PART NO. TODAS50-EN-00

HITACHI

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Technical Manual
Operational Principle

ZX
135US-6
Hydraulic Excavator

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TODAS50-EN
Technical Manual (Troubleshooting)	: Vol. No.TTDAS50-EN
Workshop Manual	: Vol. No.WDAS50-EN
Engine Manual	: Vol. No.EDBR50-EN

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IMPORTANT: This list shows design specifications, which are not servicing standards.

Performance	without fan	with fan
Fuel Consumption Ratio	210 g/kW·h at 78.5 kW/ (at Full Load: 2000 min^{-1})	220 g/kW·h at 74.9 kW/(at Full Load: 2000 min^{-1})
	214 g/kW·h at 71.0 kW/(at Working Load: 1800 min^{-1})	-
Maximum Output Torque	375 N·m at 1800 min^{-1}	361 N·m at 1800 min^{-1}
Compression Pressure	3 MPa at 200 min^{-1}	
Valve Clearance (Intake/ Exhaust)	0.15/0.15 mm (when cold)	
No Load Speed	Slow: 1050 min^{-1}	
	Fast: 2000 min^{-1}	

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CAN Circuit

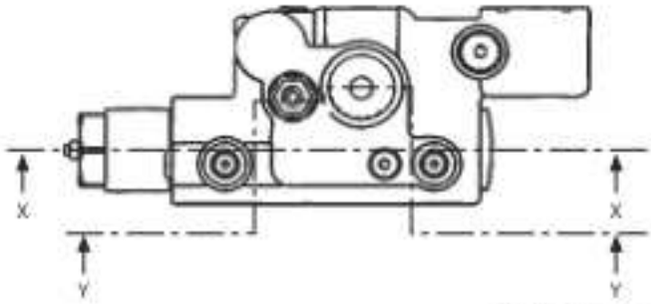
CAN (Controller Area Network) is ISO Standards of the serial communication protocol.
Four networks (CAN bus (4)), CAN 0 (1), CAN 1 (5), ISO-CAN (18), and Local-CAN (20) are equipped for this machine.
CAN 0 (1) and ISO-CAN (18) are used for the engine control. CAN 1 (5) is used for the accessories. Local-CAN (20) is used for the urea SCR system.
CAN bus (4) consists of two harnesses, CAN-H (High) (2) and CAN-L (Low) (3).
Each controller judges the CAN bus (4) level by the potential difference between CAN-H (High) (2) and CAN-L (Low) (3).
Each controller arranges the CAN bus (4) level and sends the signal and data to other controllers.
Termination resistors (120 Ω) (17) are installed to both ends of CAN bus (4).

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Hose Rupture Valve

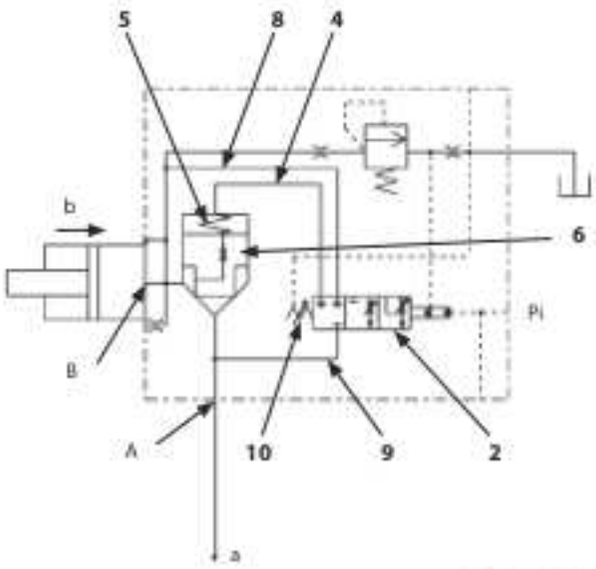
The hose rupture valve is installed to boom cylinder (bottom side circuit), arm cylinder (rod side circuit), and positioning cylinder (2-piece boom) (rod side circuit). When the hose of front attachment is damaged, the hose rupture valve blocks returning oil from each cylinder and prevents the front attachment from falling.

NOTE: The hose rupture valve in boom cylinder is explained here.



TDAA-03-07-011

- Control Lever in Neutral
  1. As pilot pressure Pi dose not act on spool(2), spool (2) is pushed to the right by the spring (10) force.
  2. One holding pressure of cylinder at port B acts on poppet (6) and the other acts on spool (2) through passage E (8).
  3. Pressure oil which flows to the spring (5) chamber through poppet (6) also acts on spool (2) through passage C (4). Pressure oil is blocked by spool (2) and does not flow to passage D (9). Holding pressure of cylinder through passage E (8) is blocked by spool (2).
  4. Poppet (6) is pushed down by the force (pressure of the spring (5) chamber + spring (5) force).
  5. Consequently, as holding pressure of cylinder at port B is blocked completely, the front attachment is prevented from falling when the hose of front attachment is damaged.

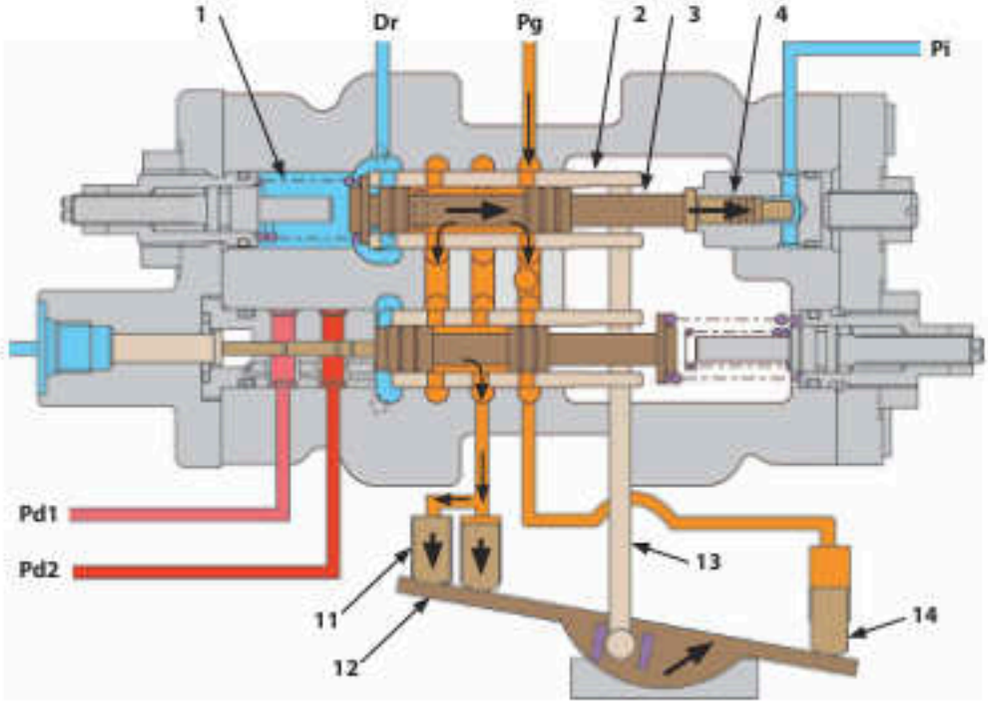


TDAA-03-07-005

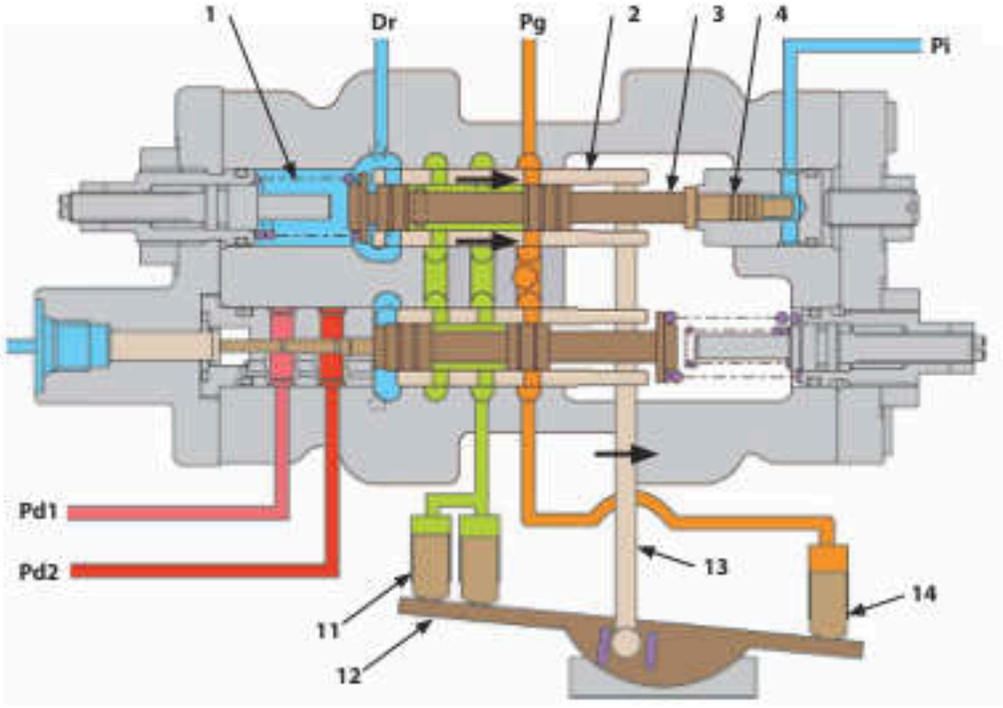
A- Port A
B- Port B
a- To Control Valve Spool (To Front Attachment Hose)
b- External Load
2- Spool
4- Passage C
5- Spring
6- Poppet
8- Passage E
9- Passage D
10- Spring

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NOTE: The illustration shows the pump1 regulator.



TDAD-03-01-029



TDAD-03-01-030

Pd1- Pump 1 Delivery Pressure
Pd2- Pump 2 Delivery Pressure

Dr- Returning to Hydraulic Oil Tank

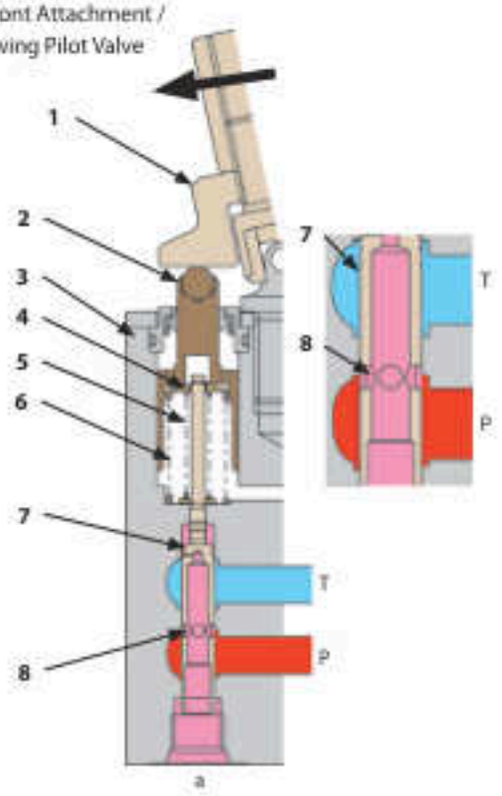
Pi- Pump Control Pressure
Pps- Torque Control Pressure

Pg- Primary Pilot Pressure (From Pilot Pump)

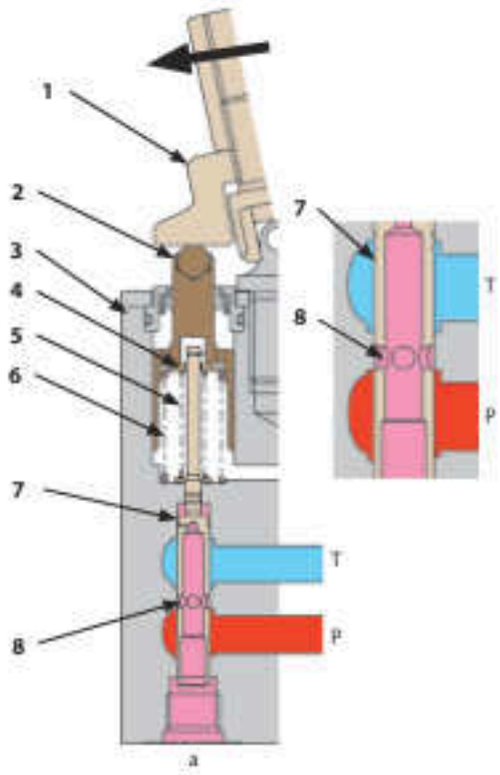
1- Spring
2- Sleeve A
3- Spool A
4- Piston
11- Servo Piston 1 (2 used)
12- Swash Plate
13- Link
14- Servo Piston 2

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Front Attachment /
Swing Pilot Valve

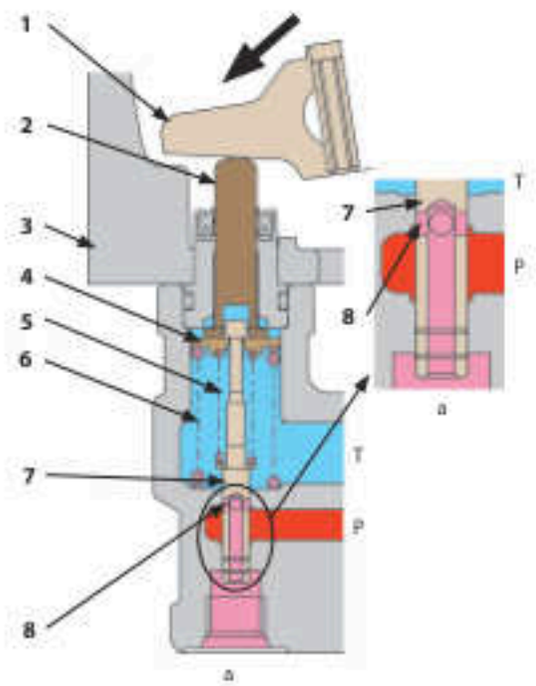


TPPP-03-04-007

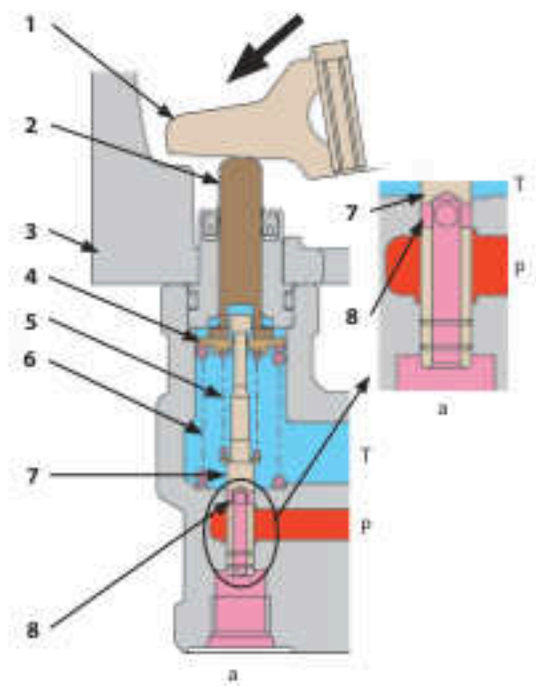


TPPP-03-04-008

Travel Pilot Valve



TPPP-03-04-012



TPPP-03-04-013

P- Port P
T- Port T
a- Output Port

1- Cam
2- Pusher
3- Casing
4- Spring Guide
5- Balance Spring
6- Return Spring
7- Spool
8- Hole

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