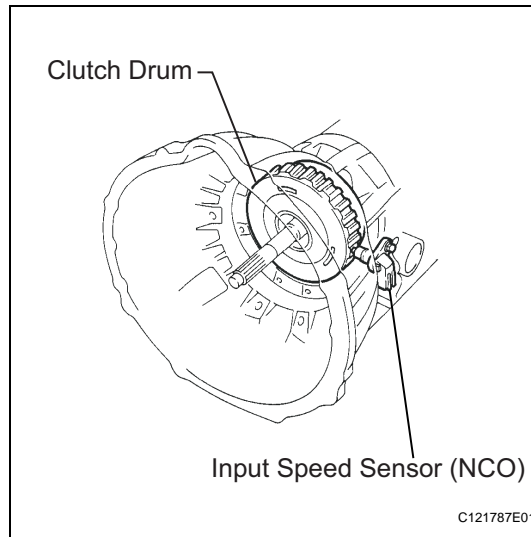


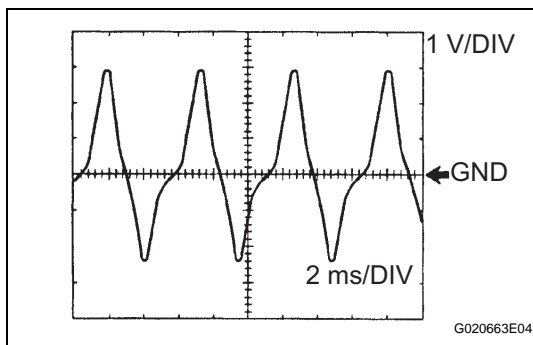
DTC	P0717	Turbine Speed Sensor Circuit No Signal
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DESCRIPTION



The sensor detects the rotation speed of the turbine which shows the input revolution of the transmission. By comparing the input turbine speed signal (NCO) with the counter gear speed sensor signal (SP2), the ECM detects the shift timing of the gears and appropriately controls the engine torque and hydraulic pressure according to various conditions. Thus, providing smooth gear shift.

DTC No.	DTC Detection Conditions	Trouble Areas
P0717	ECM detects conditions (a), (b) and (c) continuously for 5 seconds or more. (1-trip detection logic) (a) Output shaft speed is 500 rpm or more. (Vehicle speed: 31 mph (50 km/h) or more) (b) Park/neutral position switch: NSW input signal is OFF R input signal is OFF (c) Speed sensor (NCO): Less than 300 rpm	<ul style="list-style-type: none"> • Open or short in speed sensor (NCO) circuit • Speed sensor (NCO) • ECM



1. Reference (Using an oscilloscope):

Check the waveform between terminals NCO+ and NCO- of the ECM connector.

Standard:

Refer to the illustration.

Item	Content
Terminal	NCO+ (E5-34) - NCO- (E5-26)
Tool setting	1 V/DIV 2 ms/DIV
Vehicle condition	Engine idling speed (P or N position)

MONITOR DESCRIPTION

This DTC indicates that a pulse is not output from the speed sensor NCO (Turbine (input) speed sensor) or is weak. The NCO terminal of the ECM detects the revolving signal from speed sensor (NCO) (input RPM). The ECM outputs a gearshift signal comparing the speed sensor (NCO) with the output speed sensor (SP2).

If the input shaft revolution is less than 300 rpm^{*1} although the output shaft revolution is more than 500 rpm or more^{*2}, the ECM detects the trouble, illuminates the MIL and stores the DTC.

*1: Pulse is not output or is irregularly output.

*2: The vehicle speed is approximately 31 mph (50 km/h) or more.

MONITOR STRATEGY

Related DTCs	P0717: Speed sensor (NCO)/ Verify pulse input
Required sensors/Components	Speed sensor (NCO)
Frequency of operation	Continuous
Duration	5 seconds
MIL operation	Immediate
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not present.	P0500 (VSS) P0748 - P0798 (Trans solenoid (range))
Shift change	Each shift change is completed before starting next shift change operation
Output shaft rpm	500 rpm or more
Turbine speed sensor malfunction	Not detected
R switch	OFF
Park/neutral position switch	OFF

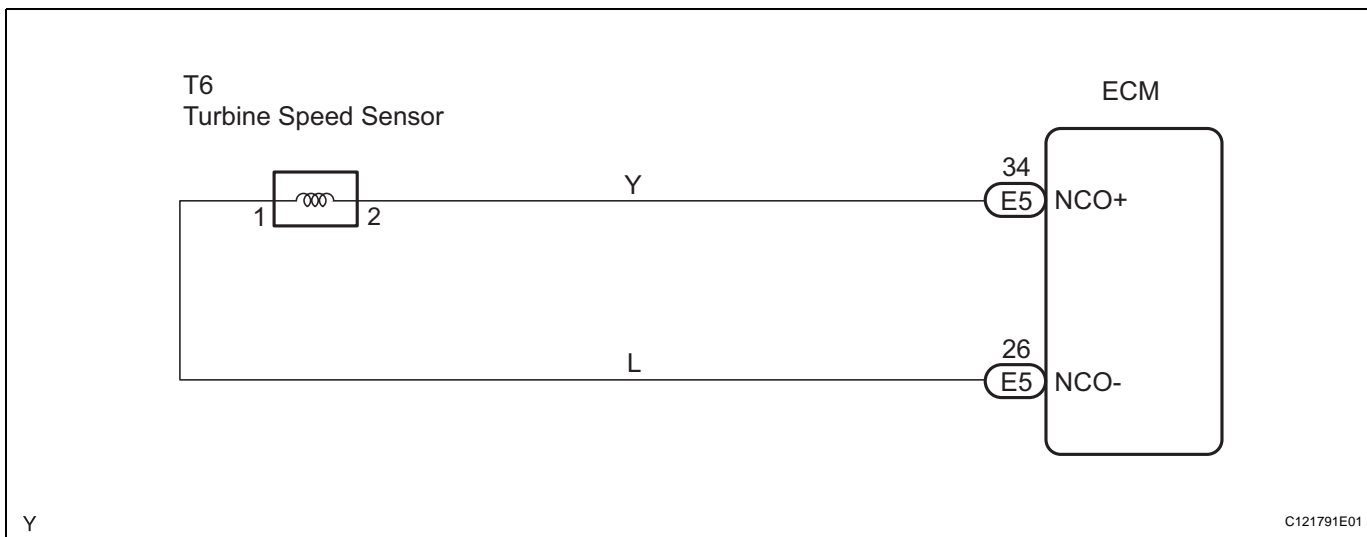
TYPICAL MALFUNCTION THRESHOLDS

Sensor signal rpm	Less than 300 rpm
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COMPONENT OPERATING RANGE

Speed sensor (NCO)	Input speed is equal to engine speed when lock-up ON.
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WIRING DIAGRAM



1. DATA LIST

HINT:

According to the DATA LIST displayed on the intelligent tester, you can read the values of components, such as the switches, sensors and actuators, without removing any parts. Reading the DATA LIST as the first step of troubleshooting is one method of shortening labor time.

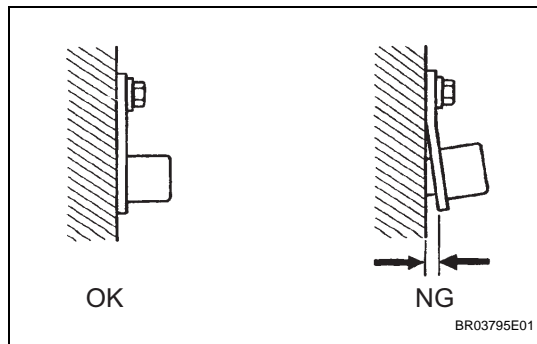
- (a) Warm up the engine.
- (b) Turn the ignition switch off.
- (c) Connect the intelligent tester together with the CAN VIM (controller area network vehicle interface module) to the DLC3.
- (d) Turn the ignition switch to the ON position.
- (e) Push the "ON" button of the tester.
- (f) Select the items "DIAGNOSIS/ ENHANCED OBD II/ DATA LIST/ A/T".
- (g) According to the display on the tester, read the "DATA LIST".

Item	Measurement Item/ Range (display)	Normal Condition
SPD (NCO)	Input Turbine Speed/ display: 50 rpm	HINT: <ul style="list-style-type: none"> • 3rd gear lock-up ON (After warming up the engine); Input turbine speed (NCO) equal to the engine speed • 4th gear lock-up ON (After warming up the engine); Input turbine speed (NCO): 0 rpm • Lock-up OFF (Idling at N position); Input turbine speed (NCO) nearly equal to the engine speed

HINT:

- SPD (NCO) is always 0 while driving indicates:
3rd Gear: Open or short in the sensor or circuit.
4th Gear: Engine speed 0 rpm
- SPD (NCO) is always less than 300 rpm while driving the vehicle at 31 mph (50 km/h) or more indicates:
Sensor trouble, improper installation, or intermittent connection trouble of the circuit.

1 INSPECT SPEED SENSOR INSTALLATION



(a) Check the speed sensor (NCO) installation.

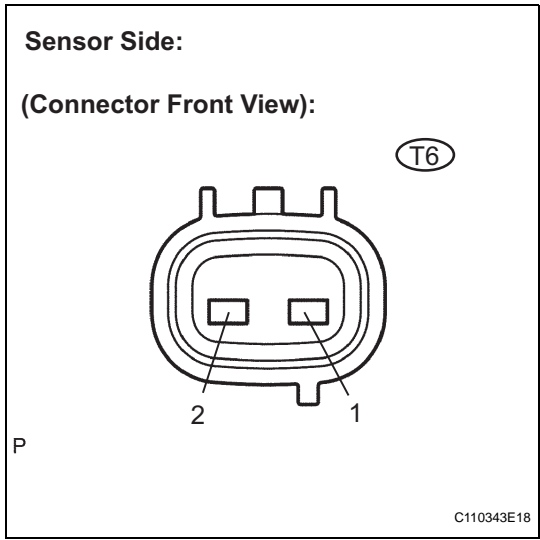
OK:

The installation bolt is tightened properly and there is no clearance between the sensor and transmission case.

NG → **REPLACE SPEED SENSOR (NCO)**

OK

2 INSPECT SPEED SENSOR (NCO)



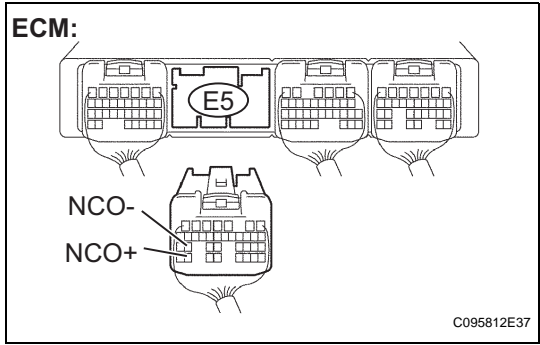
- (a) Disconnect the speed sensor connector from the transmission.
 - (b) Measure the resistance.
- Standard resistance**

Tester Connection	Specified Condition
1 - 2	560 to 680 Ω at 20 °C (68 °F)

NG → **REPLACE SPEED SENSOR (NCO)**

OK

3 CHECK HARNESS AND CONNECTOR (SPEED SENSOR - ECM)



- (a) Connect the speed sensor connector.
 - (b) Disconnect the ECM connector.
 - (c) Measure the resistance.
- Standard resistance**

Tester Connection	Specified Condition
E5-34 (NCO+) - E5-26 (NCO-)	560 to 680 Ω at 20 °C (68 °F)
E5-34 (NCO+) - Body ground	10 kΩ or higher
E5-26 (NCO-) - Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE ECM