

<b>DTC</b>	<b>P1780/97</b>	<b>Park/Neutral Position Switch Malfunction</b>
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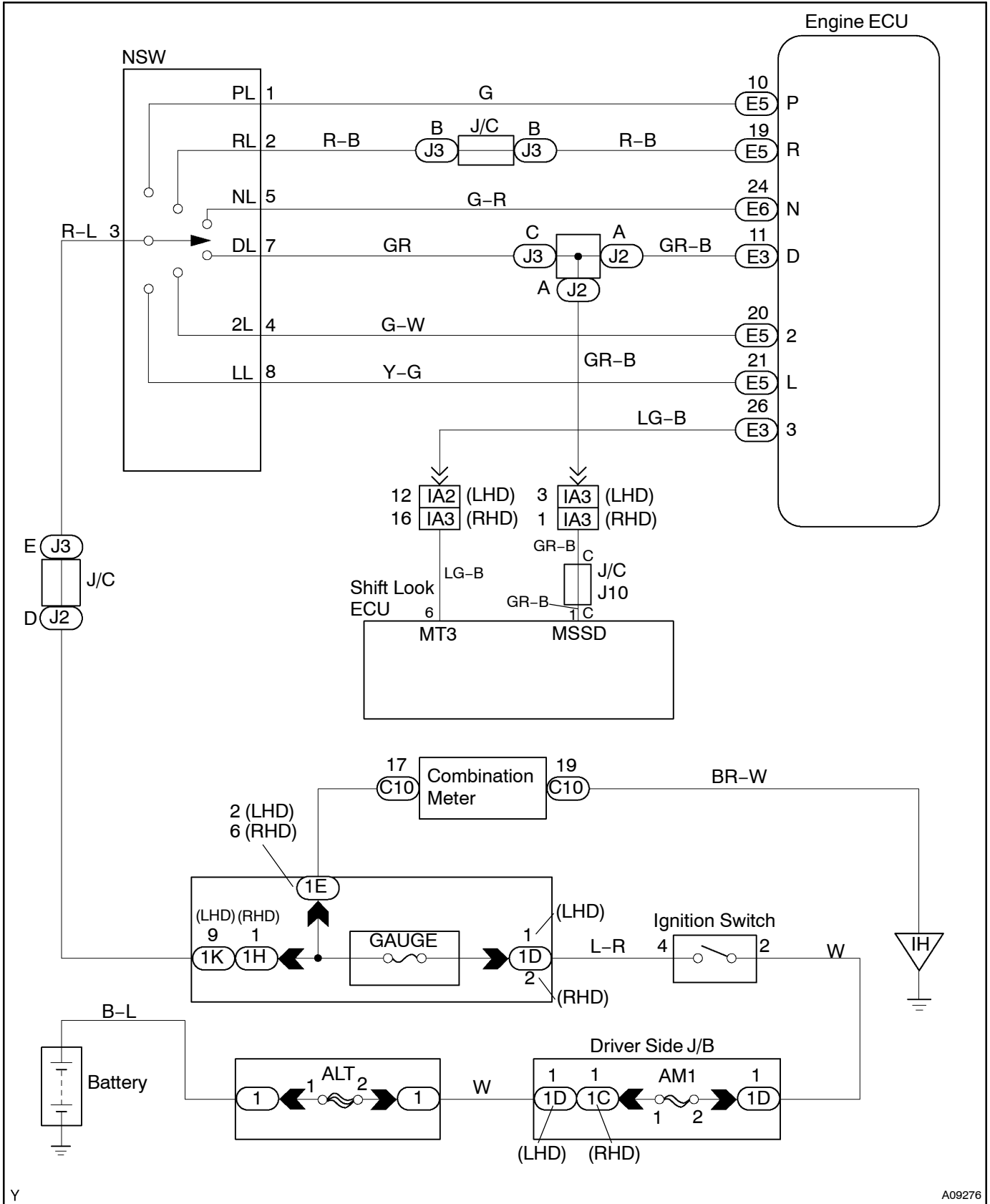
## CIRCUIT DESCRIPTION

The neutral start switch detects the shift lever range and sends signals to the engine ECU.

The engine ECU receives signals (NSW, R, 3, 2 and L) from the neutral start switch. When the signal is not sent to the engine ECU from the neutral start switch, the engine ECU judges that the shift lever is in D range.

DTC No.	DTC Detection Condition	Trouble Area
P1780/97	2 or more switches are ON simultaneously for R, N, 3, 2 and L ranges (2 trip detection logic)	<ul style="list-style-type: none"> <li>• Short in neutral start switch circuit</li> <li>• Neutral start switch</li> <li>• Engine ECU</li> </ul>
	When driving under conditions (a) and (b) for 30 seconds or more, neutral start switch is ON (N position): (2 trip detection logic) (a) Vehicle speed: 70 km/h (44 mph) or more (b) Engine speed: 1,500 - 2,500 rpm	

WIRING DIAGRAM



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A09276

## INSPECTION PROCEDURE

### When using hand-held tester:

#### HINT:

Read freeze frame data using hand-held tester. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

1 Read PNP, REVERSE, DRIVE, 3RD, 2ND and LOW signals.

#### RESULT:

- (a) Remove the DLC3 cover.
- (b) Connect the hand-held tester to the DLC3.
- (c) Turn the ignition switch ON and push the hand-held tester main switch ON.

#### CHECK:

Shift lever into the P, N, R, D, 3, 2 and L ranges, and read the PNP, REVERSE, DRIVE, 3RD, 2ND and LOW signals on the hand-held tester.

#### OK:

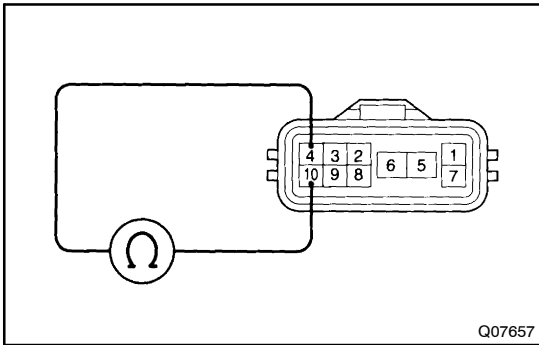
Shift range	Signal
P/N	PNP: OFF → ON
R	REVERSE: OFF → ON
D	DRIVE: OFF → ON
3	3RD: OFF → ON
2	2ND: OFF → ON
L	LOW: OFF → ON

OK

Check and replace the engine ECU (See page IN-32).

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## 2 Check neutral start switch.



### PREPARATION:

- (a) Jack up the vehicle.
- (b) Remove the neutral start switch connector.

### CHECK:

Check the continuity between each terminal shown below when the shift lever is moved to each range.

### OK:

Shift Range	Terminal No. to continuity	Terminal No. to continuity
P	3 - 7	1 - 2
R	3 - 5	-
N	3 - 5	1 - 2
D	3 - 9	-
2	3 - 4	-
L	3 - 8	-

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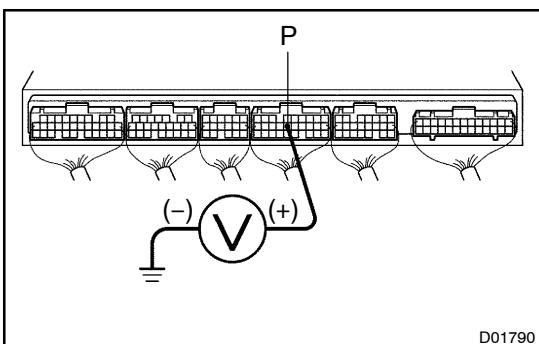
Replace neutral start switch.

OK

Repair or replace harness and connector between battery and neutral start switch, and neutral start switch and engine ECU (See page IN-32).

## When not using hand-held tester:

- 1 Measure voltage between each terminals of P, R, N, D, 3, 2, and L of engine ECU and body ground.



### PREPARATION:

Turn the ignition switch ON.

### CHECK:

Measure the voltage between each terminals P, R, N, D, 3, 2 and L of the engine ECU and body ground when the shift lever is shifted to the following positions.

### OK:

Tester Connection	Condition	Specified Condition
P - Body ground	Shift lever range: P	Battery voltage
R - Body ground	Shift lever range: R	Battery voltage*
N - Body ground	Shift lever range: N	Battery voltage
D - Body ground	Shift lever range: D Transmission control SW (for D and 3) : OFF	Battery voltage

## DIAGNOSTICS - ENGINE

3 - Body Ground	Shift lever range: 3	Battery voltage
2 - Body Ground	Shift lever range: 2 Transmission control SW (for 2 and L) OFF	Battery voltage
L - Body Ground	Shift lever range: L Transmission control SW (for 2 and L) ON	Battery voltage

## HINT:

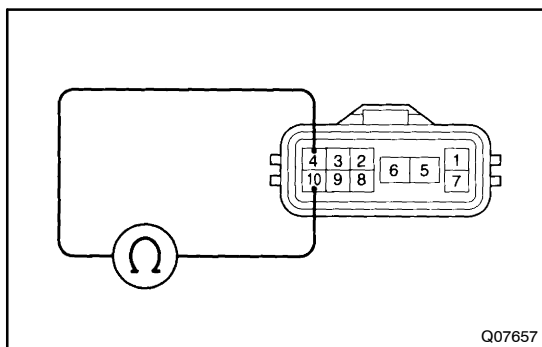
\*: The voltage will drop slightly due to lighting up of the back up light.

OK

Check and replace engine ECU (See page IN-32).

NG

## 2 Check neutral start switch.

**PREPARATION:**

- Jack up the vehicle.
- Remove the neutral start switch connector.

**CHECK:**

Check the continuity between each terminal shown below when the shift lever is moved to each range.

**OK:**

Shift Range	Terminal No. to continuity	Terminal No. to continuity
P	3 - 7	1 - 2
R	3 - 5	-
N	3 - 5	1 - 2
D	3 - 9	-
2	3 - 4	-
L	3 - 8	-

NG

Replace neutral start switch.

OK

Repair or replace harness and connector between battery and neutral start switch, and neutral start switch and engine ECU (See page IN-32).