PART NO. TOCJB-E-00

HITACHI

Technical Manual

Operational Principle

ZAXIS

210W-3
220W-3

Wheeled Excavator

Service Manual consists of the following separate Part No;

Technical Manual (Operational Principle)	: Vol. No.TOCJB-E
Technical Manual (Troubleshooting)	: Vol. No.TTCJB-E
Workshop Manual	: Vol. No.WCJB-E

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Accumulator Charging Valve

Accumulator Stating Pressure (Cut-In) ..... 14.5 MPa (148 kgf/cm^2, 2108 psi)

Accumulator Stating Pressure (Cut-Out) .. 17.7 MPa (180 kgf/cm^2, 2573 psi)

Travel Shockless Valve

Type ..... Flow regulator type (with 2-Spool Solenoid Valve)

Transmission Changeover Solenoid Valve

Pressure Reducing Valve Set Pressure.... 3.7 MPa (37.7 kgf/cm^2, 538 psi)

Oil Cooler Bypass Check Valve

Cracking Pressure ..... 250±15 kPa (2.55±0.153 kgf/cm^2, 36±2 psi) @ 5 L/min

Bypass Check Valve

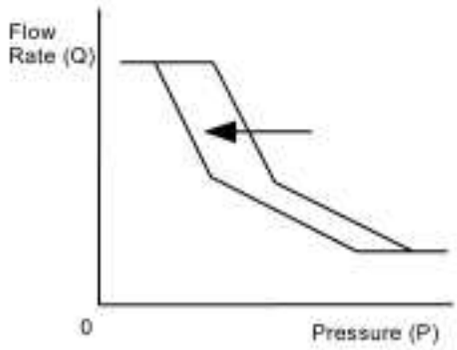
Cracking Pressure ..... 600 kPa (6.1 kgf/cm^2, 87 psi)

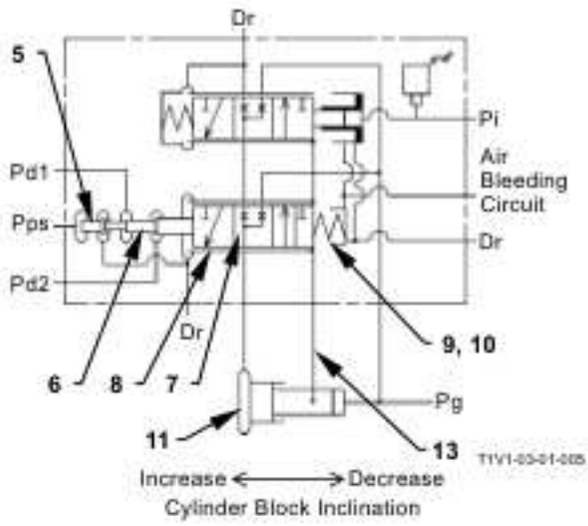
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Control by Pilot Pressure from Torque Control Solenoid Valve

- Decreasing Flow Rate

1. When the torque control solenoid valve is activated by the signals from the main controller (MC), torque control pressure Pps increases.
2. Torque control pressure Pps and either pump 1 delivery pressure Pd1 or pump 2 delivery pressure Pd2 are combined and applied to load piston 1 (5).
3. Load piston 1 (5) pushes load piston 2 (6), spool B (7) and inner spring (9) and outer spring (10). Spool B (7) moves toward direction of the arrow.
4. Due to the movement of spool B (7), pilot pressure is routed into the large chamber of servo piston (11).
5. Due to the difference in diameter between the large and small chambers, servo piston (11) is moved toward direction of the arrow. Therefore, the cylinder block is rotated in the minimum inclination direction and the pump delivery flow rate decreases.
6. The movement of cylinder block is transmitted to sleeve B (8) via link (13). Sleeve B (8) is moved in the same direction as spool B (7).
7. When sleeve B (8) is moved by the same stroke as spool B (7), the open part between sleeve B (8) and spool B (7) is closed and pilot pressure to the large chamber of servo piston (11) is blocked. Therefore, servo piston (11) is stopped and the flow rate decreasing operation is completed.





5 - Load Piston 1
6 - Load Piston 2
7 - Spool B
8 - Sleeve B
9 - Inner Spring
10 - Outer Spring
11 - Servo Piston
13 - Link

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)

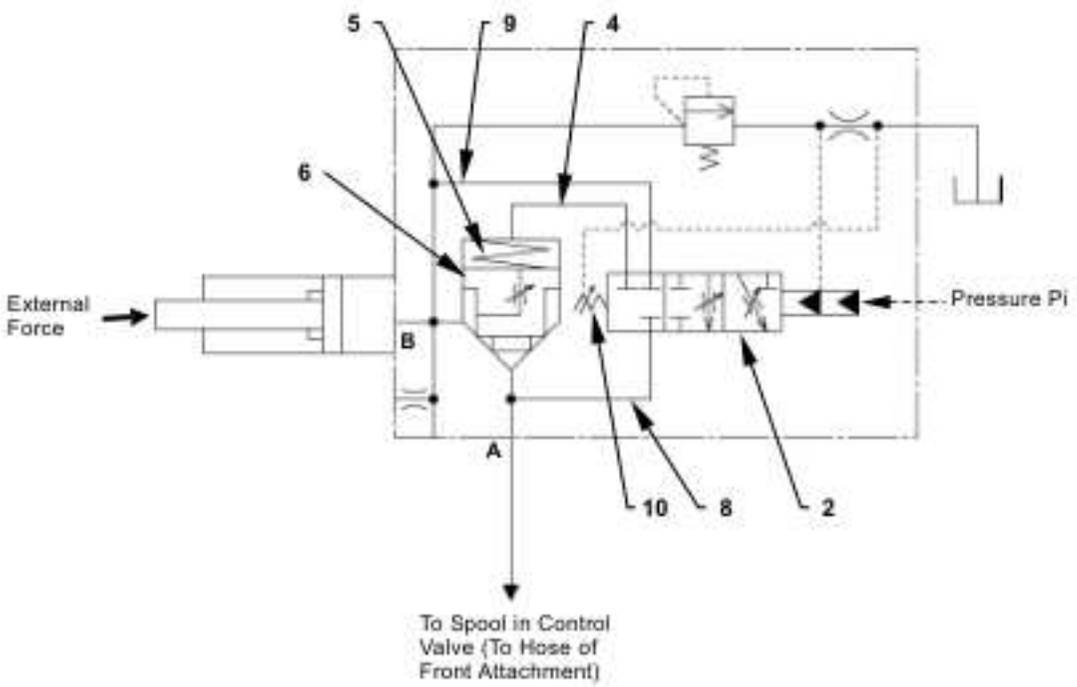
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HOSE RUPTURE VALVE

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

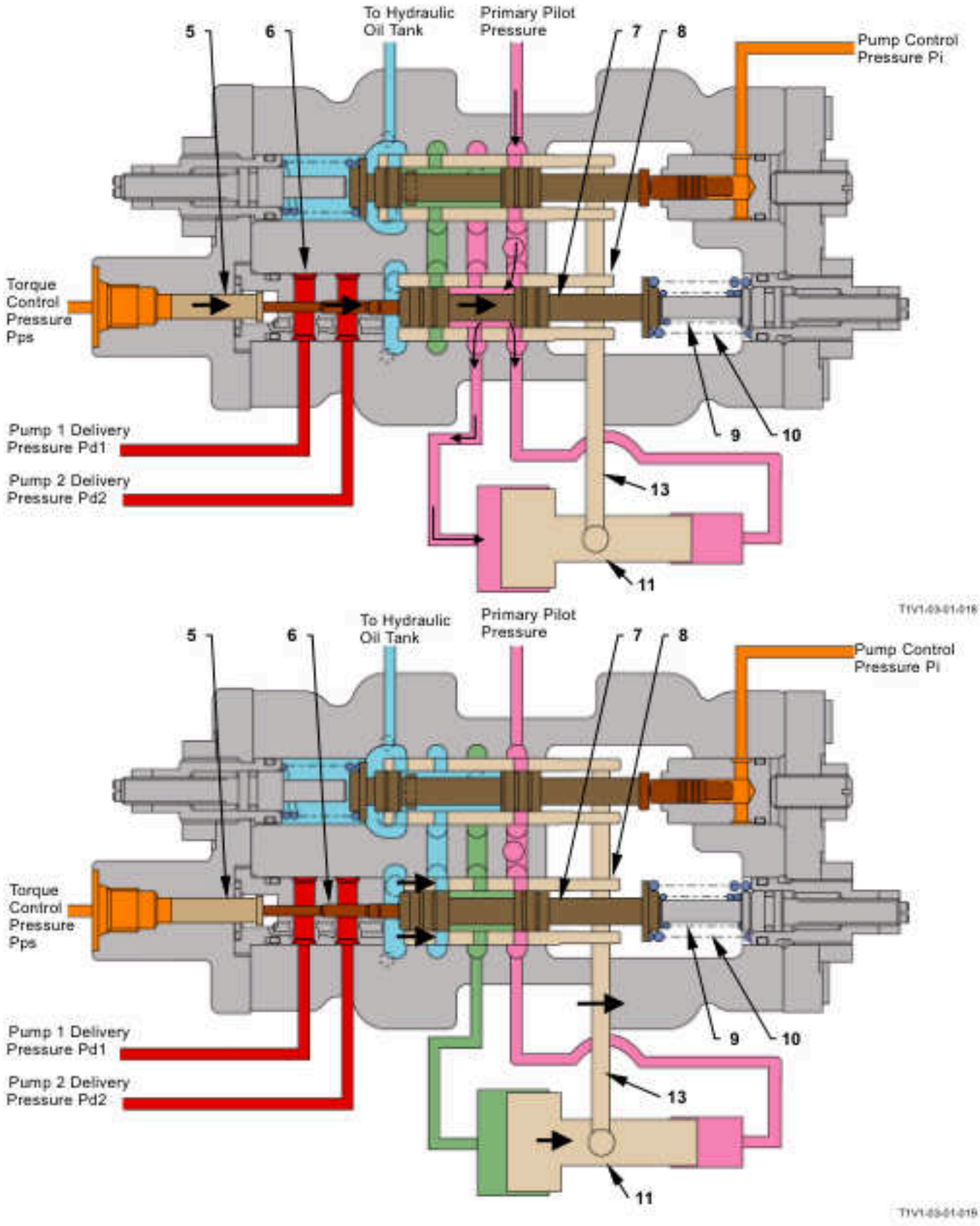
NOTE: The hose rupture valve in boom cylinder is explained here.

- Control Lever: In Neutral
  1. As pilot pressure Pi does 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 C (9).
  3. Holding pressure through passage C (9) is blocked by spool (2).
     Although pressure oil in the spring (5) chamber also acts on spool (2) through passage A (4), pressure oil is blocked by spool (2) and does not flow to passage B (8).
  4. Therefore, poppet (6) is pushed downward by force (pressure of the spring (5) chamber + spring (5) force).
  5. Consequently, as holding pressure at port B is blocked completely, the front attachment is held and prevented from falling when the hose of front attachment is damaged.



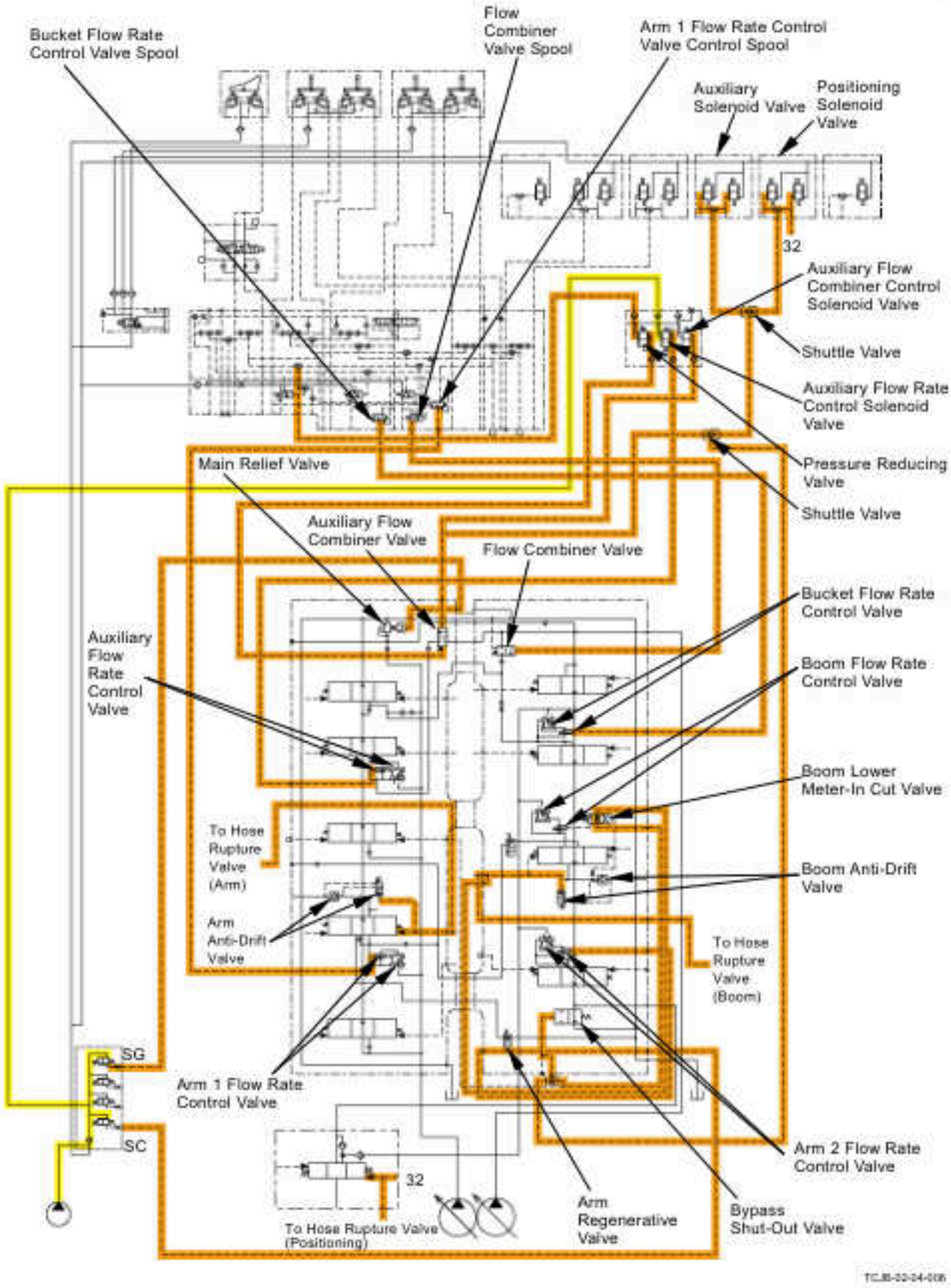
2 - Spool
4 - Passage A
5 - Spring
6 - Poppet
8 - Passage B
9 - Passage C
10 - Spring

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5 - Load Piston 1
6 - Load Piston 2
7 - Spool B
8 - Sleeve B
9 - Inner Spring
10 - Outer Spring
11 - Servo Piston
13 - Link

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