PART NO. TTDEG-EN-01

HITACHI

Reliable solutions

# Technical Manual
## Troubleshooting

# ZX60-5G
## Hydraulic Excavator

Service Manual consists of the following separate Part No.

| | |
|---|---|
| Technical Manual (Operational Principle) | : Vol. No.TODEG-E |
| Technical Manual (Troubleshooting) | : Vol. No.TTDEG-E |
| Workshop Manual | : Vol. No.WDEG-E |
| Engine Manual | : Vol. No.ETADB-EN, EWADB-EN |

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# SECTION 4

# OPERATIONAL PERFORMANCE TEST

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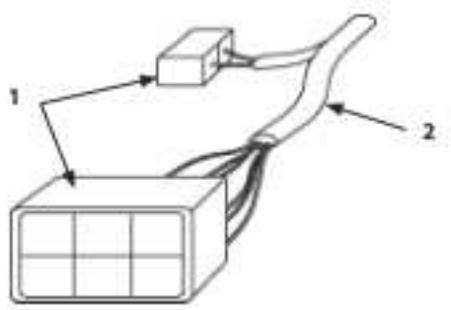

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## Troubleshooting A (Base Machine Diagnosis By Using Fault Codes) Procedure

Refer to troubleshooting A procedure in case any fault codes are displayed after diagnosing by using MPDr. or the service menu of the monitor.

- Diagnosis Procedure
  - The diagnosis procedures for the displayed fault codes are explained in this group.
  - In case more than one fault code are displayed at the same time, MC may be faulty or the power/ground of the sensor system may be faulty.
  - When the MC fault code is displayed with other fault code, replace MC.
  - When fault code 04 (Abnormal Sensor Voltage) is displayed with other fault code, diagnose for fault code 04 first.
  - In case more than one fault code other than those described above are displayed at the same time, diagnose for each fault code.
  - It may be required that the machine is operated or the test harness is connected at inspection. Check the items of preparation and perform inspection according to the procedures when diagnosing.

*NOTE: Harness end connector viewed from the open end side by the all connectors image shown in this section.*




T6L4-05-03-001

1- Harness End Connector 2- Harness



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| Procedure | Inspection Method | Condition | Evaluation | Cause |
|---|---|---|---|---|
| 12 | Measure voltage at DC/DC converter harness end #2 | Key Switch: ON | 0 V | Open circuit in harness between main relay 2 and DC/DC converter |
| 13 | Measure voltage at IGN relay harness end #2 | Key Switch: ON | 0 V | Open circuit in harness between DC/DC converter and IGN relay |
| 14 | Measure voltage at E-ECU harness end #7 | Key Switch: ON | 0 V | Open circuit in harness between IGN relay and E-ECU |
| 15 | Measure voltage at E-ECU harness end #15 | Key Switch: ON | 12 V | Faulty engine stop switch |
| 16 | Measure voltage at starter relay 2 harness end #2 | Key Switch: ON | 0 V | Open circuit in harness between DC/DC converter and starter relay 2 |
| 17 | Measure voltage at starter relay 2 harness end #1 | Key Switch: START | 0 V | Open circuit in harness between start relay and starter relay 2 |
| 18 | Measure voltage at starter relay 1 harness end terminal S | Key Switch: START | 0 V | Open circuit in harness between starter relay 2 and starter relay 1 |
| 19 | Measure voltage at battery relay terminal A | Key Switch: ON | 0 V | Faulty battery relay |
| 20 | Measure voltage at starter terminal S | Key Switch: START | 0 V | Faulty starter relay 1 |
| 21 | - | - | The check mentioned above is normal. | Faulty starter |



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## T-2 One side track does not rotate or rotates slowly. Machine mistracks.

| Track Revolution Speed | Specification (sec/3 rev) | Remark |
|---|---|---|
| Fast Speed | 12.6±1.0 | |
| Slow Speed | 19±2.0 | |

**Preparation**

- Check that both side track sags are equally adjusted.
- In only one side track does not rotate, the pilot valve, the control valve, the travel motor, or the center joint may be faulty.
- In case the machine mistracks only during fast travel mode, the travel motor displacement angle control system in the slow speed side may be abnormal.

| Procedure | Inspection Method | Condition | Evaluation | Cause |
|---|---|---|---|---|
| 1 | Measure secondary pilot pressure of travel | Operate the control lever alternately | The measured values are not within the normal values (Normal Value: 3.4-4.0 MPa) | Faulty pilot valve |
| 2 | Switch right and left travel line hoses each other at the top of center joint | - | Symptom is reversed | Stuck control valve spool |
| 3 | Switch forward travel relief valve with reverse travel one, or right travel relief valve with left one | - | Symptom is reversed. | Faulty travel motor |
| 4 | Measure relief pressure when relieving travel | When relieving travel | The measured value is not within the normal values (Normal value: $31.4^{+2.0}_{-0.5}$ MPa) | Faulty travel relief valve |
| 5 | Measure the travel motor drainage | With the motor relieved | The measured values are not within the normal values (Normal Value: less than 2.0 L/min) | Faulty travel motor |
| 6 | Disassemble and inspect the counterbalance valve | - | There is abnormality | Faulty counterbalance valve |
| 7 | - | - | The check mentioned above is normal | Faulty travel reduction gear |



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