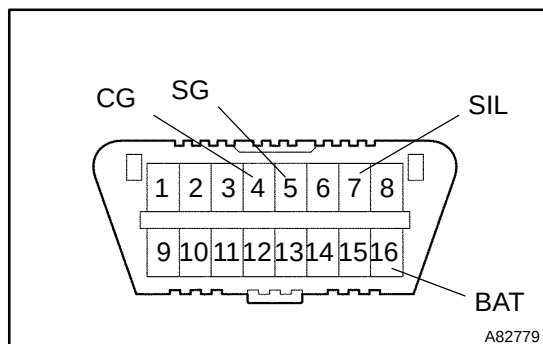


DIAGNOSIS SYSTEM

1. DESCRIPTION

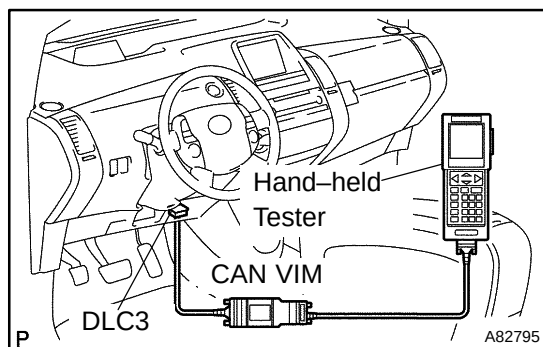
The multiplex network body ECU controls the function of the key reminder warning system on the vehicle.



2. CHECK DLC3

The vehicle's ECU uses the ISO 15765-4 for communication protocol. The terminal arrangement of the DLC3 complies with ISO 15031-03 and matches the ISO 15765-4 format.

Symbol	Terminal No.	Name	Reference terminal	Result	Condition
SIL	7	Bus "+" line	5 – Signal ground	Pulse generation	During transmission
CG	4	Chassis ground	Body ground	1 Ω or less	Always
SG	5	Signal ground	Body ground	1 Ω or less	Always
BAT	16	Battery positive	Body ground	9 to 14 V	Always



HINT:

Connect the cable of the hand-held tester (with CAN VIN) to the DLC3, change power mode to ON (IG) by pushing the power switch and attempt to use the tester. If the screen displays UNABLE TO CONNECT TO VEHICLE, a problem exists in the vehicle side or the tester side.

If communication is normal when the hand-held tester is connected to another vehicle, inspect the DLC3 on the original vehicle.

If communication is still impossible when the tester is connected to another vehicle, the problem is probably in the tester itself. Consult the Service Department listed in the tester's instruction manual.

3. INSPECT BATTERY VOLTAGE

Standard : 11 to 14 V

If voltage is below 11 V, recharge the battery before proceeding.

DATA LIST/ACTIVE TEST

1. DATA LIST

HINT:

Using the hand-held tester DATA LIST allows switch, 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.

- Connect the hand-held tester (with CAN VIN) to the DLC3.
- Change the power switch's power mode to ON (IG) by pushing the power switch.
- Read the DATA LIST according to display on the tester.

Transponder key ECU:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
KEY UNLK WRN SW	Halfway switch signal /ON or OFF	ON: Key is in key slot. OFF: No key is in key slot.	–

Multiplex network body ECU:

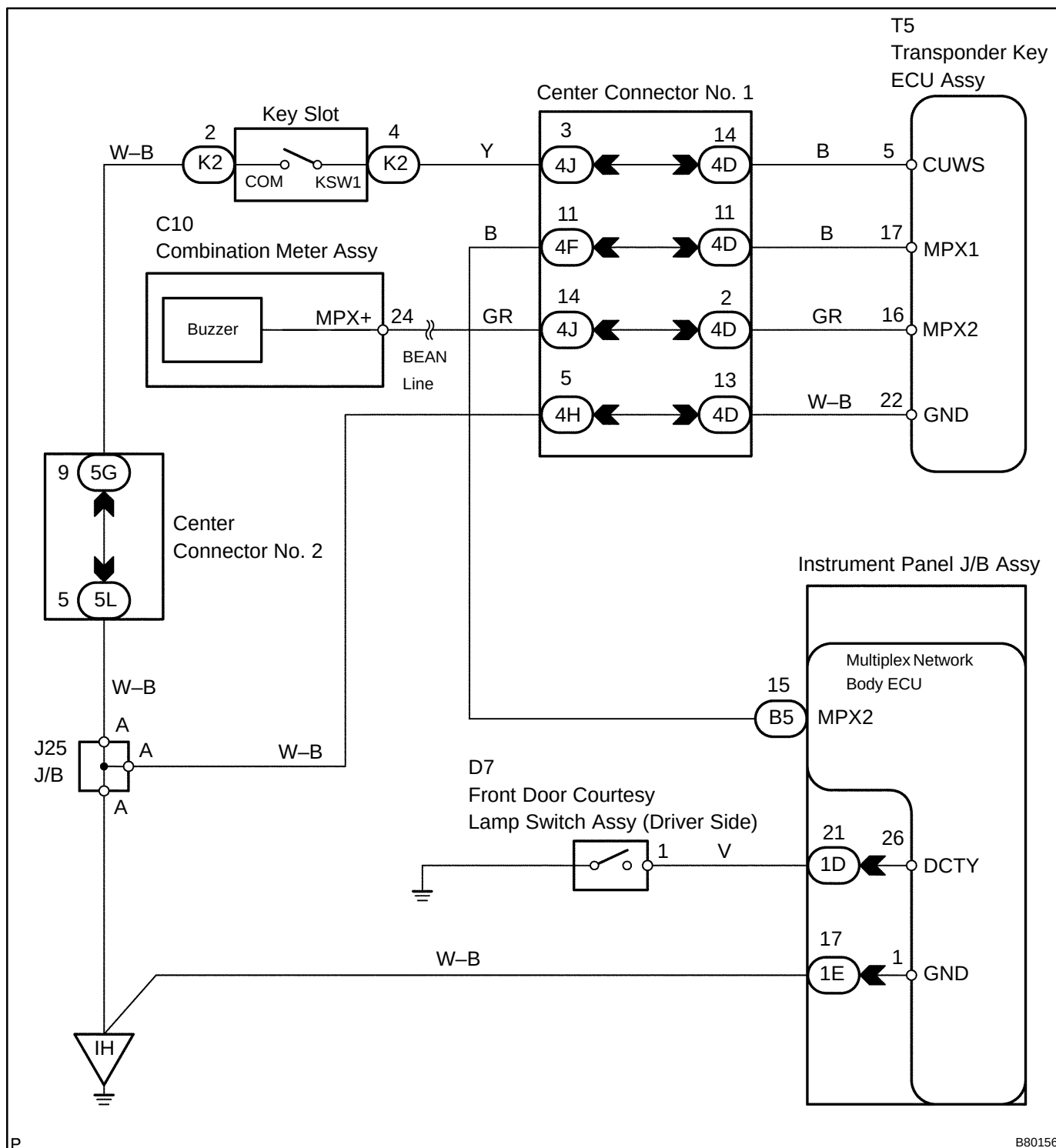
Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
D DOR CTY SW	Driver side door courtesy switch signal /ON or OFF	ON: Driver side door is open. OFF: Driver side door is closed.	–

KEY REMINDER BUZZER DOES NOT SOUND

CIRCUIT DESCRIPTION

When the power switch's power mode is OFF, the key is in the key slot and the driver side door is opened, the transponder key ECU transmits a halfway switch signal and multiplex network body ECU transmits driver side courtesy switch signal to the combination meter, which causes the buzzer to emit a sound.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 READ VALUE OF HAND-HELD TESTER

- (a) Check the DATA LIST for proper functioning of the driver side door courtesy switch.

Multiplex network body ECU:

Item	Measure Item/Display (Range)	Normal Condition	Diagnostic Note
D DOR CTY SW	Driver side door courtesy switch signal /ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	–

OK: "ON" (drive side door is open) appears on the screen.**NG****Go to step 3**

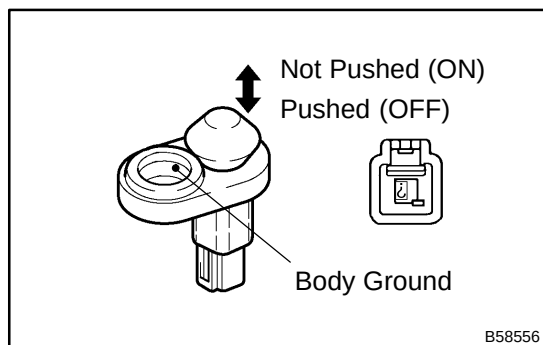
- (b) Check the DATA LIST for proper functioning of the key slot.

Transponder key ECU:

Item	Measure Item/Display (Range)	Normal Condition	Diagnostic Note
KEY UNLK WRN SW	Halfway switch signal /ON or OFF	ON: Key is in key slot OFF: No key is in key slot	–

OK: "ON"(key is in slot) appears on the screen.**NG****Go to step 5****OK****2 CHECK BUZZER (COMBINATION METER)**

- (a) Check the warning buzzer built into the combination meter (see page 05-1986).

OK: Warning buzzer sounds.**NG****REPLACE COMBINATION METER ASSY****OK****REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSY (MULTIPLEX NETWORK BODY ECU)****3 INSPECT FRONT DOOR COURTESY LAMP SWITCH ASSY (DRIVER SIDE)**

- (a) Remove the courtesy lamp switch.

- (b) Measure the switch resistance.

Standard:

Tester Condition	Switch Condition	Specified Condition
1 – Body ground	Not Pushed	Below 1 Ω
1 – Body ground	Pushed	10 k Ω or higher

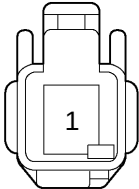
OK**REPLACE FRONT DOOR COURTESY LAMP SWITCH ASSY****OK**

4

CHECK WIRE HARNESS (FRONT DOOR COURTESY LAMP SWITCH ASSY (DRIVER SIDE) -INSTRUMENT PANEL J/B ASSY)

Wire Harness Side

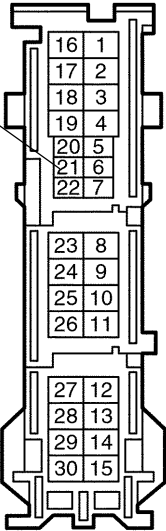
D7
Front Door Courtesy Lamp Switch Assy



B65420

1D
Instrument Panel J/B Assy

DCTY



B79240

B79560

(a) Disconnect the D7 switch and 1D J/B connectors.

(b) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
D7-1 - 1D-21 (DCTY)	Below 1 Ω

NG

REPLACE FRONT DOOR COURTESY LAMP SWITCH ASSY

OK

REPLACE INSTRUMENT PANEL J/B ASSY

2004 Prius - Preliminary Release (RM1075U)

Author :

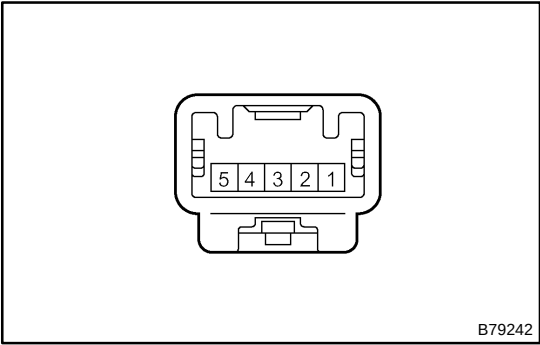
Date :

2485

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5

INSPECT KEY SLOT



(a) Measure the switch resistance.

Standard:

Tester Condition	Switch Condition	Specified Condition
2 – 4	Key in key slot	Below 1 Ω
2 – 4	No key in key slot	10 kΩ or higher

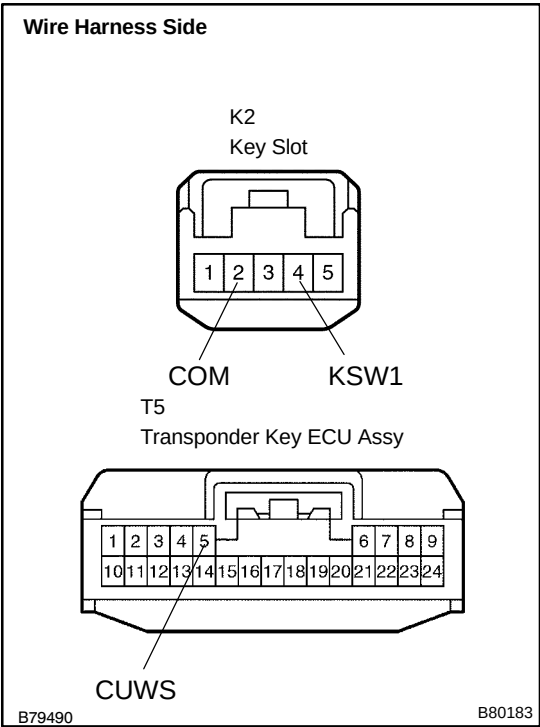
NG

REPLACE KEY SLOT

OK

6

CHECK WIRE HARNESS (KEY SLOT – INSTRUMENT PANEL J/B ASSY AND BODY GROUND)



(a) Disconnect the K2 key slot and T5 ECU connectors.
(b) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
K2-4 (KSW1) – T5-5 (CUWS)	Below 1 Ω
K2-2 (COM) – Body ground	10 kΩ or higher

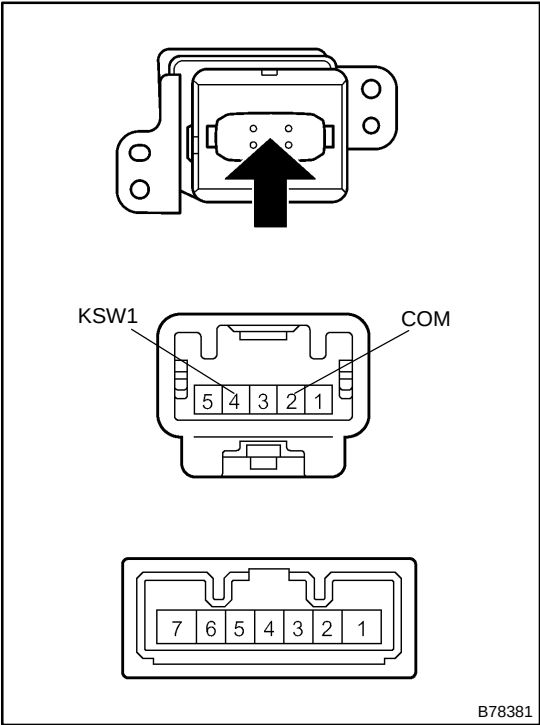
NG

REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE TRANSPONDER KEY ECU ASSY

INSPECTION



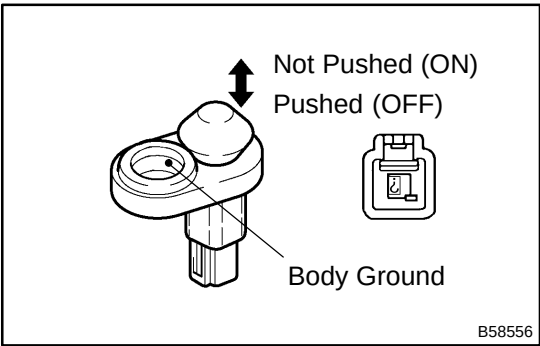
1. INSPECT KEY SLOT ASSY

- (a) Remove the key slot assy.
- (b) Measure the resistance of the slot.

Standard:

Tester Connection	Switch Condition	Specified Condition
4 (KSW1) – 2 (COM)	Key is in key slot	Below 1 Ω
4 (KSW1) – 2 (COM)	No key in is slot	10 kΩ or higher

If the result is not as specified, replace the slot assy.



2. INSPECT FRONT DOOR COURTESY LAMP SWITCH ASSY (DRIVER SIDE)

- (a) Remove the courtesy lamp switch.
- (b) Measure the switch resistance.

Standard:

Tester Condition	Switch Condition	Specified Condition
1 – Body ground	Not Pushed	Below 1 Ω
1 – Body ground	Pushed	10 kΩ or higher

ON-VEHICLE INSPECTION

1. CHECK FUNCTION

- (a) Check the key reminder warning buzzer sound function.
 - (1) Close the driver side door, insert the key into the key slot and change the power switch's power mode to OFF by pressing the power switch.
 - (2) Open the driver side door. Check that the key reminder warning buzzer emits sounds intermittently.
- (b) Check that the key reminder warning buzzer stops.
 - (1) While the buzzer is sounding, perform one of the following operations:
 - Close the driver side door (front door courtesy lamp switch is turned off).
 - Change the power switch's power mode to ON (IG) by pressing the power switch.
 - Pull out the key from the key slot.
 - (2) Check that the key reminder warning buzzer stops sounding.

SYSTEM DESCRIPTION

1. KEY REMINDER WARNING SYSTEM DESCRIPTION

- (a) The key reminder warning system sounds the combination meter buzzer as a warning when: 1) the power switch's power mode is set to OFF or ON (ACC), 2) the key is inserted into the key slot, and 3) the driver side door is opened.

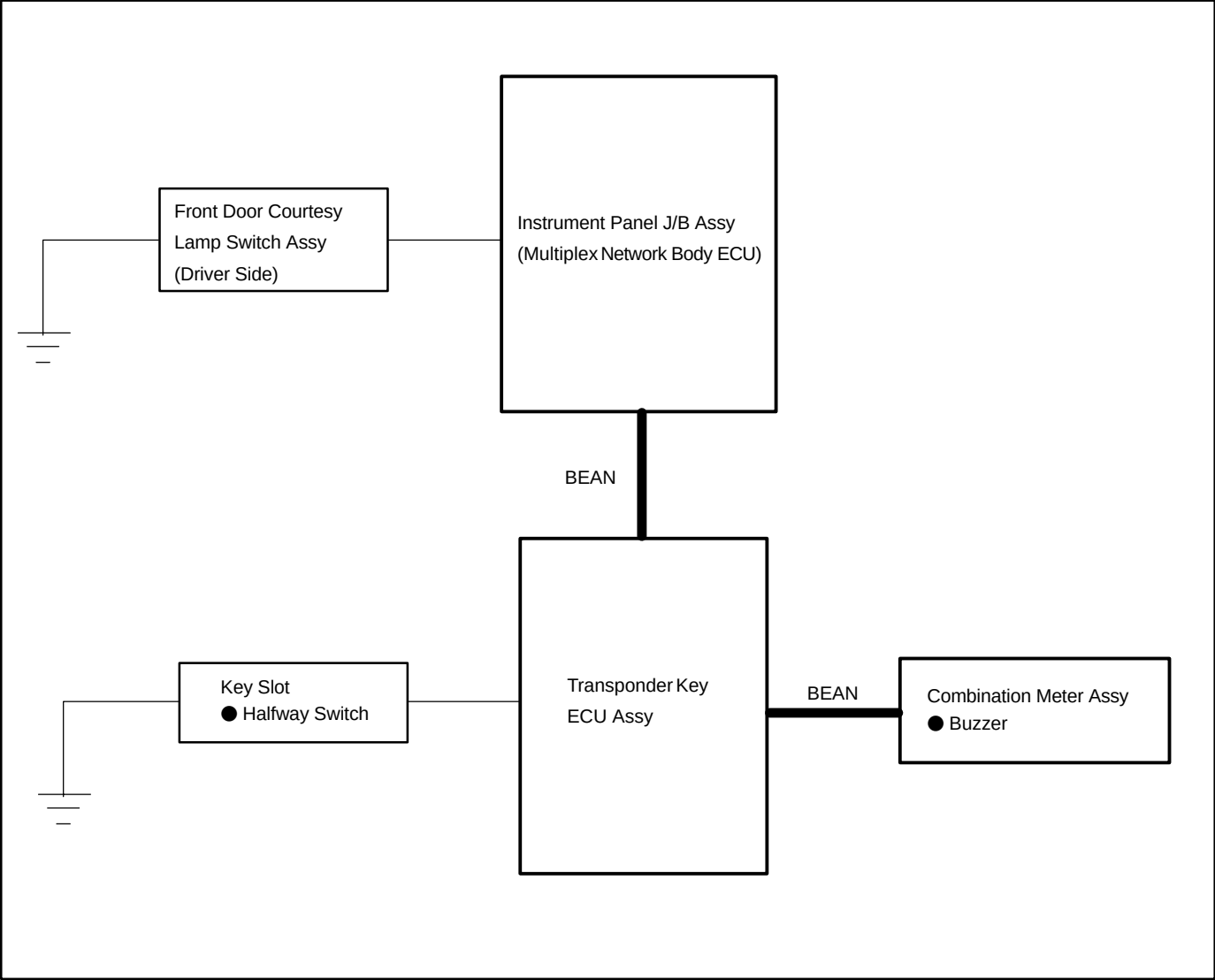
2. FUNCTION OF MAIN COMPONENTS

Components	Function
Front door courtesy lamp switch assy	Detects if driver side door is open or closed and outputs data to multiplex network body ECU
Halfway switch	Detects if key is/isn't in key slot and outputs data to transponder key ECU
Combination meter assy	Receives buzzer request signal from transponder key ECU (after transponder key ECU receives halfway switch signal and front door courtesy lamp switch signal). Then combination meter assy actuates driver circuit to sound built-in multi-buzzer intermittently.

3. FUNCTION OF DESCRIPTION

- (a) The key slot transmits a halfway switch status signal to the transponder key ECU. The front door courtesy lamp switch transmits a driver side door courtesy status signal to the multiplex network body ECU. With the power switch OFF or ON (ACC), 2 conditions are required to activate the key reminder warning system: 1) the transponder key ECU receives a signal indicating that the key is in the key slot, and 2) the transponder key ECU receives a driver side door open signal via the multiplex body ECU. If both conditions are satisfied, a buzzer request signal is transmitted from the transponder key ECU to the combination meter assy via the BEAN. The combination meter assy then actuates the driver circuit to sound a built-in multi-buzzer intermittently.

SYSTEM DIAGRAM



CUSTOMER PROBLEM ANALYSIS CHECK

KEY REMINDER WARNING SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		VIN	
		Production Date	/ /
		License Plate No.	
Date Vehicle Brought In	/ /	Odometer Reading	km miles

Date Problem First Occurred		/ /
Frequency Problem Occurs		☐ Constant ☐ Intermittent (times a day) ☐ Only once
Weather Conditions When Problem Occurred	Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others
	Outdoor Temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold (Approx. °C (°F))

Problem Symptoms	☐ Key reminder buzzer does not sound
	☐ Other

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use this procedure to troubleshoot the key reminder warning system.
- The hand-held tester should be used step 3 and 5.

1 VEHICLE BROUGHT TO WORKSHOP



2 CUSTOMER PROBLEM ANALYSIS CHECK AND SYMPTOM CHECK (See page xx-xxx)



3 INSPECT COMMUNICATION FUNCTION OF LARGE-SCALE MULTIPLEX COMMUNICATION SYSTEM (BEAM)

- (a) Use the hand-held tester to check for normal function of the multiplex communication system.
- (1) (ECU unconnected, communication stop, communication line malfunctioning)
Without code outputs, proceed to A.
 - (2) (ECU unconnected, communication stop, communication line malfunctioning)
With code outputs, proceed to B.

B

Go to MULTIPLEX COMMUNICATION SECTION
(See page 05-2558)

A

4 PROBLEM SYMPTOMS TABLE (See page 05-2314)

- (a) If the fault is not listed on the problem symptoms table, proceed to A.
- (b) If the fault is listed on the problem symptoms table, proceed to B.

B

Go to step 6

A

5 OVERALL ANALYSIS AND TROUBLESHOOTING

- (a) DATA LIST/ACTIVE TEST (see page 05-2318).
- (1) Inspection with the hand-held tester (DATA LIST).
- (b) Terminals of ECU (see page 05-2315).
- (c) On-vehicle inspection (see page 05-2323).
- (d) Inspection (see page 05-2324).



6 ADJUSTMENT, REPAIR OR REPLACEMENT



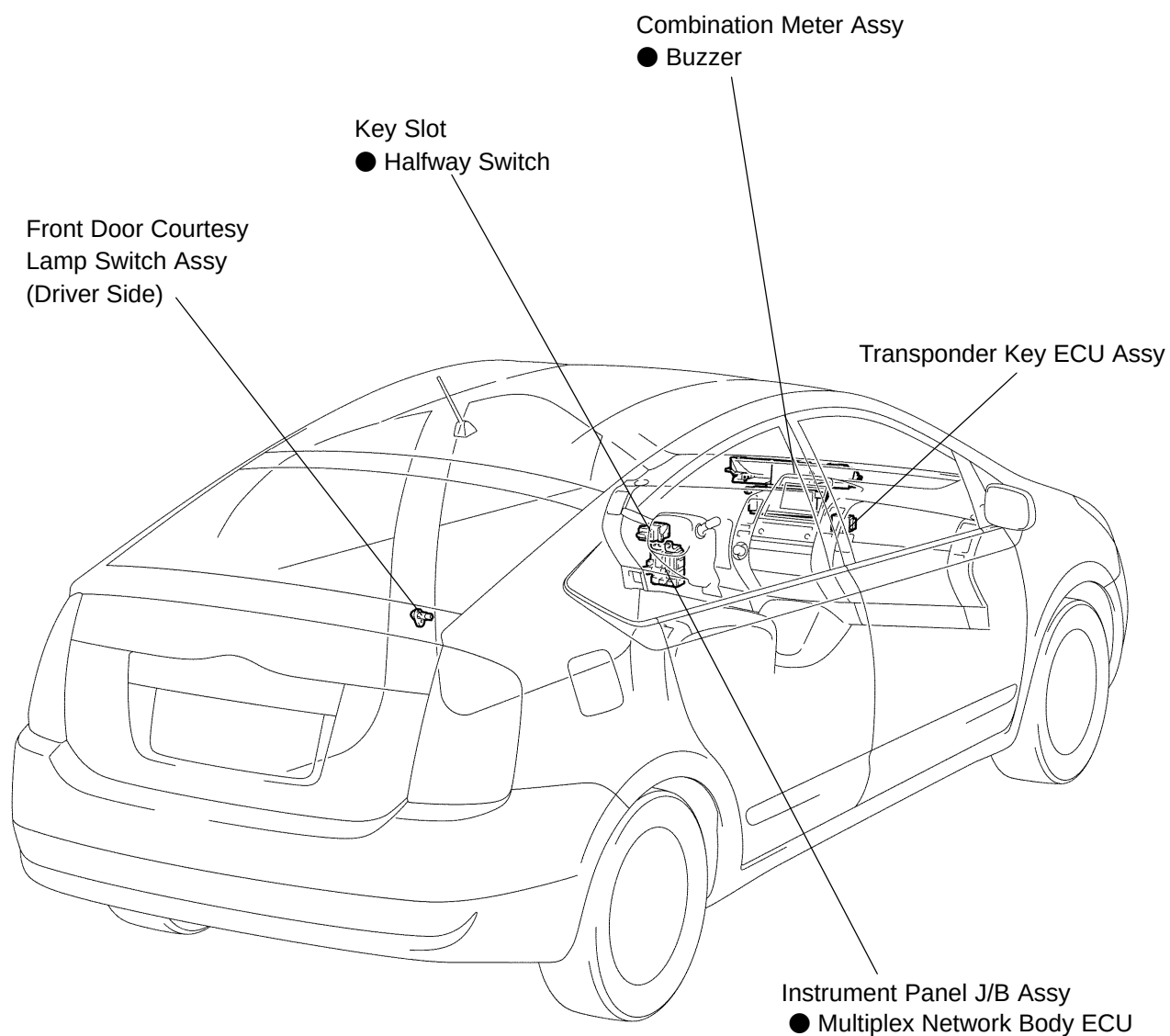
7	CONFIRMATION TEST
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END

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LOCATION



P

B79489

KEY REMINDER WARNING SYSTEM

05J4H-01

PRECAUTION

NOTICE FOR INITIALIZATION:

When disconnecting the negative (–) battery terminal, initialize the following system(s) after the terminal is reconnected.

System Name	See Page
Power Window Control System	05-2028

NOTICES FOR HYBRID SYSTEM ACTIVATION:

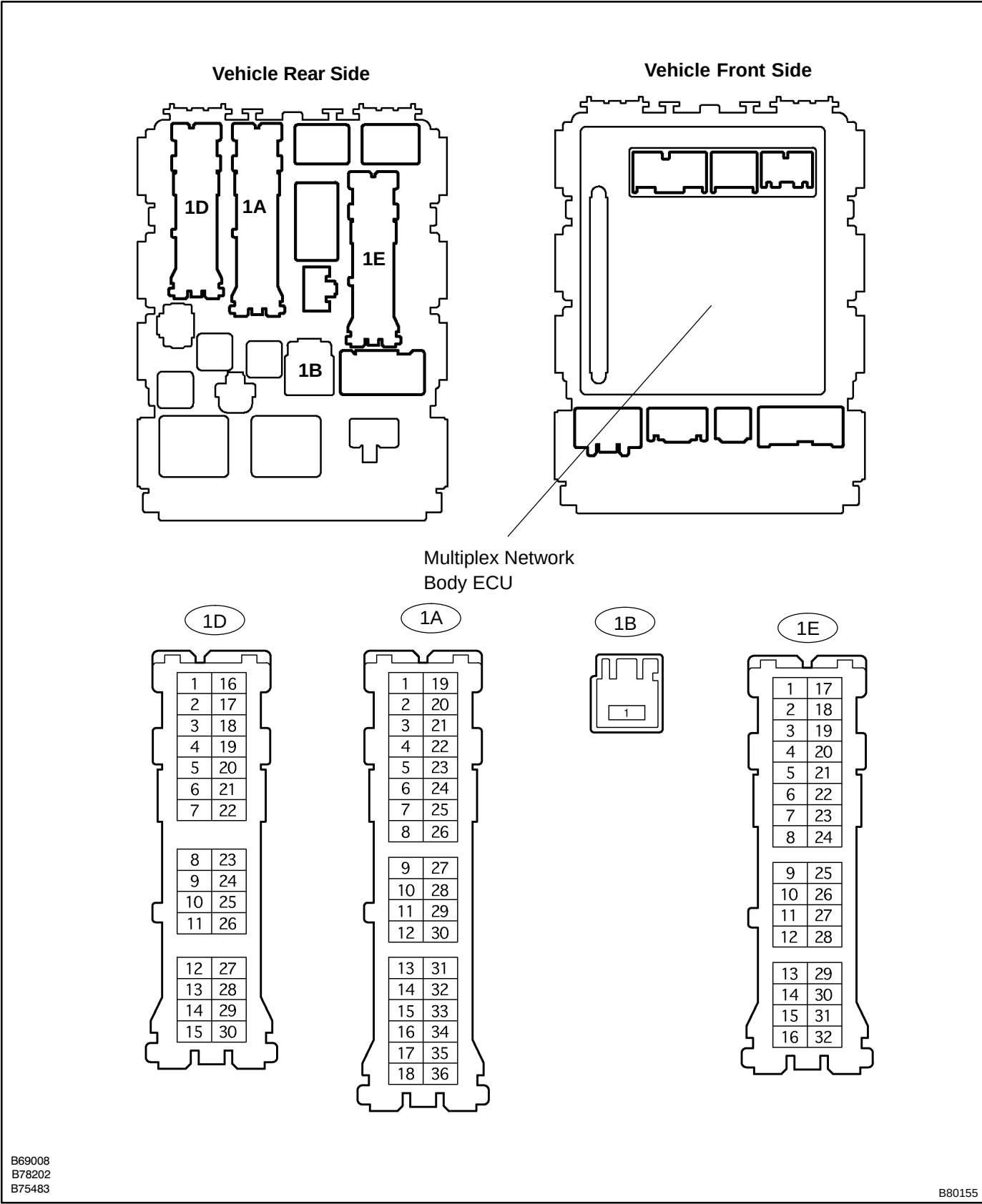
When the warning lamp is illuminated or the battery has been disconnected and reconnected, pressing the power switch may not start the system on the first try. If so, press the power switch again.

PROBLEM SYMPTOMS TABLE

Symptom	Suspected Area	See Page
Key reminder buzzer does not sound.	1. Front door courtesy lamp switch assy (driver side) 2. Combination meter 3. Wire harness 4. Instrument panel J/B assy (Multiplex network body ECU) 5. Key slot 6. Wire harness 7. Transponder key ECU assy	05-2319

TERMINALS OF ECU

1. CHECK INSTRUMENT PANEL J/B ASSY (MULTIPLEX NETWORK BODY ECU)

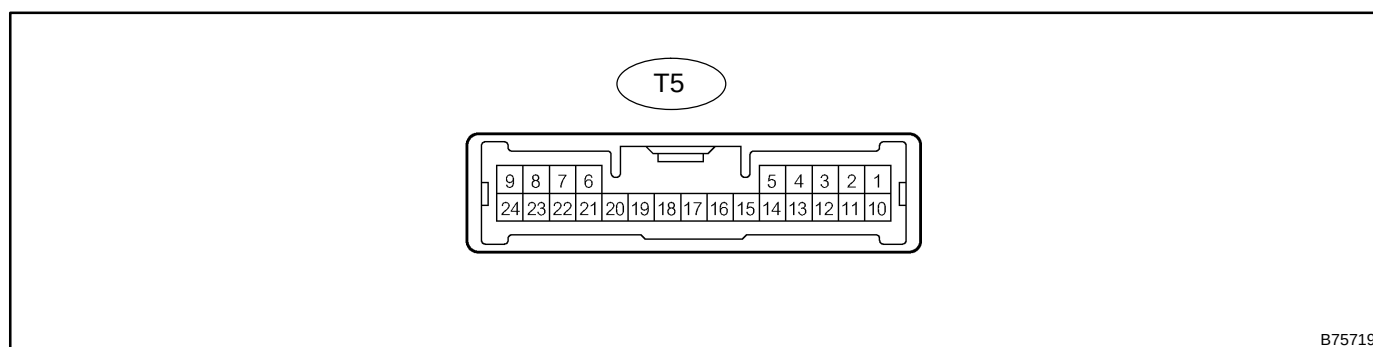


- (a) Disconnect the 1A, 1B, 1D and 1E J/B connectors.
- (b) Measure the resistance and voltage between each terminal of the wire harness side connector and body ground.

Standard:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ECUB (1A-30) – Body ground	R – Body ground	+B power supply	Constant	10 to 14 V
SIG (1B-1) – Body ground	W – Body ground	Ignition power supply	1: Power switch OFF → 2: ON (IG)	1: 10 kΩ or higher → 2: Below 1 Ω
GND (1E-17) – Body ground	W – B Body ground	Ground	Ground	Below 1 Ω
KSW (1E-26) – Body ground	Y – Body ground	Halfway switch input	1: No key in key slot → 2: Key imputed	1: 10 kΩ or higher → 2: Below 1 Ω
DTCY (1D-21) – Body ground	V – Body ground	Door courtesy switch input	1: Driver side door CLOSED → 2: OPEN	1: 10 kΩ or higher → 2: Below 1 Ω

If the result is as specified, the wire harness side may have a malfunction.

2. CHECK TRANSPONDER KEY ECU

- (a) Disconnect the T5 ECU connector.
- (b) Measure the voltage and resistance between each terminal of the wire harness side connector and body ground.

Standard:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CPUB (T5-3) – Body ground	L – Body ground	+B (IG) power supply	Constant	10 to 14 V
IG (T5-4) – Body ground	O – Body ground	IG power supply	1: Power switch OFF → 2: ON (IG)	1: 10 to 14 V → 2: 0 V
ACC (T5-12) – Body ground	P – Body ground	ACC power supply	1: Power switch OFF → 2: ON (ACC)	1: 10 to 14 V → 2: 0 V
GND (T5-22) – Body ground	W-B – Body ground	Ground	Constant	Below 1 Ω
CUWS (T5-5) – Body ground	B – Body ground	Halfway switch input	1: No key in key slot → 2: Key inserted	1: 10 kΩ or higher → 2: Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.