

<b>Last Modified:</b> 10-10-2011	6.4 C	<b>From:</b> 200501
<b>Model Year:</b> 2006	<b>Model:</b> GS300	<b>Doc ID:</b> RM000000W84002X
<b>Title:</b> A760H AUTOMATIC TRANSMISSION: ELECTRONIC CONTROLLED AUTOMATIC TRANSMISSION SYSTEM: P0705: Transmission Range Sensor Circuit Malfunction (PRNDL Input) (2006 GS300)		

<b>DTC</b>	<b>P0705</b>	<b>Transmission Range Sensor Circuit Malfunction (PRNDL Input)</b>
------------	--------------	--

## 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	<p>(A) Any 2 or more signals of the following are ON simultaneously (2-trip detection logic)</p> <ul style="list-style-type: none"> <li>● P input signal is ON.</li> <li>● N input signal is ON.</li> <li>● R input signal is ON.</li> <li>● D input signal is ON.</li> </ul> <p>(B) Any 2 or more signals of the following are ON simultaneously (2-trip detection logic)</p> <ul style="list-style-type: none"> <li>● NSW (STAR) input signal is ON.</li> <li>● R input signal is ON.</li> <li>● D input signal is ON.</li> </ul> <p>(C) When any of following conditions is met for 2.0 sec. or more in the S position (2-trip detection logic)</p> <ul style="list-style-type: none"> <li>● NSW (STAR) input signal is ON.</li> <li>● P input signal is ON.</li> <li>● N input signal is ON.</li> <li>● R input signal is ON.</li> </ul> <p>(D) All switches are OFF simultaneously for P, R, N and D positions (2-trip detection logic)</p>	<ul style="list-style-type: none"> <li>● Open or short in park/neutral position switch circuit</li> <li>● Park/neutral position switch <ul style="list-style-type: none"> <li>● ECM</li> </ul> </li> </ul>

## 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 (P, R, N, D, or S). 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	Condition (A), (B) and (C) 2 sec. Condition (D) 60 sec.
MIL operation	2 driving cycles
Sequence of operation	None

## TYPICAL ENABLING CONDITIONS

The monitor will run whenever this DTC is not present.	None
Engine switch	ON
Battery voltage	10.5 V or more

## TYPICAL MALFUNCTION THRESHOLDS

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

### Condition (A)

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

### Condition (B)

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

### Condition (C)

When shift lever is in S position, one of the following conditions is met

NSW (STAR) switch	ON
P switch	ON
N switch	ON
R switch	ON

**Condition (D)**

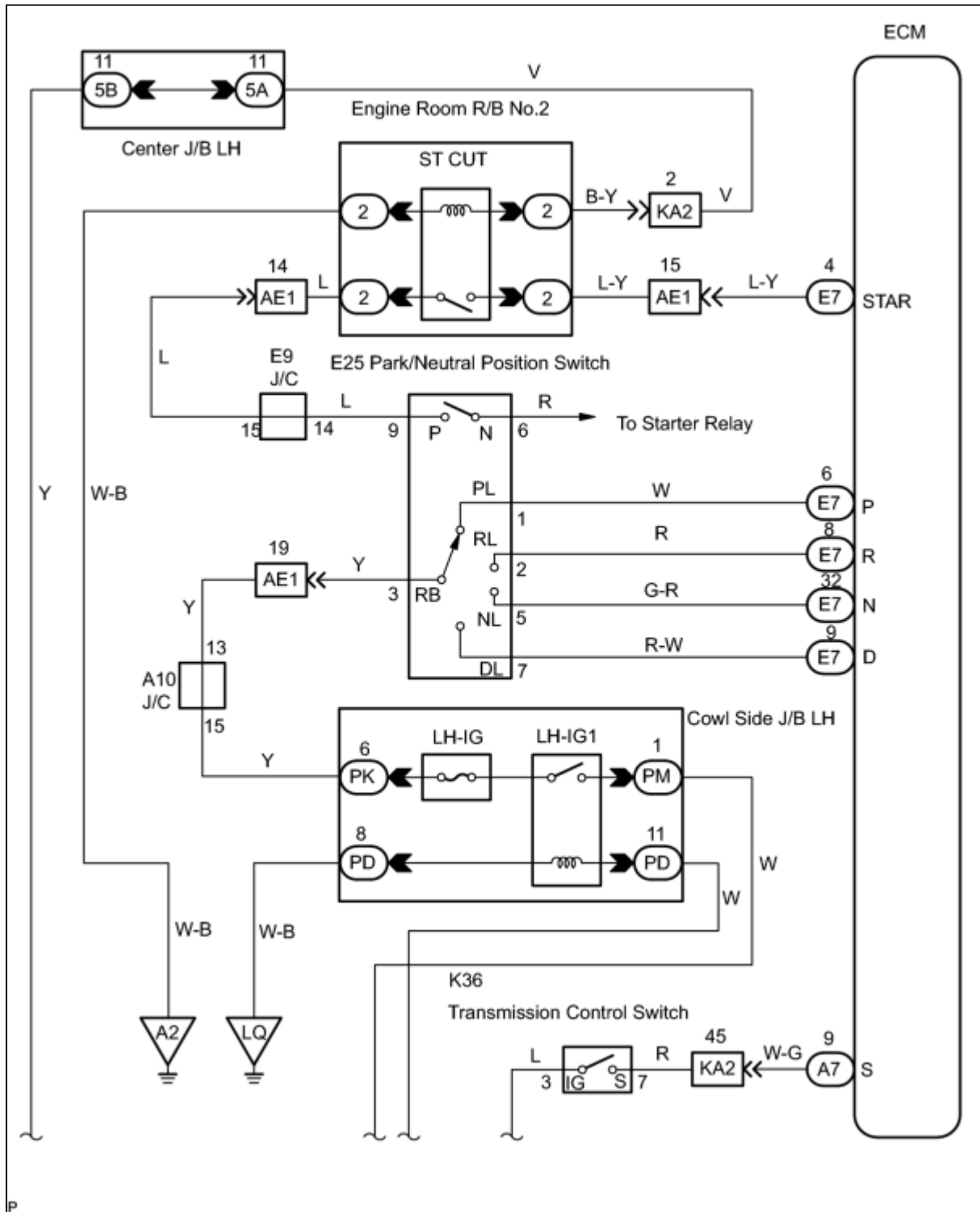
All of following conditions are met

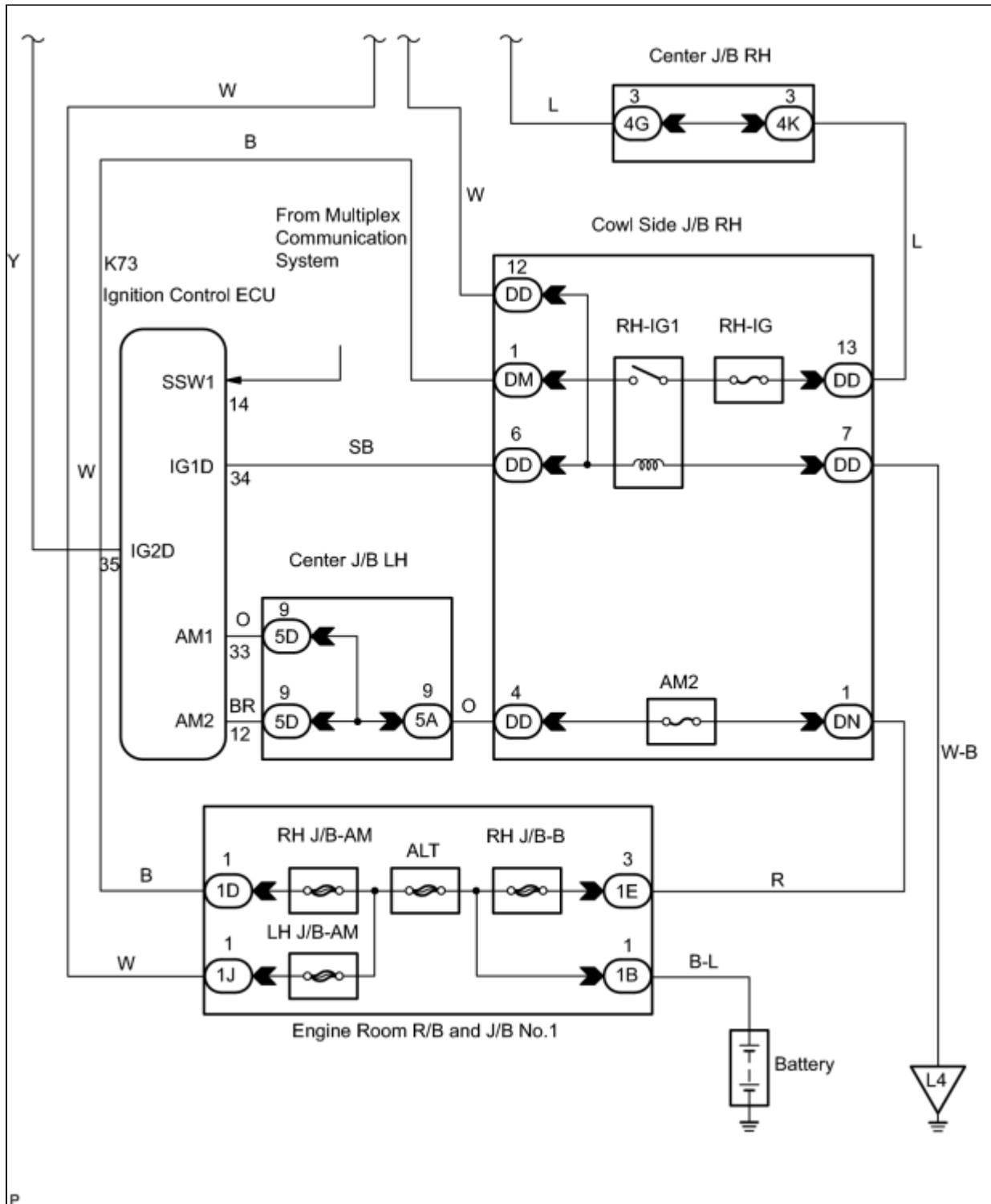
P switch	OFF
N switch	OFF
NSW (STAR) switch	OFF
R switch	OFF
D switch	OFF

## COMPONENT OPERATING RANGE

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

## WIRING DIAGRAM





## INSPECTION PROCEDURE

### 1. DATA LIST

**HINT:**

According to the DATA LIST displayed by the intelligent 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.

**NOTICE:**

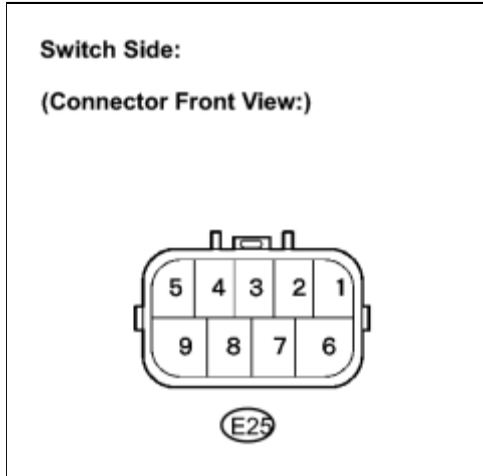
In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

- (a) Warm up the engine.
- (b) Turn the engine switch off.
- (c) Connect the intelligent tester together with the CAN VIM (controller area network vehicle interface module) to the DLC3.
- (d) Turn the engine switch on (IG) position.
- (e) Turn on the tester.
- (f) 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 Switch 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 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 and S: ON Except D and S: OFF	↑
MODE SELECT SW	Sport Mode Select Switch Status/ ON or OFF	Shift lever position is; S, "+" and "-": ON Except S, "+" and "-": OFF	-

## **PROCEDURE**

- |           |  |
|-----------|--|
| <b>1.</b> | <b>INSPECT PARK/NEUTRAL POSITION SWITCH ASSEMBLY</b> |
|-----------|--|



(a) Disconnect the park/neutral position switch connector.

(b) Measure resistance according to the value(s) in the table below when the shift lever is moved to each position.

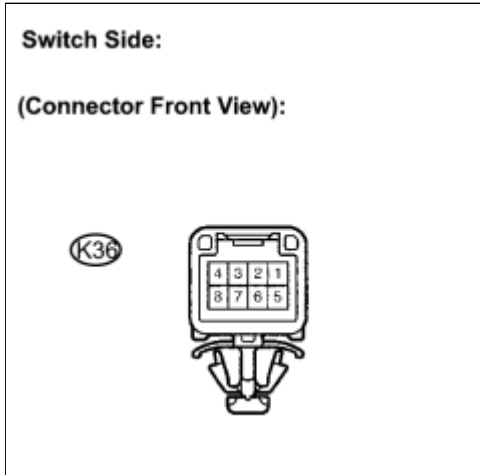
Resistance:

SHIFT POSITION	TESTER CONNECTION	SPECIFIED CONDITION
P	1 - 3 and 6- 9	Below 1 $\Omega$
Except P	$\uparrow$	10 k $\Omega$ or higher
R	2 - 3	Below 1 $\Omega$
Except R	$\uparrow$	10 k $\Omega$ or higher
N	3 - 5 and 6- 9	Below 1 $\Omega$
Except N	$\uparrow$	10 k $\Omega$ or higher
D, S, "+" and "-"	3 - 7	Below 1 $\Omega$
Except D, S, "+" and "-"	$\uparrow$	10 k $\Omega$ or higher

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

**OK**

<b>2.</b>	<b>INSPECT TRANSMISSION CONTROL SWITCH</b>
-----------	--



(a) Connect the park/neutral position switch connector.

(b) Disconnect the transmission control switch connector of shift lock control unit assembly.

(c) Measure resistance according to the value(s) in the table below when the shift lever is moved to each position.

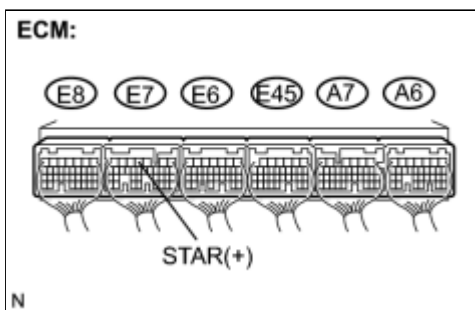
Resistance:

SHIFT POSITION	TESTER CONNECTION	SPECIFIED CONDITION
S, "+" and "-"	3 - 7	Below 1 $\Omega$
Except S, "+" and "-"	$\uparrow$	10 k $\Omega$ or higher

**NG** **REPLACE TRANSMISSION CONTROL SWITCH**

**OK**

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



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



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

Voltage:

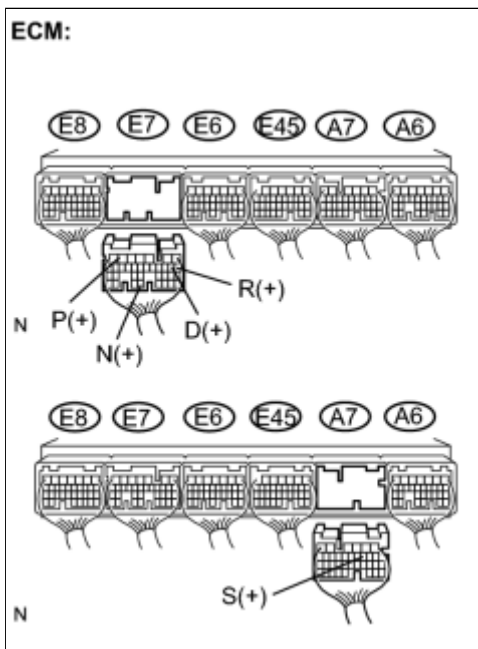
SHIFT POSITION	TESTER CONNECTION	SPECIFIED CONDITION
P and N	E7 - 4 (STAR) - Body ground	Below 1 V
Except P and N	↑	10 to 14 V

**NG** ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

**OK**



**4. CHECK HARNESS AND CONNECTOR (PARK/NEUTRAL POSITION SWITCH - ECM)**



(a) Disconnect the ECM connector.

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

Voltage:

SHIFT POSITION	TESTER CONNECTION	SPECIFIED CONDITION
P	E7 - 6 (P) - Body ground	10 to 14 V
Except P	↑	Below 1 V

N	E7 - 32 (N) - Body ground	10 to 14 V
Except N	↑	Below 1 V
R	E7 - 8 (R) - Body ground	10 to 14 V *
Except R	↑	Below 1 V
D and S	E7 - 9 (D) - Body ground	10 to 14 V
Except D and S	↑	Below 1 V
S, "+" and "-"	A7 - 9 (S) - Body ground	10 to 14 V
Except S, "+" and "-"	↑	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

**OK** ► REPLACE ECM

