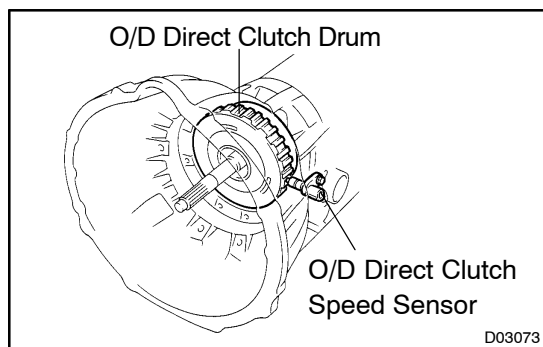


|            |              |                                                                                        |
|------------|--------------|----------------------------------------------------------------------------------------|
| <b>DTC</b> | <b>P0715</b> | <b>Input/Turbine Speed Sensor Circuit Malfunction (O/D Direct Clutch Speed Sensor)</b> |
|------------|--------------|----------------------------------------------------------------------------------------|

## CIRCUIT DESCRIPTION

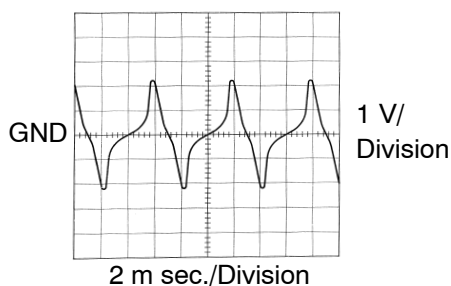


This sensor detects the rotation speed of the O/D input shaft from the rotation of the O/D direct clutch drum.

Its construction is the same as that of the No.2 vehicle speed sensor (See page [DI-188](#)).

By comparing the O/D direct clutch speed signal and No.2 vehicle speed sensor signal, the ECM detects the shift timing of the gears and appropriately controls the engine torque and hydraulic pressure in response to various conditions, thus doing smooth gear shift.

| DTC No. | DTC Detection Condition                                                                                                                                                                                                                                                                                                                                                                                                         | Trouble Area                                                                                                                                                                                                    |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P0715   | <p>All conditions below are detected for 5 secs. or more (2-trip detection logic)</p> <p>(a) Gear change not being performed</p> <p>(b) Gear position: 1st, 2nd 3rd or O/D</p> <p>(c) T/M input shaft rpm: 300 rpm or less</p> <p>(d) T/M output shaft rpm: 1,000 rpm or more</p> <p>(e) Park/neutral position switch: OFF</p> <p>(f) Shift solenoid valves No.1, No.2, SL and vehicle speed sensor are in normal operation</p> | <ul style="list-style-type: none"> <li>• Open or short in O/D direct clutch speed sensor circuit</li> <li>• O/D direct clutch speed sensor</li> <li>• ECM</li> <li>• Automatic transmission assembly</li> </ul> |

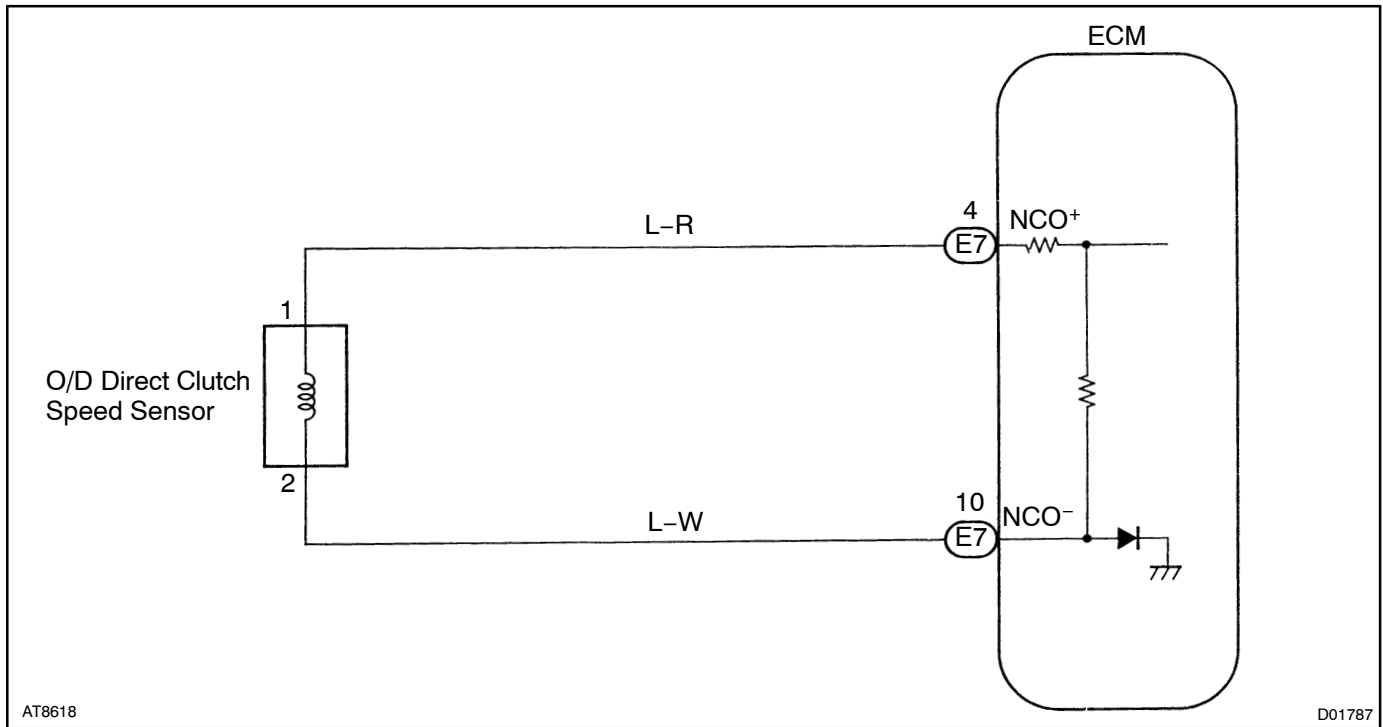


### HINT:

Waveform between terminals NCO<sup>+</sup> and NCO<sup>-</sup> during engine idling.

AT8763

# WIRING DIAGRAM



## INSPECTION PROCEDURE

### HINT:

In case of using the TOYOTA hand-held tester, start the inspection from step 1 and in case of not using the TOYOTA hand-held tester, start from step 2.

|   |                                                                      |
|---|----------------------------------------------------------------------|
| 1 | Using TOYOTA hand-held tester, check O/D direct clutch speed signal. |
|---|----------------------------------------------------------------------|

### **PREPARATION:**

- Remove the DLC3 cover.
- Connect TOYOTA hand-held tester to the DLC3.
- Start the engine (Shift position: P).
- Turn the TOYOTA hand-held tester main switch ON.

### **CHECK:**

Read O/D direct clutch speed at engine idling.

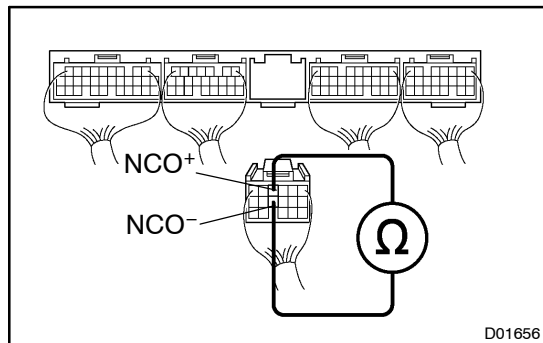
### **OK:**

700 ± 50 rpm at engine idling

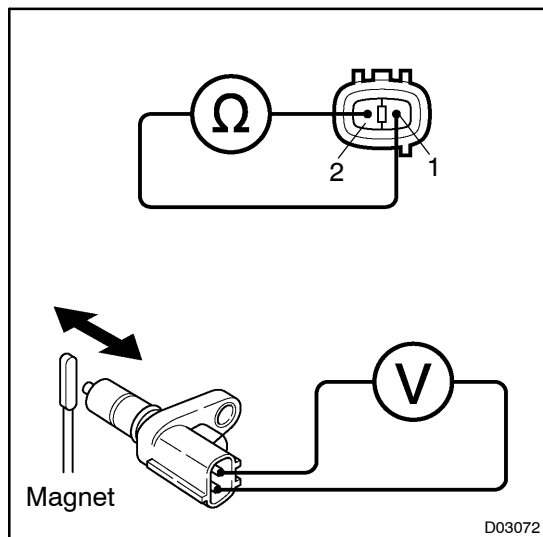
|    |               |
|----|---------------|
| NG | Go to step 2. |
|----|---------------|



Proceed to next circuit inspection shown on problem symptoms table (See page [DI-161](#)). However, when DTC P0715 is displayed, check and replace ECM (See page [IN-34](#).)

**2****Check resistance between terminals NCO<sup>+</sup> and NCO<sup>-</sup> of ECM****PREPARATION:**

Disconnect the connector from ECM.

**CHECK:**Check resistance between terminals NCO<sup>+</sup> and NCO<sup>-</sup> of ECM.**OK:****Resistance: 560 – 680 Ω at 20 °C (68 °F)****OK****Check and replace the ECM  
(See page IN-34.).****NG****3****Check O/D direct clutch speed sensor.****PREPARATION:**

Remove the O/D direct clutch speed sensor from the transmission.

**CHECK:**

- (a) Measure resistance between terminals 1 and 2 of O/D direct clutch speed sensor.
- (b) Check voltage between terminals 1 and 2 of the speed sensor when a magnet is put close to the front end of the speed sensor then kept away quickly.

**OK:****(a): Resistance: 560 – 680 Ω****(b): Voltage is generated intermittently****HINT:**

The generated voltage is extremely low.

**NG****Replace the O/D direct clutch speed sensor.****OK**

**Check and repair harness and connector between ECM and O/D direct clutch speed sensor (See page IN-34).**