PART NO. TTDFU90-EN-00

HITACHI

Reliable solutions

Technical Manual
Troubleshooting

ZX
225US-5A
225USLC-5A
Hydraulic Excavator

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TODFU90-EN
Technical Manual (Troubleshooting)	: Vol. No.TTDFU90-EN
Workshop Manual	: Vol. No.WDFU90-EN
Engine Manual	: Vol. No.ETDCY-EN, EWDCY-EN

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SECTION 4

OPERATIONAL PERFORMANCE TEST

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Air Conditioner Controller Fault Code List

Fault Code	Details	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 circumstances 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 circumstances 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 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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Air Conditioner Controller Fault Codes 43 to 92

Preparation

- Check the wiring connections first.
- Before inspection, set the key switch to the ON position.

Fault Code	Details	Procedure	Inspection Method	Evaluation:	Cause
43	Abnormal air vent damper servo motor	1	Measure voltage between air vent damper servo motor harness end 7_C and the body. (AUTO/OFF switch / blower switch: ON)	0 V	YES: Faulty controller or open circuit in wire harness between controller and air vent damper servo motor.
					NO: Go to Procedure No. 2
		2	Measure voltage between air vent damper servo motor harness end 7_C and 25_D. (AUTO/OFF switch / blower switch: ON)	0 V	YES: Faulty controller or open circuit in wire harness between controller and air vent damper servo motor.
					NO: Faulty air vent damper servo motor.
44	Abnormal air mix damper servo motor	1	Measure voltage between air mix damper servo motor harness end 7_D and the body. (AUTO/OFF switch / blower switch: ON)	0 V	YES: Faulty controller or open circuit in wire harness between controller and air mix damper servo motor.
					NO: Go to Procedure No. 2
		2	Measure voltage between air mix damper servo motor harness end 7_D and 25_E. (AUTO/OFF switch / blower switch: ON)	0 V	YES: Faulty controller or open circuit in wire harness between controller and air mix damper servo motor.
					NO: Faulty air mix damper servo motor.
51	Abnormal high/low refrigerant pressure	1	Measure voltage between high/low pressure switch harness end $A21_1$ and $A05_2$. (AUTO/OFF switch / blower switch: ON)	0 V	YES: Faulty controller or open circuit in harness between controller and high/low pressure switch.
					NO: Faulty high/low pressure switch.
91	CAN communication error	1	Check continuity in CAN1 harness.	Normal	YES: Faulty controller.
					NO: Faulty CAN1 harness.
92	CAN bus off error	1	Check continuity in CAN1 harness.	Normal	YES: Faulty controller.
					NO: Faulty CAN1 harness.

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F-3 Boom, arm, or bucket single operation is not operated. Boom, arm, or bucket single operation speed is slow.

Overload Relief Valve Set Pressure	Specification (MPa)	Remark
Boom, Arm, Bucket	$39.2^{+1.0}_{-0}$	

Preparation

- When other actuators (travel and swing motors) are operated normally, the pilot pump (primary pilot pressure) is considered to be normal.

Procedure	Inspection Method	Condition	Evaluation	Cause
1	Monitor Boom Raise Pilot Pressure and Arm Roll-In Pilot Pressure.	Fully operate boom raise and arm roll-in.	The measured values are out of the specification. (Specification: 3.5-4.1 MPa)	YES: Faulty pilot valve or stuck spool of shockless valve in signal control valve (only boom raise)
				NO: Go to Procedure No. 2
2	Monitor Pump 1 Control Pressure and Pump 2 Control Pressure.	Slowly operate the control lever.	The measured values are out of the specification. (Specification: 3.3-4.3 MPa)	YES: Faulty shuttle valve in signal control valve
				NO: Go to Procedure No. 3
3	Switch overload relief valves, of which the set pressure are same.	-	Symptom is reversed.	YES: Faulty overload relief valve
				NO: Stuck control valve spool or faulty cylinder (faulty seal kit)

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