

DTC	P0705	Transmission Range Sensor Circuit Malfunction (PRNDL Input)
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DESCRIPTION

The park/neutral position switch detects the shift lever position and sends signals to the ECM.

DTC No.	DTC Detection Conditions	Trouble Areas
P0705	When any one of following conditions (A) to (C) is met (2-trip detection logic): (A) Any 2 or more of the following signals are ON simultaneously. – NSW input signal is ON. – R input signal is ON. – D input signal is ON. – 3 input signal is ON. – 2 input signal is ON. (B) All switches are OFF simultaneously for P (NSW), R, N (NSW), D, 3 and 2 positions. (C) When NSW or R input signal is ON, 4 or L input signal is ON.	<ul style="list-style-type: none"> • Open or short in park/neutral position switch circuit • Park/neutral position switch • ECM

MONITOR DESCRIPTION

The DTC indicates a problem with the park/neutral position switch and the wire harness in the park/neutral position switch circuit.

For security, the park/neutral position switch detects the shift lever position so that the engine can be started only when the vehicle is in the P or N shift position.

When the park/neutral position switch sends more than one signal at a time from switch positions P, R, N, D, 3 or 2, the ECM interprets this as a fault in the switch. The ECM will turn on the MIL and store the DTC.

MONITOR STRATEGY

Related DTCs	P0705: Park/neutral position switch/Verify switch input
Required sensors/Components	Park/neutral position switch
Frequency of operation	Continuous
Duration	Conditions (A) and (C): 2 seconds Condition (B): 60 seconds
MIL operation	2 driving cycles
Sequence of operation	None

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TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not present.	None
Ignition switch	ON
Battery voltage	10.5 V or more

TYPICAL MALFUNCTION THRESHOLDS

One of the following conditions is met: Condition (A), (B) or (C)

Condition (A)

Number of the following signals input at the same time	2 or more
Park/neutral position switch	ON
R switch	ON
D switch	ON
3 switch	ON

2 switch	ON
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Condition (B)

All of following conditions are met

Park/neutral position switch	OFF
R switch	OFF
D switch	OFF
3 switch	OFF
2 switch	OFF

Condition (C)

Both (i) and (ii) are met

(i) One of following conditions is met

Park/neutral position switch	ON
R switch	ON

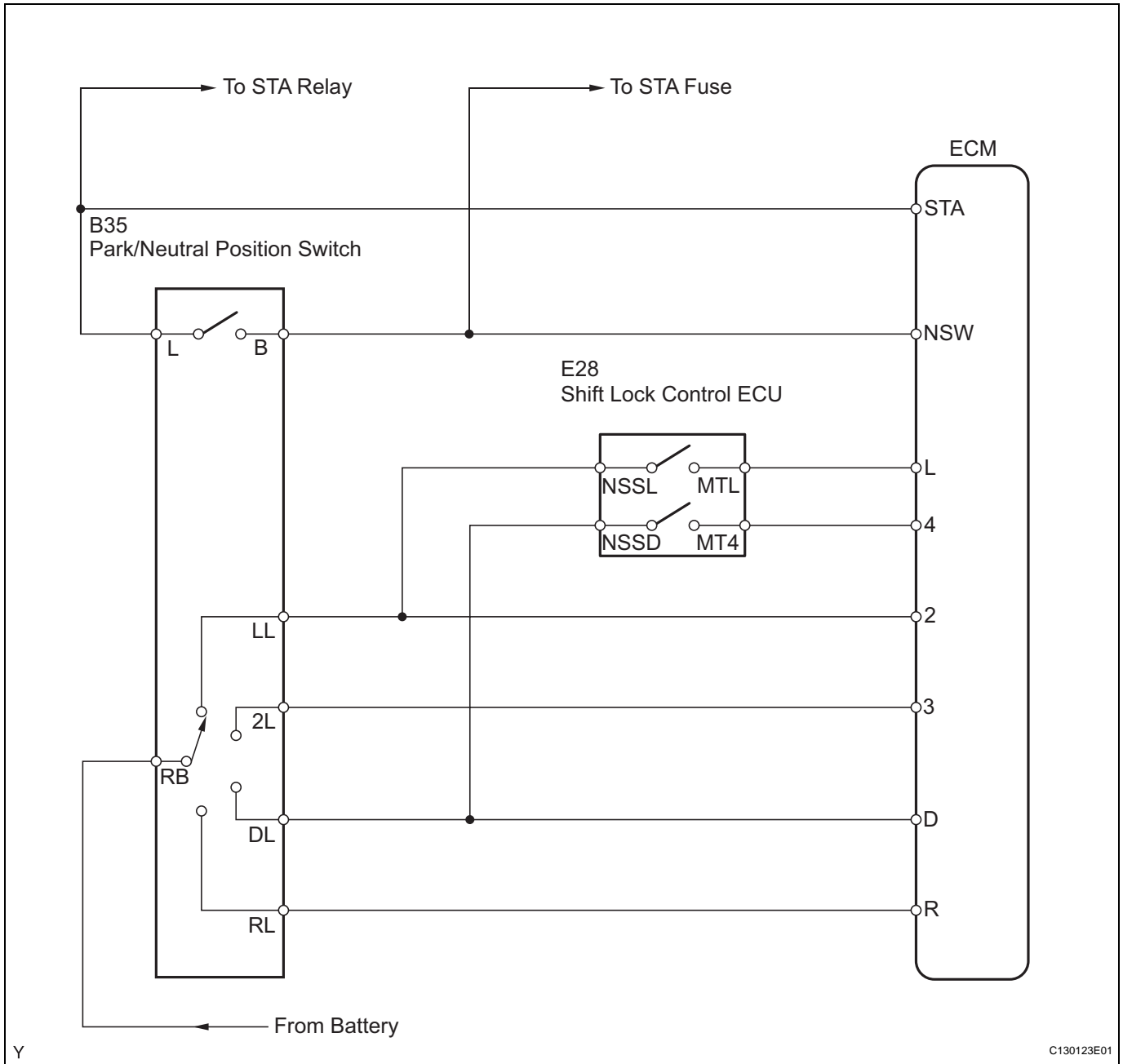
(ii) One of following conditions is met

4 switch	ON
L switch	ON

COMPONENT OPERATING RANGE

Park/neutral position switch	The park/neutral position switch sends only one signal to the ECM
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WIRING DIAGRAM



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INSPECTION PROCEDURE

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 a first step of troubleshooting is one method of shortening labor time.

NOTICE:

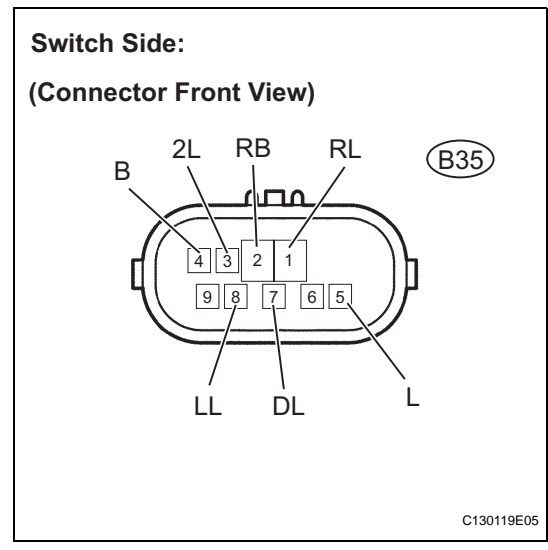
In the table below, the values listed under "Normal Condition" are for reference only. Do not depend solely on these reference values when judging whether a part is faulty or not.

1. Connect the intelligent tester together with the CAN VIM (Controller Area Network Vehicle Interface Module) to the DLC3.
2. Turn the ignition switch to the ON position.
3. Push the "ON" button of the tester.
4. Select the items "DIAGNOSIS / ENHANCED OBD II / DATA LIST / A/T".

5. According to the display on the tester, read the "DATA LIST".

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
PNP SW [NSW]	PNP Switch Status/ ON or OFF	Shift lever position is; P or N: ON Except P and N: OFF	When the shift lever position displayed on the intelligent tester differs from the actual position, adjustment of the PNP switch or the shift cable may be incorrect.
REVERSE	PNP Switch Status/ ON or OFF	Shift lever position is; R: ON Except R: OFF	
DRIVE	PNP Switch Status/ ON or OFF	Shift lever position is; D or 4: ON Except D and 4: OFF	
4th/DRIVE	PNP Switch Status/ ON or OFF	Shift lever position is; 4: ON Except 4: OFF	
3RD	PNP Switch Status/ ON or OFF	Shift lever position is; 3: ON Except 3: OFF	
2ND	PNP Switch Status/ ON or OFF	Shift lever position is; 2 or L: ON Except 2 and L: OFF	
LOW	PNP Switch Status/ ON or OFF	Shift lever position is; L: ON Except L: OFF	

1 INSPECT PARK/NEUTRAL POSITION SWITCH ASSEMBLY



- (a) Disconnect the park/neutral position switch connector.
- (b) Measure the resistance when the shift lever is moved to each position.

Standard resistance

Shift Position	Tester Connection	Specified Condition
P or N	4 (B) - 5 (L)	Below 1 Ω
Except P and N	4 (B) - 5 (L)	10 kΩ or higher
R	1 (RL) - 2 (RB)	Below 1 Ω
Except R	1 (RL) - 2 (RB)	10 kΩ or higher
D or 4	2 (RB) - 7 (DL)	Below 1 Ω
Except D and 4	2 (RB) - 7 (DL)	10 kΩ or higher
3	2 (RB) - 3 (2L)	Below 1 Ω
Except 3	2 (RB) - 3 (2L)	10 kΩ or higher
2 or L	2 (RB) - 8 (LL)	Below 1 Ω
Except 2 and L	2 (RB) - 8 (LL)	10 kΩ or higher

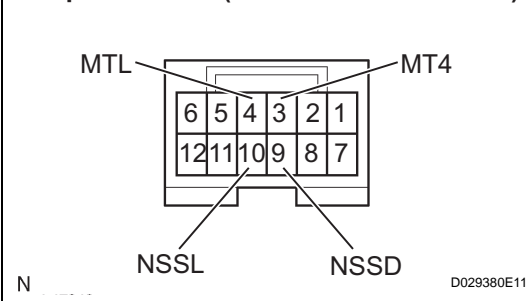
NG → **REPLACE PARK/NEUTRAL POSITION SWITCH ASSEMBLY**

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2 INSPECT SHIFT LOCK CONTROL ECU SUB-ASSEMBLY

Component Side (Connector Front View):



- (a) Connect the park/neutral position switch connector.
- (b) Disconnect the shift lock control ECU connector.
- (c) Measure the resistance when the shift lever is moved to each position.

Standard resistance

Shift Position	Tester Connection	Specified Condition
D	9 (NSSD) - 3 (MT4)	10 kΩ or higher
4	9 (NSSD) - 3 (MT4)	Below 1 Ω
2	10 (NSSL) - 4 (MTL)	10 kΩ or higher
L	10 (NSSL) - 4 (MTL)	Below 1 Ω

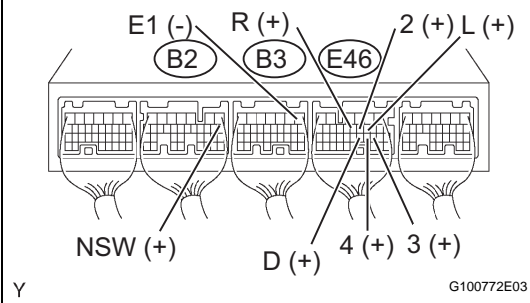
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REPLACE SHIFT LOCK CONTROL ECU SUB-ASSEMBLY

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3 CHECK HARNESS AND CONNECTOR (PARK/NEUTRAL POSITION SWITCH - ECM)

ECM:



- (a) Connect the shift lock control ECU connector.
- (b) Turn the ignition switch to the ON position.
- (c) Measure the voltage when the shift lever is moved to each position.

Standard voltage

Shift Position	Tester Connection	Specified Condition
P or N	B2-8 (NSW) - B3-1 (E1)	Below 2 V
Except P and N	B2-8 (NSW) - B3-1 (E1)	11 to 14 V
R	E46-11 (R) - B3-1 (E1)	11 to 14 V*
Except R	E46-11 (R) - B3-1 (E1)	Below 1 V
D or 4	E46-21 (D) - B3-1 (E1)	11 to 14 V
Except D and 4	E46-21 (D) - B3-1 (E1)	Below 1 V
4	E46-20 (4) - B3-1 (E1)	11 to 14 V
Except 4	E46-20 (4) - B3-1 (E1)	Below 1 V
3	E46-19 (3) - B3-1 (E1)	11 to 14 V
Except 3	E46-19 (3) - B3-1 (E1)	Below 1 V
2 or L	E46-10 (2) - B3-1 (E1)	11 to 14 V
Except 2 and L	E46-10 (2) - B3-1 (E1)	Below 1 V
L	E46-9 (L) - B3-1 (E1)	11 to 14 V
Except L	E46-9 (L) - B3-1 (E1)	Below 1 V

HINT:

*: The voltage will drop slightly due to illumination of the back up light.

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REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ECM