HITACHI

PART NO. TTNFC-EN-00

Reliable solutions

Technical Manual

Troubleshooting

ZW

310-5A

Wheel Loader

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SECTION 4

OPERATIONAL PERFORMANCE TEST

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List of Frequency Distribution Data

Item	Details
Pump Load	Frequency distribution of main pump delivery pressure
Radiator Coolant Temperature (79 °C or less)	Total hours when coolant temperature is less than 80°C (176°F) during a day.
Radiator Coolant Temperature (80 to 93 °C)	Total hours when coolant temperature is 80°C (176°F) or more and less than 94°C (201°F) during a day.
Radiator Coolant Temperature (94 to 104 °C)	Total hours when coolant temperature is 94°C (201°F) or more and less than 105°C (221°F) during a day.
Radiator Coolant Temperature (105 °C or more)	Total hours when coolant temperature is 105°C (221°F) or more during a day.
Hydraulic Oil Temperature (49 °C or less)	Total hours when hydraulic oil temperature is less than 50°C (122°F) during a day.
Hydraulic Oil Temperature (50 to 89 °C)	Total hours when hydraulic oil temperature is 50°C (122°F) or more and less than 90°C (194°F) during a day.
Hydraulic Oil Temperature (90 to 99 °C)	Total hours when hydraulic oil temperature is 90°C (194°F) or more and less than 100°C (212°F) during a day.
Hydraulic Oil Temperature (100 °C or more)	Total hours when hydraulic oil temperature is 100°C (212°F) or more during a day.
Torque Converter Oil Temperature (49 °C or less)	Total hours when torque converter oil temperature is less than 50°C (122°F) during a day.
Torque Converter Oil Temperature (50 to 89 °C)	Total hours when torque converter oil temperature is 50°C (122°F) or more and less than 90°C (194°F) during a day.
Torque Converter Oil Temperature (90 to 109 °C)	Total hours when torque converter oil temperature is 90°C (194°F) or more and less than 110°C (230°F) during a day.
Torque Converter Oil Temperature (110 °C or more)	Total hours when torque converter oil temperature is 110°C (230°F) or more during a day.

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ECM Fault Code List

Fault Code		Trouble or MP Dr. Message	Possible Cause	Symptoms in Machine Operation When Trouble Occurs
MPDr.	INSITE			
652-5	331	Injector Solenoid Valve Cylinder #2 Circuit – open circuit	Injector Solenoid Driver Cylinder 2 Circuit - Current Below Normal or Open Circuit. Current detected at injector number 2 when voltage is turned off.	The current to the injector is shut off. The engine can possibly misfire or run rough.
654-5	332	Injector Solenoid Valve Cylinder #4 Circuit – open circuit	Injector Solenoid Driver Cylinder 4 Circuit - Current Below Normal or Open Circuit. Current detected at injector number 4 when voltage is turned off.	The current to the injector is shut off. The engine can possibly misfire or run rough.
630-2	341	Engine Control Module – data lost	Severe loss of data from the ECM due to unswitched battery supply circuit	Possibly no noticeable performance effects, or engine dying, or difficulty in starting the engine. Fault information, trip information, and maintenance monitor data can be inaccurate.
629-12	343	Engine Control Module - Warning internal hardware failure	Internal ECM error due to bad intelligent device or component	Possibly none on performance, or severe derate.
3509-4	352	Sensor Supply Voltage #1 Circuit - shorted low	Low voltage detected on the internal electronic control module (ECM) supply line to some of the sensors.	Engine is derated to no-air setting.
3509-3	386	Sensor Supply Voltage #1 Circuit - shorted high	High voltage detected on the internal electronic control module (ECM) supply wire to the sensors.	Engine is derated to no-air setting.
1043-3	387	Accelerator Pedal Position Sensor Supply Voltage Circuit - shorted high	High voltage detected on the ECM voltage supply line to the throttle(s) (VTP supply).	Engine will only idle.
100-1	415	Engine Oil Pressure Low – Critical	Oil pressure signal indicates oil pressure below the very low oil pressure engine protection limit.	Progressive power derate with increasing time after alert. If engine protection shutdown feature is enabled, engine will shut down 30 seconds after the red lamp starts flashing.
97-15	418	Water in Fuel Indicator High – Maintenance	Water has been detected in the fuel filter.	Possible white smoke, loss of power, or hard starting.
1319-2	419	Intake Manifold Boost Pressure Imbalance	An error in the intake manifold pressure sensor signal was detected by the ECM.	Engine is derated to no-air setting.
639-2	426	SAE J1939 datalink - cannot transmit	Communication between the electronic control module (ECM) and another device on the J1939 datalink has been lost.	None on performance. J1939 devices possibly do not operate.
97-3	428	Water in Fuel Sensor Circuit - shorted high	High voltage detected at water-in-fuel (WIF) sensor circuit.	-
97-4	429	Water in Fuel Sensor Circuit - shorted low	Low voltage detected at water-in-fuel (WIF) sensor circuit.	-

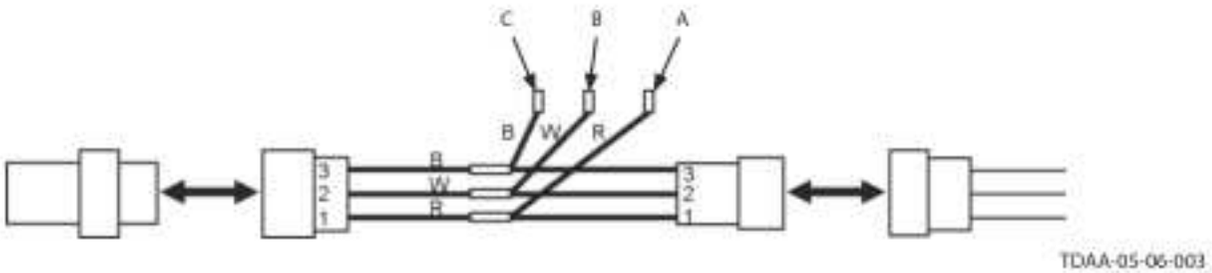
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MC Fault Codes 111600, 111601, 111602

Preparation

- Check the wiring connections first.
- Connect the test harness and dummy sensor.
- Before inspection, set the key switch to the ON position.

Fault Code	Trouble or MP Dr. Message	Inspection Method	Evaluation	Cause
111600-3	T/M Output Speed Sensor Failure	Check harness	Abnormal in harness check	Abnormal harness.
			Normal in harness check	Faulty sensor.
111600-4	T/M Output Speed Sensor Circuit Low Input	Check harness	Abnormal in harness check	Abnormal harness.
			Normal in harness check	Faulty sensor.
111601-3	Torque Converter Output Speed Sensor Failure	Check harness	Abnormal in harness check	Abnormal harness.
			Normal in harness check	Faulty sensor.
111602-3	Intermediate Shaft Speed Sensor Failure	Check harness	Abnormal in harness check	Abnormal harness.
			Normal in harness check	Faulty sensor.

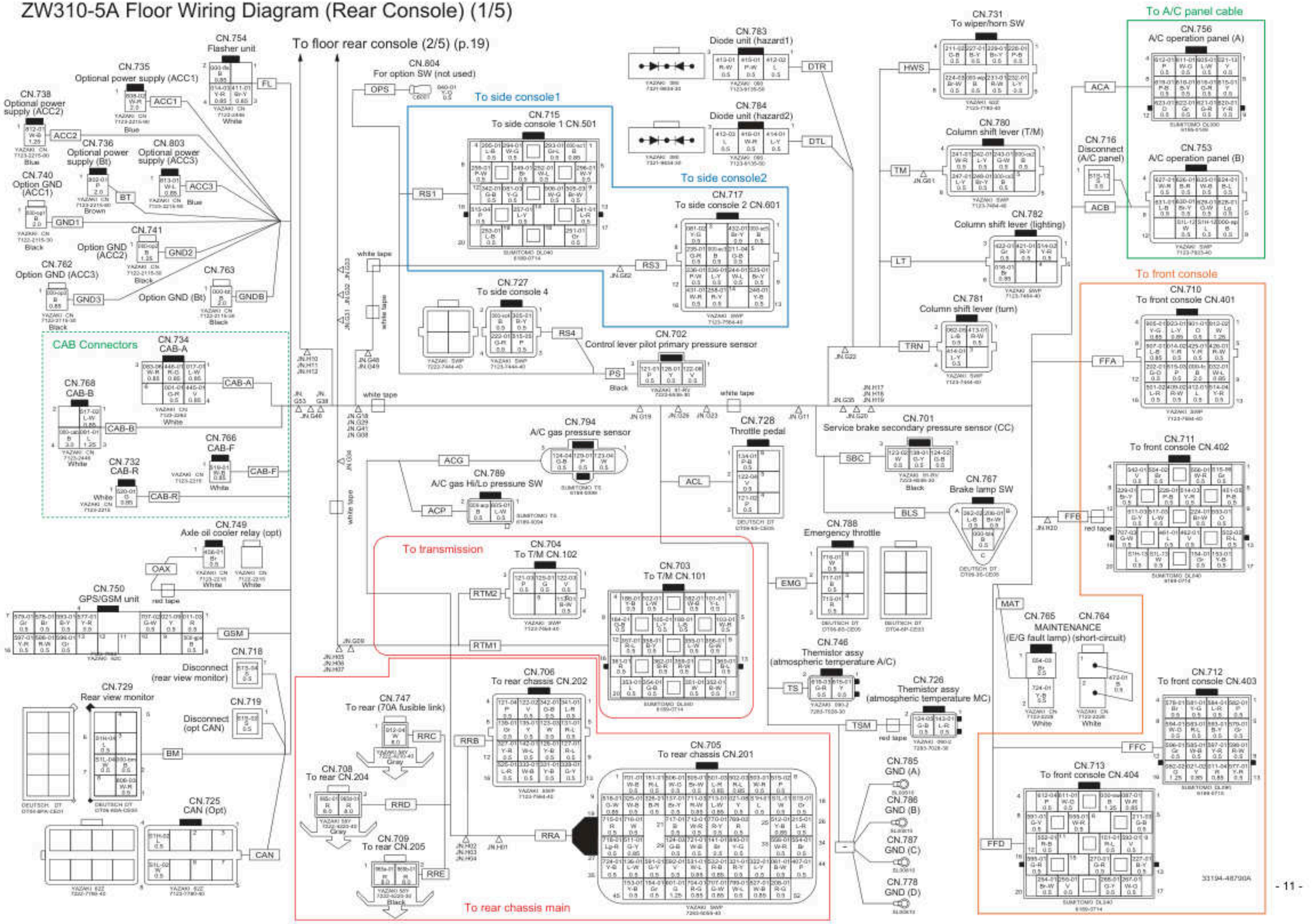


TDAA-05-06-003

NOTE: Refer to p. T5-4-12 for each sensor.

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ZW310-5A Floor Wiring Diagram (Rear Console) (1/5)



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