PART NO. TOLBA-EN-00

HITACHI

Reliable solutions

Technical Manual
Operational Principle

ZX
170W-5B
Wheeled Excavator

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TOLBA-EN
Technical Manual (Troubleshooting)	: Vol. No.TTLBA-EN
Workshop Manual	: Vol. No.WLBA-EN
Engine Manual	: Vol. No.ETDCA-EN, EWDCA-EN

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			Boom	Arm	Bucket
CYLINDER	Monoblock Boom	Rod Outer Diameter	80 mm (3.1")	90 mm (3.5")	75 mm (3.0")
		Tube Inner Diameter	110 mm (4.3")	120 mm (4.7")	105 mm (4.1")
		Stroke	1005 mm (3' 4")	1365 mm (4' 6")	935 mm (3' 1")
		Fully Retracted Length	1655 mm (5' 5")	1905 mm (6' 3")	1460 mm (4' 10")
		Plating Thickness	30 µm (1.18 µin)	30 µm (1.18 µin)	30 µm (1.18 µin)
		Weight	148 kg (327 lb)	202 kg (446 lb)	119 kg (263 lb)
	2-Piece Boom	Rod Outer Diameter	80 mm (3.1")	90 mm (3.5")	75 mm (3.0")
		Tube Inner Diameter	110 mm (4.3")	120 mm (4.7")	105 mm (4.1")
		Stroke	940 mm (3' 1")	1365 mm (4' 6")	935 mm (3' 1")
		Fully Retracted Length	1680 mm (5' 6")	1905 mm (6' 3")	1460 mm (4' 10")
		Plating Thickness	30 µm (1.18 µin)	30 µm (1.18 µin)	30 µm (1.18 µin)
		Weight	148 kg (327 lb)	210 kg (463 lb)	119 kg (263 lb)

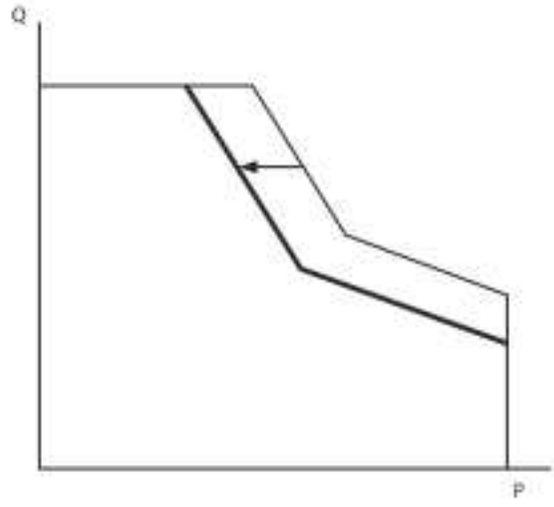
			Positioning
CYLINDER	2-Piece Boom	Rod Outer Diameter	105 mm (4.1")
		Tube Inner Diameter	170 mm (6.7")
		Stroke	703 mm (2' 4")
		Fully Retracted Length	1290 mm (4' 3")
		Plating Thickness	30 µm (1.18 µin)
		Weight	300 kg (662 lb)

			Blade	Outrigger
CYLINDER	Optional	Rod Outer Diameter	60 mm (2.4")	60 mm (2.4")
		Tube Inner Diameter	105 mm (4.1")	854 mm (2' 10")
		Plating Thickness	30 µm (1.18 µin)	30 µm (1.18 µin)
		Weight	47 kg (104 lb)	67 kg (148 lb)

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Steering Pump Torque Decrease Control

Purpose:
The steering pump torque decrease control decreases driving torque of pumps 1, 2, prevents the engine from stalling increases pump delivery pressure, and efficiently utilizes the engine output power when load to the steering pump increases.



P - Pressure Q - Flow Rate

Operation:

1. When the following conditions exist and MC 1 (12) receives the signals from the steering pump delivery pressure sensor (27), MC 1 (12) activates torque control solenoid valve (28) so that the pumps 1 and 2 delivery flow rate are reduced.
2. Therefore, the total driving torque of pumps 1, 2 and the steering pump is controlled in order not to exceed the engine output power. Then, the engine output power can be used efficiently.

Condition:

- Brake Switch (34): Axle lock (36) or OFF position (35)
- Auto Axle Lock switch (33):OFF
- Work Brake Release Switch (15): Ineffective
- FNR Switch (39): Forward position (42) or Reverse position (40)
- Travel Forward or Reverse: Operation

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Overload Relief Valve

Overload relief valves (3) are located in steering valve (1) and prevent the circuit pressure between steering cylinder (11) and steering valve (1) from increasing more than the set pressure.

Operation

1. When an external force is applied to the steering (left) direction, surge pressure is developed in the circuit.
2. When the circuit pressure increases more than the spring (4) force of in the overload relief valve (3), ball (6) and holder (5) in overload relief valve (3) are moved up so that pressure oil flows to hydraulic oil tank (8) via the oil passage around holder (5).
3. When the circuit pressure decreases, ball (6) and holder (5) are moved down by the spring (4) force and overload relief valve (3) is closed again.

Make-Up Valve

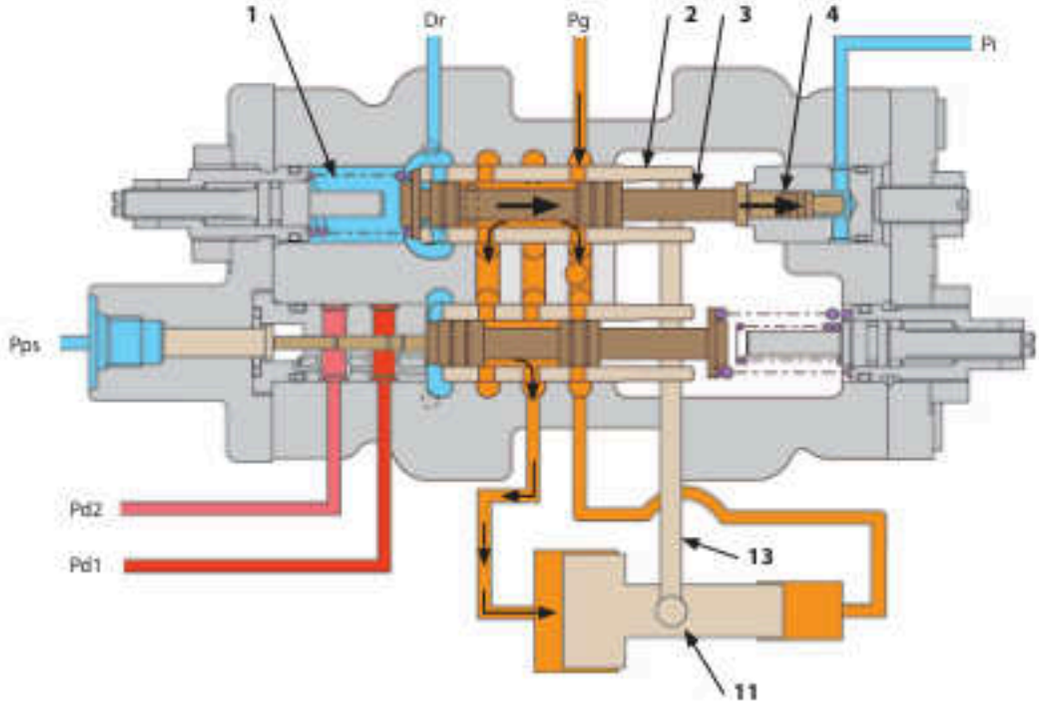
Make-up valves (10) are located in steering valve (1). If the circuit pressure between steering cylinder (11) and steering valve (1) decreases below pressure in hydraulic oil tank (8), make-up valves (10) draw hydraulic oil through port T in order to prevent cavitation.

Operation

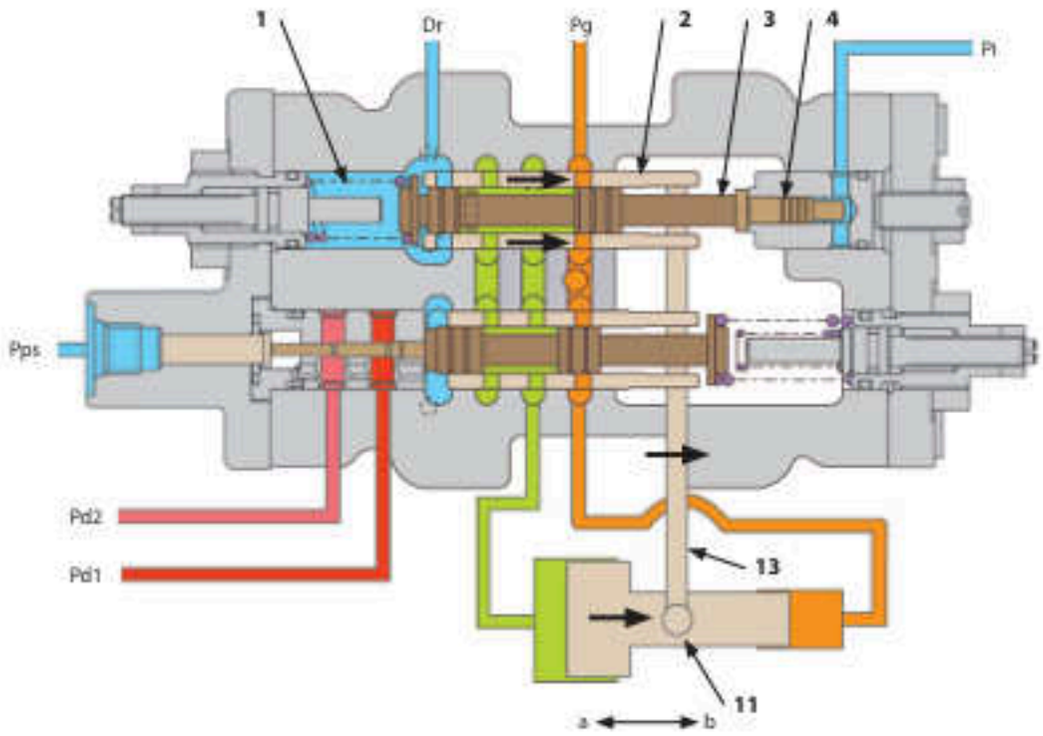
1. When the circuit pressure between steering cylinder (11) and steering valve (1) decreases below pressure in hydraulic oil tank (8), pressure oil from port T moves ball (9) in make-up valve (10) up and flows to the circuit between steering cylinder (11) and steering valve (1).
2. When the circuit pressure between steering cylinder (11) and steering valve (1) increases, ball (9) is moved down by pressure oil and make-up valve (10) is closed again.

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NOTE: The illustration shows the pump1 regulator.



TPPP-03-01-018



TPPP-03-01-019

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

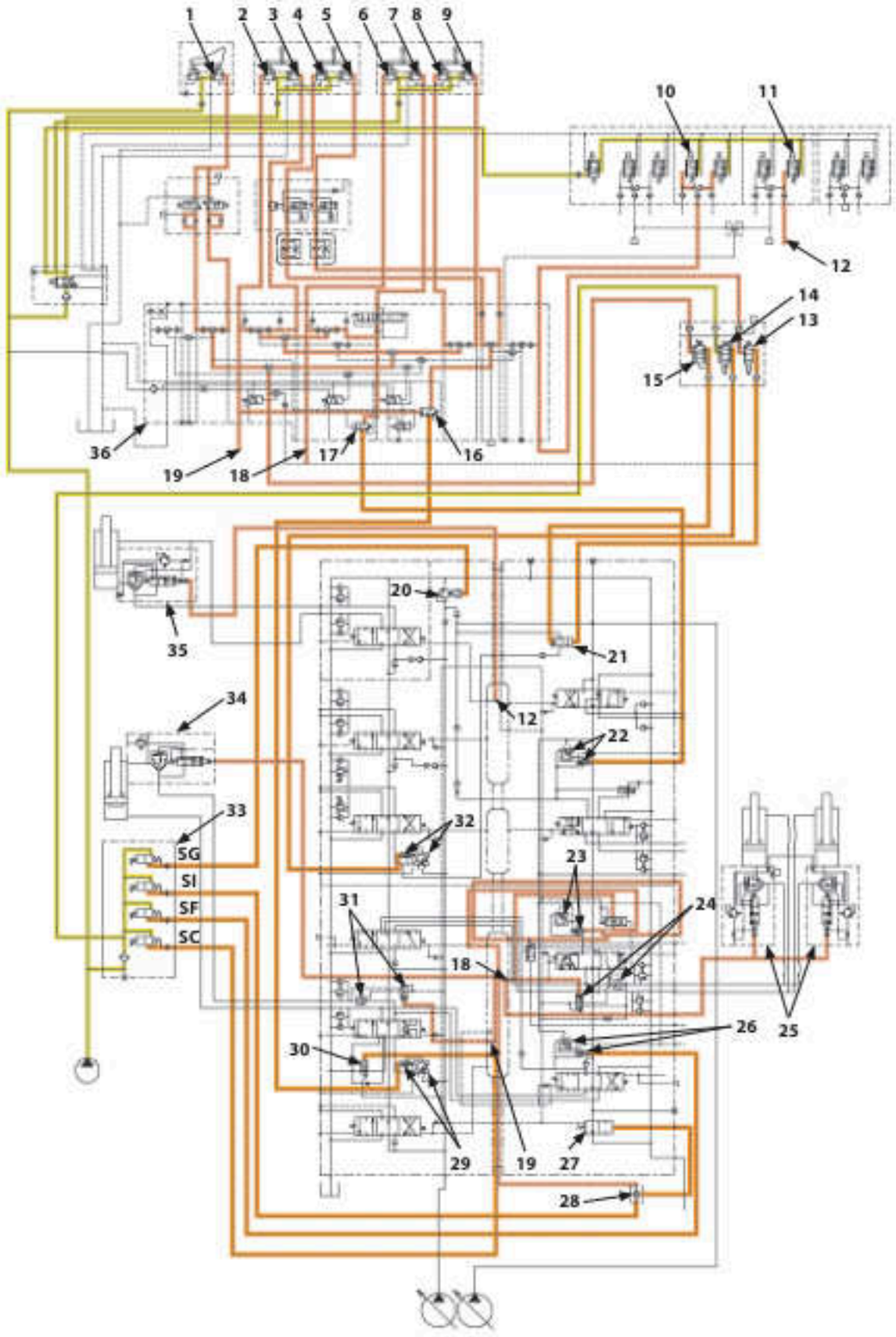
Dr- Returning to Hydraulic Oil Tank

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
13- Link

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