PART NO. TTDCF-EN-00

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Technical Manual
Troubleshooting

ZH
210-A
210LC-A
Hybrid Excavator

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TODCF-EN
Technical Manual (Troubleshooting)	: Vol. No.TTDCF-EN
Workshop Manual	: Vol. No.WDCF-EN
Engine Manual	: Vol. No.KM-4HK1-E

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SECTION 4

OPERATIONAL PERFORMANCE TEST

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Fault Code	Trouble	Cause	Symptoms in Machine Operation When Trouble Occurs.	Remedy
11206-3	Pump 1 Flow Control Pressure Sensor Circuit High Input	Voltage: more than 4.8 V	Although the control lever of bucket roll-in or arm roll-in is fully operated at PWR mode with front attachment above ground, engine speed is not increased. Fast travel cannot be selected easily.	Check the harness. Replace the pump 1 control pressure sensor.
11206-4	Pump 1 Flow Control Pressure Sensor Circuit Low Input	Voltage: less than 0.1 V	Although the control lever of bucket roll-in or arm roll-in is fully operated at PWR mode with front attachment above ground, engine speed is not increased. Fast travel cannot be selected easily.	Check the harness. Replace the pump 1 control pressure sensor.
11207-3	Pump 3 Flow Control Pressure Sensor Circuit High Input	Voltage: more than 4.8 V	Boom raise speed is slow during level crowding operation. Swing speed is slow.	Check the harness. Replace the pump 3 control pressure sensor.
11207-4	Pump 3 Flow Control Pressure Sensor Circuit Low Input	Voltage: less than 0.1 V	Boom raise speed is slow during level crowding operation. Swing speed is slow.	Check the harness. Replace the pump 3 control pressure sensor.
11208-3	Pump 2 Flow Control Pressure Sensor Circuit High Input	Voltage: more than 4.8 V	Although the control lever of arm roll-in is fully operated at PWR mode with front attachment above ground, engine speed is not increased. Fast travel cannot be selected easily.	Check the harness. Replace the pump 2 control pressure sensor.
11208-4	Pump 2 Flow Control Pressure Sensor Circuit Low Input	Voltage: less than 0.1 V	Although the control lever of arm roll-in is fully operated at PWR mode with front attachment above ground, engine speed is not increased. Fast travel cannot be selected easily.	Check the harness. Replace the pump 2 control pressure sensor.

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Group 3 Monitor

Power Controller (PCU)

Item	Unit	Data
PCU Status	-	Power controller operating status
Swing Electrical Motor Temp	°C	Measured value of thermistor temperature in swing electric motor
Assist Alternator Motor Temp	°C	Measured value of thermistor temperature in assist alternator motor
DC Reactor Temperature	°C	Measured value of DC reactor temperature in PCU
Swing Inverter IGBT Temp	°C	Measured value of swing inverter IGBT temperature
Chopper IGBT Temperature	°C	Measured value of chopper IGBT temperature
Capacitor Temperature	°C	Measured value of thermistor temperature in capacitor
Swing INV Gate OFF Input	OFF/ON	Swing INV gate OFF signal input status
Insulation Check Selection Input	OFF/ON	Insulation check selection signal input status
System Regular Stop Input	OFF/ON	Hybrid system regular stop signal input status
System Emergency Stop Input	OFF/ON	Hybrid system emergency stop signal input status
Key Switch Input	OFF/ON	Key switch input status
Capacitor Error Input	OFF/ON	Capacitor unit trouble detection status
Capacitor Warning 3 Input	OFF/ON	Capacitor unit alarm status 3
Capacitor Warning 2 Input	OFF/ON	Capacitor unit alarm status 2
Capacitor Warning 1 Input	OFF/ON	Capacitor unit alarm status 1
Leak Detector Relay Output	OFF/ON	Leak detection relay ON/OFF status
P-side Main Relay Output	OFF/ON	P-side main relay ON/OFF status
N-side Main Relay Output	OFF/ON	N-side main relay ON/OFF status
Inrush Prev Main Relay Output	OFF/ON	Inrush prevention relay ON/OFF status
Leak Detection Relay Circuit Broken	OFF/ON	Leak detection relay open circuit status
P-side Main Relay Circuit Broken	OFF/ON	P-side main relay open circuit status
N-side Main Relay Circuit Broken	OFF/ON	N-side main relay open circuit status
Inrush Prev Main Relay Broken	OFF/ON	Inrush prevention relay open circuit status
WARNING Signal Output	OFF/ON	WARNING signal output ON/OFF status
ERROR Signal Output	OFF/ON	ERROR signal output ON/OFF status
READY Signal Output	OFF/ON	READY signal output ON/OFF status

List of Alarm

Logo	Alarm	Alarm Screen	Remedy
 TDCF-07-03-005	Hybrid System Alarm	Hybrid system is abnormal. Contact your authorized dealer.	Refer to Troubleshooting A.
 TDCF-07-03-004	Hybrid Temperature Alarm	The hybrid component temperature is abnormal. Contact your authorized dealer.	Refer to Troubleshooting A.

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PCU Fault Code 19618

Fault Code 19618-0: Swing INV High Voltage

Preparation

- Check the wiring connections first.
- Check the power harness between PCU and swing electric motor (T7-5-55). Check the power harness between PCU and capacitor unit (T7-5-58).

Inspection Method	Evaluation	Cause
Measure insulation resistance between assist alternator motor #1 and body, between assist alternator motor #2 and body, and between assist alternator motor #3 and body.	less than 100 kΩ (measurement voltage: 500 V)	Abnormal insulation of assist alternator motor.
Measure resistance between assist alternator motor #1 and #2, between assist alternator motor #2 and #3, and between assist alternator motor #3 and #1.	They are unbalanced. (Default: 0.83 to 1.01 Ω)	Abnormal assist alternator motor.
Measure insulation resistance between swing electric motor #1 and body, between swing electric motor #2 and body, and between swing electric motor #3 and body.	less than 100 kΩ (measurement voltage: 500 V)	Abnormal insulation of swing electric motor.
Measure resistance between swing electric motor #1 and #2, between swing electric motor #2 and #3, and between swing electric motor #3 and #1.	They are unbalanced. (Default: 0.11 to 0.14 Ω)	Abnormal swing electric motor.
Check continuity in power harness between PCU and swing electric motor.	-	Open circuit in power harness.
Check discontinuity in power harness between PCU and swing electric motor.	-	Shorted circuit in power harness.
Replace the power harness between PCU and swing electric motor, and retry by using MPDr.	Un-displayed fault code	Faulty power harness.
Check continuity in power harness between PCU and the capacitor unit.	-	Open circuit in power harness.
Check discontinuity in power harness between PCU and the capacitor unit.	-	Shorted circuit in power harness.
Replace the power harness between PCU and the capacitor unit, and retry by using MPDr.	Un-displayed fault code	Faulty power harness.
Replace the capacitor unit and retry by using MPDr.	Un-displayed fault code	Faulty capacitor unit.
Replace PCU and retry by using MPDr.	Un-displayed fault code	Faulty PCU.

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