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	(A) 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. • 2 input signal is ON. (B) 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. • 3 input signal is ON. • L input signal is ON.	• Open or 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.

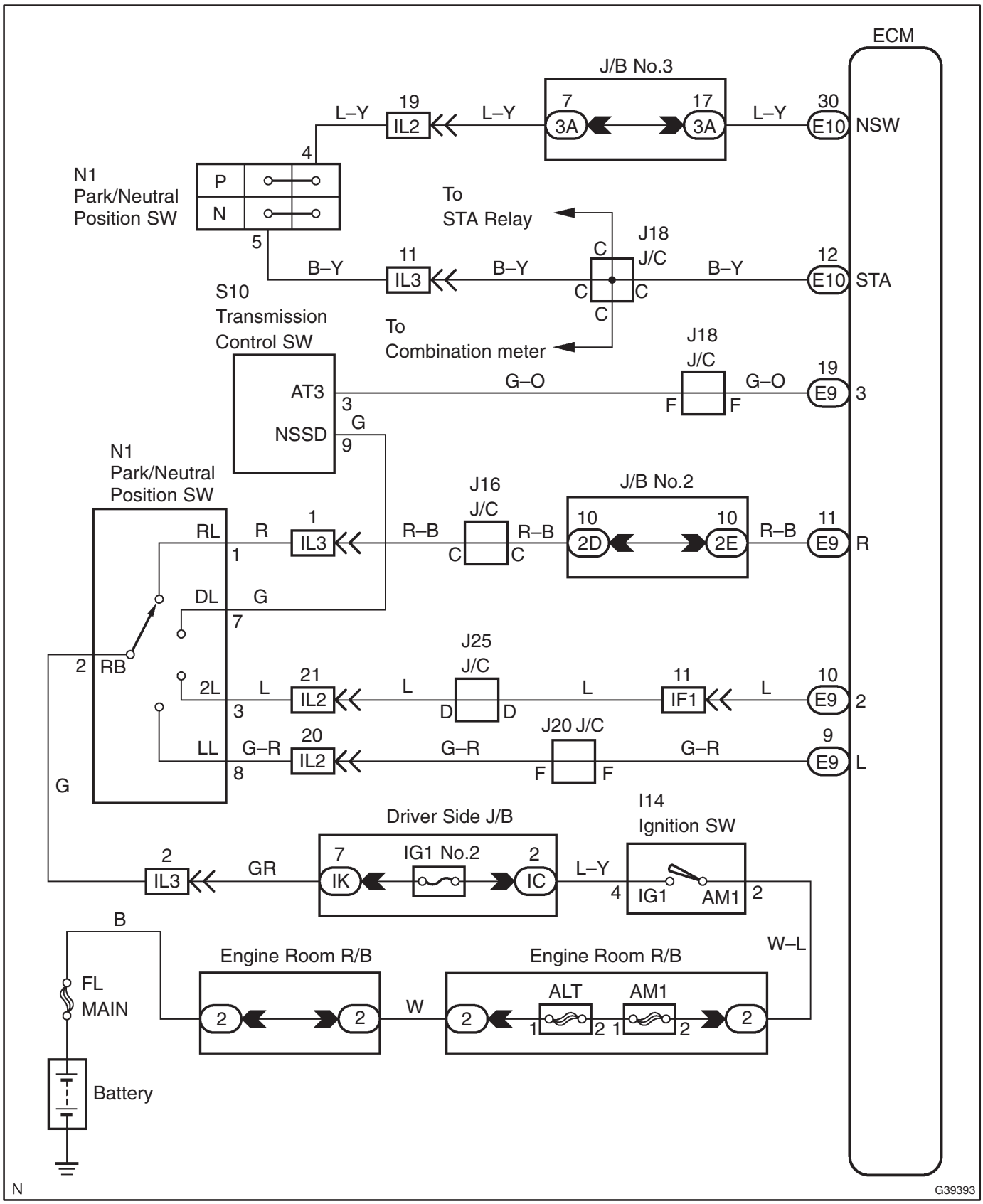
The park/neutral position switch detects the shift lever position and sends a signal to the ECM.

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, 3, 2 or L).

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.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Using the Intelligent Tester II Data List allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the Data List early in troubleshooting is one way to shorten labor time.

NOTICE:

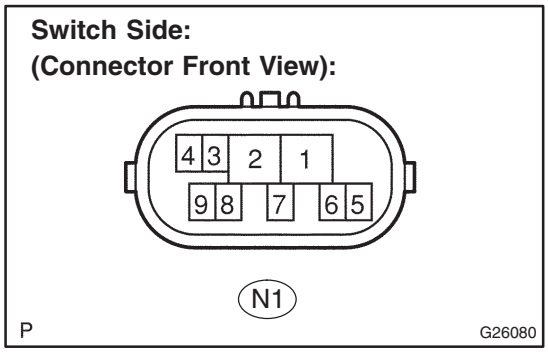
In the table below, the values listed under ”Normal Condition” are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

(a) Warm up the engine.
(b) Turn the ignition switch off.
(c) Connect the Intelligent Tester II to the DLC3.
(d) Turn the ignition switch to the ON position.
(e) Turn on the tester.
(f) Select the item ”Enter / Power train / Engine and ECT / Data List”.
(g) Follow the instructions on the tester and read the Data List.

Item	Measurement Item/ Range (display)	Normal Condition	Diagnostic Note
Neutral Position SW Signal	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 Intelligent tester II differs from the actual position, adjustment of the PNP switch or the shift cable may be incorrect.
Shift SW Status (L Range)	PNP SW Status/ ON or OFF	Shift lever position is; L: ON Except L: OFF	↑
Shift SW Status (2 Range)	PNP SW Status/ ON or OFF	Shift lever position is; 2 and L: ON Except 2 and L: OFF	↑
Shift SW Status (3 Range)	PNP SW Status/ ON or OFF	Shift lever position is; 3: ON Except 3: OFF	↑
Shift SW Status (R Range)	PNP SW Status/ ON or OFF	Shift lever position is; R: ON Except R: OFF	↑

HINT:
Start the inspection from the step 1 when the malfunction is found in the 3 position, and start from step 2 when the malfunction is in the other position.

1 INSPECT PARK/NEUTRAL POSITION SWITCH ASSY



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

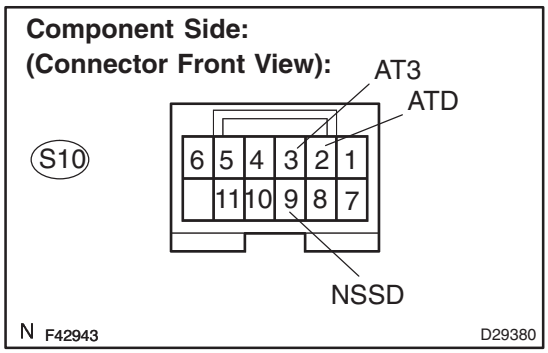
Standard:

Shift Position	Tester Connection	Specified Condition
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 and 3	2 – 7	Below 1 Ω
Except D and 3	↑	10 kΩ or higher
2	2 – 3	Below 1 Ω
Except 2	↑	10 kΩ or higher
L	2 – 8	Below 1 Ω
Except L	↑	10 kΩ or higher

NG → **REPLACE PARK/NEUTRAL POSITION SWITCH ASSY (SEE PAGE 40–10)**

OK

2 INSPECT SHIFT LOCK CONTROL ECU SUB–ASSY



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

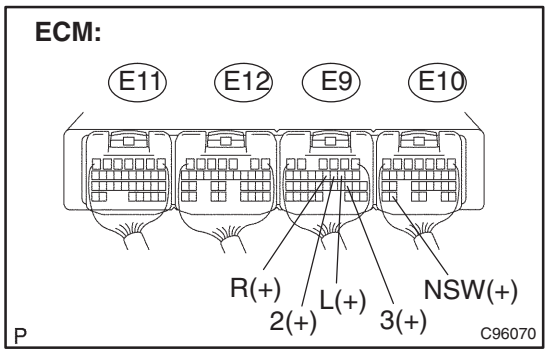
Standard:

Shift position	Tester connection	Specified condition
D	9 – 2 (NSSD – ATD)	Below 1 Ω
3		10 kΩ or higher
D	9 – 3 (NSSD – AT3)	10 kΩ or higher
3		Below 1 Ω

NG → **REPLACE SHIFT LOCK CONTROL ECU SUB–ASSY**

OK

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



(a) Connect the shift lock control ECU connector.
(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 – 30 (NSW) – Body ground	Below 2 V
Except P and N	↑	10 to 14 V
R	E9 – 11 (R) – Body ground	10 to 14 V*
Except R	↑	Below 1 V
D and 3	E9 – 19 (3) – Body ground	10 to 14 V
Except D and 3	↑	Below 1 V
2	E9 – 10 (2) – Body ground	10 to 14 V
Except 2	↑	Below 1 V
L	E9 – 9 (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 01–36)**

OK

REPLACE ECM (SEE PAGE 10–12)