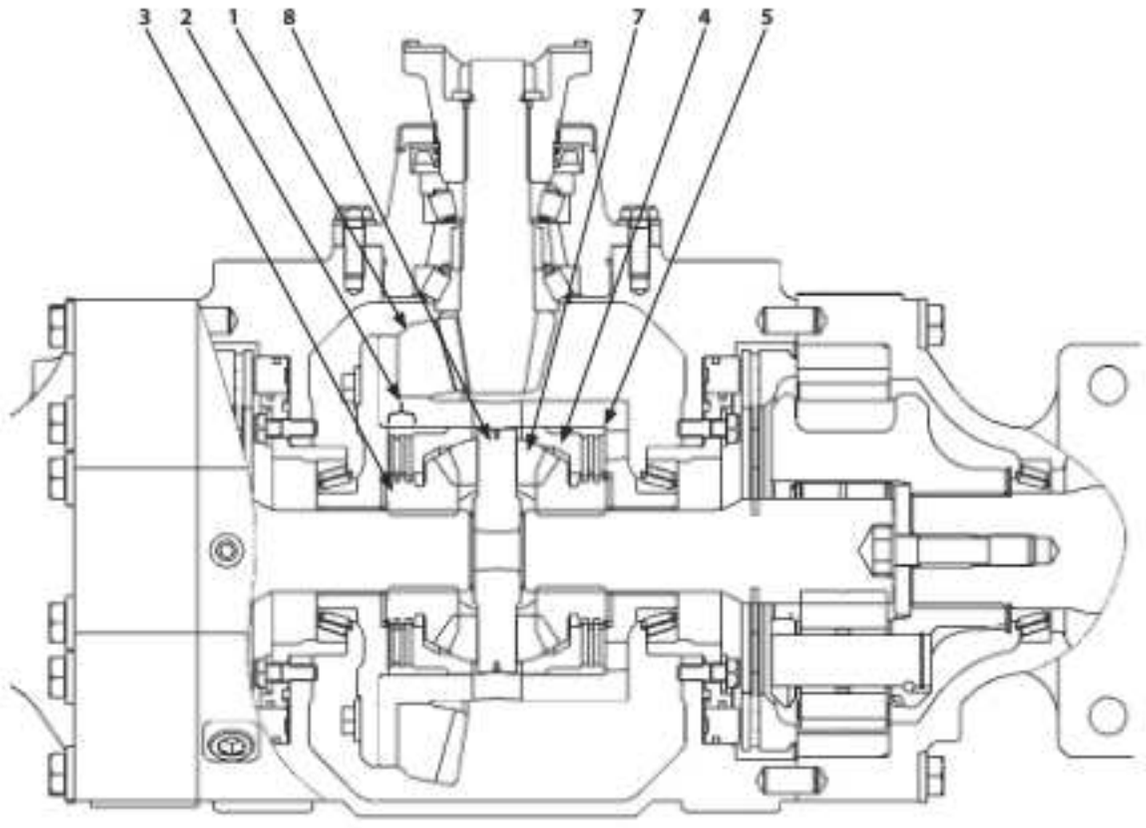
RIDE CONTROL VALVE	Type	Hydraulic Operated Type
	Overload Relief Set-Pressure	28.4 MPa (290 kgf/cm^2, 4119 psi) at 50 L/min
	Charge-Cut Valve	8.5 MPa (87 kgf/cm^2, 1233 psi)
RIDE CONTROL ACCUMULATOR (OPTIONAL)	Capacity	2.5 L (153 in^3)
	Charging Pressure	2.2 MPa (22 kgf/cm^2, 319 psi)

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LIMITED SLIP DIFFERENTIAL (LSD) (OPTIONAL)

Wheel loader, as required by the kind of work, must be operated in places where skidding takes place easily like sand and muddy soil where traction is difficult to be applied. In places like these, tires can slip even if the torque proportioning differential (TPD) is installed. Rotation is transmitted to the slipping tire, but not to the tires contacting the earth, so not only the function of the wheel loader is worsened, but the tire lives are shortened. The limited slip differential (LSD) is set as an option to reduce skidding in places where traction is more difficult to be applied than TPD.

LSD is so constructed that clutch assembly (2) is inserted between the side gear and case (5), which makes restriction of different movement by keeping the left and right tire speeds the same by the resistances of the friction surfaces.



TNSA-03-09-003

1- Link Gear
2- Clutch Assembly
3- Side Gear
4- Ring
5- Case
7- Pinion Gear
8- Spider

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Overload Relief Valve

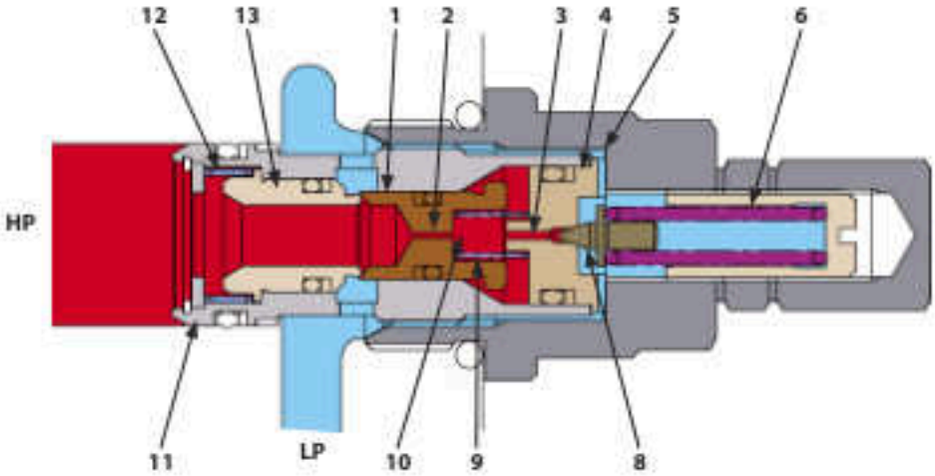
The overload relief valve prevents the hoses and the ride control accumulator from being damaged in case pressure in the bottom side circuit of the lift arm cylinder is suddenly raised by an external force or something during operation of the lift arm cylinder.

Relief Operation

1. Pressure in port HP (actuator circuit) is routed to pilot poppet (8) through orifice A (2) in main poppet (1) and orifice B (3) in seat (4).
2. When pressure in port HP reaches the set force of spring B (6), pilot poppet (8) is opened and pressure oil flows to port LP (the hydraulic oil tank) through passage A (5) and the periphery of sleeve (11).
3. At this time, a pressure difference is caused between port HP and spring chamber (10) due to orifice A (2).
4. When this pressure difference reaches the set pressure of spring A (9), main poppet (1) is opened and pressure oil from port HP flows to port LP.
5. Consequently, the actuator circuit pressure decreases.
6. When the actuator circuit pressure decreases to the specified pressure, main poppet (1) is closed by the force of spring A (9).

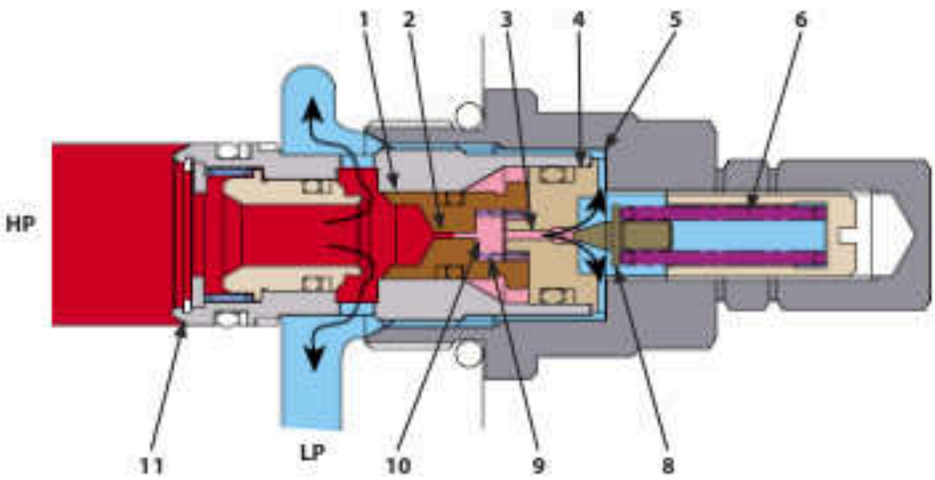
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Normal Operation:



T176-03-03-012

Relief Operation:



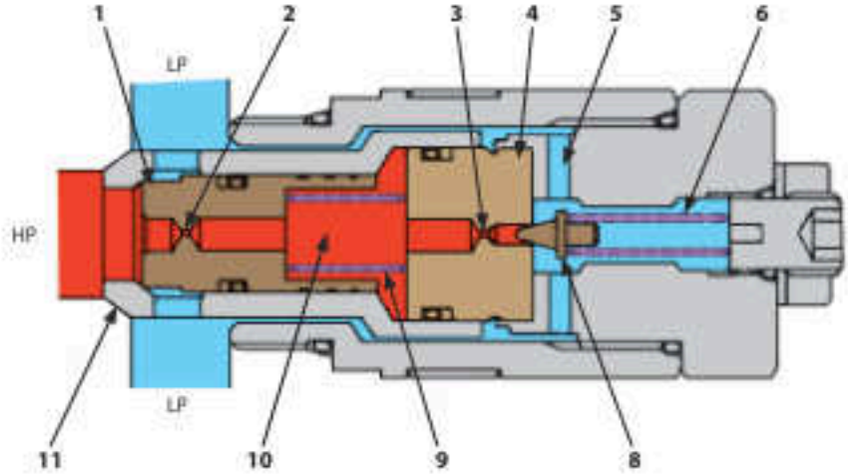
T176-03-03-013

HP- Actuator Circuit
LP- Hydraulic Oil Tank

1- Main Poppet
2- Orifice A
3- Orifice B
4- Seat
5- Passage A
6- Spring B
8- Pilot Poppet
9- Spring A
10- Spring Chamber
11- Sleeve
12- Spring C
13- Make-Up Valve

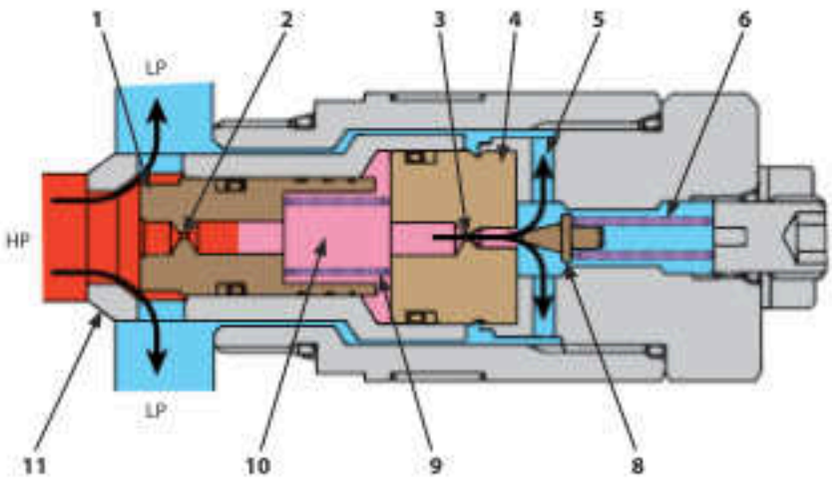
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During Normal Operation:



TNSA-03-02-013

During Relief Operation:



TNSA-03-02-014

HP- Main Circuit

LP- Hydraulic Oil Tank

1- Main Poppet
2- Orifice A
3- Orifice B
4- Seat
5- Passage A
6- Spring B
8- Pilot Poppet
9- Spring A
10- Spring Chamber
11- Sleeve

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