DTC	P0705	Transmission Range Sensor Circuit Malfunction (PRNDL Input)

DTC	P0850	Park / Neutral Switch Input Circuit

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	Either of the following conditions is met: (a) Any 2 or more of the following signals are ON simultaneously. (2-trip detection logic) • Park/neutral position switch input signal is ON • R input signal is ON • D input signal is ON • 2 input signal is ON (b) Any 2 or more of the following signals are ON simultaneously. (2-trip detection logic) • Park/neutral position switch input signal is ON • R input signal is ON • 3 input signal is ON • L input signal is ON	• Open or short in park/neutral position switch circuit • Park/neutral position switch • ECM
P0850	Park/neutral position switch remains ON (P, N position) while driving under conditions (a) and (b) for 15 seconds. (2-trip detection logic) (a) Vehicle speed: 43.5 mph (70 km/h) or more (b) Engine speed: 1,500 to 2,500 rpm	• Short in park/neutral position switch circuit • Park/neutral position switch • ECM

MONITOR DESCRIPTION

These DTCs indicate 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 or D, the ECM interprets this as a fault in the switch. The ECM turns on the MIL and store a DTC.

MONITOR STRATEGY

P0705:

Related DTCs	P0705: Park/neutral position switch/Verify switch input
Required sensors/Components	Park/neutral position switch
Frequency of operation	Continuous
Duration	2 seconds
MIL operation	2 driving cycles
Sequence of operation	None

P0850:

Related DTCs	P0850: Park/Neutral position switch/Verify switch cycling
Required sensors/Components	Park/Neutral position switch
Frequency of operation	Continuous
Duration	15 seconds
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

P0705:

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

P0850:

The monitor will run whenever the following DTCs are not present.	None
Vehicle speed	43.5 mph (70 km/h) or more
Engine speed	1,500 rpm or more and 2,500 rpm or less
Intake air amount per revolution	0.6 g/rev. or more

TYPICAL MALFUNCTION THRESHOLDS

P0705: One of the following conditions is met: Condition (A) or (B)

Condition (A)

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

Condition (B)

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

P0850:

Park/neutral position switch	ON

COMPONENT OPERATING RANGE

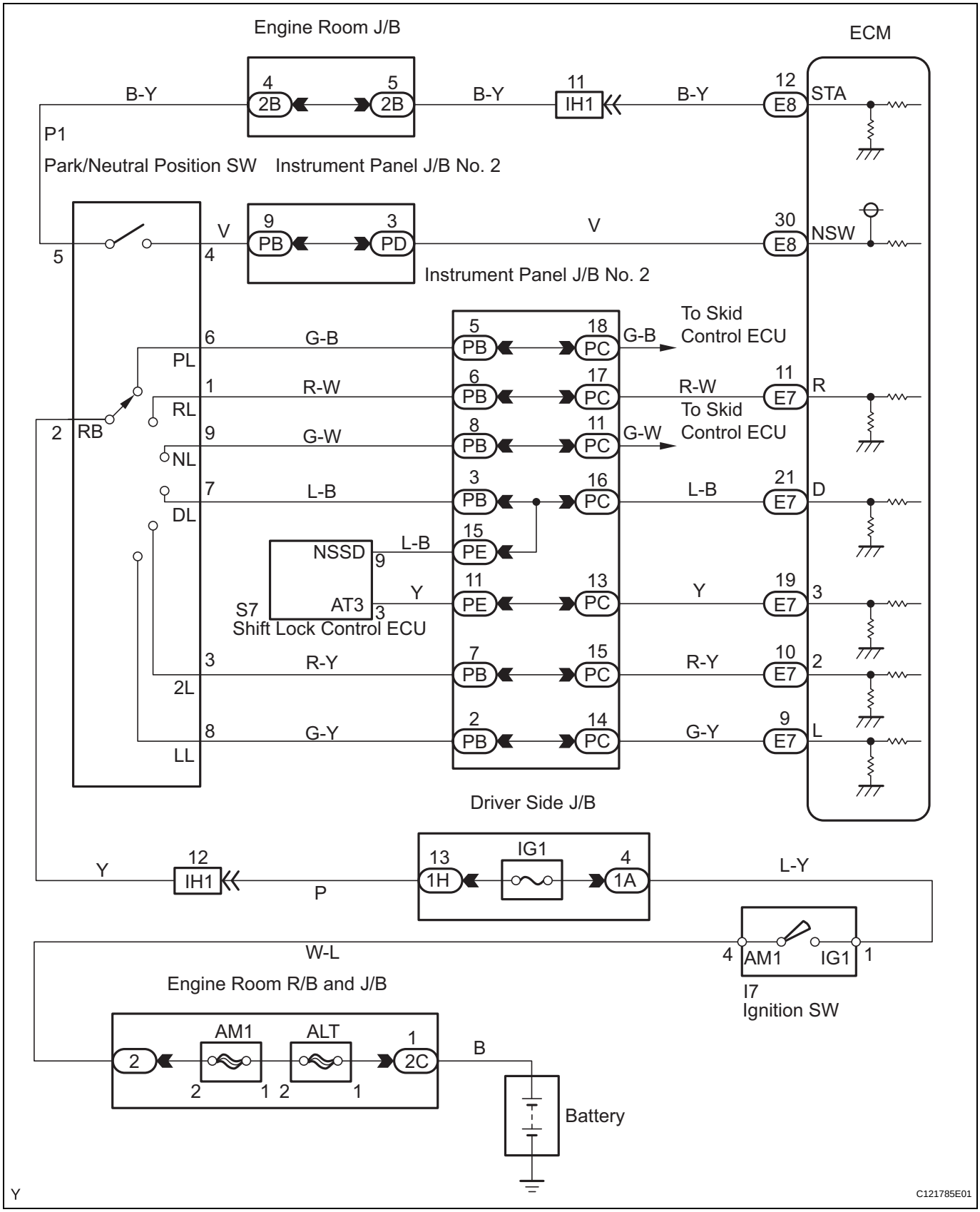
P0705:

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

P0850:

Park/neutral position switch	The park/neutral position switch is OFF when vehicle speed is 43.5 mph (70 km/h) or more and engine speed is between 1,500 rpm and 2,500 rpm.

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.

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.

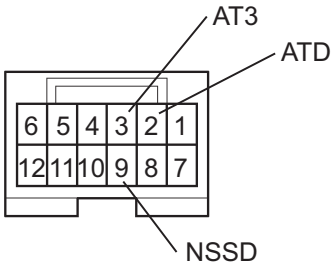
(a) Connect the intelligent tester together with the CAN VIM (controller area network vehicle interface module) to the DLC3.
(b) Turn the ignition switch to the ON position.
(c) Push the "ON" button of the tester.
(d) Select the items "DIAGNOSIS/ ENHANCED OBD II/ DATA LIST/ A/T".
(e) According to the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

Item	Measurement Item/ Range (display)	Normal Condition	Diagnostic Note
PNP SW [NSW]	PNP SW 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 SW Status/ ON or OFF	Shift lever position is; R: ON Except R: OFF	
DRIVE	PNP SW Status/ ON or OFF	Shift lever position is; D: ON Except D: OFF	
3RD	PNP SW Status/ ON or OFF	Shift lever position is; 3: ON Except 3: OFF	
2ND	PNP SW Status/ ON or OFF	Shift lever position is; 2: ON Except 2: OFF	
LOW	PNP SW Status/ ON or OFF	Shift lever position is; L: ON Except L: OFF	

1	INSPECT SHIFT LOCK CONTROL ECU SUB-ASSEMBLY (TRANSMISSION CONTROL SWITCH)

Component Side:

(Connector Front View): S7



C121789E01

(a) Disconnect the shift lock control ECU connector.
(b) Measure the resistance when the shift lever is moved to each position.

Standard resistance

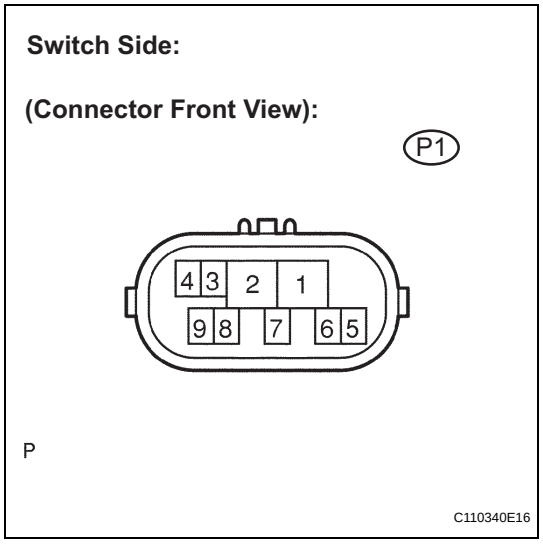
Shift Position	Tester Connection	Specified Condition
D	9 (NSSD) - 2 (ATD)	Below 1 Ω
3	9 (NSSD) - 2 (ATD)	10 kΩ or higher
D	9 (NSSD) - 3 (AT3)	10 kΩ or higher
3	9 (NSSD) - 3 (AT3)	Below 1 Ω

NG → **REPLACE SHIFT LOCK CONTROL ECU SUB-ASSEMBLY**

AT

OK

2 INSPECT PARK/NEUTRAL POSITION SWITCH ASSEMBLY



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

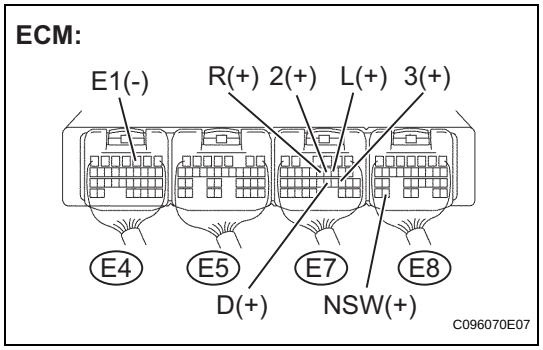
Standard resistance

Shift Position	Tester Connection	Specified Condition
P	2 - 6 and 4 - 5	Below 1 Ω
Except P	2 - 6 and 4 - 5	10 kΩ or higher
R	1 - 2	Below 1 Ω
Except R	1 - 2	10 kΩ or higher
N	2 - 9 and 4 - 5	Below 1 Ω
Except N	2 - 9 and 4 - 5	10 kΩ or higher
D, 3	2 - 7	Below 1 Ω
Except D, 3	2 - 7	10 kΩ or higher
2	2 - 3	Below 1 Ω
Except 2	2 - 3	10 kΩ or higher
L	2 - 8	Below 1 Ω
Except L	2 - 8	10 kΩ or higher

NG → REPLACE PARK/NEUTRAL POSITION SWITCH ASSEMBLY

OK

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



(a) Connect the park/neutral position switch 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 and N	E8-30 (NSW) - E4-3 (E1)	Below 1 V
Except P and N	E8-30 (NSW) - E4-3 (E1)	10 to 14 V
R	E7-11 (R) - E4-3 (E1)	10 to 14 V*
Except R	E7-11 (R) - E4-3 (E1)	Below 1 V
D	E7-21 (D) - E4-3 (E1)	10 to 14 V
Except D	E7-21 (D) - E4-3 (E1)	Below 1 V
3	E7-19 (3) - E4-3 (E1)	10 to 14 V
Except 3	E7-19 (3) - E4-3 (E1)	Below 1 V
2	E7-10 (2) - E4-3 (E1)	10 to 14 V
Except 2	E7-10 (2) - E4-3 (E1)	Below 1 V
L	E7-9 (L) - E4-3 (E1)	10 to 14 V
Except L	E7-9 (L) - E4-3 (E1)	Below 1 V

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

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

OK

REPLACE ECM