PART NO. TTNCC-EN-00

HITACHI

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Technical Manual
Troubleshooting

ZW

120-5B
Wheel Loader

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TONCC-EN
Technical Manual (Troubleshooting)	: Vol. No.TTNCC-EN
Workshop Manual	: Vol. No.WNCC-EN
Engine Manual	: Vol. No.ENCB-EN

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SECTION 4

OPERATIONAL PERFORMANCE TEST

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Air Conditioner Controller Fault Code List

Fault Code	Trouble	Cause	Symptoms in Machine Operation When Trouble Occurs	Remedy
E11	Open circuit in recirculated air sensor	Voltage: more than 4.95 V	Operation is controlled under such circumstance as no recirculated air sensor is provided.	Check the wire harness. Replace the recirculated air sensor.
E12	Shorted circuit in recirculated air sensor	Voltage: less than 0.3 V	Operation is controlled under such circumstance as no recirculated air sensor is provided.	Check the wire harness. Replace the recirculated air sensor.
E13	Open circuit in outdoor ambient temperature sensor	Voltage: more than 4.88 V	Operation is controlled under such circumstance as no outdoor ambient temperature sensor is provided.	Check the wire harness. Replace the outdoor ambient temperature sensor.
E14	Shorted circuit in outdoor ambient temperature sensor	Voltage: less than 0.096 V	Operation is controlled under such circumstance as no outdoor ambient temperature sensor is provided.	Check the wire harness. Replace the outdoor ambient temperature sensor.
E17	Open circuit in solar radiation sensor	-	Operation is controlled under such circumstance as no solar radiation sensor is provided.	Check the wire harness. Replace the solar radiation sensor.
E18	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 wire harness. Replace the solar radiation sensor.
E21	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.
E22	Shorted 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.

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Fault Code		Trouble	Cause	Symptoms in Machine Operation When Trouble Occurs	Remedy
DEUTZ	HCM				
594 596	523615-3	Fuel High-Pressure Metering Unit Circuit High Input	Faulty common rail pressure sensor. Faulty wire harness. Faulty suction control valve. Shorted circuit in wire harness to the power source.	The output power decreases.	Check the wire harness. Check the suction control valve. Replace the common rail pressure sensor.
595 597	523615-4	Fuel High-Pressure Metering Unit Circuit Low Input	Faulty common rail pressure sensor. Faulty wire harness. Faulty suction control valve. Shorted circuit in wire harness to the ground.	The output power decreases.	Check the wire harness. Check the suction control valve. Replace the common rail pressure sensor.
592	523615-5	Fuel High-Pressure Metering Unit Low Current	Faulty ECM. Faulty common rail pressure sensor. Faulty wire harness. Faulty suction control valve.	The output power decreases.	Check the wire harness. Check the suction control valve. Replace the common rail pressure sensor. Replace the ECM.
122	523698-11	Engine Shut-Off from Supervisory Monitoring Function	Faulty ECM.	The engine stops.	Replace the ECM.
291	523776-9	CAN Reception Failure (Time-Out Error)	Faulty ECM. Faulty CAN harness.	No output power change.	Check the CAN harness. Replace the ECM.
292	523777-9	CAN Reception Failure (Passive Time-Out Error)	Faulty ECM. Faulty CAN harness.	No output power change.	Check the CAN harness. Replace the ECM.

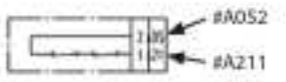
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• Frost Sensor (CN12)
Monitors the fin temperature which is cooled by the evaporator. When the temperature is higher than 3 °C (approx. 4.2 kΩ), the controller turns the compressor relay ON. When the temperature is lower than 2 °C (approx. 4.5 kΩ), the controller turns the compressor relay OFF. Therefore, the evaporator in the air conditioner unit is prevented from freezing. The electrical resistance in the frost sensor is 100 Ω to 115 kΩ.

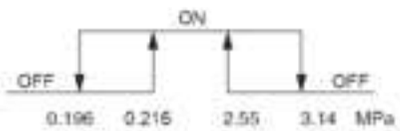


TDAA-05-07-006

• High/Low Pressure Switch (CN14)
Controls the compressor clutch solenoid while monitoring the compressor circuit pressure. The high/low pressure switch consists of a pressure gauge and a switch. The pressure gauge detects the lower pressure range (0.196 MPa to 0.216 MPa) and the surge pressure range (2.55 MPa to 3.14 MPa). When the circuit pressure is reduced to the lower pressure range or increases to the surge pressure range, the pressure gauge turns the switch OFF so that the compressor operation stops.
If the pressure is reduced to the lower range, a lack of refrigerant is suspected. Therefore, damage to the compressor due to a lack of refrigerant is prevented. In case the pressure increases to the surge range, damage to the air conditioner circuit parts due to excessively high circuit pressure is prevented.



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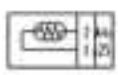


TDAA-05-07-014

• Re-circulated Air Sensor (CN11)
Monitors the temperatures (0 to 25 C) around the re-circulated air inlet as the interior air temperatures and converts them to the electrical resistance values. The temperatures 0 °C to 25 °C corresponds to a resistance of 1.645 kΩ (0 °C) to 5 kΩ (25 °C) respectively.
The electrical resistance in the air circulation sensor is 300 Ω to 430 kΩ.



TDAA-05-07-008



TDAA-05-07-009

• Outdoor Ambient Temperature Sensor (CN15)
Monitors the temperature around the rear side of the machine as the fresh air temperature, and converts the temperature to the electrical resistance value. The electrical resistance in the fresh air sensor is 100 Ω to 210 kΩ.

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