HITACHI

PART NO. TONFC-EN-00

Reliable solutions

Technical Manual

Operational Principle

ZW

310-5A

Wheel Loader

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SECTION 1

GENERAL

CONTENTS

Group 1 Specifications

Specifications T1-1-1
Weight of Main Components T1-1-2

Group 2 Component Layout

Main Component (Overview) T1-2-1
Main Component (Travel System) T1-2-3
Electric Component Layout (Overview) T1-2-4
Electrical System (Cab) T1-2-5
Controller and Relays T1-2-6
Right Console T1-2-7
Monitor and Switches T1-2-8
Monitor Panel T1-2-9
Electrical System (Relays) T1-2-10
Engine/Fan Pump T1-2-11
Transmission and Torque Converter Assembly T1-2-12
Hydraulic Pump Device T1-2-13
Control Valve T1-2-14
Charging Block T1-2-15
Front Axle T1-2-15
Steering Valve T1-2-16
Brake Valve T1-2-16
Fan Motor T1-2-16
Pilot Valve T1-2-16
Ride Control Group (Option) T1-2-17
Emergency Steering Group (Option) T1-2-18
Emergency Steering Pump (Option) T1-2-18

Group 3 Component Specifications

Engine T1-3-1
Engine Accessories T1-3-4
Hydraulic Component T1-3-5
Electrical Component T1-3-9

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Hydraulic Component

Hydraulic Main Pump	Type	Bent axis type variable displacement axial plunger pump
	Theoretical Displacement	340 L/min
	PTO Gear Ratio	1.0
Regulator	Type	Hydraulic pressure operated type
Priority Valve	Relief Set-Pressure	29.4 MPa (300 kgf/cm^2) at 90 L/min
Control Valve	Type	Pilot pressure operated type (2-spools)
	Main Relief Set-Pressure	29.4 MPa (300 kgf/cm^2) at 290 L/min
	Overload Relief Set-Pressure	36.8 MPa (375 kgf/cm^2) at 50 L/min (Lift arm) 32.5 MPa (330 kgf/cm^2) at 50 L/min (Bucket)

NOTE: See T1-3-2 for fan pump.

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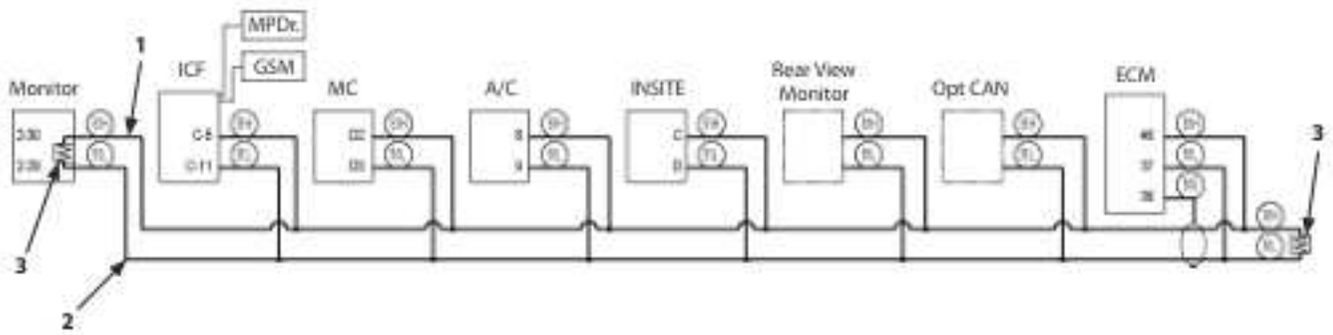
CAN Circuit

CAN (Controller Area Network) is ISO Standards of the serial communication protocol.

CAN is used for the engine control and for the accessories.

CAN consists of two harnesses, CAN-H (High) (1) and CAN-L (Low) (2).
Each controller judges the CAN level due to potential difference between CAN-H (High) (1) and CAN-L (Low) (2).
Each controller arranges the CAN level and sends the signal and data to other controllers.

In addition, termination resistors (120 Ω) (3) are installed to both ends of CAN.



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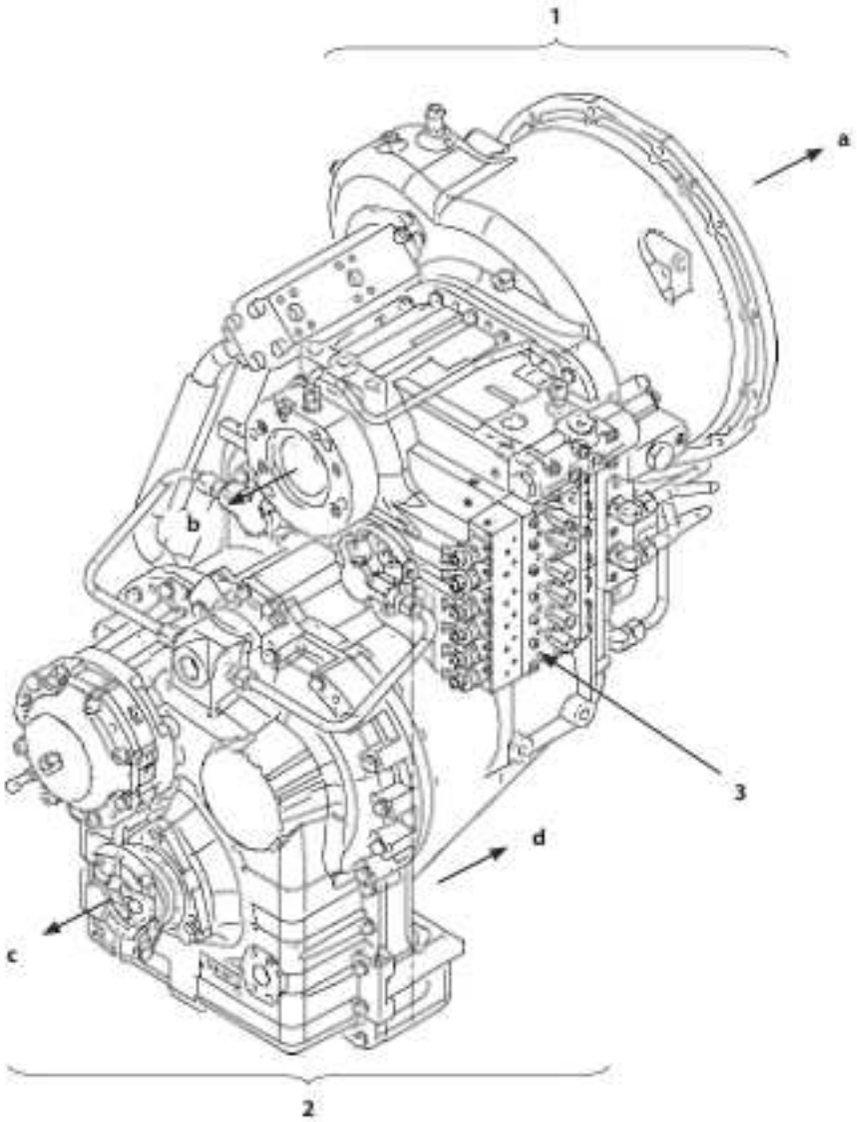
NOTE: *CAN communication is indicated by bold line.*

NOTE: *ICF: Information Controller*
MC: Main Controller
A/C: Air Conditioner Controller
INSITE: Engine Diagnostic Tool (Option)
ECM: Engine Control Module

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Drive Unit Outline

The selectable range drive unit consists of transmission (2) and torque converter (1).
The selectable range drive unit is connected with the engine. The output power from the engine is transmitted to transmission (2) through the engine flywheel and torque converter (1).



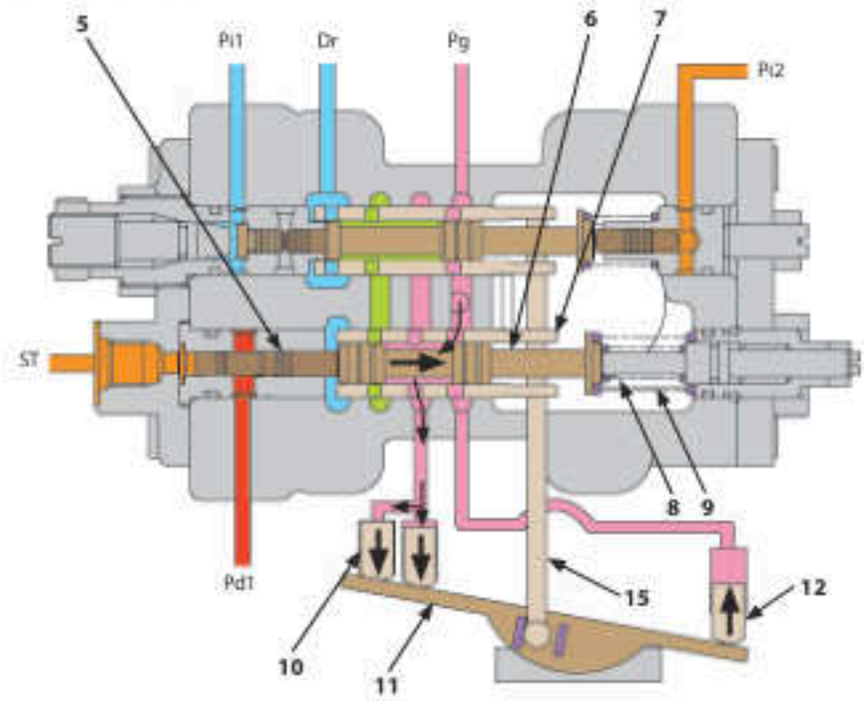
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a- To Engine
b- To Main Pump
c- To Second Propeller Shaft
d- To Third Propeller Shaft
1- Torque Converter
2- Transmission
3- Transmission Control Valve

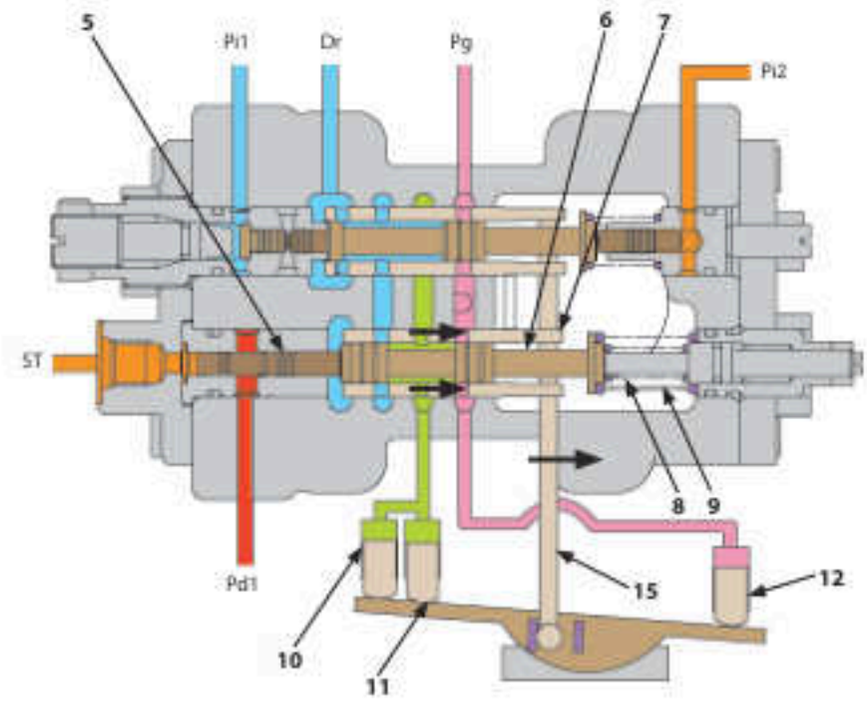
NOTE: Refer to p.T1-2-11 for the main components of the drive unit.

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Pump Regulator (Flow Rate Decrease)



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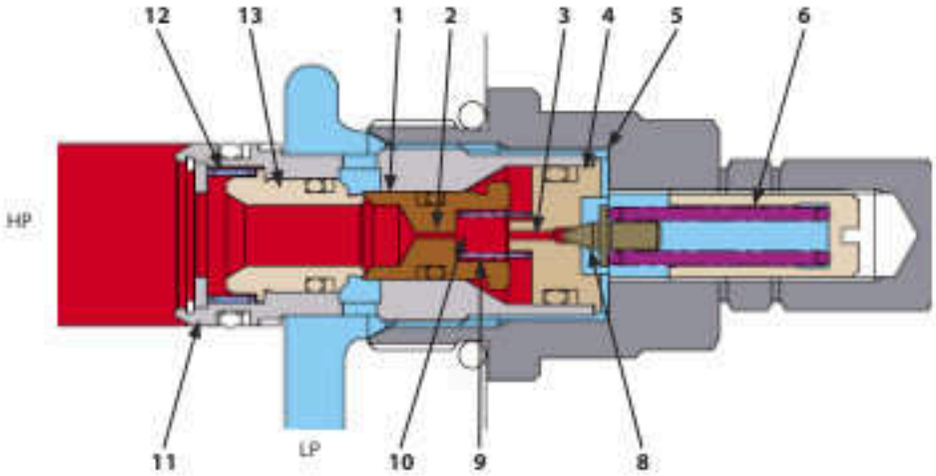
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Pd1- Own Pump Delivery Pressure
ST- Torque Control Pressure
Dr- Returning to Hydraulic Oil Tank
Pi1- Pump Control Pressure 1
Pi2- Pump Control Pressure 2
Pg- Primary Pilot Pressure (From Pilot Pump)

5- Load Piston
6- Spool 2
7- Sleeve 2
8- Inner Spring
9- Outer Spring
10- Servo Piston 1
11- Swash Plate
12- Servo Piston 2
15- Feedback Lever Link

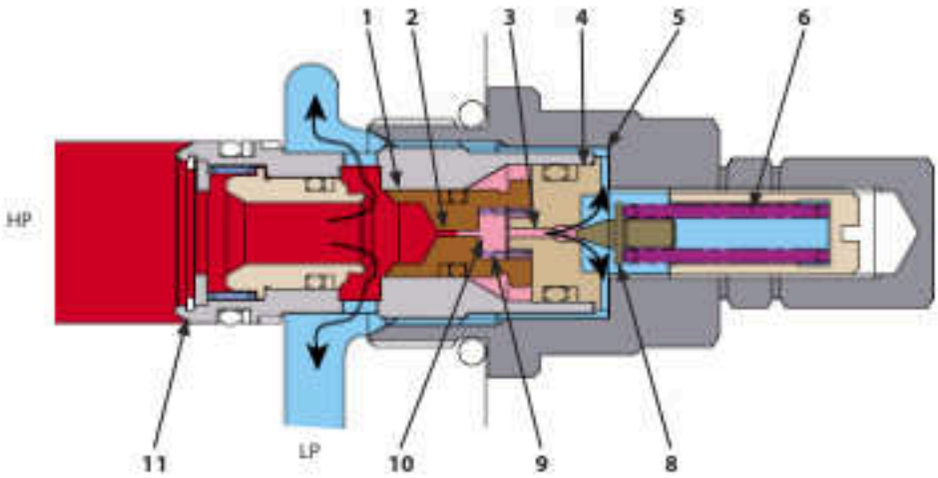
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Normal Operation:



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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