PART NO. TODDD-EN-01

HITACHI

Reliable solutions

Technical Manual
Operational Principle

ZX
350LC-5B
350LCN-5B
Hydraulic Excavator

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TODDD-EN
Technical Manual (Troubleshooting)	: Vol. No.TTDDD-EN
Workshop Manual	: Vol. No.WDDD-EN
Engine Manual	: Vol. No.ETDDD-EN, EWDDD-EN

MidWestTech | Hitachi ZX350LC-5B, ZX350LCN-5B Excavator Operational Principle Technical Service Manual | Publication TODDD-EN-01

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

SECTION 1

GENERAL

CONTENTS

Group 1 Specifications

Specifications T1-1-1
Working Ranges T1-1-2

Group 2 Component Layout

Main Component T1-2-1
Electrical System (Overview) T1-2-3
Electrical System (Rear Tray) T1-2-4
Electrical System (Switch Panel) T1-2-5
Electrical System (Utility Space) T1-2-6
Electrical System (Relays) T1-2-7
Engine T1-2-8
Muffler Filter T1-2-9
Pump Device T1-2-10
Around Pump Device T1-2-11
Control Valve T1-2-12
Signal Control Valve T1-2-12
Swing Device T1-2-14
Travel Device T1-2-14
5-Spool Solenoid Valve Unit T1-2-15
2-Spool Solenoid Valve Unit (for Muffler Filter Regeneration Control) T1-2-15
Layout of Attachment Spec. Parts T1-2-16

Group 3 Component Specifications

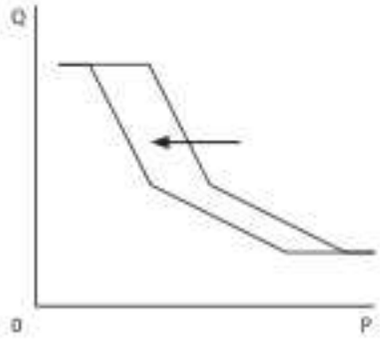
Engine T1-3-1
Engine Accessories T1-3-5
Hydraulic Component T1-3-7
Electrical Component T1-3-11

MidWestTech | Hitachi ZX350LC-5B, ZX350LCN-5B Excavator Operational Principle Te... Order the manual at mid-west-tech.com >

FUEL COOLER	Weight	1.0 kg (3.0 lb)
	Core Type	Wavy Fin
	Capacity	0.41 L (0.11 US gal.)
BATTERY	Type	180G51-MF
	Voltage	12 V
	Capacity	128 Ah (5-Hour Rate)
	Weight	45 kg (100 lb)×2
Fuel Solenoid Pump	Manufacture Product No.	B6952E
	Rated Voltage	DC 24 V

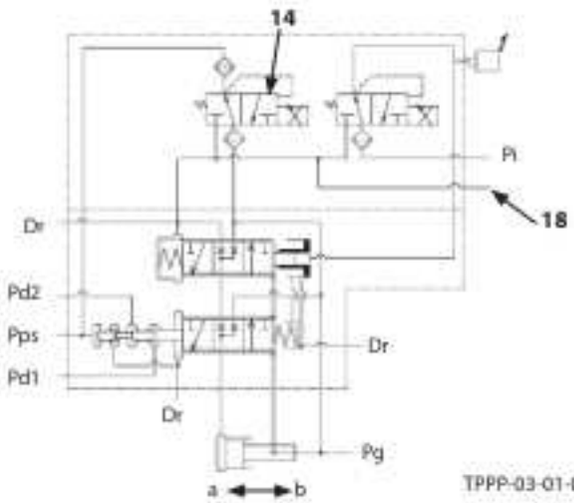
MidWestTech | Hitachi ZX350LC-5B, ZX350LCN-5B Excavator Operational Principle Te... Order the manual at mid-west-tech.com >

- Control by Pilot Pressure from Torque Control Solenoid Valve (14, 16)
  MC (main controller) sends the signals to the torque control solenoid valve (14, 16) according to the engine speed and the signals from sensors.
  The torque control solenoid valve (14, 16) delivers torque control pilot pressure Pps to the regulator in response to the signals from MC. When receiving torque control pilot pressure Pps, the regulator reduces the pump delivery flow rate.
  (Refer to SYSTEM / Control System.)

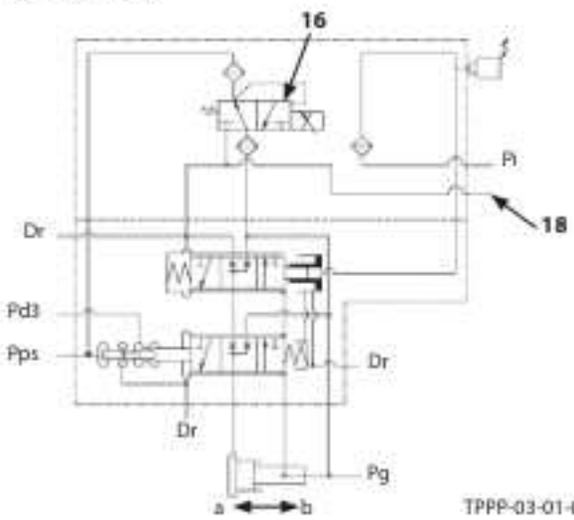


Q- Flow Rate P- Pressure

Pump 2 Regulator



Pump 3 Regulator



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)
a- Displacement Angle Increase
b- Displacement Angle Decrease

14- Pump 1 and 2 Torque Control Solenoid Valve
16- Pump 3 Torque Control Solenoid Valve
18- Air Bleeding Circuit

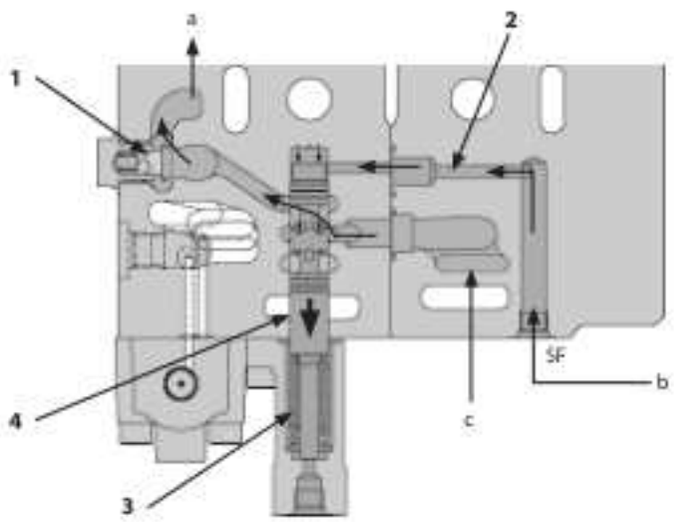
MidWestTech | Hitachi ZX350LC-5B, ZX350LCN-5B Excavator Operational Principle Te... Order the manual at mid-west-tech.com >

Digging Regenerative Valve

The digging regenerative valve is provided in the return circuit of boom raise and functions during combined operation of boom raise and arm roll-in.
When the digging regenerative valve is shifted, pressure oil from the boom cylinder (6) rod side (return side) flows through the digging regenerative valve, is combined with pressure oil from pump 2 (8), and flows to arm 1 spool (12). Therefore, speed of arm roll-in increases. (Refer to SYSTEM / Control System.)

Operation

1. When 5-spool solenoid valve unit (SF) is activated by the signal from MC (main controller), pressure oil from the pilot pump flows to port SF through 5-spool solenoid valve unit (SF).
2. Pressure oil from port SF is routed to the end of spool (4) through inner passage (2).
3. Spool (4) compresses spring (3) and moves downward.
4. Therefore, pressure oil from the boom cylinder (6) rod side (return side) opens check valve (1), is combined with pressure oil from pump 2 (8), and flows to arm 1 spool (12).
5. Consequently, as pressure oil flow rate flowing to arm cylinder (13) increases, speed of arm roll-in increases.

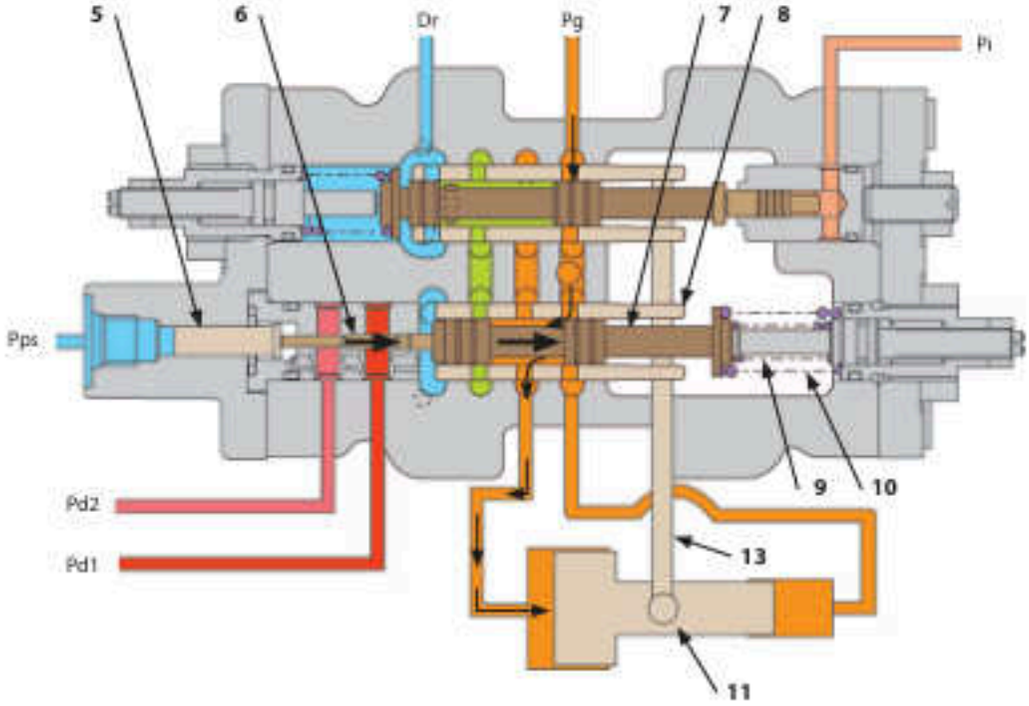


TDAA-03-03-047

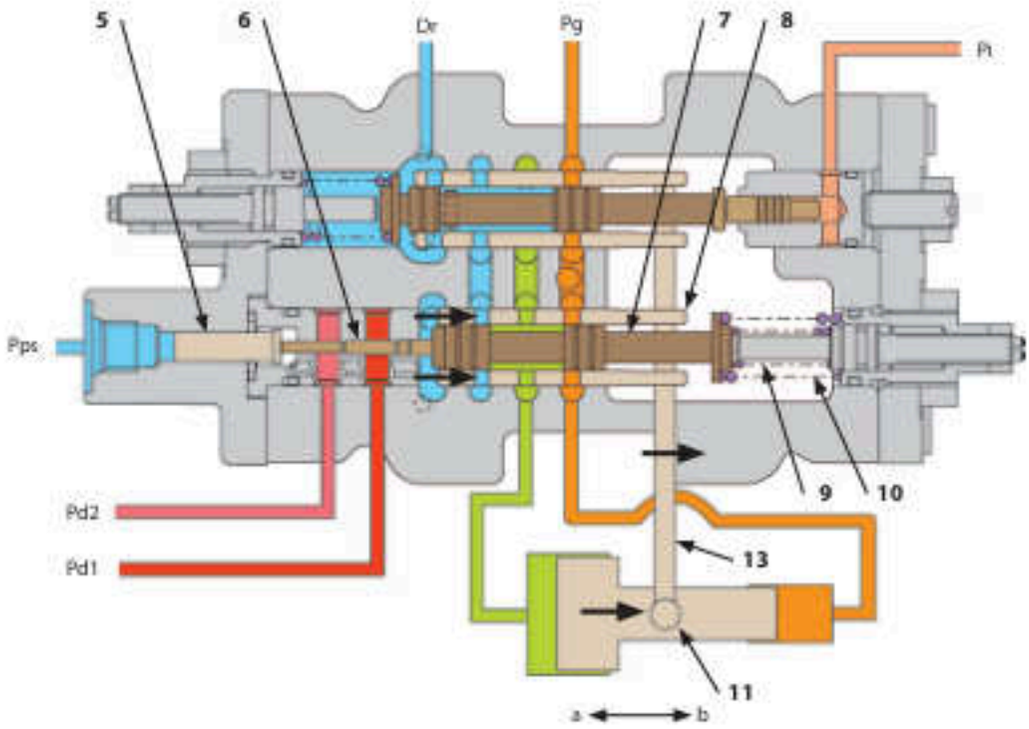
a - To Arm 1 Spool (12)
b - Pilot Pressure from 5-Spool Solenoid Valve Unit (SF)
c - Returning Oil from Boom Cylinder (6) Rod Side
1 - Check Valve
2 - Inner Passage
3 - Spring
4 - Spool (Digging Regenerative Valve)

MidWestTech | Hitachi ZX350LC-5B, ZX350LCN-5B Excavator Operational Principle Te... Order the manual at mid-west-tech.com >

NOTE: The illustration shows the pump1 regulator.



TPPP-03-01-013



TPPP-03-01-014

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)

5- Load Piston 1
6- Load Piston 2

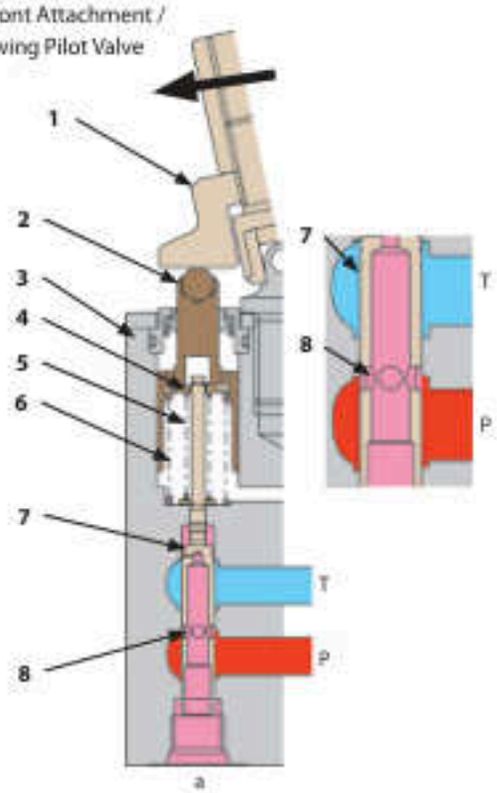
7- Spool B
8- Sleeve B

9- Inner Spring
10- Outer Spring

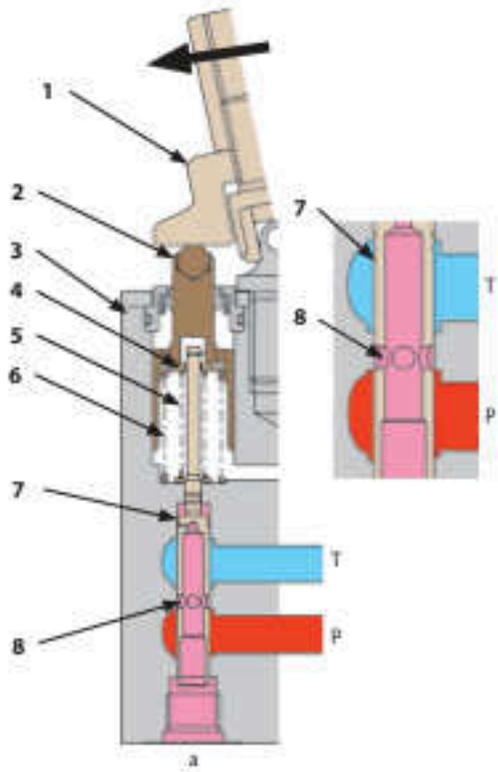
11- Servo Piston
13- Link

MidWestTech | Hitachi ZX350LC-5B, ZX350LCN-5B Excavator Operational Principle Te... Order the manual at mid-west-tech.com >

Front Attachment / Swing Pilot Valve

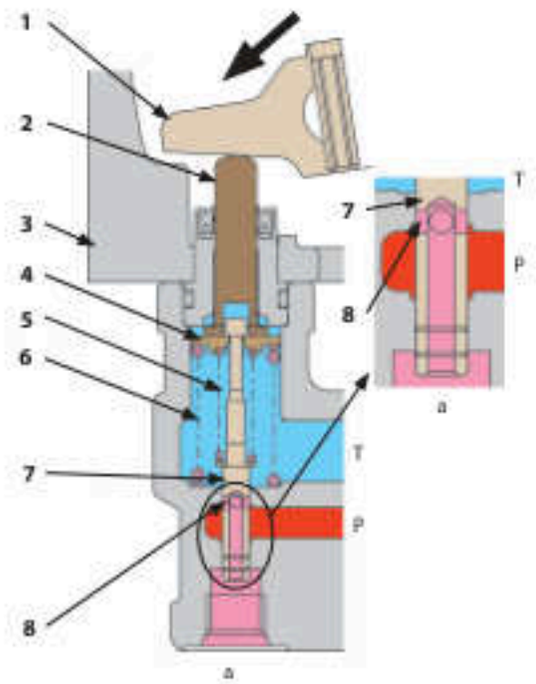


TPPP-03-04-007

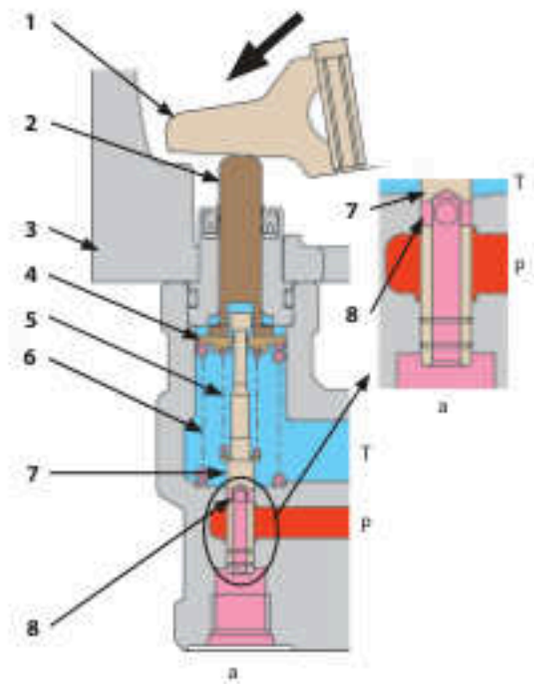


TPPP-03-04-008

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 ZX350LC-5B, ZX350LCN-5B Excavator Operational Principle Te... Order the manual at mid-west-tech.com >