PART NO. TOJBA-EN-00

HITACHI

Reliable solutions

# Technical Manual
## Operational Principle

# ZX
# 670LC-5B
# 670LCH-5B
# 670LCR-5B
## Hydraulic Excavator

Service Manual consists of the following separate Part No.

| | |
|---|---|
| Technical Manual (Operational Principle) | : Vol. No.TOJBA-EN |
| Technical Manual (Troubleshooting) | : Vol. No.TTJBA-EN |
| Workshop Manual | : Vol. No.WJBA-EN |
| Engine Manual | : Vol. No.ETJBA-EN, EWJBA-EN |

MidWestTech | Hitachi ZX670LC-5B, ZX670LCH-5B, ZX670LCR-5B Excavator Operational Principle Technical Service Manual | Publication TOJBA-EN-00

Order the manual at mid-west-tech.com >

# SECTION 1

# GENERAL

## CONTENTS


### Group 1 Specifications

Specifications ..... T1-1-1
Working Ranges ..... T1-1-4

### Group 2 Component Layout

Main Component ..... T1-2-1
View A ..... T1-2-2
Electrical System (Overview) ..... T1-2-3
Fuel Pump ..... T1-2-4
Electrical System (Rear Tray) ..... T1-2-5
Electrical System (Switch Panel) ..... T1-2-6
Electrical System (Cab Behind Side) ..... T1-2-7
Around Horn ..... T1-2-8
Boom Upper Side ..... T1-2-8
Around Oil Cooler ..... T1-2-8
Auto Lubricating System ..... T1-2-8
Engine ..... T1-2-9
Muffler Filter ..... T1-2-10
Pump Device ..... T1-2-11
Control Valve ..... T1-2-12
Check Valve ..... T1-2-14
Signal Control Valve ..... T1-2-14
4-Spool Solenoid Valve Unit ..... T1-2-17
Oil Cooler Fan Valve ..... T1-2-17
2-Spool Solenoid Valve Unit ..... T1-2-17

### Group 3 Component Specifications

Engine ..... T1-3-1
Engine Accessories ..... T1-3-5
Hydraulic Component ..... T1-3-7
Electrical Component ..... T1-3-11





MidWestTech | Hitachi ZX670LC-5B, ZX670LCH-5B, ZX670LCR-5B Excavator Operati... Order the manual at mid-west-tech.com >

| | | |
|---|---|---|
| FRONT ATTACHMENT PILOT VALVE | Model | HVP07C-040-101 |
| | Plunger Stroke | Ports 1, 3: 6.5 mm (0.26 in), Ports 2, 4: 8.0 mm (0.32 in) |
| TRAVEL PILOT VALVE | Model | HVP08A-040-101 |
| | Plunger Stroke | Ports 1, 2, 3, 4: 4.6 mm (0.18 in) |
| AUXILIARY / COUNTERWEIGHT PILOT VALVE | Model | HVP09A-040-101 |
| | Plunger Stroke | Ports 1, 2: 3.7 mm (0.15 in) |
| 4-SPOOL SOLENOID VALVE UNIT | Type | 4-Spool Proportional Solenoid valve |
| | Rated Voltage | DC 24 V |
| | Coil Resistance | 22 Ω |
| 2-SPOOL SOLENOID VALVE UNIT | Type | 2-Spool Proportional Solenoid Valve |
| | Rated Voltage | DC 24 V |
| | Coil Resistance | 22 Ω |
| SIGNAL CONTROL VALVE | Model | KVSS-10-H |
| | Rated Pressure | 3.72 MPa (38 kgf/cm$^2$, 540 psi) |
| PILOT SHUT-OFF SOLENOID VALVE | Type | ON/OFF Solenoid Valve |
| | Rated Voltage | DC 24V |
| | Coil Resistance | 49 Ω |
| LOW-PRESSURE RELIEF VALVE | Relief Set Pressure | 100±50 kPa (1.0±0.5 kgf/cm$^2$, 15±7 psi) at 40 L/min (11 US gpm) |
| BYPASS CHECK VALVE | Relief Set Pressure | 350±70 kPa (3.6±0.7 kgf/cm$^2$, 51±10 psi) at 40 L/min (11 US gpm) |
| FILTER | Air Cleaner (Filtration) | - |
| | Full-Flow Filter (Filtration) | β10≥2.0 |
| | Suction Filter (Filtration) | 177 µm (80 mesh) |
| | Drain Filter (Filtration) | 10 µm |
| | Pilot Filter (Filtration) | 10≥1.4 |



MidWestTech | Hitachi ZX670LC-5B, ZX670LCH-5B, ZX670LCR-5B Excavator Operati... Order the manual at mid-west-tech.com >

### Counterweight Removal/Installation Pump Control (Only Machine with Optional Parts Equipped)

Purpose:
The pump flow rate is limited to easily perform the inching operation.
(Refer to SYSTEM/Hydraulic System Counterweight Removal/Installation Circuit)

Operation:

1. When operating the counterweight pilot valve (optional), pressure sensor (counterweight) (13) detects pilot pressure and sends the signal to MC (14).
2. MC (14) drives pump 1 control solenoid valve (30) and pump 2 control solenoid valve (28) in order to minimize the delivery flow rate of pump 1 and pump 2.
3. Each delivery flow rate of pump 1 and pump 2 is reduced to the minimum flow rate.



MidWestTech | Hitachi ZX670LC-5B, ZX670LCH-5B, ZX670LCR-5B Excavator Operati... Order the manual at mid-west-tech.com >

## Flow Rate Control Valve

The flow rate control valve is provided in the arm 1, arm 2, boom 1, and swing circuits, restricts oil flow rate in the circuit during combined operation, and gives priority to other actuators.

Each flow rate control valve is operated during combined operation as shown below.

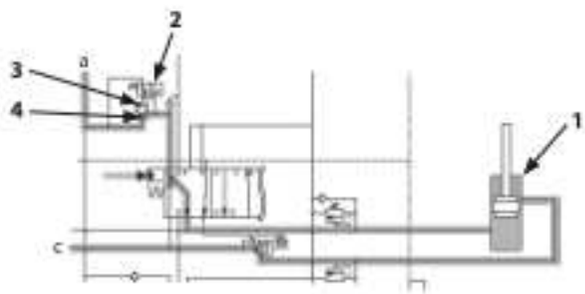
| Flow Rate Control Valve | Combined Operation |
|---|---|
| Arm 1 | Swing, Arm Roll-In |
| Arm 2 | Boom Raise, Arm Roll-In |
| | Boom Raise, Arm Roll-Out |
| Boom 1 | Boom Lower with Front Attachment above Ground (High Pressure at Bottom Side) |
| Swing | Swing, Boom Raise |
| | Swing, Arm Roll-Out |

### Arm 1, Boom 1, Swing

*NOTE: The arm 1 flow rate control valve is explained here.*

### Flow Rate Control OFF

1. Pressure oil from pump 2 is routed to check valve (4) of poppet valve (3).
2. Normally, selector valve (2) is kept open so that pressure oil from pump 2 opens check valve (4) and flows to the arm 1 spool through selector valve (2).
3. When load in the actuator side is high, poppet valve (3) is opened and pressure oil from pump 2 flows to the arm 1 spool.
4. Therefore, pressure oil flow rate flowing to the arm 1 spool increases and arm operating speed becomes fast.



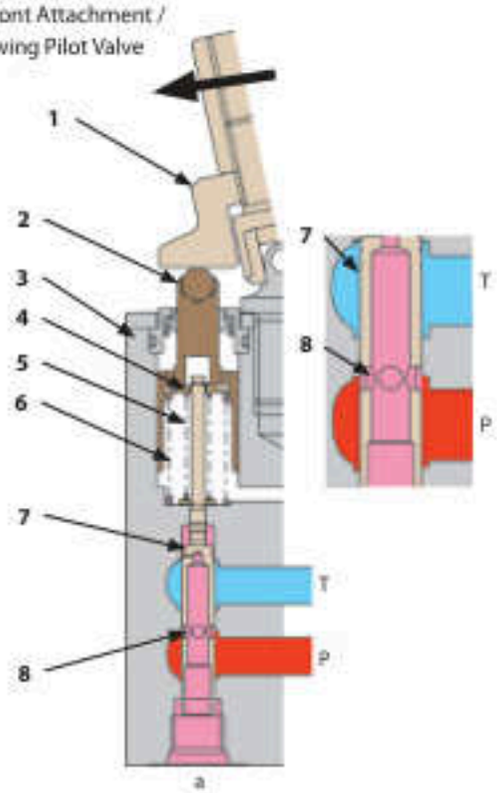

TJAA-03-03-030

a - Pressure Oil from Pump 2
c - To Hydraulic Oil Tank
1- Arm Cylinder
2- Selector Valve
3- Poppet Valve
4- Check Valve

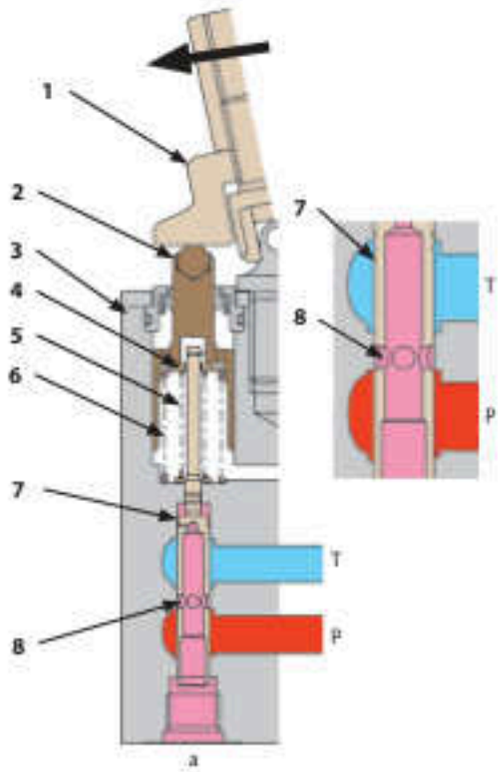


MidWestTech | Hitachi ZX670LC-5B, ZX670LCH-5B, ZX670LCR-5B Excavator Operati... Order the manual at mid-west-tech.com >

Front Attachment / Swing Pilot Valve

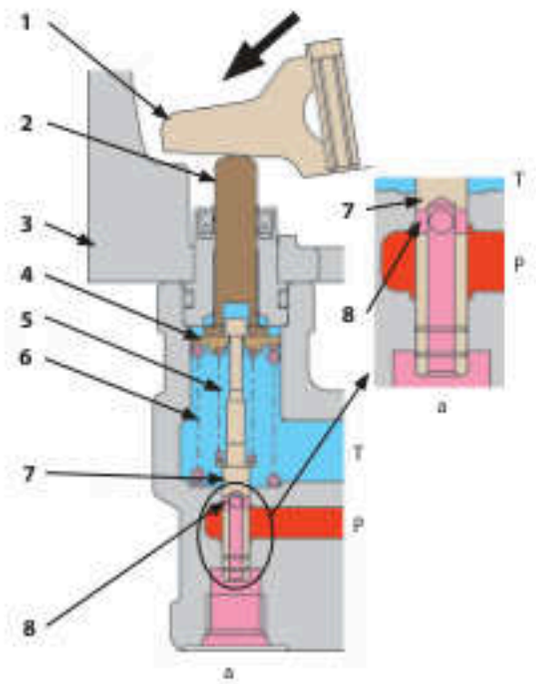



TPPP-03-04-007

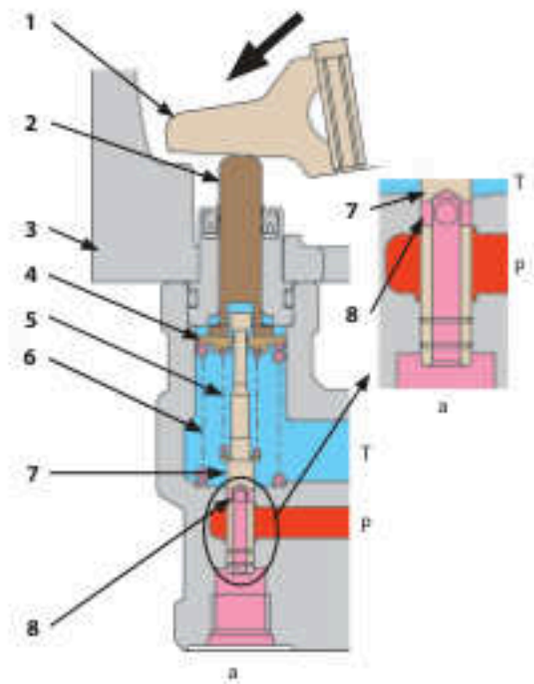



TPPP-03-04-008

Travel Pilot Valve




TPPP-03-04-012



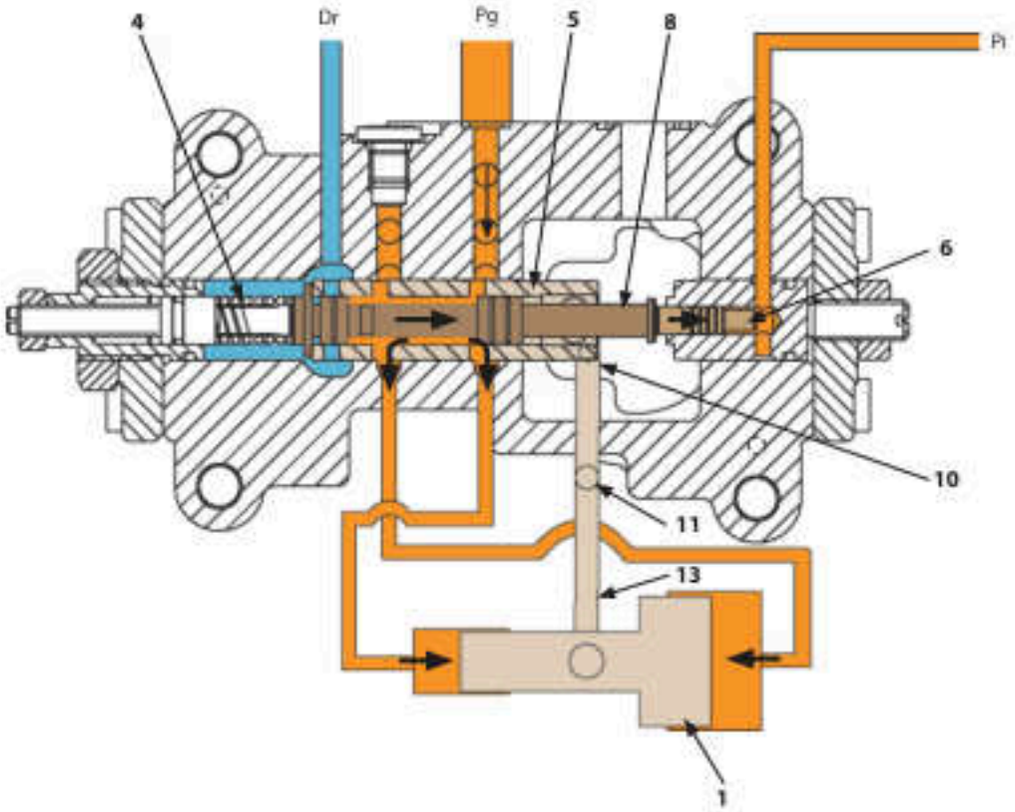

TPPP-03-04-013

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

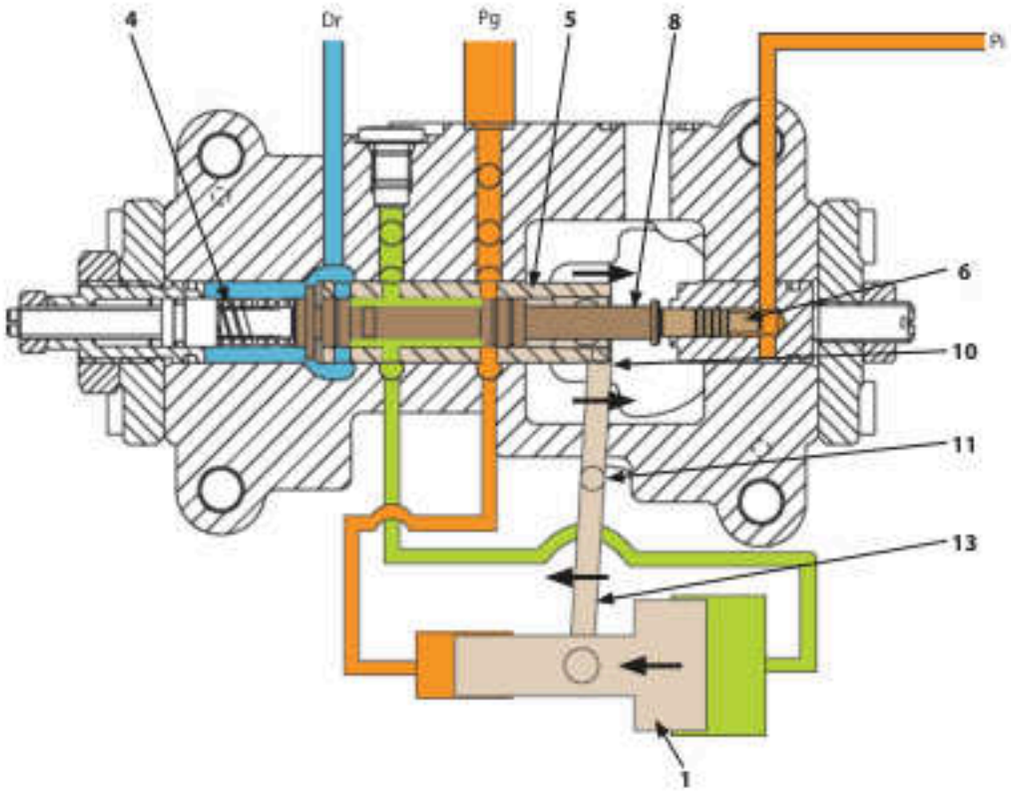
1- Cam
2- Pusher
3- Casing
4- Spring Guide
5- Balance Spring
6- Return Spring
7- Spool
8- Hole



MidWestTech | Hitachi ZX670LC-5B, ZX670LCH-5B, ZX670LCR-5B Excavator Operati... Order the manual at mid-west-tech.com >




TJBA-03-01-021




TJBA-03-01-022

Dr- Returning to Hydraulic Oil Tank
Pi- Flow Rate Control Pressure
Pg- Primary Pilot Pressure (From Pilot Pump)

1- Servo Piston
4- Spring
5- Sleeve
6- Piston
8- Spool
10- Pin
11- Pin
13- Link



MidWestTech | Hitachi ZX670LC-5B, ZX670LCH-5B, ZX670LCR-5B Excavator Operati... Order the manual at mid-west-tech.com >