PART NO. TTJAE-EN-00

HITACHI

Reliable solutions

Technical Manual
Troubleshooting

ZX
470-5A
470LC-5A
490H-5A
490LCH-5A
530LCH-5A
Hydraulic Excavator

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TOJAE-EN
Technical Manual (Troubleshooting)	: Vol. No.TTJAE-EN
Workshop Manual	: Vol. No.WJAE-EN
Engine Manual	: Vol. No.ETJAE-EN, EWJAE-EN

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SECTION 4

OPERATIONAL PERFORMANCE TEST

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Fan Pump Flow Rate Measurement

- P-Q Control (Torque Control)

Summary:

Fan pump performance is checked by measuring the pump flow rate by using a hydraulic tester (3) installed at the fan pump delivery port to be measured. Use a hydraulic tester.

IMPORTANT: This measurement procedure is a simple method.

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 piping.

2. Disconnect the delivery hose (8) from fan pump. Install the adapter (1) (ST 6686) to the delivery port.

: 36 mm, 41 mm

3. Connect test hose (2) to adapter (1) (ST 6686) and hydraulic tester (4) with adapter (3). Install adapter (5), test hose (6) and nipple (7) to hydraulic tester (4).

: 41 mm

4. Connect the delivery hose (8) to nipple (7).

: 36 mm

5. Disconnect the hose from the port Pp (9). Install plug (ST 6204) to the port Pp (9).

: 19 mm

6. Remove the vacuum pump. Loosen plug (10) on top of the pump casing. Bleed air from the casing until oil only comes out.

: 6 mm

7. Fully open the loading valve of hydraulic tester (4).
8. Start the engine. Confirm that no oil leakage is observed at the hydraulic tester (4) connection.

Measurement:

1. Maintain the hydraulic oil temperature at 50±5 °C.
2. Measure the maximum flow rate.
3. Select the following conditions.

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

4. Adjust the set pressure of relief valve in fan valve to each pressure point specified along the fan pump P-Q curve. (Refer to T4-2-6) Slowly restrict the loading valve of hydraulic tester (3). Measure the flow rates and engine speeds at each pressure point specified in the P-Q curve.
5. Repeat the measurement three times and calculate the average values.

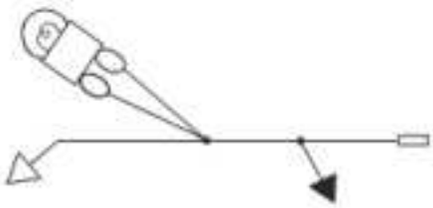
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Test Wire Harness

Parts Number 4283594 (ST 7126)

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

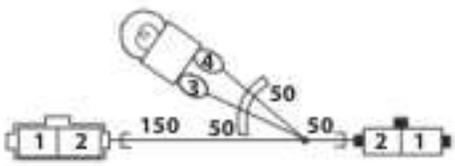
- Parts Number 4283594 (ST 7126)
Use in order to check a single-line (open circuit and/or voltage).
  - During Operation: Light is ON.



T107-07-05-012

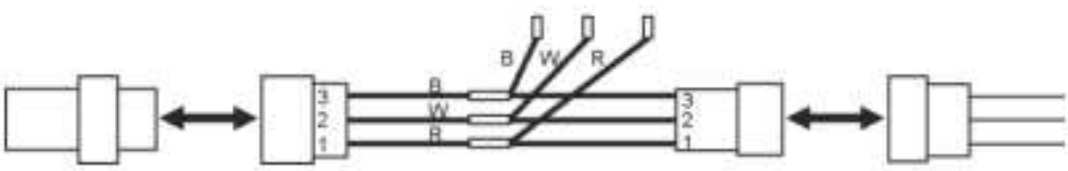
Parts Number (ST 7226)

- 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.



T107-07-06-015

Connect a test wire harness to the wire harness end connector of pressure sensor. Check the state of pressure sensor circuit.
- ST 6701 for high-pressure sensor
- ST 6703 for low-pressure sensor



TDAA-05-06-003

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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 re-circulated air temperature sensor	Voltage: more than 4.95 V	Operation is controlled under such circumstance as no re-circulated air temperature sensor is provided.	Check the wire harness. Replace the re-circulated air temperature sensor.
12	Short circuit in re-circulated air temperature sensor	Voltage: less than 0.3 V	Operation is controlled under such circumstance as no re-circulated air temperature sensor is provided.	Check the wire harness. Replace the re-circulated air temperature sensor.
13	Open circuit in ambient temperature sensor	Voltage: more than 4.88 V	Operation is controlled under such circumstance as no ambient temperature sensor is provided.	Check the wire harness. Replace the ambient temperature sensor.
14	Short circuit in ambient temperature sensor	Voltage: less than 0.096 V	Operation is controlled under such circumstance as no ambient temperature sensor is provided.	Check the wire harness. Replace the ambient temperature sensor.
18	Short 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 wire harness. Replace the solar radiation sensor.
21	Open circuit in frost sensor	Voltage: more than 4.79 V	The compressor clutch is disengaged. (The compressor stops.)	Check the wire harness. Replace the frost sensor.
22	Short circuit in frost sensor	Voltage: less than 0.096 V	The compressor clutch is disengaged. (The compressor stops.)	Check the wire harness. Replace the frost sensor.
43	Abnormal air vent damper servo motor	Short circuit: Voltage: 0 V Open circuit: Voltage: more than 5 V	Air vent damper servo motor becomes inoperable.	Check the wire harness. Replace the air vent damper servo motor.
44	Abnormal air mix damper servo motor	Short circuit: Voltage: less than 0.2 V Open circuit: Voltage: more than 4.8 V	Air mix damper servo motor becomes inoperable.	Check the wire harness. Replace the air mix damper servo motor.
51	Abnormal high/low refrigerant pressure	Voltage: 0 V	The compressor clutch is disengaged. (The compressor stops.)	Check the wire 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 the air conditioner controller.
92	CAN bus off error	Faulty air conditioner controller. Faulty CAN1 harness.	Air conditioner stops.	Check the CAN1 harness. Replace the air conditioner controller.

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