POWER DOOR LOCK CONTROL SYSTEM

PRECAUTION

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

System Name	See Procedure
Power Window Control System	IN-29
Sliding Roof System	

1. EXPRESSIONS OF IGNITION SWITCH

(a) The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this section.

DL

Switch Type		Ignition Switch (position)	Engine Switch (condition)
Expression	Ignition Switch off	LOCK	Off
	Ignition Switch on (IG)	ON	On (IG)
	Ignition Switch on (ACC)	ACC	On (ACC)
	Engine Start	START	Start

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use this procedure to troubleshoot the power door lock system.
- The intelligent tester should be used in steps 4 and 6.

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	CUSTOMER PROBLEM ANALYSIS CHECK AND SYMPTOM CHECK

HINT:

See page IN-36.

NEXT

3	PROBLEM SYMPTOMS TABLE

(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 5

A

4	OVERALL ANALYSIS AND TROUBLESHOOTING

(a) DATA LIST / ACTIVE TEST (See page DL-11).
  (1) Inspection with the intelligent tester (DATA LIST).
  (2) Inspection with the intelligent tester (ACTIVE TEST).

(b) Terminals of ECU (See page DL-9).

(c) On-vehicle inspection (See page DL-12).

NEXT

5	ADJUST, REPAIR OR REPLACE

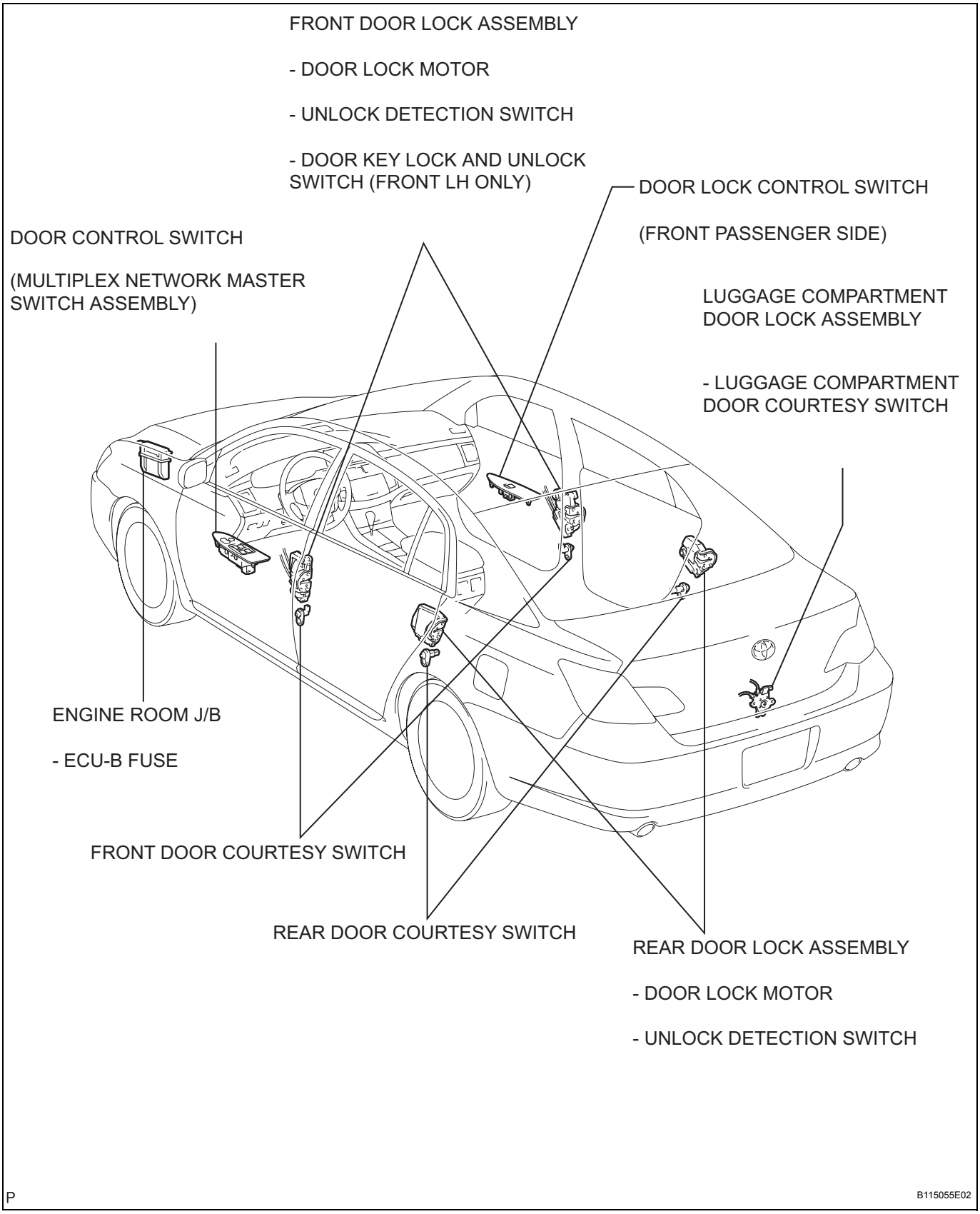
NEXT

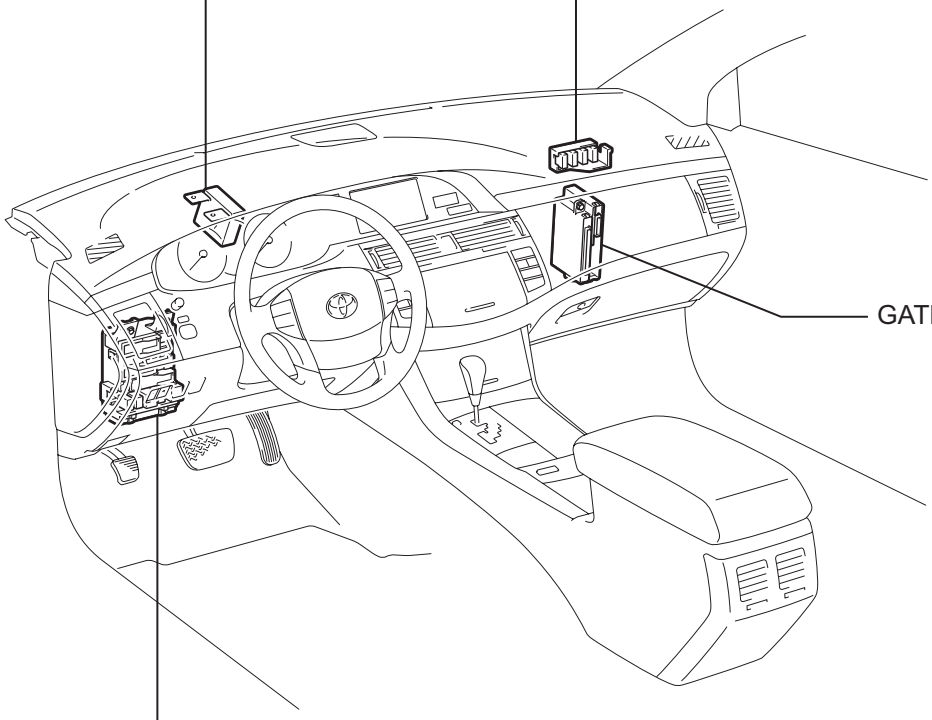
6	**CONFIRMATION TEST**

NEXT

END

PARTS LOCATION





INSTRUMENT PANEL J/B

- BODY ECU
- ECU-ACC FUSE
- ECU-IG FUSE
- IG1 RELAY
- ACC RELAY

P

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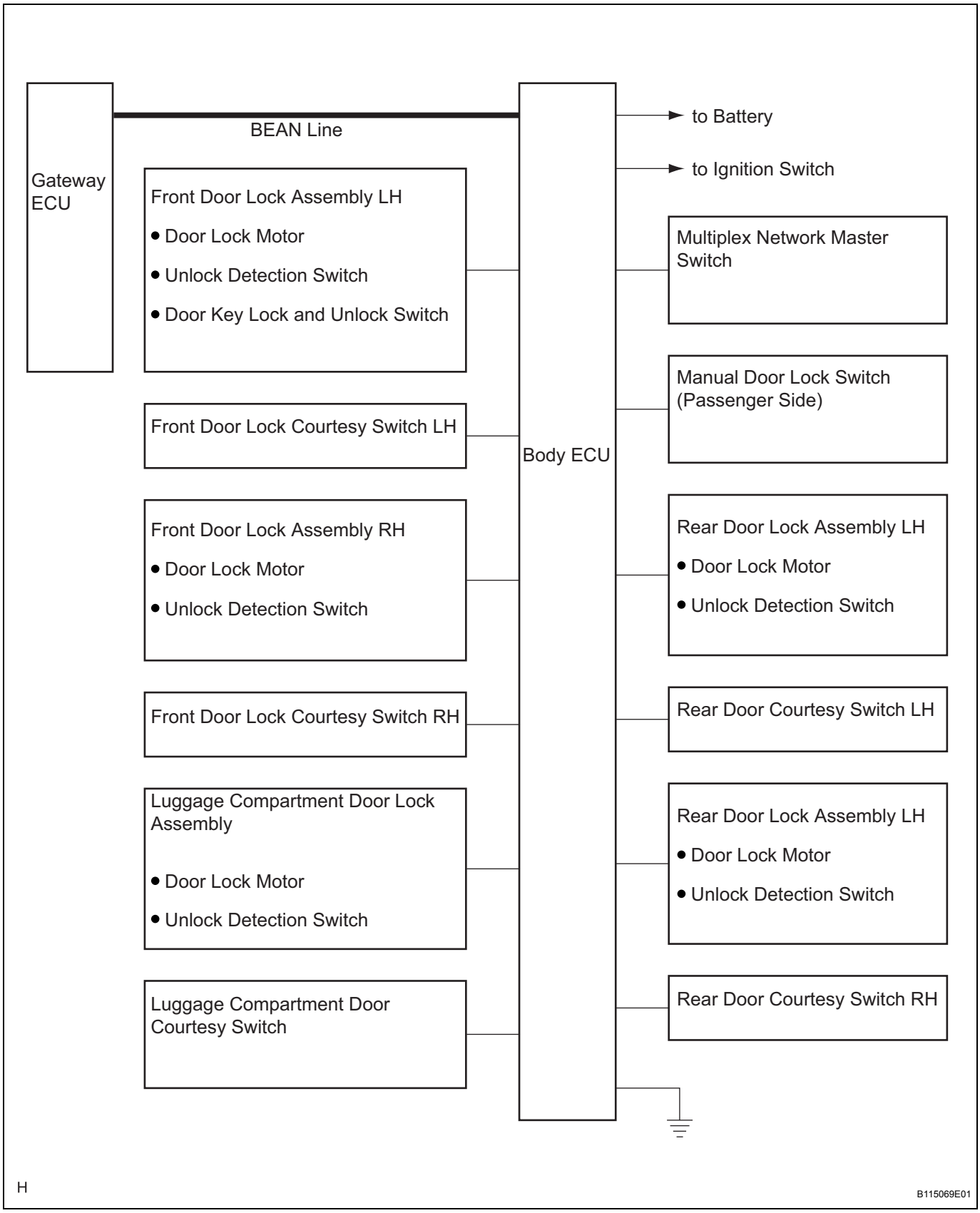
SYSTEM DIAGRAM



SYSTEM DESCRIPTION

1. POWER DOOR LOCK SYSTEM DESCRIPTION

(a) The power door lock system locks/unlocks all doors with a one-touch operation.
- The door control switch of the master switch assembly on the driver's door and the driver's door key cylinder send lock/unlock request signals to each door lock motor assembly through the body ECU.
- The door control switch on the passenger door sends lock/unlock request signals to each door lock motor assembly through the body ECU.

(b) Components

Components	Function
Power window regulator master switch assembly	Door control switch on master switch assembly locks/unlocks all doors.
Door lock control switch	Locks/unlocks all doors.
Door courtesy switch	Placed on each door. Detects door status (open or closed) and outputs data to body ECU. Turns on when door is open and off when door is closed.
Front door lock assembly (Driver side)	• Built-in motor locks/unlocks door. • Built-in door control switch (key-linked) detects door key operation's door status (locked or unlocked) and outputs data to body ECU. • Built-in position switch detects door status (locked or unlocked) and outputs data to body ECU. This switch turns off when door is locked and on when door is unlocked.
Luggage compartment door lock assembly	Built-in courtesy switch detects door status (open or closed) and outputs data to body ECU. This switch turns on when door is open and off when door is closed.
Door lock assembly (Passenger, RL and RR side)	• Built-in motor locks/unlocks door. • Built-in position switch detects door status (locked or unlocked) and outputs data to body ECU. This switch turns off when door is locked and on when door is unlocked.

(c) Functions

Functions	Outlines
Manual lock and unlock *1	This function can lock or unlock all doors by the door lock control switch operation.
One-motion open *1	When the door is locked, this function enables the door to be unlocked by merely pulling the inside handle of the door.
Key-linked lock *2	This function, which is linked with the key cylinder, can lock all the doors when a lock operations is effected.
Key-lined unlock *2	This function, which is linked with the key cylinder, can lock all the doors when an unlock operation effected.
Key-linked 2-step unlock *2	This function is provided to unlock the driver's door by turning the key cylinder first step and to unlock all doors by turning it the second step. However, the second step must be performed within three seconds.
Prevention of key confinement *1	When the key is inserted in the ignition key cylinder with the driver's door open and any front door is locked (with the door lock knob, door lock control switch, or door key cylinder), after locking the door is automatically unlocked.
Manual unlock prohibition *1	When a lock operation is effected through transmitter or key-linked operation, this function prohibits the door lock control switch from becoming unlocked.
Shift-linked automatic door lock	When the conditions listed below are met consecutively, this function causes all the doors to be automatically locked. • The power source is changed from the "OFF" or "ACC" to the "IG-ON". • All doors are closed. • The shift lever is moved out of P position. • Any of the doors are unlocked.

Functions	Outlines
Speed-sensitive automatic door lock	When the conditions listed below are met consecutively, this function causes all the doors to be automatically locked. • Vehicle speed is higher than approximately 20 km/h (13 mph). • All doors are closed. • The shift lever is out of P or N position. • Any of the doors are unlocked.
Shift-linked automatic door unlock	When the power source is "IG-ON", by shifting the shift lever to P position from the position other than P position, all doors will be automatically unlocked.
Opening driver's door-linked automatic door unlock	All doors are unlocked automatically when the driver's door is opened within ten seconds after the power source is changed from "IG-ON" to the "ACC" or "OFF".

*1: Only for driver and front passenger doors

*2: Only for driver door

CUSTOMIZE PARAMETERS

HINT:
The following items can be customized.
NOTICE:

- **After confirming whether items requested by the customer are applicable or not for customization, perform customize operations.**
- **Be sure to record the current settings before customizing.**
- **When troubleshooting, make sure that the item in question is not set to "OFF" as a result of customization.**

1. BODY ECU (Using intelligent tester):

Display (Item)	Default	Contents	Setting
Auto Lock	OFF	Function that locks the doors once when the vehicle speed reaches a certain level.	ON/OFF
Unlk/Key Twice	ON	Functions that unlocks only driver side door when driver side door key cylinder is turned to unlock once and unlocks all the doors when it is turned to unlock twice. In OFF setting, turning it once unlocks all doors.	ON/OFF
All Unlk/Opn-Cl	ON		ON/OFF
Unlock/Park	OFF	Function that unlocks doors when lever is shifted to P position from any position other than P while the ignition switch is ON.	ON/OFF

2. MANUAL SETTING (Switch operation)

(a) Close all the doors.
(b) Turn the ignition switch on (IG).
(c) Within ten seconds after the ignition switch on (IG).

- To set function (Shift-linked Automatic Door Lock)
  Push and hold the LOCK side of the power door lock switch for five seconds with the shift lever in the P.
- To set function (Speed-sensitive Automatic Door Lock)
  Push and hold the LOCK side of the power door lock switch for five seconds with the shift lever in any position except P.
- To set function (Shift-linked Automatic Door Unlock)
  Push and hold the UNLOCK side of the power door lock switch for five seconds with the shift lever in the P.
- To set function (Opening Driver's Door-linked Automatic Door Unlock)
  Push and hold the UNLOCK side of the power door lock switch for five seconds with the shift lever in any position except P.

If user wants to cancel a function, repeat the procedure. Each time user perform the procedure, the function is set or cancelled.

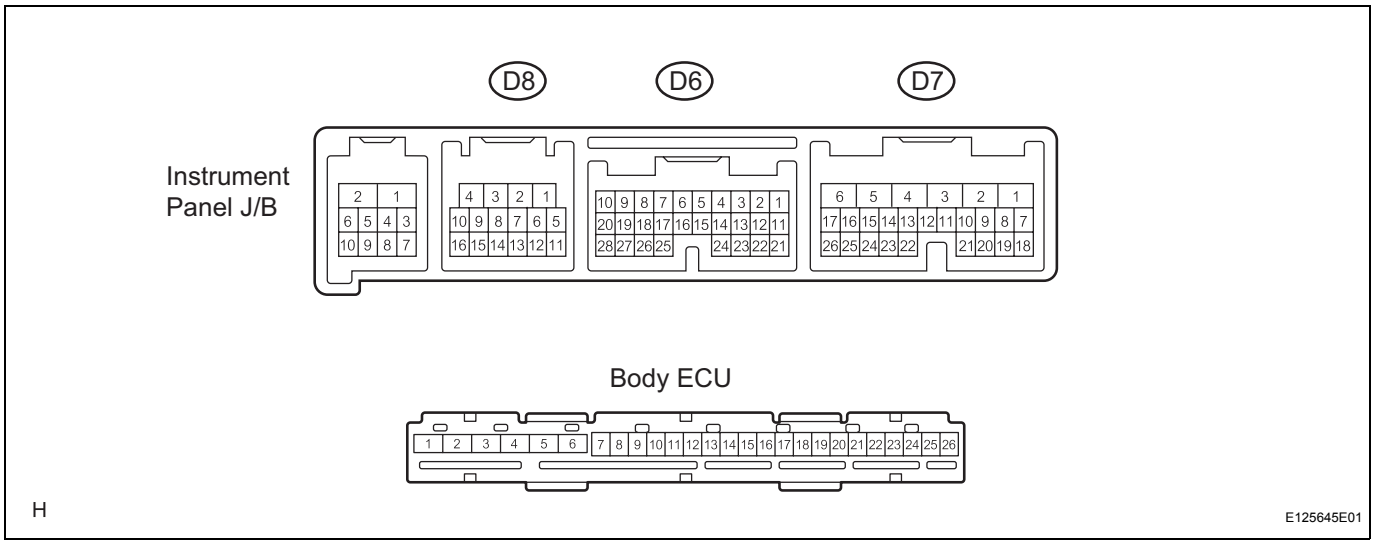
PROBLEM SYMPTOMS TABLE

POWER DOOR LOCK CONTROL SYSTEM

Symptom	Suspected area	See page
All doors cannot be locked/unlocked simultaneously (door control switch)	1. Power source circuit (Body ECU)	DL-60
	2. Door lock control switch circuit (Master switch)	DL-27
	3. Body ECU	-
All doors cannot be locked/unlocked simultaneously (driver door key cylinder)	1. Power source circuit (Body ECU)	DL-60
	2. Door lock control switch circuit (Master switch)	DL-27
	3. Door key lock and unlock switch circuit (Driver side)	DL-57
	4. Body ECU	-
Driver side door lock does not operate	1. Power source circuit (Body ECU)	DL-60
	2. Door lock motor circuit (Driver side)	DL-31
	3. Door key lock and unlock switch circuit (Driver side)	DL-57
	4. Body ECU	-
Passenger side door lock does not operate	1. Power source circuit (Body ECU)	DL-60
	2. Door lock motor circuit (Passenger side)	DL-34
	3. Body ECU	-
Rear LH side door lock does not operate	1. Power source circuit (Body ECU)	DL-60
	2. Door lock motor circuit (Rear LH side)	DL-37
	3. Body ECU	-
Rear RH side door lock does not operate	1. Power source circuit (Body ECU)	DL-60
	2. Door lock motor circuit (Rear RH side)	DL-40
	3. Body ECU	-
Key lock-in prevention function does not work properly (manual operation and key-linked lock are active)	1. Door courtesy light switch assembly (Driver side)	DL-43
	2. Door key lock and unlock switch circuit (Driver side)	DL-57
	3. Body ECU	-
On or more doors cannot be lock/unlock simultaneously (Smart key operation)	1. Troubleshooting	DL-159
	2. Door unlock detection switch circuit (Driver side)	DL-15
	3. Door unlock detection switch circuit (Front passenger side)	DL-18
	4. Door unlock detection switch circuit (Rear door LH)	DL-21
	5. Door unlock detection switch circuit (Rear door RH)	DL-24
	6. Body ECU	-
On or more doors cannot be lock/unlock simultaneously (Wireless key operation)	1. Troubleshooting	DL-76
	2. Door unlock detection switch circuit (Driver side)	DL-15
	3. Door unlock detection switch circuit (Front passenger side)	DL-18
	4. Door unlock detection switch circuit (Rear door LH)	DL-21
	5. Door unlock detection switch circuit (Rear door RH)	DL-24
	6. Body ECU	-
On or more doors cannot be lock/unlock simultaneously (Theft deterrent operation)	1. Troubleshooting	TD-9
	2. Door unlock detection switch circuit (Driver side)	DL-15
	3. Door unlock detection switch circuit (Front passenger side)	DL-18
	4. Door unlock detection switch circuit (Rear door LH)	DL-21
	5. Door unlock detection switch circuit (Rear door RH)	DL-24
	6. Body ECU	-

TERMINALS OF ECU

1. INSTRUMENT PANEL J/B (BODY ECU)



INSTRUMENT PANEL J/B:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
LSWR (D6-5) - Body ground	B - Body ground	Rear right door lock position switch input	Door lock position switch is UNLOCK → LOCK	Below 1 V → 10 to 14 V
UL2 (D6-4) - Body ground	Y - Body ground	Passenger door key-linked door unlock input	Door key-linked is OFF → UNLOCK	10 to 14 V → Below 1 V
LSWP (D6-27) - Body ground	GR - Body ground	Passenger door lock position switch input	Door lock position switch is UNLOCK → LOCK	Below 1 V → 10 to 14 V
LGCY (D6-25) - Body ground	V - Body ground	Luggage compartment door courtesy switch input	Luggage door courtesy switch is CLOSE → OPEN	Below 1 V → 10 to 14 V
PCTY (D6-23) - Body ground	L - Body ground	Passenger door courtesy switch input	Door courtesy switch is CLOSE → OPEN	Below 1 V → 10 to 14 V
TR+ (D7-1) - Body ground	B - Body ground	Door lock motor UNLOCK drive output (Luggage compartment door)	Ignition switch on (IG), luggage door lock motor is OFF → UNLOCK	Below 1 V → 10 to 14 V
ACTD (D8-1) - Body ground	GR - Body ground	Door lock motor UNLOCK drive output (Driver door)	Ignition switch on (IG), door lock motor is OFF → UNLOCK	Below 1 V → 10 to 14 V
UL3 (D8-8) - Body ground	V - Body ground	Driver key-linked door unlock input	Door key-linked is OFF → UNLOCK	10 to 14 V → Below 1 V
LSWD (D8-7) - Body ground	L - Body ground	Driver door lock position switch input	Door lock position switch is UNLOCK → LOCK	Below 1 V → 10 to 14 V
RCTY (D8-16) - Body ground	GR - Body ground	Rear right door courtesy switch input	Door courtesy switch is CLOSE → OPEN	Below 1 V → 10 to 14 V
DCTY (D8-14) - Body ground	L - Body ground	Driver door courtesy switch input	Door courtesy switch is CLOSE → OPEN	Below 1 V → 10 to 14 V

BODY ECU:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ACT+ (1) - Body ground	- - Body ground	Door lock motor LOCK drive output (All door)	Ignition switch on (IG), door lock motor is OFF → LOCK	Below 1 V → 10 to 14 V
ACT- (3)- Body ground	- - Body ground	Door lock motor UNLOCK drive output (All door)	ignition switch on (IG), door lock motor is OFF → UNLOCK	Below 1 V → 10 to 14 V
GND2 (4) - Body ground	- - Body ground	Ground	Always	Below 1 V
GND1 (5) - Body ground	- - Body ground	Ground	Always	Below 1 V
L1 (9) - Body ground	- - Body ground	Door lock input	Manual door lock is OFF → LOCK	10 to 14 V → Below 1 V
L2 (10) - Body ground	- - Body ground	Driver key-linked door lock input	Driver door key-linked is OFF → LOCK	10 to 14 V → Below 1 V

DL

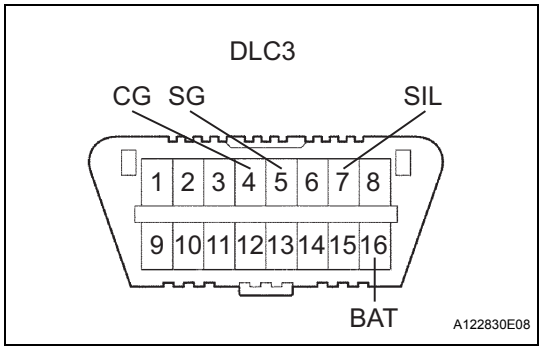
Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
UL1 (12) - Body ground	- - Body ground	Door unlock input	Manual door lock is OFF → UNLOCK	10 to 14 V → Below 1 V
IG (15) - Body ground	- - Body ground	Power supply	Ignition switch OFF → ON	Below 1 V → 10 to 14 V
LCTY (17) - Body ground	- - Body ground	Rear left door courtesy switch input	Door courtesy switch is CLOSE → OPEN	Below 1 V → 10 to 14 V
LSWL (20) - Body ground	- - Body ground	Rear left door lock position switch input	Door lock position switch is UNLOCK → LOCK	Below 1 V → 10 to 14 V
ACC (22) - Body ground	- - Body ground	Power supply	Ignition switch OFF → ACC	Below 1 V → 10 to 14 V
BECU (26) - Body ground	- - Body ground	Power supply	Always	10 to 14 V

DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) Power door lock control system data can be read in the Data Link Connector 3 (DLC3) of the vehicle. When the system seems to be malfunctioning, use the intelligent tester to check for malfunctions and perform repairs.

2. CHECK DLC3



(a) The vehicle's ECM uses ISO 9141-2 for communication.
The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.

Tester Connection	Condition	Specified Condition
7 (Bus + line) - 5 (Signal ground)	During communication	Pulse generation
4 (Chassis ground) - Body ground	Constant	Below 1 Ω
5 (Signal ground) - Body ground	Constant	Below 1 Ω
16 (B+) - Body ground	Constant	9 to 14 V

HINT:
Connect the cable of the intelligent tester to the DLC3, turned the ignition switch ON and attempt to use the intelligent tester. If the screen displays UNABLE TO CONNECT TO VEHICLE, a problem exists in the vehicle side or tester side.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of 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 manual.

(b) Check the battery voltage.

3. INSPECT BATTERY VOLTAGE

(a) Inspect the battery voltage.
Voltage:
11 to 14 V
If voltage is below 11 V, recharge the battery before proceeding.

DL

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

Using the intelligent tester's 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 save time.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the ignition switch on (IG).

(c) Read the DATA LIST on the tester's screen.

Body ECU:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
TRUNK KEY UNLK	Trunk key switch signal/ON or OFF	ON: Trunk is unlocked OFF: Trunk is locked	-
LUGG COURTESY SW	Luggage courtesy switch signal/ ON or OFF	ON: Luggage courtesy switch is open OFF: Luggage courtesy switch is closed	-
D DOR CTY SW	Door courtesy switch signal/ON or OFF	ON: Door is open OFF: Door is closed	-
P DOR CTY SW	Door courtesy switch signal/ON or OFF	ON: Door is open OFF: Door is closed	-
Rr DOR CTY SW	Door courtesy switch signal/ON or OFF	ON: Door is open OFF: Door is closed	-
Dr LOCK POS SW	Door unlock detection switch signal/ON or OFF	ON: Door is unlocked OFF: Door is locked	-
P LOCK POS SW	Door unlock detection switch signal/ON or OFF	ON: Door is unlocked OFF: Door is locked	-
Rr LOCK POS SW	Door unlock detection switch signal/ON or OFF	ON: Door is unlocked OFF: Door is locked	-
D/L SW-LOCK	Door lock switch signal (LOCK)/ ON or OFF	ON: Door is locked OFF: Door is unlocked	-
D/L SW-UNLOCK	Door lock switch signal (UNLOCK)/ON or OFF	ON: Door is unlocked OFF: Door is locked	-
DOR KEY SW-LOCK	Door key lock and unlock switch signal/ON or OFF	ON: Door key is locked OFF: Door key is unlocked	-
P DOR KEY SW-UL	Door key lock and unlock switch signal (Front passenger)/ON or OFF	ON: Door key is unlocked OFF: Door key is locked	-
D DOR KEY SW-UL	Door key lock and unlock switch signal (Driver)/ON or OFF	ON: Door key is unlocked OFF: Door key is locked	-

2. ACTIVE TEST

HINT:

Performing the intelligent tester's ACTIVE TEST allows relay, VSV, actuator and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the ignition switch on (IG).

(c) Perform the ACTIVE TEST according to the display on the tester.

Body ECU:

Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor LOCK/UNLOCK	-
SHOCK UNLOCK	Operate door lock motor UNLOCK/OFF	-

ON-VEHICLE INSPECTION

1. CHECK ELECTRICAL DOOR LOCK OPERATION

(a) Check the basic function.
  (1) Check that all doors lock when the door control switch (for manual operation) is turned to LOCK and all doors unlock when turned to UNLOCK.
  (2) Check that all doors lock when the driver side door lock key cylinder is turned to LOCK using the key.
  (3) Check that only the driver side door unlocks when the driver side door lock key cylinder is turned to UNLOCK and all doors unlock when turned to UNLOCK once again within 3 seconds using the key (2-step unlocking function).

(b) Check the key lock-in prevention function.
NOTICE:
In order to prevent the key from being actually locked-in, the inspection should be made with the driver side door window open.
  (1) Have the key inserted into the ignition key cylinder.
  (2) With the driver side door open, check that all doors unlock immediately after the door lock knob for the driver side door is turned to LOCK.
  (3) With the driver side door open, check that all doors unlock immediately after the door control switch (for manual operation) is turned to LOCK.
  (4) With the driver side door open, turn the driver side door lock knob to LOCK and hold it for 2 seconds or more, and then close the driver side door. Then check that all doors unlock.

(c) Check the security function.
  (1) Close all doors with the driver side door window open so that the door control switch can be operated from outside the vehicle.
  (2) Pull out the key, open the driver side door and then close and lock the door without using the key. Under this condition, check that all doors do not unlock when the door control switch (for manual operation) is turned to UNLOCK from outside the vehicle.
  (3) Pull out the key, close and lock the driver side door by key operation. Under this condition, check that all doors do not unlock when the door control switch (for manual operation) is turned to UNLOCK from outside the vehicle.

(4) Pull out the key, close the driver side door and lock the door by wireless door lock operation. Under this condition, check that all doors do not unlock when the door control switch (for manual operation) is tuned to UNLOCK from outside the vehicle.
HINT:
Check that the security function is canceled under the following conditions.
- The ignition switch is turned ON.
- The driver side door is unlocked using the key.
- The door control switch (for manual operation) is turned to UNLOCK after the door control knob is turned to UNLOCK manually.
- The doors are unlocked with wireless operation.

(d) Check the automatic unlocking function interlocked with the shift lever.
(1) When the ignition switch is ON, moving the shift lever to P position from any position other than P while the vehicle speed is 0 km/h will automatically unlock all the doors.

(e) Check the driver door-linked automatic door unlock function.
(1) When the driver door is closed, turning the ignition switch from ON to OFF position and opening the driver door within 10 seconds will automatically unlock all the doors.

(f) Check the vehicle speed automatic door lock.
(1) When the vehicle speed reaches 20 km/h (13 mph), all doors will automatically lock.

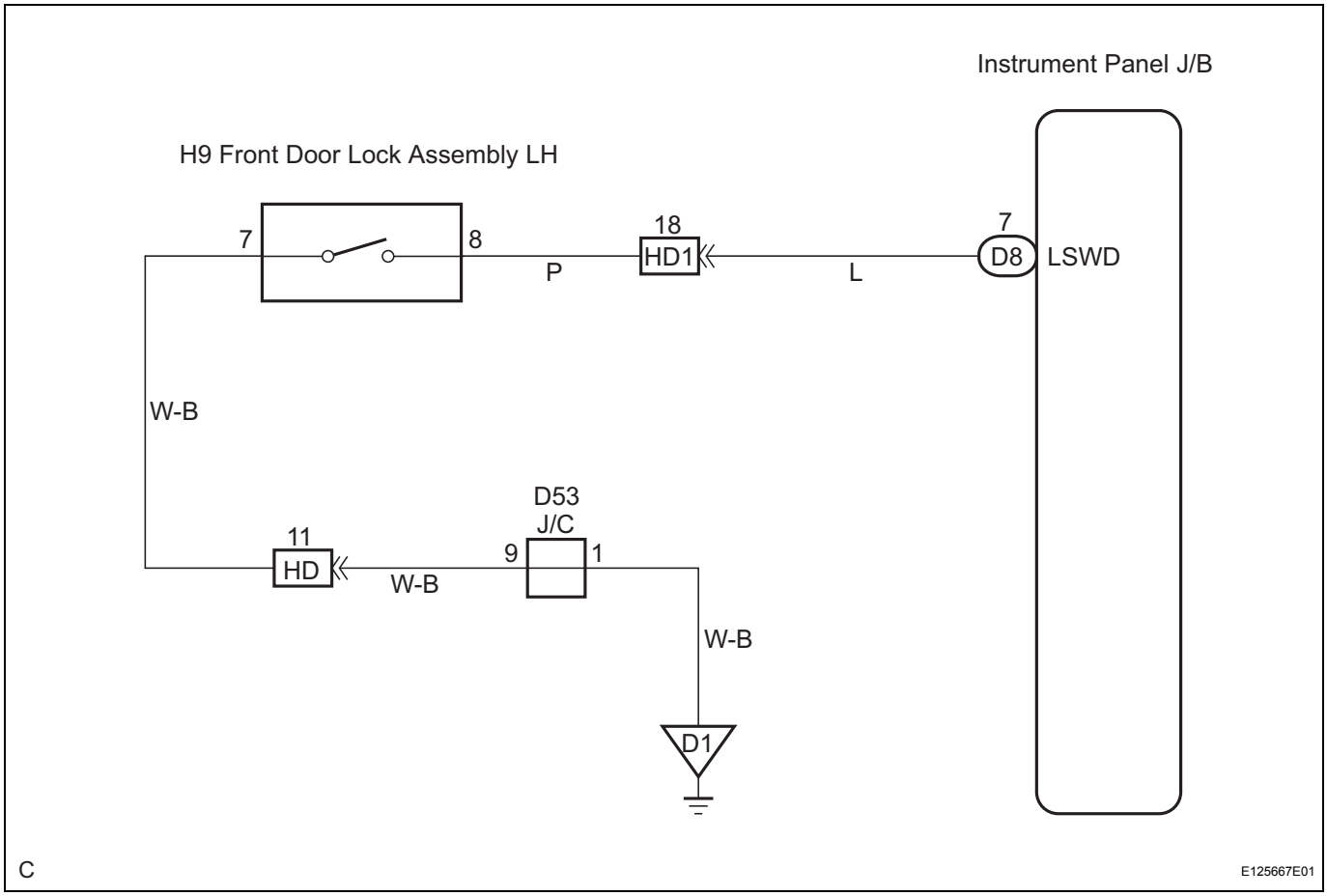
(g) Check the automatic locking function interlocked with the shift lever.
(1) When any door is unlocked with all doors closed and the engine started, check that all doors automatically lock when the shift lever is moved into any position from the P position.
(2) For the function described above, whether the brake pedal needs to be depressed or not can be selected using the intelligent tester.
(3) When any door is unlocked after all doors automatically lock, check that all doors attempt to automatically lock once again (retry function). The retry function is canceled when any of the following conditions is fulfilled:
- All doors are locked.
- Any door is opened.
- The shift lever is moved into the P position.
- The doors are locked or unlocked by the user.
- The ignition switch is turned OFF.
- The engine is stopped.

Driver Side Door UNLOCK Detection Switch Circuit

DESCRIPTION

The door unlock detection switch is built in the door lock assembly.
This switch is ON when the door lock knob is in the unlock position and OFF when it is in the lock position.
It is used as one of the operating conditions for the key confinement prevention function.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR UNLOCK DETECTION SWITCH)

(a) Check the DATA LIST for proper functioning of the door unlock detection switch.

Body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
D LOCK POS SW	Door unlock detection switch signal / ON or OFF	ON: Door is unlocked OFF: Door is locked	-

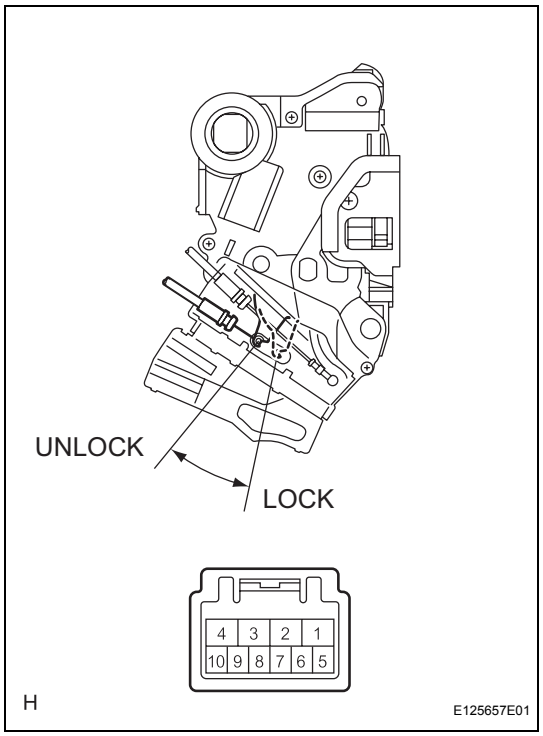
OK:
"ON" (door is unlocked) appears on the screen.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT FRONT DOOR LOCK ASSEMBLY LH (DOOR UNLOCK DETECTION SWITCH)



(a) Remove the front door lock assembly LH.
(b) Measure the resistance of the door unlock detection switch.

Resistance

Tester Condition	Door Lock Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	ON (Door lock set to UNLOCK)	7 - 8 (Below 1 Ω)
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	OFF (Door Lock set to LOCK)	7 - 8 (10 kΩ or higher)

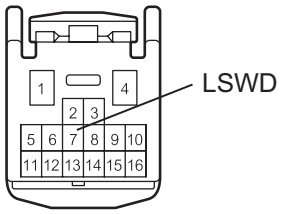
NG → **REPLACE FRONT DOOR LOCK ASSEMBLY LH**

OK

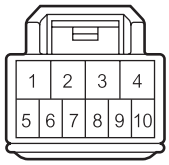
DL

3	CHECK WIRE HARNESS (FRONT DOOR LOCK ASSEMBLY LH - INSTRUMENT PANEL J/B)

D8 Instrument Panel J/B:



H9 Front Door Lock Assembly LH:



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(a) Disconnect the D8 and H9 connectors.
(b) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
D8-7 - H9-8	Always	Below 1 Ω
H9-7 - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

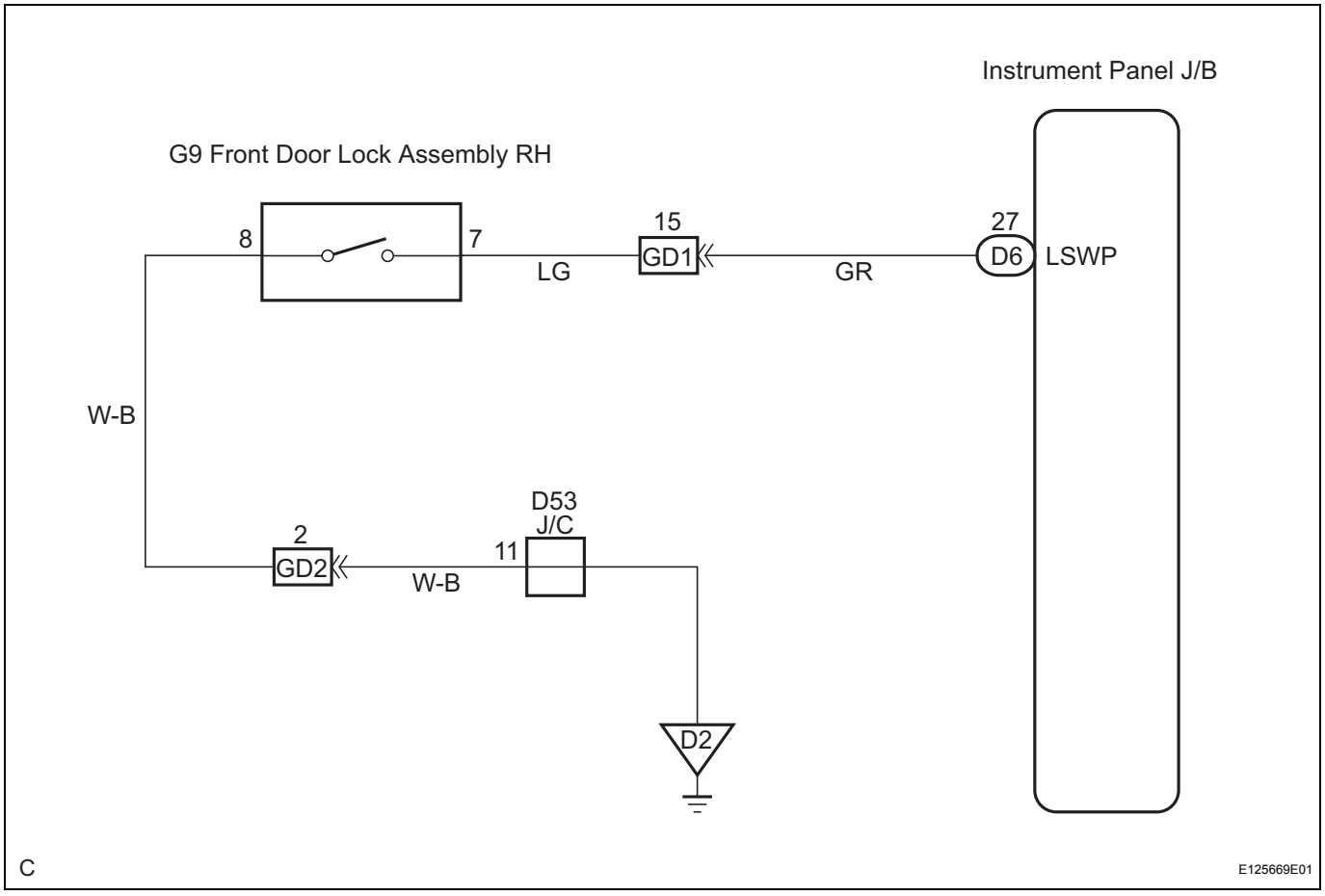
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Front Passenger Side Door UNLOCK Detection Switch Circuit

DESCRIPTION

The door unlock detection switch is built in the door lock assembly.
This switch is ON when the door lock knob is in the unlock position and OFF when the knob is in the lock position. It is used as one of the operating conditions for the key confinement prevention function.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR UNLOCK DETECTION SWITCH)

(a) Check the DATA LIST for proper functioning of the door unlock detection switch.

Body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
P LOCK POS SW	Door unlock detection switch signal / ON or OFF	ON: Door is unlocked OFF: Door is locked	-

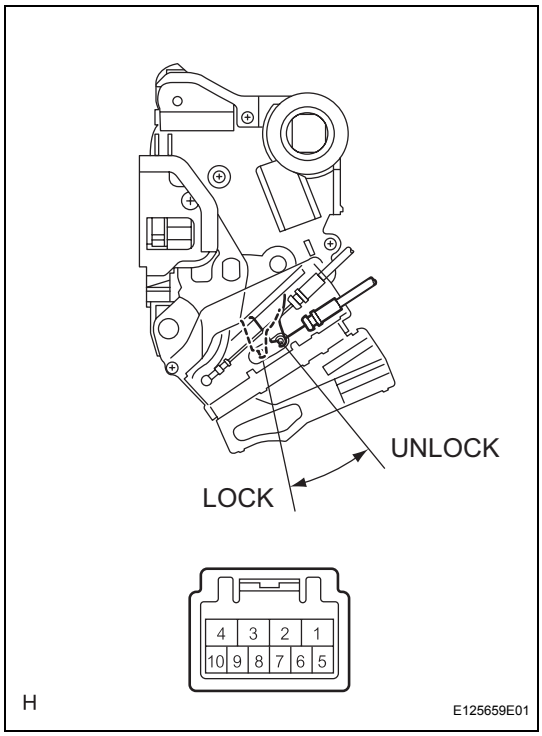
OK:
"ON" (door is unlocked) appears on the screen.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT FRONT DOOR LOCK ASSEMBLY RH (DOOR UNLOCK DETECTION SWITCH)



(a) Remove the front door lock assembly RH.
(b) Measure the resistance of the door unlock detection switch.

Resistance

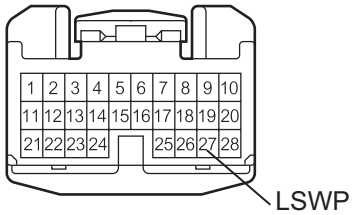
Tester Connection	Door Lock Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	ON (Door lock set to UNLOCK)	7 - 8 (Below 1 Ω)
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	OFF (Door Lock set to LOCK)	7 - 8 (10 kΩ or higher)

NG → **REPLACE FRONT DOOR LOCK ASSEMBLY RH**

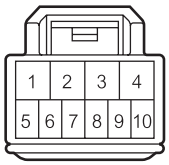
OK

3	CHECK WIRE HARNESS (FRONT DOOR LOCK ASSEMBLY RH - INSTRUMENT PANEL J/B)

D6 Instrument Panel J/B:



G9 Door Lock Assembly (Front Passenger Side):



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(a) Disconnect the D6 and G9 connectors.
(b) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
D6-27 - G9-7	Always	Below 1 Ω
G9-8 - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

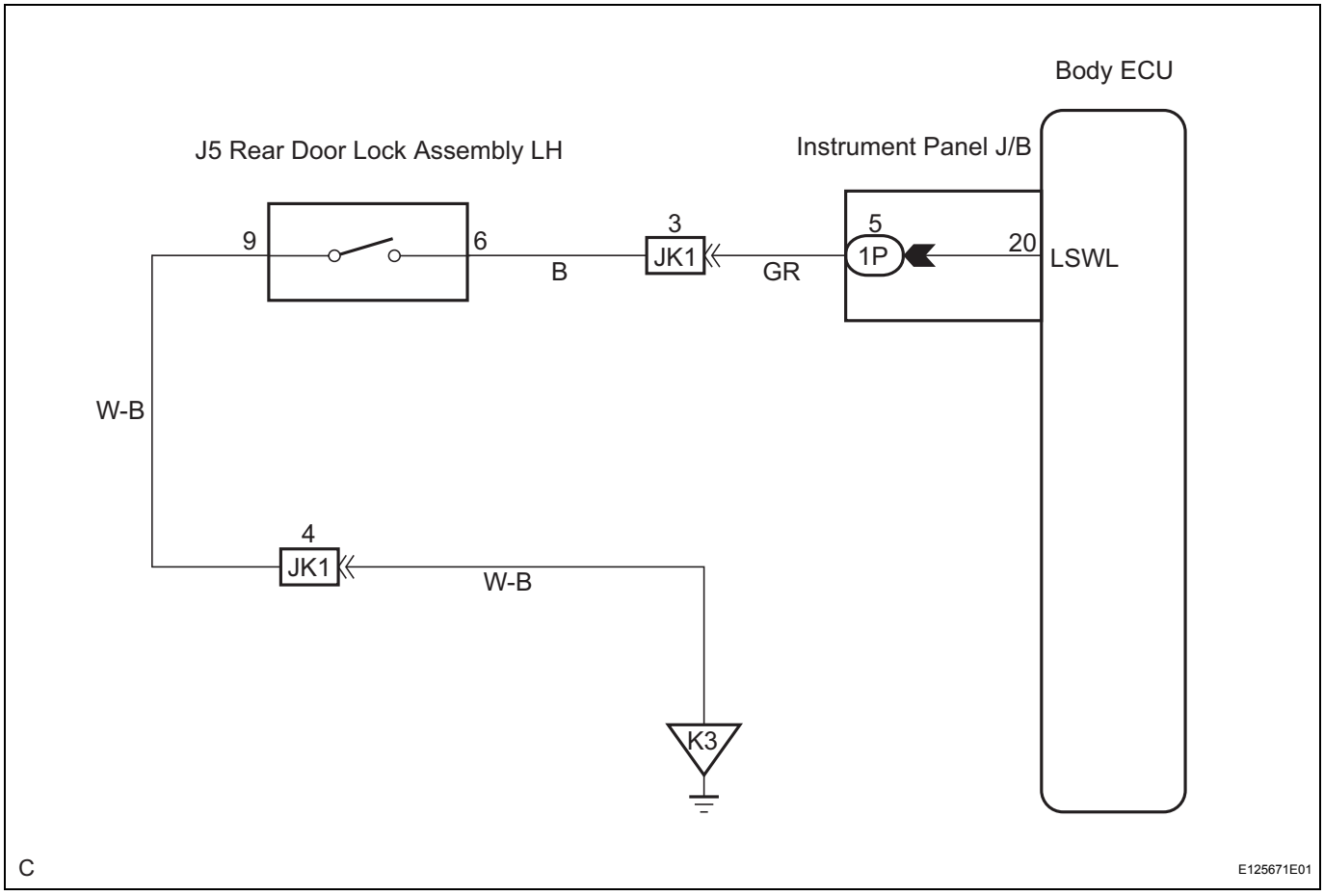
DL

Rear Door UNLOCK Detection Switch LH Circuit

DESCRIPTION

The door unlock detection switch is built in the door lock assembly.
This switch is ON when the door lock knob is in the unlock position and OFF when it is in the lock position.
It is used as one of the operating conditions for the key confinement prevention function.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR UNLOCK DETECTION SWITCH)

(a) Check the DATA LIST for proper functioning of the door unlock detection switch.

Body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
Rr LOCK POS SW	Door unlock detection switch signal / ON or OFF	ON: Door is unlocked OFF: Door is locked	-

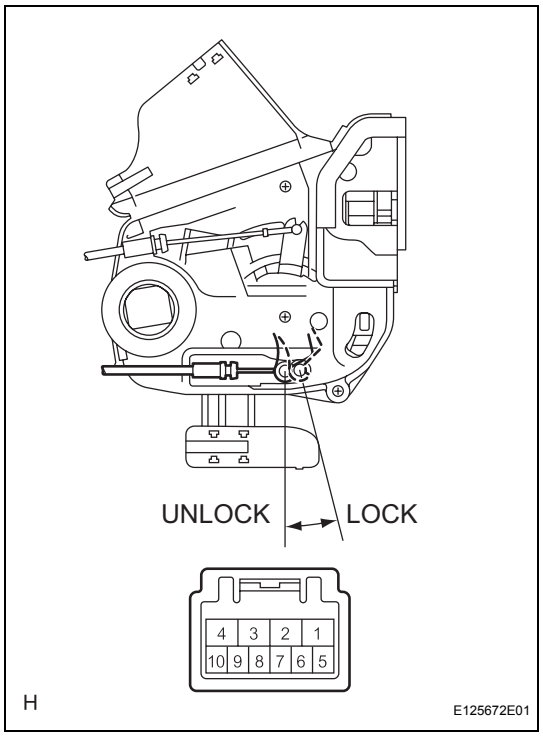
OK:
"ON" (door is unlocked) appears on the screen.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT REAR DOOR LOCK ASSEMBLY LH (DOOR UNLOCK DETECTION SWITCH)



(a) Remove the rear door lock assembly LH.
(b) Measure the resistance of the door unlock detection switch.

Resistance

Tester Connection	Door Lock Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	ON (Door lock set to UNLOCK)	6 - 9 (Below 1 Ω)
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	OFF (Door lock set to LOCK)	6 - 9 (10 kΩ or higher)

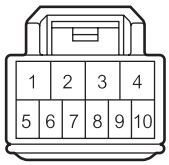
NG → **REPLACE REAR DOOR LOCK ASSEMBLY LH**

OK

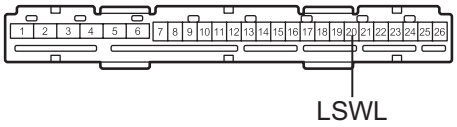
DL

3	CHECK WIRE HARNESS (REAR DOOR LOCK ASSEMBLY LH - INSTRUMENT PANEL J/B)

J5 Rear Door Lock Assembly LH:



Instrument Panel J/B:



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(a) Disconnect the J5 connector.
(b) Remove the body ECU from instrument panel J/B.
(c) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
20 - J5-6	Always	Below 1 Ω
J5-9 - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

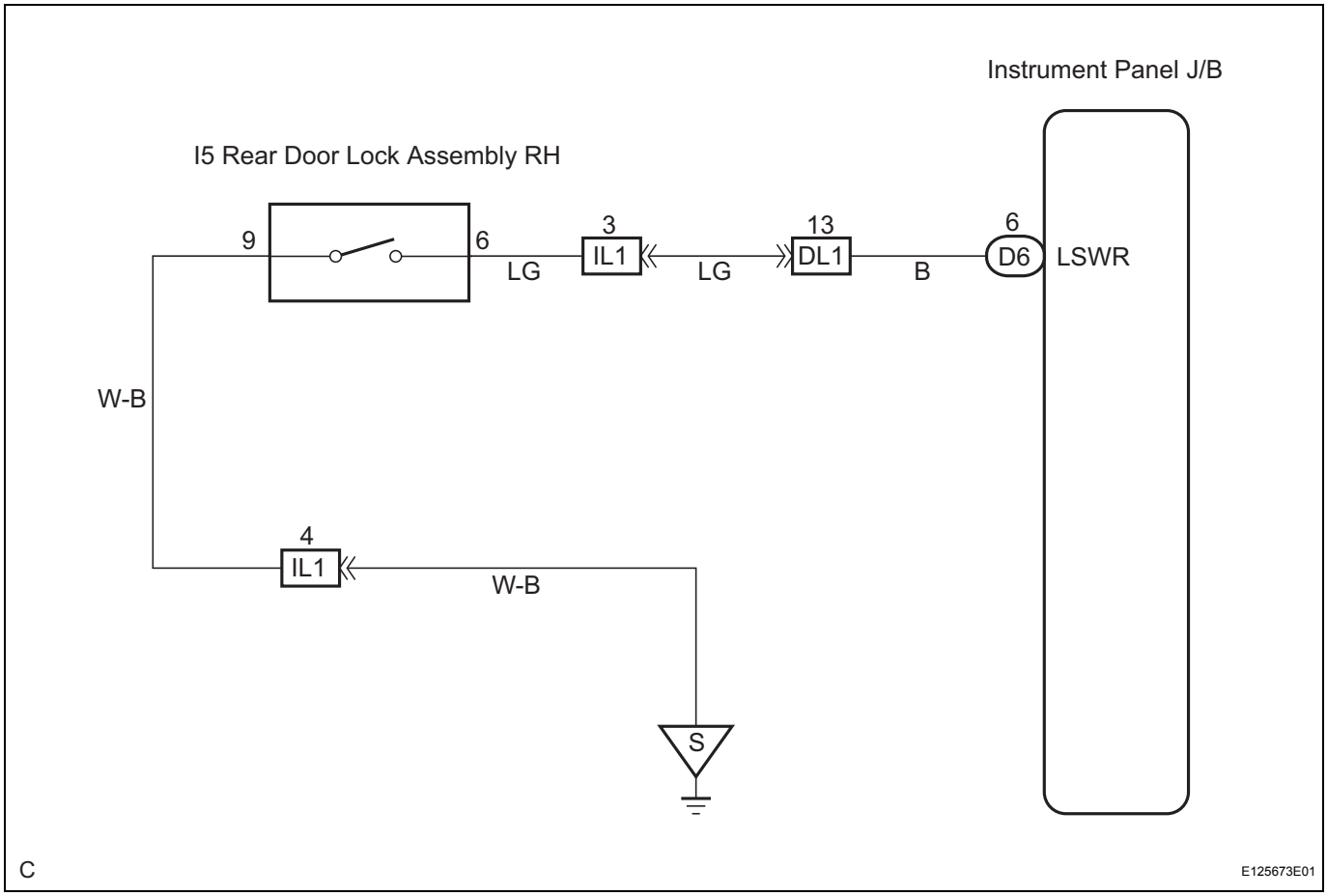
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Rear Door UNLOCK Detection Switch RH Circuit

DESCRIPTION

The door unlock detection switch is built in the door lock assembly.
This switch is ON when the door lock knob is in the unlock position and OFF when it is in the lock position.
It is used as one of the operating conditions for the key confinement prevention function.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR UNLOCK DETECTION SWITCH)

(a) Check the DATA LIST for proper functioning of the door unlock detection switch.

Body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
Rr LOCK POS SW	Door unlock detection switch signal / ON or OFF	ON: Door is unlocked OFF: Door is locked	-

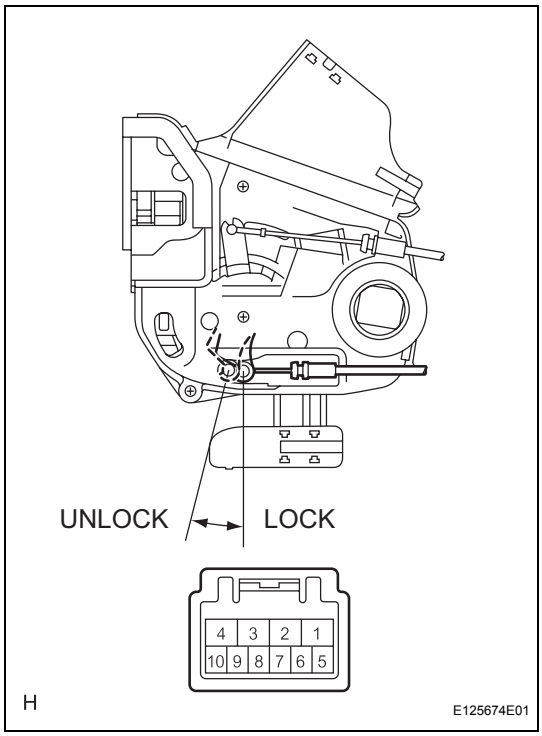
OK:
"ON" (door is unlocked) appears on the screen.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT REAR DOOR LOCK ASSEMBLY RH (DOOR UNLOCK DETECTION SWITCH)



(a) Remove the rear door lock assembly RH.
(b) Measure the resistance of the door unlock detection switch.

Resistance

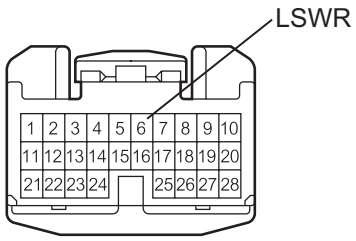
Tester Connection	Door Lock Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	ON (Door lock set to UNLOCK)	6 - 9 (Below 1 Ω)
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	OFF (Door lock set to LOCK)	6 - 9 (10 kΩ or higher)

NG → **REPLACE REAR DOOR LOCK ASSEMBLY RH**

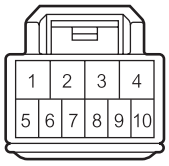
OK

3	CHECK WIRE HARNESS (REAR DOOR LOCK ASSEMBLY RH - INSTRUMENT PANEL J/B)

D6 Instrument Panel J/B:



I5 Door Lock Assembly (Rear RH):



H

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(a) Disconnect the D6 and I5 connectors.
(b) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
D6-6 - I5-6	Always	Below 1 Ω
I5-9 - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

DL

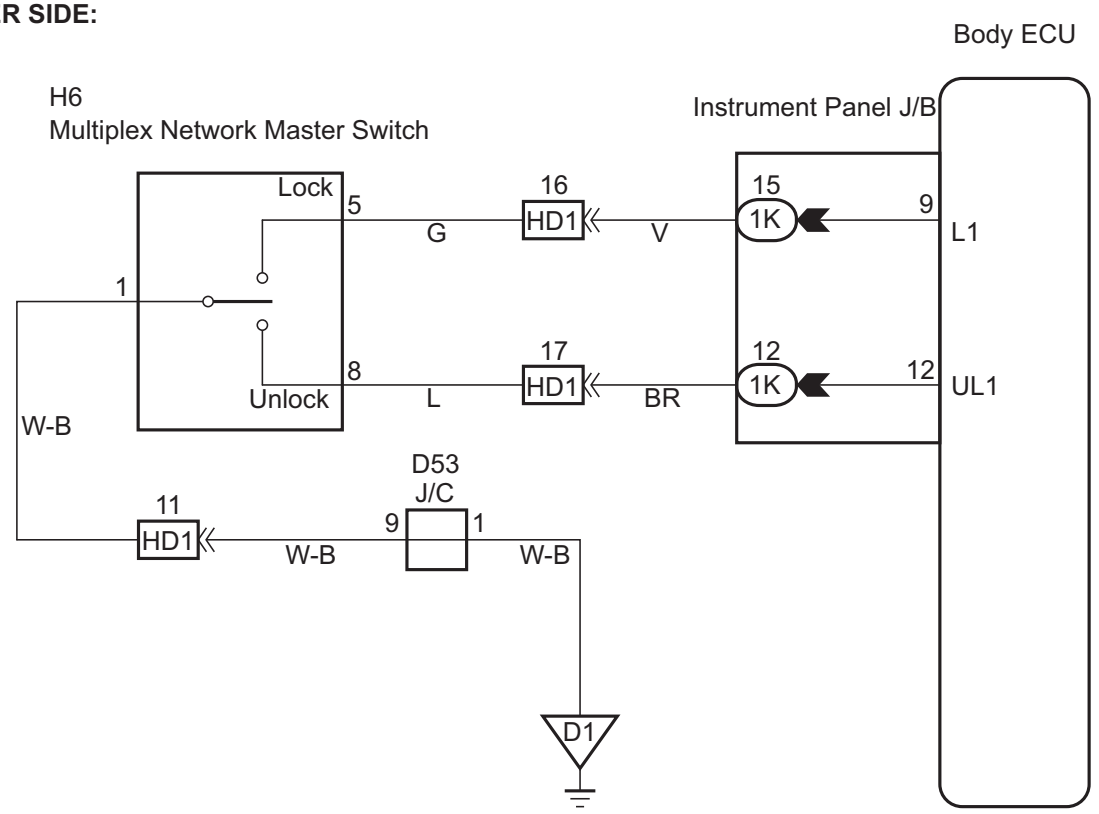
Door Lock Control Switch Circuit

DESCRIPTION

When a malfunction is detected in these switches, inspect each switch. Then, replace the malfunctioning switch. If no malfunction is detected in switches, check the wire harness.

WIRING DIAGRAM

DRIVER SIDE:



C

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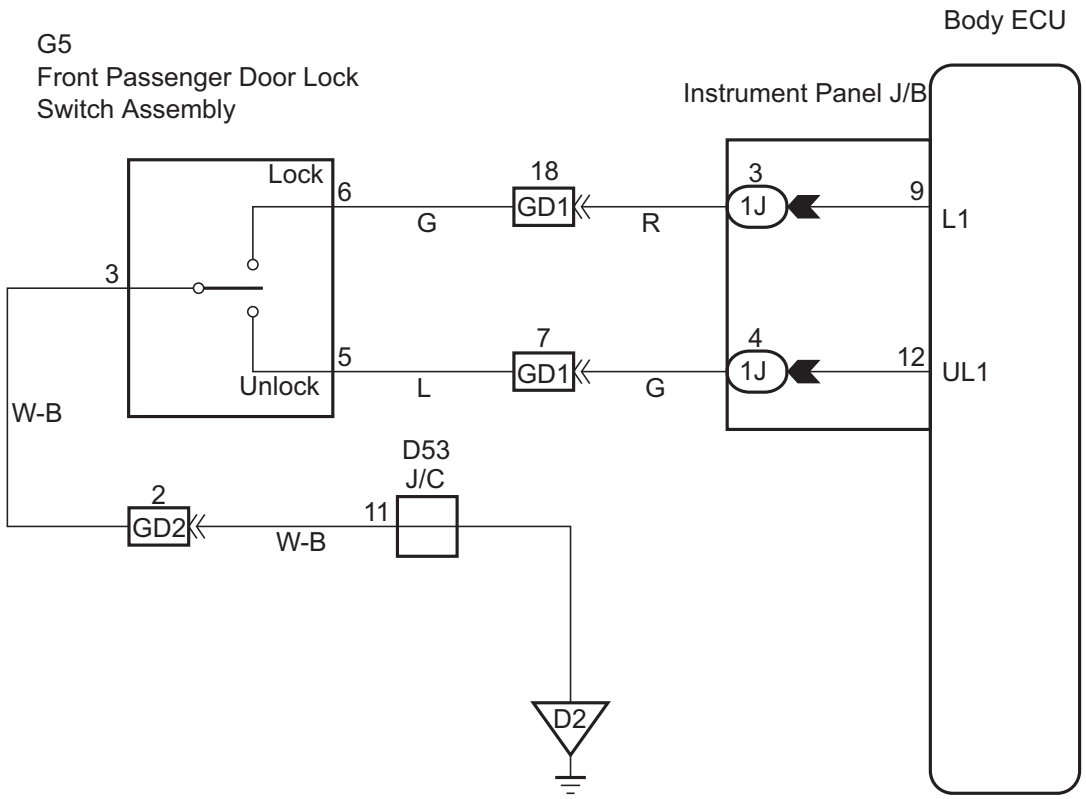
PASSENGER SIDE:



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR LOCK SWITCH)

(a) Check the DATA LIST for proper functioning of the door unlock detection switch.

Body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
D/L SW-LOCK	Door lock switch signal (LOCK) / ON or OFF	ON: Door is locked OFF: Door is unlocked	-
D/L SW-UNLOCK	Door lock switch signal (UNLOCK) / ON or OFF	ON: Door is unlocked OFF: Door is locked	-

OK:
"ON" (door is locked / unlocked) appears on the screen.

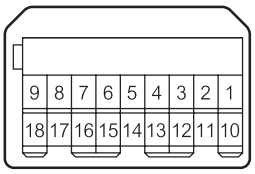
NG → **Go to step 2**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT DOOR LOCK CONTROL SWITCH

DRIVER SIDE:



H

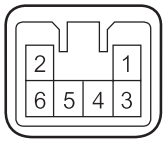
E125652E01

(a) Inspect door lock switch (driver side).
(1) Disconnect the multiplex network master switch assembly.
(2) Measure the resistance of the switch when the switch is operated.

Resistance

Tester Connection	Door Lock Condition	Specified Condition
1 - 8	ON (Door lock set to UNLOCK)	Below 1 Ω
1 - 5	OFF (Door Lock set to LOCK)	Below 1 Ω

PASSENGER SIDE:



H

E125654E01

(b) Inspect door lock switch (passenger side).
(1) Disconnect the front passenger door lock switch assembly.
(2) Measure the resistance of the switch when the switch is operated.

Resistance

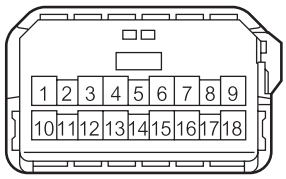
Tester Connection	Door Lock Condition	Specified Condition
3 - 5	ON (Door lock set to UNLOCK)	Below 1 Ω
3 - 6	OFF (Door Lock set to LOCK)	Below 1 Ω

NG → **REPLACE DOOR LOCK CONTROL SWITCH**

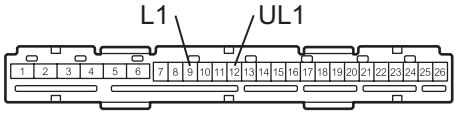
OK

3	CHECK WIRE HARNESS (DOOR LOCK SWITCH ASSEMBLY - INSTRUMENT PANEL J/B)

H6 Multiplex Network Master Switch Assembly:



Instrument Panel J/B:



H

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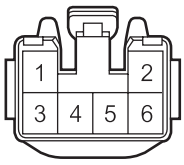
(a) Inspect driver side.
(1) Disconnect the H6 connector.
(2) Remove the body ECU from instrument panel J/B.
(3) Measure the resistance of the wire harness side connectors.

Resistance

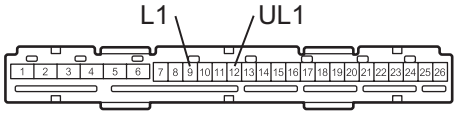
Tester Connection	Condition	Specified Condition
9 - H6-5 (L1)	Always	Below 1 Ω
12 - H6-8 (UL1)	Always	Below 1 Ω
H6-1 - Body ground	Always	Below 1 Ω

DL

G5 Front Passenger Door Lock Switch Assembly:



Instrument Panel J/B:



H

E125655E01

(b) Inspect passenger side.
(1) Disconnect the G5 connector.
(2) Remove the body ECU from instrument panel J/B.
(3) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
9 - G5-6 (L1)	Always	Below 1 Ω
12 - G5-5 (UL1)	Always	Below 1 Ω
G5-3 - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

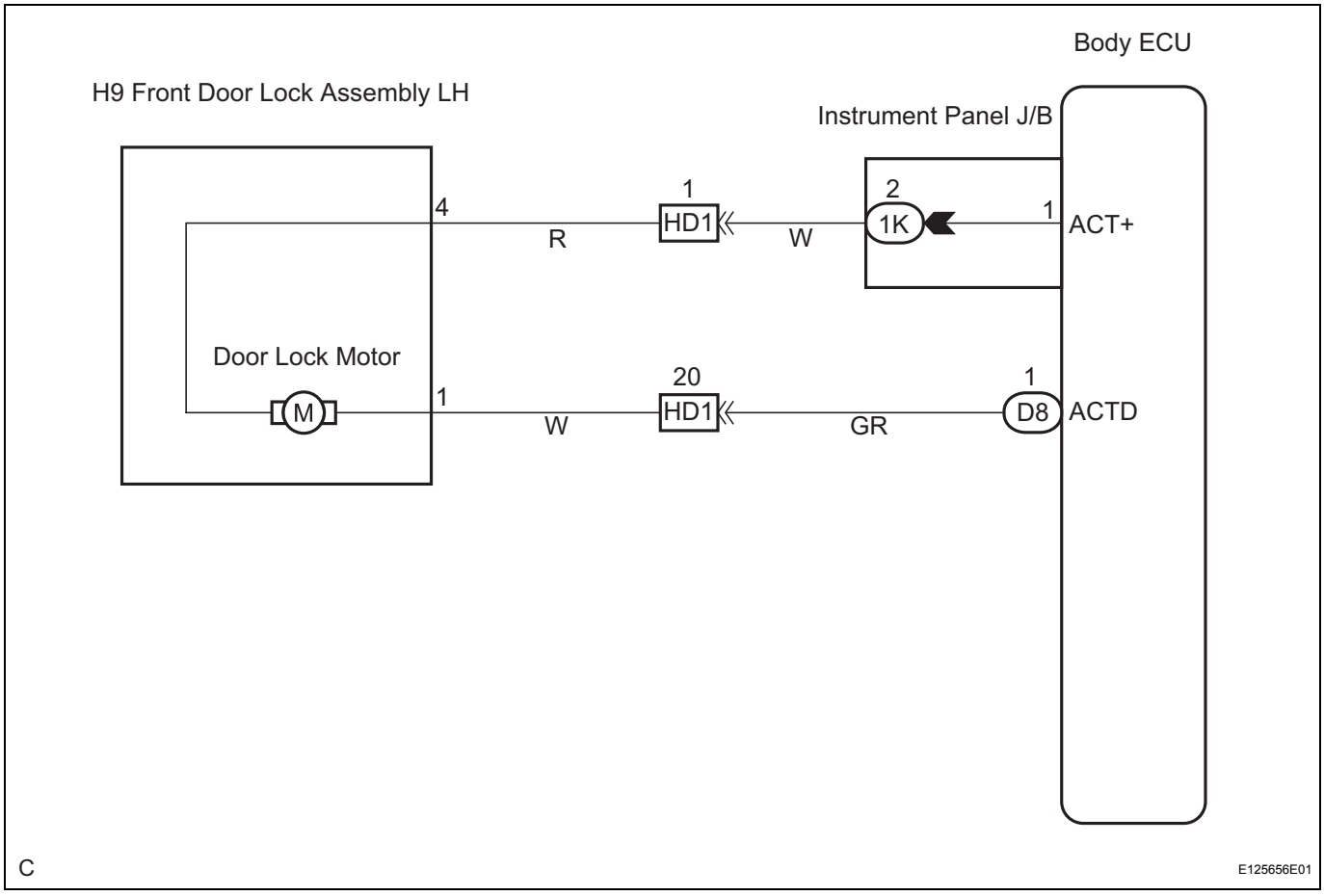
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Driver Side Door Lock Motor Circuit

DESCRIPTION

The door lock motor is built in the door lock assembly.
The body ECU receives the driver door lock switch signal from the master switch and operates the door lock motor.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST (DOOR LOCK)

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the power door lock operates.

Body ECU:

Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor LOCK / UNLOCK	-

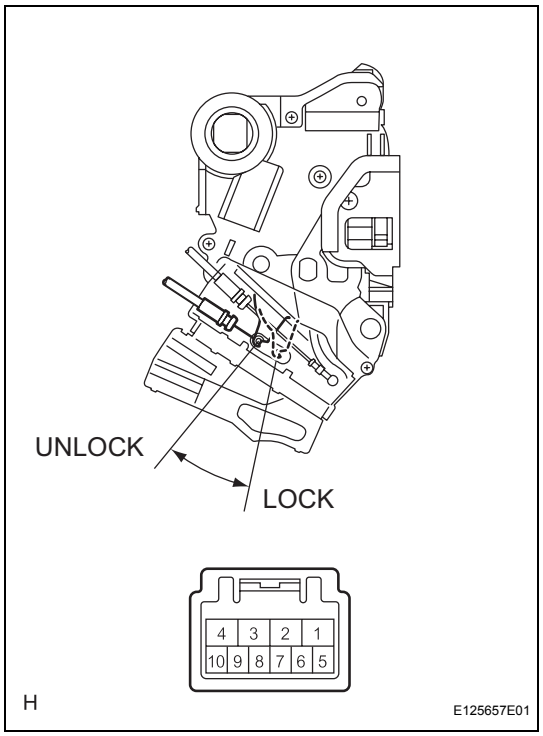
OK:
Door lock is locked / unlocked.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT FRONT DOOR LOCK ASSEMBLY LH (DOOR LOCK MOTOR)



(a) Remove the front door lock assembly LH.
(b) Apply battery voltage and check operation of the door lock motor.

Standard

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

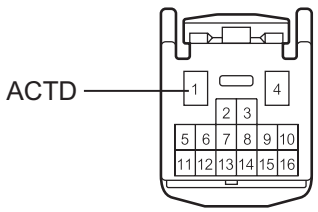
NG → **REPLACE FRONT DOOR LOCK ASSEMBLY LH**

OK

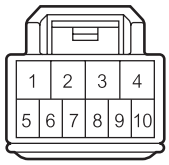
DL

3	CHECK WIRE HARNESS (FRONT DOOR LOCK ASSEMBLY LH - INSTRUMENT PANEL J/B)

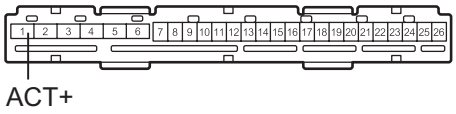
D8 Instrument Panel J/B:



H9 Front Door Lock Assembly LH:



Instrument Panel J/B:



(a) Disconnect the D8 and H9 connectors.
(b) Remove the body ECU from instrument panel J/B.
(c) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
1 - H9-4 (ACT+)	Always	Below 1 Ω
D8-1 - H9-1 (ACTD)	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

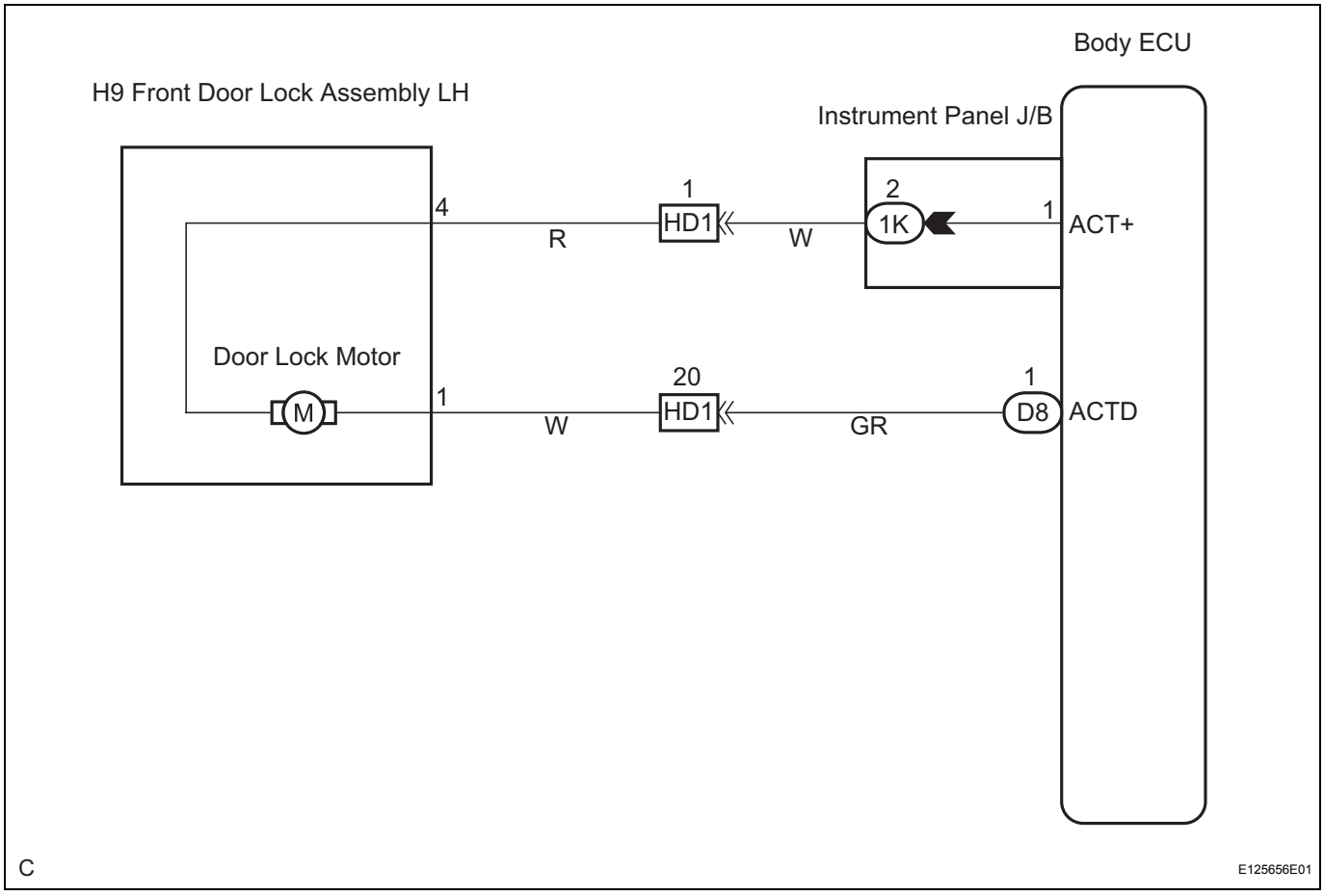
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Driver Side Door Lock Motor Circuit

DESCRIPTION

The door lock motor is built in the door lock assembly.
The body ECU receives the driver door lock switch signal from the master switch and operates the door lock motor.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST (DOOR LOCK)

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the power door lock operates.

Body ECU:

Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor LOCK / UNLOCK	-

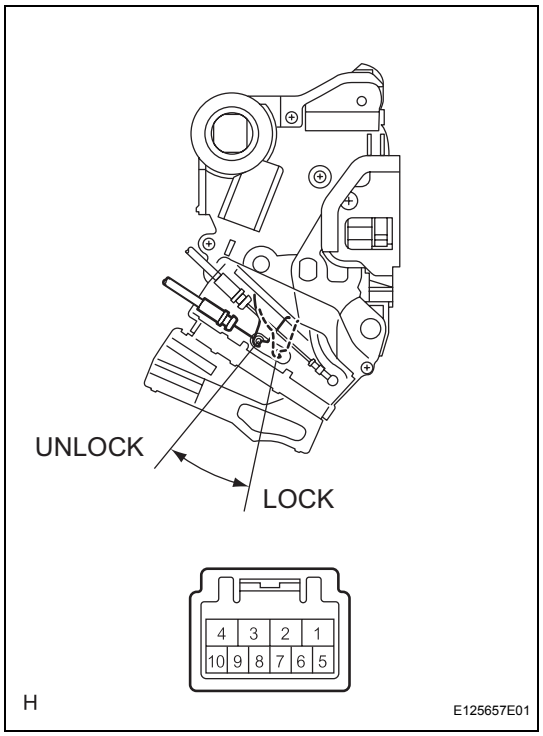
OK:
Door lock is locked / unlocked.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT FRONT DOOR LOCK ASSEMBLY LH (DOOR LOCK MOTOR)



(a) Remove the front door lock assembly LH.
(b) Apply battery voltage and check operation of the door lock motor.

Standard

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

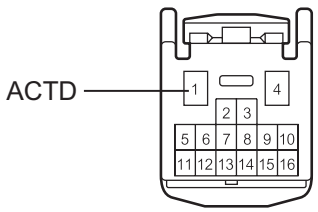
NG → **REPLACE FRONT DOOR LOCK ASSEMBLY LH**

OK

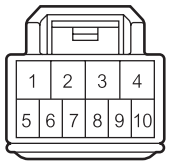
DL

3	CHECK WIRE HARNESS (FRONT DOOR LOCK ASSEMBLY LH - INSTRUMENT PANEL J/B)

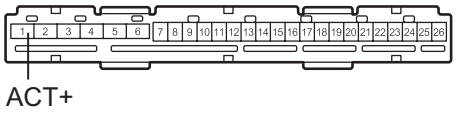
D8 Instrument Panel J/B:



H9 Front Door Lock Assembly LH:



Instrument Panel J/B:



(a) Disconnect the D8 and H9 connectors.
(b) Remove the body ECU from instrument panel J/B.
(c) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
1 - H9-4 (ACT+)	Always	Below 1 Ω
D8-1 - H9-1 (ACTD)	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

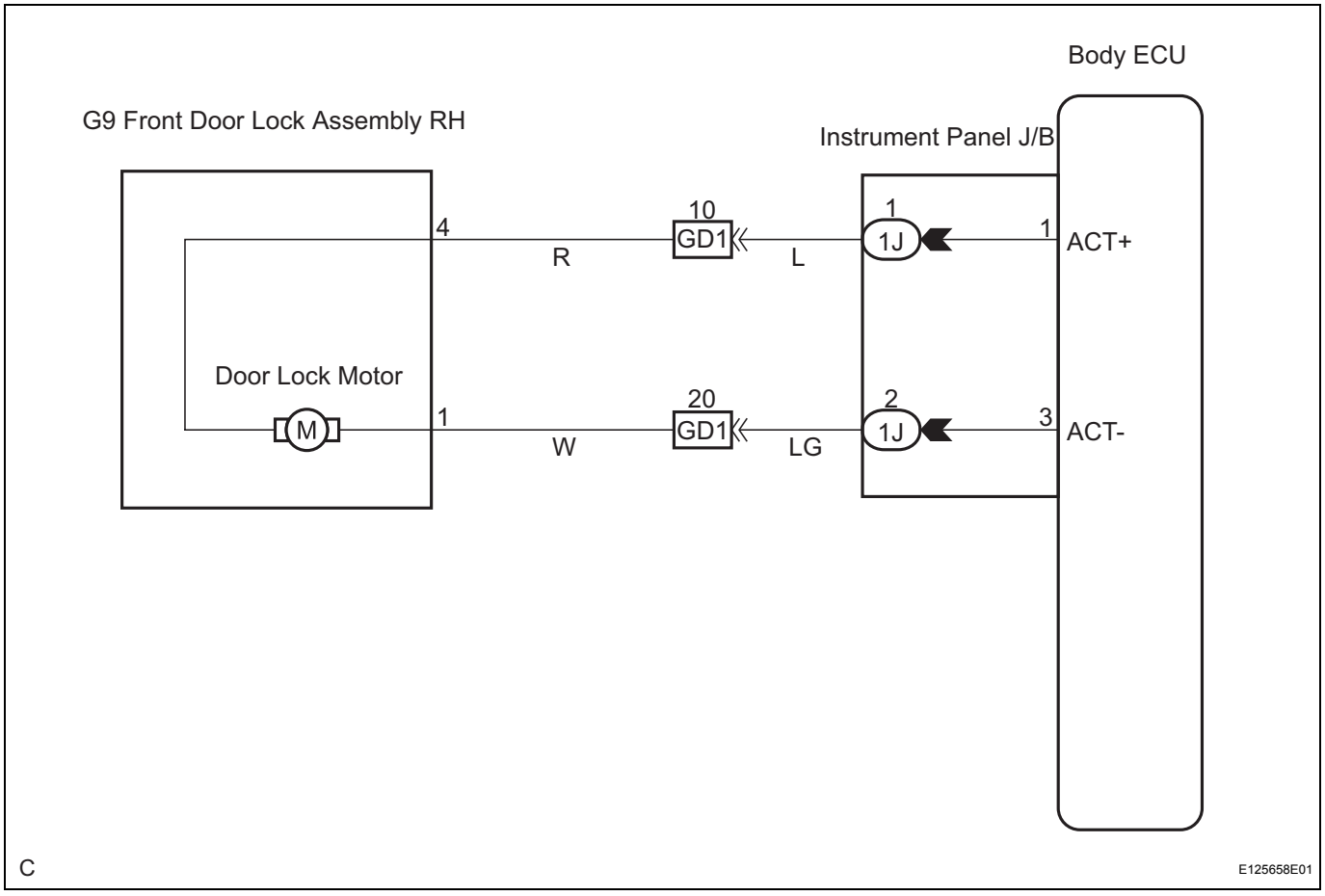
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Front Passenger Side Door Lock Motor Circuit

DESCRIPTION

The door lock motor is built in the door lock assembly.
The body ECU receives the front passenger door lock switch signal from the master switch and operates the door lock motor.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST (DOOR LOCK)

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the power door lock operates.

Body ECU:

Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor LOCK / UNLOCK	-

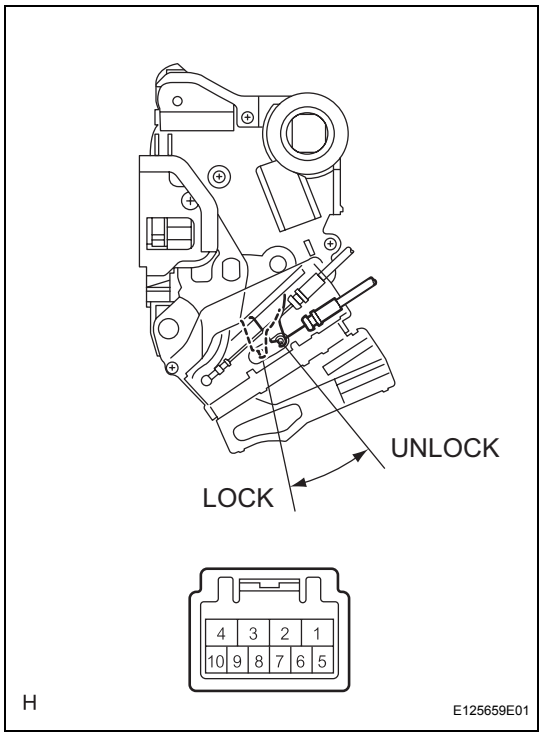
OK:
Door lock is locked / unlocked.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT FRONT DOOR LOCK ASSEMBLY RH (DOOR LOCK MOTOR)



(a) Remove the front door lock assembly RH.
(b) Apply battery voltage and check operation of the door lock motor.

Voltage

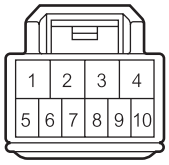
Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

NG → **REPLACE FRONT DOOR LOCK ASSEMBLY RH**

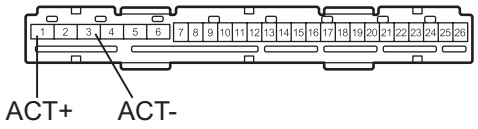
OK

3	CHECK WIRE HARNESS (FRONT DOOR LOCK ASSEMBLY RH - INSTRUMENT PANEL J/B)

G9 Front Door Lock Assembly RH:



Instrument Panel J/B:



H

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(a) Disconnect the G9 connector.
(b) Remove the body ECU from instrument panel J/B.
(c) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
1 - G9-4 (ACT+)	Always	Below 1 Ω
3 - G9-1 (ACT-)	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

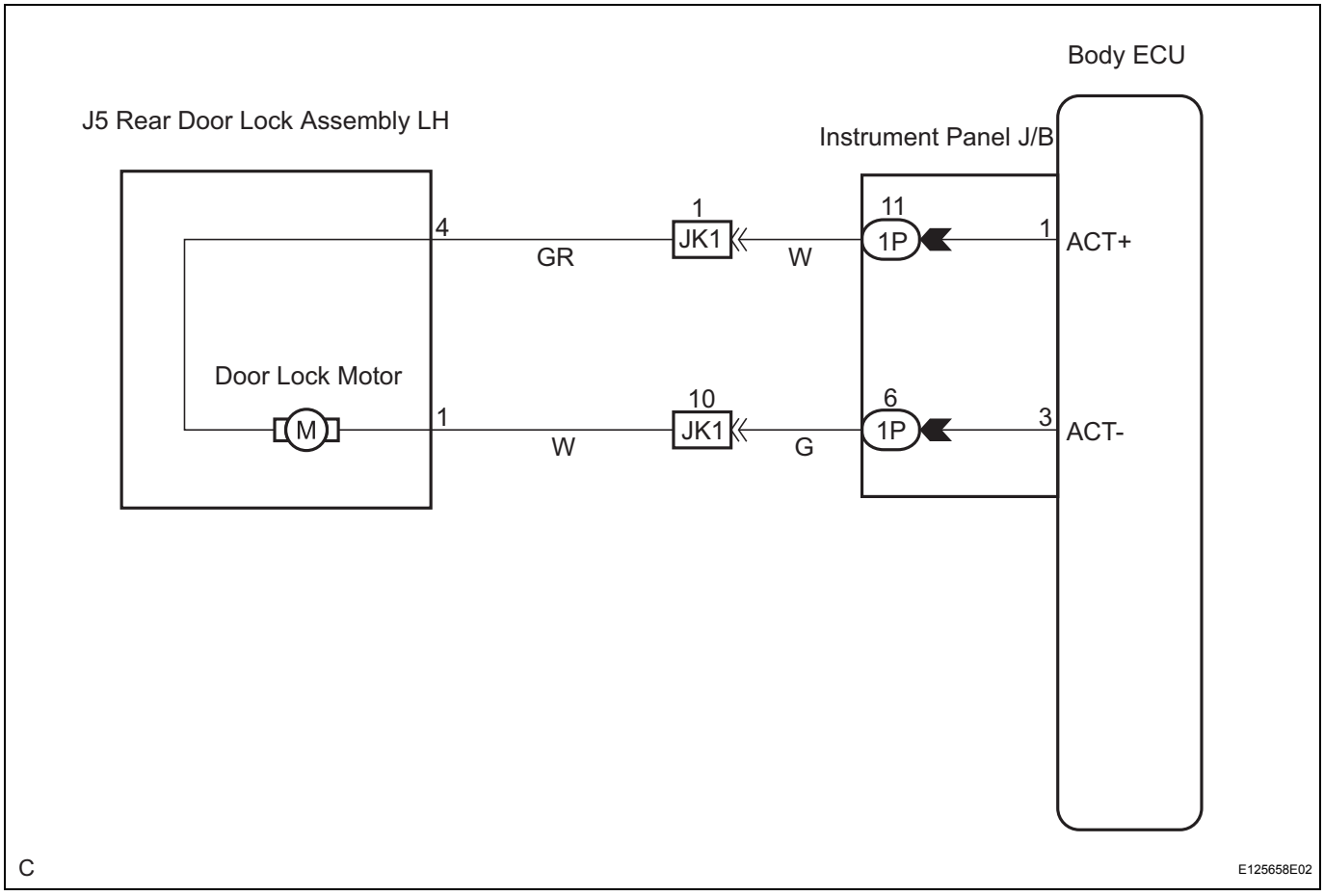
DL

Rear Door Lock Motor LH Circuit

DESCRIPTION

The door lock motor is built in the door lock assembly.
The body ECU receives the rear left door lock switch signal from the master switch and operates the door lock motor.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST (DOOR LOCK)

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the power door lock operates.

Body ECU:

Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor LOCK / UNLOCK	-

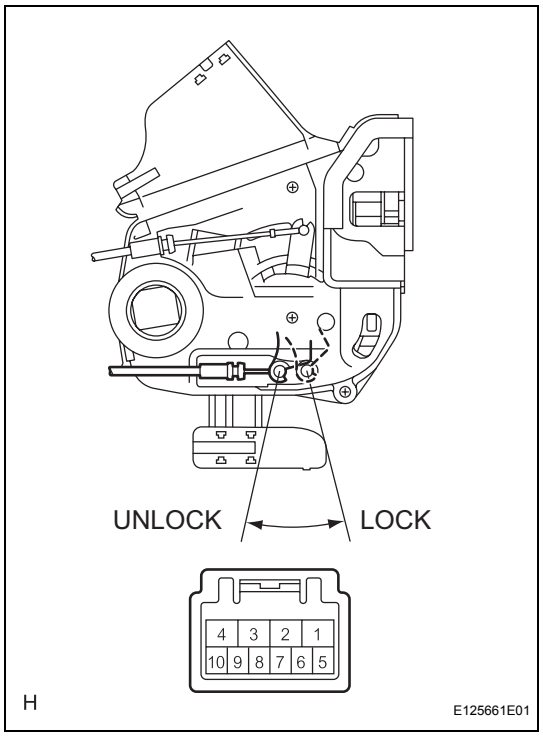
OK:
Door lock is locked / unlocked.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 **INSPECT REAR DOOR LOCK ASSEMBLY LH (DOOR LOCK MOTOR)**



(a) Remove the rear door lock assembly LH.
(b) Apply battery voltage and check operation of the door lock motor.
Voltage

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

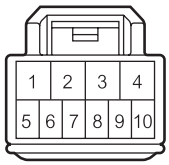
NG → **REPLACE REAR DOOR LOCK ASSEMBLY LH**

OK

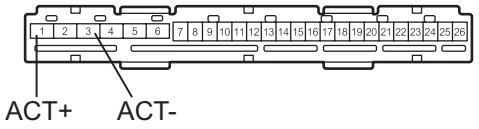
DL

3	CHECK WIRE HARNESS (REAR DOOR LOCK ASSEMBLY LH - INSTRUMENT PANEL J/B)

J5 Front Door Lock Assembly LH:



Instrument Panel J/B:



ACT+ ACT-

H

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(a) Disconnect the J5 connector.
(b) Remove the body ECU from instrument panel J/B.
(c) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
1 - J5-4 (ACT+)	Always	Below 1 Ω
3 - J5-1 (ACT-)	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

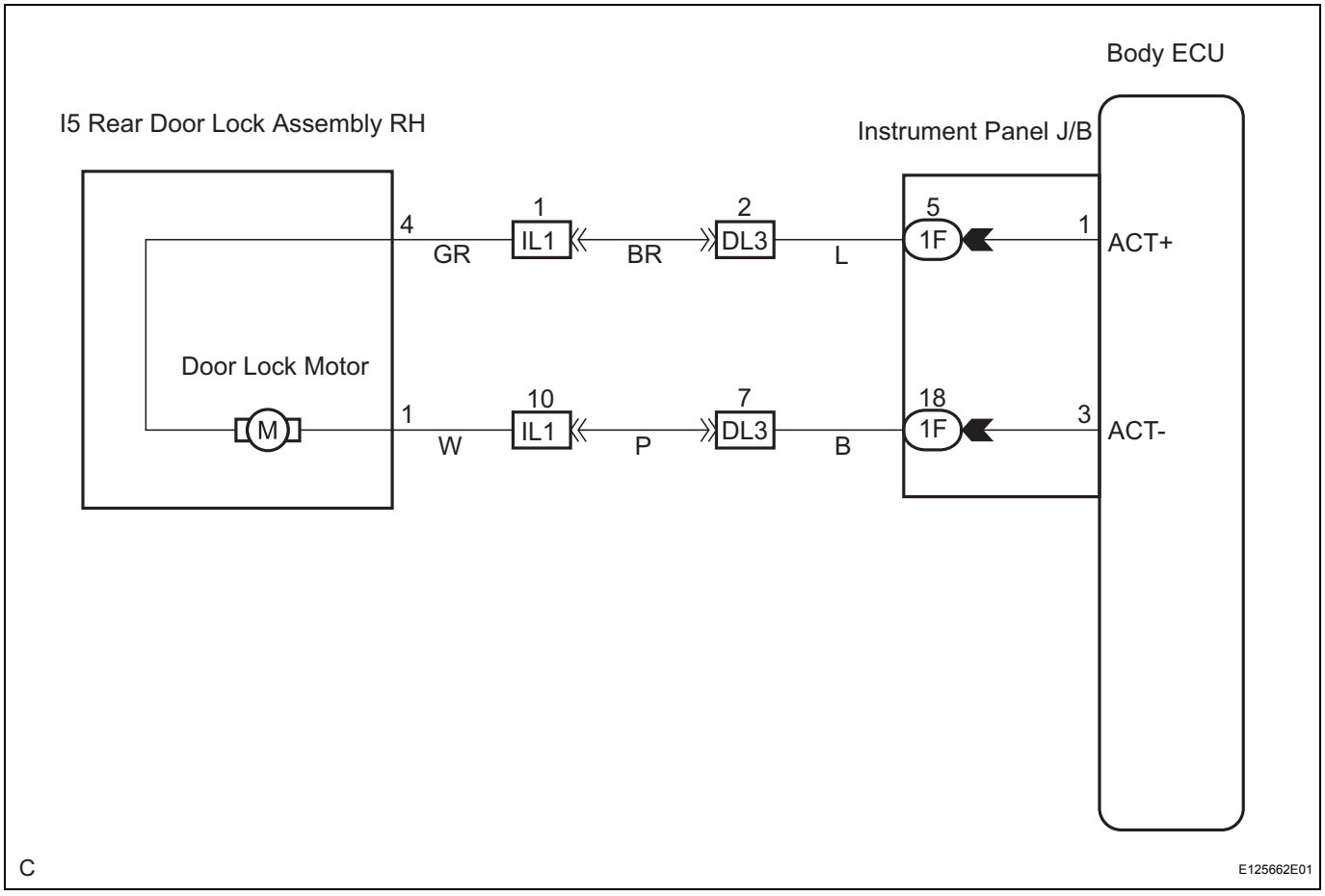
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Rear Door Lock Motor RH Circuit

DESCRIPTION

The door lock motor is built in the door lock assembly.
The body ECU receives the rear right door lock switch signal from the master switch and operates the door lock motor.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST (DOOR LOCK)

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the power door lock operates.

Body ECU:

Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor LOCK / UNLOCK	-

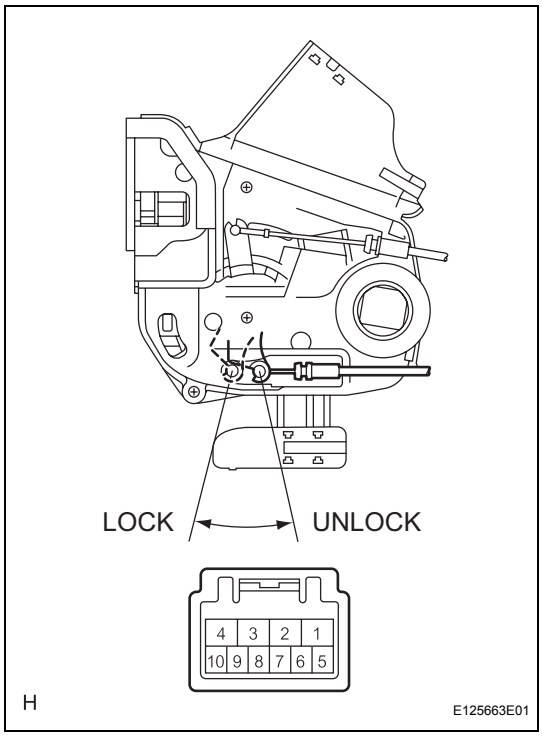
OK:
Door lock is locked / unlocked.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT REAR DOOR LOCK ASSEMBLY RH (DOOR LOCK MOTOR)



(a) Remove the rear door lock assembly RH.
(b) Apply battery voltage and check operation of the door lock motor.

Voltage

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

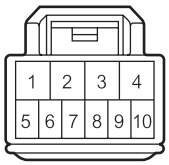
NG → **REPLACE REAR DOOR LOCK ASSEMBLY RH**

OK

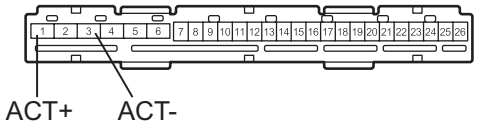
DL

3	CHECK WIRE HARNESS (REAR DOOR LOCK ASSEMBLY RH - INSTRUMENT PANEL J/B)

I5 Front Door Lock Assembly RH:



Instrument Panel J/B:



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(a) Disconnect the I5 connector.
(b) Remove the body ECU from instrument panel J/B.
(c) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
1 - I5-4 (ACT+)	Always	Below 1 Ω
3 - I5-1 (ACT-)	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

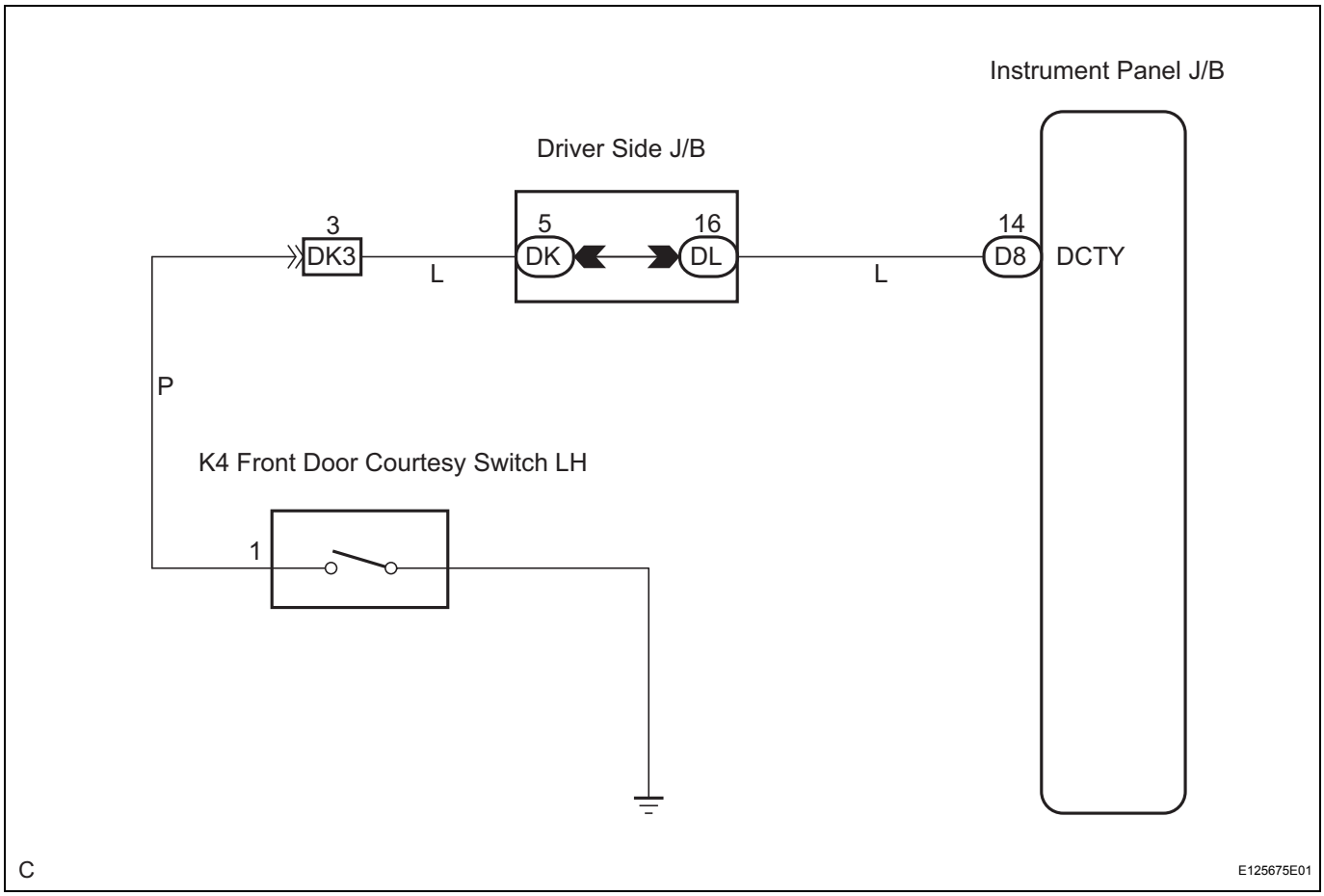
DL

Driver Side Door Courtesy Switch Circuit

DESCRIPTION

The door courtesy turns on when the door is opened and turns off when the door is closed.
The body ECU detects the condition of the door courtesy switch.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR COURTESY SWITCH)

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

Body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
D COURTESY SW	Door courtesy switch signal / ON or OFF	ON: Door is open OFF: Door is closed	-

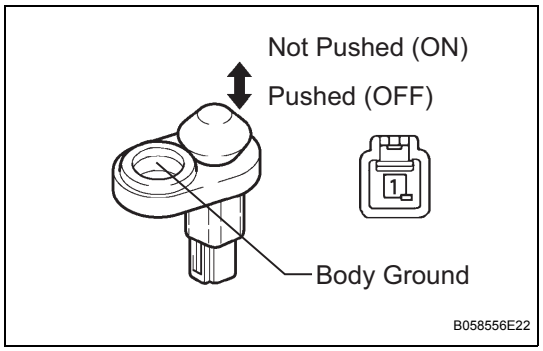
OK:
"ON" (door is open) appears on the screen.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT FRONT DOOR COURTESY SWITCH



(a) Remove the courtesy switch.
(b) Measure the resistance of the switch.
Resistance

Tester Connection	Switch Condition	Specified Condition
1 - Body ground	Not Pushed (ON)	Below 1 Ω
1 - Body ground	Pushed (OFF)	10 kΩ or higher

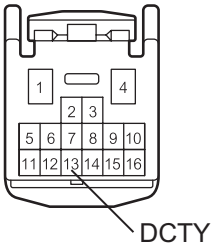
NG → **REPLACE FRONT DOOR COURTESY SWITCH**

DL

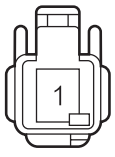
OK

3 CHECK WIRE HARNESS (FRONT DOOR COURTESY SWITCH LH - INSTRUMENT PANEL J/B)

D8 Instrument Panel J/B:



K4 Front Courtesy Switch LH:



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(a) Disconnect the D8 and L5 connectors.
(b) Measure the resistance of the wire harness side connectors.
Resistance

Tester Connection	Condition	Specified Condition
D8-14 - K4-1	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

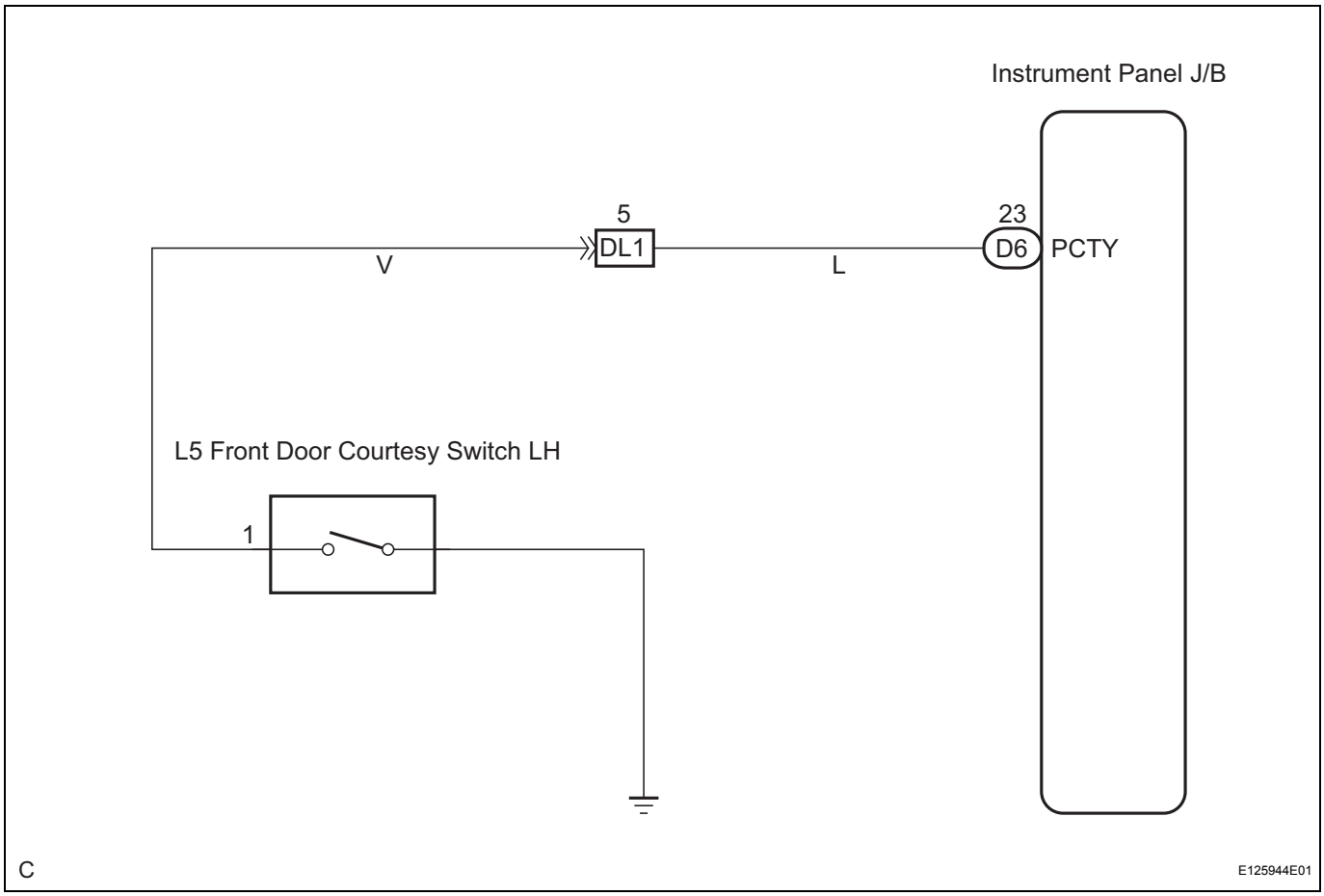
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Front Passenger Side Door Courtesy Switch Circuit

DESCRIPTION

The door courtesy turns on when the door is opened and turns off when the door is closed.
The body ECU detects the condition of the door courtesy switch.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR COURTESY SWITCH)

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

Body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
P COURTESY SW	Door courtesy switch signal / ON or OFF	ON: Door is open OFF: Door is close	-

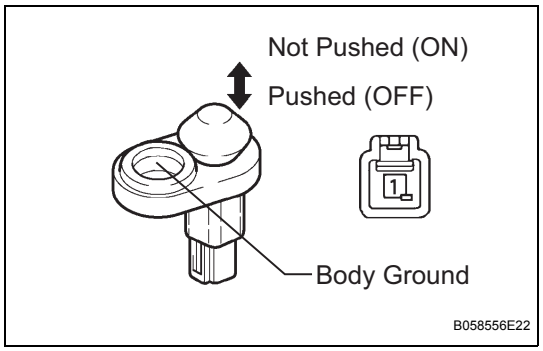
OK:
"ON" (door is open) appears on the screen.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT FRONT DOOR COURTESY SWITCH



(a) Remove the courtesy switch.
(b) Measure the resistance of the switch.
Resistance

Tester Connection	Switch Condition	Specified Condition
1 - Body ground	Not Pushed (ON)	Below 1 Ω
1 - Body ground	Pushed (OFF)	10 kΩ or higher

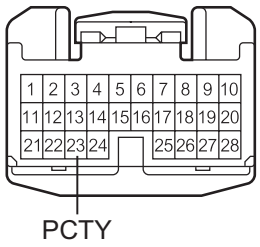
NG → **REPLACE FRONT DOOR COURTESY SWITCH**

DL

OK

3 CHECK WIRE HARNESS (FRONT DOOR COURTESY SWITCH RH - INSTRUMENT PANEL J/B)

D6 Instrument Panel J/B:



L5 Front Door Courtesy Switch RH:

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(a) Disconnect the D6 switch and L5 connectors.
(b) Measure the resistance of the wire harness side connectors.
Resistance

Tester Connection	Condition	Specified Condition
D6-26 - L5-1	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

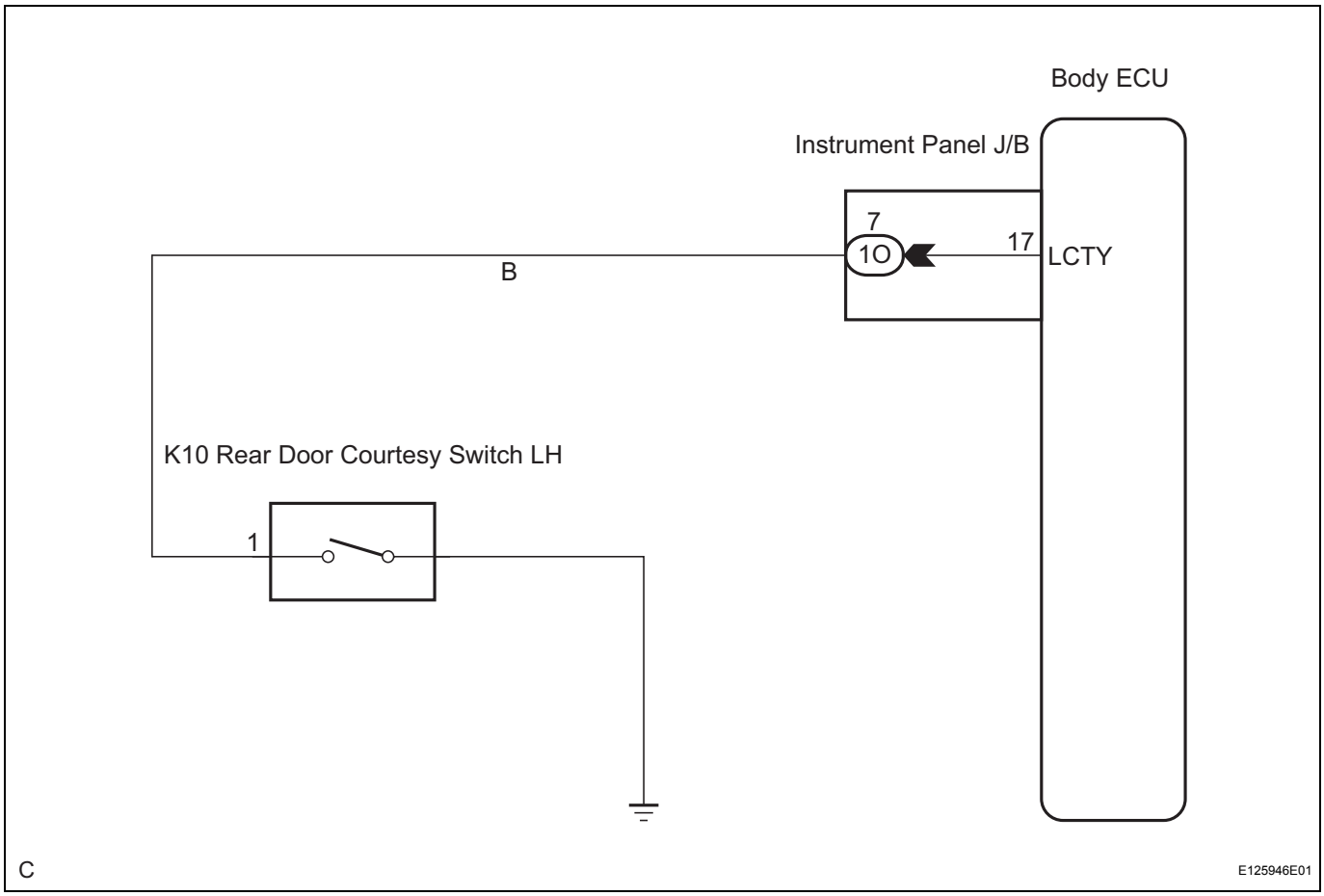
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Rear Door Courtesy Switch LH Circuit

DESCRIPTION

The door courtesy turns on when the door is opened and turns off when the door is closed.
The body ECU detects the condition of the door courtesy switch.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR COURTESY SWITCH)

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

Body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
Rr COURTESY SW	Door courtesy switch signal / ON or OFF	ON: Door is open OFF: Door is closed	-

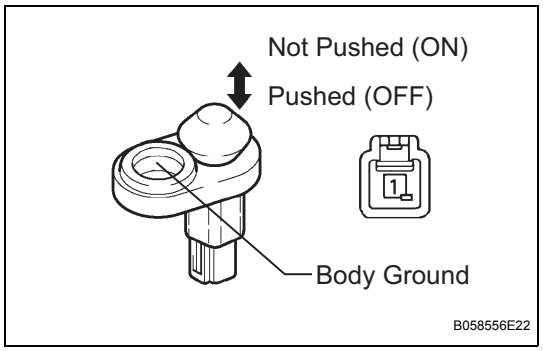
OK:
"ON" (door is open) appears on the screen.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT REAR DOOR COURTESY SWITCH



(a) Remove the courtesy switch.
(b) Measure the resistance of the switch.
Resistance

Tester Connection	Switch Condition	Specified Condition
1 - Body ground	Not Pushed (ON)	Below 1 Ω
1 - Body ground	Pushed (OFF)	10 kΩ or higher

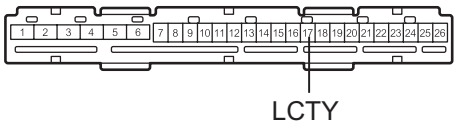
NG → **REPLACE REAR DOOR COURTESY SWITCH**

DL

OK

3 CHECK WIRE HARNESS (REAR DOOR COURTESY SWITCH LH - INSTRUMENT PANEL J/B)

INSTRUMENT PANEL J/B:



K10 Rear Door Courtesy Switch LH:

(a) Disconnect the K10 and body ECU connectors.
(b) Measure the resistance of the wire harness side connectors.
Resistance

Tester Connection	Condition	Specified Condition
17 - K10-1	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

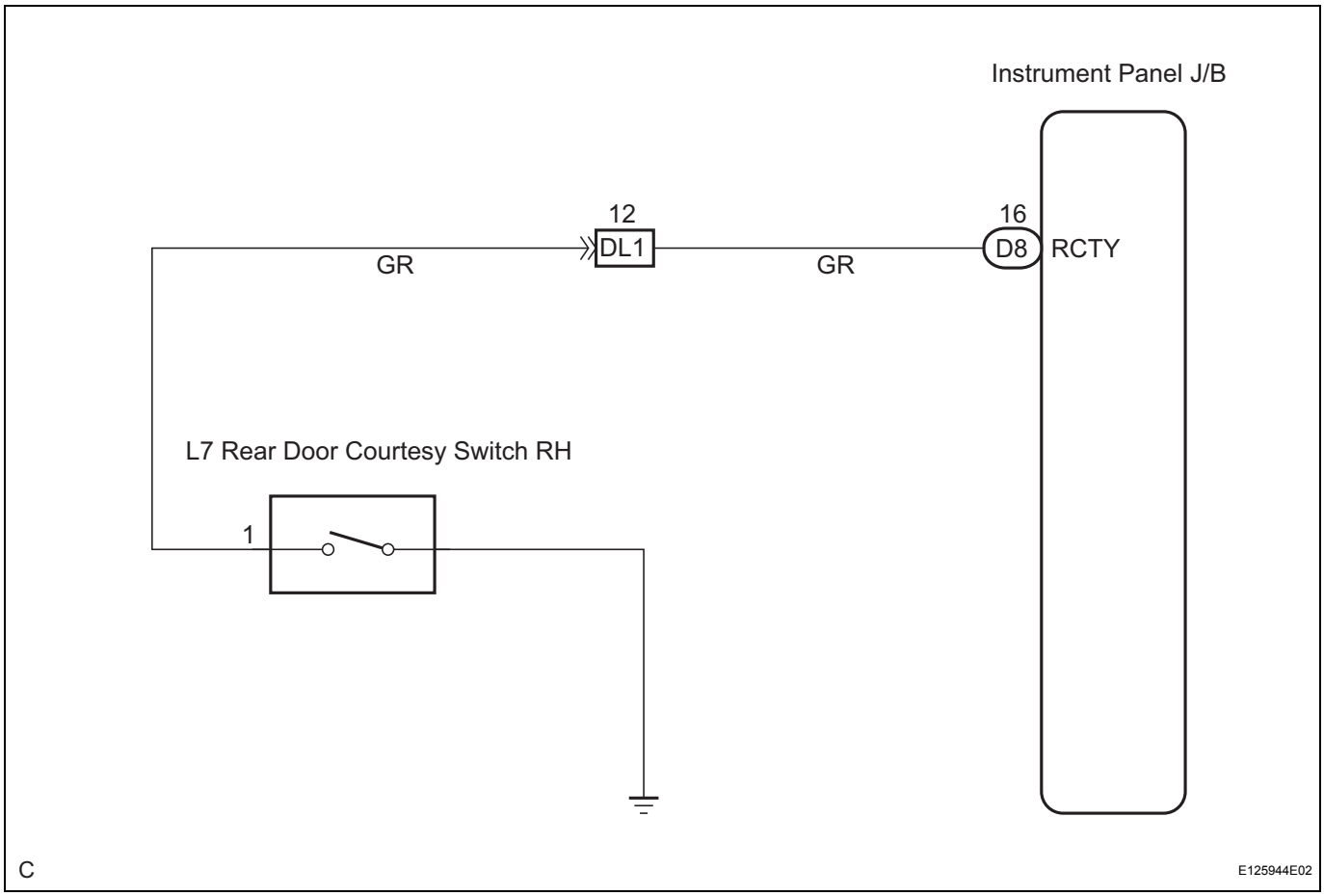
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Rear Door Courtesy Switch RH Circuit

DESCRIPTION

The door courtesy turns on when the door is opened and turns off when the door is closed.
The body ECU detects the condition of the door courtesy switch.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR COURTESY SWITCH)

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

Body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
Rr COURTESY SW	Door courtesy switch signal / ON or OFF	ON: Door is open OFF: Door is closed	-

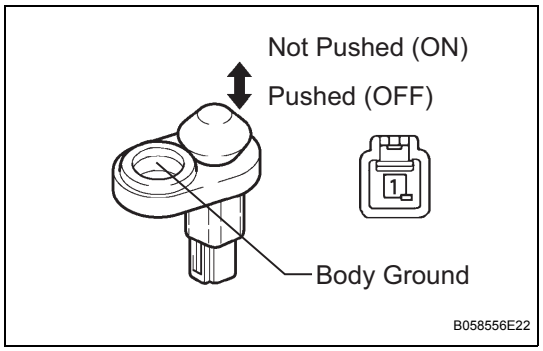
OK:
"ON" (door is open) appears on the screen.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT REAR DOOR COURTESY SWITCH



(a) Remove the courtesy switch.
(b) Measure the resistance of the switch.
Resistance

Tester Connection	Switch Condition	Specified Condition
1 - Body ground	Not Pushed (ON)	Below 1 Ω
1 - Body ground	Pushed (OFF)	10 kΩ or higher

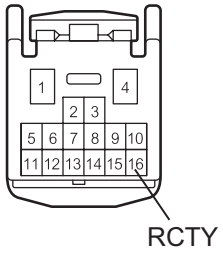
NG → **REPLACE REAR DOOR COURTESY SWITCH**

DL

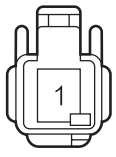
OK

3 CHECK WIRE HARNESS (REAR DOOR COURTESY SWITCH RH - INSTRUMENT PANEL J/B)

D8 Instrument Panel J/B:



L7 Rear Door Courtesy Switch RH:



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(a) Disconnect the D8 and L7 connectors.
(b) Measure the resistance of the wire harness side connectors.
Resistance

Tester Connection	Condition	Specified Condition
D8-16 - L7-1	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

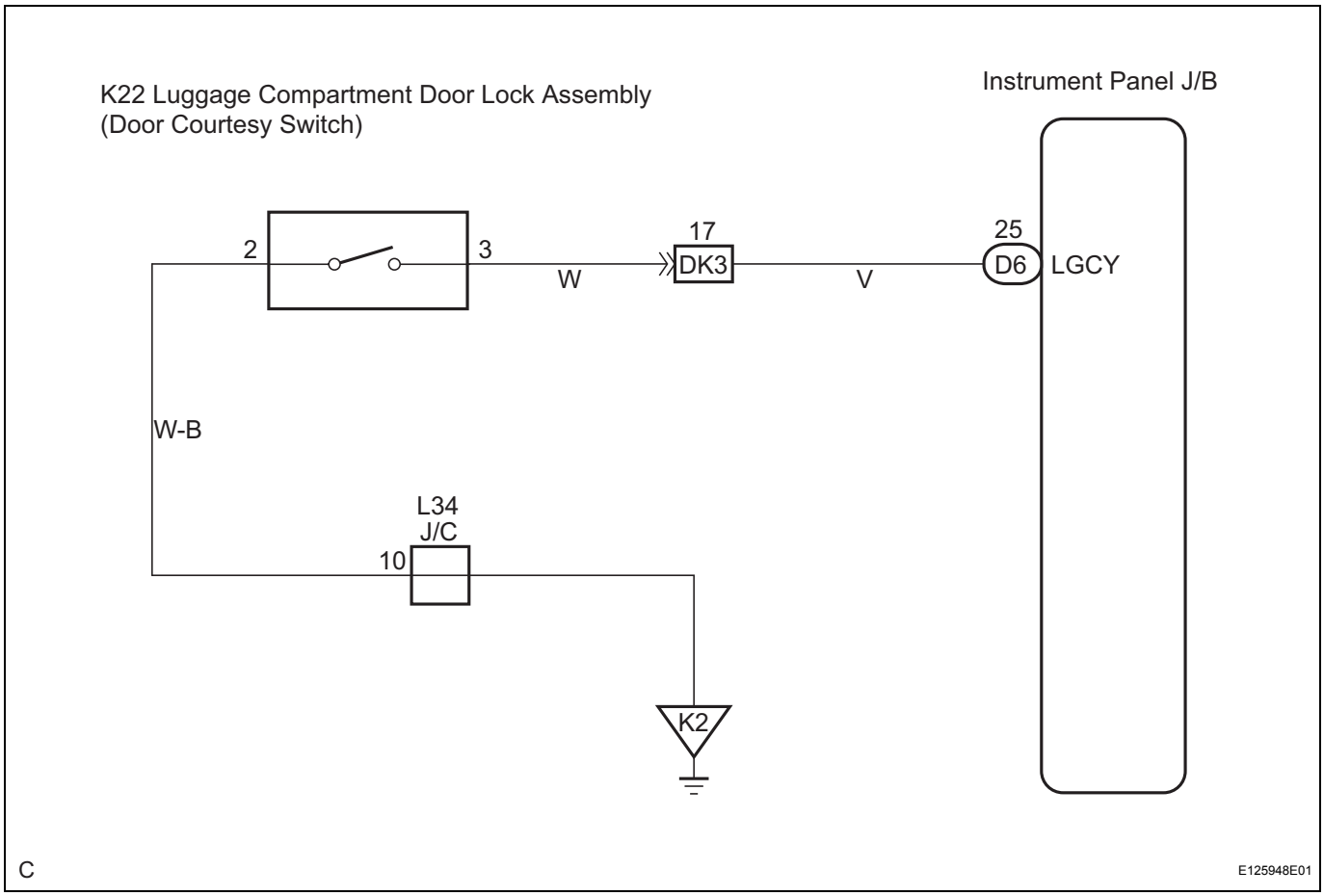
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Luggage Compartment Door Courtesy Switch Circuit

DESCRIPTION

The door courtesy turns on when the door is open and turns off when the door is closed.
The body ECU detects the condition of the door courtesy switch.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR COURTESY SWITCH)

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

Body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
LUGG COURTESY	Door courtesy switch signal / ON or OFF	ON: Door is open OFF: Door is closed	-

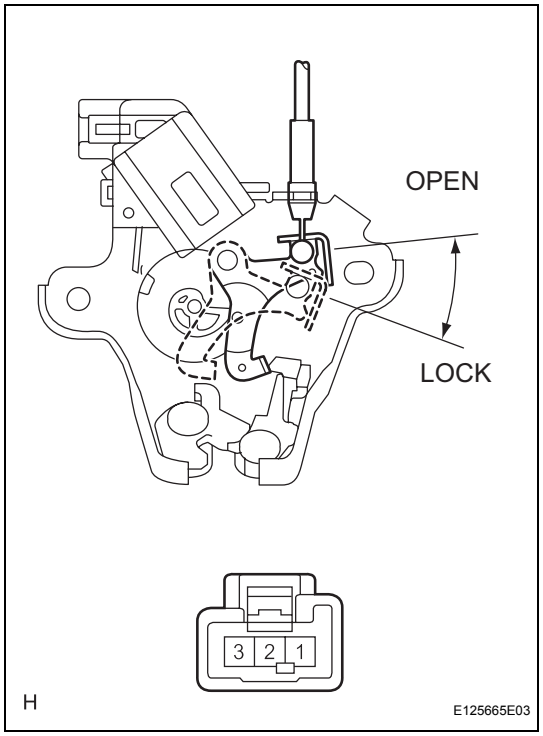
OK:
"ON" (door is open) appears on the screen.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT LUGGAGE COMPARTMENT DOOR LOCK ASSEMBLY (DOOR COURTESY SWITCH)



(a) Remove the luggage door lock.
(b) Measure the resistance of the switch.
Resistance

Tester Connection	Switch Condition	Specified Condition
2 - 3	Not Pushed (ON)	Below 1 Ω
2 - 3	Pushed (OFF)	10 kΩ or higher

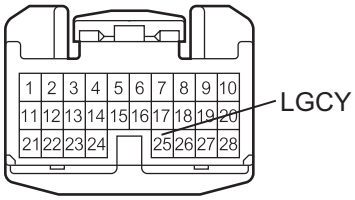
NG → **REPLACE LUGGAGE COMPARTMENT DOOR LOCK ASSEMBLY**

OK

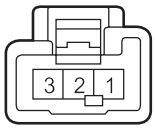
DL

3	CHECK WIRE HARNESS (LUGGAGE COMPARTMENT DOOR LOCK - INSTRUMENT PANEL J/B)

D6 Instrument Panel J/B:



L24 Luggage Compartment Door Lock Assembly (Door Courtesy Switch):



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(a) Disconnect the D6 and K22 connectors.
(b) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
D6-25 - K22-3 (LGCY)	Always	Below 1 Ω
K22-2 - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

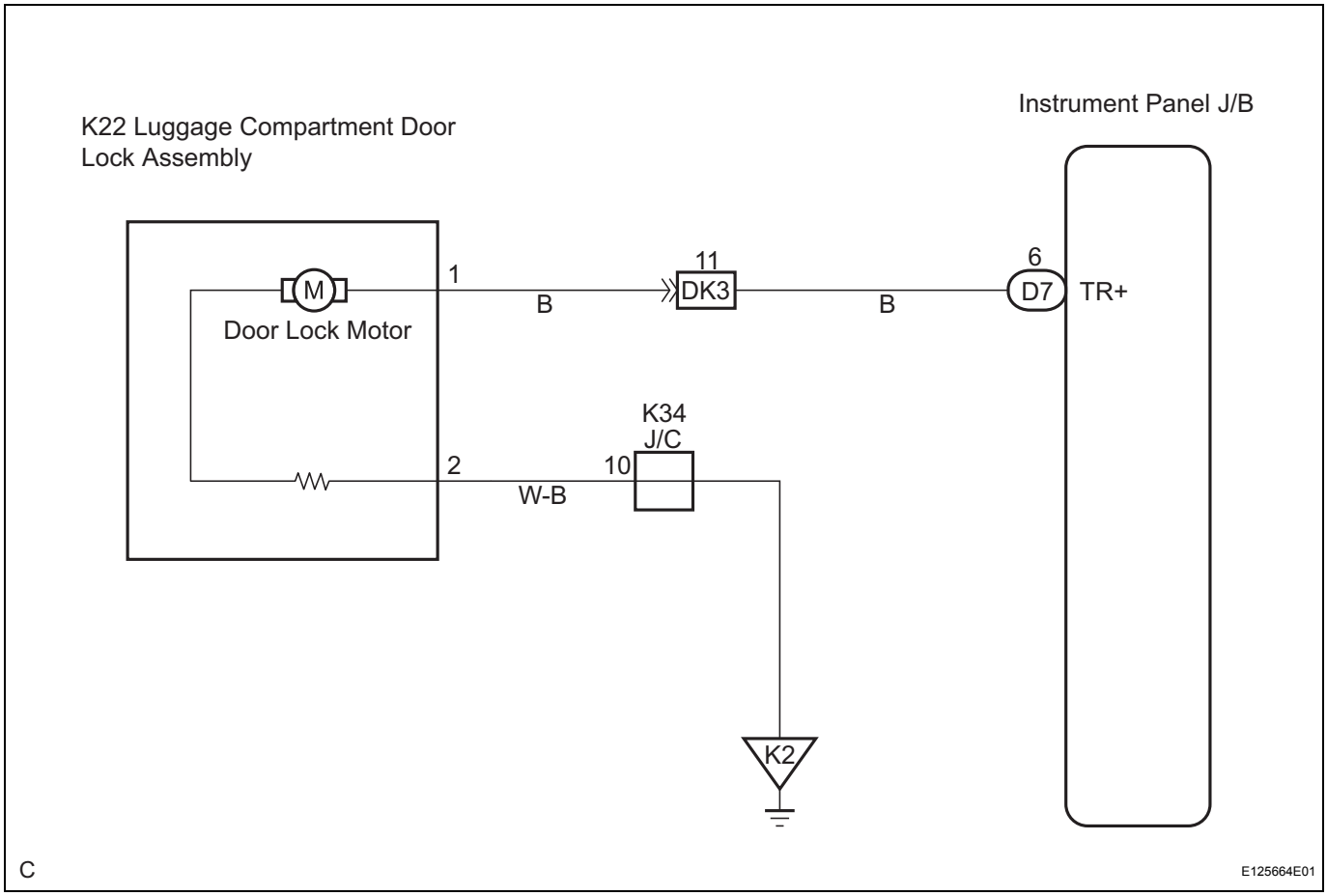
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Luggage Compartment Door Lock Circuit

DESCRIPTION

The door lock motor is built in the luggage compartment door lock assembly.
The body ECU receives the driver door lock switch signal from the master switch and operates the door lock motor.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST (DOOR LOCK)

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the power door lock operates.

Body ECU:

Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor LOCK / UNLOCK	-

OK:

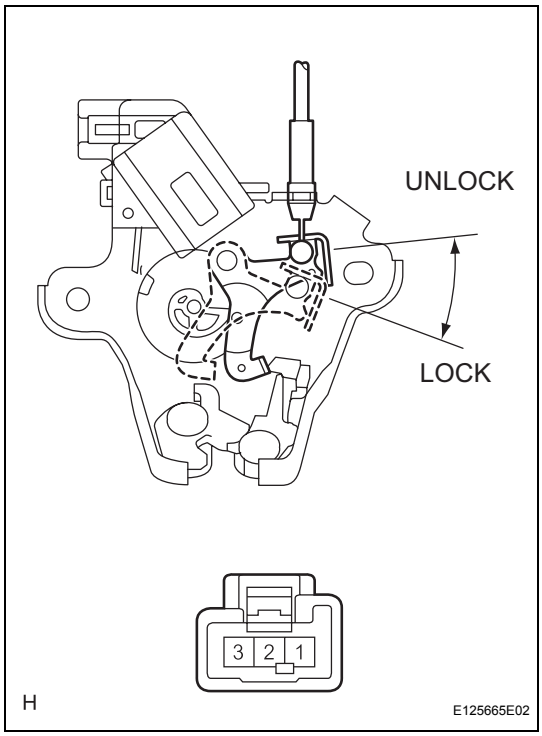
Door lock is locked / unlocked.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT LUGGAGE COMPARTMENT DOOR LOCK ASSEMBLY (DOOR LOCK MOTOR)



(a) Remove the luggage compartment door lock assembly.
(b) Apply battery voltage and check operation of the door lock motor.

Voltage

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 2	Unlock
Battery positive (+) → Terminal 2 Battery negative (-) → Terminal 1	Lock

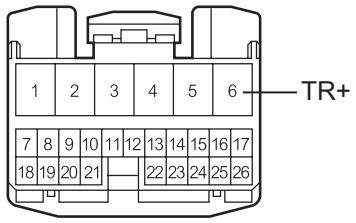
NG → **REPLACE LUGGAGE COMPARTMENT DOOR LOCK ASSEMBLY**

OK

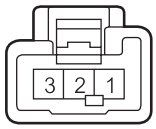
DL

3	CHECK WIRE HARNESS (LUGGAGE COMPARTMENT DOOR LOCK - INSTRUMENT PANEL J/B)

D7 Instrument Panel J/B:



K22 Luggage Compartment Door Lock Assembly:



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(a) Disconnect the D7 and K22 connectors.
(b) Measure the resistance of the wire harness side connectors.

Resistance

Tester Connection	Condition	Specified Condition
D7-6 - K22-1	Always	Below 1 Ω
K22-1 - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

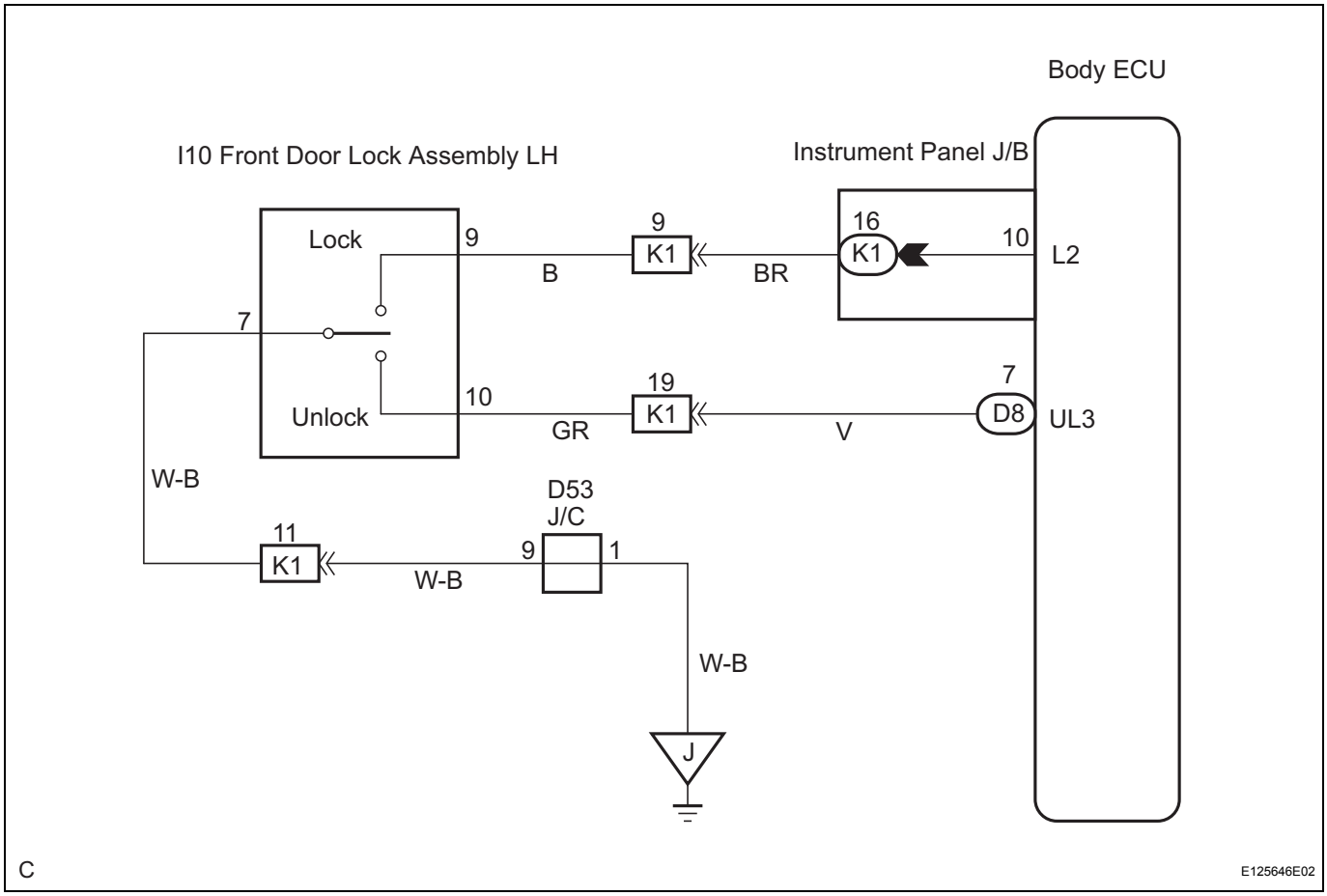
DL

Door Key Lock / Unlock Switch Circuit

DESCRIPTION

The door lock and unlock switch is built in the door lock assembly.
This switch is ON when the door key is in the unlock position and OFF when the door key is in the lock position. It is used as one of the operating conditions for the key confinement prevention function.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (DOOR KEY LOCK AND UNLOCK SWITCH)

(a) Check the DATA LIST for proper functioning of the door unlock detection switch.

Body ECU:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
D DOR KEY SW-UL	Door key lock and unlock switch signal (Driver)/ON or OFF	ON: Door key is unlocked OFF: Door key is locked	-

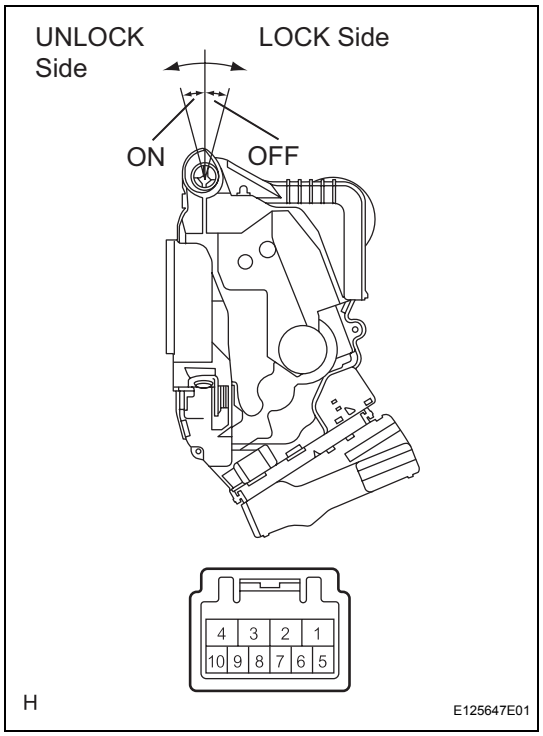
OK:
"ON" (door key switch is unlocked) appears on the screen.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT FRONT DOOR LOCK ASSEMBLY LH (DOOR KEY LOCK AND UNLOCK SWITCH)



(a) Remove the front door lock assembly LH.
(b) Measure the resistance of the switch when the switch is operated.

Resistance

Tester Connection	Condition	Specified Condition
10 - 7	ON (Door lock set to UNLOCK)	Below 1 Ω
9 - 7	OFF(Door lock set to LOCK)	10 kΩ or higher

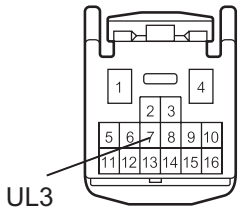
NG → **REPLACE FRONT DOOR LOCK ASSEMBLY LH**

OK

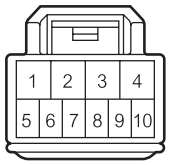
DL

3	CHECK WIRE HARNESS (FRONT DOOR LOCK ASSEMBLY LH - INSTRUMENT PANEL J/B)

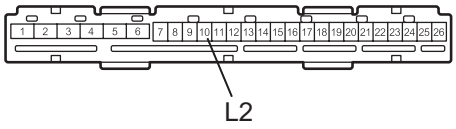
D8 Instrument Panel J/B:



I10 Front Door Lock Assembly LH:



Instrument Panel J/B:



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(a) Disconnect the D8 and I10 connectors.
(b) Remove the body ECU from instrument panel J/B.
(c) Measure the resistance of the switch when the switch is operated.

Resistance

Tester Connection	Condition	Specified Condition
10 - I10-9	Always	Below 1 Ω
D8-7 - I10-10	Always	Below 1 Ω
D10-7 - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

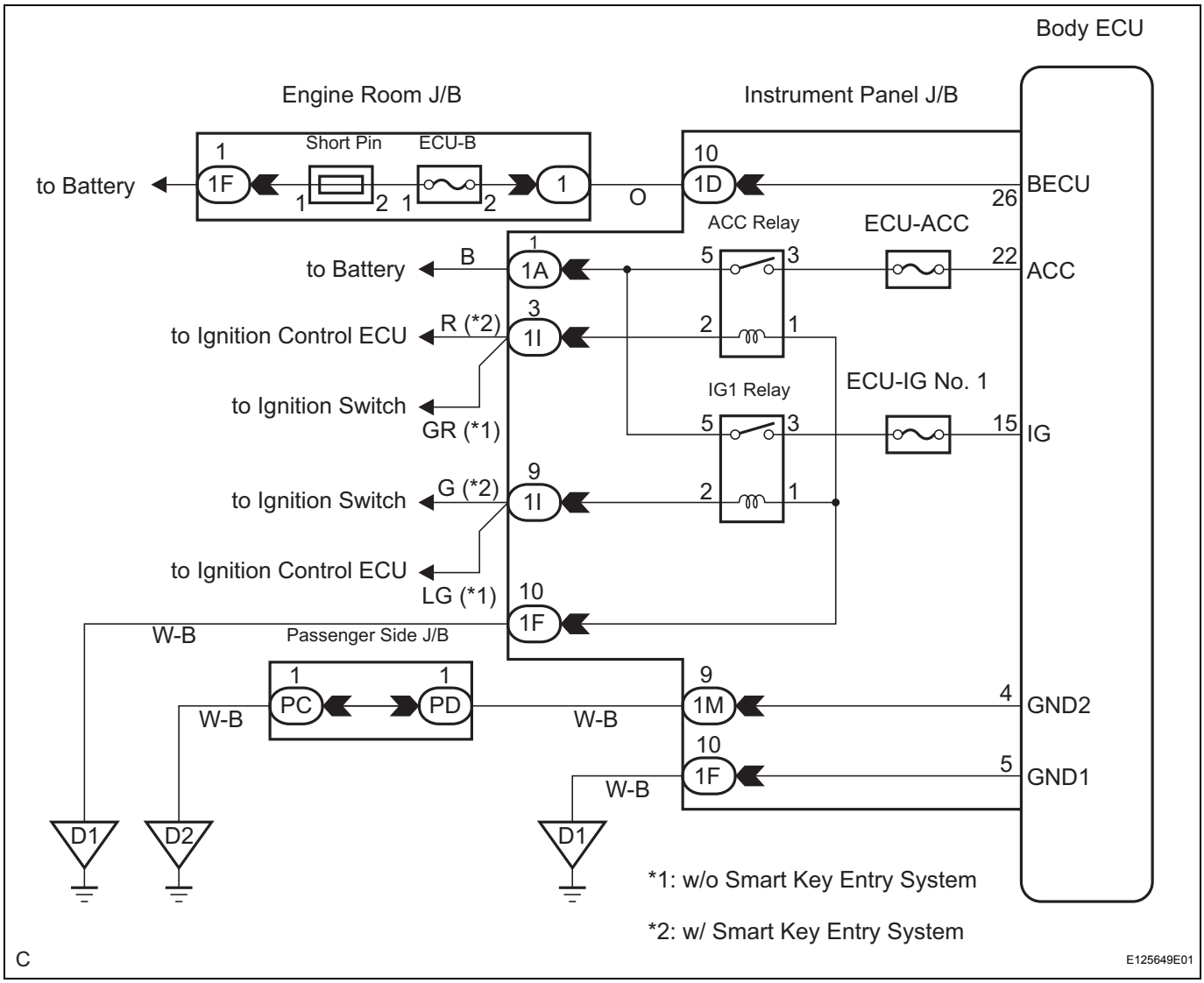
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Power Source Circuit

DESCRIPTION

This circuit supplies power to operate the body ECU.

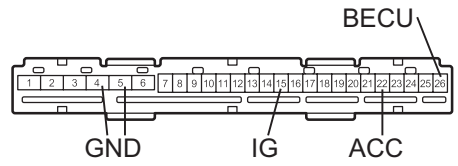
WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK WIRE HARNESS (INSTRUMENT PANEL J/B - BATTERY AND BODY GROUND)

Instrument Panel J/B:



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(a) Remove the body ECU from instrument panel J/B.

(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
4, 5 (GND) - Body ground	Always	Below 1 Ω

(c) Measure the voltage according to the value(s) in the table below.

Voltage

Tester Connection	Condition	Specified Condition
26 (BECU) - Body ground	Always	10 to 14 V
22 (ACC) - Body ground	Ignition switch ACC	10 to 14 V
15 (IG) - Body ground	Ignition switch on (IG)	10 to 14 V

DL

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

WIRELESS DOOR LOCK CONTROL SYSTEM

PRECAUTION

NOTICE:
If either battery terminal is disconnected, the following systems must be initialized after the terminal is reconnected.

System Name	See Procedure
Power window control system	IN-29
Sliding roof system	

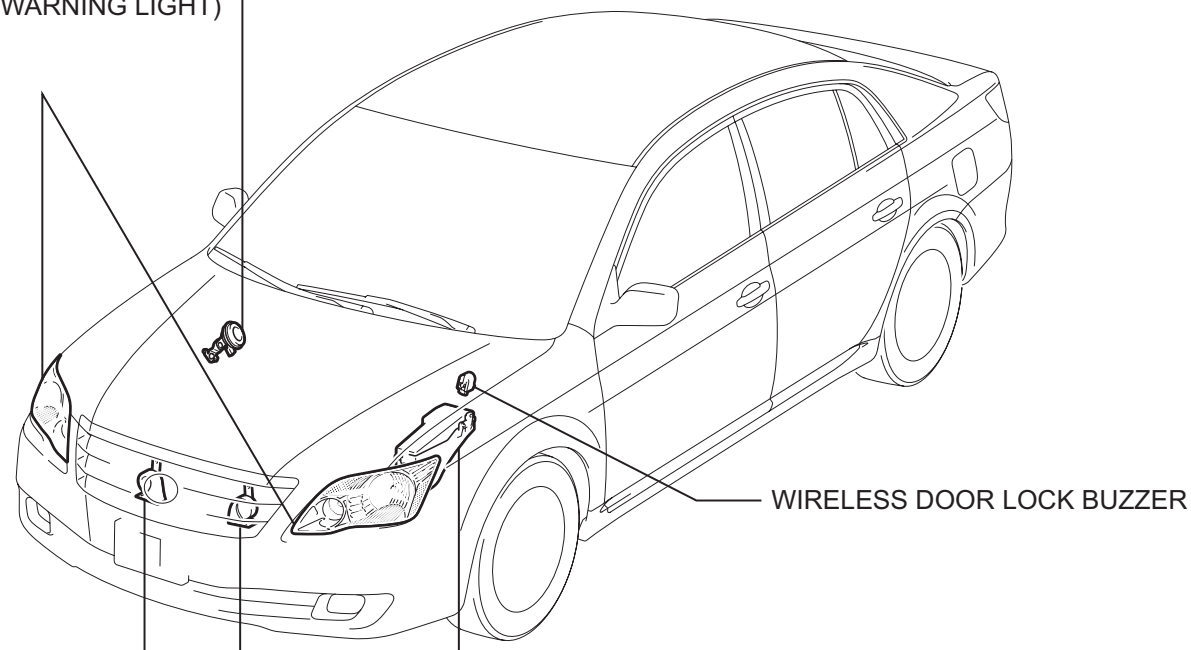
1. FUNCTIONS AND OPERATING CONDITIONS

(a) Power door lock/unlock function:
This wireless door lock control function operates only when the following 4 conditions are met:
(1) There is no key in the ignition key cylinder.
(2) All the doors are closed.
(3) The power door lock system is functioning normally.
(4) The function is not disabled by customization.
HINT:
The unlock function operates even when any of the doors are open.

(b) Remote panic function:
This wireless control function operates only when the following condition is met:
(1) The ignition switch is off.
HINT:
The key can be inserted. However the ignition switch must be turned off.

(c) The wireless transmitter operational range differs depending on the situation.
(1) The operational range differs depending on the user, the way the transmitter is held and the location.
(2) In certain areas, the operational range will be reduced due to the vehicle body shape and the influence of the surrounding environment.
(3) Since the transmitter uses weak radio waves, the operational range may be reduced or the transmitter may not function if interference or stronger radio waves occur in the area where the transmitter is used.
(4) When the battery is low, the operational range is reduced and/or the transmitter may not function.
HINT:
If the transmitter has been left in a place that is exposed to direct sunlight, such as on the instrument panel, the battery may be weakened or other problems may occur.

PARTS LOCATION



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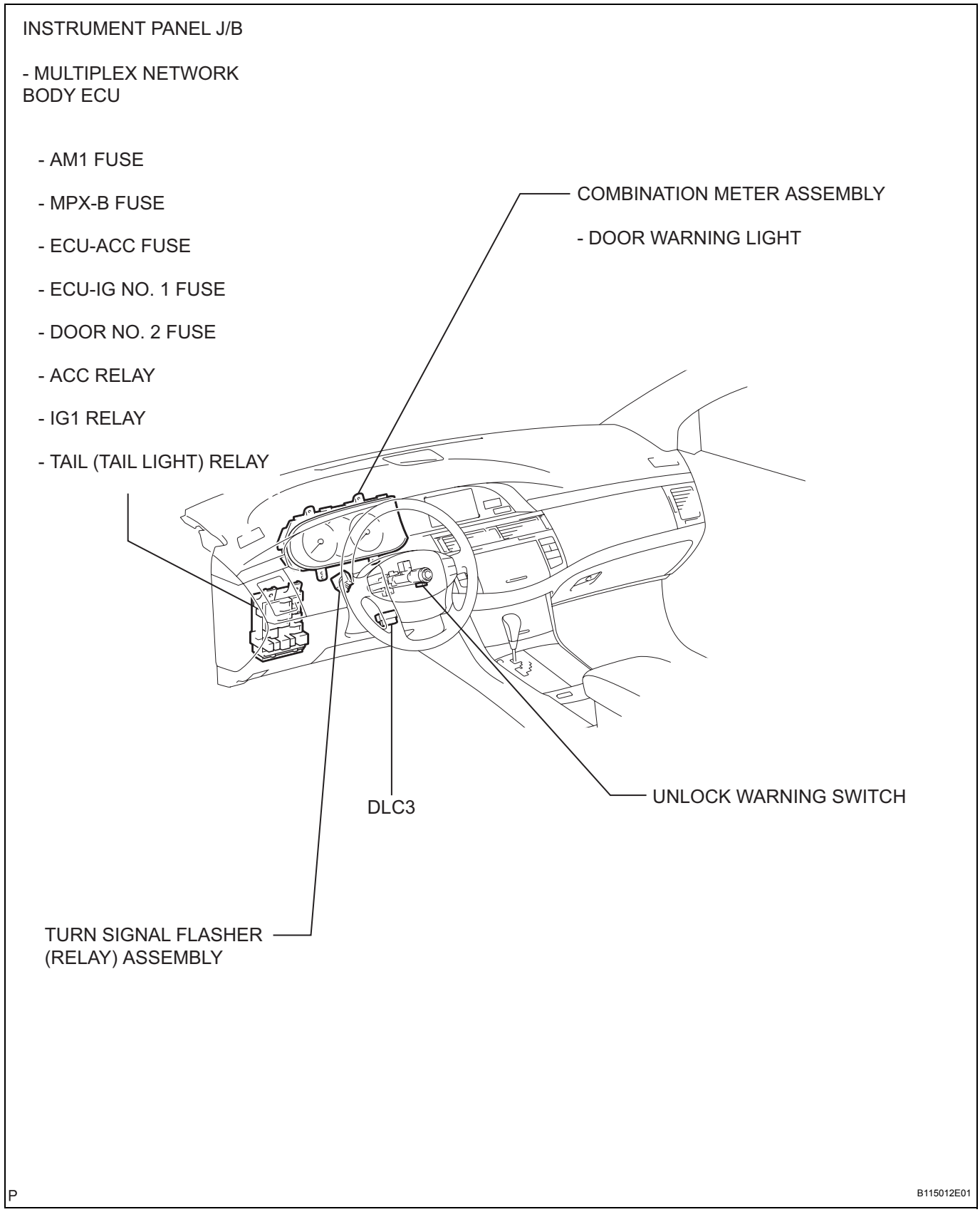
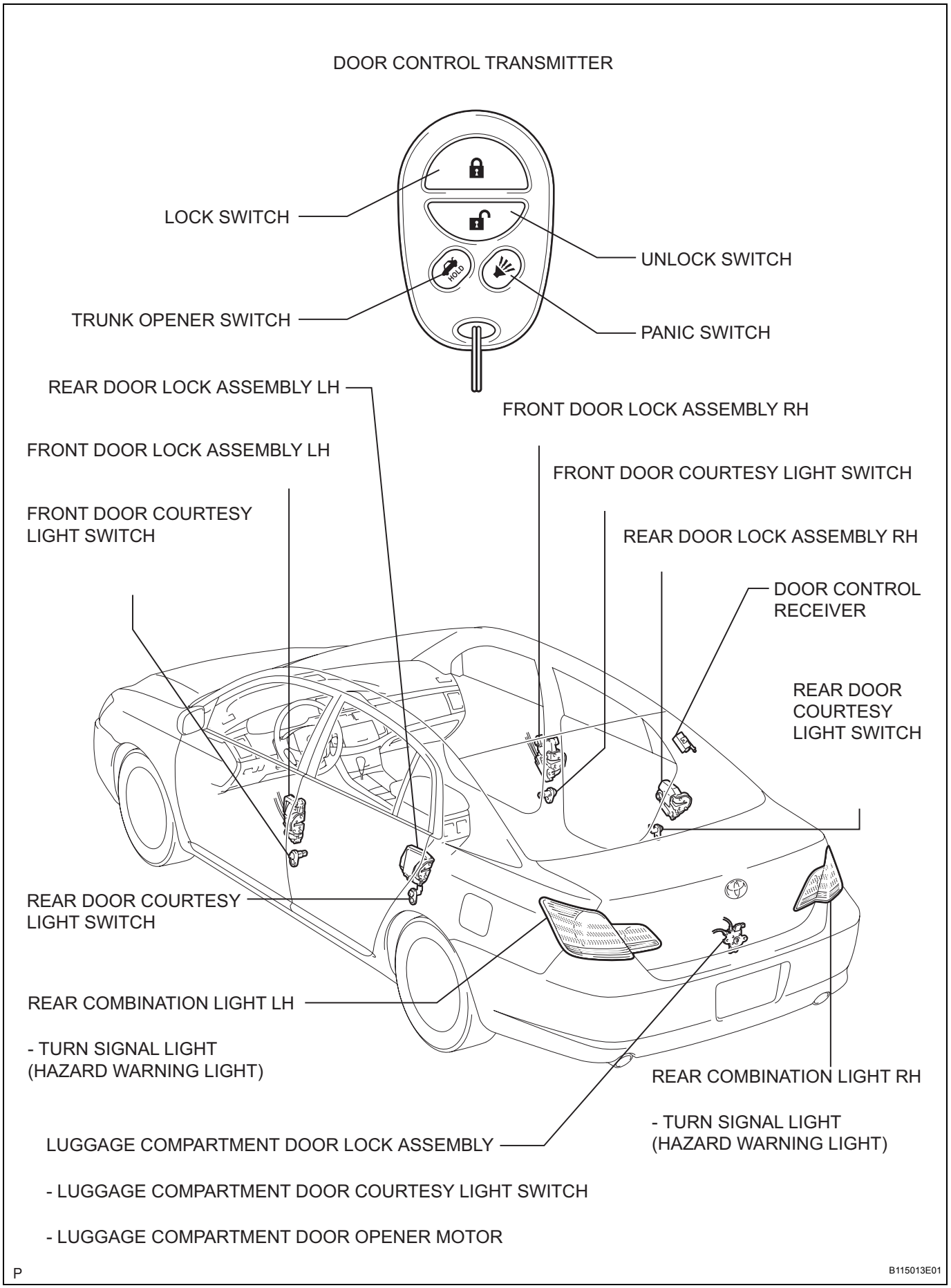

INSTRUMENT PANEL J/B
- MULTIPLEX NETWORK BODY ECU
- AM1 FUSE
- MPX-B FUSE
- ECU-ACC FUSE
- ECU-IG NO. 1 FUSE
- DOOR NO. 2 FUSE
- ACC RELAY
- IG1 RELAY
- TAIL (TAIL LIGHT) RELAY
COMBINATION METER ASSEMBLY
- DOOR WARNING LIGHT
DLC3
UNLOCK WARNING SWITCH
TURN SIGNAL FLASHER (RELAY) ASSEMBLY
P
B115012E01


DOOR CONTROL TRANSMITTER
LOCK SWITCH
UNLOCK SWITCH
TRUNK OPENER SWITCH
PANIC SWITCH
HOLD
REAR DOOR LOCK ASSEMBLY LH
FRONT DOOR LOCK ASSEMBLY RH
FRONT DOOR LOCK ASSEMBLY LH
FRONT DOOR COURTESY LIGHT SWITCH
FRONT DOOR COURTESY LIGHT SWITCH
REAR DOOR LOCK ASSEMBLY RH
DOOR CONTROL RECEIVER
REAR DOOR COURTESY LIGHT SWITCH
REAR DOOR COURTESY LIGHT SWITCH
REAR COMBINATION LIGHT LH
- TURN SIGNAL LIGHT (HAZARD WARNING LIGHT)
REAR COMBINATION LIGHT RH
- TURN SIGNAL LIGHT (HAZARD WARNING LIGHT)
LUGGAGE COMPARTMENT DOOR LOCK ASSEMBLY
- LUGGAGE COMPARTMENT DOOR COURTESY LIGHT SWITCH
- LUGGAGE COMPARTMENT DOOR OPENER MOTOR
P
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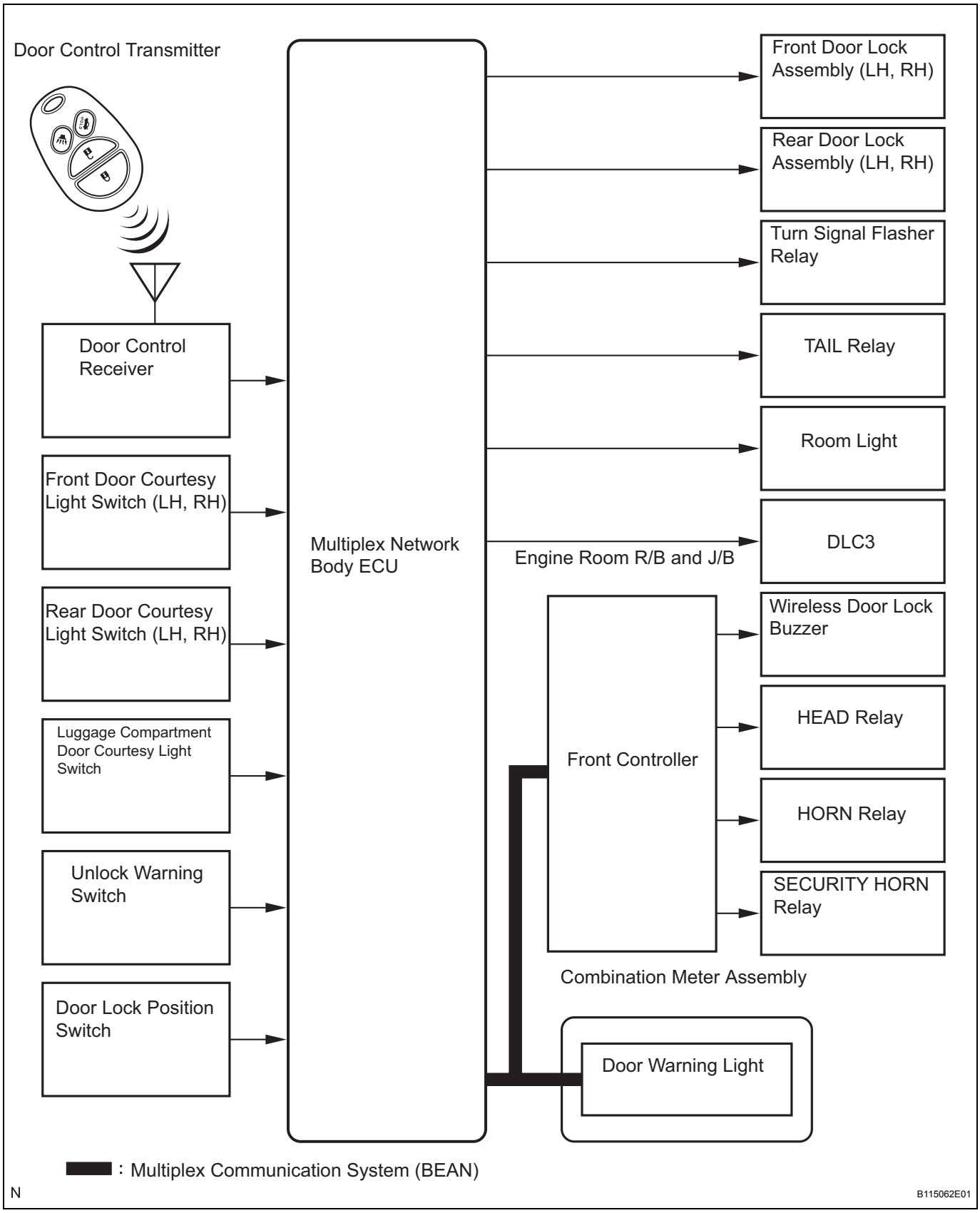
SYSTEM DIAGRAM



Transmitting ECU (Transmitter)	Receiving ECU	Signals	Communication Method
Multiplex network body ECU	Front controller	• Wireless door lock buzzer drive (answer back) signal • Headlight drive (panic alarm) signal • Horn drive (panic alarm) signal • Security horn drive (panic alarm) signal	Multiplex communication system
Multiplex network body ECU	Combination meter	Door warning light ON signal	Multiplex communication system

SYSTEM DESCRIPTION

1. WIRELESS DOOR LOCK CONTROL SYSTEM

(a) The wireless door lock control system functions to lock and unlock all the doors from a distance. The system is controlled by an intelligent transmitter which sends radio waves to the door control receiver. The multiplex network body ECU performs an ID code identification process and engages the door lock control.

2. FUNCTION OF MAIN COMPONENTS

Component	Function
Door control transmitter	• Has lock, unlock, panic and trunk opener switches. • Transmits weak radio waves (recognition codes and function codes) to the door control receiver. • Illuminates the indicator light (LED) during transmission.
Door control receiver	Receives weak radio waves (recognition codes and function codes) and outputs them as code data to the multiplex network body ECU.
• Front door courtesy light switch • Rear door courtesy light switch • Luggage compartment door courtesy light switch	Turns on when a door is open and turns off when it is closed. Outputs door status codes (open or closed) to the multiplex network body ECU.
Unlock warning switch	Detects if the key is inserted in the ignition switch or not.
Door lock position switch	Transmits the door lock positions of each door to the multiplex network body ECU.
Wireless door lock buzzer	Emits beep (answer back) when doors are locked or unlocked.
Multiplex network body ECU	Sends wireless door lock control signals in response to the code data from the door control receiver and signals from each switch.

3. SYSTEM FUNCTION

(a) The door control transmitter has lock, unlock, panic and trunk opener switches. Operating these switches activates each function.
The wireless door lock control system has the following functions:

Function	Operation
All door lock	Pressing the lock switch of the transmitter locks all doors.
All door unlock	Pressing the unlock switch of the transmitter unlocks all doors.
All door unlock (2-step unlock)	Pressing the unlock switch of the transmitter once unlocks the driver's door, and pressing it again within 3 seconds unlocks all the doors.
Panic alarm	Pressing the panic switch of the transmitter for longer than about 0.8 seconds causes the following alarms to activate: • Sounds the vehicle horn and security horn. • Flashes the hazard warning lights, headlights, and tail lights. • Illuminates the room light when the switch is in the DOOR position.
Automatic lock	If none of the doors is opened within 30 seconds after they are unlocked by the wireless door lock control, all the doors will lock again automatically.
Door ajar warning	If any door is open or ajar, pressing the lock switch of the transmitter will cause the wireless door lock buzzer to sound for about 10 seconds.
Illuminated entry	When all the doors are locked, pressing the unlock switch causes the room lights to illuminate simultaneously with the unlock operation.
Repeat	If a door is not locked in response to the locking operation of the transmitter, the body ECU will output a lock signal after 1 second.
Answer back	• The hazard warning light flashes once when locking, and flashes twice when unlocking, to signal that the operation has been completed. • When the transmitter is used to lock or unlock the doors, this function sounds the wireless door lock buzzer to signal that the operation has been completed.
Trunk opener	Keeping the trunk opener switch of the transmitter pressed for longer than about 0.8 seconds opens the trunk.

Function	Operation
Security	Sends an operation signal as a rolling code.
Self-diagnostic mode	The following are ways to enter the self-diagnostic mode. • If the door control receiver receives normal radio waves from the door control transmitter when the system is in diagnostic mode, it sounds the wireless door lock buzzer in a normal pattern that corresponds to the function of each switch. • Short terminals TC and CG of the DLC3 with the SST check wire. • Read DTCs with the intelligent tester.
Buzzer cancel	The wireless door lock buzzer can be turned ON/OFF by operating the ignition switch or any of the door control transmitter switches.
Transmitter recognition code registration	Enables the registration (writing and storing) of 4 types of transmitter recognition codes in the EEPROM that is contained in the body ECU.

4. TRANSMITTER RECOGNITION CODE REGISTRATION FUNCTION

(a) The table below shows the 4 ID registration function modes by which up to 4 different codes can be registered. The codes are electronically registered (written and stored) in the EEPROM that is contained in the multiplex network body ECU.

Mode	Function
Add mode	Adds a newly received code while preserving any previously registered codes. The mode is used when adding a new transmitter. If the number of codes exceeds 4, the oldest registered code is erased first.
Rewrite mode	Erases all previously registered codes and registers only newly input codes.
Confirmation mode	Confirms how many codes are currently registered. When adding a new code, this mode is used to check how many codes already exist.
Prohibition mode	Deletes all the registered codes and disables the wireless door lock function. This mode is used when the transmitter is lost.

5. OPERATION OF INTERLOCK FUNCTION

(a) Lock operation is not available when:
- Any of the doors is open.
- The key is inserted in the ignition switch.

(b) Unlock operation is not available when:
- The key is inserted in the ignition switch.

(c) Trunk opener operation is not available when:
- The key is inserted in the ignition switch.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- The wireless door lock control system troubleshooting procedures are based on the premise that the power door lock control system is operating normally. Check the power door lock control system first before troubleshooting the wireless door lock control system.
  Use this procedure to troubleshoot the wireless door lock control system.
- The intelligent tester can be used at steps 4 ,5, 8, 11 and 14.

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	CUSTOMER PROBLEM ANALYSIS

(a) Interview and confirm the trouble.

NEXT

3	PROBLEM SYMPTOM CONFIRMATION

NEXT

4	CHECK BODY MULTIPLEX COMMUNICATION SYSTEM

(a) Check for output DTCs (See page MP-23).
HINT:
The ECM of this system is connected to the multiplex communication system. Therefore, before starting troubleshooting, make sure to check that there is no trouble in the multiplex communication system.

⇨	**MULTIPLEX SYSTEM DTC IS OUTPUT: PROCEED TO MULTIPLEX COMMUNICATION SYSTEM**
⇨	**NO MULTIPLEX SYSTEM DTC: GO TO STEP 5**

5	DTC CLEAR

HINT:
See page MP-23

NEXT

6	PROBLEM SYMPTOM SIMULATION

→ SYMPTOM DOES NOT OCCUR: GO TO STEP 7

→ SYMPTOM OCCURS: GO TO STEP 8

7	SYMPTOM SIMULATION

NEXT

8	DTC CHECK (OTHER THAN MULTIPLEX SYSTEM DTC)

HINT:
See page DL-82

→ DTC IS OUTPUT: GO TO STEP 9

→ NO DTC: GO TO STEP 10

9	DTC CHART

HINT:
See page DL-86

NEXT

GO TO STEP 11

10	PROBLEM SYMPTOMS TABLE

HINT:
See page DL-76

NEXT

11	CIRCUIT INSPECTION

NEXT

12	IDENTIFICATION OF PROBLEM

NEXT

13	ADJUSTMENT, REPAIR OR REPLACEMENT

NEXT

14	CONFIRMATION TEST

NEXT

DL

END

REGISTRATION

HINT:

- Register the recognition code if the door control transmitter or the door control receiver has been replaced.
- Add mode is used to register new recognition codes while still retaining codes already registered. This mode is used when a new transmitter is added. If the number of registered codes exceeds 4, the previously registered codes will be erased in order, starting from the oldest registered code.
- Rewrite mode is used to erase all the previously registered recognition codes in order to register all new recognition codes. This mode is used when the transmitter or the door control receiver is exchanged for a new one.
- Confirmation mode is used to confirm the number of recognition codes already registered before another recognition code is registered.
- Prohibition mode is used to erase all the registered codes and disable the wireless door lock function. This mode is used when the transmitter is lost.
- All the following registration procedures must be performed in order.

1. REGISTER RECOGNITION CODE USING INTELLIGENT TESTER

(a) Turn the ignition switch to the on (IG) position.

(b) Select the add or rewrite mode according to the intelligent tester display.

(c) The number of registered codes is indicated.

(d) Registration of the door control transmitter.

(1) If the add mode or rewrite mode has been selected, press LOCK and UNLOCK on the transmitter simultaneously.

(2) Press either of the switches on the door control transmitter again.

HINT:

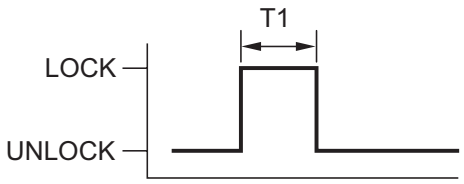
The second operation must be performed within 3 seconds after the first operation.

(3) The body ECU automatically performs the power door LOCK-UNLOCK operation after the switch on the door control transmitter is turned off, in order to indicate whether registration has been completed correctly or not.

Response to Registration Completion

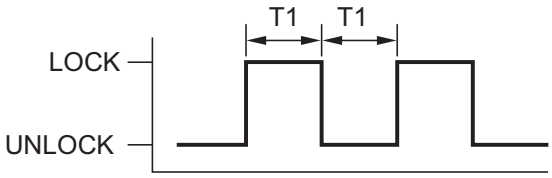
LOCK-UNLOCK Occurs Once:

Registration of recognition code has been completed.



LOCK-UNLOCK Occurs Twice:

Registration of recognition code has failed.



T1: Approx. 1 second

N B110067E03

HINT:
If the LOCK-UNLOCK operation is performed twice, registration of the recognition code has failed. Perform registration procedures from the beginning once again.

(4) If registration is continued, the next recognition code must be registered in the door control transmitter within 40 seconds.
HINT:
Up to four recognition codes can be registered.

(e) Completing the registration mode.
(1) The registration mode will cease when any of the following occurs:
- The intelligent tester is used to order completion.
- The intelligent tester is disconnected.

(f) Perform the following after registration is completed.
(1) Perform the wireless door lock control operation check (See page DL-86).
HINT:
If the wireless door lock control does not operate, perform the registration procedure again.

2. REGISTER RECOGNITION CODE MANUAL OPERATION

(a) Ensure that the following conditions are met:
(1) No key is in the ignition key cylinder.
(2) Driver side door is open (Other doors are closed).
(3) Driver side door is unlocked.

(b) When the above conditions are met, perform the following:

(1) Insert and remove the key from the ignition key cylinder twice. (End in remove) (Procedure A)
HINT:
Complete this step within 5 seconds.

(2) Close and open the driver side door twice. (End in open) (Procedure B)

(3) Insert and remove the key from the ignition key cylinder. (Procedure C)

(4) Close and open the driver side door twice. (End in open) (Procedure D)

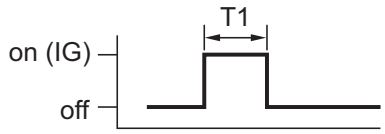
(5) Insert the key into the ignition key cylinder and close all doors. (Procedure E)
HINT:
Complete the Procedure B through E within 40 seconds.

(6) Turn the ignition switch from the on (IG) to the off position at approximately 1 second intervals according to the number of times shown below. (Procedure F)

Number of on (IG)-off Operations of the Ignition Switch

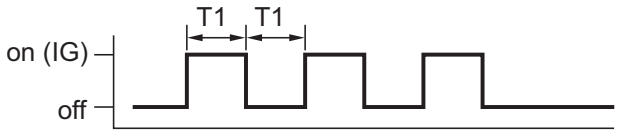
Add Mode:

on (IG)-off operation: 1 time



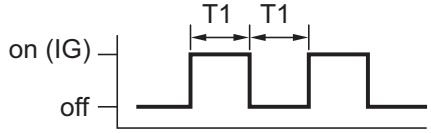
Confirmation Mode:

on (IG)-off operation: 3 times



Rewrite Mode:

on (IG)-off operation: 2 times



Prohibition Mode:

on (IG)-off operation: 5 times

T1: Approx. 1 second

N B110068E05

HINT:
If the number of on (IG)-off operations of the ignition switch is 0, 4 or 6 or more, there will be no response (power door lock and unlock operation) to show which mode has been selected.

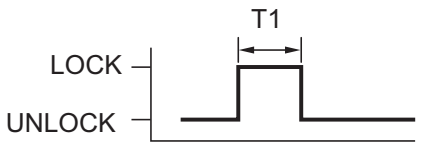
(7) Remove the key from the ignition key cylinder. (Procedure G)
HINT:
Complete the Procedure F and G within 40 seconds.

(8) The body ECU automatically performs the power door LOCK-UNLOCK operation within 3 seconds after the mode has been selected and informs the technician of the selected mode using the following response patterns.

Response to a Selected Mode (Power Door Lock Operation)

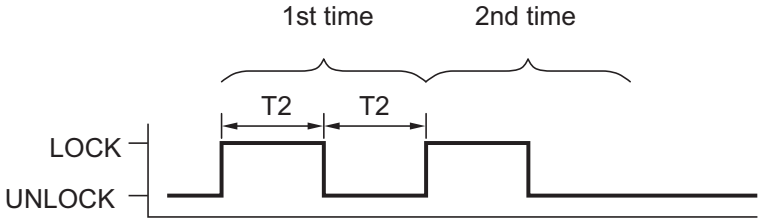
Add Mode:

LOCK-UNLOCK operation: 1 time



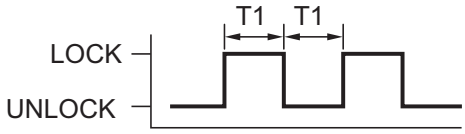
Confirmation Mode:

LOCK-UNLOCK operation: The number of registered codes (1 - 5 times)



Rewrite Mode:

LOCK-UNLOCK operation: 2 times



Prohibition Mode:

LOCK-UNLOCK operation: 5 times

T1: Approx. 1 second T2: Approx. 2 seconds

N B110069E02

HINT:

- When the confirmation mode or prohibition mode has been selected, the registration procedure will be completed.
- In the confirmation mode, when the LOCK-UNLOCK operation is performed twice, the number of registered recognition codes is 2.
- In the confirmation mode, when 0 codes are registered, the LOCK-UNLOCK operation is automatically performed 5 times.

(c) Registration of the door control transmitter.

(1) If the add mode or rewrite mode has been selected, press LOCK and UNLOCK on the transmitter simultaneously.

(2) Press either of the switches on the door control transmitter again.

HINT:

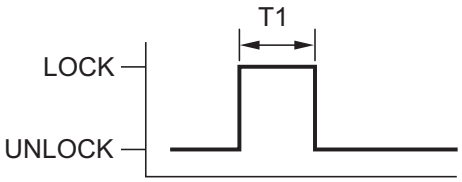
- The second operation must be performed within 3 seconds after the first operation.
- A recognition code must be registered in the door control transmitter within 40 seconds after a selected mode is responded to.

(3) The body ECU automatically performs the power door LOCK-UNLOCK operation within 3 seconds after the switch on the door control transmitter is turned off, in order to indicate whether registration has been completed correctly or not.

Response to Registration Completion

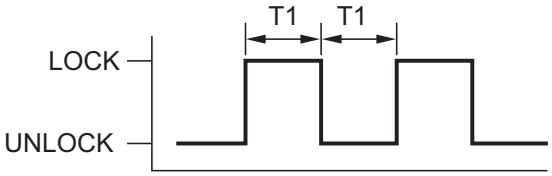
LOCK-UNLOCK Occurs Once:

Registration of recognition code has been completed.



LOCK-UNLOCK Occurs Twice:

Registration of recognition code has failed.



T1: Approx. 1 second

N

B110067E03

HINT:
If the LOCK-UNLOCK operation is performed twice, registration of the recognition code has failed. Perform registration procedures from the beginning once again.

(4) If registration is continued, the next recognition code must be registered in the door control transmitter within 40 seconds.
HINT:
Up to four recognition codes can be registered.

(d) Completing the registration mode.
(1) The registration mode will cease when any of the following occurs:
- Any of the doors is opened.
- The key is inserted into the ignition key cylinder.

(e) Perform the following after registration is completed.
(1) Perform the wireless door lock control operation check (See page DL-86).
HINT:
If the wireless door lock control does not operate, perform the registration procedure again.

DL

CUSTOMIZE PARAMETERS

HINT:
The following items can be customized.
NOTICE:

- **When the customer requests a change in a function, first make sure that customization of the function(s) is possible.**
- **Be sure to record the current settings before customizing.**
- **When troubleshooting a function, first make sure that the function is not set to OFF.**

Display (item)	Default	Function	Setting
OPEN DOOR WARN (Open door warning)	ON	If any door is not completely closed and transmitter lock switch is pressed, this function sounds buzzer for 10 seconds.	ON/OFF
WIRELESS OPER (Wireless door lock control function)	ON	Function that turns wireless door lock function ON/OFF.	ON/OFF
ALARM FUNCTION (*1) (Panic function)	ON	Function that operates theft deterrent system when transmitter panic switch on transmitter is pressed and held for 2.5 seconds.	ON/OFF
UNLOCK/2OPER (Wireless unlock operated twice)	ON	Function that unlocks driver side door when unlock switch on transmitter is pressed once, and unlocks all doors when pressed twice. if setting is OFF, pressing unlock switch once makes all doors unlock.	ON/OFF
AUTO LOCK DELAY (Auto lock time)	30 s	This function regulates the interval between unlocking and automatic relocking of doors.	30 s/60 s
WIRLS BUZZ RESP (Buzzer answer-back for wireless door lock control)	ON	Function that sounds wireless door lock buzzer for answer-back when lock/unlock switch on transmitter is pressed.	ON/OFF
HAZARD ANS BACK (Hazard answer-back for wireless door lock control)	ON	When lock switch on transmitter is pressed, this function blinks all hazard warning lights once. When unlock switch is pressed, all hazard warning lights blink twice.	ON/OFF
TRUNK LID OPER (Wireless trunk opener function setting)	0.8 s PR	Changes operation method of transmitter to open trunk.	1 TIME/2 TIMES/0.8 s PR/OFF

(*1): This function cannot be turned on or off if the security system is turned off.

PROBLEM SYMPTOMS TABLE

If a normal system code is displayed during the DTC check, but the problem still occurs, check the circuits for each problem symptom in the order given in the table below and proceed to the relevant troubleshooting page.

HINT:

- The following is the troubleshooting procedure for the wireless door lock control of a vehicle without the smart key system.
  For the troubleshooting procedure for the wireless door lock control of a vehicle with the smart key system, refer to the smart key system.
- inspect the fuse and relay before investigating the suspected areas shown in the table below.
- Inspect each malfunction circuit in numerical order for its corresponding symptom.

WIRELESS DOOR LOCK CONTROL SYSTEM:

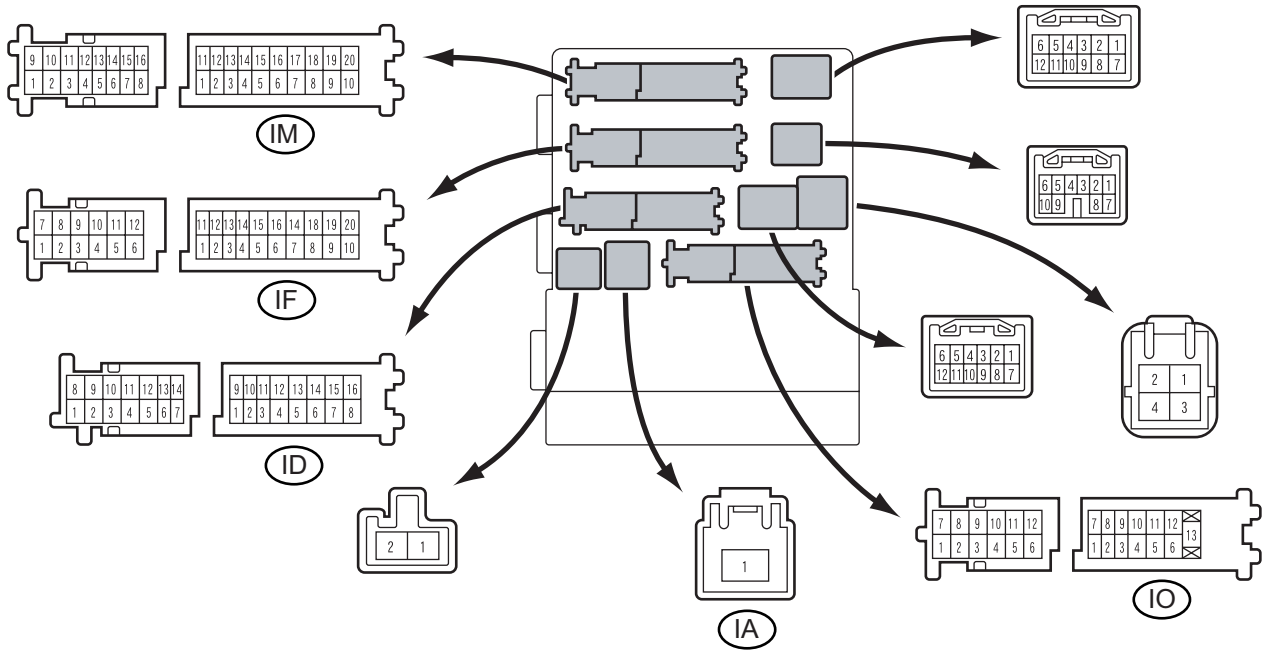
Symptom	Suspected area	See page
The wireless door lock control system does not operate.	1. Transmitter battery	DL-232
	2. Enter the self-diagnostic mode. If the recognition code does not match the key code, check that the key code can be registered in the rewrite or add mode of the recognition code registration.	DL-82
	3. Wireless door lock receiver circuit	DL-89
	4. Power source circuit	DL-117
	5. IG signal circuit	DL-93
	6. Key unlock warning switch circuit	DL-120
	7. Front door courtesy light switch circuit	DL-101
	8. Rear door courtesy light switch circuit	DL-104
	9. Luggage compartment door courtesy light switch circuit	DL-107
	10. If the symptoms still occur after the above areas are inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-
The panic alarm function only does not operate.	1. Transmitter battery	DL-232
	2. If the symptoms still occur after the above area is inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-
The panic alarm function does not operate (Vehicle horn).	1. Power source circuit	DL-117
	2. IG signal circuit	DL-93
	3. Horn circuit	DL-95
	4. If the symptoms still occur after the above circuits are inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-
The panic alarm function does not operate (Security horn).	1. Power source circuit	DL-117
	2. IG signal circuit	DL-93
	3. Theft deterrent system	TD-9
	4. If the symptoms still occur after the above areas are inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-
The panic alarm function does not operate (Hazard warning light).	1. Power source circuit	DL-117
	2. IG signal circuit	DL-93
	3. Hazard warning light circuit	DL-98
	4. If the symptoms still occur after the above circuits are inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-

Symptom	Suspected area	See page
The panic alarm function does not operate (Headlight or taillight).	1. Power source circuit	DL-117
	2. IG signal circuit	DL-93
	3. Lighting system	LI-18
	4. If the symptoms still occur after the above areas are inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-
The automatic lock function does not operate.	1. Power source circuit	DL-117
	2. IG signal circuit	DL-93
	3. Key unlock warning switch circuit	DL-120
	4. Front door courtesy light switch circuit	DL-101
	5. Rear door courtesy light switch circuit	DL-104
	6. Luggage compartment door courtesy light switch circuit	DL-107
	7. If the symptoms still occur after the above circuits are inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-
The door ajar warning function only does not operate.	1. Power source circuit	DL-117
	2. IG signal circuit	DL-93
	3. Key unlock warning switch circuit	DL-120
	4. Front door courtesy light switch circuit	DL-101
	5. Rear door courtesy light switch circuit	DL-104
	6. Luggage compartment door courtesy light switch circuit	DL-107
	7. If the symptoms still occur after the above circuits are inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-
The illuminated entry function only does not operate.	1. Lighting system	LI-18
	2. If the symptoms still occur after the above area is inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-
The answer back function does not operate (Wireless door lock buzzer).	1. Power source circuit	DL-117
	2. Wireless door lock buzzer circuit	DL-110
	3. If the symptoms still occur after the above circuits are inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-
The answer back function does not operate (Hazard warning light).	1. Power source circuit	DL-117
	2. Hazard warning light circuit	DL-98
	3. If the symptoms still occur after the above circuits are inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-
The wireless trunk opener function only does not operate.	1. Power source circuit	DL-117
	2. Key unlock warning switch circuit	DL-120
	3. Luggage compartment door courtesy light switch circuit	DL-107
	4. Luggage compartment door opener motor circuit	DL-114
	5. If the symptoms still occur after the above circuits are inspected and proved to be normal, replace the instrument panel J/B (body ECU).	-

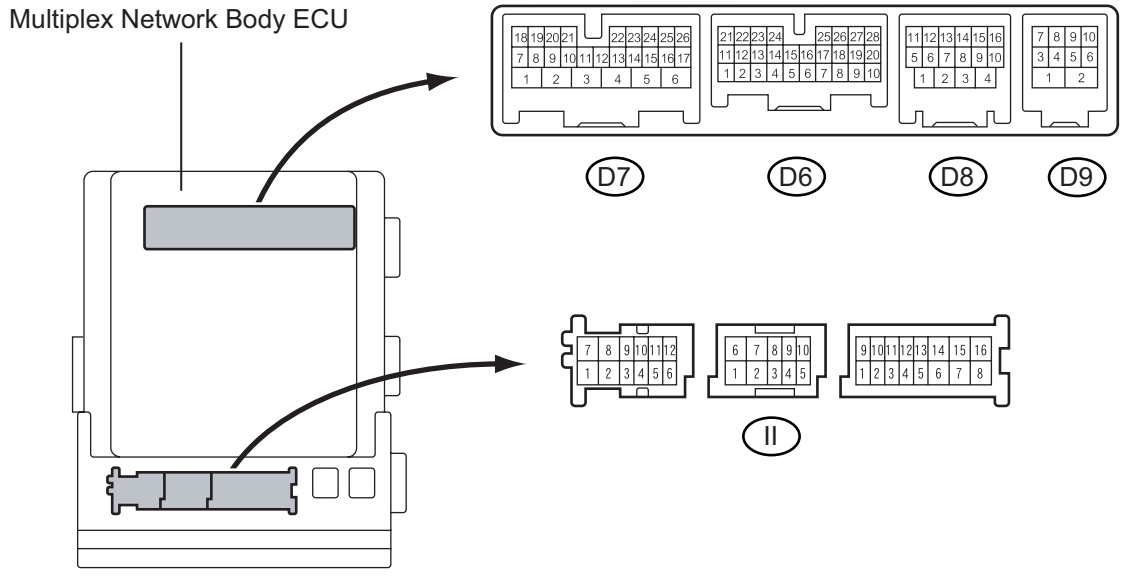
TERMINALS OF ECU

1. INSTRUMENT PANEL JUNCTION BLOCK (MULTIPLEX NETWORK BODY ECU)

Instrument Panel Junction Block (Front Side) Connector Front View:



Instrument Panel Junction Block (Rear Side) Connector Front View:



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(a) Disconnect the multiplex network body ECU connector and instrument panel J/B connector.
(b) Check the voltage and resistance of each terminal of the wire harness side connector.

Standard

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BATB (IA-1) - Body ground	B - Body ground	+B (power battery system) power supply	Always	10 to 14 V
BECU (ID-10) - Body ground	O - Body ground	+B power supply	Always	10 to 14 V
ALTB (ID-16) - Body ground	W - Body ground	+B (power generator system) power supply	Always	10 to 14 V
GND1 (IF-10) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
ACC (II-3) - Body ground	GR - Body ground	Ignition power supply (ACC signal)	Ignition switch off → on (ACC)	Below 1 V → 10 to 14 V
IG (II-9) - Body ground	G - Body ground	Ignition power supply (IG signal)	Ignition switch off → on (IG)	Below 1 V → 10 to 14 V
GND2 (IM-9) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
LCTY (IO-7) - Body ground	B - Body ground	Rear door (LH) courtesy light switch signal	Rear door (LH) is open → closed	Below 1 Ω → 10 kΩ or higher
PCTY (D6-23) - Body ground	L - Body ground	Passenger side door courtesy light switch signal	Passenger side door is open → closed	Below 1 Ω → 10 kΩ or higher
LGCY (D6-25) - Body ground	V - Body ground	Luggage compartment light (Luggage compartment door courtesy light switch) signal	Luggage compartment light is ON → OFF (Luggage compartment door is open (unlocked) → closed (locked))	Below 1 Ω → 10 kΩ or higher
KSW (D7-21) - Body ground	B- Body ground	Unlock warning switch signal	Ignition key is inserted → not inserted	Below 1 Ω → 10 kΩ or higher
DCTY (D8-14) - Body ground	L - Body ground	Driver side door courtesy light switch signal	Driver side door is open → closed	Below 1 Ω → 10 kΩ or higher
RCTY (D8-16) - Body ground	GR - Body ground	Rear door (RH) courtesy light switch signal	Rear door (RH) is open → closed	Below 1 Ω → 10 kΩ or higher

If the result is not as specified, there may be a malfunction on the wire harness side.
(c) Reconnect the multiplex network body ECU connector and instrument panel J/B connector.
(d) Check the voltage of each terminal of the ECU side connector.

Voltage

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
TR+ (D7-1) - Body ground	B - Body ground	Luggage compartment door opener motor signal	Luggage compartment door is closed (locked) → open (unlocked)	Below 1 V → 10 to 14 V (*1)
HAZ (D7-2) - Body ground	P - Body ground	Turn signal flasher relay signal	Any transmitter switch is pressed → not pressed	Below 1 V → 10 to 14 V (*2)

If the result is not as specified, the multiplex network body ECU may have a malfunction.
(*1): When operating the motor.
(*2): When operating the answer back function.

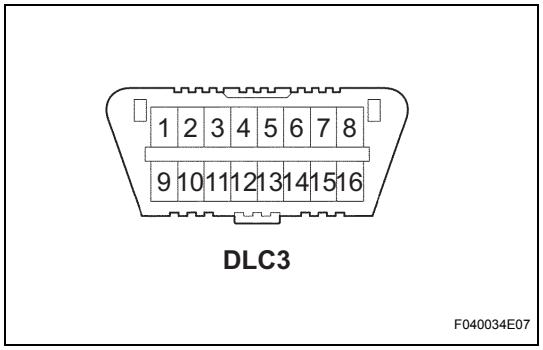
DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) The ECM stores trouble codes when trouble occurs on the vehicle.
The diagnosis system allows for reading of the trouble codes from the DLC3.
Use the intelligent tester or SST to check and solve the problem.

2. CHECK DLC3

(a) The vehicle's ECM uses ISO 9141-2 for communication. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.



Symbols (Temrminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	11 to 14 V
CANH (6) - CANL (14)	HIGH-level CAN bus line	Ignition switch off	54 to 67 Ω
CANH (6) - Body positive	HIGH-level CAN bus line	Ignition switch off	1 MΩ or higher
CANH (6) - CG (4)	HIGH-level CAN bus line	Ignition switch off	3 kΩ or higher
CANL (14) - Battery positive	LOW-level CAN bus line	Ignition switch off	1 MΩ or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Ignition switch off	3 kΩ or higher

HINT:
If the display shows a communication error message after connecting the intelligent tester to the DLC3 and turning the ignition switch on (IG), there is a problem with either the vehicle or the tool (intelligent tester only).

- If communication is normal when the tool is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still impossible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

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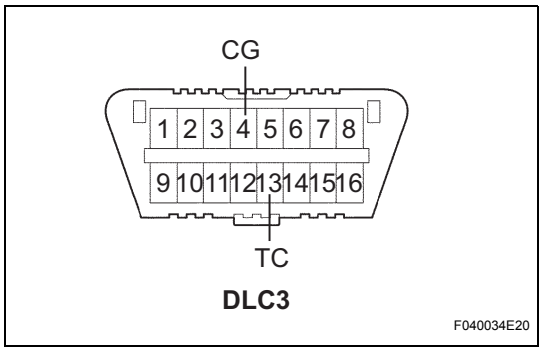


DTC CHECK / CLEAR

1. DTC CHECK / CLEAR USING SST CHECK WIRE:

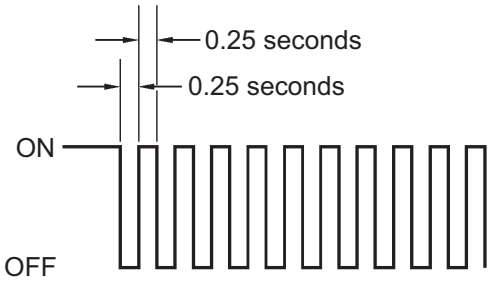
(a) Step 1: DTC check

(1) Using SST, create a short-circuit between terminals TC and CG of the DLC3.
SST 09843-18040

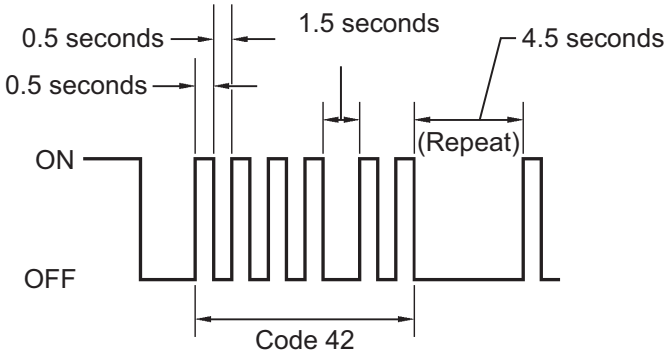
(2) Turn the ignition switch on (IG).

(3) Read and record DTCs from the door warning light on the combination meter. As examples, refer to the chart below for the blinking patterns of the normal system code and diagnostic trouble code 42.

Normal System Code:



Diagnostic Trouble Code:



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HINT:

- If the door warning light does not conform to DTC blinking patterns, or to the normal system code blinking pattern, inspect the multiplex communication system (See page MP-23).
- The door warning light circuit uses BEAN for communication. If there are any malfunctions in the circuit, check for DTCs in the multiplex communication system.

(b) DTC clear

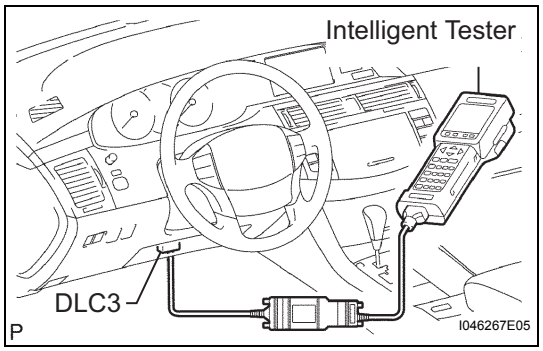
(1) Turn the ignition switch off.

(2) If DTCs are indicated, repair the relevant circuits referring to the DIAGNOSTIC TROUBLE CODE CHART (See page DL-86).

(3) Clear the DTCs according to either one of the following procedures.

- Disconnect the negative (-) battery cable for 60 seconds.
- Remove the ECU-B fuse for 60 seconds.

(4) Recheck the DTCs (see step 1).



2. DTC CHECK / CLEAR USING INTELLIGENT TESTER:

(a) DTC check
  (1) Connect the intelligent tester to the DLC3.
  (2) Turn the ignition switch on (IG).
  (3) Read the DTCs on the tester screen.

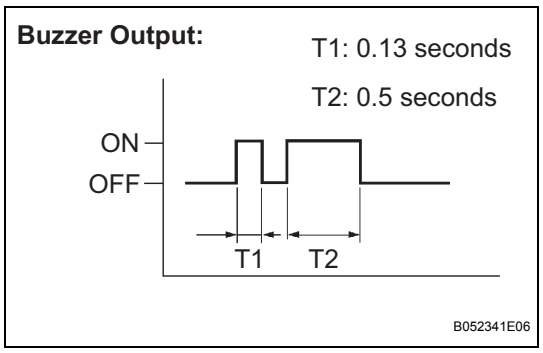
(b) DTC clear
  (1) Connect the intelligent tester to the DLC3.
  (2) Turn the ignition switch on (IG).
  (3) Clear the DTCs following the prompts on the tester screen.
  HINT:
  The intelligent tester has a SNAPSHOT function which records the monitored data.
  Refer to the intelligent tester operator's manual for further details.

3. SELF-DIAGNOSTIC MODE OPERATING IGNITION KEY CYLINDER:

(a) Switch to self-diagnostic mode.
  (1) Establish the vehicle's initial conditions (See page DL-71).
  (2) Insert the key into the ignition key cylinder and remove it.
  (3) Within 5 seconds after the key is removed, reinsert it into the ignition key cylinder.
  (4) Step A: Turn the ignition switch on (IG) then off.
  (5) Step B: Within 30 seconds of turning the ignition switch off, repeat step (A) 9 more times.
  HINT:
  - Turning the ignition switch on (IG), after step (B) has been completed, will end the self-diagnostic mode.
  - Do not lock or unlock doors while performing the self-diagnostic mode.

  NOTICE:
  If the change to self-diagnostic mode fails, the system will return to normal mode.

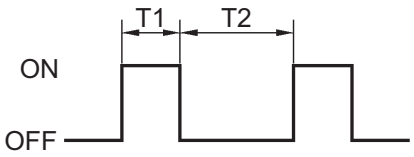
(b) Check that the system has switched to self-diagnostic mode by checking the sound pattern of the wireless door lock buzzer.



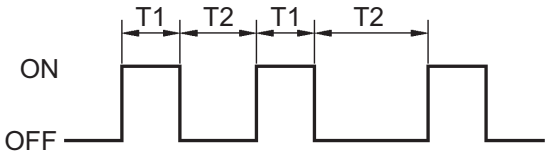
(c) Check the diagnostic outputs when the door control transmitter switch is held down. The diagnostic outputs can be checked by listening to the wireless door lock buzzer.

Buzzer Output:

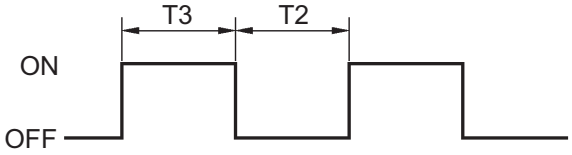
Normal Wave (Lock Switch):



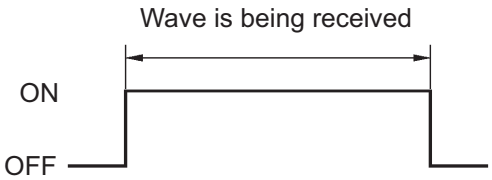
Normal Wave (Unlock Switch):



Normal Wave (Panic or Trunk Opener Switch):



Mismatched Recognition Code:



No Diagnostic Output:

T1: 0.125 seconds

T2: 0.25 seconds

T3: 0.5 seconds

N

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4. SELF-DIAGNOSTIC MODE USING INTELLIGENT TESTER:

(a) Switch to self-diagnostic mode.

(1) Connect the intelligent tester to the DLC3.

(2) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.

HINT:

Refer to the intelligent tester operator's manual for further details.

DATA LIST / ACTIVE TEST

1. DATA LIST

(a) While the intelligent tester is connected to the DLC3 with the ignition switch on (IG), the wireless door lock control data list can be displayed. Follow the prompts on the tester screen to access the DATA LIST.

BODY:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
KEY UNLK WRN SW	Unlock warning switch/ON or OFF	ON: Ignition key is inserted OFF: Ignition key is not inserted	-
WIRELESS OPER	Wireless door lock control function/ON or OFF	ON: Operating OFF: Not operating	-
OPEN DOOR WARN	Open door warning/ON or OFF	ON: Operating OFF: Not operating	-
AUTO LOCK DELAY	Automatic lock time/60 s or 30 s	60 s: 60 seconds 30 s: 30 seconds	-
UNLOCK/2 OPER	2 times operation wireless unlock/ON or OFF	ON: All doors unlock when wireless unlock switch is pressed twice OFF: All doors unlock when wireless unlock switch is pressed once	-
ALARM FUNCTION	Panic function/ON or OFF	ON: Operating OFF: Not operating	-
LUGG COURTESY SW	Luggage compartment door courtesy light switch/ON or OFF	ON: Door is open OFF: Door is closed	-
IG SW	Ignition switch on (IG)/ON or OFF	ON: Ignition switch on (IG) OFF: Ignition switch off or on (ACC)	-
ACC SW	Ignition switch on (ACC)/ON or OFF	ON: Ignition switch on (ACC) OFF: Ignition switch not on (ACC)	-
HAZARD ANS BACK	Hazard answer back of wireless/ON or OFF	ON: Operating OFF: Not operating	-
WIRLS BUZZ RESP	Wireless door lock buzzer response/ON or OFF	ON: Operating OFF: Not operating	-
D DOR CTY SW	Driver side door courtesy light switch/ON or OFF	ON: Door is open OFF: Door is closed	-
P DOR CTY SW	Passenger side door courtesy light switch/ON or OFF	ON: Door is open OFF: Door is closed	-
Rr DOR CTY SW	Rear door courtesy light switch/ON or OFF	ON: Either LH or RH door is open OFF: Both LH and RH doors are closed	-
D LOCK POS SW	Driver side door lock position switch/ON or OFF	ON: Door lock is in unlock position OFF: Door lock is in lock position	-
P LOCK POS SW	Passenger side door lock position switch/ON or OFF	ON: Door lock is in unlock position OFF: Door lock is in lock position	-
Rr LOCK POS SW	Rear door lock position switch/ON or OFF	ON: Door lock is in unlock position OFF: Door lock is in lock position	-

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
TRUNK LID OPER	Trunk lid operation/1 TIME or 2 TIMES or 0.8 s PR or OFF	1 TIME: Trunk opens when wireless trunk opener switch is pressed once 2 TIMES: Trunk opens when wireless trunk opener switch is pressed twice 0.8 s PR: Trunk opens when trunk opener switch is pressed and held down for 0.8 seconds OFF: Not operating	-

2. ACTIVE TEST

HINT:

Performing the ACTIVE TEST using the intelligent tester allows components such as the relay, VSV and actuator to operate without part removal. Performing the ACTIVE TEST as the first step of troubleshooting is one way to shorten labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Connect the intelligent tester to the DLC3.

(b) Turn the ignition switch on (IG).

(c) According to the display on the tester, perform the ACTIVE TEST.

HINT:

The ignition switch must be turned on (IG) to proceed to the ACTIVE TEST using the intelligent tester.

BODY:

Item	Vehicle Condition/Test Details	Diagnostic Note
HAZARD	Turns turn signal flasher (relay) assembly ON/OFF	Observe headlight and rear combination light
TRUNK/BDOR OPEN	Turns luggage compartment door opener motor ON/OFF	Observe luggage compartment door

DIAGNOSTIC TROUBLE CODE CHART

HINT:
If a trouble code is displayed during the DTC check, inspect the trouble areas listed for that code. For details of the code, refer to "See page " in the DTC chart.

- The following is the troubleshooting procedure for the wireless door lock control of a vehicle without the smart key system.
  For the troubleshooting procedure for the wireless door lock control of a vehicle with the smart key system, refer to the smart key system.
- Inspect the fuse and relay before investigating the trouble areas shown in the table below.

WIRELESS DOOR LOCK CONTROL SYSTEM

DTC No.	Detection Item	Trouble Area	See page
B1242	Wireless Door Lock Tuner Circuit Malfunction	1. Wire harness 2. Door control receiver 3. Instrument panel J/B (Multiplex network body ECU)	DL-89

ON-VEHICLE INSPECTION

1. CHECK WIRELESS DOOR LOCK CONTROL SYSTEM

HINT:

- The following switches built into the door control transmitter send radio waves to the door lock control.
- The operational range must be taken into account during checks.

(a) Establish conditions that allow the wireless control function to be operated successfully.

(b) Check these basic functions.

(1) Check that all the doors lock when the lock switch is pressed.

(2) Check that all the doors unlock when the unlock switch is pressed.

(c) Check the panic alarm function.

(1) Check that if the panic switch is held down for 0.8 seconds or more, the theft deterrent alarm function sounds the horn, and flashes the headlights, tail lights and hazard warning lights for 27.5 seconds. And with the theft alarm function active, check if pressing any switch on the transmitter stops the horn and turns off the headlights, tail lights and hazard warning lights.

(d) Check the automatic lock function.

(1) Check that if all the doors are unlocked with the unlock switch and none of the doors are opened or locked within approximately 30 seconds, the doors automatically re-lock.

(2) Check that if all the doors are unlocked with the unlock switch and a door is opened or locked within approximately 30 seconds, the automatic lock function does not operate.

(e) Check the door ajar warning function.

(1) Check that if a door is open or not completely closed, the doors cannot be locked with the lock switch and the wireless door lock buzzer sounds for about 10 seconds.

(f) Check the room light ON function.

HINT:

Move the room light switch to the DOOR position before the check.

(1) Check that the room light comes on simultaneously with the unlocking operation when the unlock switch has been pressed for 1 second.

(2) Check that the room light goes off in approximately 15 seconds if none of the doors is opened after the unlocking operation.

(g) Check the repeat function.

(1) Check that all doors attempt to automatically lock once again 1 second after the lock switch has been pressed while one of the door lock knobs is held in the unlocked position.

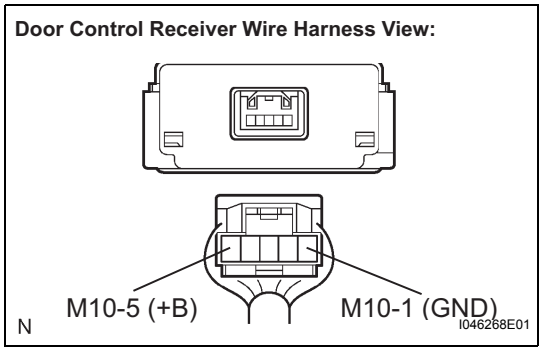
(h) Check the answer back function.
  (1) When the lock switch is pressed, check that the hazard warning lights flash once and the wireless door lock buzzer sounds once simultaneously with the locking of all the doors.
  (2) When the unlock switch is pressed, check that the hazard warning lights flash twice and the wireless door lock buzzer sounds twice simultaneously with the unlocking of all the doors.

(i) Check the switch operation fail-safe function.
  (1) Check that the doors cannot be locked by operating a switch while the key is in the ignition key cylinder.
  HINT:
  This check cannot be made when the system is in recognition code registration mode.

(j) Check the chattering prevention function.
  (1) Check that the corresponding operation occurs only once, and does not repeat itself while the switch is kept pressed. Check that the corresponding operation is carried out when the switch is operated repeatedly at 1-second intervals.

(k) Check the trunk opener function.
  (1) Check that the trunk opens when the trunk opener switch is held down for 0.8 seconds or more.

Door Control Receiver Wire Harness View:



2. CHECK DOOR CONTROL RECEIVER

(a) Disconnect the door control receiver connector.

(b) Measure the voltage according to the value(s) in the table below.

Voltage

Tester Connection	Condition	Specified Condition
M10-5 (+B) - Body ground	Always	10 to 14 V

(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
M10-1 (GND) - Body ground	Always	Below 1 Ω

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

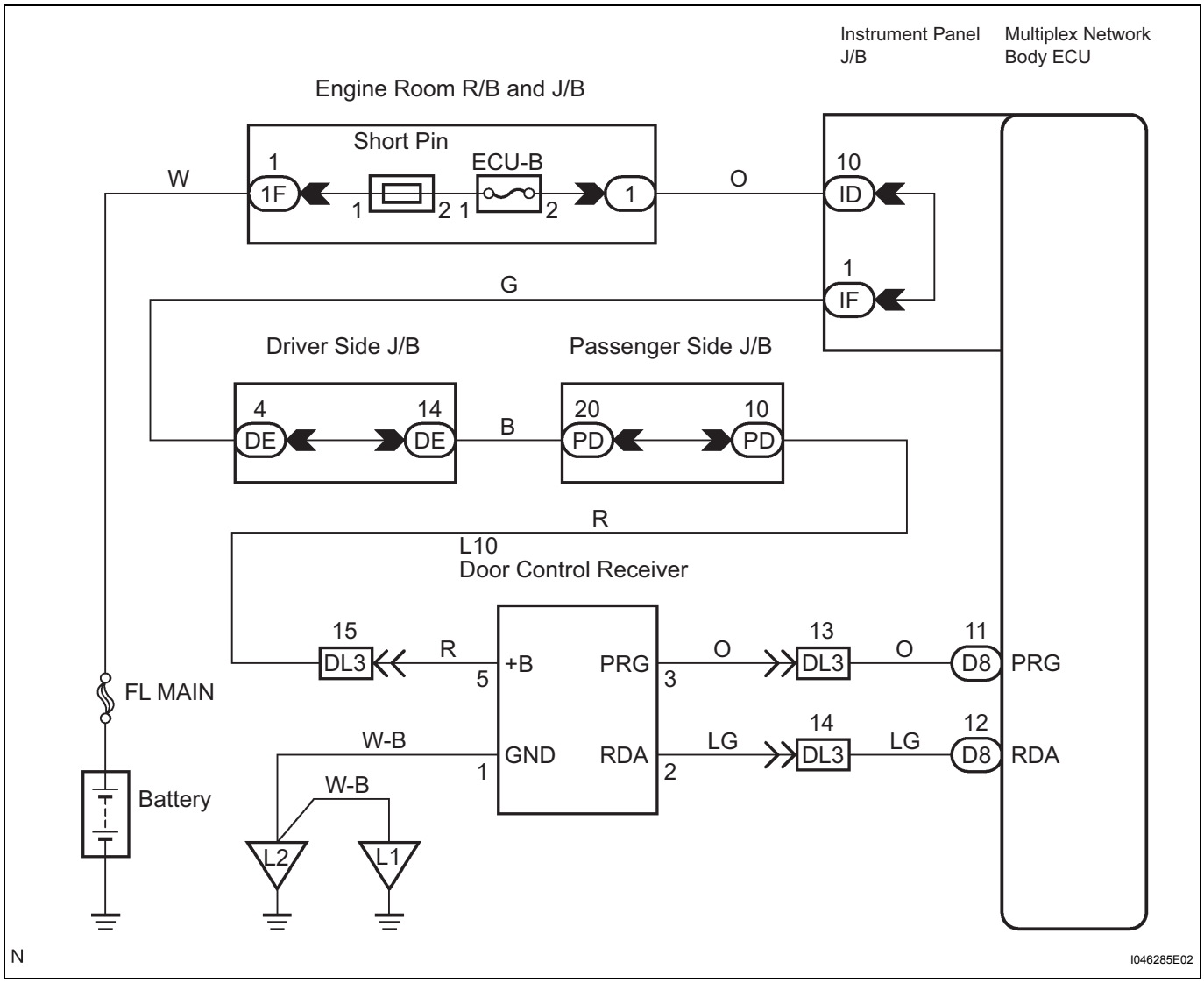
DTC	B1242	Wireless Door Lock Tuner Circuit Malfunction

DESCRIPTION

The door control receiver receivers signals from the transmitter and sends these signals to the multiplex network body ECU.

DTC No.	DTC Detection Condition	Trouble Area
B1242/42	In diagnostic mode, an applicable RDA signal cannot be received within 1 second after an PRG signal has been output from the body ECU.	• Wire harness • Door control receiver • Instrument panel J/B (Multiplex network body ECU)

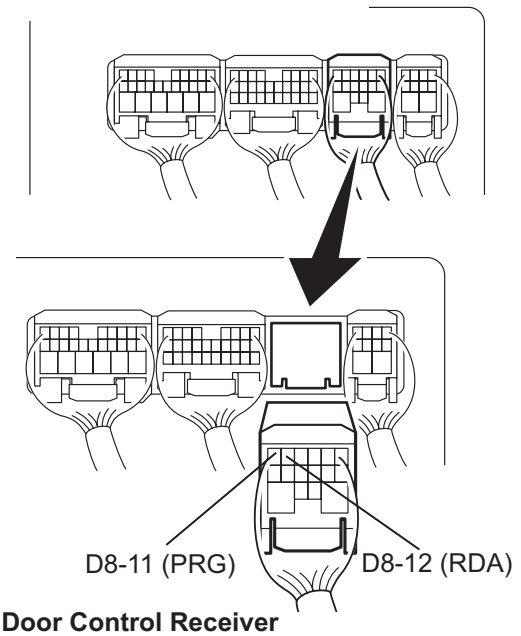
WIRING DIAGRAM



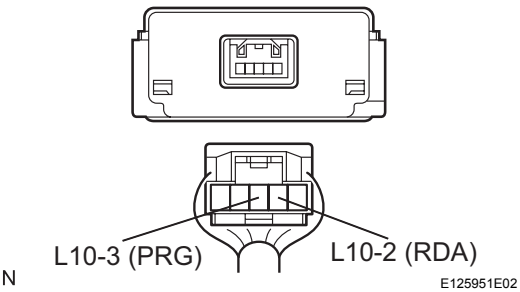
INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR (BETWEEN MULTIPLEX NETWORK BODY ECU - DOOR CONTROL RECEIVER)

Multiplex Network Body ECU Wire Harness View:



Door Control Receiver Wire Harness View:



(a) Disconnect the multiplex network body ECU (D8) connector and the door control receiver connector.
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D8-11 (PRG) - L10-3 (PRG)	Always	Below 1 Ω
D8-11 (PRG) - Body ground	Always	10 kΩ or higher
D8-12 (RDA) - L10-2 (RDA)	Always	Below 1 Ω
D8-12 (RDA) - Body ground	Always	10 kΩ or higher

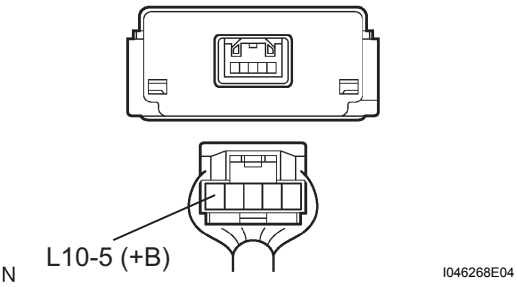
DL

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

2	INSPECT DOOR CONTROL RECEIVER (+B TERMINAL)

Door Control Receiver Wire Harness View:



(a) Measure the voltage according to the value(s) in the table below.

Voltage

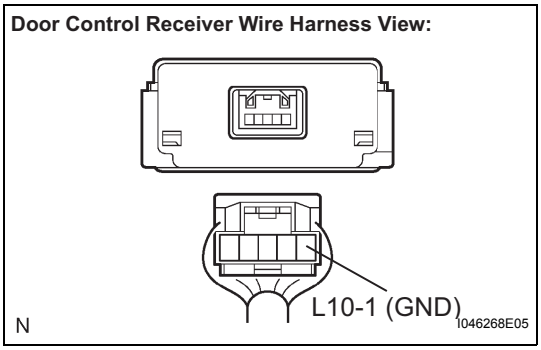
Tester Connection	Condition	Specified Condition
L10-5 (+B) - Body ground	Always	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR (+B CIRCUIT)**

OK

3	INSPECT DOOR CONTROL RECEIVER (GND TERMINAL)

Door Control Receiver Wire Harness View:



(a) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
L10-1 (GND) - Body ground	Always	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR (GND CIRCUIT)

DL

OK

4	REPLACE DOOR CONTROL RECEIVER

(a) Reconnect the multiplex network body ECU (D8) connector.
(b) Replace the door control receiver.
(c) Perform the registration procedures (See page DL-71).
HINT:
If a new or normally functioning door control receiver is available, connect it and check if the wireless door lock function is normal or DTCs are output. If the alternative receiver functions normally, replace the original door control receiver.

NEXT

5	RECONFIRM DTC OUTPUT

(a) Clear the DTC (See page DL-82).
(b) Check if the same DTC is detected.
HINT:
Reinstall the sensors, connectors, etc. and restore the previous vehicle conditions before rechecking for DTCs.

Result

Result	Proceed to
DTC is output	A
DTC is not output (When troubleshooting in accordance with the DTC CHART)	B
DTC is output (When troubleshooting in accordance with the PROBLEM SYMPTOMS TABLE)	C

B → END

C → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

A

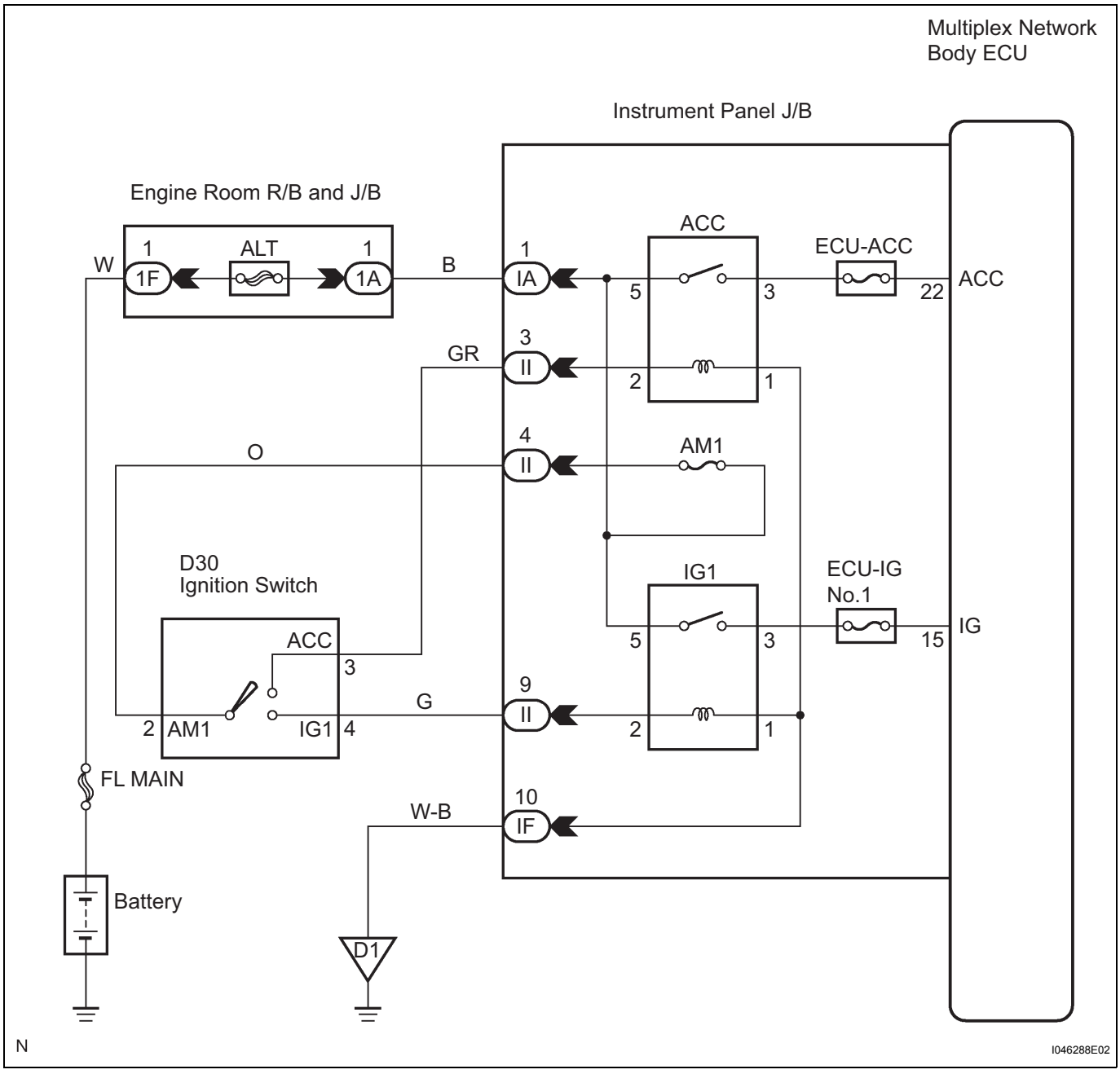
REPLACE INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY

IG Signal Circuit

DESCRIPTION

The multiplex network body ECU determines the ignition position (off, on (ACC, IG)) based on signals from the IG or ACC circuit.
Signals from the unlock warning switch are used to operate wireless door lock control system functions such as automatic lock and door ajar warning.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
Start the inspection from step 1 when using the intelligent tester and start from step 2 when not using the intelligent tester.

1	READ VALUE ON INTELLIGENT TESTER (IGNITION SWITCH)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Select the items below in the "DATA LIST" and read the display on the intelligent tester.

BODY:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
IG SW	Ignition switch on (IG)/ON or OFF	ON: Ignition switch on (IG) OFF: Ignition switch off or on (ACC)	-
ACC SW	Ignition switch on (ACC)/ON or OFF	ON: Ignition switch on (ACC) OFF: Ignition switch not on (ACC)	-

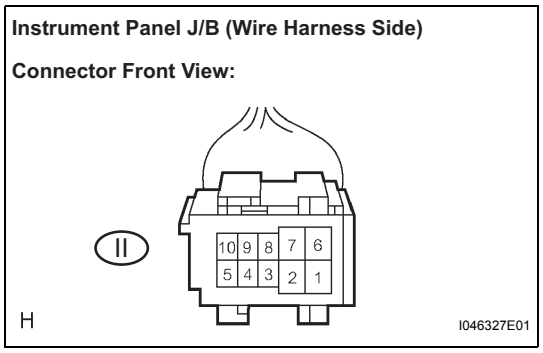
OK:
When the ignition switch is operated, the display changes as shown above.

NG → **Go to step 2**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT MULTIPLEX NETWORK BODY ECU (IG - ACC TERMINALS)



(a) Turn the ignition switch off.
(b) Disconnect the instrument panel J/B (II) connector.
(c) Measure the voltage according to the value(s) in the table below.

Voltage

Tester Connection	Condition	Specified Condition
II-9 (IG) - Body ground	Ignition switch off	Below 1 V
II-9 (IG) - Body ground	Ignition switch on (IG)	10 to 14 V
II-3 (ACC) - Body ground	Ignition switch off	Below 1 V
II-3 (ACC) - Body ground	Ignition switch on (ACC)	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR (IG OR ACC CIRCUIT)**

OK

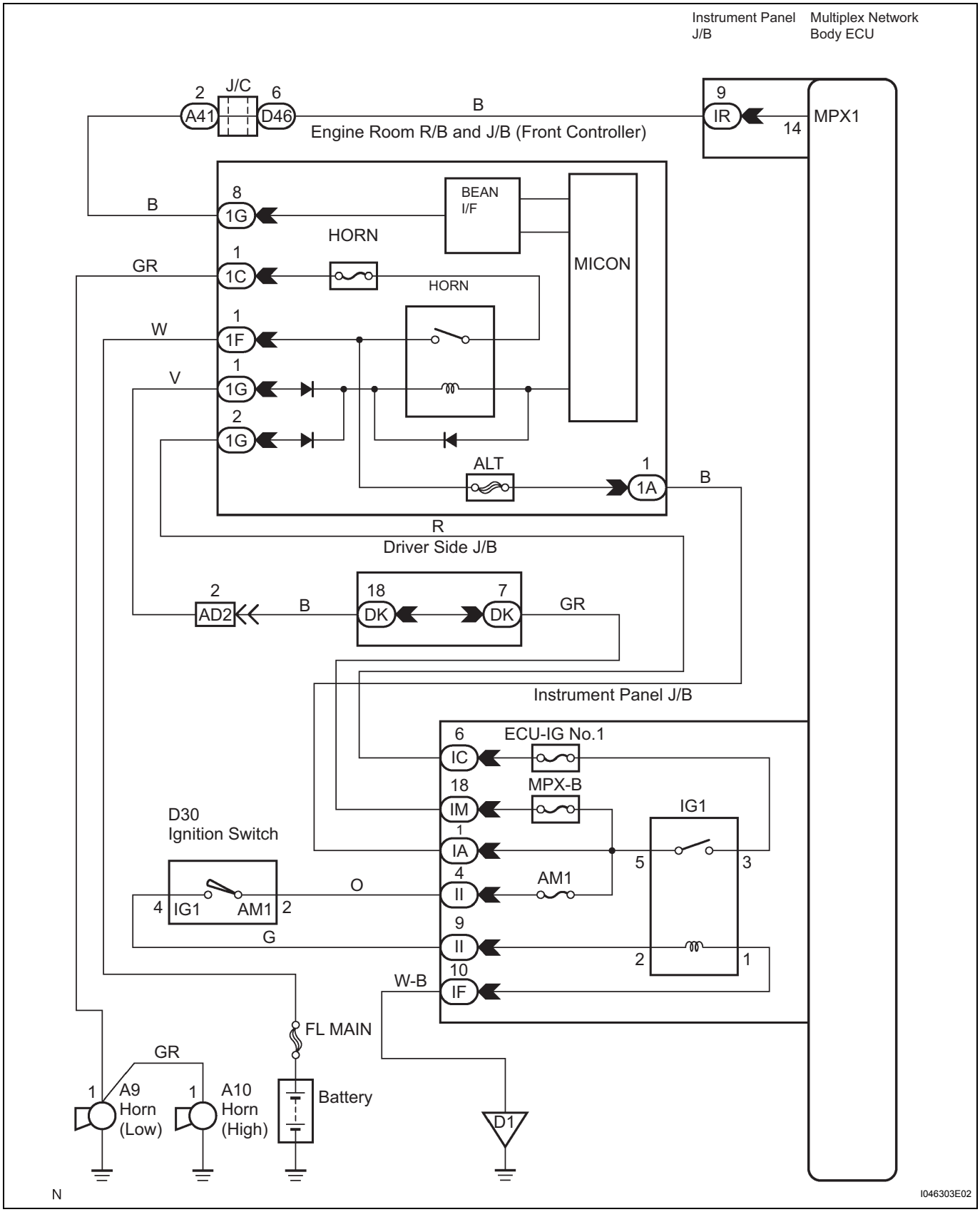
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Horn Circuit

DESCRIPTION

The multiplex network body ECU activates the horn when a panic signal is detected from the door control transmitter.
HINT:
The horn for the panic alarm function can be set to OFF.

WIRING DIAGRAM



DL

INSPECTION PROCEDURE

HINT:
The horn circuit uses BEAN for communication. If there are any malfunctions in this circuit, check for DTCs in the multiplex communication system (See page MP-23).

1	CHECK STEERING PAD

(a) When pushing the steering pad switch, check that the vehicle horn sounds normally.
OK:
The horn sounds normally.

NG → **GO TO HORN SYSTEM**

OK

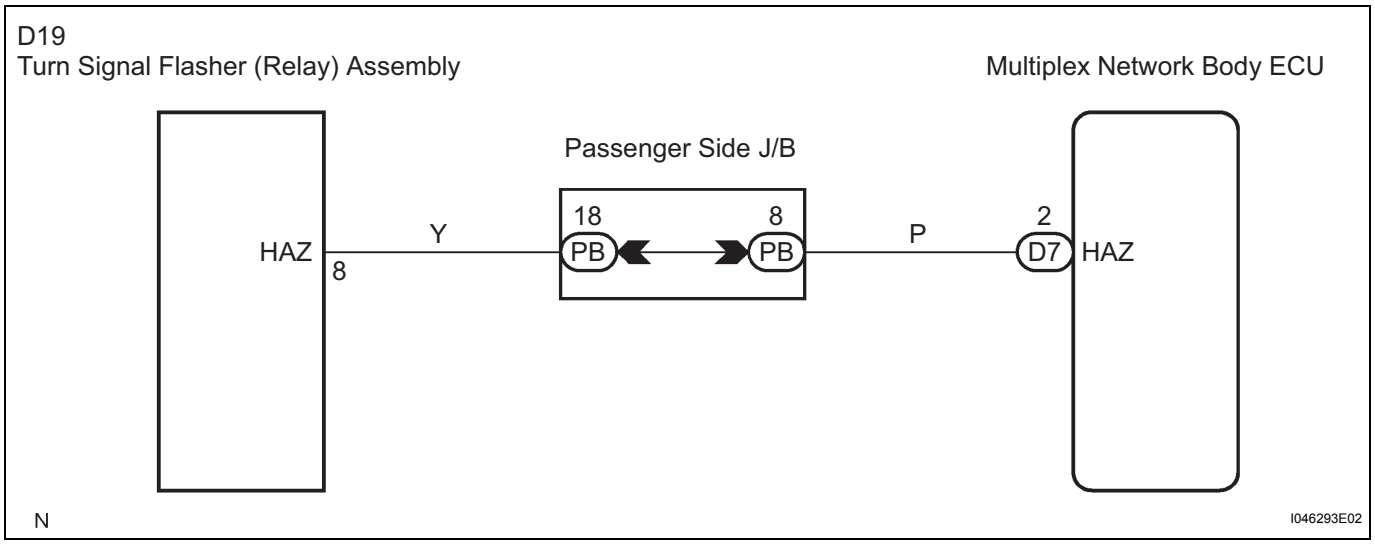
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Hazard Warning Light Circuit

DESCRIPTION

The multiplex network body ECU blinks the hazard warning light when a lock/unlock signal is detected from the door control transmitter.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- It is possible to set the hazard warning light to OFF so that it does not blink for the answer back operation function.
  Confirm that the hazard warning light is not set to OFF and the hazard warning light is operating normally before performing the following inspections.
- Start the inspection from step 1 when using the intelligent tester and start from step 2 when not using the intelligent tester.

1	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (HAZARD WARNING LIGHT)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Select "ACTIVE TEST" mode on the intelligent tester.

BODY:

Item	Vehicle Condition/Test Details	Diagnostic Note
HAZARD	Turns turn signal flasher (relay) assembly ON/OFF	Observe headlight and rear combination light

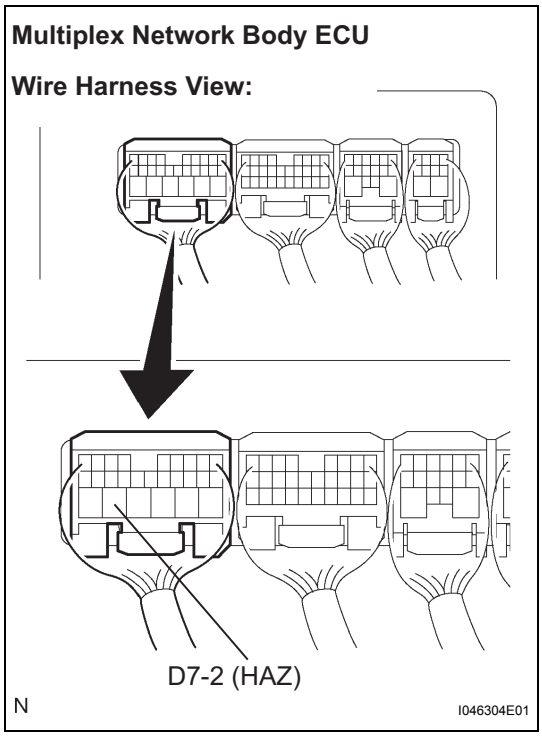
(d) Check that the intelligent tester can operate the hazard warning lights in the headlight and rear combination light units.
OK:
The hazard warning lights turn on and off in accordance with intelligent tester operation.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT MULTIPLEX NETWORK BODY ECU (HAZ TERMINAL)



(a) Measure the voltage according to the value(s) in the table below.

Voltage

Tester Connection	Condition	Specified Condition
D7-2 (HAZ) - Body ground	Any transmitter switch pressed	Below 1 V
D7-2 (HAZ) - Body ground	Transmitter switch not pressed	10 to 14 V (*1)

(*1): When operating the answer back function.

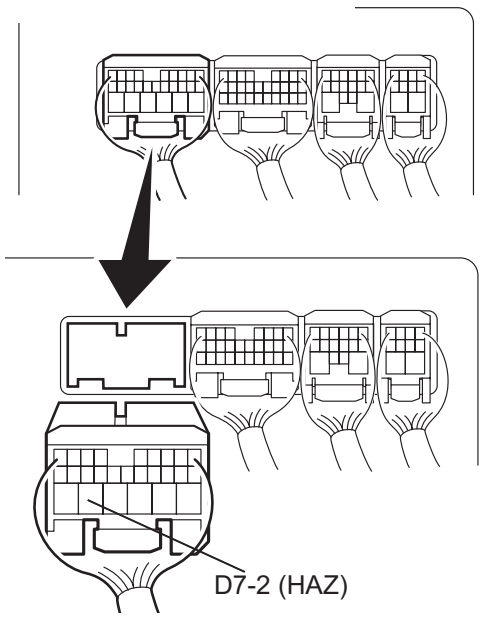
NG → **Go to step 3**

OK

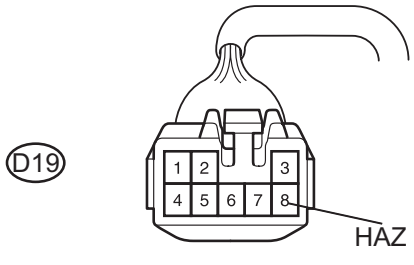
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

3	CHECK HARNESS AND CONNECTOR (BETWEEN MULTIPLEX NETWORK BODY ECU - TURN SIGNAL FLASHER)

Multiplex Network Body ECU Wire Harness View:



Turn Signal Flasher Assy (Wire Harness Side) Connector Front View:



N

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(a) Turn the ignition switch off.
(b) Disconnect the multiplex network body ECU (D7) connector and turn signal flasher assembly connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D7-2 (HAZ) - D19-8 (HAZ)	Always	Below 1 Ω
D7-2 (HAZ) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE TURN SIGNAL FLASHER ASSEMBLY

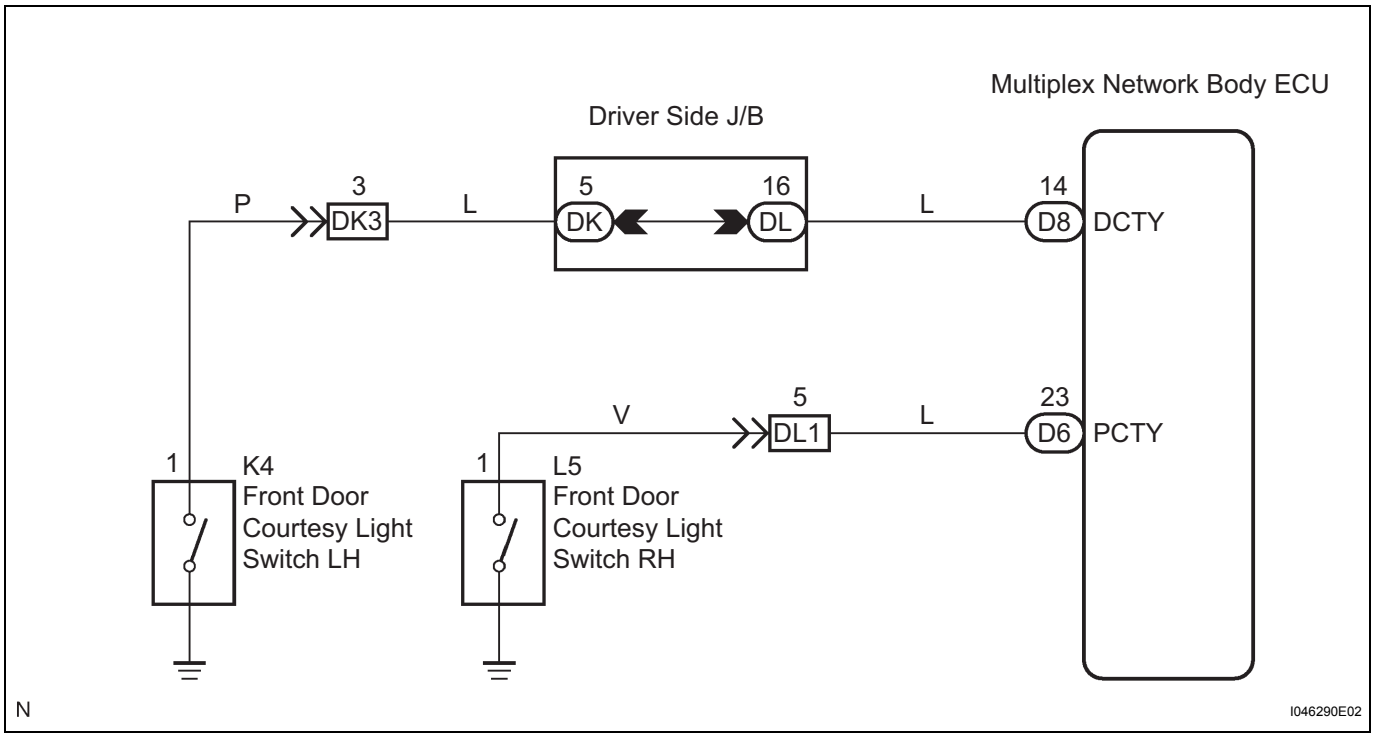
DL

Front Door Courtesy Switch Circuit

DESCRIPTION

The multiplex network body ECU detects the door open or closed status based on signals from the front door courtesy light switches, and operates the automatic lock and door ajar warning functions.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 when using the intelligent tester and start from step 2 when not using the intelligent tester.

1	READ VALUE ON INTELLIGENT TESTER (FRONT DOOR COURTESY LIGHT SWITCH)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Select the items below in the "DATA LIST" and read the display on the intelligent tester.

BODY:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
D DOR CTY SW	Driver side door courtesy light switch/ON or OFF	ON: Door is open OFF: Door is closed	-
P DOR CTY SW	Passenger side door courtesy light switch/ON or OFF	ON: Door is open OFF: Door is closed	-

OK:

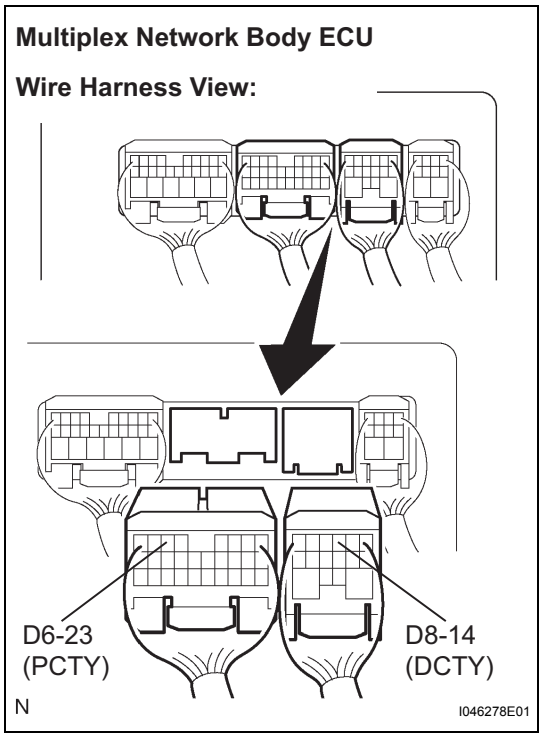
When each front door is opened/closed, the display will change as shown above.

NG → **Go to step 2**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT MULTIPLEX NETWORK BODY ECU (D, PCTY TERMINALS)



(a) Turn the ignition switch off.
(b) Disconnect the multiplex network body ECU (D6, D8) connectors.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

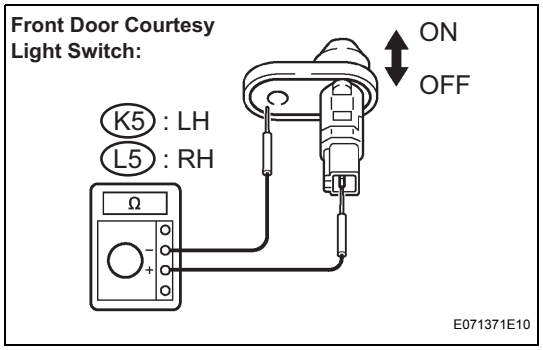
Tester Connection	Condition	Specified Condition
D8-14 (DCTY) - Body ground	Driver side door is open	Below 1 Ω
D8-14 (DCTY) - Body ground	Driver side door is closed	10 kΩ or higher
D6-23 (PCTY) - Body ground	Passenger side door is open	Below 1 Ω
D6-23 (PCTY) - Body ground	Passenger side door is closed	10 kΩ or higher

NG → **Go to step 3**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

3 INSPECT FRONT DOOR COURTESY LIGHT SWITCH ASSEMBLY



(a) Remove the front door courtesy light switch.
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
1 - Body ground	Switch ON (Shaft is not pressed)	Below 1 Ω
1 - Body ground	Switch OFF (Shaft is pressed)	10 kΩ or higher

NG → **REPLACE FRONT DOOR COURTESY LIGHT SWITCH ASSEMBLY**

OK

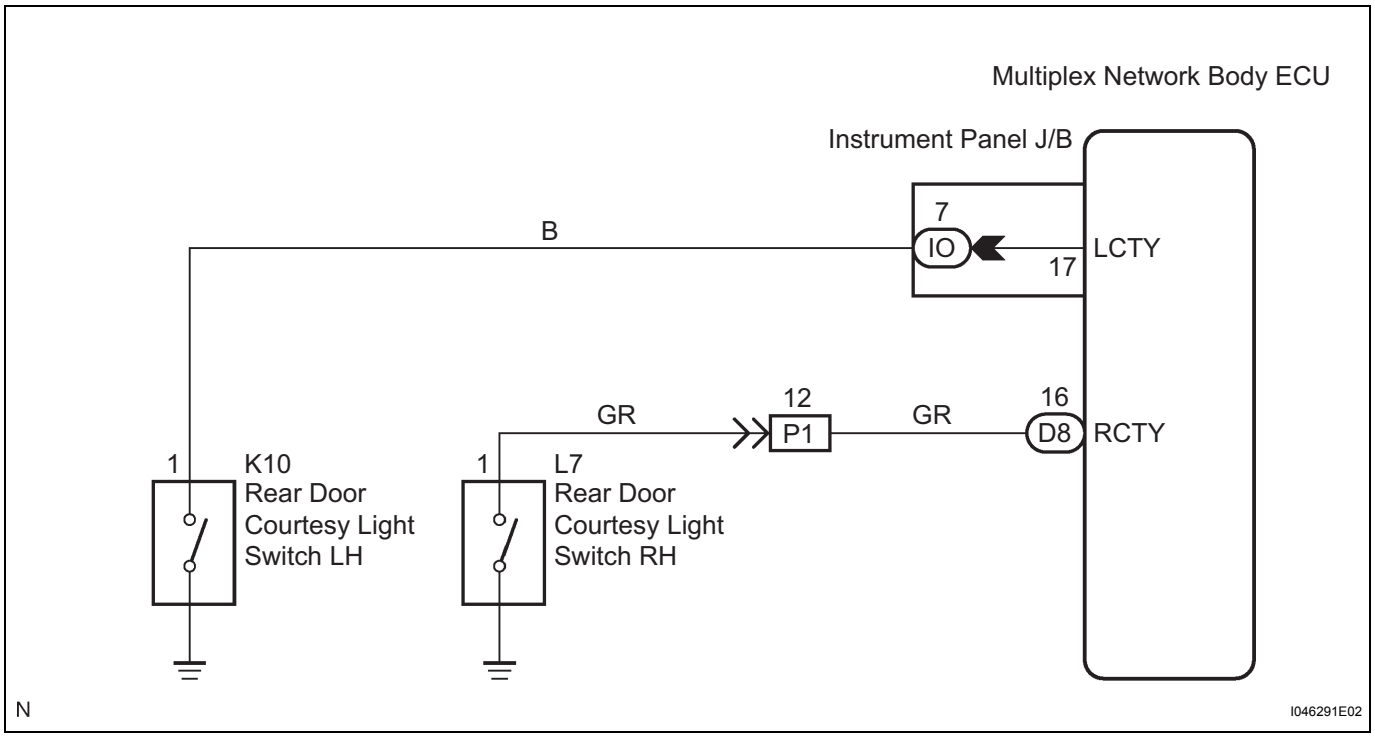
REPAIR OR REPLACE HARNESS OR CONNECTOR (BETWEEN MULTIPLEX NETWORK BODY ECU, BODY GROUND - FRONT DOOR)

Rear Door Courtesy Switch Circuit

DESCRIPTION

The multiplex network body ECU detects the door open or closed status based on signals from the rear door courtesy light switches, and operates the automatic lock and door ajar warning functions.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 when using the intelligent tester and start from step 2 when not using the intelligent tester.

1	READ VALUE ON INTELLIGENT TESTER (REAR DOOR COURTESY LIGHT SWITCH)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Select the items below in the "DATA LIST" and read the display on the intelligent tester.

BODY:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
Rr DOR CTY SW	Rear door courtesy light switch/ ON or OFF	ON: Either LH or RH door is open OFF: Both LH and RH doors are closed	-

OK:

When the rear doors are opened/closed, the display will change as shown above.

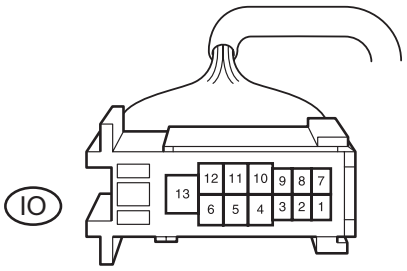
NG → **Go to step 2**

OK

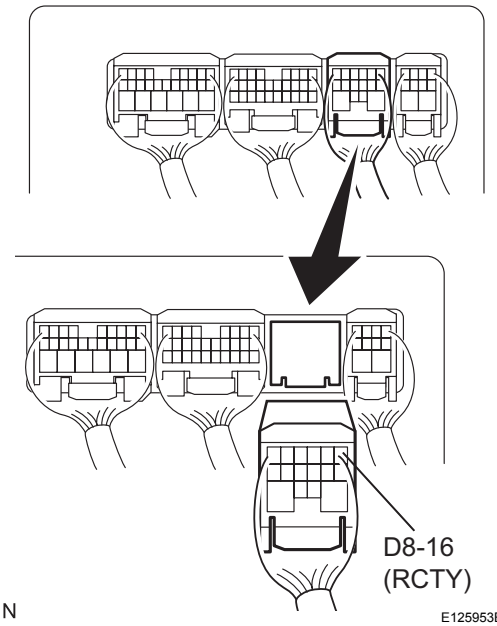
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT MULTIPLEX NETWORK BODY ECU (L, RCTY TERMINALS)

Instrument Panel J/B (Wire Harness Side) Connector Front View:



Multiplex Network Body ECU Wire Harness View:



(a) Turn the ignition switch off.
(b) Disconnect the instrument panel J/B (IO) connector and the multiplex network body ECU (D8) connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

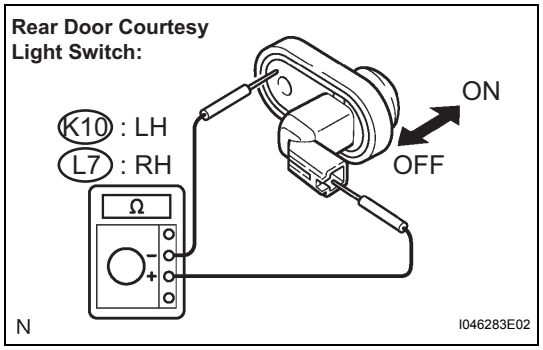
Tester Connection	Condition	Specified Condition
IO-7 (LCTY) - Body ground	Rear door (LH) is open	Below 1 Ω
IO-7 (LCTY) - Body ground	Rear door (LH) is closed	10 kΩ or higher
D8-16 (RCTY) - Body ground	Rear door (RH) is open	Below 1 Ω
D8-16 (RCTY) - Body ground	Rear door (RH) is closed	10 kΩ or higher

NG → **Go to step 3**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

3	**INSPECT REAR DOOR COURTESY LIGHT SWITCH ASSEMBLY**



(a) Remove the rear door courtesy light switch.
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
1 - Body ground	Switch ON (Shaft is not pressed)	Below 1 Ω
1 - Body ground	Switch OFF (Shaft is pressed)	10 kΩ or higher

NG → **REPLACE REAR DOOR COURTESY LIGHT SWITCH ASSEMBLY**

OK

REPAIR OR REPLACE HARNESS OR CONNECTOR (BETWEEN MULTIPLEX NETWORK BODY ECU, BODY GROUND - REAR DOOR)

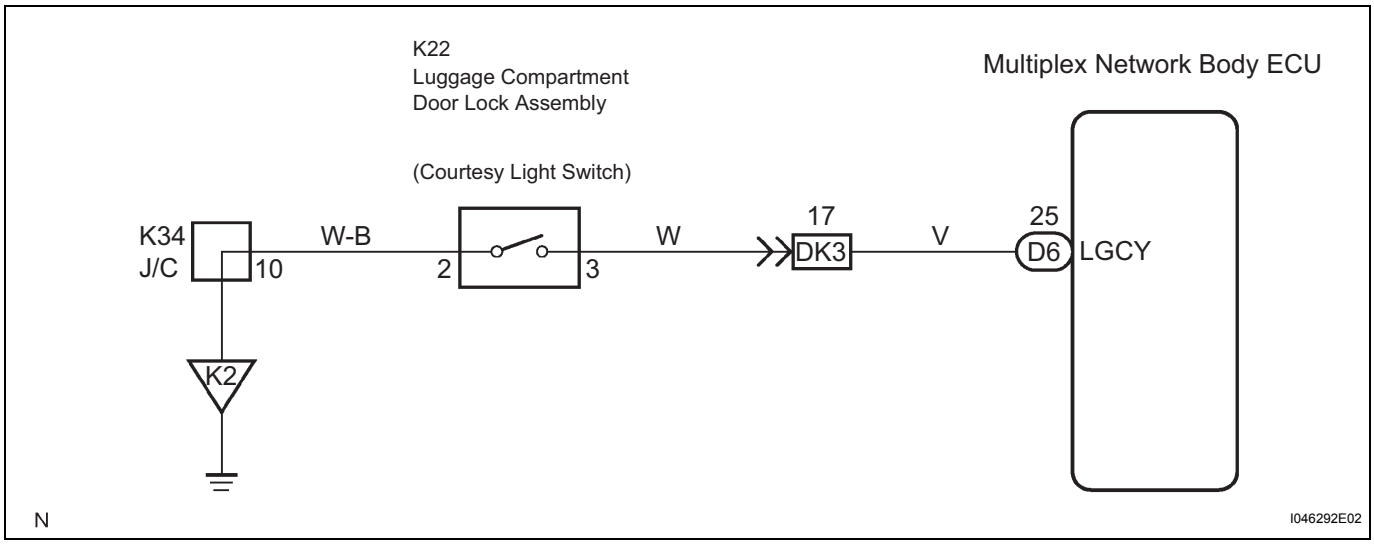
DL

Luggage Compartment Door Courtesy Switch Circuit

DESCRIPTION

The multiplex network body ECU detects the luggage compartment door open or closed status based on signals from the luggage compartment door courtesy light switch (luggage room light).

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
Start the inspection from step 1 when using the intelligent tester and start from step 2 when not using the intelligent tester.

1	READ VALUE OF INTELLIGENT TESTER (LUGGAGE COMPARTMENT DOOR COURTESY LIGHT SWITCH)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Select the items below in the "DATA LIST" and read the display on the intelligent tester.

BODY:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
LUGG COURTESY SW	Luggage compartment door courtesy light switch/ON or OFF	ON: Door is open OFF: Door is closed	-

OK:
When the luggage compartment door is operated, the display changes as shown above.

NG → **Go to step 2**

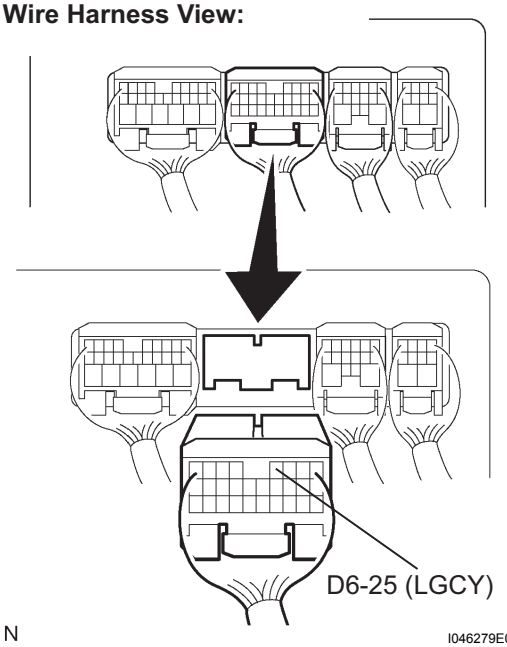
OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT MULTIPLEX NETWORK BODY ECU (LGCY TERMINAL)

Multiplex Network Body ECU

Wire Harness View:



(a) Turn the ignition switch off.
(b) Disconnect the multiplex network body ECU (D6) connectors.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D6-25 (LGCY) - Body ground	Luggage compartment light is ON (Luggage compartment door is open (unlocked))	Below 1 Ω
D6-25 (LGCY) - Body ground	Luggage compartment light is OFF (Luggage compartment door is closed (locked))	10 kΩ or higher

NG → **Go to step 3**

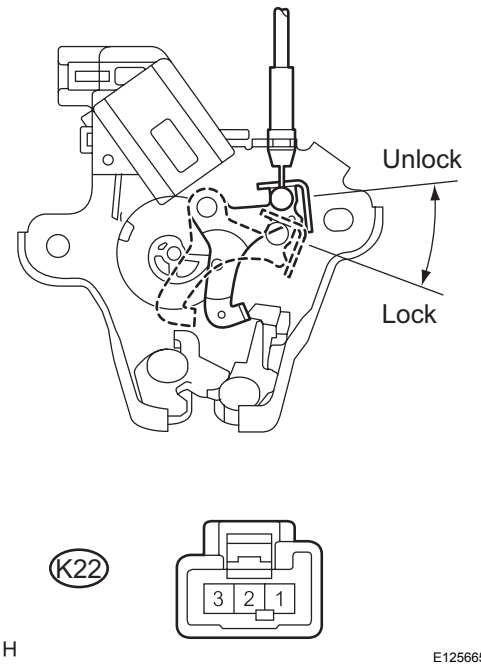
OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

DL

3	INSPECT LUGGAGE COMPARTMENT DOOR LOCK ASSEMBLY

Luggage Compartment Door Lock Assembly:



(a) Remove the luggage compartment door lock assembly.
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
K22-2 - K22-3	Unlock position	Below 1 Ω
K22-2 - K22-3	Lock position	10 kΩ or higher

NG → **REPLACE LUGGAGE COMPARTMENT DOOR LOCK ASSEMBLY (LUGGAGE COMPARTMENT DOOR COURTESY LIGHT SWITCH)**

OK

REPAIR OR REPLACE HARNESS OR CONNECTOR (BODY ECU, BODY GROUND - COURTESY SWITCH)

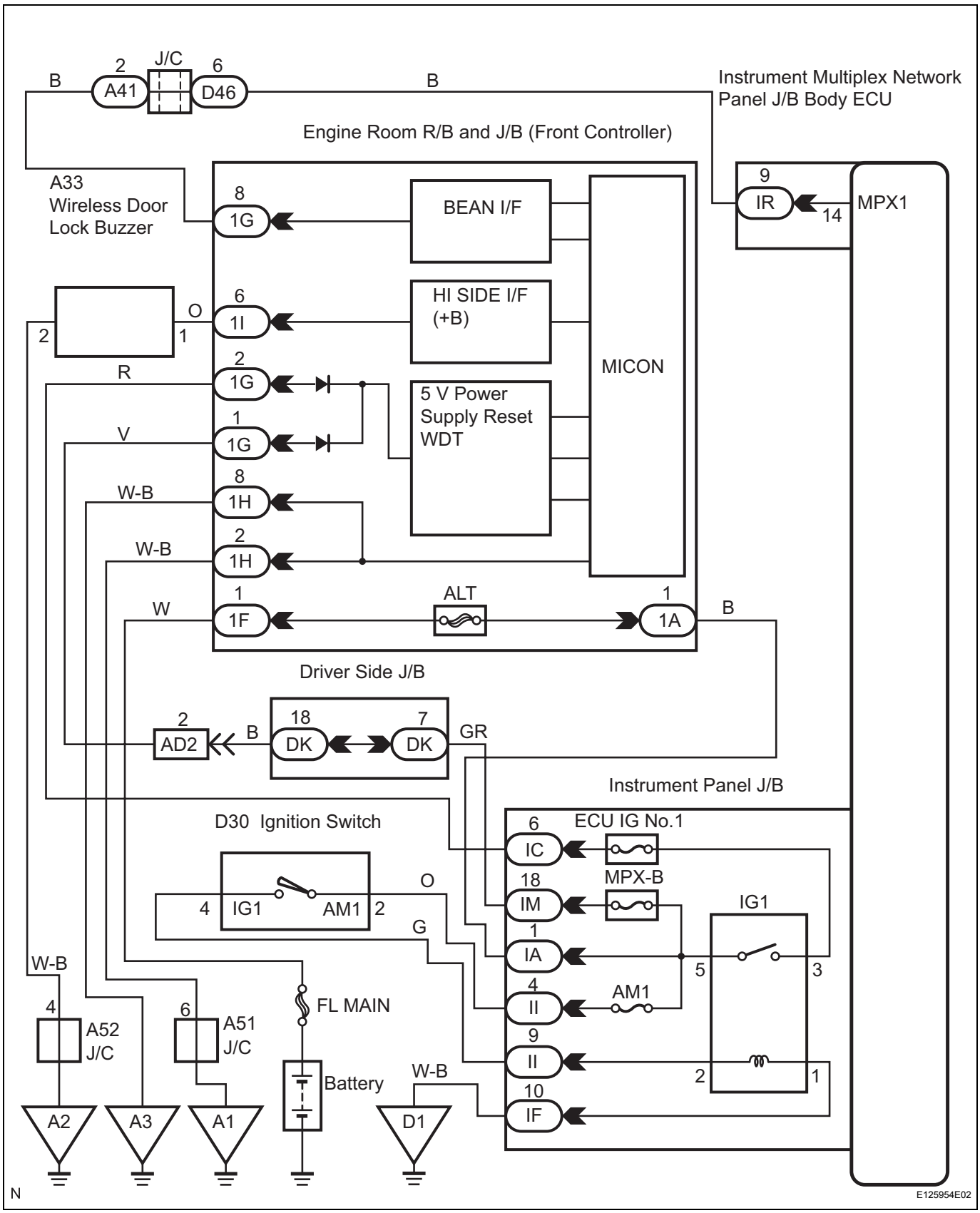
DL

Wireless Door Lock Buzzer Circuit

DESCRIPTION

The multiplex network body ECU activates the wireless door lock buzzer when detecting a lock/unlock signal from the door control transmitter.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
The wireless door lock buzzer circuit uses BEAN for communication. If there are malfunctions in this circuit, check for DTCs in the multiplex communication system.

1	CHECK FRONT CONTROLLER

(a) Check if the front controller properly controls each function (lighting, wiper, buzzer, etc.).

Result

Condition	Proceed to
OK	A
NG (All functions (lighting, wiper, buzzer, etc.) are not controlled.)	B
NG (Only buzzer is not controlled.)	C

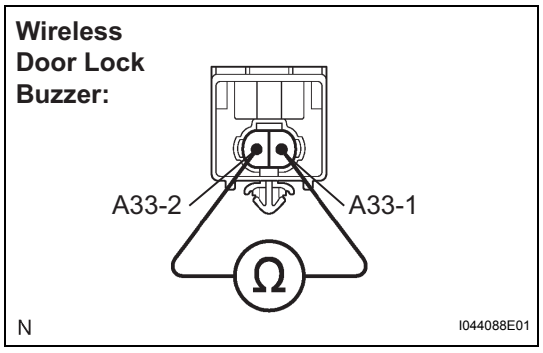
B → REPAIR OR REPLACE HARNESS OR CONNECTOR (POWER SOURCE OR GROUND CIRCUIT)

C → Go to step 2

A

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT WIRELESS DOOR LOCK BUZZER



(a) Disconnect the wireless door lock buzzer connector.
(b) Measure the resistance according to the value(s) in the table below.
HINT:
The buzzer circuit is built into the ECU, not into the buzzer, itself. When battery voltage is applied directly to the buzzer, the buzzer will not sound.

Resistance

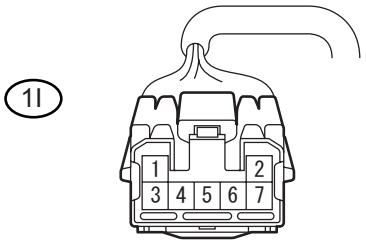
Tester Connection	Condition	Specified Condition
A33-1 - A33-2	Always	Approx. 1 kΩ

NG → REPLACE WIRELESS DOOR LOCK BUZZER

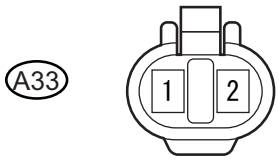
OK

3	CHECK HARNESS AND CONNECTOR (BETWEEN FRONT CONTROLLER, BODY GROUND AND DOOR LOCK BUZZER)

Engine Room R/B and J/B (Wire Harness Side) Connector Front View:



Wireless Door Lock Buzzer (Wire Harness Side) Connector Front View:



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(a) Disconnect the engine room R/B and J/B (1I) connector.
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
1I-6 - A33-1	Always	Below 1 Ω
1I-6 - Body ground	Always	10 kΩ or higher
A33-2 - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

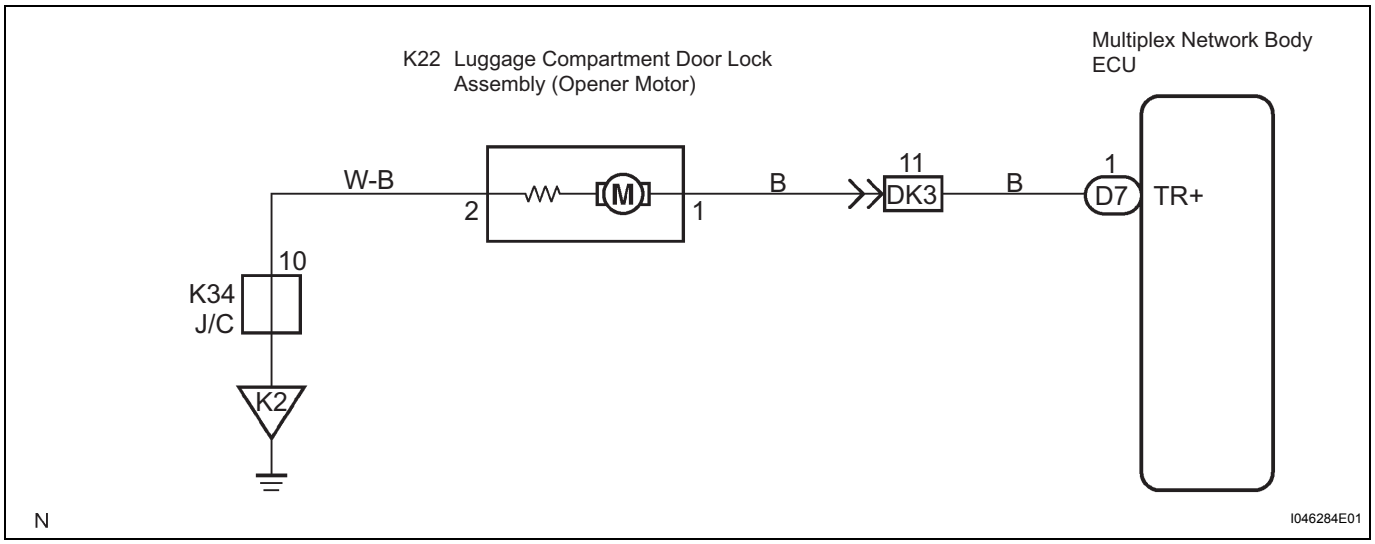
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Luggage Compartment Door Opener Circuit

DESCRIPTION

The multiplex network body ECU operates the luggage compartment door opener motor when a luggage compartment door open (trunk opener) signal from the transmitter is detected.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Start the inspection from step 1 when using the intelligent tester and start from step 2 when not using the intelligent tester.

1	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (LUGGAGE COMPARTMENT DOOR OPENER MOTOR)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Select "ACTIVE TEST" mode on the intelligent tester.

BODY:

Item	Vehicle Condition / Test details	Diagnostic Note
TRUNK / BDOR OPEN	Turns luggage compartment door opener motor ON/OFF	Observe luggage compartment door

(d) Check that the luggage compartment door can be opened and closed when the door opener motor is turned on and off.

OK:

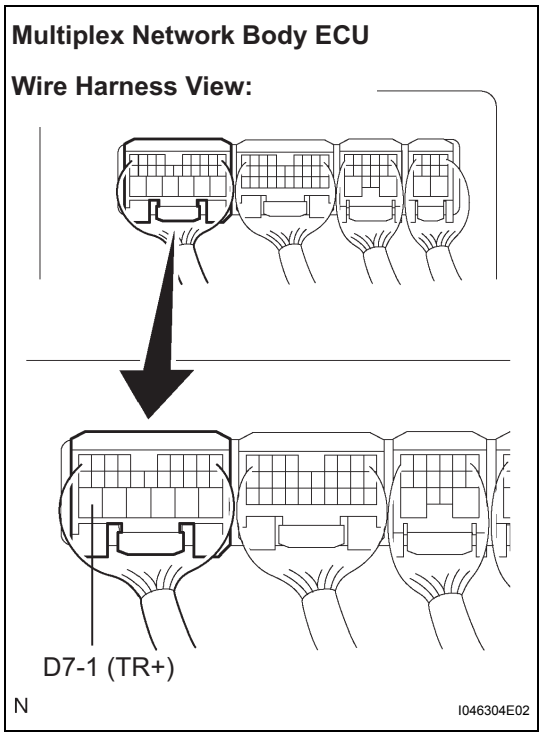
The luggage compartment door opens and closes in accordance with the intelligent tester operation.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT MULTIPLEX NETWORK BODY ECU (TR+ TERMINAL)



(a) Measure the voltage according to the value(s) in the table below.

Voltage

Tester Connection	Condition	Specified Condition
D7-1 (TR+) - Body ground	Luggage compartment door is closed (locked)	Below 1 V
D7-1 (TR+) - Body ground	Luggage compartment door is opened (unlocked)	10 to 14 V (*1)

(*1): When operating the motor.

NG → **Go to step 3**

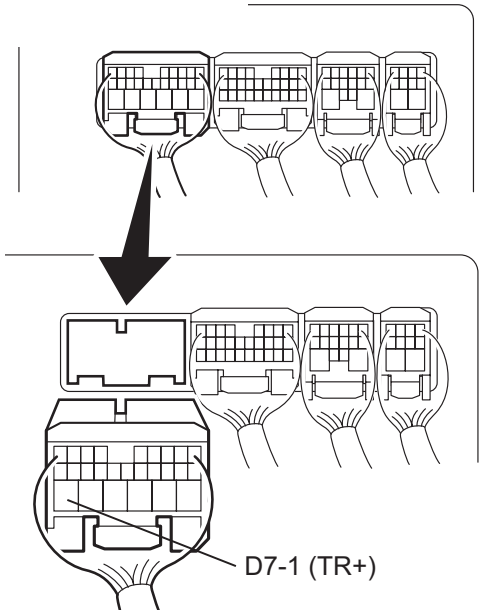
OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

3	CHECK HARNESS AND CONNECTOR (BETWEEN BODY ECU, BODY GROUND AND OPENER MOTOR)

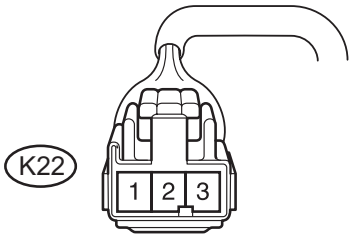
Multiplex Network Body ECU

Wire Harness View:



Luggage Compartment Door Opener Motor

(Wire Harness Side) Connector Front View:



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(a) Turn the ignition switch off.
(b) Disconnect the multiplex network body ECU (D7) connector.
(c) Remove the luggage compartment door lock assembly.
(d) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D7-1 (TR+) - K22-1	Always	Below 1 Ω
D7-1 (TR+) - Body ground	Always	10 kΩ or higher
K22-2 - Body ground	Always	Below 1 Ω

DL

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

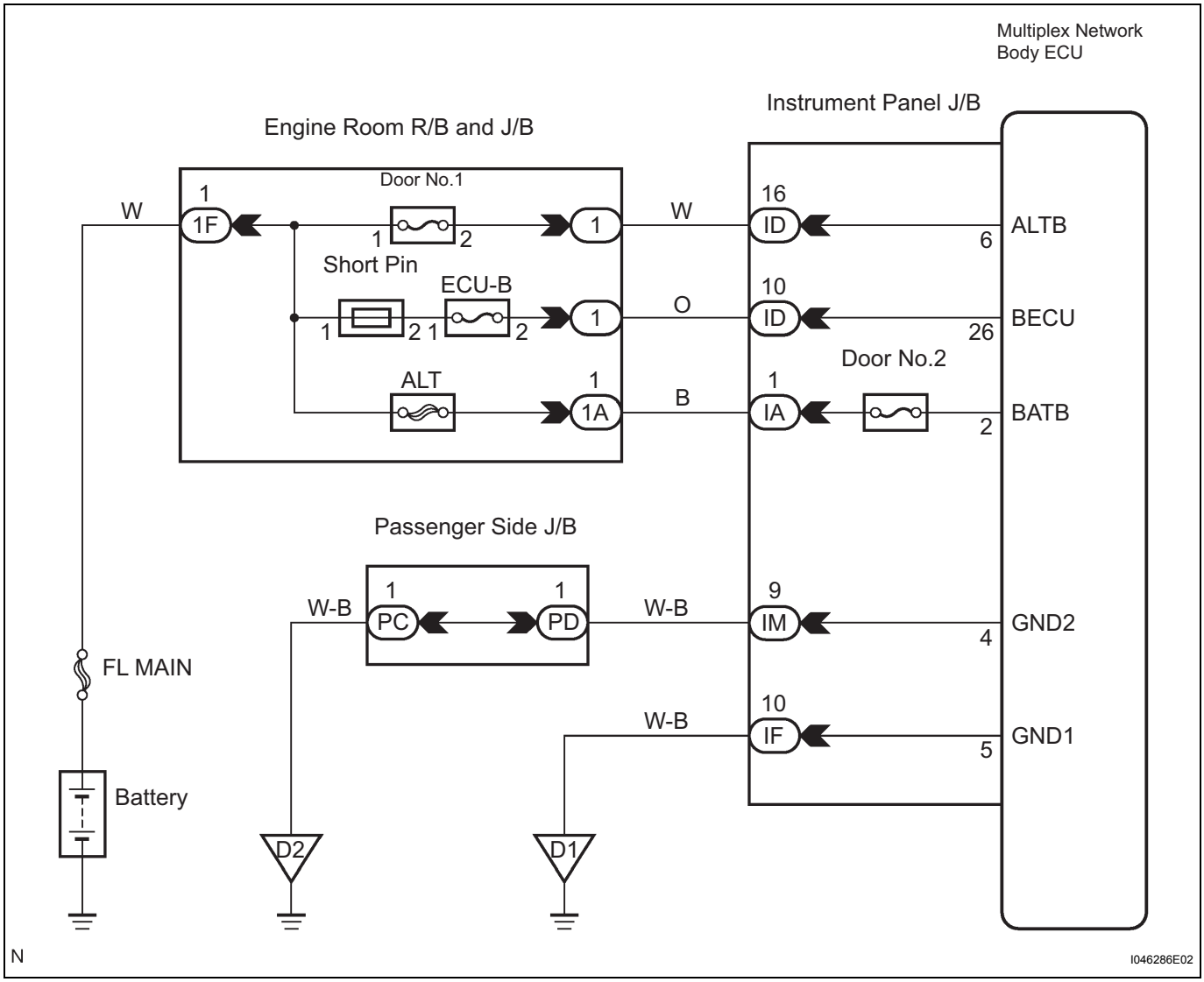
REPLACE LUGGAGE COMPARTMENT DOOR LOCK ASSEMBLY (LUGGAGE COMPARTMENT DOOR OPENER MOTOR)

Power Source Circuit

DESCRIPTION

This is the power circuit for the multiplex network body ECU.
Power is supplied to the multiplex network body ECU via the BECU circuit. The BECU circuit is used as the power source circuit of the ECU.

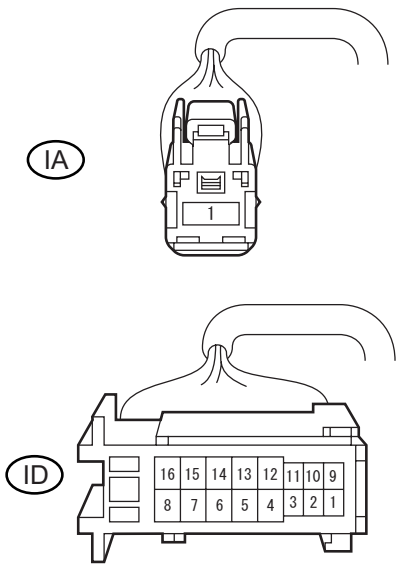
WIRING DIAGRAM



INSPECTION PROCEDURE

1 INSPECT MULTIPLEX NETWORK BODY ECU (BATB, BECU - ALTB TERMINALS)

Instrument Panel J/B (Wire Harness Side) Connector Front View:



(a) Disconnect the instrument panel J/B (IA, ID) connectors.
(b) Measure the voltage according to the value(s) in the table below.

Voltage

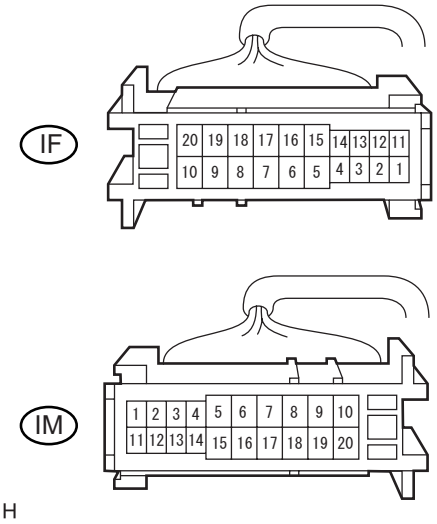
Tester Connection	Condition	Specified Condition
IA-1 (BATB) - Body ground	Always	10 to 14 V
ID-10 (BECU) - Body ground	Always	10 to 14 V
ID-16 (ALTB) - Body ground	Always	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR (BATB, BECU OR ALTB CIRCUIT)**

OK

2 INSPECT MULTIPLEX NETWORK BODY ECU (GND TERMINAL)

Instrument Panel J/B (Wire Harness Side)Connector Front View:



(a) Disconnect the instrument panel J/B (IF, IM) connectors.
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
IF-10 (GND1) - Body ground	Always	Below 1 Ω
IM-9 (GND2) - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR (GND CIRCUIT)**

DL

OK

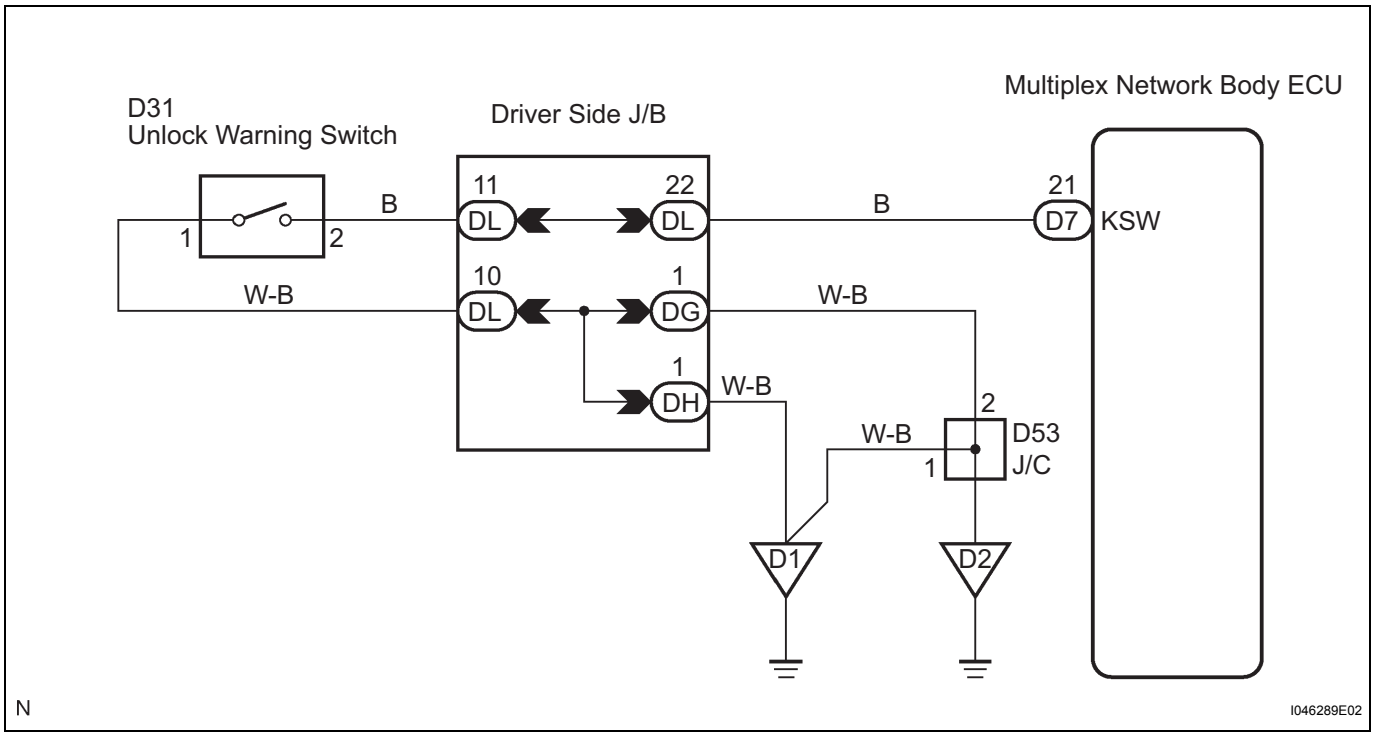
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Unlock Warning Switch Circuit

DESCRIPTION

The multiplex network body ECU determines whether the key is inserted into the ignition key cylinder based on signals from the unlock warning switch.
Signals from the unlock warning switch are used to operate wireless door lock control system functions such as automatic lock and door ajar warning.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
Start the inspection from step 1 when using the intelligent tester and start from step 2 when not using the intelligent tester.

1	READ VALUE ON INTELLIGENT TESTER (UNLOCK WARNING SWITCH)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Select the items below in the "DATA LIST" and read the display on the intelligent tester.

BODY:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
KEY UNLK WRN SW	Unlock warning switch/ON or OFF	ON: Ignition key inserted OFF: Ignition key is not inserted	-

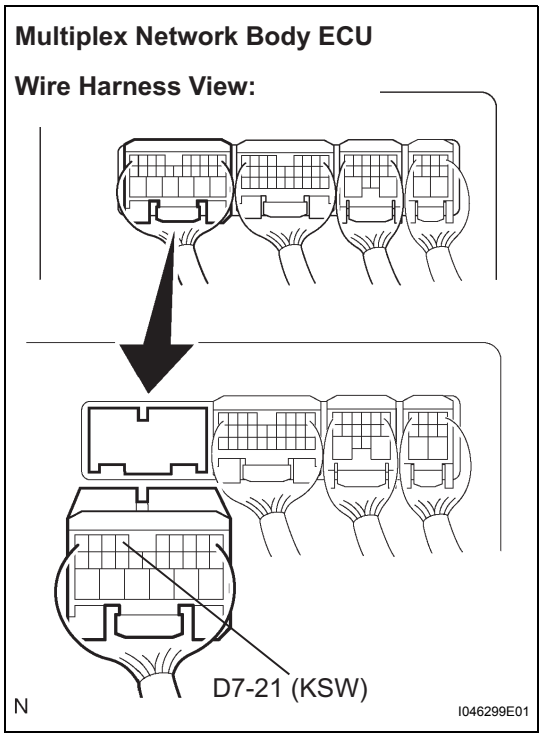
OK:
When the ignition switch is operated, the display changes as shown above.

NG → Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT MULTIPLEX NETWORK BODY ECU (KSW TERMINAL)



(a) Turn the ignition switch off.
(b) Disconnect the multiplex network body ECU (D7) connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

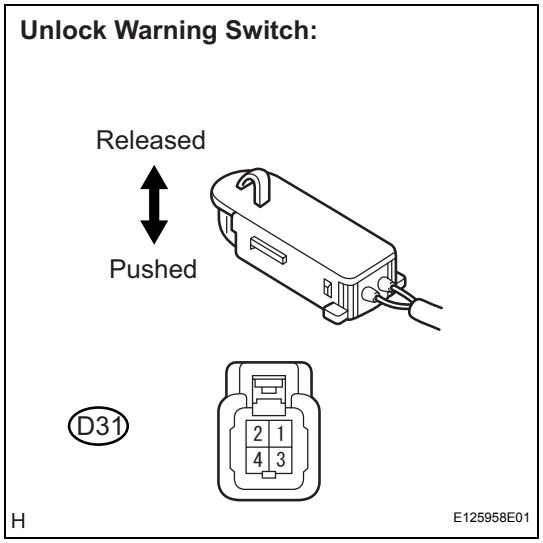
Tester Connection	Condition	Specified Condition
D7-21 (KSW) - Body ground	Ignition key is inserted	Below 1 Ω
D7-21 (KSW) - Body ground	Ignition key is not inserted	10 kΩ or higher

NG → Go to step 3

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

3	INSPECT UNLOCK WARNING SWITCH



(a) Disconnect the unlock warning switch connector.
(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D31-1 - D31-2	Switch pushed (Ignition key is inserted)	Below 1 Ω
D31-1 - D31-2	Switch released (Ignition key is not inserted)	10 kΩ or higher

NG → **REPLACE UNLOCK WARNING SWITCH**

OK

REPAIR OR REPLACE HARNESS OR CONNECTOR (BETWEEN BODY ECU, BODY GROUND - UNLOCK WARNING SWITCH)

SMART KEY SYSTEM

PRECAUTION

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

System	See procedure
Power Window Control System	IN-29
Sliding Roof Control System	

1. PRECAUTIONS WHEN USING THE INTELLIGENT TESTER

(a) When troubleshooting the smart key system using the intelligent tester with the engine switch off, connect the intelligent tester to the vehicle and repeat turning any of the courtesy light switches on and off until communication between the tester and the vehicle begins (the interval between ON and OFF should be less than 1.5 sec.).

(b) After DTCs are all cleared, check if the trouble occurs again 6 seconds after the engine switch is turned on (IG).

2. PRECAUTIONS FOR EACH FUNCTION

(a) Precautions for the key:
The key is a precision instrument. Be sure to observe the following:
(1) Do not apply a strong impact.
(2) Do not keep the key in a high temperature area for a long time.
(3) Do not use an ultrasonic washing machine to clean the key.
(4) Keep the key away from magnets or magnetized items during use.
(5) Do not attach any stickers to the key.

(b) Precautions for entry unlock function:
- If the door handle is touched with gloved hands, the response may be delayed.
- Make sure that the doors are unlocked by the entry unlock function before puling on the door handle to open the doors.
- The doors may not be unlocked if the key is suddenly brought up to the vehicle or the door handle is lightly touched. If the doors cannot be unlocked, the door unlock operation will be repeated 4 times. At this time, the door may not be unlocked with the door handle being pulled for some mechanical reason. Be sure to put the handle back to the original position if the door cannot be opened by puling on the handle.

- If the key is brought too close to the transmitter on the outside of the vehicle, the door may not be unlocked because the key cannot react to the strong radio wave output from the transmitter.
- If the key is within the detection area outside of the vehicle, the door can be unlocked even when anyone other than the person who is carrying the key holds the door handle. However, the doors other that the door that the codes match will not be unlocked. (If the key is within the driver's door detection area outside of the vehicle, the door will be unlocked when anyone who is carrying the key holds the drive's door handle. However, if any door handles other than that of the driver's door is held, the doors will not be unlocked.)
- If the door is not opened after the door unlock operation, the door automatically locks after approximately 30 seconds.
- If a large amount of water is applied to the door handle, because of a car wash or heavy rain, with the key in the detection area outside of the vehicle, the antenna built into the outside handle will react to unlock the door. However, the door will be locked again after approximately 30 seconds if the door is not opened.
- If the key of the smart key system is used while it is being carried with the key of another smart key system, the time before the entry unlock operation will become longer than usual. This is not a malfunction.

(c) Precautions for entry lock function:

- Be sure to firmly push the lock switch on the door handle. The door may not lock if it is lightly pushed.
- If the key is brought too close to the vehicle, such as to the windows or door handle, the entry lock function may not operate. Furthermore, the key left alarm may sound and the entry unlock will not be permitted. In this case, move the key away from the vehicle and perform the entry lock operation. Then, perform the entry unlock operation again.
- Do not touch the lock switch while opening or closing the door. If the lock switch is pushed with the key carried while opening or closing the door, the door ajar alarm will sound (peeping sound for 10 seconds to the outside of the vehicle).
- Be sure to carry the key. The key left prevention function may not operate if the key is on the instrument panel, rear tray or floor, or in the glove box, resulting in key confinement.

- If the door is locked with the operation linked to the key, wireless operation or manual operation while the key is in the action areas of the cabin or luggage compartment, the entry unlock will not be permitted. If the wireless door lock operation is performed near the window or outside handle, the entry unlock may no be performed. In this case, perform the wireless door unlock operation to unlock the door.
- Entry lock will not be permitted for 3 seconds after the door lock operation (including entry lock and wireless operation).

(d) Precautions for the push button start function:

- Before starting the engine, firmly depress the brake pedal until the indicator of the engine switch lights up in green.
- The power source condition (OFF, ACC, ON) is always stored in the vehicle. After the battery is removed and reinstalled, the power source condition before battery removal will be restored. Be sure to turn the engine switch off before disconnecting the cable from the battery terminal. Be careful when the power source condition before the battery becomes dead cannot be confirmed.
- After the battery is removed and reinstalled, be sure to wait 10 seconds or more before engine start. The engine may not start immediately after the battery is reinstalled.
- If the key is held over the engine switch to start the engine because the key battery has died, the following warning will sound:

(1) Driver's door open → close:

- Warning to inform that the P position power remains on
- Warning to inform that any of power for the shift positions other than P remains on

(2) Doors other than the driver's door open → close:

- Warning to inform that any of the passengers is carrying the key out of the vehicle

HINT:

These warnings will sound because whether the key is in the cabin or not cannot be determined. They do not indicate system malfunctions.

(e) Precautions for the function to prevent key confirmation in the luggage compartment:

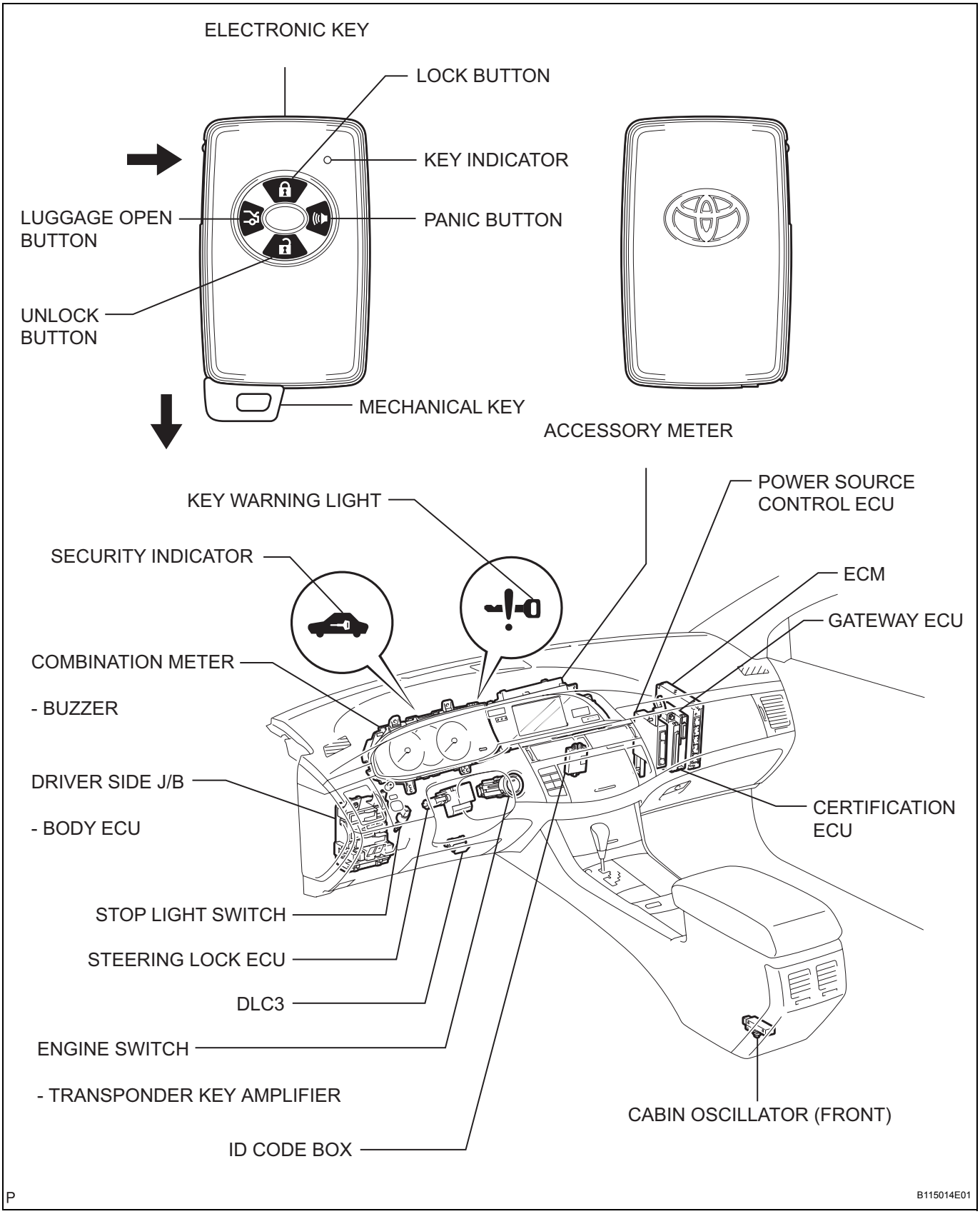
- Do not place the key in the luggage compartment.
  If the luggage compartment is closed with the key in it when all the doors are locked, the alarm the inform key confinement will operate (peeping sound for 2 seconds to the outside of the vehicle). However, the alarm may no operate for some reason relating to the key location (near the spare tire or the side of the luggage compartment), the key condition (covered with metal or near metal), or ambient radio waves.
- If the luggage compartment is closed with the key in it when any of the doors is unlocked or open, the key confinement prevention function will not operate. In this case, use the luggage compartment opener in the cabin to open the luggage compartment and take out the key.
- The alarm may erroneously operate in the following conditions. If you can confirm that you carry the key or the key is in the cabin, there is no problem. The entry luggage compartment open function may not operate if the alarm erroneously operates. In this case, use the luggage compartment opener in the cabin or perform wireless operation to open the luggage compartment.
  (a) The key is brought into the cabin after the luggage compartment is opened, then the luggage compartment is closed.
  (b) The luggage compartment is closed by the person who is carrying the key.
    * If the alarm operates when the luggage compartment is closed with all the doors locked, the key must be in the cabin or luggage compartment. Check the cabin and luggage compartment to find the key.
    * If the luggage compartment is closed with the key in it when all the doors are locked, the alarm will sounds and the luggage compartment can be opened. This may cause vehicle theft.
    * Do not open or close the luggage compartment after all the doors are locked if you want to keep the spare keys in the cabin. As a result, the alarm may sound and the luggage compartment can be opened, causing vehicle theft.

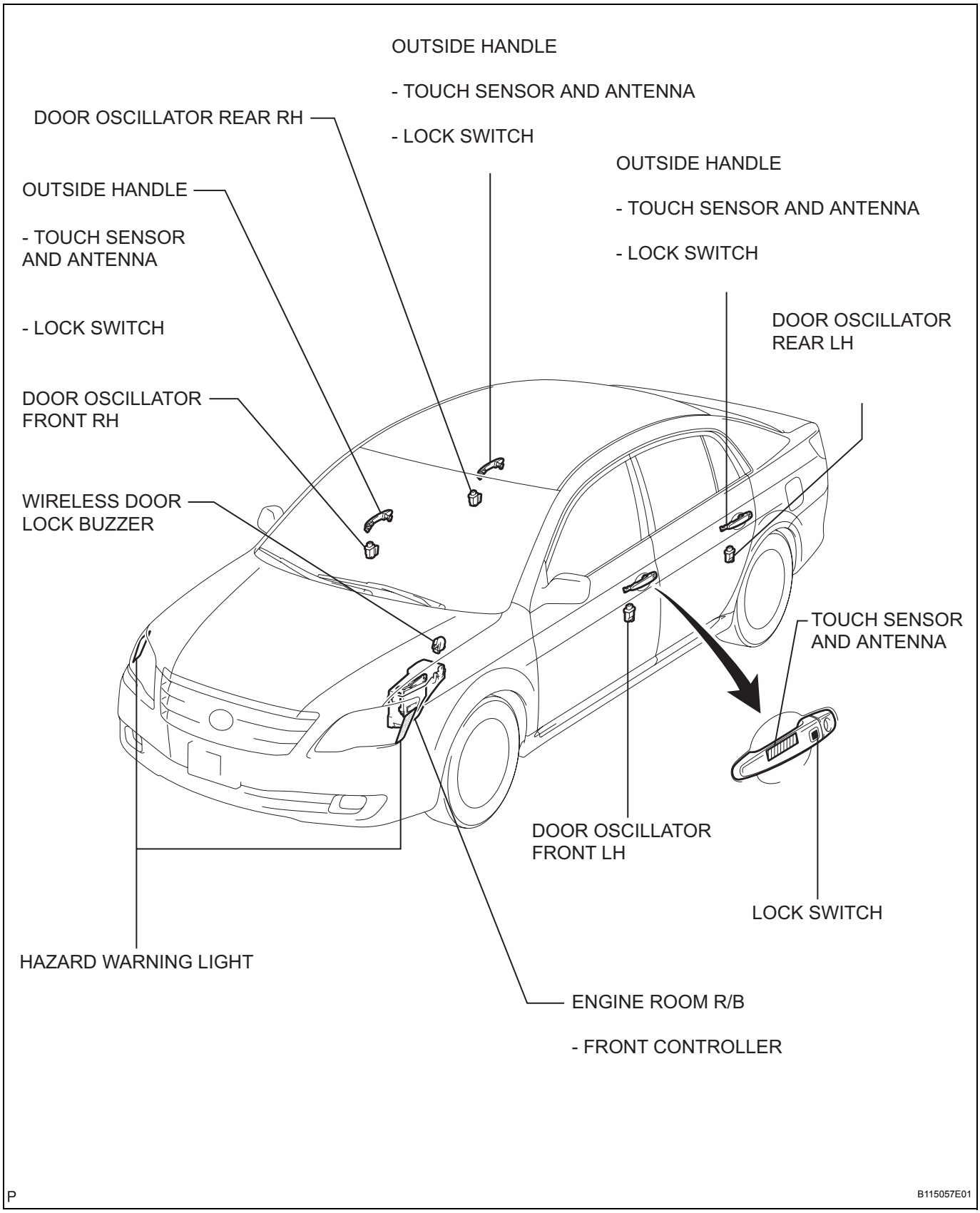
(f) Precautions for the battery built into the key and the vehicle battery:
- When the door is being locked, the vehicle battery is used to transmit a radio wave. The battery may be dead if the vehicle remains stopped for a long time. If the vehicle is not used for a long time, remove the battery from the vehicle or cancel the smart key system (For the cancellation procedure, See page DL-156).
- When the door is being locked with the key in the action area of the door oscillator, the battery is used for regular communication between the key and vehicle. If the vehicle is not used, keep the key away from the vehicle (more than 2 m (6.6 ft)).

(g) Precautions for the smart unlock mode switching function:
- Do not perform the smart unlock mode switching within a 1 m (3.3 ft) area around the vehicle.
- The smart unlock mode switching may not be performed within 5 seconds after the previous switching. Wait 5 seconds or more before performing the next switching.

(h) Precautions for the steering lock function:
- If the vehicle skids for some reason such as engine stall, do not open the doors until the vehicle completely stops safely. If any of the doors is opened during vehicle skid, the steering lock may operate.
- If the engine start and stop are repeated in a short interval, the engine may not be started. Wait 10 seconds or more and then start the engine.
- Be careful when the battery is dead because the steering lock does not operate at this time.
- After replacing the steering lock assembly, open and close the driver's door. The engine may not start if the driver's door is not opened and closed.

PARTS LOCATION




OUTSIDE HANDLE
- TOUCH SENSOR AND ANTENNA
- LOCK SWITCH
DOOR OSCILLATOR REAR RH
OUTSIDE HANDLE
- TOUCH SENSOR AND ANTENNA
- LOCK SWITCH
OUTSIDE HANDLE
- TOUCH SENSOR AND ANTENNA
- LOCK SWITCH
DOOR OSCILLATOR REAR LH
DOOR OSCILLATOR FRONT RH
WIRELESS DOOR LOCK BUZZER
TOUCH SENSOR AND ANTENNA
DOOR OSCILLATOR FRONT LH
LOCK SWITCH
HAZARD WARNING LIGHT
ENGINE ROOM R/B
- FRONT CONTROLLER
P
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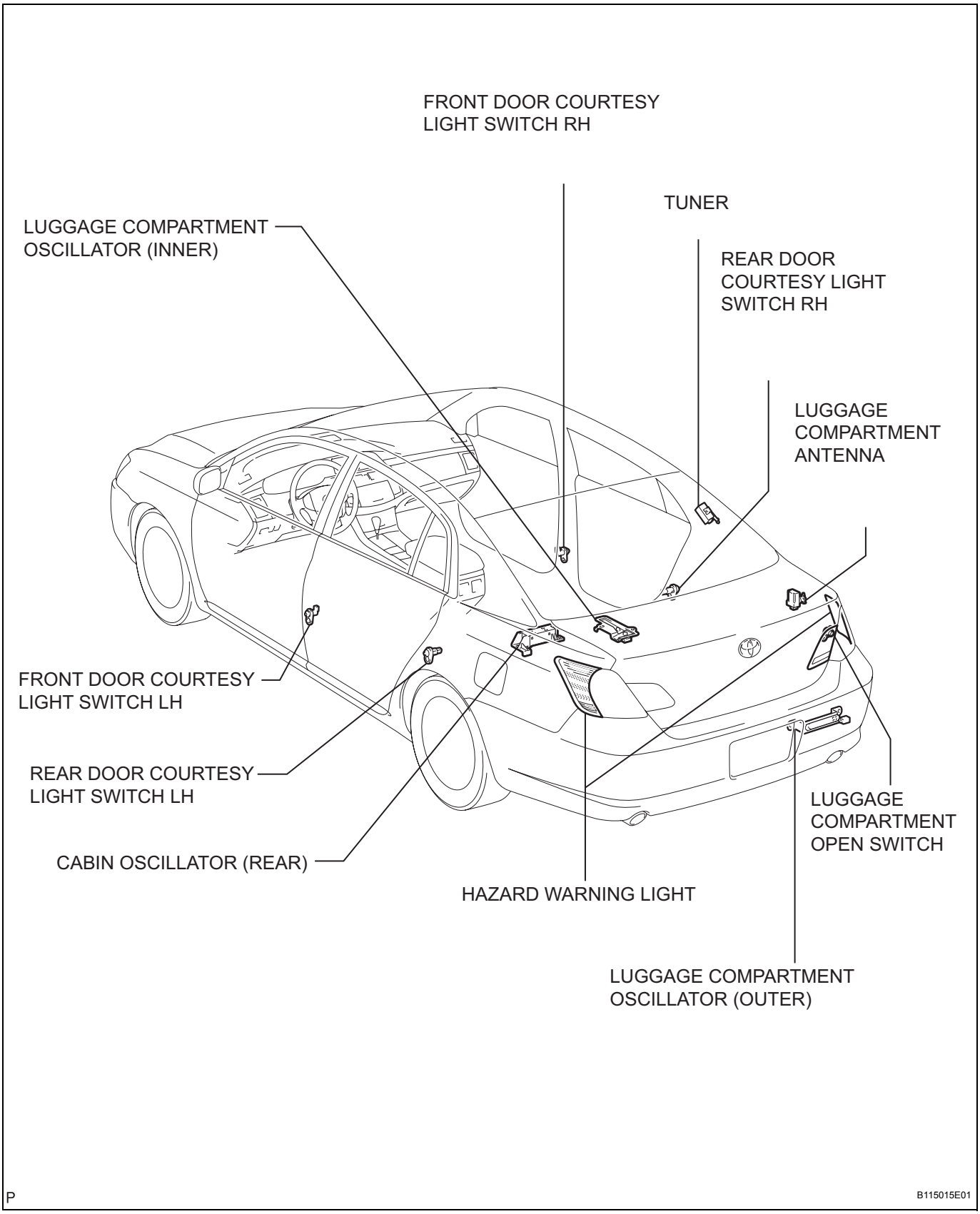
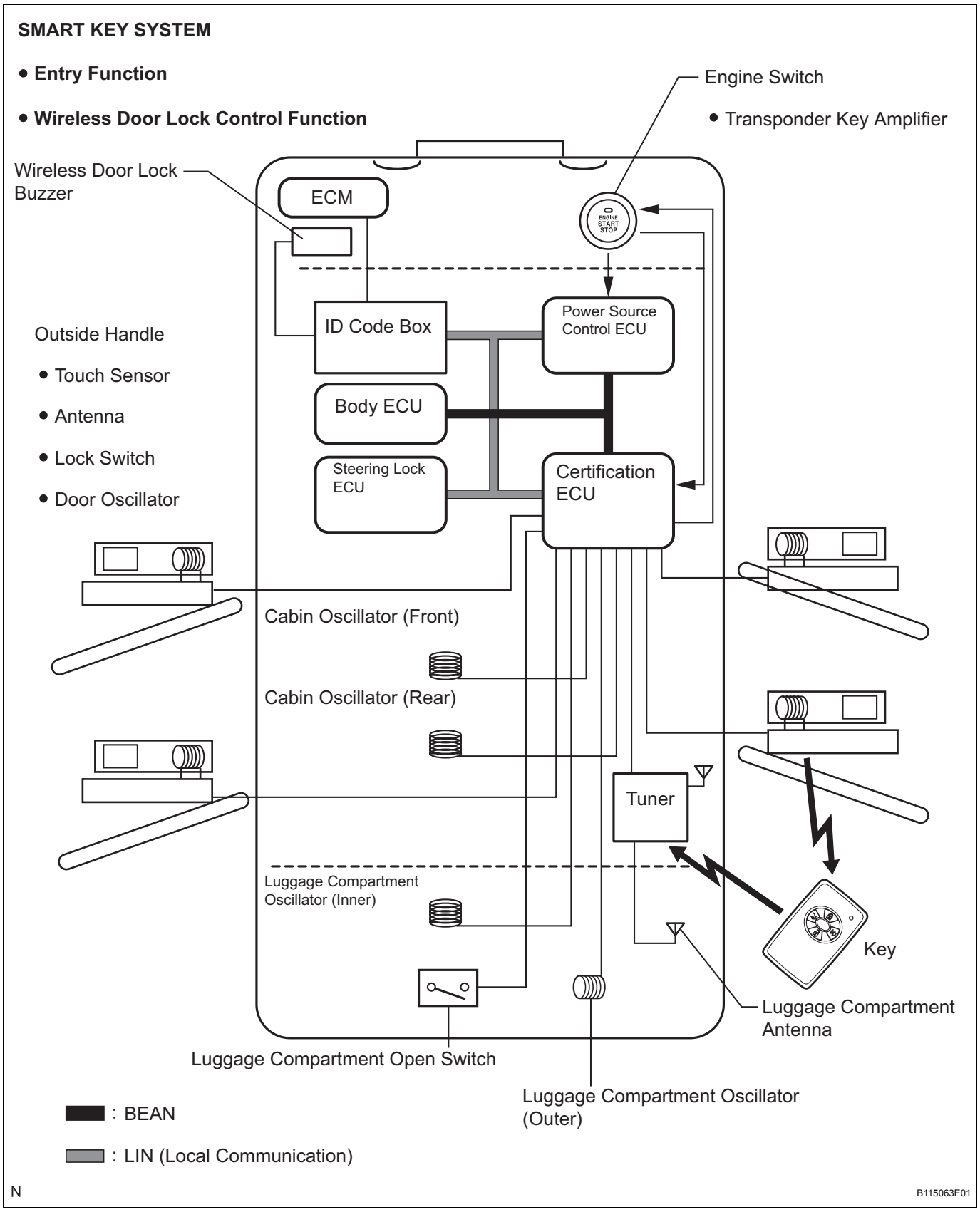

FRONT DOOR COURTESY LIGHT SWITCH RH
TUNER
LUGGAGE COMPARTMENT OSCILLATOR (INNER)
REAR DOOR COURTESY LIGHT SWITCH RH
LUGGAGE COMPARTMENT ANTENNA
FRONT DOOR COURTESY LIGHT SWITCH LH
REAR DOOR COURTESY LIGHT SWITCH LH
CABIN OSCILLATOR (REAR)
LUGGAGE COMPARTMENT OPEN SWITCH
HAZARD WARNING LIGHT
LUGGAGE COMPARTMENT OSCILLATOR (OUTER)
P
B115015E01

SYSTEM DIAGRAM



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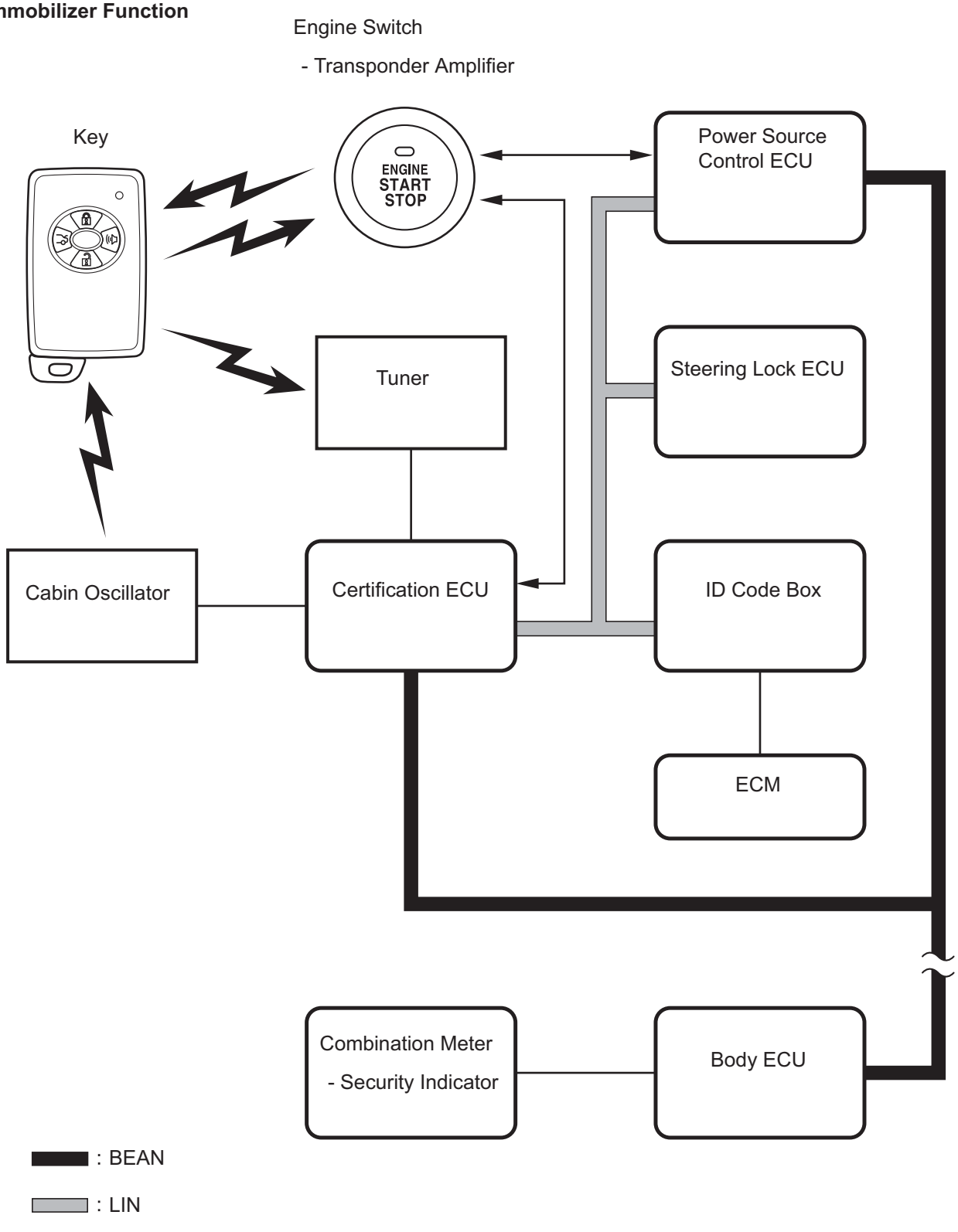
SMART KEY SYSTEM

- Immobilizer Function



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ENTRY FUNCTION

Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signals	Communication method
Combination meter	Certification ECU	• Vehicle speed signal • Travel distance information	BEAN

Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signals	Communication method
Power source control ECU	Certification ECU	• Alarm control signal • Power source control ECU information	BEAN
Combination meter	Multi-display	• Door open warning signal • Smart key system warning light signal	BEAN / AVC-LAN
Certification ECU	Combination meter	• Smart key system warning light signal • Shift position warning signal • "Single beep" sound control signal • "Intermittent beep" sound control signal • "Beep buzzer" sound control signal	BEAN
Body ECU	Certification ECU	• Door lock / unlock position signal • Courtesy light switch signal • Smart key system control signal • Alarm signal • Destination signal • Vehicle type handle signal • Door key operation switch signal • Door lock output operate signal • Wireless door lock / unlock signal • DTC erase signal • DTC response signal	BEAN
ECM	Certification ECU	Engine speed signal	BEAN / CAN

WIRELESS DOOR CONTROL FUNCTION

Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signals	Communication method
Power source control ECU	Certification ECU	Key code recognition signal	BEAN
Certification ECU	Body ECU	Wireless buzzer control signal	BEAN
Body ECU	Certification ECU	Alarm signal	BEAN

START FUNCTION

Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signals	Communication method
Combination meter	Power source control ECU	• Vehicle speed signal • Travel distance information	BEAN
Combination meter	Multi-display	• Door open warning signal • Shift position warning signal • Smart key system warning light signal	BEAN / AVC-LAN
Power source control ECU	Body ECU	Security control signal	BEAN
Body ECU	Power source control ECU	• Engine start switch illumination signal • Stop light switch signal • Courtesy light switch signal • DTC erase signal • DTC response signal	BEAN
ECM	Power source control ECU	• Engine speed signal • Shift P position signal	BEAN / CAN

ENGINE IMMOBILIZER FUNCTION

Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signals	Communication method
Combination meter	Multi-display	• Door open warning signal • Smart key system warning light signal	BEAN / AVC-LAN

Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signals	Communication method
Certification ECU	Body ECU	• Double lock fail-safe unset signal • Security indicator light flash signal • Security indicator light turn on signal • Immobilizer set / unset signal	BEAN
Power source control ECU	Certification ECU	Key code recognition signal	BEAN
ID code box	Certification ECU	DTC (B2791) signal	LIN
ID code box	Steering lock ECU	• Steering lock release signal • Matching request random number signal	LIN

START KEY SYSTEM

Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signals	Communication method
ID code box	Certification ECU	• Matching request random number signal • EEP ROM access malfunction • Model code matching signal • Model code mismatching signal • ECM code receiving status • Engine start permission request signal • Engine start permission response signal • S code matching result signal • S code registration status signal • S code registration mode signal • L code matching result signal • ECM communication signal • The number of registered key response signal • Diagnosis mode switching signal	LIN
Certification ECU	ID code box	• 3 bit code request signal • ID code matching result signal • The number of registered key signal • Vehicle type handle signal	LIN
ID code box	• Certification ECU • Steering lock ECU	• L code registration mode signal • Diagnosis mode request signal • DTC clear request signal	LIN
ID code box	Steering lock ECU	L code registration status signal	LIN
Certification ECU	• Certification ECU • ID code box	Steering lock request signal	LIN
Steering lock ECU	Certification ECU	• Steering unlock signal • Steering lock confirmation • Steering unlock confirmation signal • Diagnosis response signal • Steering lock drive relay signal • Steering unlock drive relay signal • Steering lock motor operation signal	LIN
ID code box	Certification ECU	The number of registered key signal	LIN

Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signals	Communication method
Power source control ECU	Certification ECU	• Shift position P signal • Power ON operation status signal • Engine starting status • ACC relay operating status • IG relay operating status	LIN
Power source control ECU	Steering lock ECU	Steering lock relay power supply status	LIN
Steering lock ECU	• Certification ECU • Power source control ECU	• Steering lock catching malfunction signal • Push button start malfunction signal • Engine operation signal	LIN

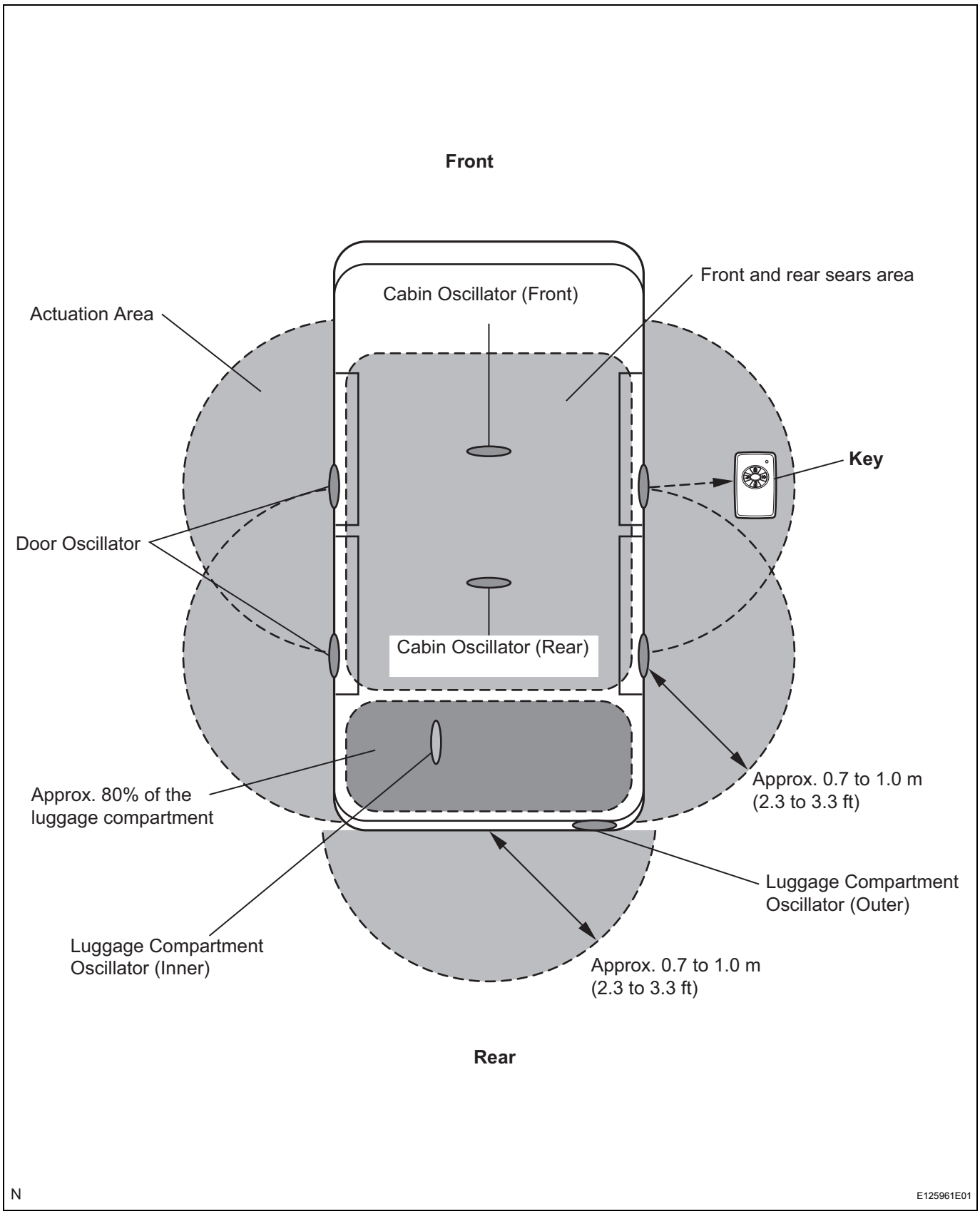
SYSTEM DESCRIPTION

1. SMART KEY SYSTEM DESCRIPTION

(a) In addition to conventional mechanical key and wireless door lock remote control functions, the smart key system enables door to lock / unlock, steering lock to release, engine to start and luggage compartment to open without operating the key. The only requirement is that the key be in the driver's possession.

- This system is controlled by the certification ECU. When the certification ECU detects the presence of the smart key system in one of the action area, it identifies and checks the ID code, and outputs operation signals to the related ECU in accordance with their functions.
- The detection areas are formed by 8 oscillators (4 door oscillators, 2 luggage compartment oscillators, and 2 cabin oscillators).

2. ACTION AREA



(a) Precautions for the entire system:
- Be sure to carry the key during inspection of the smart key system.

- The key detection area may become small, or the key may not be detected correctly, in the following conditions (As weak radio waves are used to detect the key).
  (a) The battery is dead.
  (b) Any facilities that generate strong radio waves, such as a TV tower, power plant or broadcast station, are located near the inspection site.
  (c) Any wireless applications such as a cellular phone are carried with the key.
  (d) The key is in contact or covered with metal.
  (e) A radio wave keyless entry system is operated near the inspection site.
  (f) The key is located near the device that generates high voltage or noise.
- The key may be difficult to operate for some reason relating to the vehicle body shape.
- The key may not be detected correctly if it is around the vehicle's windows, the door handle or center of the bumper even when it is in the detection area outside the vehicle.
- The key may not be detected correctly if it is on the instrument panel, rear tray or floor, or in the glove box even when it is in the detection area inside the vehicle.
- The engine cannot be started even when the key is in the detection area inside the luggage compartment.
- The key may not operate if the key is not held properly.
- The key emits a weak radio wave. If using a pacemaker, be sure to read the manual of the pacemaker before using the key because this radio wave may affect it.
- The smart key system does not operate in the following conditions:
  (a) The smart key system is cancelled (For detail, See page DL-156).
  (b) The key battery is completely dead (The indicator does not blink by pushing any of the buttons on the key) (For details, See page DL-232).

3. FUNCTION OF MAIN COMPONENTS

Component	Function
Key	The key consists of a mechanical key, the transmitter for the wireless door lock remote control and the transceiver for the smart key system, and a transponder chip for the engine immobilizer control.
Certification ECU	Controls the smart key system in accordance with the signals from each oscillator, various switches, ECUs and key. • Judges and certifies the ID code from the tuner. • Transmits the engine immobilizer unset signal to the ID code box. • Transmits the steering unlock signals to the steering lock ECU.

Component		Function
Power Source Control ECU		Controls the push button start function in accordance with the signals from the various switches, ECUs and combination meter. • Transmits the key verification request signal to the certification ECU in accordance with the engine switch signal, and turns the relays ON and OFF.
ID Code Box		Receives the steering unlock or engine immobilizer unset signals from the certification ECU, certifies them, and transmits each unset signal to the steering lock ECU or ECM.
Body ECU		• Receives the request signal from the certification ECU and actuates the door lock motor to unlock or lock the door. • Transmits each door condition to the certification ECU.
Outside Handle	Antenna	Transmits the request signals.
	Touch Sensor	Detects when a person touches an outside handle inside.
	Lock Switch	Transmits door lock request signals to certification ECU.
	Door Oscillator • Front RH and LH • Rear RH and LH	Receives the request signal from the certification ECU, and forms the actuation area around each door.
Cabin Oscillator • Front and Rear		Receives the request signal from the certification ECU, and forms the actuation area in the vehicle interior.
Luggage compartment Oscillator • Inner		Receives the request signal from the certification ECU, and forms the actuation area in the luggage compartment.
Luggage compartment Oscillator • Outer		Receives the request signal from the certification ECU, and forms the actuation area around the luggage compartment lid.
Tuner		• Receives the ID code from the key in the actuation area and transmits it to certification ECU. • Receives the ID code from the key in the luggage compartment and transmits it to certification ECU.
Luggage compartment Antenna		Receives the ID code from the key in the luggage compartment and transmits it to the tuner.
Outside Rear View Mirror	Foot Light	When the key enters the exterior actuation area, the foot light is illuminated in accordance with the request signal of the certification ECU.
Luggage compartment Open Switch		Transmits a luggage compartment lid open request signal to Certification ECU.
Stop Light Switch		Outputs the state of the brake pedal to the power source control ECU.
Wireless Door Lock Buzzer		When the certification ECU detects human errors such as the following, it warns the driver by sounding the wireless door lock buzzer, illuminating the key warning light and sounding the buzzer in accordance with the request signal from the ECU. **Example:** • The key is taken outside the vehicle. • The driver gets out while the engine is still running. • The driver gets out while the shift is in a position other than "P".
Combination Meter	Key Warning Light	
	Buzzer	
Accessory Meter		

4. CONSTRUCTION AND OPERATION

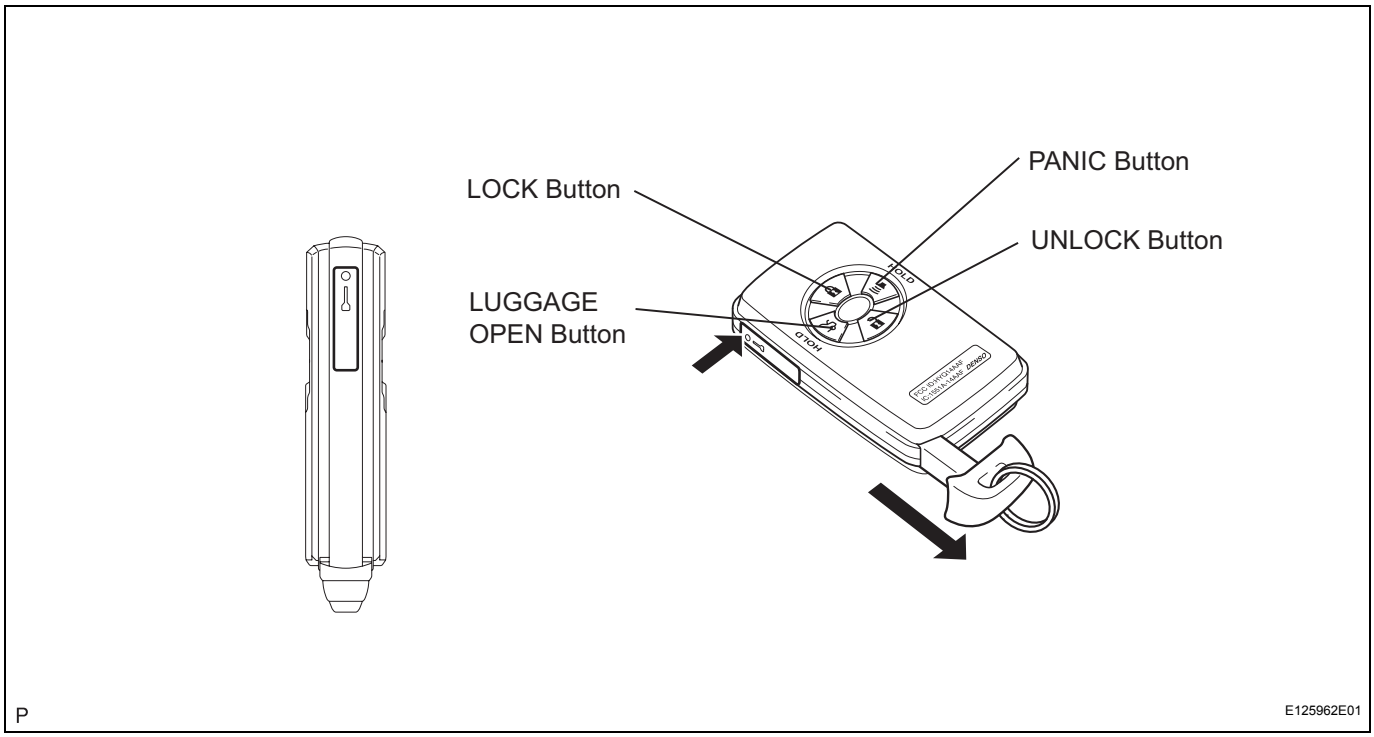
(a) Key

The key consists of a mechanical key, a transmitter function for the wireless door lock remote control and a transceiver for the smart key system, and a transponder chip for the engine immobilizer control.

- The transceiver function for the smart key system receives the signals from the oscillators and returns the ID code to the tuner.
- The transmitter function for the wireless door lock remote control has a LOCK button, UNLOCK button, LUGGAGE OPEN button, PANIC button.
- The transponder chip for the engine immobilizer control returns to the engine switch the radio wave response it received from the engine switch.

- This mechanical key works for the driver door, luggage compartment storage extension and glove box, but cannot start the engine.

A total of four keys can be registered. For details, See page DL-150.



(b) Oscillator (Each Door, Front and Rear Cabins, Luggage compartment Inner, luggage compartment Outer)

Each oscillator transmits the request signal received from the certification ECU, and forms a key actuation area to detect the presence of a key.

The actuation area formed by each door oscillator and luggage compartment outer oscillator is approximately 0.7 to 1.0 m (2.3 to 3.3 ft.) from the outside handle of each door, or the center of the rear bumper.

- The actuation area of each door oscillator is formed by transmitting a request signal every 0.25 seconds while the engine switch is off and each door is locked. In this way it detects the proximity of a key. During entry lock, the actuation area is formed with the lock switch on.
- The actuation area of the luggage compartment outer oscillator is formed when the luggage compartment open switch is on. It is formed twice until the key can be verified.
- The actuation area of the front and rear cabin oscillator is formed when the driver door is opened or closed, during start ignition, when a warning is activated, or when the lock switch is on.

- The actuation area of the luggage compartment inner oscillator forms when the luggage compartment lid is closed or the luggage compartment open switch is pressed, and is formed twice until the key can be verified.

5. ENTRY FUNCTION OPERATION

(a) The smart key system has the following functions.

Function	Outline
Mechanical Key	The operation is same as mechanical key.
Wireless Door Remote Control	This function is a convenient system for locking and unlocking all the doors or luggage compartment at a distance. The operation is same as wireless door lock remote control system. However, the receiver in the certification ECU uses a tuner to perform control.
Entry Illumination	When a key enters any actuation area of the door oscillator, the foot light, the front interior light, and engine switch illumination illuminate.
Entry Unlock	When a key is located in any actuation area of the door oscillator, the door will unlock with the touch of an outside door handle.
Entry Unlock Mode Switching (See page DL-156)	Switches the doors that can be unlocked with the entry unlock function in two modes. • Driver Door Mode • All Door Mode
Entry Lock	When a key is located in any actuation area of the door oscillator and the power source is OFF, the door will be locked by merely pressing the lock switch on the outside door handle.
Entry Luggage compartment Open	When a key is in an actuation area of the luggage compartment outer oscillator, the luggage compartment opens by merely pressing the luggage compartment open switch.
Memory Call	This function operates the memory system in accordance with key ID.
Prevention of Key Confinement (*1)	• Prevents the confinement of the key if the door is locked from the outside door handle while the key is still inside the vehicle. • If the luggage compartment lid is closed while the key is still in the luggage compartment, the warning buzzer sounds, If the luggage compartment open switch is operated in two seconds during this period, the luggage compartment lid can be opened.
Warning	When any of the situations below occur, the smart key system causes certification ECU to sound the buzzer in the combination meter and wireless door lock buzzer, and illuminate the key warning light in order to the alert the driver. • An exit warning if the shift lever is in a position other than "P" and the power source is a mode other than "OFF". • An exit warning if the shift lever is in "P" and the power source is a mode other than "OFF". • A warning if the occupant leaves with the key. • A warning if the engine switch is operated while the key is outside the actuation area. • A warning if the entry lock is operated while the key is inside the vehicle. • A warning if the key battery is weak.
Battery Saving	If the key is constantly located within any actuation area of the door oscillator, the system maintains periodic communication with key. Therefore, if the vehicle remains parked in that state for a long time, the key battery and the vehicle battery could be drained.
Key Cancel (See page DL-156)	The following key functions can be cancelled by following certain operations. • Entry Unlock / Lock • Entry Unlock Mode Switching • Entry Luggage compartment Open • Prevention of Key Confinement • Warning
Push Button Start	When a key is located in any actuation area of the cabin oscillator, the power source mode can be switched by operating the engine switch.

*1: "Prevention of key confinement" function activates only when all the doors are locked.

DL

6. **Wireless door lock and unlock and luggage compartment open function**
   Push the LOCK / UNLOCK / PANIC / LUGGAGE COMPARTMENT button on the key to operate each function.
7. **Entry unlock function**
   (a) The action area is formed by regular communication between the door oscillator and tuner when the door is locked in order to detect access of the person carrying the key.
   (b) When the person carrying the key enters the action area around the vehicle, the matching of the ID codes for the door oscillator and key will automatically be performed. After the matching is completed, the door will enter unlock standby mode.
   (c) In unlock standby mode, the antenna built into the outside handle starts. If the outside handle is held (the back side of the handle is touched), the door unlock operation will be performed. (If the ID codes do not match, the door unlock operation for that door can not be done by holding the outside handle.) At this time, the hazard warning light blinks twice and the wireless door lock buzzer sounds twice.
   (d) If any of the doors is not opened after door unlock operation, all doors will automatically lock after 30 seconds.
8. **Entry lock function**
   (a) After leaving the vehicle carrying the key, push the lock switch on the outside handle when all the doors are closed.
   (b) The certification ECU determines whether the key is located inside or outside of the cabin based on the information of the door oscillator and cabin oscillator. The matching of the ID codes is performed.
   (c) When the matching result shows that the ID codes of the key and cabin oscillator do not match and those of the key and door oscillator match, the door lock function will operate. As this time, the hazard warning light blinks once and the wireless door lock buzzer sounds once.
   (d) If the key is located inside of the cabin, the door lock function will not operate and the alarm buzzer (peep sound) will sound for 2 seconds.

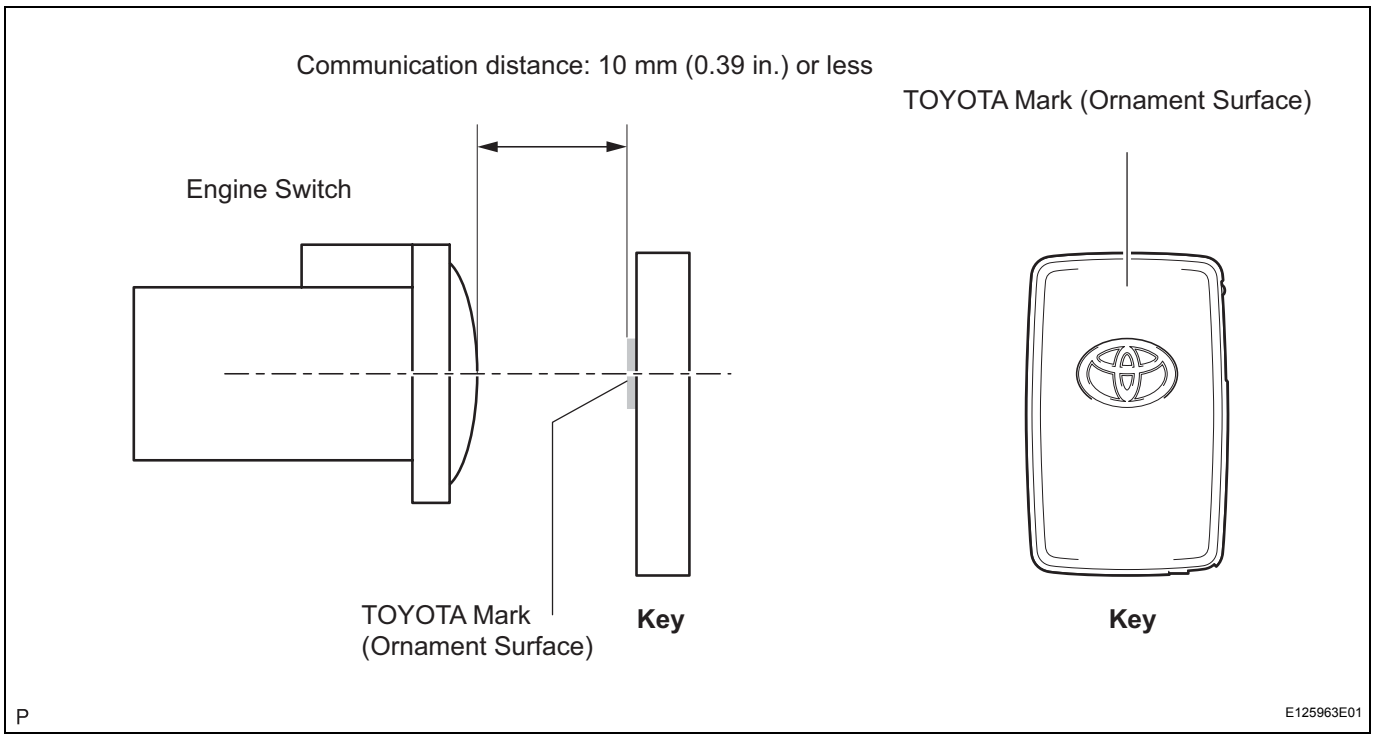
9. Push button start function

(a) When all the power sources of the vehicle are off, get in the vehicle carrying the key. Push the engine switch with the brake pedal released to perform matching of the ID codes inside of the cabin. If the codes match, the engine switch will light up in amber. The engine switch will change between ACC, IG, and OFF every time the engine switch is pushed. If the engine switch is pushed when the engine switch is ON (IG) with the shift lever in a position other than P and N, the engine switch will change to ON (ACC), not to OFF.

(b) When all the power source of the vehicle are off, get in the vehicle carrying the key. When the brake pedal is depressed with the shift lever in the P or N position, the matching of the ID codes will be performed inside the cabin. If the ID codes match, the indicator of the engine switch will light up in green. While the indicator lights up in green, push the engine switch to start the engine.

10. Push button start function (Key battery is dead)

(a) Get in the vehicle carrying the key (Use the mechanical key built into the key to unlock the door). Depress the brake pedal and hold the ornament face of the key to the engine switch so that the distance between them is 10 mm or less.



Release the brake pedal and push the engine switch within 5 seconds after a pip buzzer sounds. The engine switch will light up in amber. The engine switch will change between ACC, IG, and OFF every time the engine switch is pushed If the engine switch is pushed when the engine switch is ON (IG) with the shift lever in a position other than P and N, the engine switch will change to ON (ACC), not OFF.

(b) Get in the vehicle carrying the key (Use the mechanical key built into the key to unlock the door). Depress the brake pedal with the shift lever in the P or N position and hold the ornament face of the key to the engine switch so that the distance between them is 10 mm or less.
The indicator of the engine switch lights up in green after a pip buzzer sounds. Push the engine switch with the brake pedal depressed within 5 seconds of the buzzer sound.

11. Engine stop - Steering lock function / Engine immobilizer set function

If the engine switch is pushed after the vehicle stops, the engine and all the power sources will turn off. If the engine switch is pushed when the vehicle stops with the shift lever in a position other than P and N, the engine switch will change to ON (ACC), not to OFF.
If the driver's door is opened with the shift lever in the P position, steering lock will operate.

12. Entry luggage compartment open function

Stand in front of the luggage compartment with the key and push the luggage compartment open switch to start the matching of the ID codes for the luggage compartment oscillator (outer). If the ID codes match, luggage compartment open operation will be performed.

13. Prevention of key confinement function

(a) If you attempt to lock the door through keyless operation (move the lock knob to the lock position and then close the door) with the key in the cabin, the system determines that the key is located in the cabin and unlocks the door.

(b) If the luggage compartment is closed with the key in it, the alarm will sound and the luggage compartment can be opened only when all the doors are locked in order to prevent key confinement in the vehicle.
HINT:
"Prevention of key confinement" function activates only when all the doors are locked.

14. Entry illumination function

(a) When a person carrying the key enters the action area, the door will enter unlock standby mode and the front dome light and door mirror foot light will light up.
HINT:
The smart illumination function operates when the key enters the detection area from out of the detection area outside of the cabin (for 3 seconds or more). If the key remains in the detection area, the illumination function does not operate.

15. Memory call function

When the driver's door is opened or the engine switch is turned ON (ACC, IG), the seat position, etc. will automatically be restored to the state that has been set for the key code.
For the procedures of key registration (See page DL-150) and cancellation (See page DL-156).

16. Warning Function

(a) General
When any of the situation below occurs, the smart key system causes certification ECU to sound the buzzer in the combination meter and the wireless door lock buzzer, and illuminate the key warning light in order to alert the driver.
(1) An exit warning if the shift lever is in a position other than "P" and the power source is a mode other than "OFF".
(2) An exit warning if the shift lever is in "P" and the power source is a mode other than "OFF".
(3) A warning if the occupant leaves with the key.
(4) A warning if the engine switch is operated while the key is outside the actuation area.
(5) A warning if the entry lock is operated while the key is inside the vehicle.
(6) A warning if the key battery is weak.

(b) Situation: A
There are two patterns for situation A.
Pattern 1. In situation a), the door is opened and the user tries to leave the vehicle.
Pattern 2. Then the user holds the key and tries to move away from the vehicle.
In these situations the following control is performed.

Pattern 1.

Possible Effects without Warning	Sudden vehicle start, Vehicle roll-away
Warning Condition	The certification ECU gives a warning when all the following conditions are satisfied. • Shift lever is except "P". • Power source mode is except "OFF". • Driver door is opened. • Vehicle speed is 0.

Combination Meter	Buzzer	Warning: Continuous sound The warning is stopped when one of the following conditions are met. • Power source mode is "OFF". • Shift lever is "P". • Vehicle speed is above 0.
	Key Warning Light	-
Wireless Door Lock Buzzer		-

Pattern 2.

Possible Effects without Warning		Sudden vehicle start, Vehicle theft, Vehicle roll-away
Warning Condition		The certification ECU gives a warning when all the following conditions are satisfied. • Shift lever is except "P". • Power source mode is except "OFF". • Driver door changed from open to close. • Vehicle speed is 0. • Key is not in the vehicle.
Combination Meter	Buzzer	Warning: Continuous sound The warning is stopped when one of the following conditions is met. • Power source mode is "OFF" • Shift lever is "P". • Vehicle speed is above 0.
	Key Warning Light	Warning: Turn ON The warning is stopped when one of the following conditions is met. • Power source mode is "OFF". • Key is in the vehicle.
Wireless Door Lock Buzzer		Warning: Continuous sound The warning is stopped when one of the following conditions is met. • Power source mode is "OFF". • Shift lever is "P". • key is in the vehicle. • Vehicle speed is above 0.

(c) Situation: B

There are three patterns for situation B.

Pattern 1. In situation b), the door is opened and the user tries to leave the vehicle.

Pattern 2. Then the user holds the key and tries to move away from the vehicle.

Pattern 3. Then the user tires to use the entry lock and presses the lock switch.

In these situations the following control is performed.

Pattern 1.

Possible Effects without Warning		Vehicle theft
Warning Condition		The certification ECU gives a warning when all the following conditions are satisfied. • Shift lever is "P". • Power source mode is except "OFF". • Driver door is opened.
Combination Meter	Buzzer	Warning: Discontinuous sound The warning is stopped when one of the following conditions is met. • Power source mode is "OFF". • Shift lever is except "P". • Driver door is closed.
	Key Warning Light	-
Wireless Door Lock Buzzer		-

Pattern 2.

Possible Effects without Warning	Vehicle theft, Engine cannot be restarted

Warning Condition		The certification ECU gives a warning when all the following conditions are satisfied. • Shift lever is "P". • Power source mode is not "OFF". • Driver door changed from open to closed. • key is not in the vehicle.
Combination Meter	Buzzer	Warning: Sound once
	Key Warning Light	Warning: Turn ON The warning is stopped when one of the following conditions is met. • Power source mode is "OFF". • Key is in the vehicle.
Wireless Door Lock Buzzer		Warning: Sound 3 times The warning is stopped when one of the following conditions is met. • Power source mode is "OFF". • Vehicle speed is above 0.

Pattern 3.

Possible Effects without Warning		Vehicle theft
Warning Condition		The certification ECU gives a warning when all the following conditions are satisfied. • Shift lever is "P". • Power source mode is not "OFF". • All doors are closed. • Lock switch is "ON". • Key is outside the vehicle.
Combination Meter	Buzzer	-
	Key Warning Light	-
Wireless Door Lock Buzzer		Warning: Sounds for 2 seconds

(d) Situation: C
In this situation the following control is performed.

Possible Effects without Warning		Engine cannot be restarted
Warning Condition		The certification ECU gives a warning when all the following conditions are satisfied. • Power source mode is not "OFF". • Any door but the driver's changed from open to close. • Vehicle speed is 0. • Key is not in the vehicle.
Combination Meter	Buzzer	Warning: Sound once
	Key Warning Light	Warning: Turn ON The warning is stopped when one of the following conditions is met. • Power source mode is "OFF". • Vehicle speed is above 0.
Wireless Door Lock Buzzer		Warning: Sound 3 times The warning is stopped when one of the following conditions is met. • Power source mode is "OFF". • Vehicle speed is above 0.

(e) Situation: D
In this situation the following control is performed.

Possible Effects without Warning		Confuses the user
Warning Condition		The certification ECU gives a warning when all the following conditions are satisfied. • Engine switch is pushed. • Key is not in the vehicle.
Combination Meter	Buzzer	Warning: Sound once
	Key Warning Light	Warning: Turns ON for 5 seconds
Wireless Door Lock Buzzer		-

(f) Situation: E
In this situation the following control is performed.

Possible Effects without Warning	Vehicle theft

Warning Condition		The certification ECU gives a warning when all the following conditions are satisfied. • Power source mode is "OFF". • All doors are closed. • Lock switch is "ON". • Key is in the vehicle.
Combination Meter	Buzzer	-
	Key Warning Light	-
Wireless Door Lock Buzzer		Warning: Sounds for 2 seconds

(g) Situation: F
In this situation the following control is performed.

Possible Effects without Warning		Smart key system does not function
Warning Condition		The certification ECU gives a warning when all the following conditions are satisfied. • Power source mode switches to OFF after being left in IG-ON for over 20 minutes. • Key battery voltage is low.
Combination Meter	Buzzer	Warning: Sound once
	Key Warning Light	-
Wireless Door Lock Buzzer		-

DL

17. Battery Saving

(a) Vehicle Battery Saving Function
In the smart key system, signals are emitted outside of the vehicle at a prescribed interval (300 ms) when the doors are locked. Therefore, the vehicle battery could be drained if the vehicle remains parked for a long time. For this reason, the controls listed below are effected.

Condition	Control
No response from key for more than 5 days	Signal transmission interval is extended from 250 ms to 750 ms.
No response from key for more than 14 days	Automatically deactivates the smart key system.

Reinstatement Conditions
- A wireless door lock remote control signal (lock, unlock, or luggage compartment lid open) is input and the ID matches.
- A user carries the key and pushes a lock switch signal for the outside door handle.
- A door is locked or unlocked by the mechanical key.

(b) Key Battery and Vehicle Battery Saving Function
In the smart key system, if the key is constantly located within the vehicle exterior actuation area of the doors, the system maintains periodic communication with the key. Therefore, if the vehicle remains parked in that state for a long time, the key battery and the vehicle battery could be drained. For this reason, if this state continues longer than 10 minutes, the smart key system automatically becomes deactivated.

Reinstatement Conditions
- A wireless door lock remote control signal (lock, unlock, or luggage compartment lid open) is input and the ID matches.
- A user carries the key and pushes a lock switch signal for the outside handle.

- A door is locked or unlocked by the mechanical key.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use this procedure to troubleshoot the smart key system.
- The intelligent tester can be used in steps 3, 4, 5 and 7.
- When troubleshooting the smart key system using the intelligent tester with the engine switch off, connect the intelligent tester to the vehicle and repeat turning any of the courtesy light switches on and off until communication between the tester and the vehicle begins (the interval ON and OFF should be less than 1.5 sec.).

1	VEHICLE BROUGHT TO WORKSHOP

DL

NEXT

2	CUSTOMER PROBLEM ANALYSIS

(a) Confirm problem symptoms.

NEXT

3	CHECK MULTIPLEX COMMUNICATION SYSTEM

(a) Check for DTCs (See page MP-23).
HINT:
This system uses multiplex communication. Check for DTCs for the multiplex communication system before performing the troubleshooting.

Result

Result	Proceed to
DTC is not output.	A
DTC is output.	B

B → GO TO MULTIPLEX COMMUNICATION SYSTEM

A

4	CHECK DTC

(a) Check for DTCs (See page DL-170).
(1) Record the DTCs.
(b) Clear the DTCs.
HINT:
After DTCs are all cleared, check if the trouble occurs again 6 seconds after the engine switch is turned on (IG).
(c) Recheck for DTCs.

(1) Simulate the malfunction and check if the DTCs are output again.

Result

Result	Proceed to
DTC is output.	A
DTC is not output.	B
DTCs are not output, and the malfunction cannot be simulated or checked.	C

B → Go to step 10

C → SYMPTOM SIMULATION

A

5 DTC CHART

NEXT

6 CIRCUIT INSPECTION

NEXT

7 OVERALL ANALYSIS AND TROUBLESHOOTING

(a) DATA LIST / ACTIVE TEST (See page DL-171)
  (1) Inspection with the intelligent tester (DATA LIST / ACTIVE TEST)
(b) Terminal of ECU (See page DL-164)
(c) On-vehicle inspection (See page DL-178)

NEXT

8 ADJUST, REPAIR OR REPLACE

NEXT

9 CONFIRMATION TEST

NEXT

END

DL

10	PROBLEM SYMPTOMS TABLE

NEXT

11	ADJUST, REPAIR OR REPLACE

NEXT

12	CONFIRMATION TEST

NEXT

DL

END

REGISTRATION

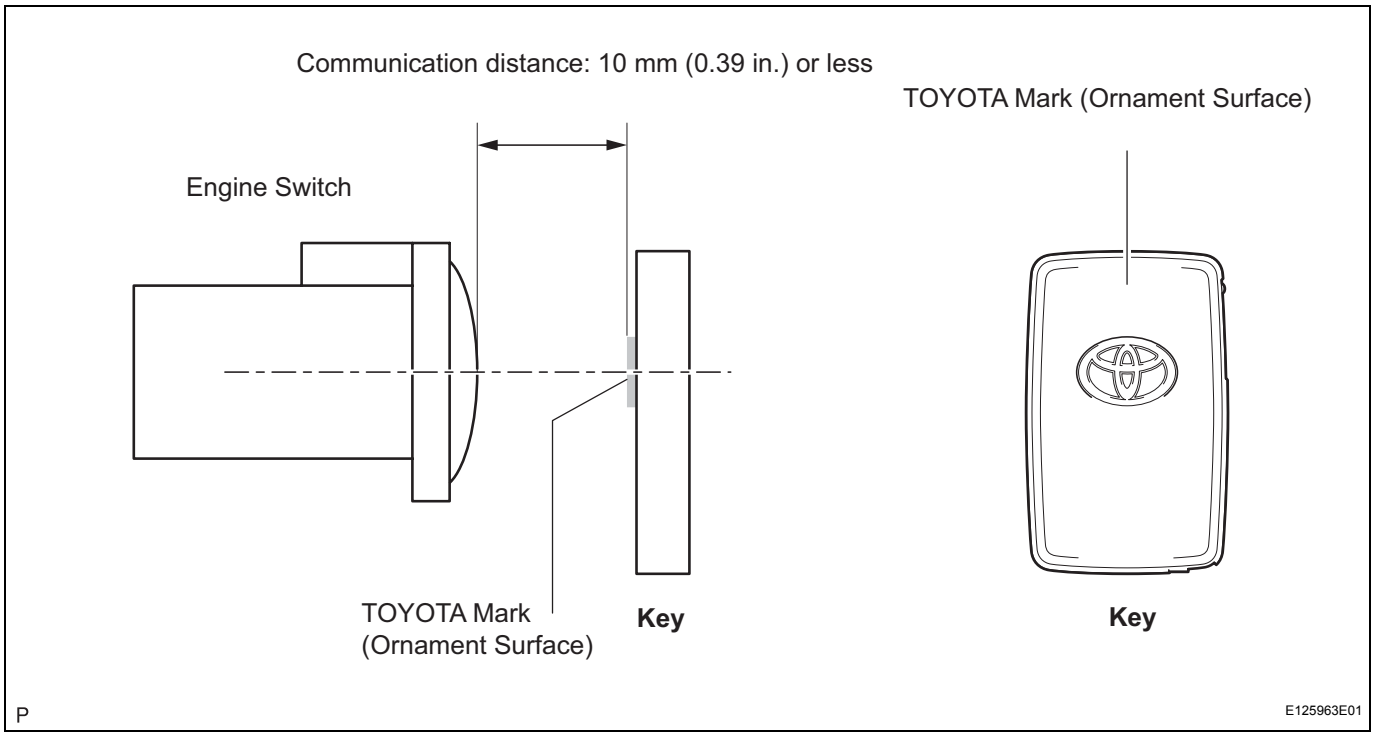
1. DESCRIPTION OF CODE REGISTRATION

HINT:

- ID codes are the same as recognition codes for the wireless transmitter and the engine immobiliser function. Registering an ID code enables the smart key system, the wireless door lock control function and the engine immobiliser function to be operated.
- Code registration is needed when the certification ECU, ID code box, steering lock ECU or key is replaced with a new one.

(a) PROCEDURE "1"

The vehicle with the smart key system does not have a key slot. Therefore, hold the key close to the engine switch to register the key, as shown in the illustration below.



2. PART REPLACEMENT AND KEY REGISTRATION PROCEDURES

(a) The following table shows ECU replacement and key registration procedures in case the malfunctioning ECU has been specified after troubleshooting the smart key system.

HINT:

- The following procedures indicated in the table below require the use of the intelligent tester:
  - New key ID registration
  - Additional key ID registration
  - Key ID erasure
  - ECU code registration
- If all of the registered keys are not available, replacement of the ID code box is also required.

- A maximum of 7 keys can be registered.

Part to be replaced	Condition		Procedure	Reference
Certification ECU	Customer has brought all keys		1. Replace certification ECU	-
			2. Reregister all keys (new key ID registration)	PROCEDURE "B"
	Some keys are lost	Key ID codes can be registered and erased	1. Erase key codes (key ID erasure)	PROCEDURE "D"
			2. Perform additional key registration procedure (additional key ID registration)	PROCEDURE "C"
			3. Replace certification ECU	-
			4. Reregister all keys (new key ID registration) HINT: If some keys are not registered during above steps, they will be disabled because they cannot be registered later	PROCEDURE "B"
		Key ID codes cannot be either registered or erased	1. Replace certification ECU	-
			2. Replace ID code box	-
			3. Reregister all keys (new key ID registration) HINT: If key codes cannot be erased or additional keys cannot be registered due to a malfunction in certification ECU, replace ID code box and certification ECU. If some keys are not registered during above steps, they will be disabled because they cannot be registered later	PROCEDURE "A"
			4. ECU communication ID registration	PROCEDURE "F"
ID code box	At least 1 key is available		1. Replace ID code box	-
			2. Register recognition codes in ECUs (ECU code registration)	PROCEDURE "E"
			3. ECU communication ID registration	PROCEDURE "F"
	All keys are lost		1. Replace ID code box	-
			2. Replace certification ECU	-
			3. Reregister all keys (new key ID registration) HINT: If some keys are not registered during above steps, they will be disabled because they cannot be registered later	PROCEDURE "A"
			4. ECU communication ID registration	PROCEDURE "F"
Steering lock ECU	Customer has brought at least 1 key		1. Replace steering lock ECU	-
			2. Register recognition codes in ECUs (ECU code registration)	PROCEDURE "E"
	All keys are lost		1. Replace steering lock ECU	-
			2. Replace certification ECU	-
			3. Replace ID code box	-
			4. Reregister all keys (new key ID registration) HINT: If some keys are not registered during above steps, they will be disabled because they cannot be registered later	PROCEDURE "A"
			5. ECU communication ID registration	PROCEDURE "F"
Power Source Control ECU	No condition required		Replace power source control ECU	-
ECM	No condition required		1. Replace ECM	-
			2. ECU communication ID registration	PROCEDURE "F"

DL

Part to be replaced	Condition	Procedure	Reference
Key	Customer has brought at least 1 key	1. Using remaining key, erase lost key (key ID erasure)	PROCEDURE "D"
		2. Register additional keys as necessary (additional key ID registration)	PROCEDURE "E"
	All keys are lost	1. Replace certification ECU	-
		2. Replace ID code box	-
		3. Register all keys (new key ID registration) HINT: If customer brings lost keys at later date, they can be registered using additional key ID registration function	PROCEDURE "A"
		4. ECU communication ID registration	PROCEDURE "F"

3. KEY REGISTRATION PROCEDURES

(a) PROCEDURE "A"

New key ID registration (when replacing certification ECU and ID code box, or certification ECU, ID code box and steering lock ECU)

DL

Process	Procedure
1. Start of registration	1. Connect intelligent tester (with CAN VIM) to DLC3 2. Turn engine switch on (IG) 3. Select "SMART ACCESS / ID UTILITY / SMART CODE REG" from tester menu HINT: The engine switch cannot be turned on (IG) more than 10 times. After connecting tester, turn tester on while turning driver side door courtesy light switch on and off repeatedly at 1.5 second intervals or less to continue key registration procedure
2. Confirmation of ECU code	Perform operation according to prompts on tester screen HINT: The mode is automatically selected by tester, new registration mode or add more
3. Verification of unregistered key *1	Hold unregistered key close to engine switch (For details, refer to PROCEDURE "1")
	Confirm that wireless door lock buzzer sounds. Place unregistered key on front passenger side seat
	Confirm that wireless door lock buzzer sounds
4. Registration of ID code	Perform operation according to prompts on tester screen
5. End of registration	Finish new key ID code registration

*1: Repeat this process for each key which is to be registered for the vehicle. Finish the procedure for each key within 30 seconds. If the procedure for any of the keys has not been finished within the specified time, perform registration procedures from process 1 again. Make sure that only 1 key is in the cabin during registration procedures. If 2 or more keys are in the cabin simultaneously, electric waves will interfere with each other, preventing normal registration.

(b) PROCEDURE "B"
New key ID registration (when replacing certification ECU)

Process	Procedure
1. Start of registration	1. Connect intelligent tester (with CAN VIM) to DLC3 2. Turn engine switch on (IG) 3. Select "SMART ACCESS / ID UTILITY / SMART CODE REG" from tester menu HINT: The engine switch cannot be turned on (IG) more than 10 times. After connecting tester, turn tester on while turning driver side door courtesy light switch on and off repeatedly at 1.5 second intervals or less to continue key registration procedure
2. Confirmation of ECU code	Perform operation according to prompts on tester screen HINT: The mode is automatically selected by tester, new registration mode or add mode
3. Confirmation of all registered keys *1	Hold unregistered key close to engine switch (For details, refer to PROCEDURE "1")
	Confirm that wireless door lock buzzer sounds
4. Confirmation of ECU code	Perform operation according to prompts on tester screen
5. Verification of unregistered key *2	Hold unregistered key close to engine switch (For details, refer to PROCEDURE "1")
	Confirm that wireless door lock buzzer sounds. Place unregistered key on front passenger side seat
	Confirm that wireless door lock buzzer sounds
5. Registration of ID code	Perform operation according to prompts on tester screen
6. End of registration	Finish new key ID code registration

*1: Repeat this process for each key registered for the vehicle. Finish the procedure for each key within 30 seconds. If the procedure for any of the keys has not been finished within the specified time, perform registration procedures from process 1 again. If performing the key confirmation procedure for a key, the security indicator comes on and remains on until all the keys are confirmed.
*2: Repeat this process for each key which is to be registered for the vehicle. Finish the procedure for each key within 30 seconds. If the procedure for any of the keys has not been finished within the specified time, perform registration procedures from 1 again. Make sure that only 1 key is in the cabin during registration procedures. If 2 or more keys are in the cabin simultaneously, electric waves will interfere with each other, preventing normal registration.

(c) PROCEDURE "C"
Additional key ID registration

Process	Procedure
1. Start of registration	1. Connect intelligent tester (with CAN VIM) to DLC3 2. Turn engine switch on (IG) 3. Select "SMART ACCESS / ID UTILITY / SMART CODE REG" from tester menu

Process	Procedure
2. Confirmation of registered key *1	Perform operation according to prompts on intelligent tester screen HINT: The mode is automatically selected by tester, new registration mode or add mode
	Hold unregistered key close to engine switch (For details, refer to PROCEDURE "1")
	Confirm that wireless door lock buzzer sounds once
3. Confirmation of ECU code	Perform operation according to prompts on tester screen
4. Verification of unregistered key *2	Hold unregistered key close to engine switch (For details, refer to PROCEDURE "1")
	Confirm that wireless door lock buzzer sounds. Place unregistered key on front passenger side seat
	Confirm that wireless door lock buzzer sounds
5. Registration of ID code	Perform operation according to prompts on tester screen
6. End of registration	Finish key ID code registration

*1: Perform this process for one of the keys registered for the vehicle. Finish the procedure within 30 seconds. If the procedure has not been finished within the specified time, perform registration procedures from process 1 again.
*2: Repeat this process for each key which is to be registered for the vehicle. Finish the procedure for each key within 30 seconds. If the procedure for any of the keys has not been finished within the specified time, perform registration procedures from 1 again. Make sure that only 1 key is in the cabin during registration procedures. If 2 or more keys are in the cabin simultaneously, electric waves will interfere with each other, preventing normal registration.

(d) PROCEDURE "D"
Key ID erasure
HINT:
Erase all registered key codes except one.

Process	Procedure
1. Start of erasure	1. Connect intelligent tester (with CAN VIM) to DLC3 2. Turn engine switch on (IG) 3. Select "SMART ACCESS / ID UTILITY / SMART CODE ERS" from tester menu
2. Confirmation of registered key *1	Perform operation according to prompts on intelligent tester screen
	Hold unregistered key close to engine switch (For details, refer to PROCEDURE "1")
	Confirm that wireless door lock buzzer sounds once
3. Confirmation of ECU code	Perform operation according to prompts on tester screen
4. Erasure of ID code	Perform operation according to prompts on tester screen
5. End of erasure	Finish key ID code erasure

*1: Perform this process for one of the keys registered for the vehicle. Finish the procedure within 30 seconds. If the procedure has not been finished within the specified time, perform erasure procedures from process 1 again.

(e) PROCEDURE "E"
ECU code registration

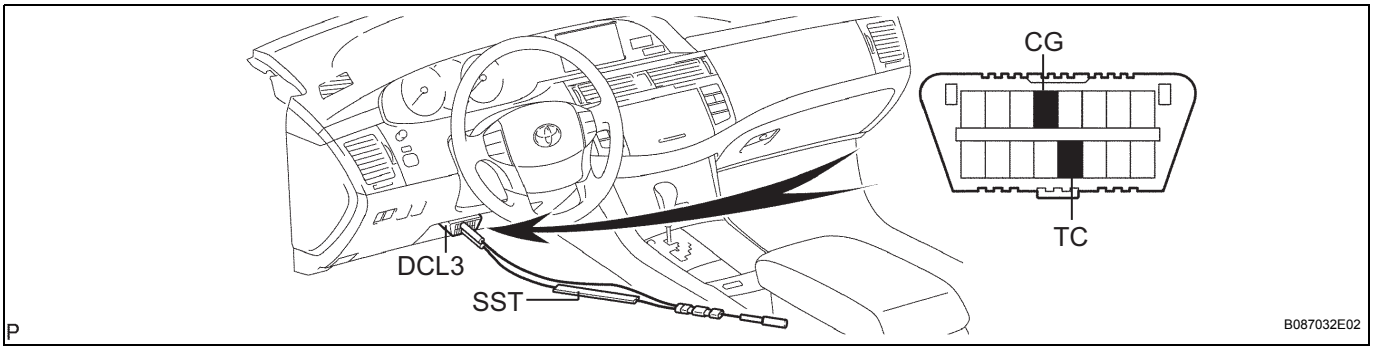
Process	Procedure
1. Start of registration	1. Connect intelligent tester (with CAN VIM) to DLC3 2. Turn engine switch on (IG) 3. Select "SMART ACCESS / ID UTILITY / ECU COMM ID REG / ID Code Box and Steering Lock" from tester menu
2. Confirmation of registered key *1	Hold unregistered key close to engine switch (For details, refer to PROCEDURE "1")
	Confirm that wireless door lock buzzer sounds once
3. Erasure of ECU code	Perform operation according to prompts on tester screen
4. End of registration	Finish ECU code registration

*1: Perform this process for one of the keys registered for the vehicle. Finish the procedure within 30 seconds. If the procedure has not been finished within the specified time, perform erasure procedures from process 1 again.

DL

(f) PROCEDURE "F"
ECU communication ID registration
NOTICE:
- **The ECU COMMUNICATION ID should be registered when the ID code box and/or the ECM is replaced in order to match these ECM COMMUNICATION ID.**
- **The engine cannot be started unless the ECM COMMUNICATION ID matches.**

Register the ECU communication ID.



(1) Using SST, connect terminals TC and CG of the DLC3.
SST 09843-18040
(2) Turn the engine switch on (IG) and leave it for 30 minutes.
HINT:
Do not start the engine.
(3) Turn the engine switch off and disconnect terminals TC and CG.
(4) Check that the engine starts.

CUSTOMIZE PARAMETERS

HINT:
The following items can be customized.

NOTICE:

- **When the customer requests a change in a function, first make sure that customization of the function(s) is possible.**
- **Be sure to record the current settings before customizing.**
- **When troubleshooting a function, first make sure that the function is not set to OFF.**

1. Using intelligent tester

WIRELESS DOOR LOCK

Display (Item)	Default	Contents	Setting
OPEN DOOR WARN (Open door warning)	ON	Function to make the buzzer sound for 10 seconds if the door is open when locking with the wireless door lock function.	ON / OFF
WIRELESS OPER (Wireless door lock control function)	ON	ON / OFF of the wireless door lock function.	ON / OFF
ALARM FUNCTION (*1) (Panic function)	ON	Function to operate the theft deterrent system by keeping pressing the lock button of the transmitter for 2.5 seconds. If there is a panic button, press the panic button instead of the lock button.	ON / OFF
UNLOCK/2 OPER (2 times operation wireless unlock)	ON	Function to unlock the driver's door by pressing the unlock button of the transmitter once and to unlock all the doors by pressing it twice. In the OFF setting, pressing one time makes all the doors unlocked.	ON / OFF
LUGGAGE COMPARTMENT LID OPER (Trunk lid open function type)	0.8 s PR	To change the operation method of opening the luggage compartment by the transmitter.	1 TIME / 2 TIMES / 0.8 s PR / OFF
AUTO LOCK DELAY (Auto lock time)	30 s	To change the time until re-locking after unlocking with the wireless door lock function.	60 s / 30 s
HAZARD AND BACK (Hazard answer back of the wireless)	ON	Function to light up the all turn signal lights once when pressing the transmitter lock button and twice when pressing the unlock button.	ON / OFF
WIRLS BUZZ RESP (Wireless buzzer response)	ON	ON / OFF of the wireless buzzer response function.	ON / OFF

*1: w/ Theft deterrent system

WARNING (COMBINATION METER)

Display (Item)	Default	Contents	Setting
SMART WARN3 (Warn a key is taken out by fellow passengers)	ON	Function to warn that a key is taken out by fellow passengers (it means the key is taken out from except the driver's door) when ignition is not OFF.	ON / OFF
KEY LOW-BATT WRN (Warn when the key battery becomes weak)	ON	Setting a warning function for the first time when a key battery becomes weak.	ON / OFF
KEY REMND VOLUM (Key reminder buzzer volume)	LARGE	To change the volume of the key reminder buzzer.	LARGE / MEDIUM / SMALL
KEY REMND SOUND (Key reminder buzzer sound)	NORMAL	To change the frequency of the key reminder buzzer.	NORMAL / FAST / SLOW / 0 s

SMART

Display (Item)	Default	Contents	Setting
SMART IGNITION (SMART ignition available area)	ALL	Function to choose the available area for smart key to start E/G and cancel the Steering Lock.	FRONT / ALL

Display (Item)	Default	Contents	Setting
PARK WAIT TIME (Wait time to permit opening door after locking)	2.5 s	Setting a wait time to permit opening a door after it being locked with SMART entry.	0.5 s / 1.5 s / 2.5 s / 5 s
SMART TRUNK (Luggage compartment opening operation when vehicle is locked)	ON	Function to open a luggage compartment when the driver has the key and press the luggage open button.	ON / OFF
KEY LOW-BATT WRN	ON	Function to set a warning function for the time when a key battery becomes weak.	ON / OFF

2. Entry Unlock Mode Switching

(a) Check that the power source mode is OFF and the LED on the key does not blink. Press all buttons other than LOCK and UNLOCK on the key at the same time for approximately 5 seconds while the key is in the actuation area.

(b) Certification ECU receives this signal from the tuner and switches the entry unlock mode.

(c) The certification ECU sounds the buzzer of the wireless door lock buzzer and combination meter to inform the user that the mode has been switched.

Mode	Wireless Door Lock Buzzer	Buzzer in Combination Meter
Driver Door (Default)	 Sounds 3 times	Sounds once
All Doors (Customized)	 Sounds 2 times	Sounds once

N

E126056E03

HINT:

- The function only switches the entry unlock of the smart key system. It does not switch the unlocking of the wireless door lock remote control.
- The entry unlock mode cannot be changed for 5 seconds after the previous change.

3. Key Cancel

Key cancel is operated when certain operations are performed with the vehicle in the following conditions.

- A function that allows you to lock / unlock the doors and open the luggage compartment by simply carrying a key.
- A function that causes the vehicle to beep if keys are left inside the vehicle or luggage compartment and a door is closed.
- A function that recalls the position of the driver's seat and side rear view mirrors.

(a) The operation procedures are as follows:
(1) Unlock twice with the UNLOCK button of the key.
(2) Open the driver's door within 5 seconds, from 1) operation.
(3) Unlock twice with the UNLOCK button of the key within 5 seconds from 2) operation.
(4) Repeat open → close twice for the driver door within 30 seconds, from 3) operation and open again.
(Driver Door: Open → Close → Open → Close → Open)
(5) Unlock twice with the UNLOCK button of the key within 5 seconds, from 3) operation.
(6) Repeat open → close once for the driver door within 30 seconds, from 3) operation and open again.
(Driver Door: Open → Close → Open)
(7) Close the driver door within 5 seconds, from 6) operation.
When key cancel is activated, the wireless door lock buzzer sounds twice.
To return to the original condition, perform the procedures again. When key cancel is returned, the wireless door lock buzzer sounds once.

PROBLEM SYMPTOMS TABLE

ENTRY LOCK / UNLOCK FUNCTION

Symptom	Suspected area	See page
Entry unlock does not operate.	1. Check for DTCs in the smart key system.	DL-177
	2. Power door lock control system	DL-8
	3. See "ID code matching inside the cabin cannot be performed" in this table.	-
	4. Courtesy light switch circuit (Front)	DL-101
	5. Courtesy light switch circuit (Rear)	DL-104
	6. Lock position switch circuit (Driver door)	DL-15
	7. Lock position switch circuit (Front passenger door)	DL-18
	8. Lock position switch circuit (Rear passenger door LH)	DL-21
	9. Lock position switch circuit (Rear passenger door RH)	DL-24
	10. Touch sensor circuit	DL-211
	11. Antenna circuit	DL-215
	12. Replace the door oscillator.	-
	13. Replace the body ECU.	-
	14. Replace the certification ECU.	-
Entry lock does not operate.	1. Check for DTCs in the smart key system.	DL-177
	2. Power door lock control system	DL-8
	3. See "ID code matching inside the cabin cannot be performed" in this table.	-
	4. Courtesy light switch circuit (Front)	DL-101
	5. Courtesy light switch circuit (Rear)	DL-104
	6. Lock position switch circuit (Driver door)	DL-15
	7. Lock position switch circuit (Front passenger door)	DL-18
	8. Lock position switch circuit (Rear passenger door LH)	DL-21
	9. Lock position switch circuit (Rear passenger door RH)	DL-24
	10. Trigger (Lock) switch circuit	DL-228
	11. Antenna circuit	DL-215
	12. Replace the body ECU.	-
	13. Replace the certification ECU.	-
Luggage compartment does not open (when the key is outside the vehicle).	1. Check for DTCs in the smart key system.	DL-177
	2. Power door lock control system	DL-8
	3. Check if any function is cancelled due to customization.	DL-156
	4. Operate the luggage compartment SW on the key to check the wireless function. (If it does not operate, see "Wireless door lock function" in this table.)	-
	5. Check operation of the cabin oscillator in diagnostic mode.	DL-171
	6. Luggage oscillator circuit	DL-217
	7. Luggage compartment open switch circuit	DL-222
	8. Replace the body ECU.	-
	9. Replace the certification ECU.	-

Symptom	Suspected area	See page
Function to prevent key confinement in the luggage compartment does not operate. (The luggage compartment does not open.)	1. Check for DTCs in the smart key system.	DL-177
	2. Power door lock control system	DL-8
	3. Courtesy light switch circuit (Front)	DL-101
	4. Courtesy light switch circuit (Rear)	DL-104
	5. Lock position switch circuit (Driver door)	DL-15
	6. Lock position switch circuit (Front passenger door)	DL-18
	7. Lock position switch circuit (Rear passenger door LH)	DL-21
	8. Lock position switch circuit (Rear passenger door RH)	DL-24
	9. Check if any function is not cancelled due to customization.	DL-156
	10. Operate the LOCK/UNLOCK SW on the key to check the wireless function. (If it does not operate, see "Wireless door lock function" in this table.)	-
	11. Check operation of the cabin oscillator in diagnostic mode.	DL-171
	12. Luggage oscillator circuit	DL-217
	13. Replace the body ECU.	-
	14. Replace the certification ECU.	-
Function to prevent key confinement in the luggage compartment does not operate. (The alarm does not sound.)	1. Check if the function to prevent key confinement in the luggage compartment operates.	-
	2. Check if answer back is performed when the wireless door lock is operated.	DL-86
	3. Replace the certification ECU.	-
The outside alarm of the answer back and entry systems does not sound.	1. Check if the function to prevent key confinement in the luggage compartment operates.	-
	2. Check that "WIRLS BUZZ RESP" and "HAZARD ANS BACK" in the DATA LIST of the body ECU is YES. (If it is NO, go to power door lock system.)	DL-11
	3. Wireless door lock tuner circuit (DTC B1242)	DL-89
	4. Replace the certification ECU.	-
The inside alarm of the entry system does not sound.	1. Operate the LOCK/UNLOCK SW on the key to check the wireless function. (If it does not operate, see "Wireless door lock function" in this table.)	-
	2. Check if the key reminder buzzer sounds.	-
	3. Replace the certification ECU.	-
ID code matching inside the cabin cannot be performed.	1. Check if any function is cancelled due to customization.	DL-156
	2. Operate the LOCK/UNLOCK SW on the key to check the wireless function. (If it does not operate, see "Wireless door lock function" in this table.)	-
	3. Check the cabin oscillator operation in the diagnostic mode.	DL-171
	4. Cabin oscillator circuit	DL-220
	5. Luggage oscillator circuit	DL-217
	6. System is normal.	-
ID code matching outside the cabin cannot be performed.	1. Check if any function is cancelled due to customization.	DL-156
	2. Operate the LOCK/UNLOCK SW on the key to check the wireless function. (If it does not operate, see "Wireless door lock function" in this table.)	-
	3. Check operation of each door oscillator in diagnostic mode.	DL-171
	4. Door oscillator circuit	DL-206
	5. System is normal.	-

WIRELESS DOOR LOCK FUNCTION

Symptom	Suspected area	See page
Wireless door lock function does not operate.	1. Key	DL-232
	2. Wireless door lock tuner circuit (DTC B1242)	DL-89
	3. Power door lock control system	DL-8
	4. Replace the certification ECU.	-
Luggage compartment is the only wireless door lock function that does not operate.	1. Key	DL-232
	2. Wireless door lock tuner circuit (DTC B1242)	DL-89
	3. Power door lock control system	DL-8
	4. Replace the certification ECU	-
No answer back (wireless door lock buzzer)	1. Wireless door lock buzzer circuit	DL-110
	2. Replace the certification ECU.	-
No answer back (hazard warning light)	1. Turn signal warning light circuit	DL-98
	2. Replace the certification ECU.	-

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STEERING LOCK FUNCTION

Symptom	Suspected area	See page
Steering wheel cannot be unlocked (the engine cannot be started).	1. Check for DTCs in the push button start.	ST-23
	2. Check for DTCs in the smart key system.	DL-177
	3. Check that the "LCK/UNLCK REC" item in the DATA LIST of the certification ECU displays YES within 10 seconds after starting the engine. (If it displays NO, see "No steering unlock command" in this table.)	-
	4. Check the output from the IGE terminal of the steering lock ECU (DTC B2782).	SR-17
	5. Steering lock ECU power source circuit	SR-29
	6. Replace the steering lock ECU.	-
Steering wheel cannot be unlocked (no steering unlock command).	1. Check that the "S CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the certification ECU or ID code box.)	DL-171
	2. Check that the "L CODE MACH" item in the DATA LIST of the steering lock ECU displays OK. (If it displays NG, replace the steering lock ECU or ID code box.)	DL-171
	3. Replace the certification ECU.	-
Steering wheel cannot be locked.	1. Check for DTCs in the push button start.	ST-23
	2. Check for DTCs in the smart key system.	DL-177
	3. With the engine switch OFF and the shift in the P position, open and close the drivers door. After that, check that the "LCK/UNLCK REC" item in the DATA LIST of the certification ECU displays YES within 10 seconds. (If it displays NO, see "No steering lock command" in this table.)	-
	4. Check the output from the IGE terminal of the steering lock ECU (DTC B2782).	SR-17
	5. Steering lock ECU power source circuit	SR-29
	6. Replace the steering lock ECU.	-
Steering wheel cannot be locked (no steering lock command).	1. Courtesy light switch circuit (Front)	DL-101
	2. Courtesy light switch circuit (Rear)	DL-104
	3. Check that the "S CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the certification ECU or ID code box.)	DL-171
	4. Check that the "L CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the steering lock ECU or ID code box.)	DL-171
	5. Replace the certification ECU.	-

KEY REMINDER WARNING FUNCTION

Symptom	Suspected area	See page
Key reminder buzzer does not sound.	1. Perform ACTIVE TEST for the combination meter.	ME-33
	2. Check "COURTESY SW" in the DATA LIST of the door lock control system.	DL-11
	3. Check the key reminder buzzer when the engine switch is ON (ACC) and the drivers door is opened.	-
	4. Check if the steering wheel is locked when all power supplies are OFF and the drivers door is opened. (If the steering wheel is not locked, see "Steering wheel cannot be locked" in the steering lock function table.)	-
	5. Check that the "LCK BAR STUCK" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the steering lock assembly.)	DL-171
	6. Replace the certification ECU.	-

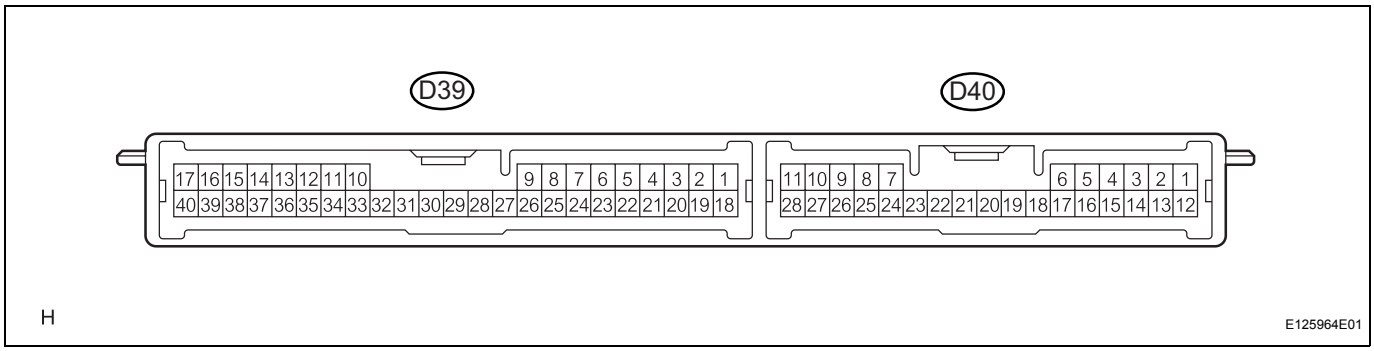
PUSH BUTTON START FUNCTION

Symptom	Suspected area	See page
Engine does not start.	1. Check for DTCs in the push button start.	ST-23
	2. Check for DTCs in the smart key system.	DL-177
	3. Check that the engine switch is turned on.	-
	4. Check cranking operation. (If cranking operation is possible, see "Engine does not start due to the engine immobilizer" in this table.)	-
	5. Check "SHIFT P SIG" in the DATA LIST of the power source control ECU and confirm that the shift signal is normal.	DL-171
	6. Check whether the steering wheel is locked or unlocked. (If it is locked, see "Steering wheel cannot be unlocked" in the steering lock function table.)	-
	7. Check the output signal from the ST SW of the certification ECU (DTC B2275).	ST-38
	8. Replace the power source control ECU.	-
Engine does not start due to the engine immobilizer.	1. Check that the "L CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the steering lock ECU or ID code box.)	DL-171
	2. Check that the "ENG START REQ" item in the DATA LIST of the certification ECU displays YES. (If it displays NO, replace the certification ECU.)	DL-171
	3. Check that the "S CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the certification ECU or ID code box.)	DL-171
	4. Replace the ID code box.	-
Engine does not start due to the EFI system.	1. Terminals of ACCR and STAR are turned on when starting the engine (DTC B2276).	ST-41
	2. ST relay	ST-80
	3. Starter	ST-74
	4. Replace the ECM.	-

Symptom	Suspected area	See page
Power does not turn on (neither ACC nor IG is possible).	1. Check for DTCs in the push button start.	ST-23
	2. Place the key on the drivers seat, move the shift lever to the P position, and depress the brake pedal. Check that the engine switch indicator comes on in green. (If the indicator does not come on or comes on in amber, see "ID code matching inside the cabin cannot be performed" in this table.)	-
	3. Check the IG1 relay (DTC B2272).	ST-27
	4. Check the IG2 relay (DTC B2273).	ST-32
	5. Check the ACC relay (DTC B2274).	ST-35
	6. Check the input terminal of the engine switch (DTC B2278).	ST-45
	7. Ground circuit (Power source control ECU - body ground)	ST-17
	8. Replace the power source control ECU.	-
Power is not turned on (only ACC is not turned on).	1. Check for DTCs in the push button start.	ST-23
	2. Check the ACC relay (DTC B2274).	ST-35
	3. Replace the power source control ECU.	-
Power is not turned on (only IG is not turned on).	1. Check for DTCs in the push button start.	ST-23
	2. Check the IG1 relay (DTC B2272).	ST-27
	3. Check the IG2 relay (DTC B2273).	ST-32
	4. Replace the power source control ECU.	-

TERMINALS OF ECU

1. CHECK CERTIFICATION ECU



(a) Disconnect the D39 and D40 ECU connectors.
(b) Measure the resistance and voltage of each terminal of the wire harness side connector.

DL

Standard

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
+B1 (D39-1) - Body ground	R - Body ground	+B power supply	Always	10 to 14 V
TSW1 (D39-3) - Body ground	LG - Body ground	Trigger switch (Lock switch) signal	Front lock switch LH not pushed → Pushed	10 kΩ or higher → Below 1 Ω
TSW2 (D39-4) - Body ground	GR - Body ground	Trigger switch (Lock switch) signal	Front lock switch RH not pushed → Pushed	10 kΩ or higher → Below 1 Ω
TSW5 (D39-7) - Body ground	G - Body ground	Luggage compartment open switch signal	Luggage compartment open switch not pushed → Pushed	10 kΩ or higher → Below 1 Ω
LIN (D39-10) - Body ground	BR - Body ground	LIN line	Always	10 kΩ or higher
E (D39-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
IG (D39-18) - Body ground	Y - Body ground	Ignition power supply	Engine switch OFF → ON (IG)	Below 1 V → 10 to 14 V
ACC (D39-19) - Body ground	SB - Body ground	ACC power supply	Engine switch OFF → ON (ACC)	Below 1 V → 10 to 14 V
TSW3 (D40-25) - Body ground	Y - Body ground	Trigger switch (Lock switch) signal	Rear lock switch LH not pushed → Pushed	10 kΩ or higher → Below 1 Ω
TSW4 (D39-26) - Body ground	GR - Body ground	Trigger switch (Lock switch) signal	Rear lock switch RH not pushed → Pushed	10 kΩ or higher → Below 1 Ω
MPX1 (D39-27) - Body ground	R - Body ground	MPX line	Always	10 kΩ or higher
MPX2 (D39-28) - Body ground	B - Body ground	MPX line	Always	10 kΩ or higher
AGND (D39-40) - Body ground	V - Body ground	Ground	Always	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.
(c) Reconnect the D39 and D40 ECU connectors.
(d) Measure the voltage and frequency of each terminal of the connector.

Standard

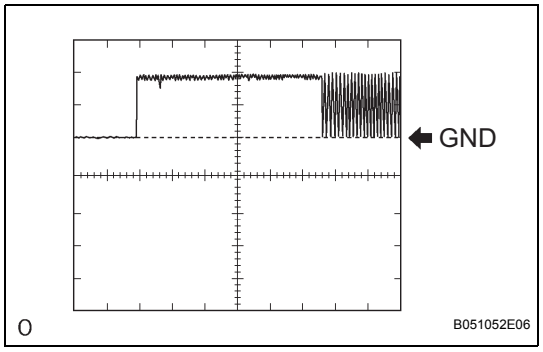
Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
SEL1 (D39-5) - Body ground	P - Body ground	Outside handle antenna signal	Move the key more than 5 m (16.4 ft) away from the front door LH. → Bring it to the outside handle.	10 to 14 V → Below 1 V

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
SEL2 (D39-6) - Body ground	V - Body ground	Outside handle antenna signal	Move the key more than 5 m (16.4 ft) away from the front door RH. → Bring it to the outside handle.	10 to 14 V → Below 1 V
TXCT (D39-8) - Body ground	GR - Body ground	Transponder key amplifier output signal	Key is not in the cabin. → Have the key outside the cabin and open the driver's door.	Below 1 V → Pulse generation (see waveform 1)
CODE (D39-9) - Body ground	W - Body ground	Transponder key amplifier communication signal	Key is not in the cabin. → Have the key outside the cabin and open the driver's door.	Below 1 V → Pulse generation (see waveform 2)
CG5B (D39-12) - CLG5 (D39-11)	W - R	Cabin oscillator front signal	Engine switch OFF → ON (IG) after more than 30 seconds of driver door's opening or closing.	Some Hz → 0 Hz
CG6B (D39-14) - CLG6 (D39-13)	SB - R	Cabin oscillator rear signal	Engine switch OFF → Close all the doors with the key in the cabin and turn the lock switch on.	Some Hz → 0 Hz
CG7B (D39-16) - CLG7 (D39-15)	O - G	Luggage compartment oscillator inner signal	Engine switch OFF → Turn the luggage compartment lock switch on with all the doors unlocked.	Some Hz → 0 Hz
SEN1 (D39-22) - Body ground	O - Body ground	Outside handle antenna signal	Front door LH outside handle is not held. → Front door LH outside handle is held.	10 to 14 V → Below 1 V
SEN2 (D39-23) - Body ground	B - Body ground	Outside handle antenna signal	Front door LH outside handle is not held. → Front door LH outside handle is held.	10 to 14 V → Below 1 V
RCO (D39-29) - Body ground	G - Body ground	Tuner power source	Engine switch OFF, all doors closed and key switch OFF → ON	Below 1 V → 4.6 to 5.4 V
VC5 (D39-30) - Body ground	O - Body ground	Transponder key amplifier power supply	Key is not in the vehicle. → Have the key outside the cabin and open the driver's door.	Below 1 V → 4.6 to 5.4 V
CG8B (D39-32) - CLG8 (D39-31)	P - LG	Luggage compartment oscillator outer signal	Engine switch OFF → Turn the luggage compartment lock switch on with all the doors unlocked.	Some Hz → 0 Hz
CLG1 (D39-33) - Body ground	GR - Body ground	Door oscillator output signal	All doors closed (locked), engine switch OFF → ON (IG)	Some Hz → 0 Hz
CG1B (D39-34) - Body ground	V - Body ground	Door oscillator output signal	All doors closed (locked), engine switch OFF → ON (IG)	Some Hz → 0 Hz
CLG2 (D39-35) - Body ground	LG - Body ground	Door oscillator output signal	All doors closed (locked), engine switch OFF → ON (IG)	Some Hz → 0 Hz
CG2B (D39-36) - Body ground	BR - Body ground	Door oscillator output signal	All doors closed (locked), engine switch OFF → ON (IG)	Some Hz → 0 Hz
ASEL (D39-37) - Body ground	V - Body ground	Tuner select signal	Turn the luggage compartment lock switch on with all the doors unlocked.	Below 1 V → 4.5 to 6.0 V
RDA (D39-38) - Body ground	Y - Body ground	Tuner input signal	Engine switch OFF, all doors closed, the key is not in the action area. → The key is in the action area.	10 to 14 V → Below 1 V
RSSI (D39-39) - Body ground	R - Body ground	Tuner radio wave detection signal	Engine switch OFF, all doors closed, the key is not in the action area. → The key is in the action area.	10 to 14 V → Below 1 V
SEL3 (D40-1) - Body ground	L - Body ground	Outside handle antenna signal	Move the key more than 5 m (16.4 ft) away from the rear door LH. → Bring it to the outside handle.	10 to 14 V → Below 1 V

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
SEL4 (D40-2) - Body ground	B - Body ground	Outside handle antenna signal	Move the key more than 5 m (16.4 ft) away from the rear door RH. → Bring it to the outside handle.	10 to 14 V → Below 1 V
CLG3 (D40-8) - Body ground	W - Body ground	Door oscillator output signal	All doors closed (locked), engine switch OFF → ON (IG)	Some Hz → 0 Hz
CG3B (D40-9) - Body ground	B - Body ground	Door oscillator output signal	All doors closed (locked), engine switch OFF → ON (IG)	Some Hz → 0 Hz
CLG4 (D40-10) - Body ground	V - Body ground	Door oscillator output signal	All doors closed (locked), engine switch OFF → ON (IG)	Some Hz → 0 Hz
CG4B (D40-11) - Body ground	P - Body ground	Door oscillator output signal	All doors closed (locked), engine switch OFF → ON (IG)	Some Hz → 0 Hz
SEN4 (D40-27) - Body ground	O - Body ground	Outside handle antenna signal	Rear door LH outside handle is not held. → Rear door LH outside handle is held.	10 to 14 V → Below 1 V
SEN3 (D40-28) - Body ground	BR - Body ground	Outside handle antenna signal	Rear door LH outside handle is not held. → Rear door LH outside handle is held.	10 to 14 V → Below 1 V

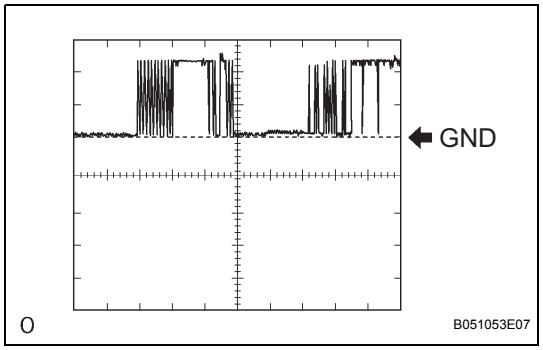
DL

If the result is not as specified, the certification ECU may have a malfunction.



(e) Inspect using oscilloscope.
Waveform 1 (Reference):

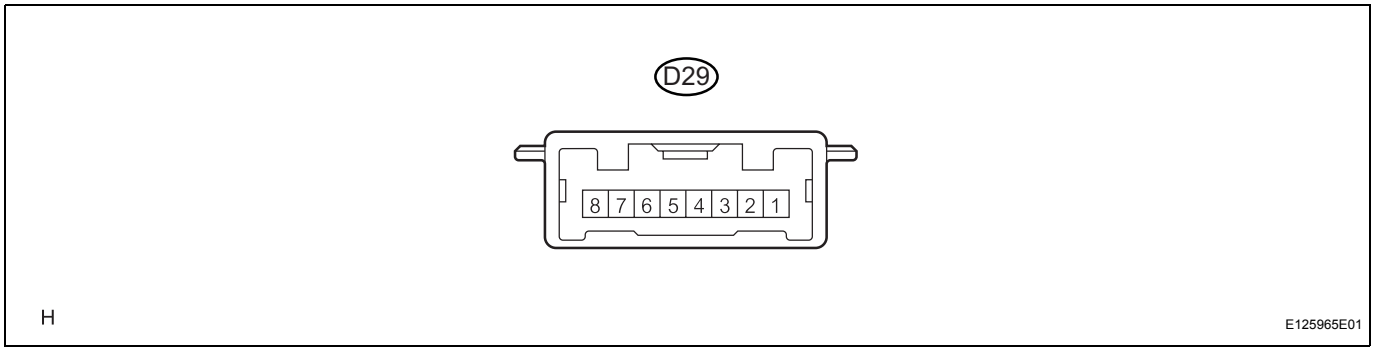
Terminal	TXCT - Body ground
Tool Setting	2 V/DIV, 10 ms/DIV
Condition	The key is not in the cabin.



(f) Inspect using oscilloscope.
Waveform 2 (Reference):

Terminal	CODE - Body ground
Tool Setting	2 V/DIV, 20 ms/DIV
Condition	The key is not in the cabin.

2. CHECK ID CODE BOX



(a) Disconnect the D29 ID code box connector.

(b) Measure the resistance of each terminal of the wire harness side connector.

Resistance

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
LIN (D29-3) - Body ground	V - Body ground	LIN line	Always	10 kΩ or higher
GND (D29-8) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
MPX8 (D29-1) - Body ground	W - Body ground	MPX line	Always	10 kΩ or higher

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

(c) Reconnect the D29 ECU connector.

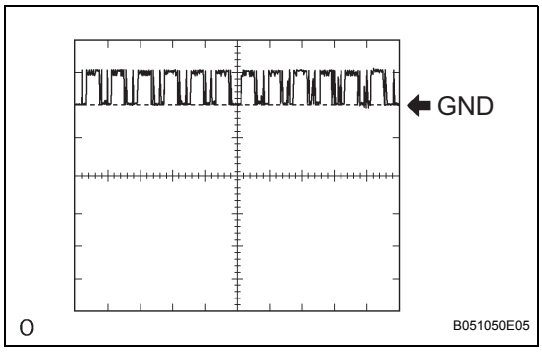
(d) Measure the voltage of each terminal of the connector.

Standard

DL

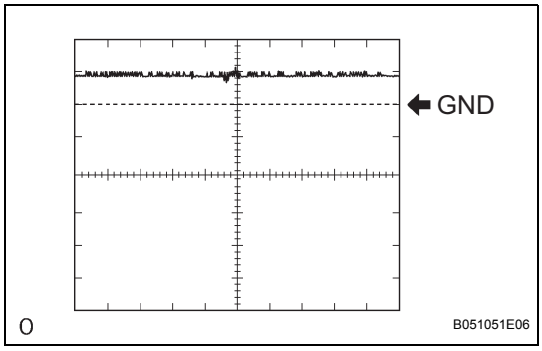
Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
EFIO (D29-6) - Body ground	L - Body ground	ECM output signal	Engine switch ON (IG)	Pulse generation (see waveform 1)
EFII (D29-5) - Body ground	BR - Body ground	ECM input signal	Always	Pulse generation (see waveform 2)

If the result is not as specified, the ID code box may have a malfunction.



(e) Inspect using oscilloscope.
Waveform 1 (Reference):

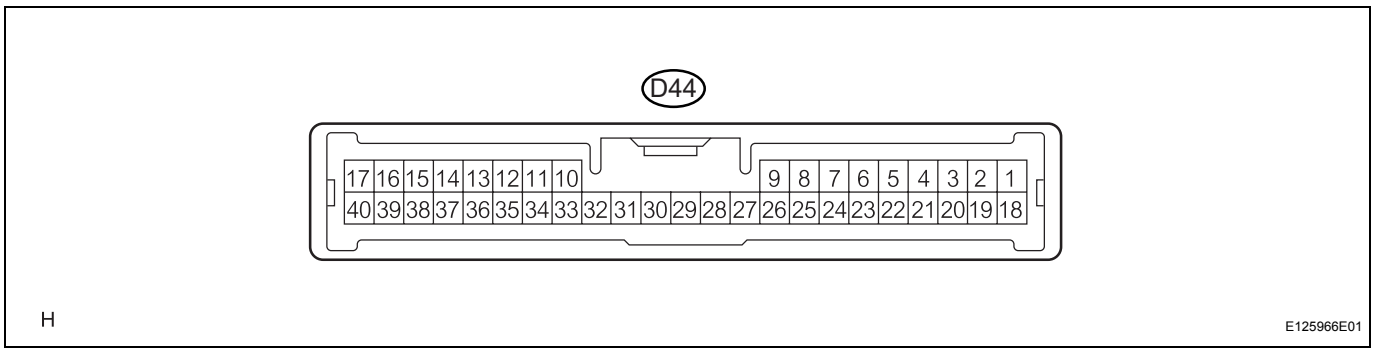
Terminal	EFIO - Body ground
Tool Setting	10 V/DIV, 100 ms/DIV
Condition	Engine switch ON (IG)



(f) Inspect using oscilloscope.
Waveform 2 (Reference):

Terminal	EFII - Body ground
Tool Setting	10 V/DIV, 100 ms/DIV
Condition	Always

3. POWER SOURCE CONTROL ECU



(a) Disconnect the D44 ECU connector.
(b) Measure the resistance of each terminal of the wire harness side connector.

Resistance

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
MPX1 (D44-7) - Body ground	B - Body ground	MPX line	Always	10 kΩ or higher
MPX2 (D44-24) - Body ground	LG - Body ground	MPX line	Always	10 kΩ or higher
LINI (D44-30) - Body ground	BR - Body ground	LIN line	Always	10 kΩ or higher

If the result is not as specified, there may be a malfunction on the wire harness side.
(c) Reconnect the D44 ECU connector.
(d) Measure the voltage and frequency of each terminal of the connector.

Voltage

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
SLR+ (D44-32) - GND2 (D44-6)	BR - W-B	Power source for steering lock actuator	Steering lock motor operate → not operate	Below 1 V → 10 to 14 V
SLP (D44-26) - GND2 (D44-6)	GR - W-B	Steering lock actuator UNLOCK position signal	Steering is locked → released	Below 1 V → 10 to 14 V
SPD (D44-19) - GND2 (D44-6)	W - W-B	Vehicle speed signal	Engine switch ON (IG), Rotate driving wheel slowly	Pulse generation
TACH (D44-2) - Body ground	L - Body ground	Engine revolution speed signal	Idling	Pulse generation
P (D44-5) - Body ground	P - Body ground	Shift lock signal	Shift lever except P position	Below 1.5 V
CTSW (D44-31) - Body ground	O - Body ground	Starter assist signal	Cranking	Below 1.5 V
STSW (D44-39) - Body ground	R - Body ground	Starter request signal	Brake pedal depressed, Shift lever P or N position, Engine switch ON (ACC, IG, START)	10 to 14 V
STR1 (D44-17) - GND2 (D44-6)	SB - W-B	Park / neutral position switch	Shift lever P or N position, Engine switch START	10 to 14 V
STR2 (D44-15) - GND2 (D44-6)	B - W-B	Starter signal	Shift lever P or N position, Engine switch START	10 to 14 V
INDS (D44-4) - Body ground	Y - Body ground	Vehicle condition signal	Brake pedal depressed, Shift lever P or N position, Engine switch ON (ACC, IG, START)	10 to 14 V
INDW (D44-13) - Body ground	GR - Body ground	Warning signal	Smart key system malfunction	Pulse generation
SWIL (D44-36) - Body ground	R - Body ground	Illumination signal	Light control switch TAIL or HEAD	10 to 14 V

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

(e) Reconnect the D44 ECU connector.

(f) Measure the voltage of the connectors.

Voltage

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
SLP1 (D44-4) - GND (D14-1)	GR - W-B	Steering lock actuator UNLOCK position signal	Steering is locked → released	Below 1 V → 10 to 14 V
IGE (D44-3) - GND (D14-1)	BR - W-B	Power source for steering lock actuator	Steering lock motor operate → not operate	Below 1 V → 10 to 14 V

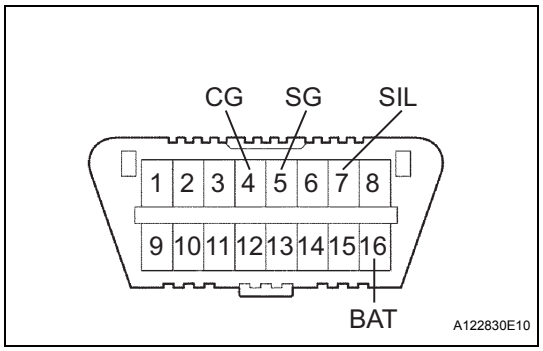
If the result is not as specified, the power source control ECU may have a malfunction.

DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) The certification ECU controls the function of the smart key system on the vehicle. Data of the smart key system and the Diagnostic Trouble Code (DTC) can be read in the Data Link Connector 3 (DLC3) of the vehicle. When a malfunction occurs in the smart key system, even though the smart key system warning light does not turn on, DTCs can be checked.
When the system seems to be malfunctioning, use the intelligent tester to check for a malfunction and perform repairs.

2. CHECK DLC3

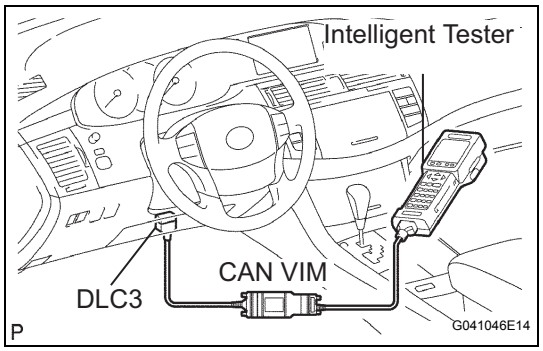


(a) The vehicle uses the ISO 15765-4 for communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.

DL

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	Below 1 Ω	Constant
SG	5	Signal ground	Body ground	Below 1 Ω	Constant
BAT	16	Battery positive	Body ground	11 to 14 V	Constant

If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.



(b) Connect the cable of the intelligent tester to the DLC3, turn the engine switch on (IG) and attempt to use the intelligent tester. If the screen displays a communication error message, a problem may be on the vehicle side or tester side.

- When troubleshooting the smart key system using the intelligent tester with the engine switch off, connect the intelligent tester to the vehicle and repeat turning any of the courtesy light switches on and off until communication between the tester and the vehicle begins (the interval between ON and OFF should be less than 1.5 sec.).
- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.

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

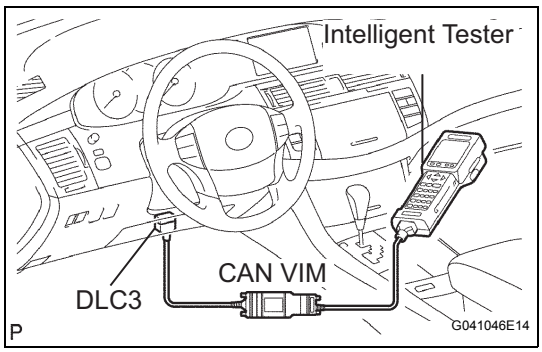
3. CHECK BATTERY VOLTAGE

(a) Check the battery voltage.

Voltage:

11 to 14 V

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



DTC CHECK / CLEAR

1. CHECK DTC

(a) Connect the intelligent tester to the DLC3.

(b) Turn the engine switch on (IG).

(c) Read the DTCs by following the directions on the tester screen.

HINT:

Refer to the intelligent tester operator's manual for further details.

2. CLEAR DTC

(a) Connect the intelligent tester to the DLC3.

(b) Turn the engine switch on (IG).

(c) Erase the DTCs by following the directions on the tester screen.

HINT:

Refer to the intelligent tester operator's manual for further details.

FAIL-SAFE CHART

If any of the following codes is recorded, the power source control ECU enters the fail-safe mode.

POWER SOURCE CONTROL ECU

DTC No.	Item	Fail-safe Function	Fail-safe Deactivation Condition
B2283	Vehicle speed sensor circuit	Steering does not lock	"Pass" condition is detected

CERTIFICATION ECU

DTC No.	Item	Fail-safe Function	Fail-safe Deactivation Condition
B2781	Steering lock ECU malfunction	Engine can not be started	"Pass" condition is detected
B2782	Steering lock ECU IGE signal circuit	Engine can not be started	"Pass" condition is detected

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

By accessing the DATA LIST displayed on the intelligent tester, you can perform such functions as reading the values of switches and sensors without removing any parts. Reading the DATA LIST is the first step of troubleshooting and is one method to shorten labor time.

(a) Connect the intelligent tester to the DLC3.
(b) Turn the engine switch on (IG).
(c) Following the display on the tester, select "DATA LIST".

PWR SOURCE CTRL (Power source control ECU):

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
SHIFT P SIG	Status of shift P position switch / ON or OFF	ON: Shift lever is P position OFF: Shift lever is non-P position	-
STR UNLOCK SW	Status of steering unlock switch / ON or OFF	ON: Steering unlock switch is UNLOCK OFF: Steering unlock switch is LOCK	-
STOP LAMP SW1	Status of stop light switch1 / ON or OFF	ON: Brake pedal pressed OFF: Brake pedal depressed	-
START SW1	Status of start switch1 / ON or OFF	ON: Engine switch is ON (IG) OFF: Engine switch is OFF	-
START SW2	Status of start switch2 / ON or OFF	ON: Engine switch is ON (IG) OFF: Engine switch is OFF	-
N SW/C SW	Status of Neutral SW / ON or OFF	ON: Shift lever is N position OFF: Shift lever is non-N position	-
RATCH CIRCUIT	Status of ratch circuit / ON or OFF	ON: Engine switch is ON (IG) OFF: Engine switch is OFF or ON (ACC) or ENGINE START	-
IG1 RELAY MON1	Status of ignition1 relay monitor (outside) / ON or OFF	ON: Engine switch is ON (IG) OFF: Engine switch is OFF	-
IG1 RELAY MON2	Status of ignition1 relay monitor (inside) / ON or OFF	ON: Engine switch is ON (IG) OFF: Engine switch is OFF	-
IG2 RELAY MON1	Status of ignition2 relay monitor (outside) / ON or OFF	ON: Engine switch is ON (IG) OFF: Engine switch is OFF	-
IG2 RELAY MON2	Status of ignition2 relay monitor (inside) / ON or OFF	ON: Engine switch is ON (IG) OFF: Engine switch is OFF	-
ST RELAY MON	Status of starter relay monitor / ON or OFF	ON: ST relay is ON OFF: ST relay is OFF	-
ST REQUEST SIG	Status of starter requesting signal monitor / ON or OFF	ON: ST relay is ON OFF: ST relay is OFF	-
ACC RELAY MON	Status of ACC relay monitor / ON or OFF	ON: Engine switch is ON (ACC) OFF: Engine switch is OFF	-
ACC CUT SIG	Status of ACC relay cut signal / ON or OFF	ON: Engine switch is OFF OFF: Engine switch is ON (ACC)	-
VEHICLE SPD SIG	Status of vehicle speed signal / STOP or RUN	ON: Vehicle is stopped OFF: Vehicle is running	-
E/G COND	Status of engine condition / STOP or RUN	ON: Engine is stopped OFF: Engine is running	When engine condition is rotating
PWR COND	Status of power supply condition / ALL, ACC ON, IG1, IG2, ST ON	ALL: All relay is ON ACC ON: ACC relay is ON IG1: IG1 relay is ON IG2: IG2 relay is ON ST ON: ST relay is ON	When ready signal allows to be capable driving

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
#CODE	Status of Number of diagnosis codes / Min.: 0, Max.: 255	-	-

SMART KEY (Certification ECU):

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
D TOUCH SENSOR	Status of touch sensor front LH / ON or OFF	ON: Touch sensor is touched OFF: Touch sensor does not touched	When the outside handle of the driver's door is touched by a person who does not carry the key after "D SELECT SIG" of the ACTIVE TEST is performed, "D TOUCH SENSOR" in the DATA LIST turn on.
P TOUCH SENSOR	Status of touch sensor front RH / ON or OFF	ON: Touch sensor is touched OFF: Touch sensor does not touched	When the outside handle of the driver's door is touched by a person who does not carry the key after "P SELECT SIG" of the ACTIVE TEST is performed, "P TOUCH SENSOR" in the DATA LIST turn on.
DR TOUCH SENSOR	Status of touch sensor rear LH / ON or OFF	ON: Touch sensor is touched OFF: Touch sensor does not touched	-
DP TOUCH SENSOR	Status of touch sensor rear RH / ON or OFF	ON: Touch sensor is touched OFF: Touch sensor does not touched	-
D TRIGGER	Lock switch front LH / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-
P TRIGGER	Lock switch front RH / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-
DR TRIGGER	Lock switch rear LH / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-
DP TRIGGER	Lock switch rear RH / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-
TR/B-DOOR UNLK	Luggage compartment open switch condition / ON or OFF	ON: Luggage compartment open switch is pushed OFF: Luggage compartment open switch does not pushed	-
IG SW	Engine switch IG condition / ON or OFF	ON: Engine switch ON (IG) OFF: Engine switch OFF	-
ACC SW	Engine switch ACC condition / ON or OFF	ON: Engine switch ON (ACC) OFF: Engine switch OFF	-
IGNITION AREA	Ignition available area / FRONT or ALL	Customization status is displayed	-
PARK WAIT TIME	Parking wait time / 0.5s, 1.5s, 2.5s, 5s	Customization status is displayed	-
TRUNK OPEN MODE	Luggage compartment door open mode with vehicle locked / ON or OFF	Customization status is displayed	-
KEY LO-BATT WRN	Low key battery warning / ON or OFF	Customization status is displayed	-
UNMATCH V-ID	Unmatched vehicle-ID / YES orNO	YES: Key ID matches vehicle NO: Key ID does not match vehicle	-
NO RESPONSE	No response / YES or NO	YES: Response from key NO: No response from key	-
UNMATCH FORMAT	Unmatched response code and format / YES or NO	YES: Key ID code matches NO: Key ID code does not match	-
LOW BATTERY	Key low battery / YES or NO	YES: Key battery voltage drops NO: Key battery voltage is normal	-

DL

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
WRONG CODE	ID code difference / YES or NO	YES: Key ID code matches NO: Key ID code does not match	-
WRONG C CODE	C code difference (Response) / YES or NO	YES: Key ID code matches NO: Key ID code does not match	-
P/S 10-MIN	Power save counter 10 minutes / Min.: 0, Max.: 255	The number of power saved for 10 minutes is displayed	-
P/S 5-DAY	Power save counter 5 days / Min.: 0, Max.: 255	The number of power saved for 5 days is displayed	-
P/S 14-DAY	Power save counter 14 days / Min.: 0, Max.: 255	The number of power saved for 10 days is displayed	-
WRONG ID CODE	ID code difference / YES or NO	YES: Key ID code matches NO: Key ID code does not match	-
WRONG ROL CODE	Rolling code difference / YES or NO	YES: Key rolling code matches NO: Key rolling code does not match	-
DOOR UNLOCK MOD	Door unlock mode / ALL, EACH, D_DOOR, SIDE	Mode status is displayed	-
FUNCTION CANCEL	Entry door lock function cancel / ON or OFF	Mode status is displayed	-
PERMIT(START)	PERMIT(START) / NG or OK	NG: Engine start without permission OK: Engine start permission	-
IMMOBILIZER	Immobilizer function status / SET or UNSET	SET: The key is not inside the cabin UNSET: Push the engine switch with the key inside the cabin with depressing the brake pedal	-
MASTER KEY	Master key / MATCH or NO MATCH	MATCH: Key code is sent NO MATCH: Unmatched key code	-
SUB KEY	Sub key / MATCH or NO MATCH	MATCH: Key code is sent NO MATCH: Unmatched key code	-
BCC	BCC malfunction / NG or OK	NG: Correct data sensing OK: Incorrect data sensing	-
STATUS	Abnormal status / NG or OK	NG: Malfunction OK: Normal	-
ENCRYPT CODE	Different encrypt code / NG or OK	NG: Data error OK: Normal	-
SERIAL NUMBER	Different serial number / NG or OK	NG: Data error OK: Normal	-
FRAME	Frame error / NG or OK	NG: Data error OK: Normal	-
RESPONSE	Response / NG or OK	NG: With no response OK: Those with a response	-
WIRLES COM ID	Wireless starter communication ID / Registered or No registered	-	-
WIRLES C-CODE	Wireless C code / Registered or No registered	-	-
SCLK SLEEP COND	Steering lock sleep condition / YES or NO	-	-
SCLK START COND	Steering lock start condition / YES or NO	-	-
STEERING LOCK	Steering lock / SET or UNSET	-	This status changes depending on the state of some sensors.
STEERING UNLOCK	Steering unlock / SET or UNSET	-	This status changes depending on the state of some sensors.

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
ENG START COND	Engine start condition / OK or NG	OK: Engine start permission NG: Engine start without permission	-
SENSOR VALUE	Sensor malfunction / NG (PAST) or OK	NG (PAST): Sensor malfunction OK: No malfunction	-
PWR SUPPLY SHORT	Short in ECU / NG (PAST) or OK	NG (PAST): Short in ECU OK: No malfunction	-
PWR SUPPLY OPEN	Open in ECU / NG (PAST) or OK	NG (PAST): Open in ECU OK: No malfunction	-
MTR DRIVER SHRT	Short in driver ECU / NG (PAST) or OK	NG (PAST): Short in driver ECU OK: No malfunction	-
MTR DRIVER OPEN	Open in driver ECU / NG (PAST) or OK	NG (PAST): Open in driver ECU OK: No malfunction	-
LCK/UNLCK REC	Steering lock command reception record / YES or NO	YES: Steering lock / unlock signal received NO: Steering lock / unlock signal not received	-
LCK BAR STUCK	Lock bar stuck malfunction / NG (PAST) or OK	NG (PAST): Lock bar stuck malfunction OK: No malfunction	-
PUSH START ERR	Push button start function malfunction / NG (PAST) or OK	NG (PAST): Malfunction in push button start OK: No malfunction	-
IG2 (LINER)	IG2 status / ON or OFF	ON: 10 to 14 V OFF: Below 1 V	-
IG (LIN)	LIN bus start-up status / ON or OFF	ON: LIN bus started-up OFF: LIN bus not started-up	-
IDBX SLEEP COND	ID code box sleep condition / YES or NO	YES: ID code box sleep available NO: ID code box sleep not available	-
IDBX START COND	ID code box start condition / YES or NO	YES: ID code box started-up NO: ID code box not started-up	-
EFI CODE RECEIV	EFI code receive / NG or OK	NG: EFI code does not receive OK: EFI code received	-
START RQST	ID code box start request condition / YES or NO	YES: ID code box start request condition NO: ID code box non-start request condition	-
CODE RQST	3 bit code request / NG or OK	NG: 3 bit code does not receive OK: 3 bit code received	-
S CODE MATCH	Code verification result / OK or NG	OK: Verification confirmed NG: Verification not conformed	-
L CODE MATCH	Code verification result / OK or NG	OK: Verification confirmed NG: Verification not conformed	-
UNLC RQ RECEIVE	Steering unlock request / YES or NO	YES: Steering unlock NO: Steering lock	-
LCK RQ RECEIVE	Steering lock request / YES or NO	YES / NO	-
START RQST-PAST	Engine start request / YES or NO	YES / NO	-
EFI COM	EFI communication / OK or NG	NG: EFI code does not receive OK: EFI code received	-
L CODE MATCH	Code verification result / OK or NG	OK: Verification confirmed NG (PAST): Verification not conformed	-
S CODE MATCH	Code verification result / OK or NG	OK: Verification confirmed NG (PAST): Verification not conformed	-

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
#CODE	Diagnostic trouble code / Min.: 0, Max.: 255	-	-

METER (Combination Meter):

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
SPEED METER	Vehicle speed / Min.: 0 km/h (0 mph), Max.: 255 km/h (158 mph)	Almost the same as the actual vehicle speed (Wheel driving)	-
TACHO METER	Engine speed / Min.: 0 rpm, Max.: 12,750 rpm	Almost the same as the actual engine speed (When engine is running)	-
KEY REMND VOLUM	Key remind warning volume / LARGE, MEDIUM, SMALL	Customization status is displayed	-
KEY REMND SOUND	Key remind warning sound / FAST, NORMAL, SLOW	Customization status is displayed	-

SMART KEY (Steering Lock):

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
KEY SW	Key unlock warning switch / ON or OFF	ON: The key is inside the cabin OFF: The key is not inside the cabin	-
IG SW	Status of ignition relay / ON or OFF	ON: Engine switch is ON (IG) OFF: Engine switch is OFF (IG)	-
IMMOBILISER	Immobilizer system status / UNSET or SET	UNSET: Push the engine switch with the key inside the cabin while depressing the brake pedal SET: The key is not inside the cabin	-
RESPONSE	Transponder chip data / OK or NG	OK: With no response NG: Those with a response	-
FRAME	Transponder chip data / OK or NG	OK: Data OK NG: Data error	-
SERIAL NUMBER	Transponder chip data / OK or NG	OK: Data OK NG: Data error	-
ENCRYPT CODE	Transponder chip data / OK or NG	OK: Data OK NG: Data error	-
STATUS	Transponder chip data / OK or NG	OK: Data OK NG: Data error	-
BCC	Transponder chip data / OK or NG	OK: Correct data sensing NG: Incorrect data sensing	-
SUB KEY	Sub key code signal / MATCH or NO MATCH	MATCH: Sub key code is sent NO MATCH: Unmatched sub key	-
MASTER KEY	Master key code signal / MATCH or NO MATCH	MATCH: Master key code is sent NO MATCH: Unmatched master key	-
REGIST SUB CODE	Number of registered sub key / Min.: 0, Max.: 15	Number of registered sub key	-
REGIST MAS CODE	Number of registered master key / Min.: 0, Max.: 15	Number of registered sub key	-
REG CODE SPACE	Memory space for key code registration / NOT FULL or FULL	FULL: Impossible to register key code any more NOT FULL: Possible to register more key codes more	-
+B	Power source / BREAK or NORMAL	BREAK: Power source open NORMAL: Power source normal	-
ANTENNA COIL	Transponder key amplifier coil condition / FAIL or NORMAL	FAIL: Antenna coil is malfunctioning NORMAL: Antenna coil is normal	-

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
G-CODE DECISION	YES or NO	-	-
G-CODE SUPPORT	SUPPORT or NOT SUP	-	-
HAZARD ANS BACK	Hazard answer back / ON or OFF	ON: Hazard answer back function operates OFF: Hazard answer back function does not operate	-
WIRLS BUZZ RESP	Wireless door lock buzzer response / ON or OFF	ON: Wireless door lock buzzer sounds OFF: Wireless door lock buzzer does not sounds	-

2. ACTIVE TEST

HINT:

Perform the ACTIVE TEST using the intelligent tester to operate the motors of the front seat outer belts.

Performing the ACTIVE TEST is one of the methods to shorten labor time. It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Connect the intelligent tester to the DLC3.

(b) Turn the engine switch on (IG).

(c) Following the display on the tester, select the "ACTIVE TEST".

SMART KEY (Certification ECU):

Item	Vehicle Condition / Test Details	Diagnostic Note
IN LUG TUNER	Inside Trunk Tuner ON / OFF	-
OVERHEAD TUNER	Cabin Tuner ON / OFF	-
D TRANSMITTER	Door Oscillator (Front LH) ON / OFF	-
P TRANSMITTER	Door Oscillator (Front RH) ON / OFF	-
Fr TRANSMITTER	Cabin Oscillator (Front) ON / OFF	-
IN-BDR TRANSMTTR	Luggage Compartment Oscillator (Inner) ON / OFF	-
BDOOR TRANSMTTR	Luggage Compartment Oscillator (Outer) ON / OFF	-
D SELECT SIG	D-sheet Select ON/OFF	The same condition as when the key is brought near the vehicle will occur even if the key is not brought near the vehicle.
P SELECT SIG	P-sheet Select ON/OFF	The same condition as when the key is brought near the vehicle will occur even if the key is not brought near the vehicle.

METER (Combination Meter):

Item	Vehicle Condition / Test Details	Diagnostic Note
OPEN DOOR WARN	Open Door Warning Light ON / OFF	-
KEY REMND BUZZR	Key Remained Buzzer ON / OFF	-
WARNING BUZZER	Warning Buzzer ON / OFF	-
SMART KEY	Smart Key System Warning Light ON / OFF	-

SMART KEY (Steering Lock ECU):

Item	Vehicle Condition / Test Details	Diagnostic Note
SECURITY INDIC	Security Indicator Light ON / OFF	-

3. SMART KEY SYSTEM DIAGNOSIS MODE

HINT:

- The smart key system diagnostic mode can be used to check that the key and each tuner operate normally without removing the tuners from the vehicle.
- The smart key system diagnostic mode check is performed with the intelligent tester.

(a) Connect the intelligent tester to the DLC3.
(b) Turn the engine switch on (IG).
(c) Following the display on the tester, select "SMART KEY" → "ID UTILITY".
(d) Select each "Item" and bring the key up to the action area in which the system can detect the key.
If the system functions normally, the wireless door lock buzzer sounds once.

SMART DIAG MODE:

Item	Tuner
D+OVERHEAD	Cabin
P+OVERHEAD	Cabin
DR+OVERHEAD	Cabin
PR+OVERHEAD	Cabin
FR+OVERHEAD	Cabin
RR+OVERHEAD	Cabin
IN-LUG+IN-LUG	Luggage
LUGG+OVERHEAD	Cabin
LUGG+IN-LUG	Luggage
IN-BDOR+OVERHEAD	Cabin
BDOR+OVERHEAD	Cabin
IMMOBI+AMP	Transponder key amplifier

DIAGNOSTIC TROUBLE CODE CHART

HINT:
If a trouble code is displayed during the DTC check, check the circuit listed for the code in the table below (Proceed to the page listed for that circuit).

SMART KEY

DTC No.	Detection Item	Trouble Area	See page
B1242	Wireless Door Lock Tuner Circuit Malfunction	1. Tuner 2. Luggage compartment tuner 3. Wire harness 4. Certification ECU	DL-182
B2784	Antenna Coil Open / Short	1. Engine switch 2. Wire harness 3. Certification ECU	DL-186
B2785	Communication Malfunction between ECUs Connected by LIN	1. Wire harness 2. Steering lock actuator (Steering lock ECU) 3. ID code box 4. Power source control ECU 5. Certification ECU	DL-189
B2786	No Response from Steering Lock ECU	1. Wire harness 2. Steering lock actuator (Steering lock ECU) 3. Certification ECU	DL-193
B2789	No Response from ID BOX	1. Wire harness 2. ID code box 3. Certification ECU	DL-195
B278A	Short to GND in Immobiliser System Power Source Circuit	1. Wire harness 2. Engine switch 3. Certification ECU	DL-197
B2790	ID BOX EEPROM Malfunction	ID code box	DL-199
B2791	Communication Condition Failure between ECM	1. Wire harness 2. ID code box 3. ECM	DL-200

ECM

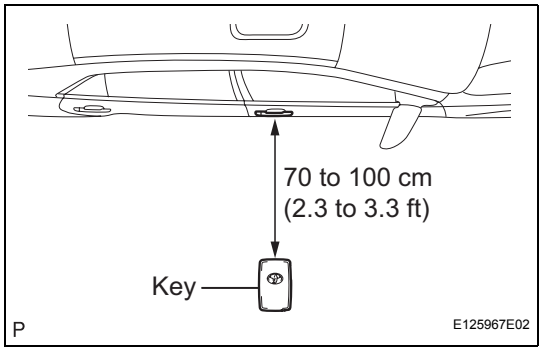
DTC No.	Detection Item	Trouble Area	See page
B2799	Communication with Immobiliser	1. Wire harness 2. ID code box 3. ECM	DL-202

ON-VEHICLE INSPECTION

1. CHECK SMART KEY SYSTEM OPERATION INSPECTION

(a) Inspect the entry door unlock function.

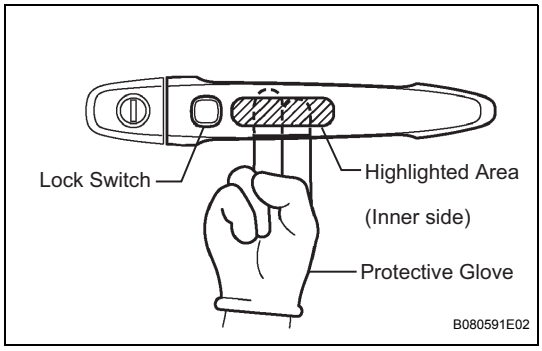
(1) Use the wireless lock operation to lock all the doors. With the key in your possession, touch a door's outside handle (touch sensor) and check that all doors unlock.



(2) Step 1: Inspect the entry door unlock operation's detection area. Hold the key at the same height as the door's outside handle (approximately 80 cm (2.6 ft) from the ground). Pay attention to the direction of the key in the illustration on the left. Check that when the key is brought within 70 to 100 cm (2.3 to 3.3 ft) of the vehicle, the system enters unlock standby mode. Unlock standby mode is signified by the key's red LED illumination.

(3) Step 2: Once the system enters unlock standby mode, touch the outside handle's sensor within 3 seconds. Check that the door unlocks.

(4) Repeat steps (1) and (2) for the remaining doors.



(5) Step 3: Inspect the door oscillator's response sensitivity. Wear protective gloves, set the system to unlock standby mode, and check that touching the highlighted area in the illustration with your index finger causes the door to unlock.

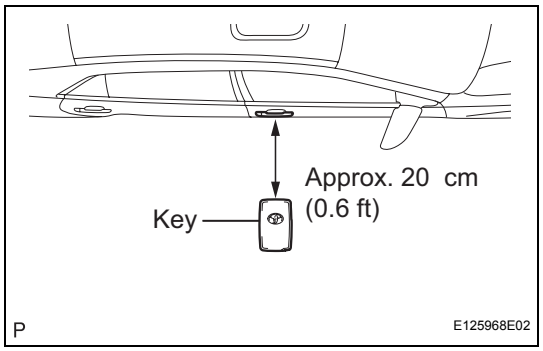
NOTICE:

When touching the highlighted area, tapping too quickly or having extended contact may not trigger the sensor. In such a case, the door will not unlock.

(6) Repeat step (3) for the remaining doors.

(b) Inspect the entry door lock function.

(1) Step 1: Close all of the vehicle's doors and set the system to unlock standby mode. With the key in your possession outside of the vehicle, check that pressing the lock switch locks all the doors.



(2) Step 2: Inspect the door lock operation's detection area and the vehicle interior's wireless door lock receiver for wave leaks. Hold the key at a height of 0.1 m (10 cm (0.33 ft) above the lower edge of the window frame). Pay attention to the direction and position of the key in the illustration on the left. Check that when the key is approximately 20 cm (0.6 ft) from the vehicle and the lock switch is pressed, all the doors lock and the warning buzzer (for when the key is left) does not sound.

NOTICE:

If the warning buzzer sounds, the vehicle interior's wireless door lock receiver may have a wave leak.

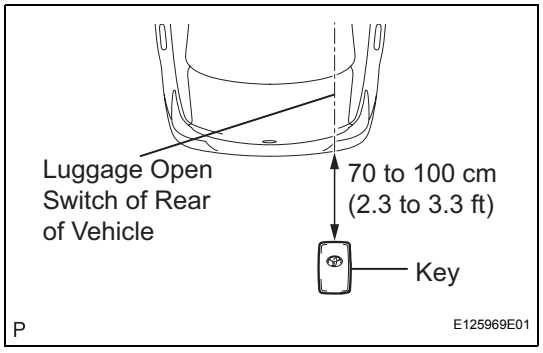
HINT:

Due to the key being unable to communicate with the system within 20 cm (0.65 ft) from the outside handle, do not press the lock switch with the same hand that is holding the key. The doors will not lock.

(3) Repeat steps (1) and (2) for the remaining doors.

(c) Inspect the entry trunk open function.

(1) Close the luggage compartment door. With the key in your possession, check that pressing the luggage compartment open switch (trunk open switch) opens the luggage compartment door.



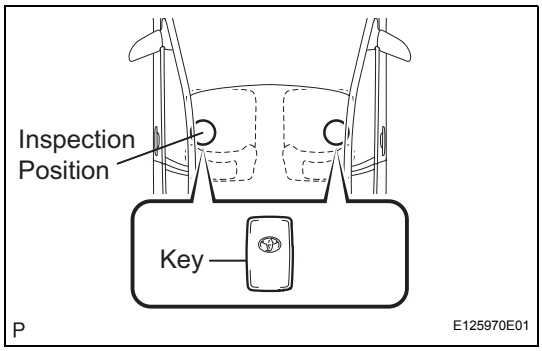
(2) Inspect the entry trunk open operation's detection area. Hold the smart key at the same height as the luggage electrical key switch (trunk open switch) (approximately 80 cm (2.6 ft) from the ground) and align it with the luggage open switch of the rear of the vehicle. Pay attention to the direction of the key in the illustration on the left. Check that when the key is brought within 70 to 100 cm (2.3 to 3.3 ft) of the vehicle, pressing the luggage compartment open switch opens the luggage compartment door.

(d) Inspect the push button start function.

(1) With the key in your possession, check that turning the engine switch on starts the engine.

(2) With the key in your possession, check that turning the engine switch from on (IG) to on (ACC) or OFF stops the engine.

DL

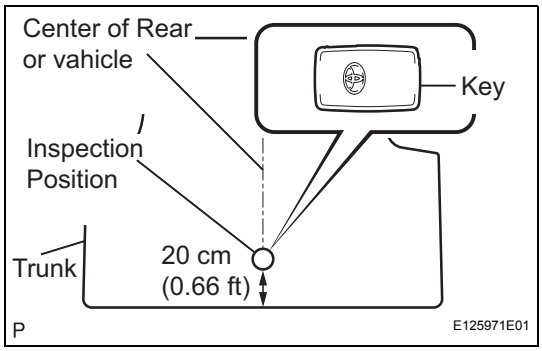


(3) Inspect the push button start operation's detection area. Pay attention to the direction of the key in the illustration on the left. Check that the engine can be started. When the key is in either of the two locations in the illustration.
NOTICE:
The engine cannot be started when the key is on the instrument panel or package tray, or in the glove box.

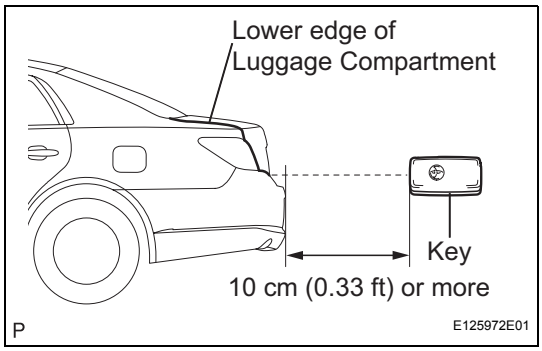
(e) Inspect the prevention of key confinement.

(1) Place the key into the trunk. Check that: 1) all doors locked and closing the luggage compartment door triggers the key's wireless door lock buzzer (which lasts approximately 20 seconds), and 2) pressing the luggage compartment open switch opens the luggage compartment door.

DL



(2) Inspect the key lock-in prevention's detection area. Pay attention to the direction of the key in the illustration on the left. When the key is in either of the two locations in the illustration, check that: 1) closing the luggage compartment door sounds the key's wireless door lock buzzer, and 2) pressing the luggage compartment open switch opens the luggage compartment door.
NOTICE:
- **If the key is inside a metal briefcase, metal box or any other metal storage item, the key will not be able to be detected by the system.**
- **"Prevention of key confinement" function activates only when all the doors are locked.**



(3) Inspect the key lock-in prevention's detection area and the luggage compartment interior's luggage tuner for wave leaks. Hold the key at the same height as the lower edge of the luggage compartment door and align it with the center of the rear of the vehicle. Pay attention to the direction and position of the key in the illustration on the left. Check that when the key is 10 cm (0.33 ft) or more away from the vehicle's rear bumper, the key's wireless door lock buzzer does not sound.
HINT:
If the warning buzzer sounds, the trunk interior's luggage tuner may have a wave leak.

(f) Inspect the key cancel function.

(1) While the engine switch is on (IG), check that the luggage compartment open switch is the only switch in the smart key system that can be operated.

(g) Inspect the indicator function.

Condition	Indicator
Engine switch is ON (IG) mode and vehicle interior check is OK	Illuminates
Engine switch is OFF mode and one of the doors is open	Blinks
Engine switch is ON (IG) / ACC and all doors are locked	Off

HINT:
In cases where an illuminated condition and a blinking condition are both satisfied, the indicator will illuminate.

(h) Inspect the answer-back (hazard warning light flashing or buzzer sounding) function.

Operation	Hazard Warning Light	Buzzer
Entry door lock function	Flashes once	Sounds once
Entry door unlock function	Flashes twice	Sounds twice
Entry trunk open function	Does not flash	Does not sounds

DTC	B1242	Wireless Door Lock Tuner Circuit Malfunction

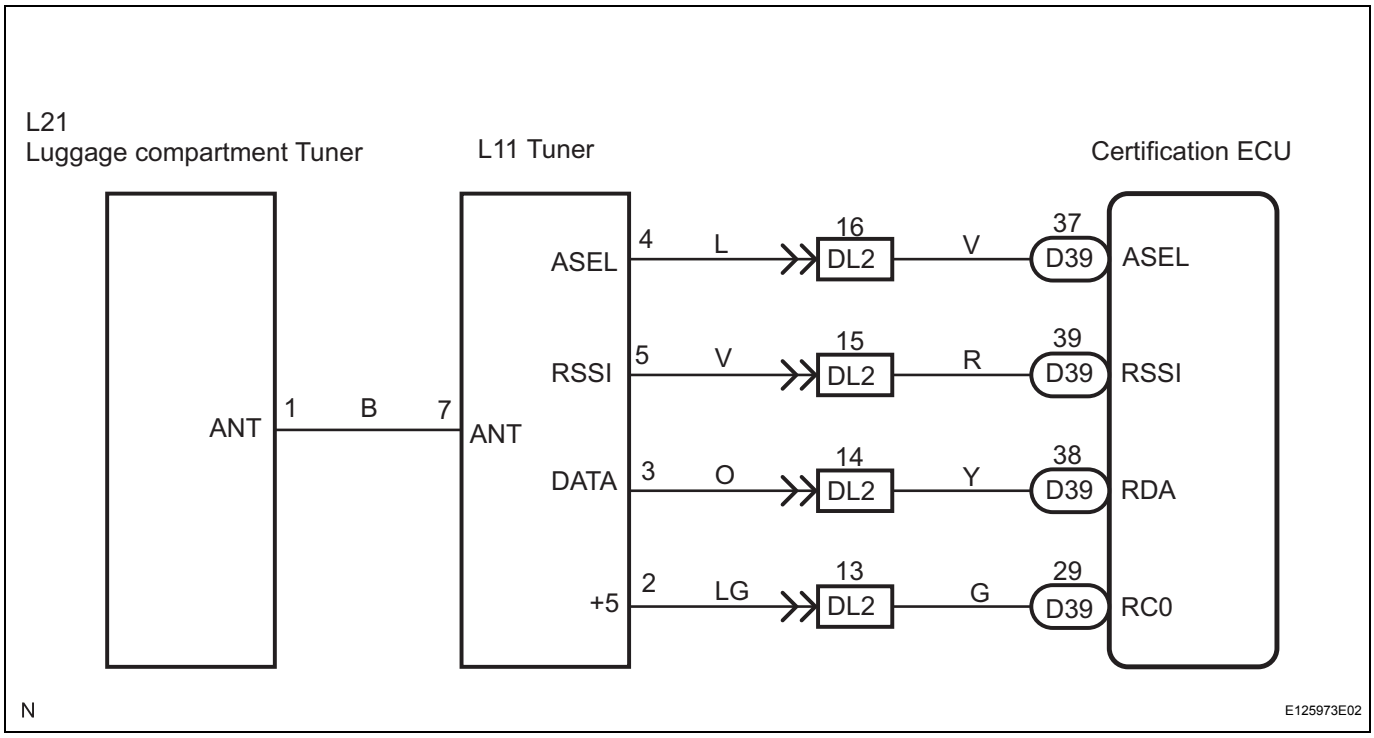
DESCRIPTION

- The tuner and the Luggage Compartment tuner are used as antennas for the entry and wireless door lock functions of the smart key system.
- The certification ECU decodes the requested smart key system operation by identifying a key code based on electric waves received via the tuner and the Luggage Compartment tuner. The ECU then sends a command, according to the requested operation, to each ECU. (e.g. If door lock operation is requested, the ECU sends a door lock command to the body ECU.)

DTC No.	DTC Detection Condition	Trouble Area
B1242	If the certification ECU detects that terminal RDA or RSSI is short-circuited, this DTC is stored.	• Tuner • Luggage compartment tuner • Wire harness • Certification ECU

DL

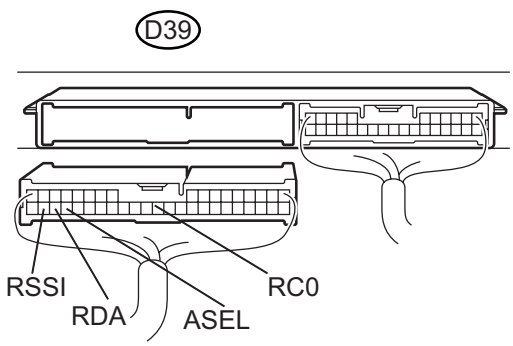
WIRING DIAGRAM



INSPECTION PROCEDURE

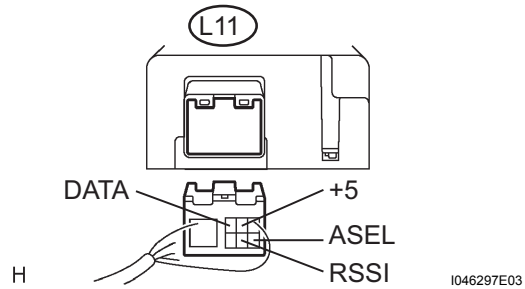
1	CHECK WIRE HARNESS (CERTIFICATION ECU - TUNER)

Certification ECU:



(a) Disconnect the D39 ECU connector.

Tuner:



(b) Disconnect the L11 tuner connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

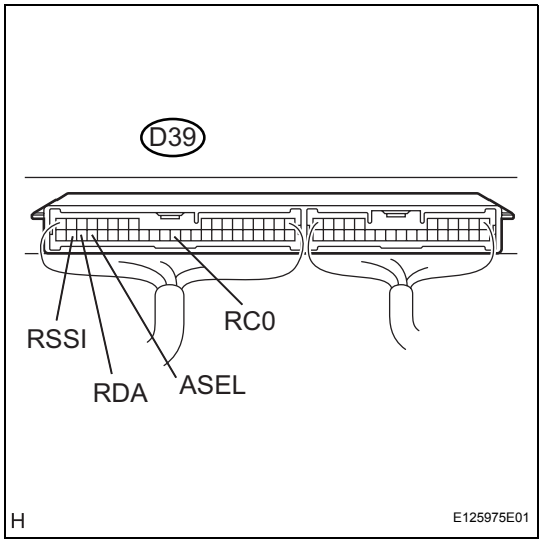
Tester Connection	Condition	Specified Condition
D39-37 (ASEL) - L11-4 (ASEL)	Always	Below 1 Ω
D39-39 (RSSI) - L11-5 (RSSI)	Always	Below 1 Ω
D39-38 (RDA) - L11-3 (DATA)	Always	Below 1 Ω
D39-29 (RC0) - L11-2 (+5)	Always	Below 1 Ω
D39-37 (ASEL) - Body ground	Always	10 kΩ or higher
D39-39 (RSSI) - Body ground	Always	10 kΩ or higher
D39-38 (RDA) - Body ground	Always	10 kΩ or higher
D39-29 (RC0) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

DL

2 INSPECT CERTIFICATION ECU



(a) Reconnect the D39 ECU connector.
(b) Measure the voltage according to the value(s) in the table below.

Voltage

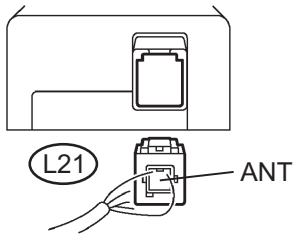
Tester Connection	Condition	Specified Condition
D39-37 (ASEL) - Body ground	Engine switch OFF, luggage compartment door OPEN → CLOSE.	Below 1 V → 4.6 to 5.4 V
D39-39 (RSSI) - Body ground	Engine switch OFF, all doors closed, the key is not in the action area. → the key in the action area.	0 to 6 V → Below 1 V
D39-38 (RDA) - Body ground	Engine switch OFF, all doors closed and key switch OFF → ON	Below 1 V → 4.6 to 5.4 V
D39-29 (RC0) - Body ground	Engine switch OFF, all doors closed and key switch OFF → ON	Below 1 V → 4.6 to 5.4 V

NG → REPLACE CERTIFICATION ECU

OK

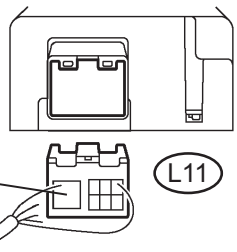
3 CHECK WIRE HARNESS (TUNER - LUGGAGE COMPARTMENT TUNER)

Luggage Compartment Tuner:



(a) Disconnect the L21 tuner connector.

Tuner:



(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
L11-7 (ANT) - L21-1 (ANT)	Always	Below 1 Ω
L11-7 (ANT) - Body ground	Always	10 kΩ or higher

Result

Result	Proceed to
OK (When troubleshooting according to the PROBLEM SYMPTOMS TABLE)	A
OK (When troubleshooting according to the DLC chart)	B

Result	Proceed to
NG	C

B → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

C → REPAIR OR REPLACE HARNESS OR CONNECTOR

A

4 REPLACE TUNER (RECONFIRM DTC)

(a) Replace the tuner.
(b) Clear the DTC and repeat the procedure to re-check it (See page DL-170).
OK:
DTC is output.

OK → END (TUNER IS DEFECTIVE)

NG

5 REPLACE LUGGAGE COMPARTMENT TUNER (RECONFIRM DTC)

(a) Replace the luggage compartment tuner.
(b) Clear the DTC and repeat the procedure to re-check it (See page DL-170).
OK:
DTC is not output.

OK → END (LUGGAGE COMPARTMENT TUNER IS DEFECTIVE)

NG

REPLACE CERTIFICATION ECU

DTC	B2784	Antenna Coil Open / Short

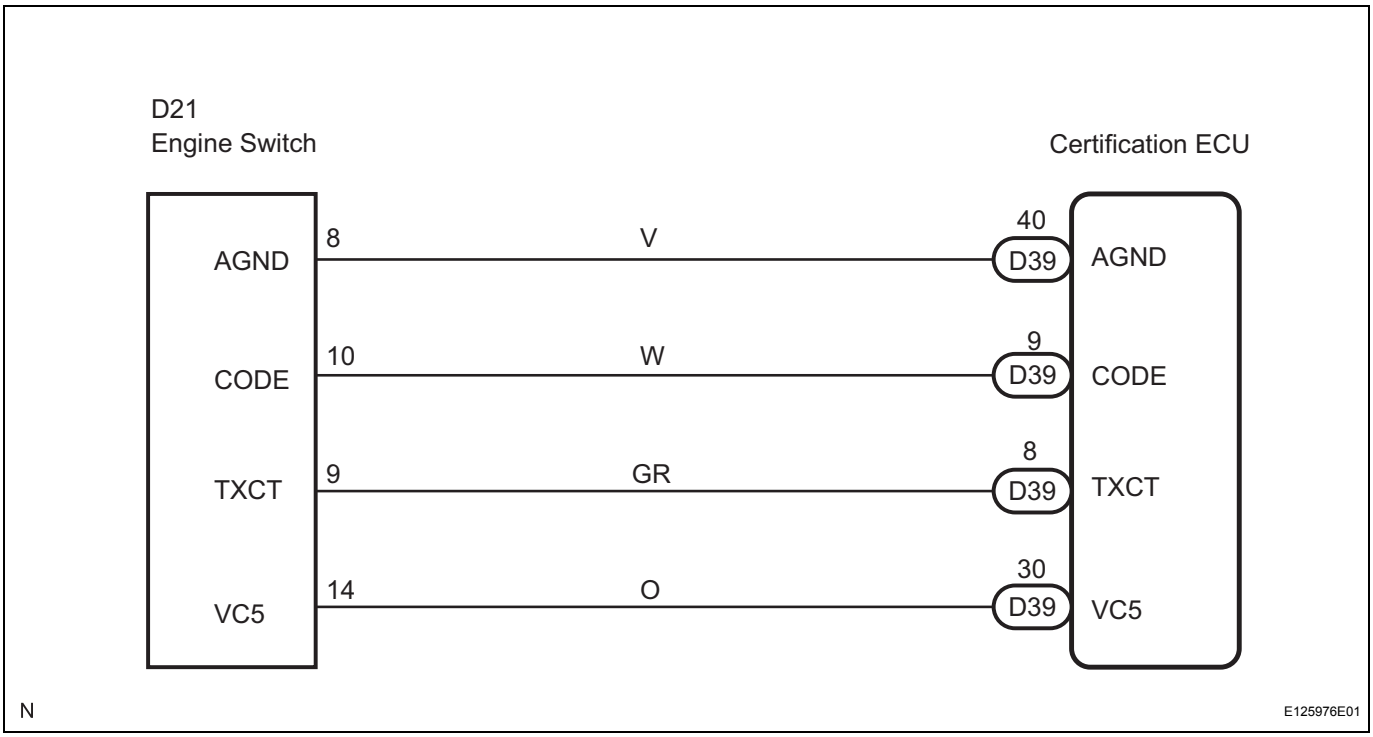
DESCRIPTION

- Operating the engine switch starts the engine or changes the power source status (ACC / IG / OFF / START).
- The engine switch is a momentary type switch which turns on only while the switch is held down. The certification ECU always stores the power source status (OFF / ACC / ON). If the battery has been removed and reinstalled, the power source status before removal is restored.
- The transponder amplifier is built into the engine switch.

DTC No.	DTC Detection Condition	Trouble Area
B2784	If the certification ECU detects an open or short circuit in the transponder amplifier built into the engine switch, this DTC is stored.	• Engine Switch • Wire harness • Certification ECU

DL

WIRING DIAGRAM



INSPECTION PROCEDURE

1	RECONFIRM DTC

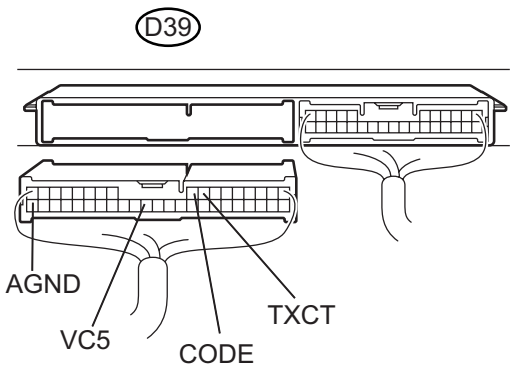
(a) Clear the DTC and repeat the procedure to re-check it (See page DL-170).
OK:
DTC is not output.

OK	END (SYSTEM IS NORMAL)

NG

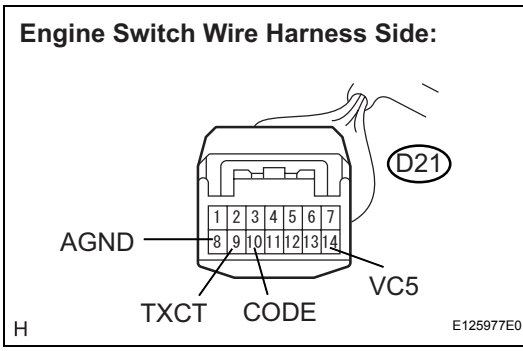
2	CHECK WIRE HARNESS (CERTIFICATION ECU - ENGINE SWITCH)

Certification ECU:



(a) Disconnect the D39 ECU connector.

Engine Switch Wire Harness Side:



(b) Disconnect the D21 switch connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D39-8 (TXCT) - D21-9 (TXCT)	Always	Below 1 Ω
D39-9 (CODE) - D21-10 (CODE)	Always	Below 1 Ω
D39-30 (VC5) - D21-14 (VC5)	Always	Below 1 Ω
D39-40 (AGND) - D21-8 (AGND)	Always	Below 1 Ω
D39-8 (TXCT) - Body ground	Always	10 kΩ or higher
D39-9 (CODE) - Body ground	Always	10 kΩ or higher
D39-30 (VC5) - Body ground	Always	10 kΩ or higher
D39-40 (AGND) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

3	REPLACE ENGINE SWITCH (CHECK OPERATION OF ENGINE SWITCH)

(a) Replace the engine switch.
(b) Clear the DTC and repeat the procedure to re-check it (See page DL-170).

OK:

DTC is not output.

OK → END (ENGINE SWITCH IS DEFECTIVE)

NG

REPLACE CERTIFICATION ECU

DTC	B2785	Communication Malfunction between ECUs Connected by LIN

DESCRIPTION

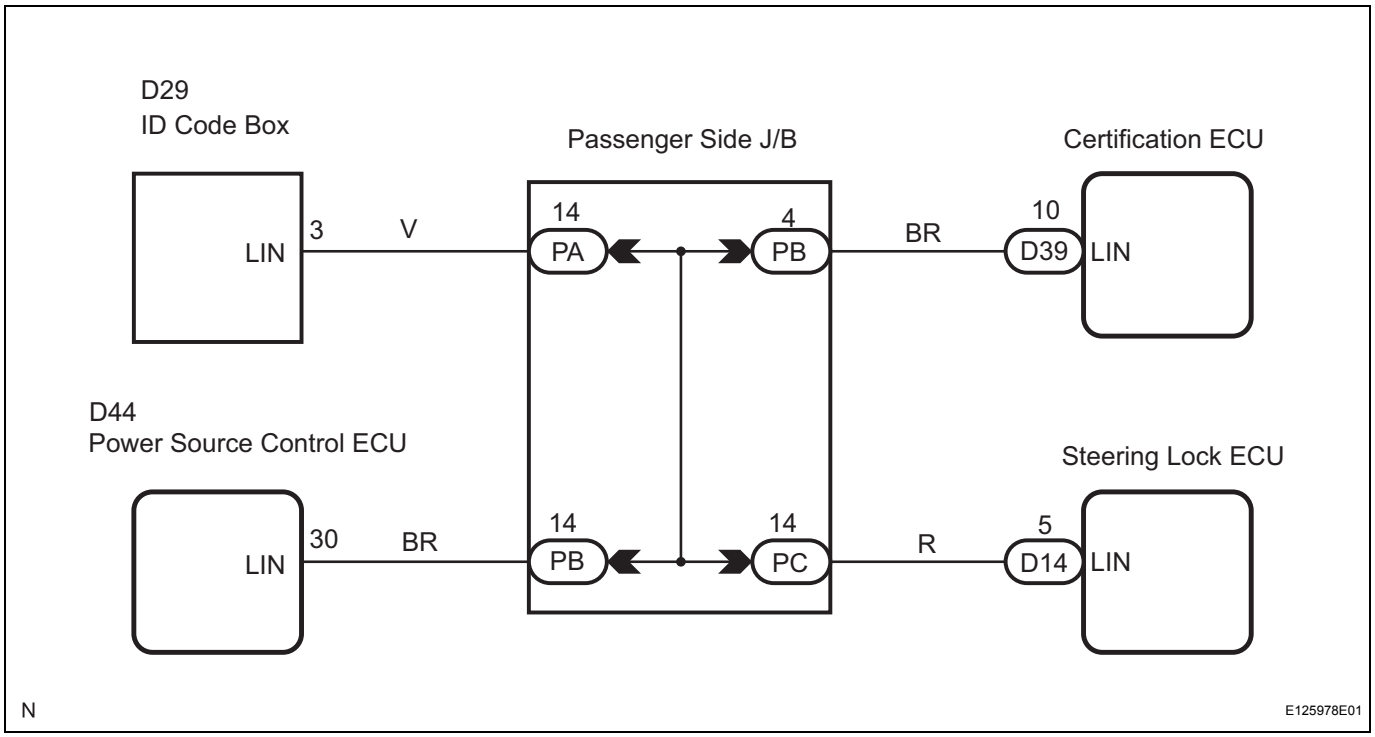
The smart key system uses the LIN communication line for communication. LIN communication sends and receives signals by serial communication, and connects with CAN and multiplex communication via the gateway ECU.

The LIN communication bus directly uses battery power. It consists of a single wire which only uses the transceiver and pull-up resistance of the open-collector.

DTC No.	DTC Detection Condition	Trouble Area
B2785	If the certification ECU detects that transmission and reception on the LIN communication line are impossible for a certain period of time, this DTC is stored.	• Wire harness • Steering lock actuator (Steering lock ECU) • ID code box • Power source control ECU • Certification ECU

DL

WIRING DIAGRAM



INSPECTION PROCEDURE

1	RECONFIRM DTC

(a) Clear the DTC and repeat the procedure to re-check it (See page DL-170).

OK:

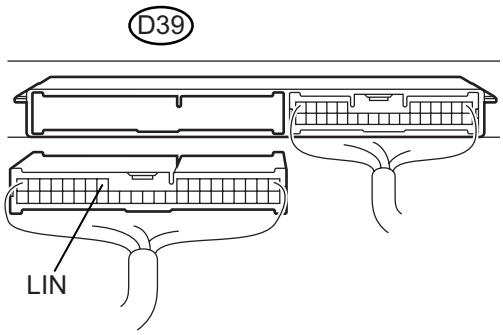
DTC is not output.

OK	END (SYSTEM IS NORMAL)

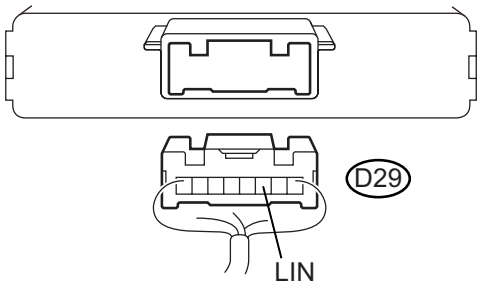
NG

2	CHECK WIRE HARNESS (CERTIFICATION ECU - ID CODE BOX - POWER SOURCE CONTROL ECU)

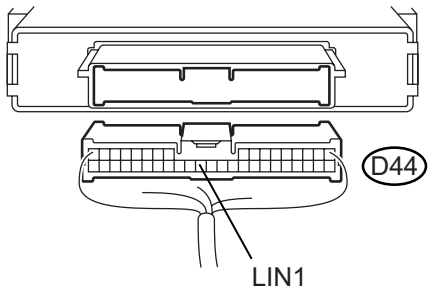
Certification ECU:



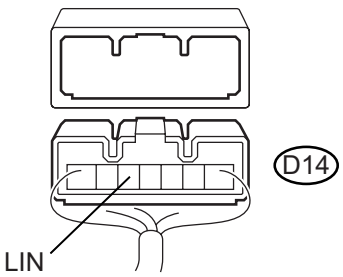
ID Code Box:



Power Sourcce Control ECU:



Steering Lock ECU:



E125979E01

(a) Disconnect the D14, D39 and D44 ECU connectors.
(b) Disconnect the D29 ID code box connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D14-5 (LIN) - D29-3 (LIN)	Always	Below 1 Ω
D14-5 (LIN) - D44-30 (LIN1)	Always	Below 1 Ω
D14-5 (LIN) - D39-10 (LIN)	Always	Below 1 Ω
D14-5 (LIN) - Body ground	Always	10 kΩ or higher

DL

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3	REPLACE CERTIFICATION ECU (CHECK OPERATION OF CERTIFICATION ECU)

(a) Replace the certification ECU.
(b) Clear the DTC and repeat the procedure to re-check it (See page DL-170).
OK:
DTC is not output.

OK → **END (CERTIFICATION ECU IS DEFECTIVE)**

NG

4	REPLACE POWER SOURCE CONTROL ECU (CHECK OPERATION OF POWER SOURCE CONTROL ECU)

(a) Replace the power source control ECU.
(b) Clear the DTC and repeat the procedure to re-check it (See page DL-170).
OK:
DTC is not output.

OK → **END (POWER SOURCE CONTROL ECU IS DEFECTIVE)**

NG

5	REPLACE STEERING LOCK ECU (CHECK OPERATION OF STEERING LOCK ECU)

(a) Replace the steering lock ECU.
(b) Clear the DTC and repeat the procedure to re-check it (See page DL-170).
OK:
DTC is not output.

OK → **END (STEERING LOCK ECU IS DEFECTIVE)**

NG

REPLACE ID CODE BOX

DTC	B2786	No Response from Steering Lock ECU

DESCRIPTION

DTC No.	DTC Detection Condition	Trouble Area
B2786	If the certification ECU cannot receive any message from the steering lock ECU via the LIN communication line for 10 seconds, this DTC is stored.	• Wire harness • Steering lock actuator (Steering lock ECU) • Certification ECU

WIRING DIAGRAM

See page DL-189.

INSPECTION PROCEDURE

1	RECONFIRM DTC

(a) Clear the DTC and repeat the procedure to re-check it (See page DL-170).

OK:

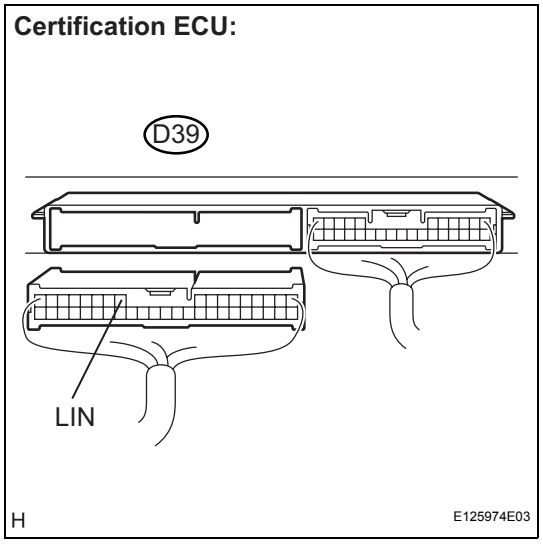
DTC is not output.

OK → **END (SYSTEM IS NORMAL)**

NG

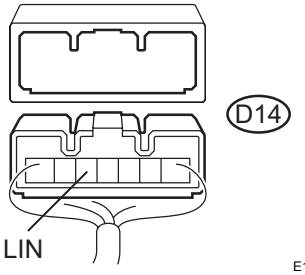
2	CHECK WIRE HARNESS (CERTIFICATION ECU - STEERING LOCK ECU)

Certification ECU:



(a) Disconnect the D39 ECU connector.

Steering Lock ECU:



(b) Disconnect the D14 ECU connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D14-5 (LIN) - D39-10 (LIN)	Always	Below 1 Ω
D14-5 (LIN) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

DL

3	REPLACE CERTIFICATION ECU (CHECK OPERATION OF CERTIFICATION ECU)

(a) Replace the certification ECU.
(b) Clear the DTC and repeat the procedure to re-check it (See page DL-170).

OK:

DTC is not output.

OK → **END (CERTIFICATION ECU IS DEFECTIVE)**

NG

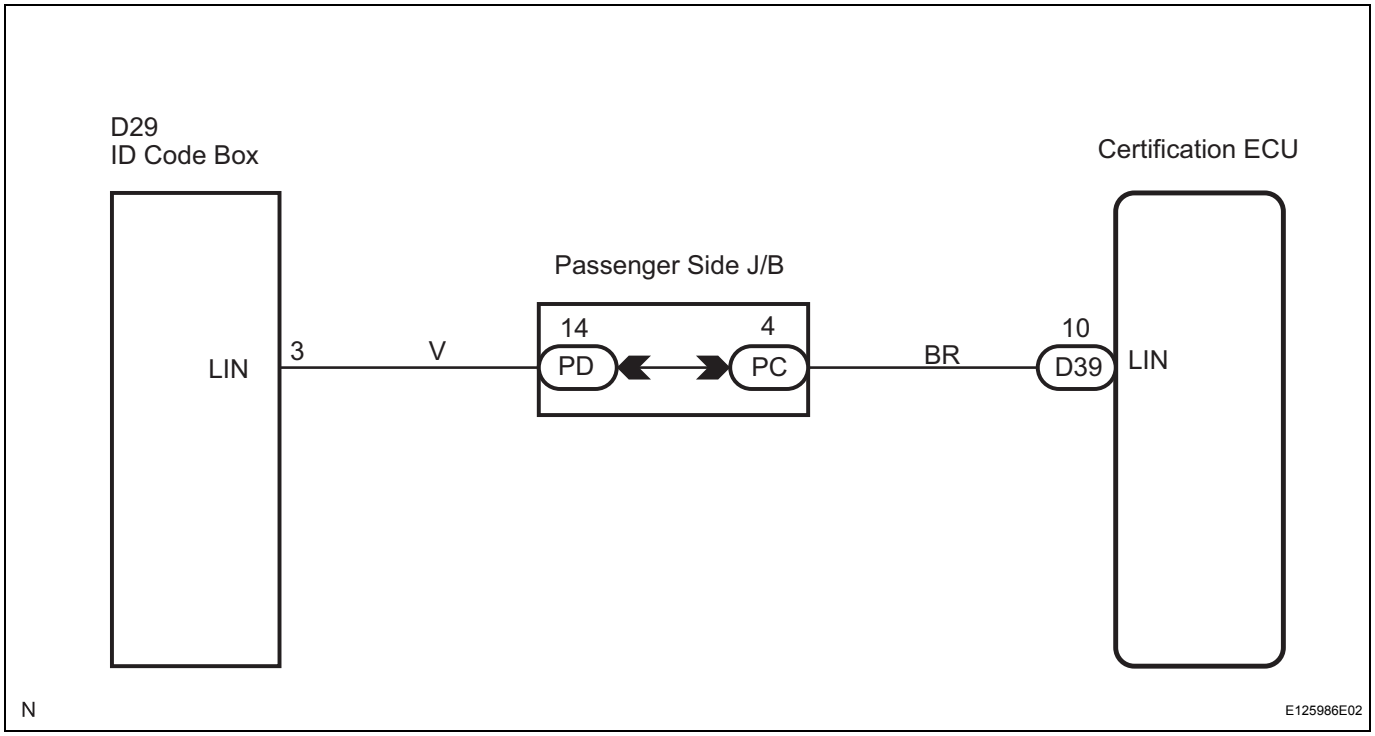
REPLACE STEERING LOCK ECU

DTC	B2789	No Response from ID BOX

DESCRIPTION

DTC No.	DTC Detection Condition	Trouble Area
B2789	If the certification ECU cannot receive any message from the ID code box via the LIN communication line for 10 seconds, this DTC is stored.	• Wire harness • ID code box • Certification ECU

WIRING DIAGRAM



DL

INSPECTION PROCEDURE

1	RECONFIRM DTC

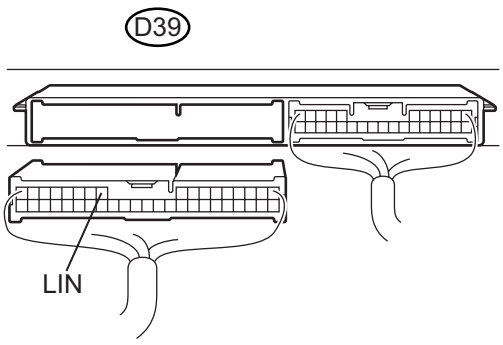
(a) Clear the DTC and repeat the procedure to re-check it (See page DL-170).
OK:
DTC is not output.

OK	END (SYSTEM IS NORMAL)

NG

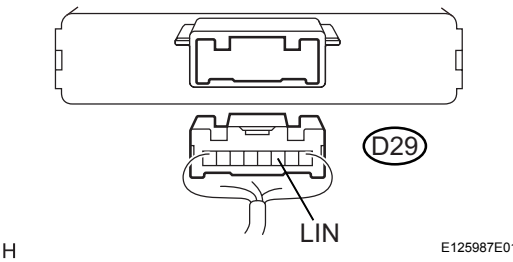
2	CHECK WIRE HARNESS (CERTIFICATION ECU - ID CODE BOX)

Certification ECU:



(a) Disconnect the D39 ECU connector.

ID Code Box:



(b) Disconnect the D29 ECU connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D29-3 (LIN) - D39-10 (LIN)	Always	Below 1 Ω
D29-3 (LIN) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

3	REPLACE CERTIFICATION ECU (CHECK OPERATION OF CERTIFICATION ECU)

(a) Replace the certification ECU.
(b) Clear the DTC and repeat the procedure to re-check it (See page DL-170).

OK:

DTC is not output.

OK → **END (CERTIFICATION ECU IS DEFECTIVE)**

NG

REPLACE ID CODE BOX

DTC	B278A	Short to GND in Immobiliser System Power Source Circuit

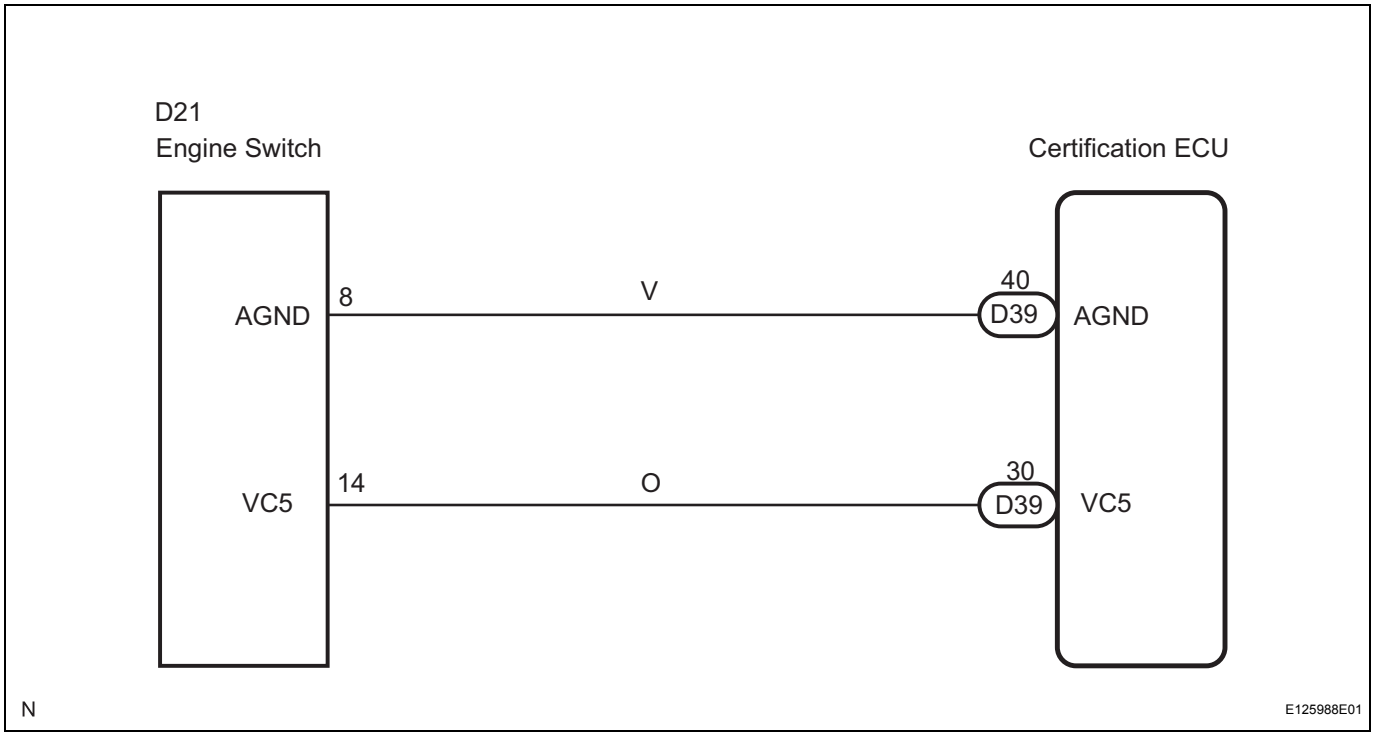
DESCRIPTION

- Operating the engine switch starts the engine or changes the power source status (ACC / IG / OFF / START).
- The engine switch is a momentary type switch which turns on only while the switch is held down. The certification ECU always stores the power source status (OFF / ACC / ON). If the battery has been removed and reinstalled, the power source status maintained before removal is restored.
- The transponder amplifier is built into the engine switch.

DTC No.	DTC Detection Condition	Trouble Area
B278A	If the certification ECU detects an open or short circuit in the power supply line (terminal VC5) to the transponder amplifier built into the engine switch, this DTC is stored.	• Wire harness • Engine switch • Certification ECU

DL

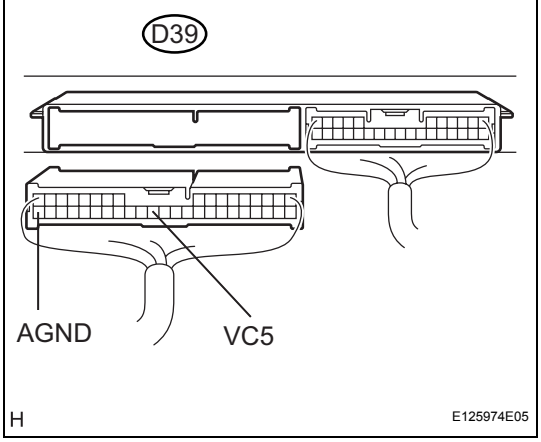
WIRING DIAGRAM



INSPECTION PROCEDURE

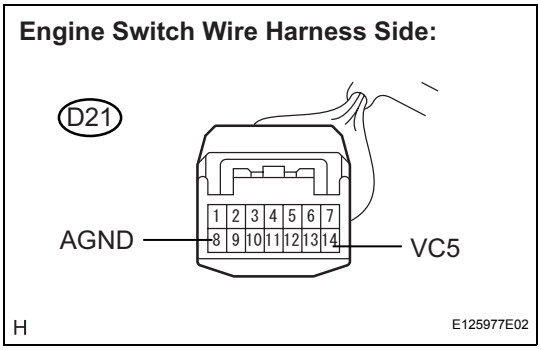
1	CHECK WIRE HARNESS (CERTIFICATION ECU - ENGINE SWITCH)

Certification ECU:



(a) Disconnect the D39 ECU connector.

Engine Switch Wire Harness Side:



(b) Disconnect the D21 switch connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D39-30 (VC5) - D21-14 (VC5)	Always	Below 1 Ω
D39-40 (AGND) - D21-8 (AGND)	Always	Below 1 Ω
D39-30 (VC5) - Body ground	Always	10 kΩ or higher
D39-40 (AGND) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

2	REPLACE ENGINE SWITCH (RECONFIRM DTC)

(a) Replace the engine switch.
(b) Clear the DTC and repeat the procedure to re-check it (See page DL-170).

OK:

DTC is not output.

OK → **END (ENGINE SWITCH IS DEFECTIVE)**

NG

REPLACE CERTIFICATION ECU

DTC	B2790	ID BOX EEPROM Malfunction

DESCRIPTION

This DTC indicates an ID code box internal malfunction. If this DTC is detected, replacement of the ID code box is required.

DTC No.	DTC Detection Condition	Trouble Area
B2790	If the certification ECU detects an ID code box internal malfunction, this DTC is stored.	ID code box

INSPECTION PROCEDURE

1	REPLACE ID CODE BOX

NEXT

END

DTC	B2791	Communication Condition Failure between ECM

DESCRIPTION

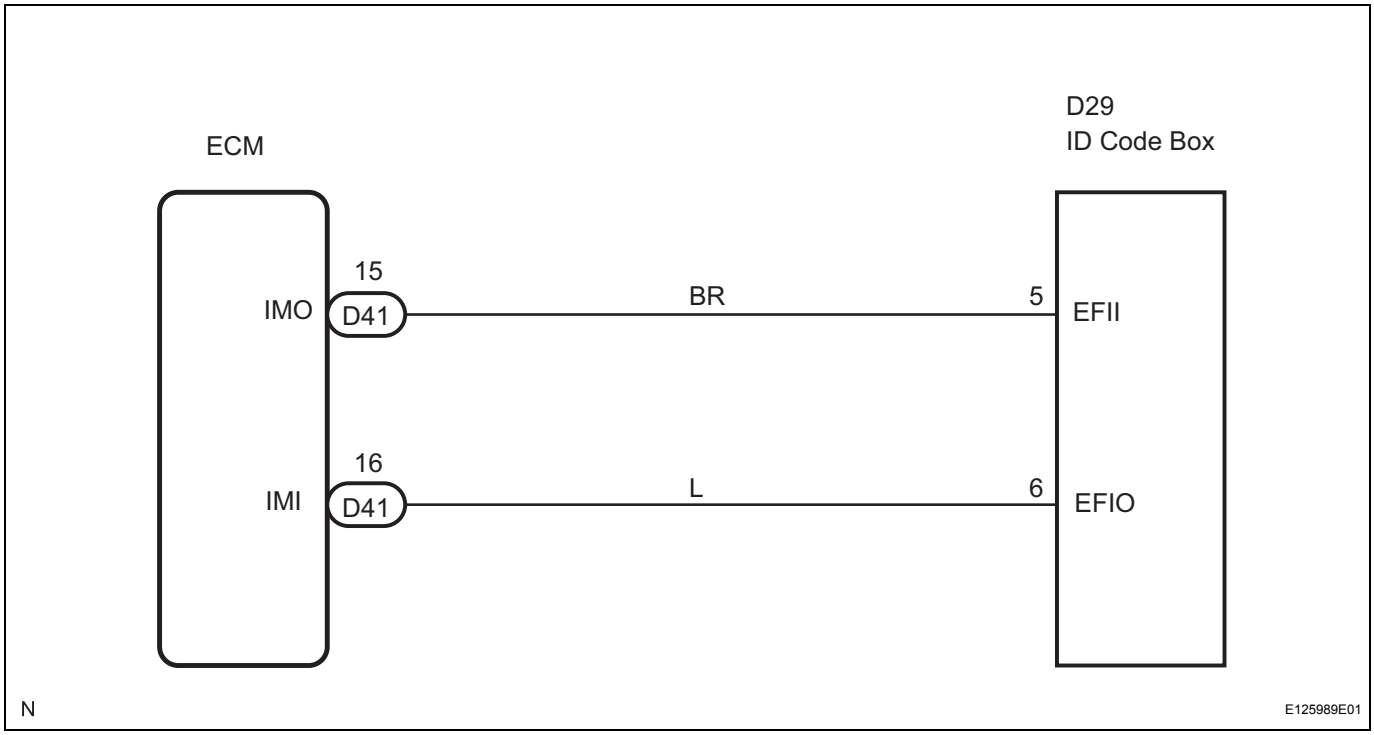
- If the ID code box receives a verification request signal from the ECM, it sends back verification information obtained from the certification ECU or steering lock ECU via the LIN communication line to the ECM.
- The ID code box sends immobilizer SET / UNSET signals to the ECM based on the information received from the certification ECU via the LIN communication line.

HINT:

- If the engine switch is turned off immediately after engine start, this DTC is also stored.
- If this DTC is detected, check if any other DTCs such as B2799 are output.

DTC No.	DTC Detection Condition	Trouble Area
B2791	If the ID code box does not respond to a verification request signal from the ECM, the certification ECU detects this DTC.	• Wire harness • ID code box • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK OPERATION OF ID CODE BOX

(a) Check that the engine switch can be turned on (IG) and the engine starts.

OK:

Engine switch can be turned on (IG) and the engine starts.

OK	END (SYSTEM IS NORMAL)

NG

CHECK THE OTHER DTC

DTC	B2799	Communication with Immobiliser

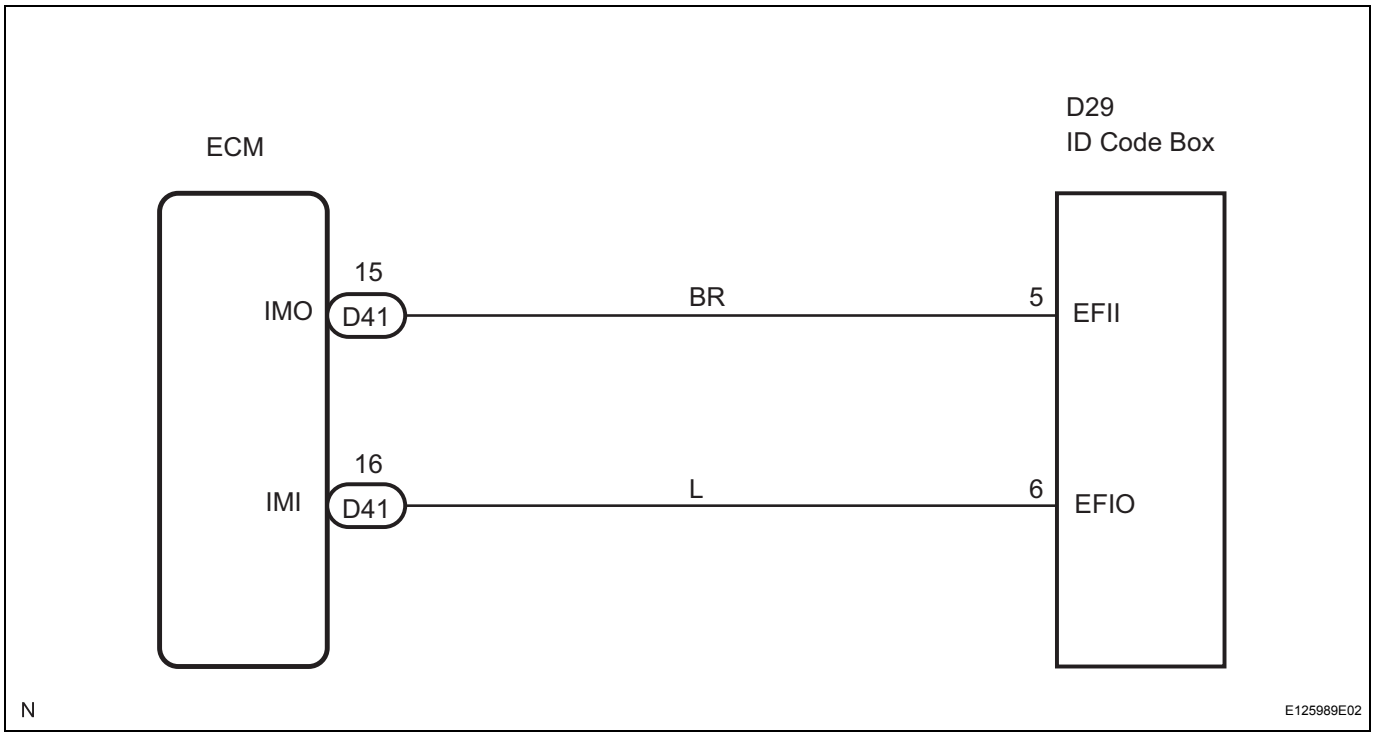
DESCRIPTION

- If the ID code box receives a verification request signal from the ECM, it sends back verification information obtained from the certification ECU or steering lock ECU via the LIN communication line to the ECM.
- The ID code box sends immobilizer SET / UNSET signals to the ECM based on the information received from the certification ECU via the LIN communication line.

DTC No.	DTC Detection Condition	Trouble Area
B2799	If either of the following conditions is met, this DTC is stored in the ECM: • The ID code box does not respond to a verification request signal from the ECM. • The ID code box responds with a wrong code to a verification request signal.	• Wire harness • ID code box • ECM

DL

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK OPERATION OF ID CODE BOX

(a) Check that the engine switch can be turned on (IG) and the engine starts.

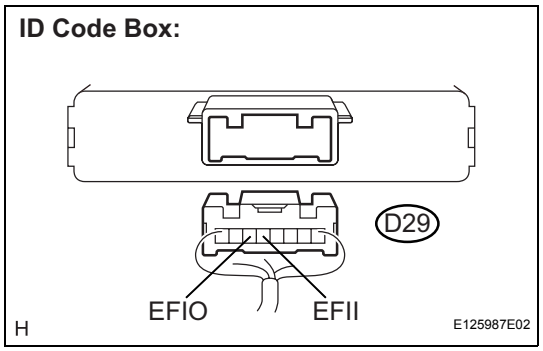
OK:

Engine switch can be turned on (IG) and the engine starts.

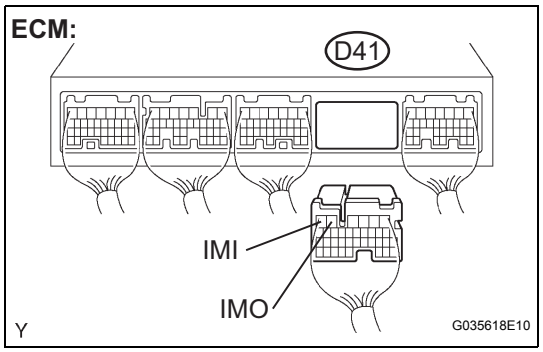
OK	END (SYSTEM IS NORMAL)

NG

2 CHECK WIRE HARNESS (ECM - ID CODE BOX)



(a) Disconnect the D29 ECU connector.



(b) Disconnect the D41 ECM connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D29-5 (EFII) - D41-15 (IMO)	Always	Below 1 Ω
D29-6 (EFIO) - D41-16 (IMI)	Always	Below 1 Ω
D29-5 (EFII) - Body ground	Always	10 kΩ or higher
D29-6 (EFIO) - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3 ECU CODE REGISTRATION

(a) ECU code registration (See page DL-150).
(b) Check that the engine switch can be turned on (IG) and the engine starts.

OK:

Engine switch can be turned on (IG) and the engine starts.

OK → END (ECU REGISTRATION ID DEFECTIVE)

NG

4 REPLACE ECM (CHECK OPERATION OF ECM)

(a) Replace the ECM.
(b) Clear the DTC and repeat the procedure to re-check it (See page DL-170).

OK:
DTC is not output.

OK → **END (ECM IS DEFECTIVE)**

NG

REPLACE ID CODE BOX

Warning Light Circuit

DESCRIPTION

- The key warning indicator light, which is built into the combination meter, comes on or blinks as a warning to the driver.
- The certification ECU sends key warning indicator light on / blink request signals to the combination meter via BEAN.

HINT:
If the key warning indicator light does not come on or blink properly, there may be a problem in the power source of the multiplex communication system and combination meter or in the certification ECU.

INSPECTION PROCEDURE

1	**GO TO MULTIPLEX COMMUNICATION SYSTEM**

NEXT

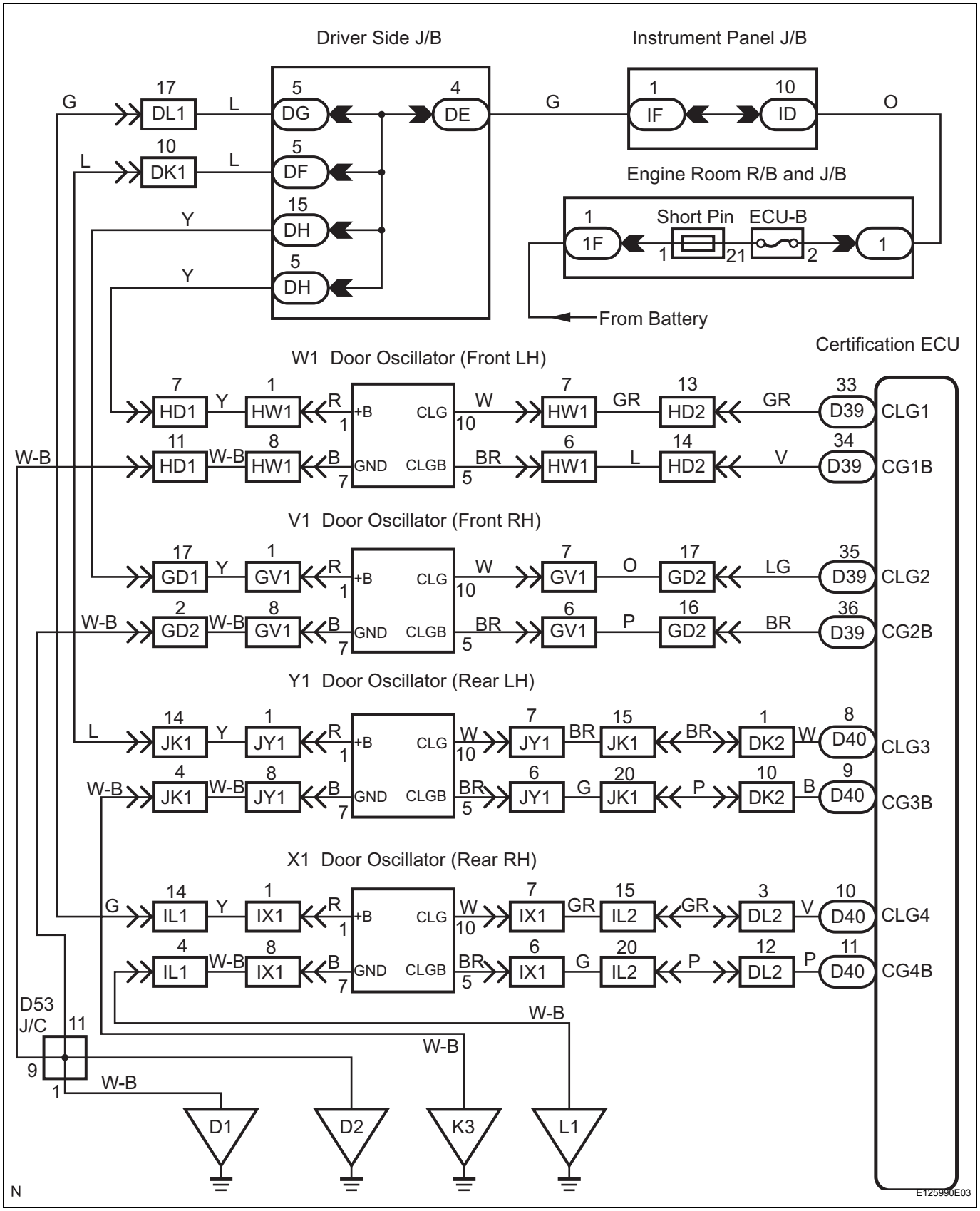
END

Door Oscillator Circuit

DESCRIPTION

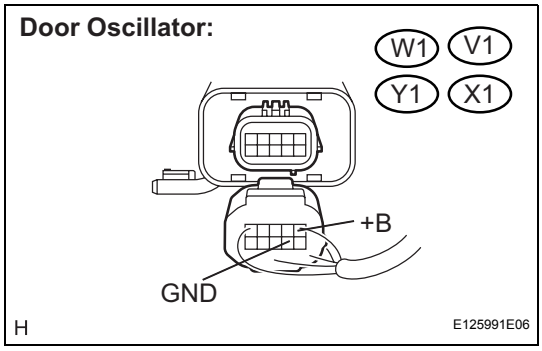
Door oscillators are built into each door. Each of them forms its own action area around its door and detects the presence of the key.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT DOOR OSCILLATOR



(a) Disconnect the oscillator connectors.
(b) Measure the voltage according to the value(s) in the table below.

Voltage:

Front LH side

Tester Connection	Condition	Specified Condition
W1-1 (+B) - W1-7 (GND)	Always	10 to 14 V

Front RH side

Tester Connection	Condition	Specified Condition
V1-1 (+B) - V1-7 (GND)	Always	10 to 14 V

Rear LH side

Tester Connection	Condition	Specified Condition
Y1-1 (+B) - Y1-7 (GND)	Always	10 to 14 V

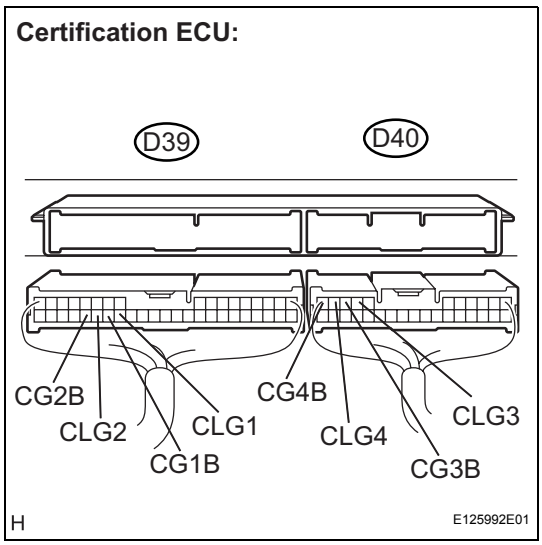
Rear RH side

Tester Connection	Condition	Specified Condition
X1-1 (+B) - X1-7 (GND)	Always	10 to 14 V

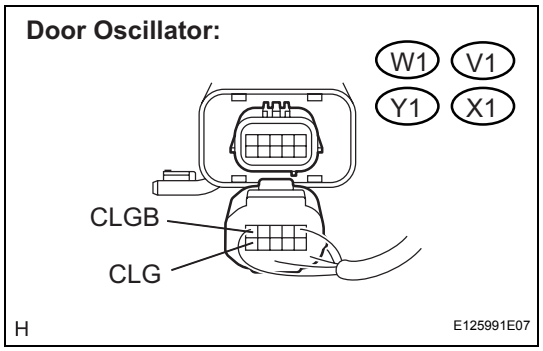
NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

2	CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR - DOOR ECU)



(a) Disconnect the D39 and D40 ECU connector.



(b) Measure the resistance between the oscillator and the certification ECU to check for an open circuit in the wire harness.
Resistance:
Below 1 Ω

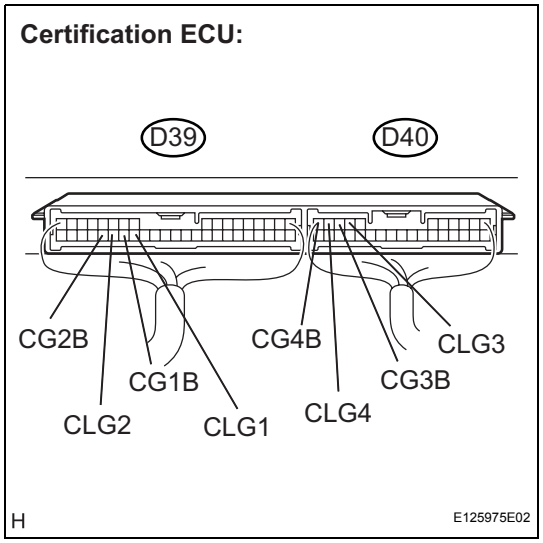
(c) Measure the resistance between the oscillator and the certification ECU to check for an short circuit in the wire harness.
Resistance:
10 kΩ or higher
HINT:
Refer to the wiring diagram for connection of each terminal.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

DL

3 PERFORM ACTIVE TEST BY INTELLIGENT TESTER (CERTIFICATION ECU OUTPUT SIGNAL)



(a) Reconnect the ECU and the oscillator connectors.
(b) Connect the intelligent tester to the DLC3.
(c) Turn the engine switch on (IG).
(d) Following the display on the tester, select the "ACTIVE TEST".
Certification ECU:

Item	Vehicle Condition / Test Details
D TRANSMITTER	Door Oscillator ON / OFF
P TRANSMITTER	Door Oscillator ON / OFF

(e) Measure the frequency according to the value(s) in the table below.
OK

Tester Connection	Condition	Specified Condition
D39-33 (CLG1) - D39-34 (CG1B)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)
D39-35 (CLG2) - D39-36 (CG2B)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)
D40-8 (CLG3) - D40-9 (CG3B)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)
D40-10 (CLG4) - D40-11 (CG4B)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

NG

4 REPLACE DOOR OSCILLATOR (CHECK OPERATION OF DOOR OSCILLATOR)

(a) Replace the door oscillator.

(b) Check that the entry LOCK / UNLOCK function operates normally.
OK:
Entry LOCK / UNLOCK function operates normally.

NG → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

OK

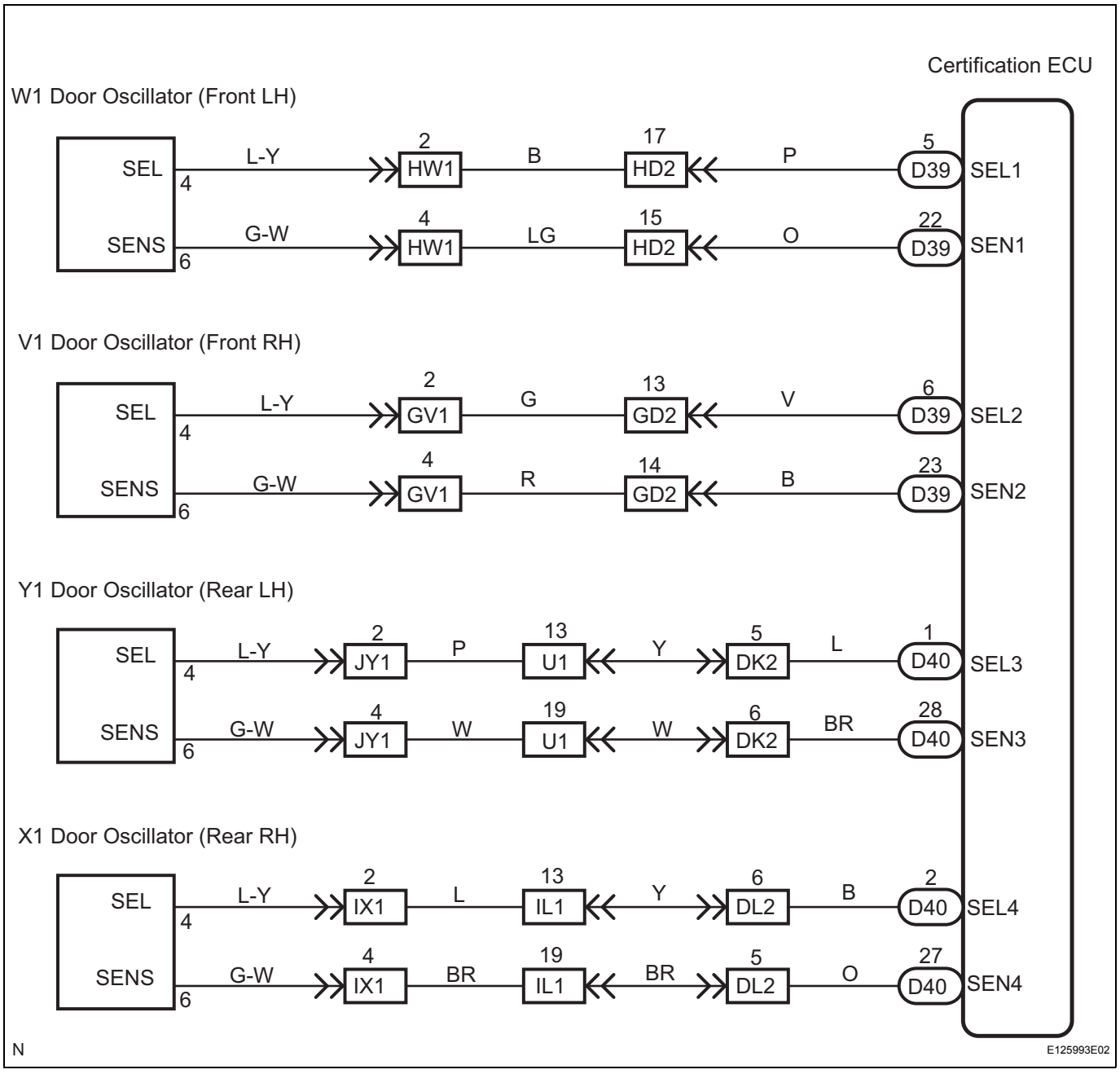
END (DOOR OSCILLATOR IS DEFECTIVE)

Touch Sensor Circuit

DESCRIPTION

This circuit receives the signal indicating whether or not a touch sensor signal is detected.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE ON INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the engine switch on (IG).

(c) Following the display on the tester, select "DATA LIST".

SMART KEY (Certification ECU):

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
D TOUCH SENSOR	Status of touch sensor front LH / ON or OFF	ON: Touch sensor is touched OFF: Touch sensor is not touched	-
P TOUCH SENSOR	Status of touch sensor front RH / ON or OFF	ON: Touch sensor is touched OFF: Touch sensor is not touched	-
DR TOUCH SENSOR	Status of touch sensor rear LH / ON or OFF	ON: Touch sensor is touched OFF: Touch sensor does not touched	-
DP TOUCH SENSOR	Status of touch sensor rear RH / ON or OFF	ON: Touch sensor is touched OFF: Touch sensor does not touched	-

OK:
"ON" (screen is touched) appears on the tester screen.

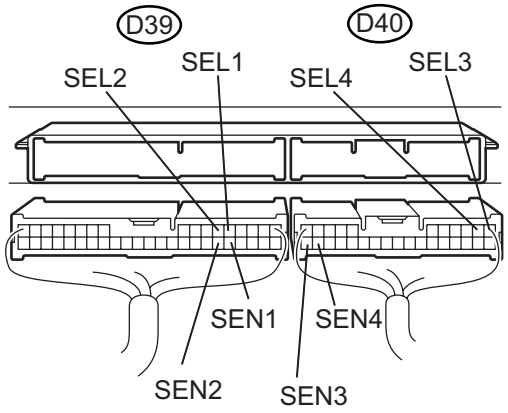
DL

OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

NG

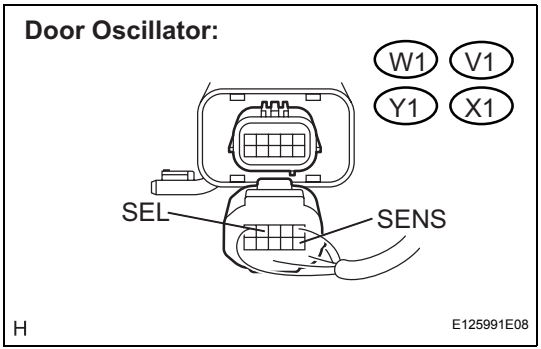
2 CHECK WIRE HARNESS (CERTIFICATION ECU - DOOR OSCILLATOR)

Certification ECU:



(a) Disconnect the D39 and D40 ECU connector.

Door Oscillator:



(b) Disconnect the oscillator connectors.

(c) Measure the resistance between the oscillator and the certification ECU to check for an open circuit in the wire harness.
Resistance:
Below 1 Ω

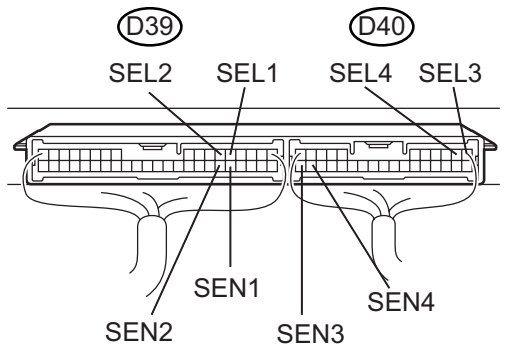
(d) Measure the resistance between the oscillator and the certification ECU to check for an short circuit in the wire harness.
Resistance:
10 kΩ or higher
HINT:
Refer to the wiring diagram for connection of each terminal.

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3 INSPECT CERTIFICATION ECU

Certification ECU:



H E125975E03

(a) Reconnect the ECU and the oscillator connectors.
(b) Connect the intelligent tester to the DLC3.
(c) Turn the engine switch on (IG).
(d) Measure the voltage according to the value(s) in the table below.

Voltage

Tester Connection	Condition	Specified Condition
SEL1 (D39-5) - Body ground	Move the key more than 5 m (16.4 ft) away from the front door LH → Bring it to the outside handle	10 to 14 V → Below 1 V
SEL2 (D39-6) - Body ground	Move the key more than 5 m (16.4 ft) away from the front door RH → Bring it to the outside handle	10 to 14 V → Below 1 V
SEL3 (D40-1) - Body ground	Move the key more than 5 m (16.4 ft) away from the rear door LH → Bring it to the outside handle	10 to 14 V → Below 1 V
SEL4 (D40-2) - Body ground	Move the key more than 5 m (16.4 ft) away from the rear door RH → Bring it to the outside handle	10 to 14 V → Below 1 V
SEN1 (D39-22) - Body ground	Front door LH outside handle is not held → Front door LH outside handle is held	10 to 14 V → Below 1 V
SEN2 (D39-23) - Body ground	Front door LH outside handle is not held → Front door LH outside handle is held	10 to 14 V → Below 1 V
SEN4 (D40-27) - Body ground	Rear door LH outside handle is not held → Rear door LH outside handle is held	10 to 14 V → Below 1 V
SEN3 (D40-28) - Body ground	Rear door LH outside handle is not held → Rear door LH outside handle is held	10 to 14 V → Below 1 V

OK → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

NG

DL

4	REPLACE DOOR OSCILLATOR (CHECK OPERATION OF DOOR OSCILLATOR)

(a) Replace the door oscillator.
(b) Check that the entry UNLOCK function operates normally.
OK:
Entry UNLOCK function operates normally.

NG → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

OK

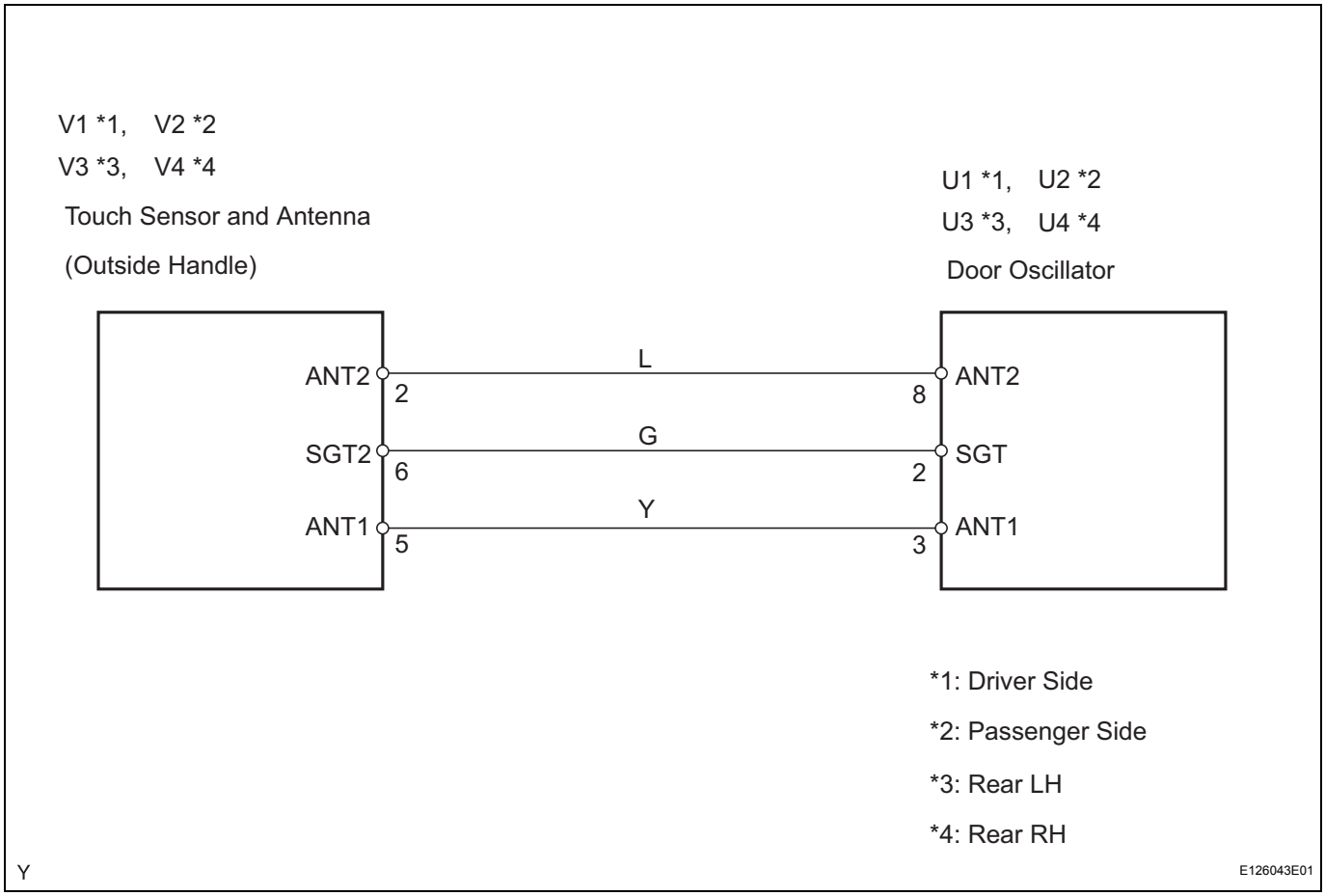
END (DOOR OSCILLATOR IS DEFECTIVE)

Antenna Circuit

DESCRIPTION

Terminals ANT1 and ANT2 of the antenna (door outside handle) detect if the key is within the action area around the door outside handle.

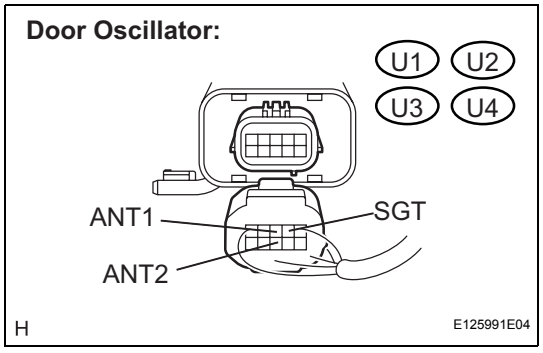
WIRING DIAGRAM



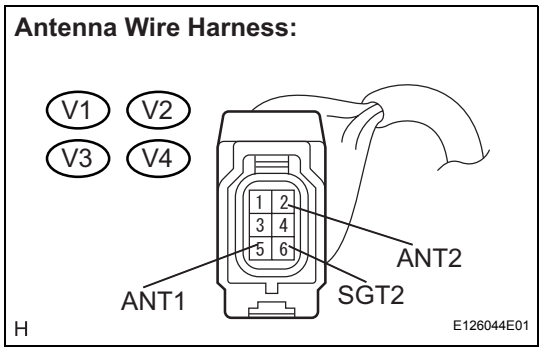
DL

INSPECTION PROCEDURE

1	CHECK WIRE HARNESS (DOOR OSCILLATOR - ANTENNA)



(a) Remove the outside handle.



(b) Disconnect the antenna and door oscillator connectors.
(c) Measure the resistance between the oscillator and the antenna to check for an open circuit in the wire harness.
Resistance:
Below 1 Ω
(d) Measure the resistance between the oscillator and the antenna to check for a short circuit in the wire harness.
Resistance:
10 kΩ or higher
HINT:
Refer to the wiring diagram for connection of each terminal.

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

DL

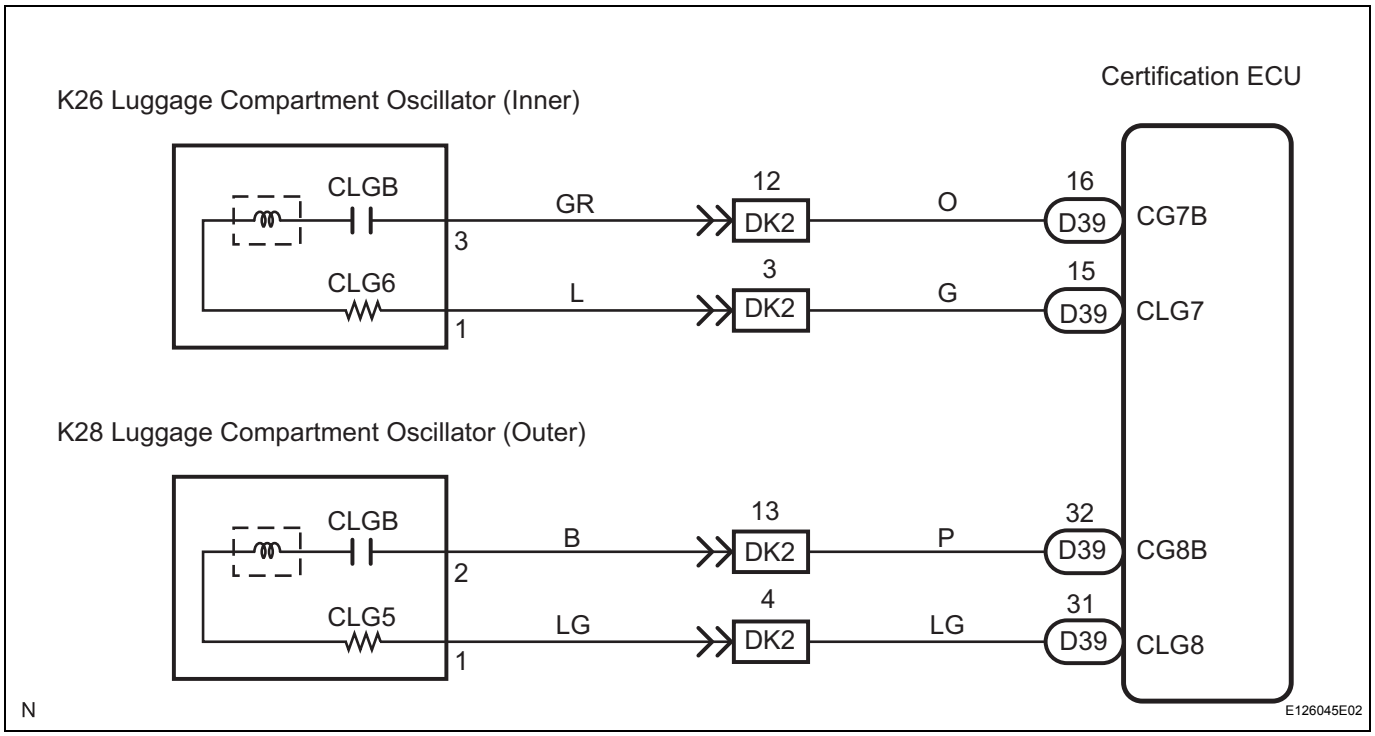
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Luggage Oscillator Circuit

DESCRIPTION

The certification ECU activates the inner and outer luggage compartment oscillators. The power is supplied from the certification ECU to both the inner and outer luggage compartment oscillators. The inner and outer luggage compartment oscillator circuits have the same wiring. If the entry luggage compartment function has a malfunction, check the circuit for the malfunctioning oscillator.

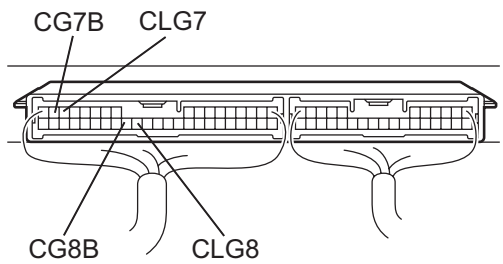
WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (CERTIFICATION ECU - OUTPUT SIGNAL)

Certification ECU:



(a) Connect the intelligent tester to the DLC3.
(b) Engine switch ON (IG).
(c) Following the display on the tester, select the "ACTIVE TEST".

Certification ECU:

Item	Vehicle Condition / Test Details
IN-BDR TRNSMTTR	Luggage compartment oscillator (Inner) ON / OFF
BDOOR TRNSMTTR	Luggage compartment oscillator (Outer) ON / OFF

(d) Measure the frequency according to the value(s) in the table below.

OK

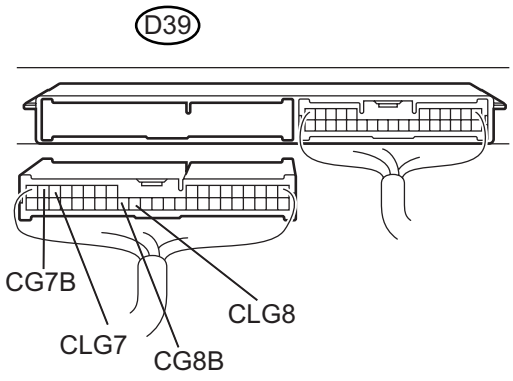
Tester Connection	Condition	Specified Condition
CG7B (D39-16) - CLG7 (D39-15)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)
CG8B (D39-32) - CLG8 (D39-31)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)

NG → **REPLACE CERTIFICATION ECU**

OK

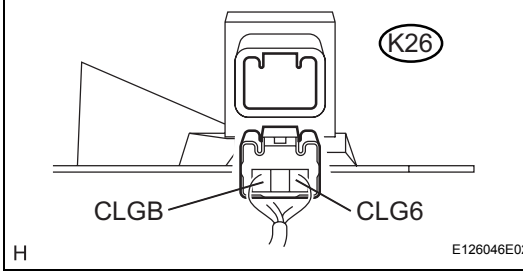
2 CHECK WIRE HARNESS (CERTIFICATION ECU - LUGGAGE COMPARTMENT OSCILLATOR)

Certification ECU:



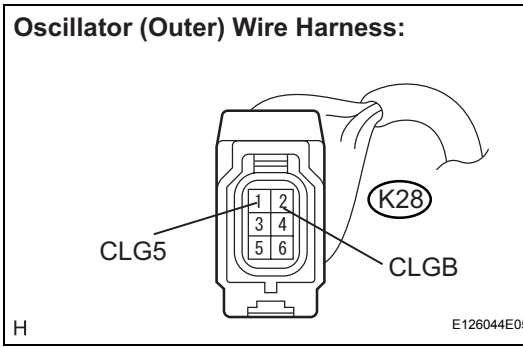
(a) Disconnect the D39 ECU connector.

Oscillator (Inner):



(b) Disconnect the oscillator connectors.

Oscillator (Outer) Wire Harness:



(c) Measure the resistance between the oscillator and the certification ECU to check for an open circuit in the wire harness.
Resistance:
Below 1 Ω

(d) Measure the resistance between the oscillator and the certification ECU to check for an short circuit in the wire harness.
Resistance:
10 kΩ or higher
HINT:
Refer to the wiring diagram for connection of each terminal.

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

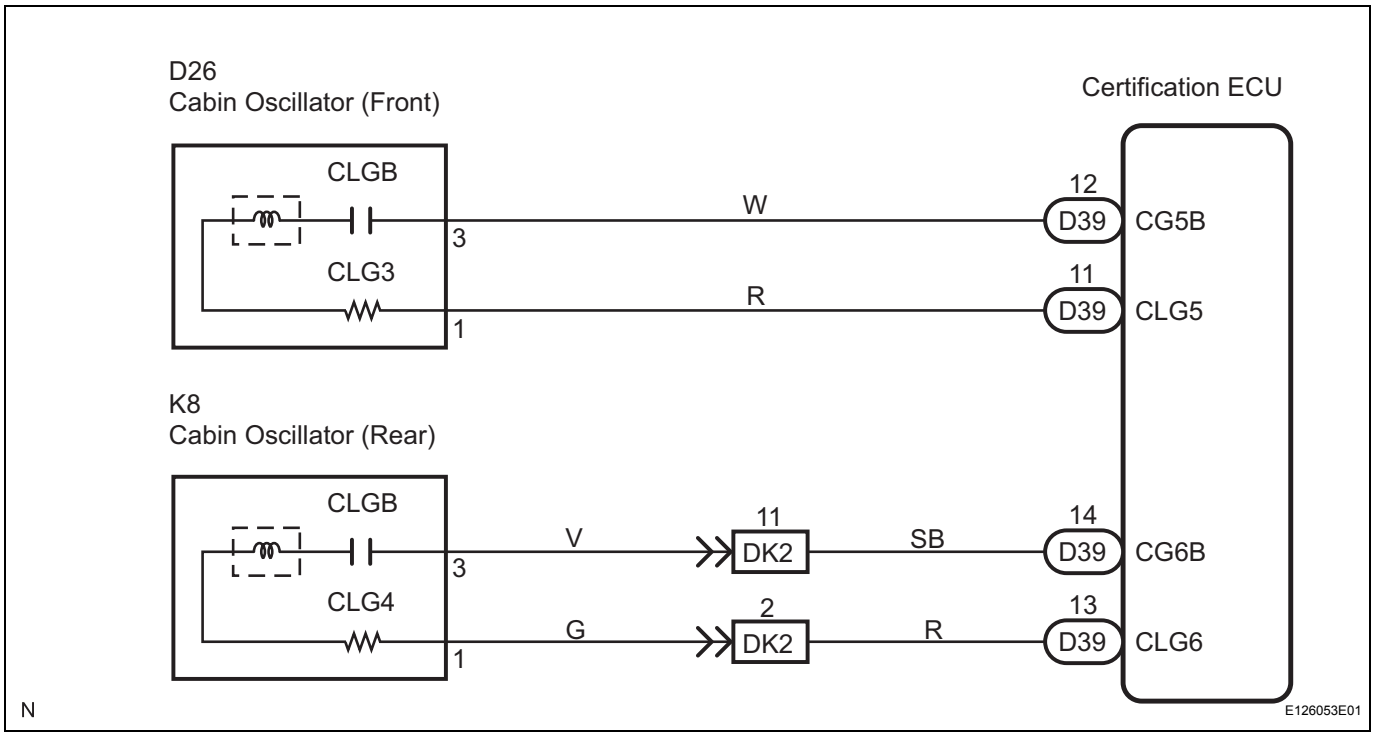
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Room Oscillator Circuit

DESCRIPTION

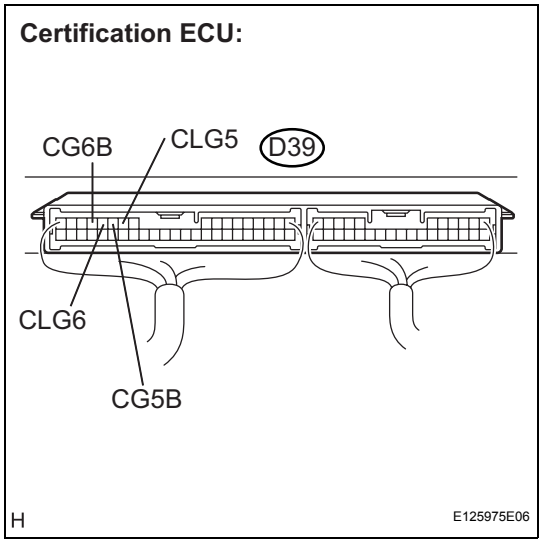
The certification ECU activates the front and rear cabin oscillators. The power is supplied from the certification ECU to both the front and rear cabin oscillators. The front and rear cabin oscillator circuits have the same wiring. If the smart key system does not operate properly inside the vehicle, check the circuit for their oscillators.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (CERTIFICATION ECU - OUTPUT SIGNAL)



(a) Connect the intelligent tester to the DLC3.
(b) Turn the engine switch on (IG).
(c) Following the display on the tester, select the "ACTIVE TEST".
Certification ECU

Item	Vehicle Condition / Test Details
Fr TRANSMITTER	Cabin Oscillator ON / OFF

(d) Measure the frequency according to the value(s) in the table below.
OK

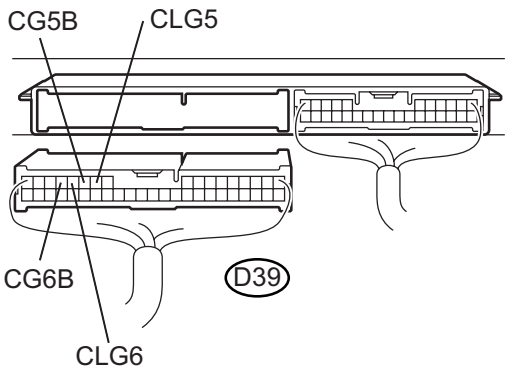
Tester Connection	Condition	Specified Condition
CG5B (D39-12) - CLG5 (D39-11)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)
CG6B (D39-14) - CLG6 (D39-13)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)

NG → REPLACE CERTIFICATION ECU

OK

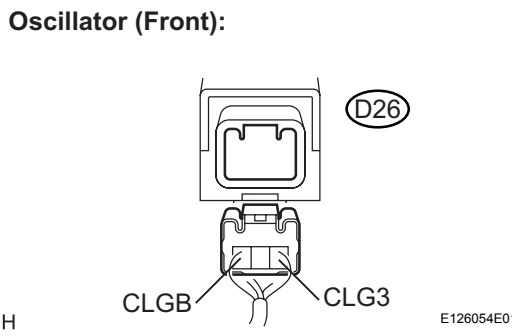
2	CHECK WIRE HARNESS (CERTIFICATION ECU - CABIN OSCILLATOR)

Certification ECU:



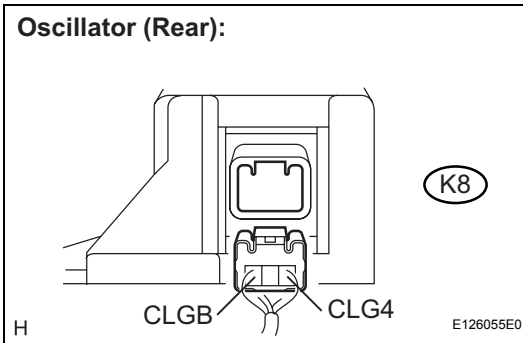
(a) Disconnect the D39 ECU connector.

Oscillator (Front):



(b) Disconnect the oscillator connectors.

Oscillator (Rear):



(c) Measure the resistance between the oscillator and the certification ECU to check for an open circuit in the wire harness.
Resistance:
Below 1 Ω

(d) Measure the resistance between the oscillator and the certification ECU to check for an short circuit in the wire harness.
Resistance:
10 kΩ or higher
HINT:
Refer to the wiring diagram for connection of each terminal.

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

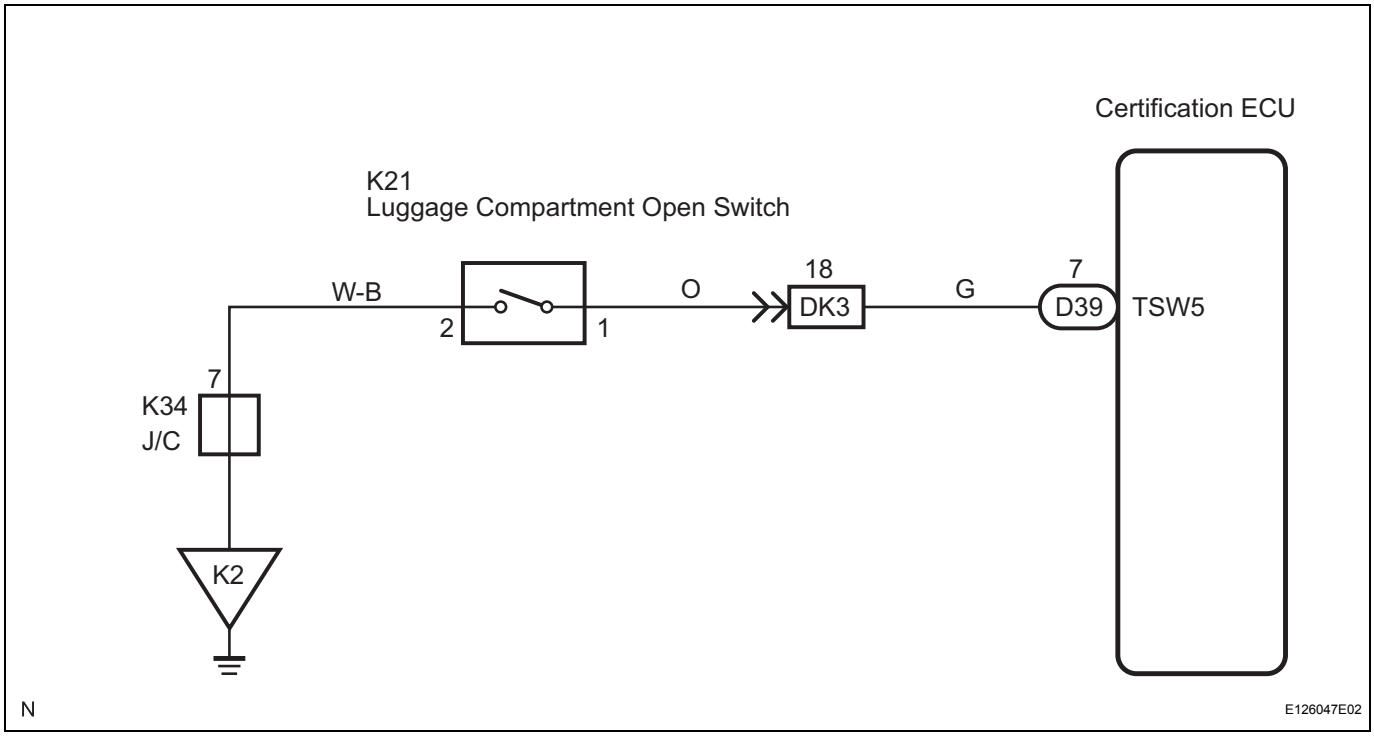
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Luggage Compartment Door Open Switch Circuit

DESCRIPTION

If the certification ECU detects that the luggage compartment open switch is pressed when the driver is carrying the key or when the key is locked in the luggage compartment door, the certification ECU sends a luggage compartment door open motor drive request signal to the body ECU.

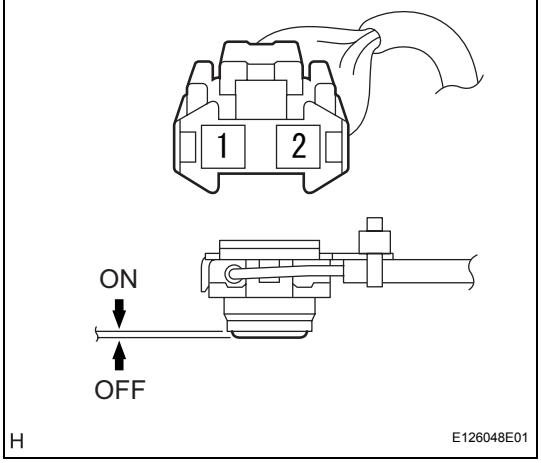
WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT LUGGAGE COMPARTMENT OPEN SWITCH

Luggage Compartment Open Switch:



(a) Disconnect the switch connector.
(b) Measure the resistance according to the value(s) in the table below.

Resistance

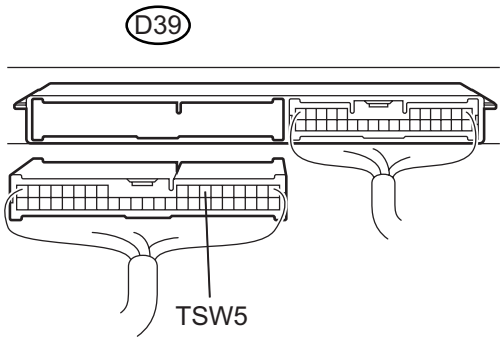
Tester Connection	Condition	Specified Condition
K21-1 - K21-2	Luggage compartment open switch not pushed → Pushed	10 kΩ or higher → Below 1 Ω

NG → **REPLACE LUGGAGE COMPARTMENT OPEN SWITCH**

OK

2	CHECK WIRE HARNESS (CERTIFICATION ECU - LUGGAGE COMPARTMENT OPEN SWITCH)

Certification ECU:



(a) Reconnect the switch connector.
(b) Disconnect the D39 ECU connector.
(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
TSW5 (D39-7) - Body ground	Luggage compartment open switch not pushed → Pushed	10 kΩ or higher → Below 1 Ω

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

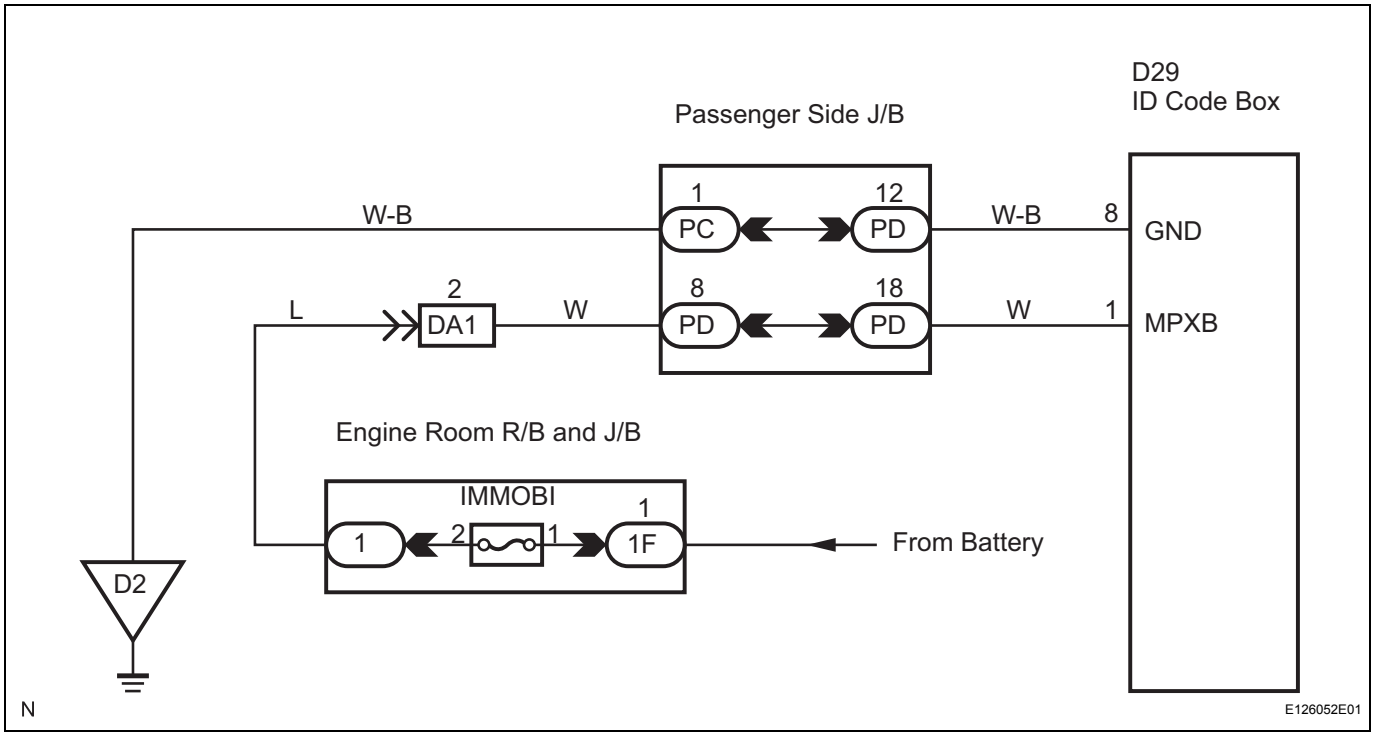
DL

ID Code Box Power Source Circuit

DESCRIPTION

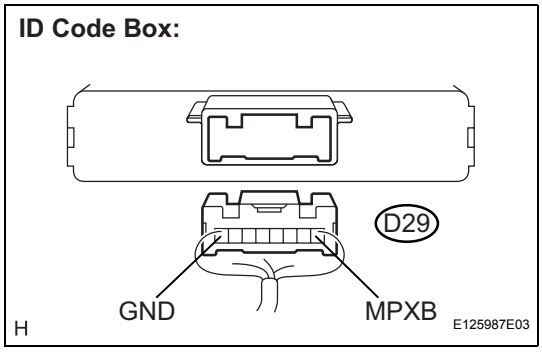
This is the power source circuit of the ID code box.
The ID code box sends immobilizer SET / UNSET signals to the ECM based on the information received from the certification ECU via the LIN communication line.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT ID CODE BOX



(a) Disconnect the D29 ID code box connector.
(b) Measure the voltage according to the value(s) in the table below.
Voltage

Tester Connection	Condition	Specified Condition
D29-1 (MPXB) - Body ground	Always	10 to 14 V

(c) Measure the resistance according to the value(s) in the table below.
Resistance

Tester Connection	Condition	Specified Condition
D29-8 (GND) - Body ground	Always	Below 1 Ω

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

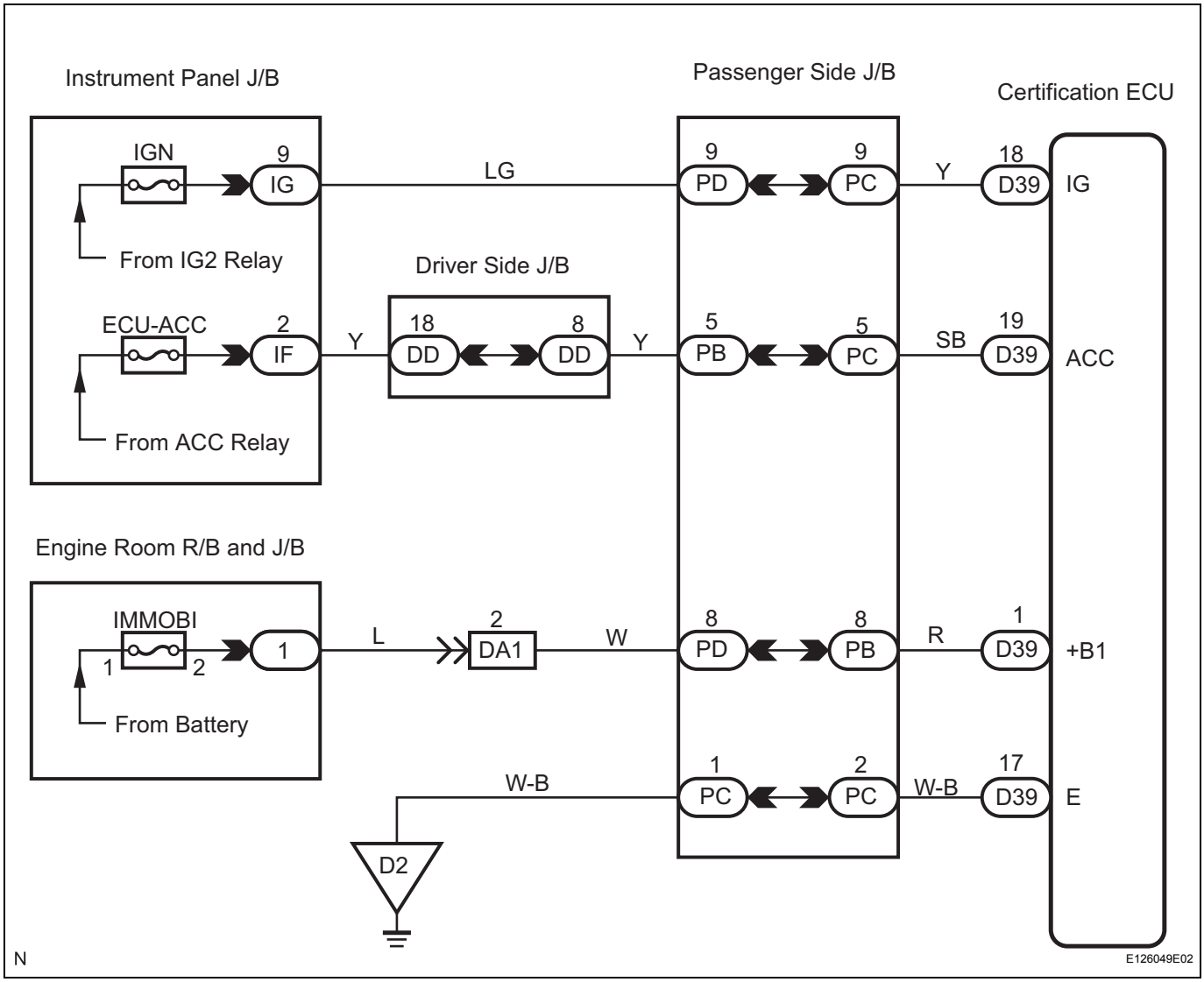
Certification ECU Power Source Circuit

DESCRIPTION

This is the power source circuit of the certification ECU.
The certification ECU controls the following:

- Key verification confirmation
- Cabin and door oscillator control
- Entry door LOCK / UNLOCK request to the body ECU
- Steering LOCK / UNLOCK request
- Immobilizer SET / UNSET request to the ID code box

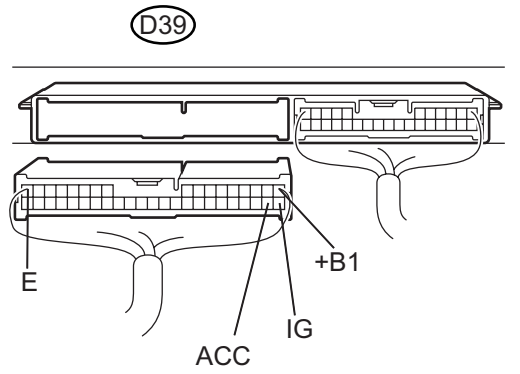
WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT CERTIFICATION ECU

Certification ECU:



(a) Disconnect the D39 certification ECU connector.
(b) Measure the voltage according to the value(s) in the table below.

Voltage

Tester Connection	Condition	Specified Condition
D39-1 (+B1) - Body ground	Always	10 to 14 V
D39-18 (IG) - Body ground	Engine switch OFF → ON (IG)	Below 1 V → 10 to 14 V
D39-19 (ACC) - Body ground	Engine switch OFF → ON (ACC)	Below 1 V → 10 to 14 V

(c) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
D39-17 (E) - Body ground	Always	Below 1 Ω

DL

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

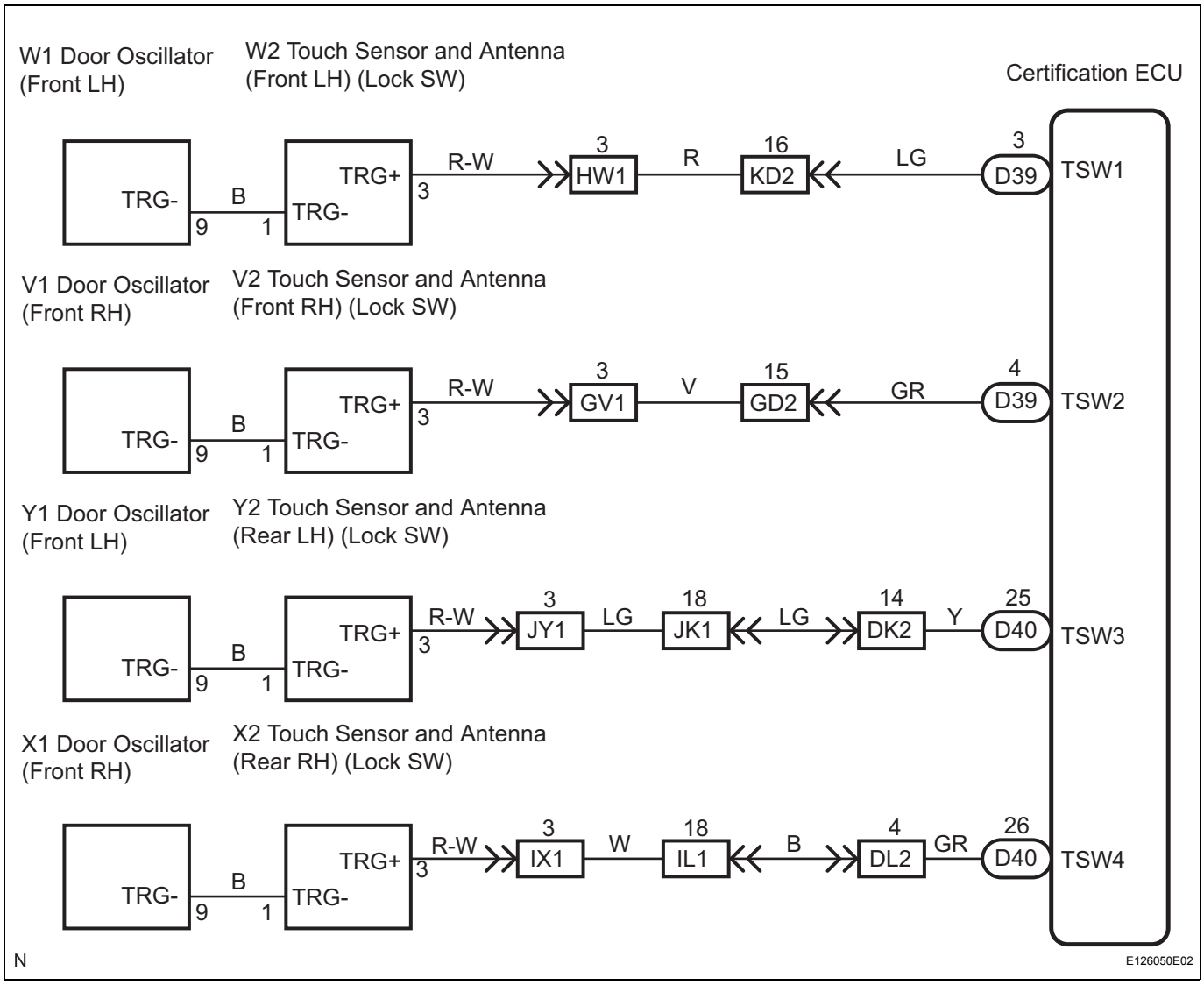
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Lock Switch Circuit

DESCRIPTION

Lock switches (trigger switch) are built into the outside handles of each door. The certification ECU detects the conditions of the each lock switch.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE ON INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the engine switch on (IG).
(c) Following the display on the tester, select "DATA LIST".

SMART KEY (Certification ECU):

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
D TRIGGER SW	Lock switch / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
P TRIGGER SW	Lock switch / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-
DR TRIGGER	Lock switch rear LH / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-
DP TRIGGER	Lock switch rear RH / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-

OK:
"ON" (lock switch is pressed) appears on the tester screen.

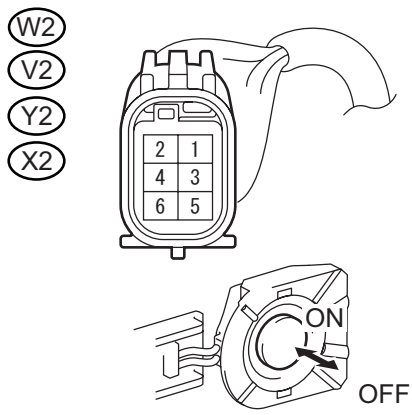
OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

NG

DL

2 INSPECT LOCK SWITCH

Lock Switch:



(a) Remove the outside handle.
(b) Disconnect the connectors.
(c) Measure the resistance according to the value(s) in the table below.

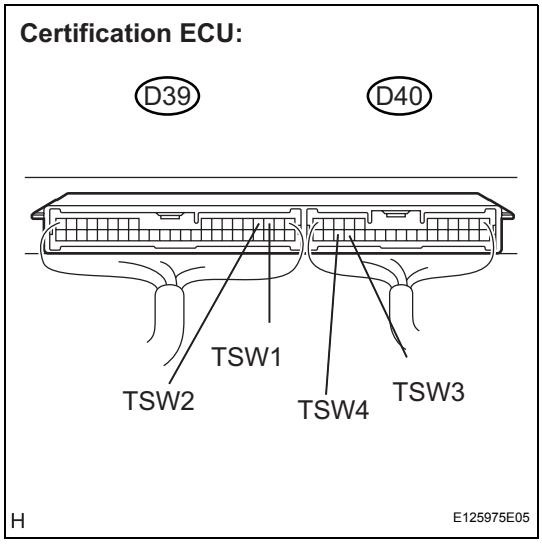
Resistance

Tester Connection	Condition	Specified Condition
W2-1 (TRG-) - W2-3 (TRG+)	Lock switch not pushed → Pushed	10 kΩ or higher → Below 1 Ω
V2-1 (TRG-) - V2-3 (TRG+)		
Y2-1 (TRG-) - Y2-3 (TRG+)		
X2-1 (TRG-) - X2-3 (TRG+)		

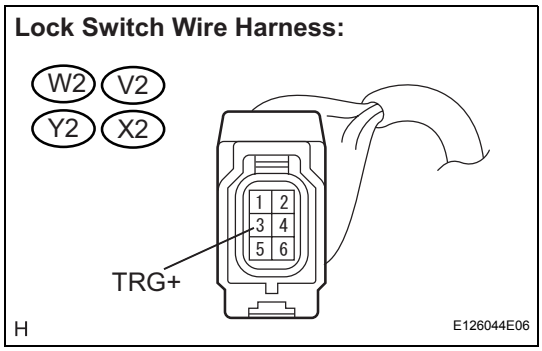
NG → **REPLACE OUTSIDE HANDLE**

OK

3	CHECK WIRE HARNESS (CERTIFICATION ECU - LOCK SWITCH)



(a) Disconnect the D39 and D40 ECU connectors.



(b) Measure the resistance according to the value(s) in the table below.

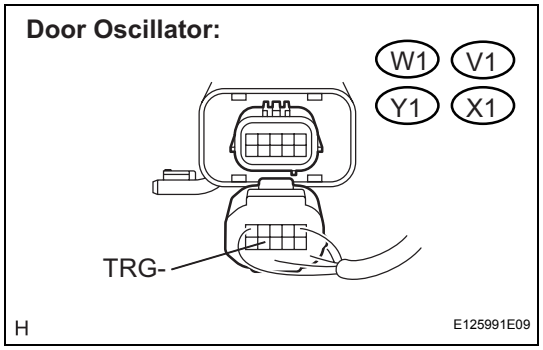
Resistance

Tester Connection	Condition	Specified Condition
D39-3 (TSW1) - W2-3 (TRG+)	Always	Below 1 Ω
D39-4 (TSW2) - V2-3 (TRG+)	Always	Below 1 Ω
D40-25 (TSW3) - Y2-3 (TRG+)	Always	Below 1 Ω
D40-26 (TSW4) - X2-3 (TRG+)	Always	Below 1 Ω
D39-3 (TSW1) - Body ground	Always	10 kΩ or higher
D39-4 (TSW2) - Body ground	Always	10 kΩ or higher
D40-25 (TSW3) - Body ground	Always	10 kΩ or higher
D40-26 (TSW4) - Body ground	Always	10 kΩ or higher

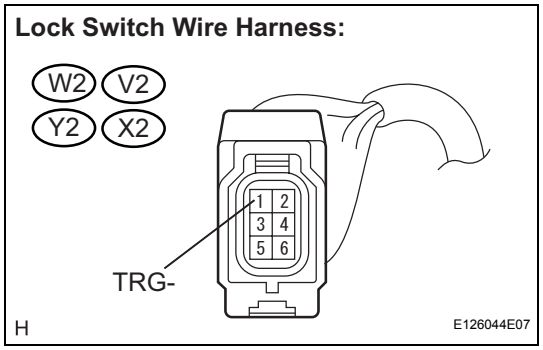
NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

4	CHECK WIRE HARNESS (DOOR OSCILLATOR - LOCK SWITCH)



(a) Disconnect the door oscillator connector.



(b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester Connection	Condition	Specified Condition
W1-9 (TRG-) - W2-1 (TRG-)	Always	Below 1 Ω
V1-9 (TRG-) - V2-1 (TRG-)	Always	Below 1 Ω
Y1-9 (TRG-) - Y2-1 (TRG-)	Always	Below 1 Ω
X1-9 (TRG-) - X2-1 (TRG-)	Always	Below 1 Ω
W1-9 (TRG-) - Body ground	Always	10 kΩ or higher
V1-9 (TRG-) - Body ground	Always	10 kΩ or higher
Y1-9 (TRG-) - Body ground	Always	10 kΩ or higher
X1-9 (TRG-) - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

TRANSMITTER BATTERY

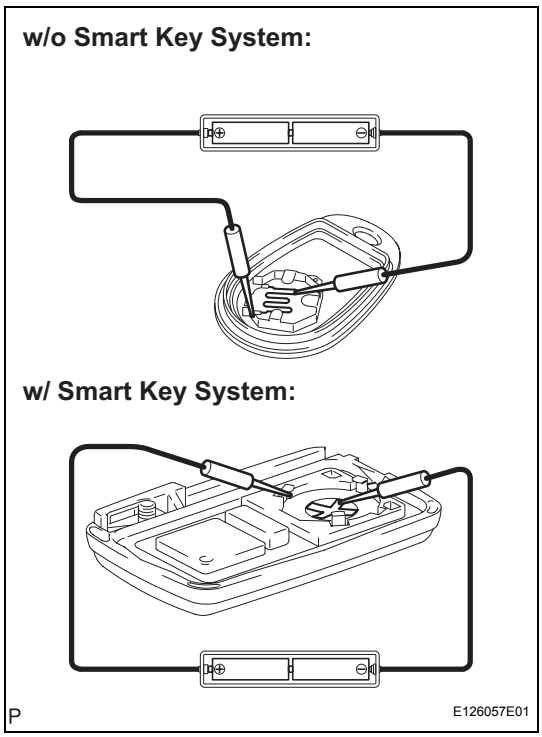
INSPECTION

1. INSPECT DOOR CONTROL TRANSMITTER

(a) Inspect operation of the transmitter.

(1) Remove the battery (lithium battery) from the transmitter (See page DL-234).

(2) Install a new non-depleted battery (lithium battery).
HINT:
When a new or non-depleted transmitter battery is not available, connect 2 new 1.5 V batteries in series. Then connect leads to the batteries and use the leads to apply 3 V voltage to the transmitter, as shown in the illustration.



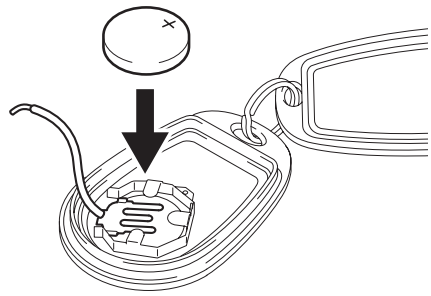
(3) From outside the vehicle, approximately 1 m (3.28 ft) from the driver side outside door handle, test the transmitter by pointing its key plate at the vehicle and pressing a transmitter switch.
OK:
The door lock can be operated via the transmitter.
HINT:
- The operational area differs depending on the user, the way the transmitter is held and the location.
- Since the transmitter uses faint electric waves, the operational area may be shortened if noise or strong electric waves occur in the area where the transmitter is used. In some cases, the transmitter may not function.

(4) Install the battery (lithium battery).

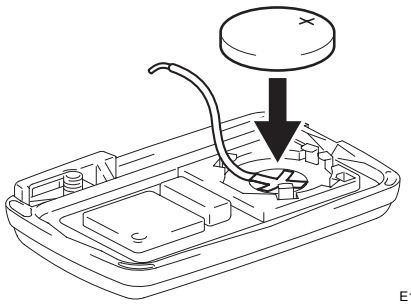
(b) Inspect the battery capacity.
HINT:
- When checking the amount of energy left in the battery (lithium battery), the battery must be checked while it is installed in the transmitter (a resistance of 1.2 kΩ is applied to the battery). When the battery energy is checked by itself (uninstalled), the voltage reading will be more than 2.5 V until the energy is depleted.
- If the transmitter is malfunctioning, the voltage reading of the energy left in the battery may be inaccurate.

(1) Remove the battery (lithium battery) from the transmitter (See page DL-234).

w/o Smart Key System:



w/ Smart Key System:



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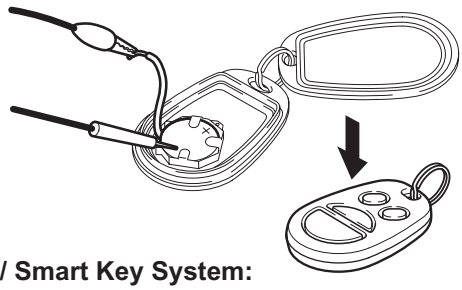
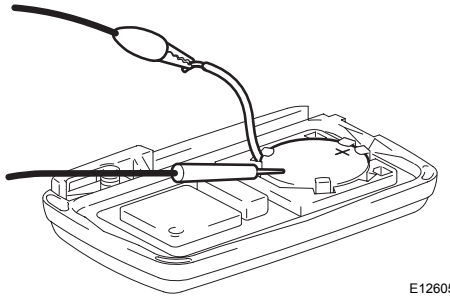
(2) Connect a wire to the negative (-) terminal of the transmitter and install the battery.

w/o Smart Key System:



w/ Smart Key System:



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(3) Connect the tester's positive (+) lead to the positive (+) side of the battery (lithium battery) and the tester's negative (-) lead to the wire.
(4) Press one of the transmitter switches for approximately 1 second.
(5) Press the transmitter switch again to check the voltage.

Voltage:

2.2 V or higher

HINT:

- When the temperature of the battery is low, the inspection cannot be made correctly. When the outcome of the test is less than 2.2 V, conduct the test again after leaving the battery in a place with a temperature 18°C (64°F) for more than 30 minutes.
- Read the voltage immediately after the switch is pressed. When 0.8 seconds have passed after the switch is pressed, the automatic power-off function starts and resistance applied to the battery will cease. The voltage of the battery will be 2.5 V or more.
- Press the switch at least 3 times before reading the voltage.

If the battery has just been returned to 18°C (64°F), the voltage may be unusually high for the first or second voltage reading.

(6) Disconnect the lead.
(7) Set the battery (lithium battery) in the transmitter.

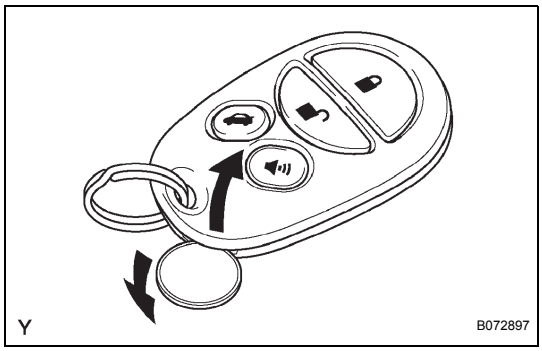
DL

REPLACEMENT

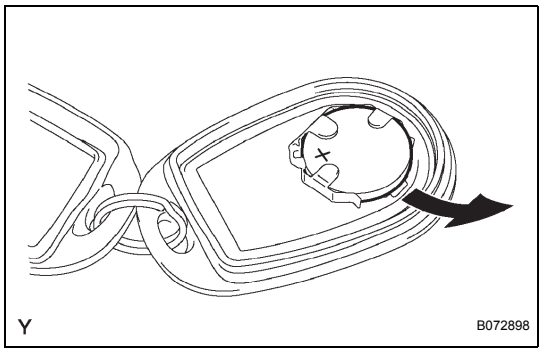
HINT:
Installation is in the reverse order of removal.

1. REMOVE TRANSMITTER BATTERY
NOTICE:
Take extra care when handling these precision electronic components.

(a) Using a coin or equivalent, pry apart the transmitter case.
NOTICE:
Do not forcibly pry apart the case.

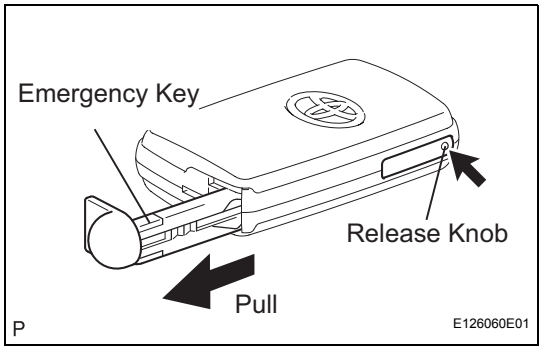


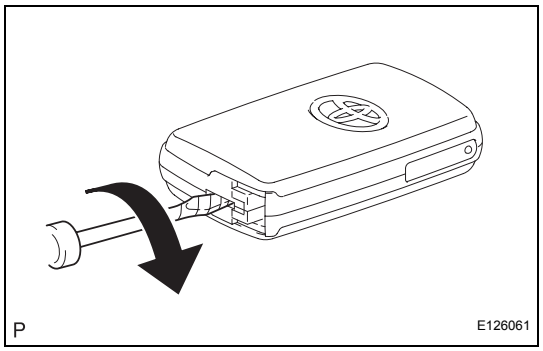
(b) Remove the battery (lithium battery).
NOTICE:
- **Do not push the terminals with your finger.**
- **Do not forcibly pry up the battery (lithium battery). The terminals may become damaged.**
- **Do not touch the battery with wet hands. Water may cause rust.**
- **Do not touch or move any components inside the transmitter as it may cease to work.**



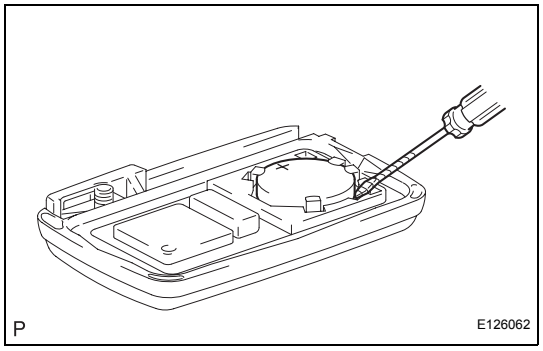
2. REMOVE TRANSMITTER BATTERY
NOTICE:
Take extra care when handling these precision electronic components.

(a) Push and hold the release knob in the direction indicated by the arrow in the illustration. Take the emergency key out of the transmitter case.



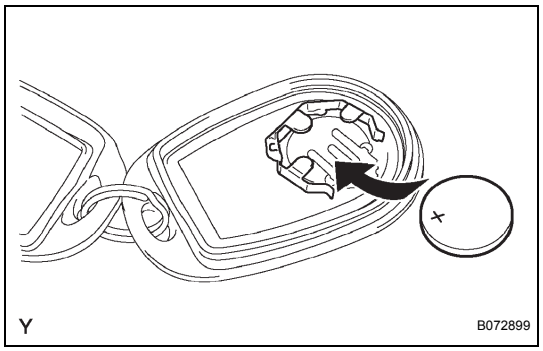


(b) Using a screwdriver, open the transmitter case.
NOTICE:
Do not forcibly pry apart the cover.
HINT:
Tape the screwdriver tip before use.



(c) Using a screwdriver, remove the transmitter's battery from the key, as shown in the illustration.
NOTICE:
- **Do not push the terminals with your finger.**
- **Do not forcibly pry up the battery (lithium battery). The terminals may become damaged.**
- **Do not touch the battery with wet hands. Water may cause rust.**
- **Do not touch or move any components inside the transmitter as it may cease to work.**

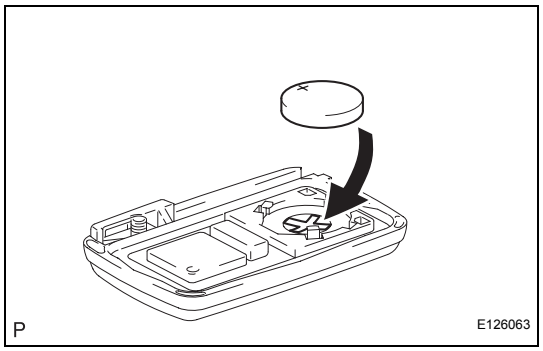
3. INSTALL TRANSMITTER BATTERY



(a) Install a new battery (lithium battery) with the positive (+) side up as shown in the illustration.
NOTICE:
- **Be sure that the positive side and the negative side of the transmitter battery are matched up correctly.**
- **Be careful not to bend the transmitter battery electrode during insertion.**
- **keep the transmitter case's interior free of dust and oil.**

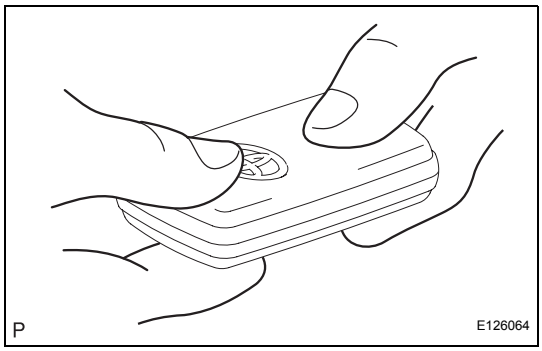
(b) Install the case securely.

4. INSTALL TRANSMITTER BATTERY

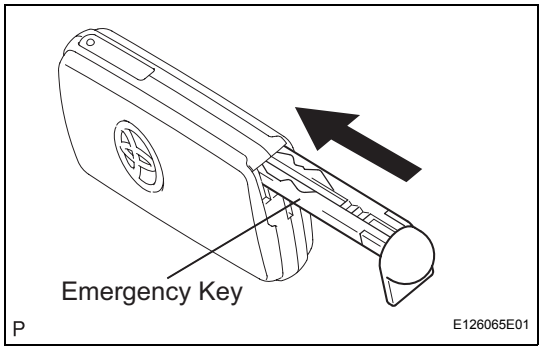


(a) Install a new battery (lithium battery) with the positive (+) side up, as shown in the illustration.
NOTICE:
- **Be sure that the positive (+) side and the negative (-) side of the transmitter battery are matched up correctly.**
- **Be careful not to bend the transmitter battery electrode during insertion.**
- **Keep the transmitter case interior free of dust and oil.**

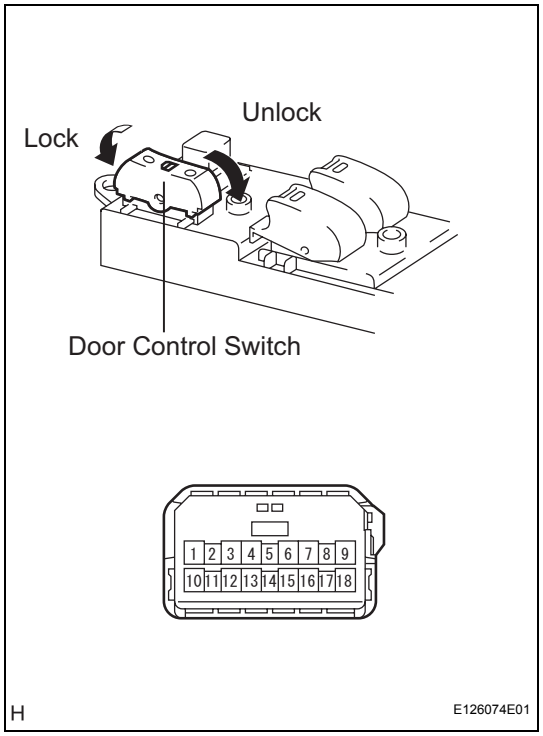
DL



(b) Install the transmitter case as shown in the illustration.



(c) Insert the emergency key into the transmitter case.
HINT:
After installation, press any of the transmitter's switches. Check that the LED illuminates.



DOOR CONTROL SWITCH

INSPECTION

1. INSPECT DOOR LOCK CONTROL SWITCH (for Driver Side)

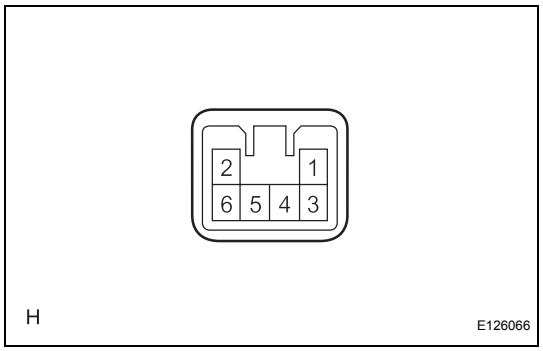
(a) Remove the multiplex network master switch assembly.

(b) Measure the resistance of the door control switch.

Resistance

Tester Connection	Condition	Specified Condition
1 - 5	Lock	Below 1 Ω
1 - 5 1 - 8	OFF	10 kΩ or higher
1 - 8	Unlock	Below 1 Ω

If the result is not as specified, replace the switch assembly.



2. INSPECT DOOR LOCK CONTROL SWITCH (for Front Passenger Side)

(a) Remove the door lock control switch assembly.

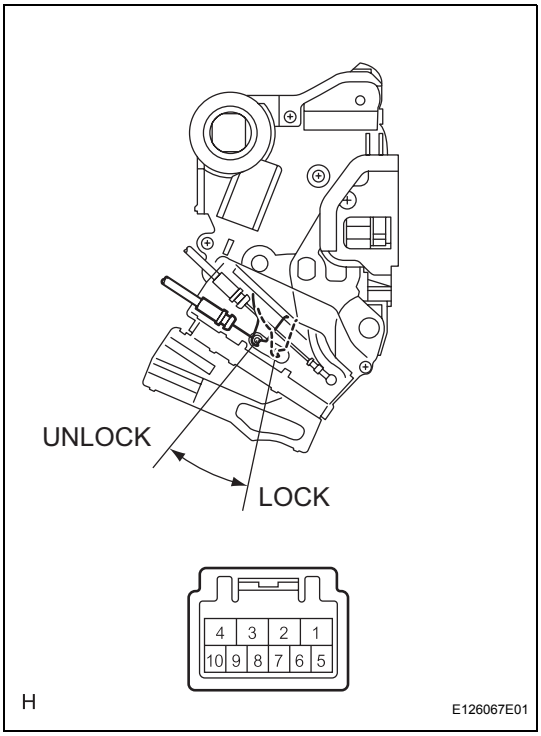
(b) Measure the resistance of the switch.

Resistance

Tester Connection	Switch Condition	Specified Condition
3 - 6	Lock	Below 1 Ω
3 - 5 3 - 6	OFF	10 kΩ or higher
3 - 5	Unlock	Below 1 Ω

If the result is not as specified, replace the switch assembly.

DL



FRONT DOOR LOCK

INSPECTION

1. INSPECT FRONT DOOR LOCK ASSEMBLY LH

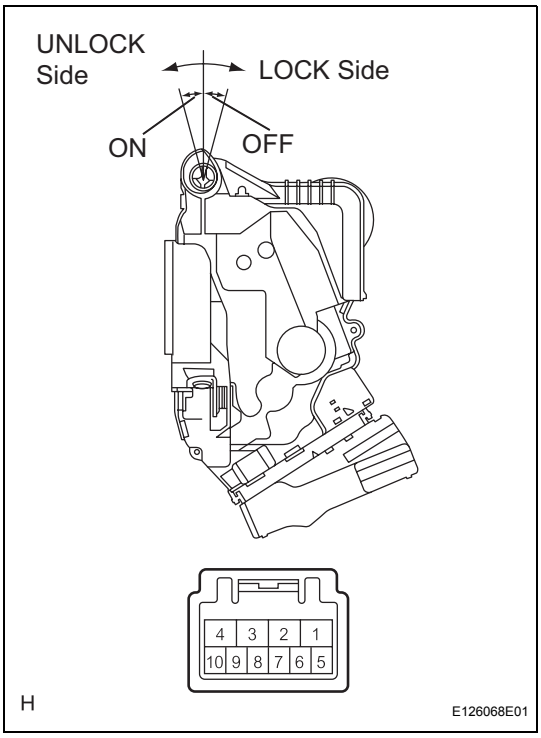
(a) Remove the front door lock assembly LH.

(b) Apply battery voltage to the door lock and check operation of the door lock motor.

OK

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

If the result is not as specified, replace the door lock assembly.

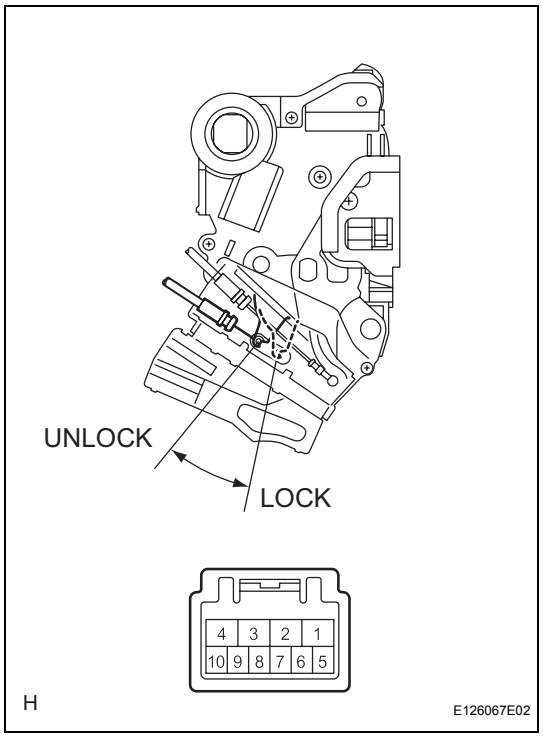


(c) Measure the resistance of the door key lock and unlock switch.

Resistance

Tester Connection	Door Lock Condition	Specified Condition
9 - 7	Lock	10 kΩ or higher
10 - 7	Unlock	Below 1 Ω

If the result is not as specified, replace the door lock assembly.



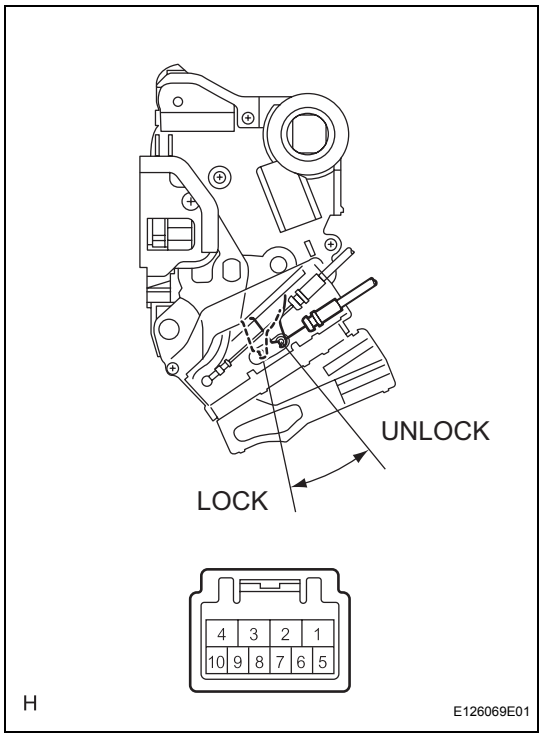
(d) Measure the resistance of the door unlock detection switch.

Resistance

Tester Connection	Door Lock Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	ON (Door lock set to UNLOCK)	7 - 8 (Below 1 Ω)
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	OFF (Door lock set to LOCK)	7 - 8 (10 kΩ or higher)

If the result is not as specified, replace the door lock assembly.

DL



2. INSPECT FRONT DOOR LOCK ASSEMBLY RH

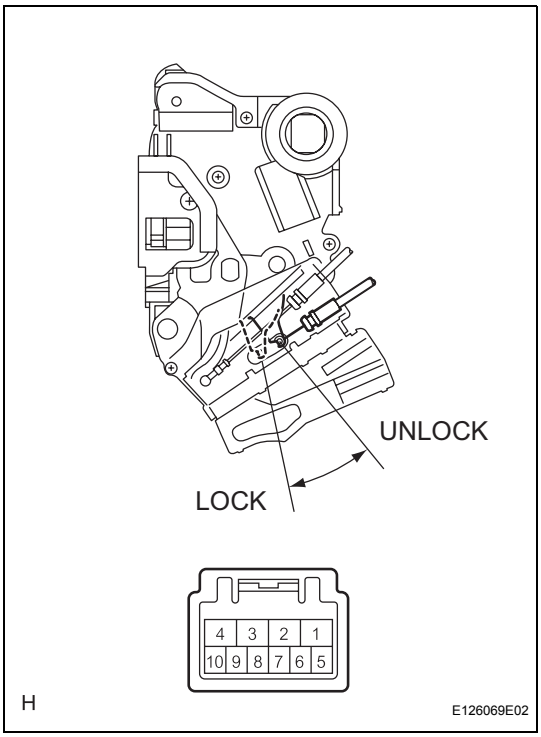
(a) Remove the front door lock assembly RH.

(b) Apply battery voltage to the door lock and check operation of the door lock motor.

OK

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

If the result is not as specified, replace the door lock assembly.



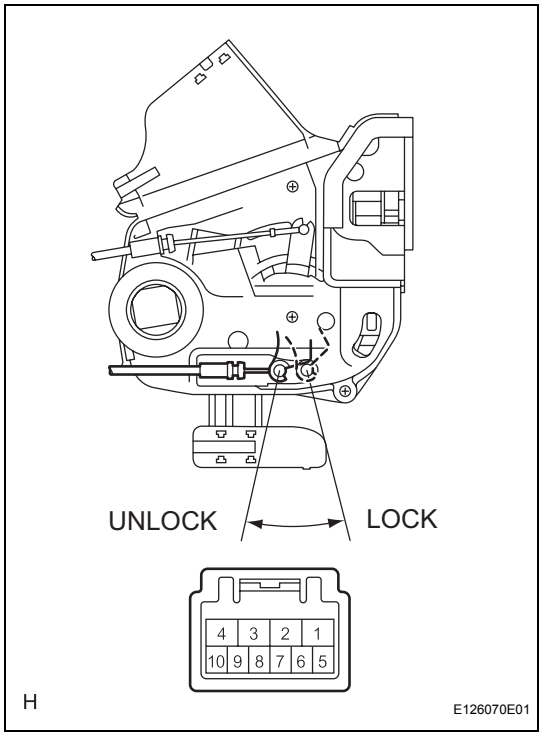
(c) Measure the resistance of the door unlock detection switch.

Resistance

Tester Connection	Door Lock Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	ON (Door lock set to UNLOCK)	7 - 8 (Below 1 Ω)
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	OFF (Door lock set to LOCK)	7 - 8 (10 kΩ or higher)

If the result is not as specified, replace the door lock assembly.

DL



REAR DOOR LOCK

INSPECTION

1. INSPECT REAR DOOR LOCK ASSEMBLY LH

(a) Remove the rear door lock assembly LH.

(b) Apply battery voltage to the door lock and check operation of the door lock motor.

OK

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

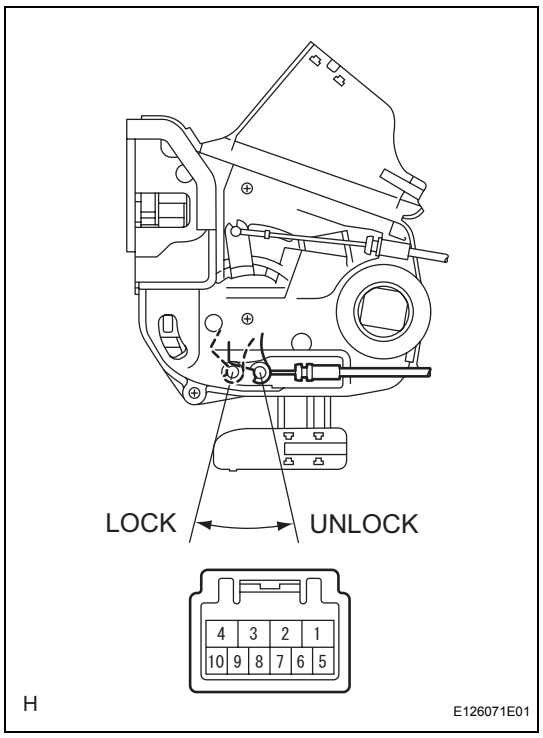
If the result is not as specified, replace the door lock assembly.

(c) Measure the resistance of the door unlock detection switch.

Resistance

Tester Connection	Door Lock Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	ON (Door lock set to UNLOCK)	6 - 9 (Below 1 Ω)
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	OFF (Door lock set to LOCK)	6 - 9 (10 kΩor higher)

If the result is not as specified, replace the door lock assembly.



2. INSPECT REAR DOOR LOCK ASSEMBLY RH

(a) Remove the rear door lock assembly RH.

(b) Apply battery voltage to the door lock and check operation of the door lock motor.

OK

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

If the result is not as specified, replace the door lock assembly.

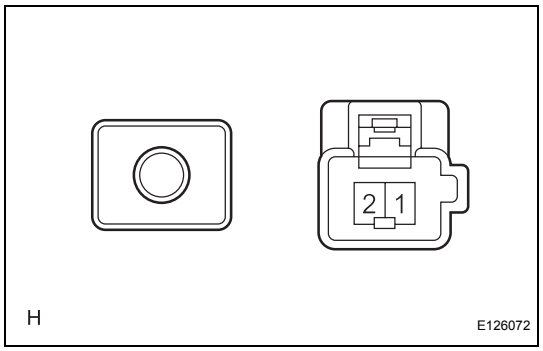
(c) Measure the resistance of the door unlock detection switch.

Resistance

Tester Connection	Door Lock Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	ON (Door lock set to UNLOCK)	6 - 9 (Below 1 Ω)
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	OFF (Door lock set to LOCK)	6 - 9 (10 kΩor higher)

DL

If the result is not as specified, replace the door lock assembly.



LUGGAGE COMPARTMENT DOOR OPENER OUTER SWITCH

INSPECTION

1. INSPECT LUGGAGE COMPARTMENT DOOR OPENER SWITCH ASSEMBLY

(a) Remove the luggage compartment door opener switch.

(b) Measure the resistance of the luggage compartment door opener switch.

Resistance

Tester Connection	Door Lock Condition	Specified Condition
1 - 2	Lock	Below 1 Ω
1 - 2	Unlock	10 kΩ or higher

DL