PART NO. TACG90-EN-00

HITACHI

Reliable solutions

Technical Manual

ZX20U-5B

Hydraulic Excavator

Service Manual consists of the following separate Part No.

Technical Manual	: Vol. No.TACG90-EN
Workshop Manual	: Vol. No.WACG90-EN
Engine Manual	: Vol. No.EACG-EN

MidWestTech | Hitachi ZX20U-5B Excavator Troubleshooting Technical Service Manual | Publication TACG90-EN-00

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

Safety Alert Symbol and Headline Notations

In this manual, the following safety alert symbol and signal words are used to alert the reader to the potential for personal injury of machine damage.

⚠ This is the safety alert symbol. When you see this symbol, be alert to the potential for personal injury.
Never fail to follow the safety instructions prescribed along with the safety alert symbol.
The safety alert symbol is also used to draw attention to component/part weights.
To avoid injury and damage, be sure to use appropriate lifting techniques and equipment when lifting heavy parts.

⚠ **CAUTION:**
Indicates potentially hazardous situation which could, if not avoided, result in personal injury or death.

IMPORTANT:
Indicates a situation which, if not conformed to the instructions, could result in damage to the machine.

NOTE:
Indicates supplementary technical information or know-how.

Units Used

SI Units (International System of Units) are used in this manual. MKSA system units and English units are also indicated in parentheses just behind SI units.

Example: 24.5 MPa (250 kgf/cm², 3560 psi)

A table for conversion from SI units to other system units is shown below for reference purposes.

Quantity	To Convert From	Into	Multiply By
Length	mm	in	0.03937
	mm	ft	0.003281
Volume	L	US gal	0.2642
	L	US qt	1.057
	m^3	yd^3	1.308
Weight	kg	lb	2.205
Force	N	kgf	0.10197
	N	lbf	0.2248
Torque	N·m	kgf·m	0.10197
Pressure	MPa	kgf/cm^2	10.197
	MPa	psi	145.0
Power	kW	PS	1.360
	kW	HP	1.341
Temperature	°C	°F	°C×1.8+32
Velocity	km/h	mph	0.6214
	min^{-1}	rpm	1.0
Flow rate	L/min	US gpm	0.2642
	mL/rev	cc/rev	1.0

NOTE: The numerical value in this manual might be different from the above-mentioned table.

MidWestTech | Hitachi ZX20U-5B Excavator Troubleshooting Technical Service Manual... Order the manual at mid-west-tech.com >

Precautions for Inspection and Maintenance

1. Disconnect the power source.
   Disconnect the wire harness from the negative terminal side in battery first when taking wire harnesses and connectors off for repair or replacement work. Failure to do so can result in damage to the wire harnesses, fuses and slow blow fuses and, in some cases, cause fire due to short circuiting. In addition, even when the key switch is turned OFF, the controller may be operated for a specified time. Therefore, disconnect the harness from the negative terminal side in battery after setting the key switch to the OFF position and waiting one minute or more.
2. Color coding of wire harnesses.
   As for the color codes of wire harnesses in the electrical system, refer to the table. In cases on the design sheet where two colors are indicated for one wire, the left initial stands for base color, while the right initial stands for marking color.

Code	R	W	L	G	Y	B
Color	Red	White	Blue	Green	Yellow	Black
Code	Or	Lg	Br	P	Gr	V
Color	Orange	Light green	Brown	Pink	Gray	Violet

NOTE:

- *Code BW indicates a black base wire with white fine-line marking.*
- *Initials "O" and "Or" both stand for the color orange.*
- *Longitudinal stripes printed on wires are not color coded, indicate the kinds of wires.*

MidWestTech | Hitachi ZX20U-5B Excavator Troubleshooting Technical Service Manual... Order the manual at mid-west-tech.com >

Swing System Troubleshooting

S-1 Swing is slow or unmoving.

	Specification	Remark
Swing Speed (sec/3 rev)	18.8±1.5	The bucket should be empty.

Preparation

- In case the blade and boom swing cylinders, along with the swing function move slowly, their power are weak, or they are not operated, the main relief valve for main pump P3 may be faulty.
- When the control valve spool sticks other than the neutral position, other trouble will occur.

Procedure	Inspection Method	Condition	Evaluation	Cause
1	Measure secondary pilot pressure of swing.	When fully operating swing	The value is not within the specification. (Specification: 2.9±0.5 MPa)	Faulty pilot valve
2	Measure delivery pressure of main pump P3.	When fully operating swing Engine Control Lever: Max. Speed	Approx. 1.6 MPa	Faulty control valve (stuck spool)
3	Measure relief pressure of swing.	When relieving swing	The value is not within the specification. (Specification: 19.3±1.0 MPa (pump))	Faulty swing relief valve
4	Measure swing motor drainage.	With constant speed	The value is not within the specification. (Specification: 0.5 L/min or less)	Faulty swing motor
5	-	-	Normal in above check	Faulty swing parking brake

MidWestTech | Hitachi ZX20U-5B Excavator Troubleshooting Technical Service Manual... Order the manual at mid-west-tech.com >

Malfunction of Coolant Temperature Indicator

- Check the wiring connections first.
- Only malfunction of the coolant temperature indicator is explained here. Refer to T5-3-11 for malfunction of the overheat indicator.

The coolant temperature indicator is not turned off.

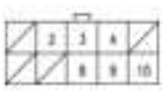
Procedure	Inspection Method	Condition	Evaluation	Cause
1	Connect coolant temperature sensor harness end terminal to the body.	Key Switch: ON Disconnect coolant temperature sensor terminal.	The symptom disappears.	Faulty coolant temperature sensor
2	Check continuity between monitor controller harness end terminal M2-10 and the body.	Connect the coolant temperature sensor harness end terminal to the body.	∞ Ω	Open circuit in wire harness between monitor controller and coolant temperature sensor
3	-	-	Normal in above check	Faulty monitor controller

The coolant temperature indicator does not light.

Procedure	Inspection Method	Condition	Evaluation	Cause
1	Disconnect coolant temperature sensor terminal. Set the key switch to the ON position.	-	The symptom disappears.	Faulty coolant temperature sensor
2	Check continuity between monitor controller harness end terminal M2-10 and the body.	Key Switch: ON Disconnect coolant temperature sensor terminal.	0 Ω	Shorted circuit in wire harness between monitor controller and coolant temperature sensor
3	-	-	Normal in above check	Faulty monitor controller

Connector (Wire harness end)

- Monitor Controller M2

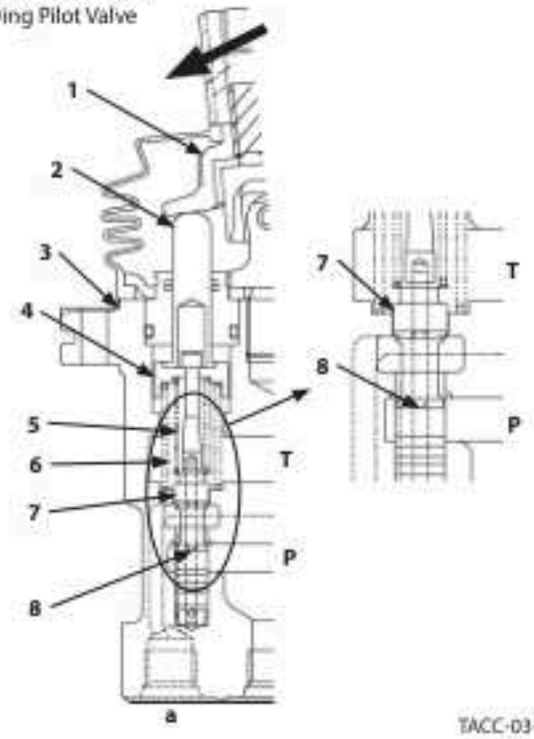


TABAS0-05-03-003

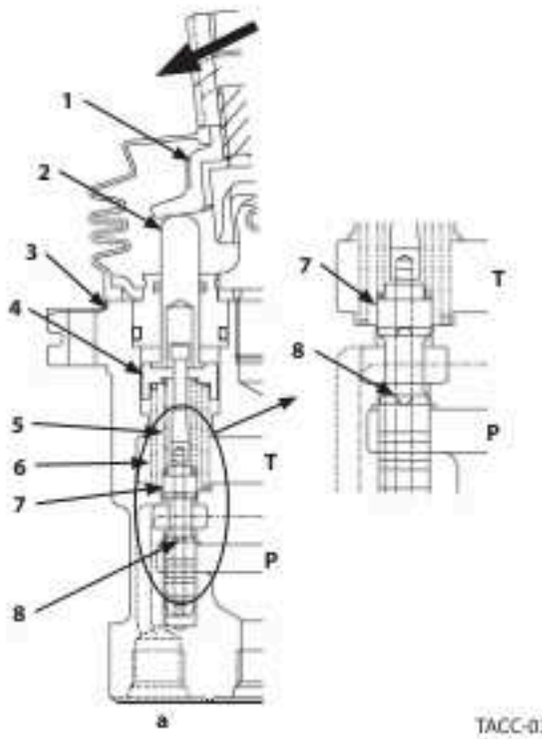
Coolant Temperature (°C)	Coolant Temperature Sensor (kΩ)
30	6.08

MidWestTech | Hitachi ZX20U-5B Excavator Troubleshooting Technical Service Manual... Order the manual at mid-west-tech.com >

Front Attachment/
Swing Pilot Valve

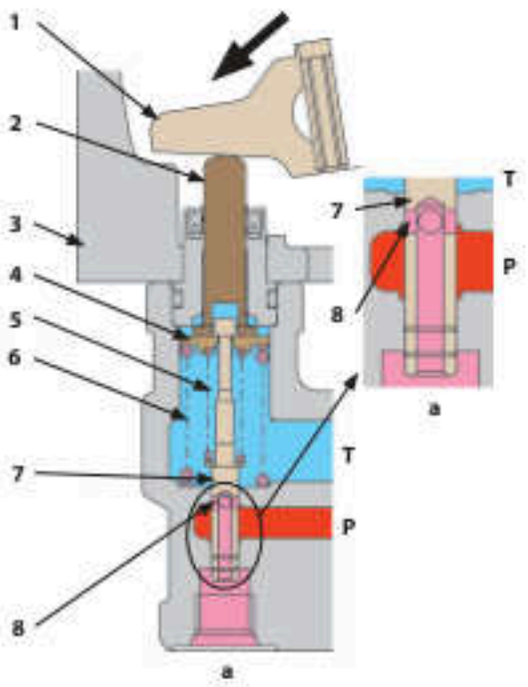


TACC-03-04-005

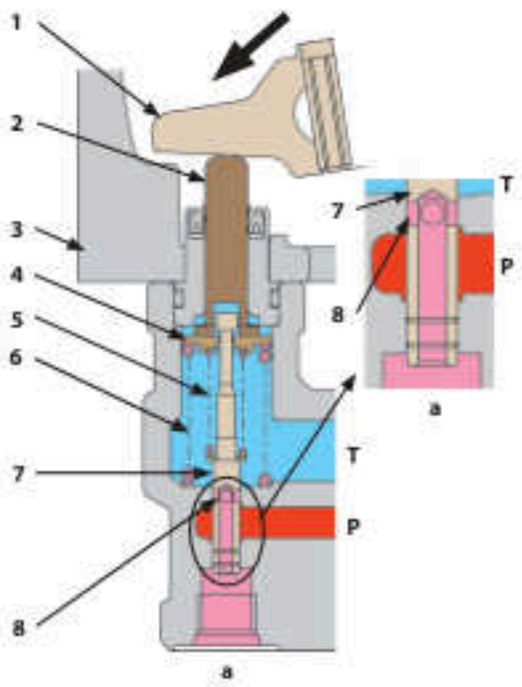


TACC-03-04-006

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 ZX20U-5B Excavator Troubleshooting Technical Service Manual... Order the manual at mid-west-tech.com >