PART NO. TOJAC-EN-00

HITACHI

Reliable solutions

Technical Manual
Operational Principle

ZX
470-5G
470LC-5G
470H-5G
470LCH-5G
470R-5G
470LCR-5G
Hydraulic Excavator

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TOJAC-EN
Technical Manual (Troubleshooting)	: Vol. No.TTJAC-EN
Workshop Manual	: Vol. No.WJAC-EN

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GENERAL

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Engine Accessories

RADIATOR ASSEMBLY	Type	Radiator/Oil Cooler Tandem Type Assembly
	Weight	260 kg (573 lb)

	Radiator	Oil Cooler
Capacity	21 L (5.5 US gal)	16 L (4.2 US gal)
Air-Tight Test Pressure	100 kPa (1.0 kgf/cm^2, 15 psi)	1500 kPa (15 kgf/cm^2, 218 psi)
Cap Opening Pressure	50 kPa (0.5 kgf/cm^2, 7 psi)	–

BATTERY	Type	195G51-MF
	Capacity	170 Ah (20-Hour Rate)
	Voltage	12 V
	Weight	41 kg (90 lb)×2

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Outline

The electrical circuit is broadly divided into the main circuit, monitor circuit, accessory circuit, and control circuit.

- Main Circuit:
  Operates the engine and the accessory related circuits.
- Monitor Circuit:
  Displays the machine operating conditions. Consists of monitor controller, monitor, relays, and switches.
- Accessory Circuit:
  Operates the accessory circuit. Consists of wiper/light controller, relays, and switches.
- Control Circuit:
  Controls the engine, pump, and valve. Consists of the actuators such as solenoid valves, MC, ECF, sensors, and switches.
  (Refer to SYSTEM / Control System.)

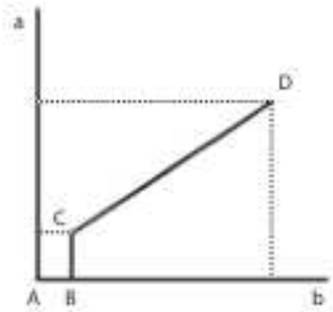
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- Auxiliary / Counterweight Removal and Installation Pilot Valve

Neutral (Output Curve: A to B):

1. When the control lever is in neutral, spool (7) completely blocks pressure oil from port P. In addition, the output port is opened to port T (hydraulic oil tank) through the inner passage in spool (7).
2. Therefore, pressure in the output port is equal to that in port T.
3. When the control lever is slightly tilted, cam (1) is moved and pusher (2) is pushed downward. Pusher (2) compress return spring (6) along with spring guide (4) together.
4. At this time, as pressure in the output port is equal to that in port T, spool (7) moves downward due to the balance spring (5) force while keeping the lower surface of the spool (7) head in contact with spring guide (4).
5. This status continues until hole (8) on spool (7) is connected to port P.

NOTE: The lever stroke while hole (8) on spool (7) is connected to port P is play.

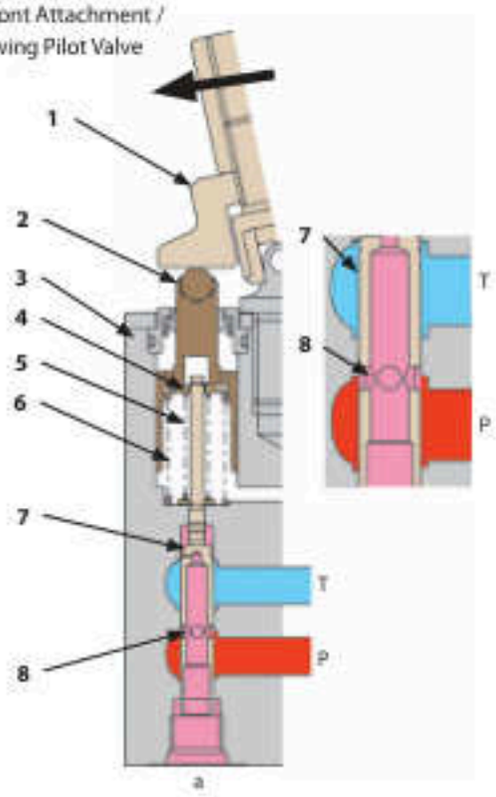


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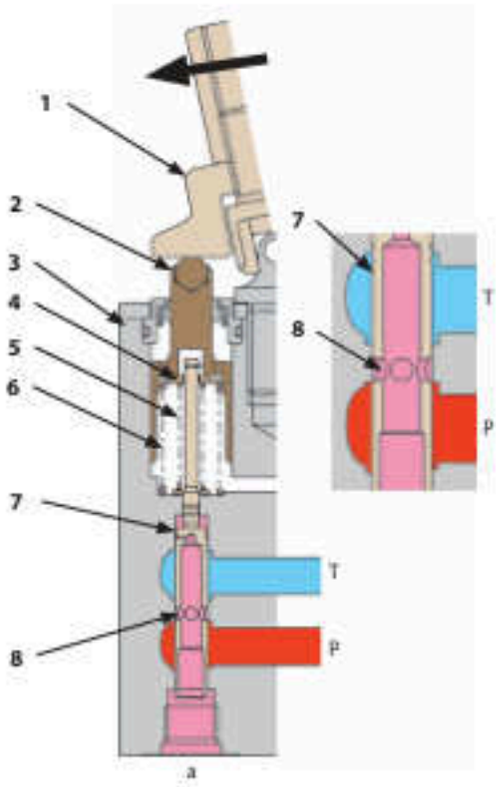
a- Pilot Pressure b- Pusher Stroke

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Front Attachment / Swing Pilot Valve

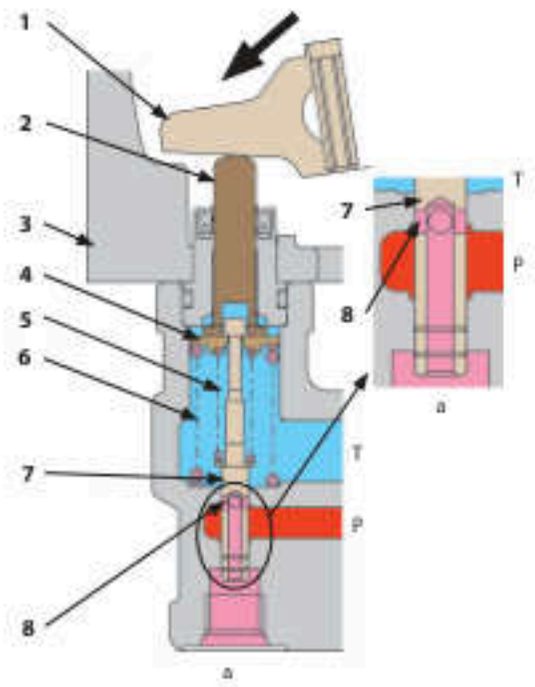


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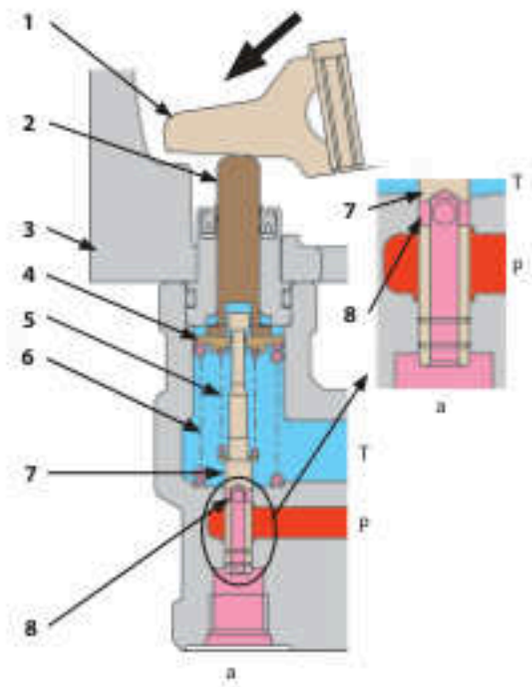


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Travel Pilot Valve



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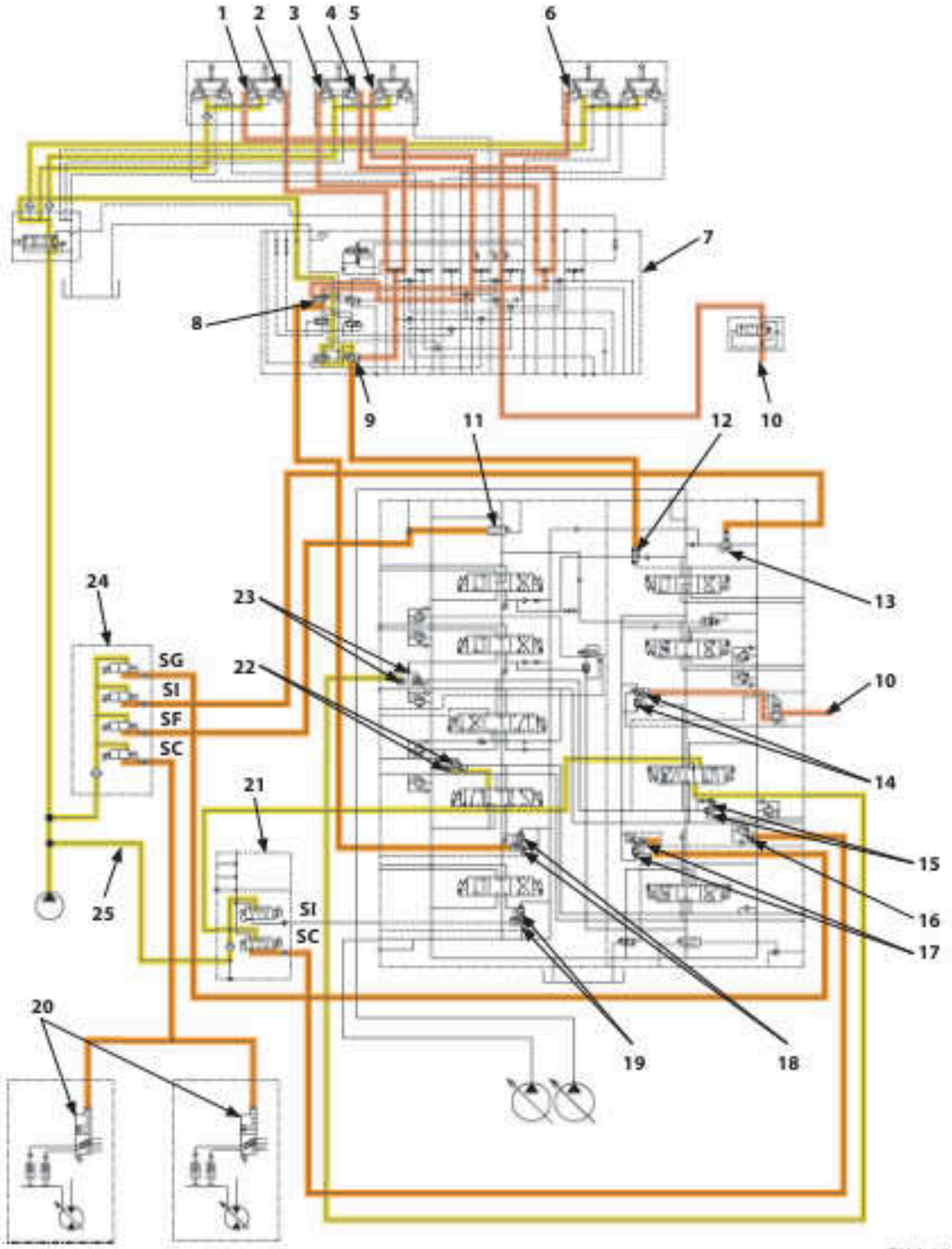


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P- Port P
T- Port T
a- Output Port

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

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1- Travel (Right Reverse)
2- Travel (Right Forward)
3- Swing (Right)
4- Swing (Left)
5- Arm Roll-In
6- Boom Lower
7- Signal Control Valve
8- Arm Flow Rate Control Valve Control Spool
9- Flow Combiner Valve Control Spool
10- Boom Lower Pilot Pressure
11- Bypass Shut-Out Valve
12- Flow Combiner Valve
13- Main Relief Valve
14- Boom Flow Rate Control Valve
15- Boom 1 Anti-Drift Valve
16- Boom Overload Relief Control Valve
17- Arm 2 Flow Rate Control Valve
18- Arm 1 Flow Rate Control Valve
19- Swing Flow Rate Control Valve
20- Travel Motor Displacement Angle Control Valve
21- 2-Spool Solenoid Valve Unit
22- Arm 1 Anti-Drift Valve
23- Boom 2 Anti-Drift Valve
24- 4-Spool Solenoid Valve Unit
25- Pilot Pressure from Pilot Pump

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