PART NO.

TATA HITACHI

Reliable solutions

Technical Manual

Troubleshooting

ZAXIS

370

400

GI - SERIES

Hydraulic Excavator

Serial No. :

ZX370GI 000001 ONWARDS
ZX400GI 000001 ONWARDS

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SECTION 4

OPERATIONAL PERFORMANCE TEST

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Main Pump Flow Rate Measurement

• P-Q Control (Torque Control)

Summary:

Main pump performance is checked by measuring the pump flow rate by using a hydraulic tester installed at the main pump delivery port to be measured. Use MPDr. and a pressure gauge at the same time.

IMPORTANT: This measurement procedure is a simple method. The measured data will be lower by approx. 5 % than the accurately measured value. In order to measure accurately, disconnect the return circuit from the control valve and connect it to the hydraulic oil tank.

Preparation:

1. Stop the engine. Push the air bleed valve and bleed air. Connect a vacuum pump to the oil filler port.

NOTE: Operate the vacuum pump while connecting the pump flow rate test line.

2. Disconnect the main pump delivery hose from the main pump to be measured. Connect pipe (1 or 2) to the main pump delivery port with the removed split flange and bolt.

: 41 mm

: 10 mm

3. Install pipe (1 or 2) to hydraulic tester (5) by using test hose (3) and adapter (4). Install adapter (6), joint (7), test hose (8) and flange (9) to hydraulic tester (5).

: 41 mm

: 10 mm

4. Install flange (9) and the disconnected hose with split flange (10) and bolt (11).

: 10 mm

5. Install a pressure gauge to the main pump to be measured. (Refer to "Main Relief Set Pressure".)

: 6 mm

6. Disconnect pipe (13) from the regulator. Connect hose (ST 6339) (14) to the disconnected pipe (13) hole on regulator to be measured. Install plug (ST 6212) to the disconnected pipe (13) hole on regulator not to be measured.

: 17 mm

7. Remove the vacuum pump. Loosen plug (12) on top of the pump casing. Bleed air from the casing until oil only comes out.

: 41 mm

8. Fully open the loading valve of hydraulic tester.

9. Start the engine. Check the pressure gauge connection for any oil leaks. Connect MPDr. and select the monitoring function.

Measurement:

1. Maintain the hydraulic oil temperature at 50±5 °C (122±9 °F)

2. Measure the maximum flow rate.

3. Select the following switch positions:

Engine Control Dial	Power Mode	Auto-Idle Switch	Work Mode
Fast Idle	PWR	OFF	Digging Mode

4. Adjust the relief set pressure of main relief valve in control valve to each pressure point specified along the main pump P-Q curve. (Refer to T4-2-7) Slowly restrict the loading valve of hydraulic tester while relieving pressure in the arm roll-in circuit. Measure the flow rates and engine speeds at each pressure point specified in the P-Q curve.

5. Repeat each measurement three times and calculate the mean values.

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Test Harness

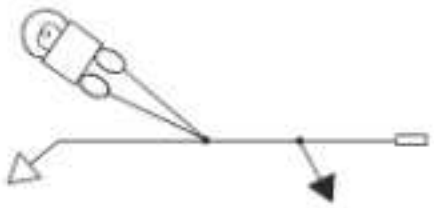
Install a test harness between connectors. Check the circuit condition depending on whether the test harness lamp lights or extinguishes during operation.

- Parts Number 4283594 (ST 7126)

Use in order to check a single-line (discontinuity and/or voltage).

- During Operation: Light is ON.

Parts Number 4283594 (ST 7126)



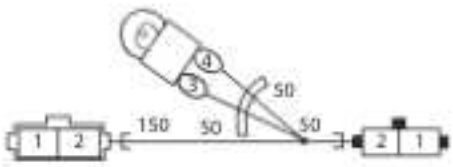
T107-07-05-012

- Parts Number (ST 7226)

Use in order to check the solenoid valve unit circuits.

- When the corresponding control lever or switch is operated: Light is ON.

Parts Number (ST 7226)



T107-07-06-015

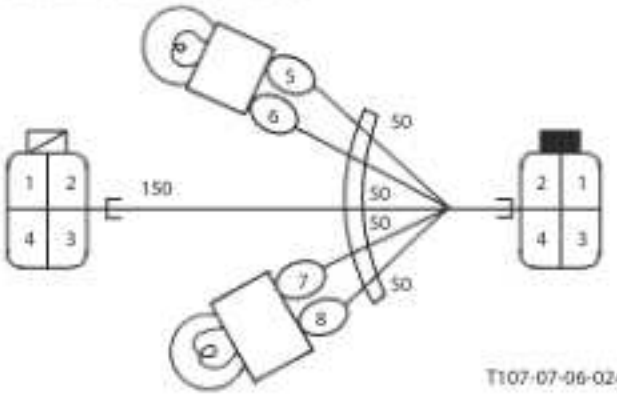
- Parts Number 4274589 (ST 7125)

Use to check the EC motor circuit.

When the engine control dial is rotated:

- Both lamps ON: Normal
- Only one lamp ON: Check for continuity of the circuit connected to the lamp OFF.
- Both lamps OFF: Check the harness together with the relay.

Parts Number 4274589 (ST 7125)

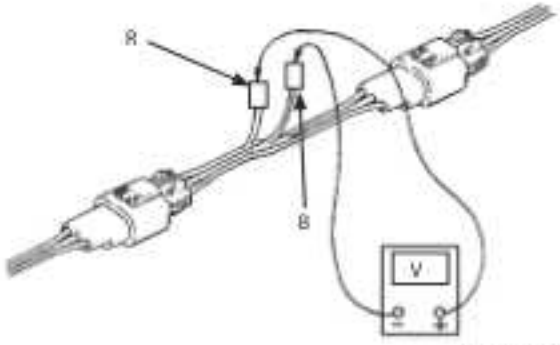


T107-07-06-024

- Parts Number 4284347 (ST 7129)

Use to measure the EC sensor circuit signal line voltage (between terminals #2 and #3).

Parts Number 4284347 (ST 7129)



T107-07-03-009


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Air Conditioner Controller Fault Code List

Fault Code	Trouble	Cause	Symptoms in Machine Operation When Trouble Occurs.	Remedy
11	Open circuit in air circulation sensor	Voltage: more than 4.95 V	Y value (air flow-in temperature) cannot be adjusted in response to the set-temperature.	Check the harness. Replace the air circulation sensor.
12	Shorted circuit in air circulation sensor	Voltage: less than 0.3 V	Y value (air flow-in temperature) cannot be adjusted in response to the set-temperature.	Check the harness. Replace the air circulation sensor.
13	Open circuit in fresh air sensor	Voltage: more than 4.88 V	Operation is controlled under such circumstance as no fresh air sensor is provided.	Check the harness. Replace the fresh air sensor.
14	Shorted circuit in fresh air sensor	Voltage: less than 0.096 V	Operation is controlled under such circumstance as no fresh air sensor is provided.	Check the harness. Replace the fresh air sensor.
18	Shorted circuit in solar radiation sensor	Voltage: more than 5.04 V	Operation is controlled under such circumstance as no solar radiation sensor is provided.	Check the harness. Replace the solar radiation sensor.
21	Open circuit in evaporator sensor	Voltage: more than 4.79 V	Operation is controlled under such circumstance as the evaporator temperature is set to 10 °C (50 °F).	Check the harness. Replace the evaporator sensor.
22	Shorted circuit in evaporator sensor	Voltage: less than 0.096 V	Operation is controlled under such circumstance as the evaporator temperature is set to 10 °C (50 °F).	Check the harness. Replace the evaporator sensor.
43	Abnormal air vent damper	Shorted circuit: Voltage: 0 V Open circuit: Voltage: more than 5 V	Air vent damper servo motor becomes inoperable.	Check the harness. Replace the air vent damper servo motor.
44	Abnormal air mix damper	Shorted circuit: Voltage: less than 0.2 V Open circuit: Voltage: more than 4.8 V	Air mix damper servo motor becomes inoperable.	Check the harness. Replace the air vent damper servo motor.
51	Abnormal high/low refrigerant pressure	Voltage: 0 V	The compressor clutch is disengaged. (The compressor stops.)	Check the harness. Replace the high/low pressure switch.
91	CAN communication error	Faulty CAN1 harness between monitor controller and air conditioner controller	Air conditioner stops.	Check the CAN1 harness. Replace air conditioner controller.
92	CAN bus off error	Faulty air conditioner controller Faulty CAN1 harness	Air conditioner stops.	Check the CAN1 harness. Replace air conditioner controller.

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ELECTRICAL CIRCUIT DIAGRAM
PART NO. YA00016887
APPLICABLE MODEL - ZX370LCH/ ZX400MTH



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