Service Information System

Tuesday, March 01, 2016

3:24 PM

**Troubleshooting**

**120H, 12H, 135H, 140H, 143H, 160H and 163H Motor Graders**

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| **Media Number -RENR4104-12**  | **Publication Date -01/10/2014**  | **Date Updated -23/10/2014**  |

i03525500

**MID 081 - CID 0585 - FMI 02**

**SMCS -** 3175-038-OJ

**Conditions Which Generate This Code:**

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| View Image |   |
| Illustration 1 | g01853855 |
| Schematic of the transmission output speed sensor (No. 1) |   |

This diagnostic code is recorded when the ECM receives an incorrect output signal from the transmission output speed sensor (No. 1). The signal is below the dropout signal level. The machine must be moving in order to initially log the diagnostic code for the sensor. The incorrect signal that is being read by the ECM has the following characteristics: erratic, intermittent and incorrect. The ECM determines that this condition exists by comparing the information from the signals. The ECM compares the two signals from the speed sensors. The ECM checks if one of the two signals is invalid or out of the range.

When this diagnostic code is active, the signal from the transmission output speed sensor (No. 1) to the ECM is incorrect.

**System Response:**

If the transmission output speed sensor (No. 2) is working properly, this diagnostic code will have no effect on the machine response.

**Note:** The ECM will not sense a signal from the speed sensor unless the machine is moving. When the ECM determines that a signal exists, the diagnostic code is not active.

**Test Step 1. CHECK THE SENSOR RESISTANCE.**

1. Turn the key start switch and the disconnect switch to the OFF position.
2. Disconnect the machine harness from the speed sensor.
3. At the connector for the speed sensor, measure the resistance between the two contacts of the connector of the speed sensor.

**Expected Result:**

The resistance measurement is between 1000 ohms and 1200 ohms.

**Results:**

* **OK -** The speed sensor has not failed. Proceed to test step 2.
* **NOT OK -** The speed sensor has failed.
**Repair:** Replace the sensor.
**STOP**

**Test Step 2. CHECK THE RETURN CIRCUIT.**

1. The disconnect switch and the key start switch remain in the OFF position.
2. The machine harness remains disconnected from the sensor.
3. Disconnect machine harness connectors J2 and J2 from the ECM.
4. Measure the resistance between contact 1 (wire E901-GN) of the machine harness connector for the sensor and contact J2-14 of the machine harness connector for the ECM.

**Expected Result:**

The resistance should measure 5 ohms or less.

**Results:**

* **OK -** The return circuit is correct. Proceed to test step 3.
* **NOT OK -** The return circuit (wire E901-GN) in the machine harness has excessive resistance (open).
**Repair:** Repair the machine harness or replace the machine harness.
**STOP**

**Test Step 3. CHECK THE SIGNAL CIRCUIT FOR AN OPEN IN THE MACHINE HARNESS.**

1. Place a jumper between the two contacts of the machine harness connector for the speed sensor.
2. Machine harness connectors J1 and J2 remain disconnected from the ECM.
3. Measure the resistance from the sensor signal J2-20 wire (E900-WH) to the return contact J2-14 wire (E901-GN) of the machine harness.

**Expected Result:**

The resistance is less than 5.0 ohms.

**Results:**

* **OK -** The resistance is less than 5.0 ohms. The signal circuit in the machine harness is correct. Proceed to test step 4.
* **NOT OK -** The resistance is greater than 5000 ohms. There is an open in the signal circuit of the machine harness.
**Repair:** Repair the machine harness or replace the machine harness.
**STOP**

**Test Step 4. CHECK THE SIGNAL FOR A SHORT.**

1. Remove the jumper between the two contacts of the speed sensor of the previous test "CHECK SIGNAL CIRCUIT FOR AN OPEN IN THE MACHINE HARNESS".
2. Reconnect the machine harness to the speed sensor.
3. At the J1 and J2 harness connectors, measure the resistance between J2-20 (wire E900-WH) and all sources of positive voltage and ground.

**Expected Result:**

Each resistance should be greater than 5000 ohms.

**Results:**

* **OK -** The machine harness is correct. Proceed to test step 5.
* **NOT OK -** There is a short in the machine harness.
**Repair:** The short is between the signal circuit (wire E900-WH) and the circuit with the low resistance measurement. Repair the machine harness or replace the machine harness.
**STOP**

**Test Step 5. CHECK IF THE DIAGNOSTIC CODE REMAINS.**

1. Clean the contacts of the harness connectors.
2. Reconnect all harness connectors.
3. Turn the disconnect switch to the ON position.
4. Turn the key start switch to the ON position.
5. Operate the machine.
6. View the status of the diagnostic code. The diagnostic code is active or the diagnostic code is not active.

**Expected Result:**

The diagnostic code is no longer active.

**Results:**

* **OK -** The diagnostic code is not active. The diagnostic code does not exist at this time. The initial diagnostic code was probably caused by a poor electrical connection or a short in one of the wires in the machine harness. Resume normal machine operation.**STOP**
* **NOT OK -** The diagnostic code has not been corrected.
**Repair:** It is unlikely that the ECM has failed. Perform CID 0585 FMI 02 again. If the cause of the diagnostic code is not found, replace the ECM. See the Testing and Adjusting, "Electronic Control Module (ECM) - Replace" Story in this manual for additional information.
**STOP**

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