DTC P0705 TRANSMISSION RANGE SENSOR CIRCUIT MALFUNCTION (PRNDL INPUT)

CIRCUIT DESCRIPTION

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

DTC No.	DTC Detection Condition	Trouble Area
P0705	Any 2 or more signals of the following are ON simultaneously (2−trip detection logic) • 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.	• Open or short in park/neutral position switch circuit • Park/neutral position switch • ECM

MONITOR DESCRIPTION

The park/neutral position switch detects the shift lever position and sends a signal to the ECM.
For security, the park/neutral position switch detects the shift lever position so that engine can be started only when the shift lever is in the P or N position.
The park/neutral position switch sends a signal to the ECM according to the shift position (R, D, 3 or 2). The ECM determines that there is a problem with the switch or related parts if it receives more than 1 position signal simultaneously. 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	2 sec.
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever this DTC is not present.	See page 05−1253
Ignition switch	ON
Battery voltage	10.5 V or more

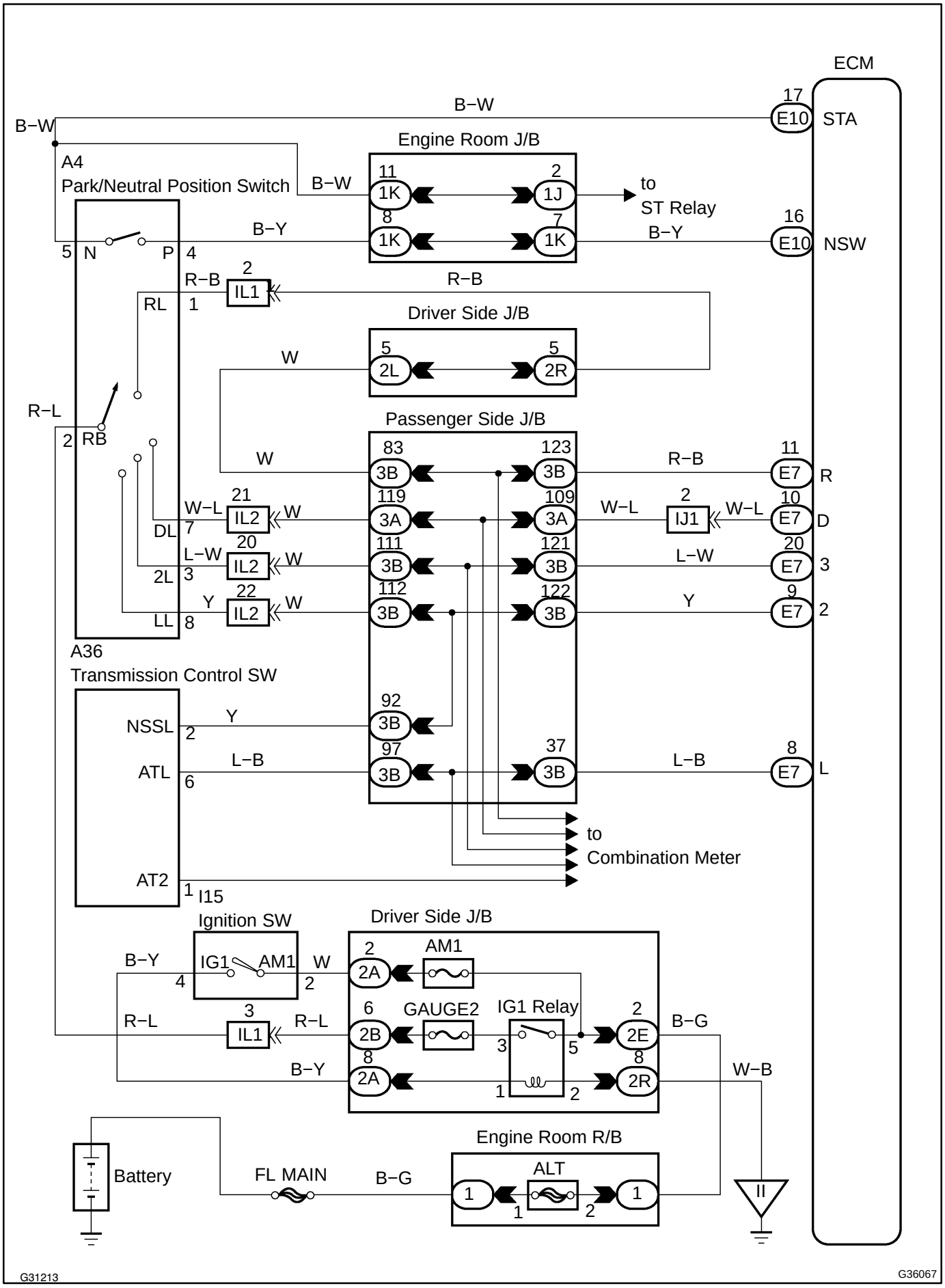
TYPICAL MALFUNCTION THRESHOLDS

Number of the following signal input at the same time	2 or more
NSW switch	ON
R switch	ON
D switch	ON
3 switch	ON
2 switch	ON

COMPONENT OPERATING RANGE

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

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

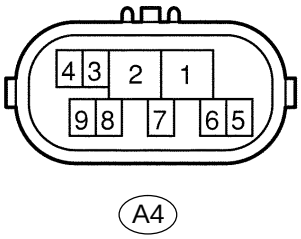
According to the DATA LIST displayed by the OBD II scan tool or hand−held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as the first step of troubleshooting is one method to shorten labor time.

(a) Warm up the engine.
(b) Turn the ignition switch off.
(c) Connect the OBD II scan tool or hand−held tester to the DLC3.
(d) Turn the ignition switch to the ON position.
(e) Push the ”ON” button of the OBD II scan tool or the hand−held tester.
(f) When you use hand−held tester:
Select the item ”DIAGNOSIS/ENHANCED OBD II/DATA LIST”.
(g) 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 and N: ON Except P and N: OFF	When the shift lever position displayed on the hand−held tester differs from the actual position, adjustment of the PNP switch or the shift cable may be incorrect.
LOW	PNP SW Status/ ON or OFF	Shift lever position is; L: ON Except L: OFF	↑
2ND	PNP SW Status/ ON or OFF	Shift lever position is; 2 and L: ON Except 2 and L: OFF	↑
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	↑

1 INSPECT PARK/NEUTRAL POSITION SWITCH ASSY

Switch Side:
(Connector Front View):



(a) Disconnect the park/neutral position switch connector.
(b) Measure the resistance according to the value(s) in the table below when the shift lever is moved to each position.

Standard:

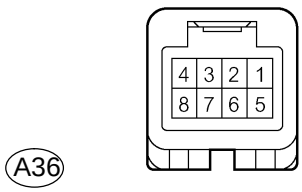
Shift Position	Tester Connection	Specified Condition
P	2 – 6 and 4 – 5	Below 1 Ω
Except P	↑	10 kΩ or higher
R	2 – 1	Below 1 Ω
Except R	↑	10 kΩ or higher
N	2 – 9 and 4 – 5	Below 1 Ω
Except N	↑	10 kΩ or higher
D	2 – 7	Below 1 Ω
Except D	↑	10 kΩ or higher
3	2 – 3	Below 1 Ω
Except 3	↑	10 kΩ or higher
2 and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

NG → **REPLACE PARK/NEUTRAL POSITION SWITCH ASSY (SEE PAGE 40–3)**

OK

2 INSPECT TRANSMISSION CONTROL SWITCH

Switch Side:
(Connector Front View):



(a) Connect the park/neutral position switch connector.
(b) Disconnect the transmission control switch connector of the shift lock control unit assy.
(c) Measure the resistance according to the value(s) in the table below when the shift lever is moved to each position.

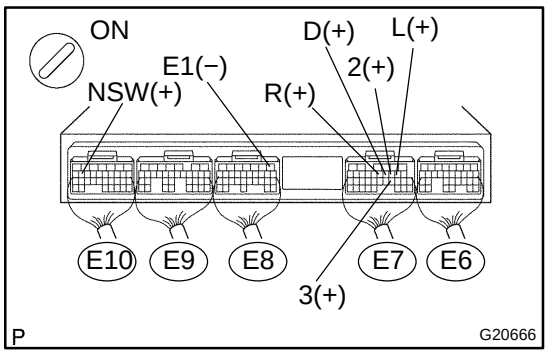
Standard:

Shift Position	Tester Connection	Specified Condition
2	1 – 2	Below 1 Ω
L	↑	10 kΩ or higher
2	6 – 2	10 kΩ or higher
L	↑	Below 1 Ω

NG → **REPLACE TRANSMISSION CONTROL SWITCH (SEE PAGE 40–53)**

OK

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



(a) Connect the transmission control switch connector of the shift lock control unit assy.

(b) Turn the ignition switch to the ON position, and measure the voltage according to the value(s) in the table below when the shift lever is moved to each position.

Standard:

Shift Position	Tester connection	Specified condition
P and N	E10 − 16 (NSW) − Body ground	Below 1 V
Except P and N	↑	10 to 14 V
R	E7 − 11 (R) − Body ground	10 to 14 V*
Except R	↑	Below 1 V
D	E7 − 10 (D) − Body ground	10 to 14 V
Except D	↑	Below 1 V
3	E7 − 20 (3) − Body ground	10 to 14 V
Except 3	↑	Below 1 V
2 and L	E7 − 9 (2) − Body ground	10 to 14 V
Except 2 and L	↑	Below 1 V
L	E7 − 8 (L) − Body ground	10 to 14 V
Except L	↑	Below 1 V

HINT:

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

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR (SEE PAGE 01−32)**

OK

REPLACE ECM (SEE PAGE 10−25)