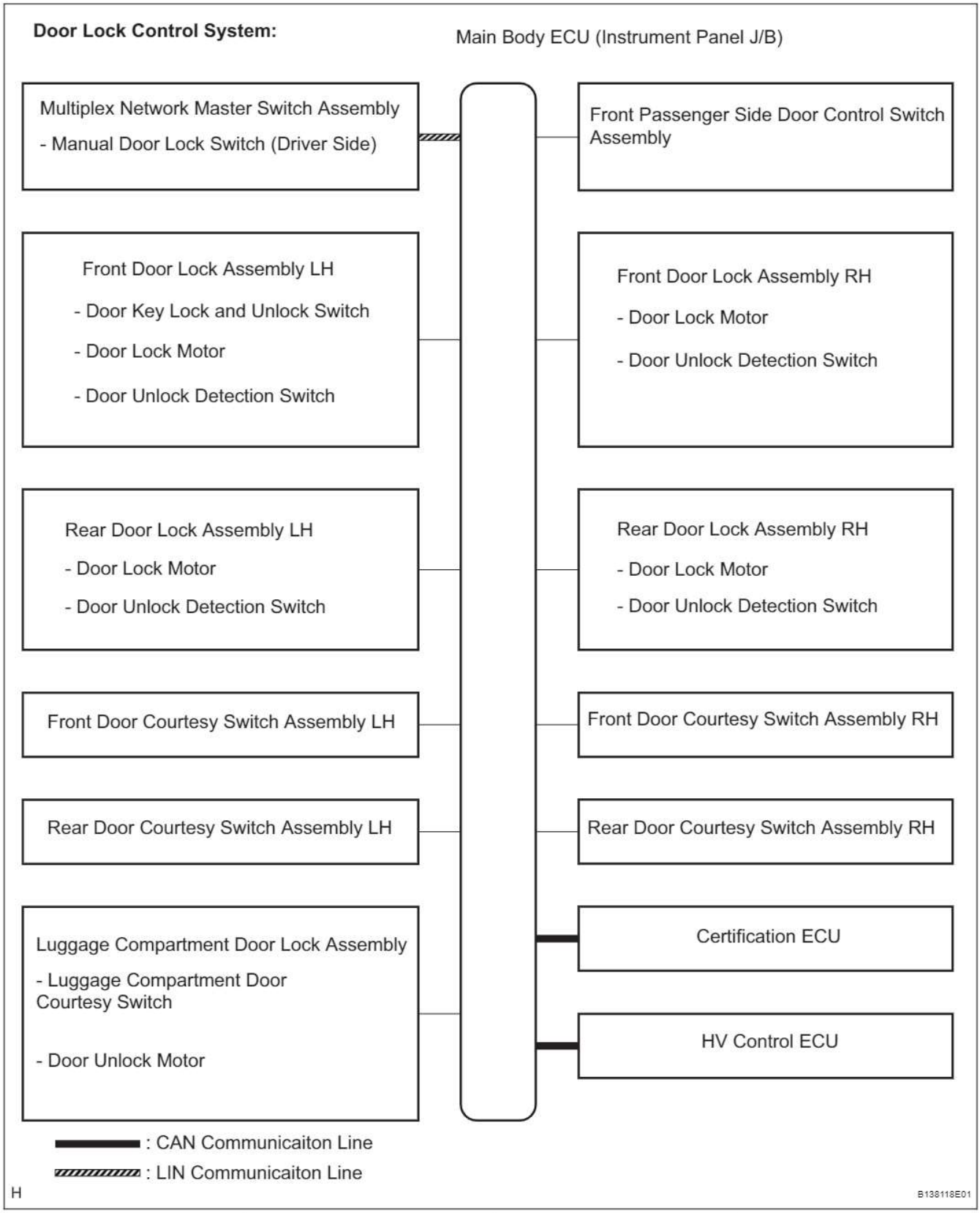
SYSTEM DIAGRAM



Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signals	Communication method
HV control ECU	Main Body ECU	Shift Position Switch Signal	CAN
Certification ECU	Main Body ECU	Door lock/unlock request signal	LIN

SYSTEM DESCRIPTION

1. POWER DOOR LOCK CONTROL SYSTEM DESCRIPTION

(a) The power door lock system locks/unlocks all the doors.

The master switch and the door control switch on the passenger door send "lock/unlock" request signals to the main body ECU. Then, the main body ECU sends these request signals to the lock motors in each door to lock/unlock all the doors at once in response to the inputs.

Operating the driver's door lock using a mechanical key sends request signals to lock/unlock the doors to the main body ECU. "2-step unlock function" is optional for unlocking procedures of the key-linked lock for the driver side door.

2. FUNCTION OF MAIN COMPONENT

Components	Function
Multiplex network master switch assembly (Manual door lock switch)	Door control switch on master switch assembly locks/unlocks all doors.
Door control switch	Door control switch on passenger side door locks/unlocks all doors.
Door courtesy switch	Placed on each door. Detects door status (open or closed) and outputs data to main body ECU. Turns on when door is open and turns off when door is closed.
Driver side door lock	• 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 main body ECU. • Built-in position switch detects door status (locked or unlocked) and outputs data to main body ECU. This switch turns off when door is locked and turns on when door is unlocked.
Front passenger side door lock, luggage compartment door lock, rear LH and RH door locks	• Built-in motor locks/unlocks door. • Built-in position switch detects door status (locked or unlocked) and outputs data to main body ECU. This switch turns off when door is locked and turns on when door is unlocked.

3. SYSTEM FUNCTION

HINT:

The following functions' default settings are ON. Some of these functions can be customized (See page DL-10).

(a) This system is controlled by the main body ECU. The main body ECU outputs signals to each door lock motor. The door lock control system of the CAMRY HV has the following functions:

Function	Outline
Manual lock and unlock function	This function can lock or unlock all doors by the door lock control switch operation.
Key-linked lock and unlock function	This function, which is linked with the key cylinder, can lock or unlock all the doors when a lock or unlock operation is effected.
Manual unlock prohibition function	Performing the door lock operation with an electrical key or a mechanical key will prohibit the unlock operation by the door lock control switch.
Key lock-in prevention function	If a each door lock operation is performed when the electrical key or mechanical key is in the cabin, all the doors will be unlocked.

Function	Outline
Shift-linked automatic door lock function	When the conditions listed below are met consecutively, this function causes all the doors to be automatically locked. • The power switch is on (IG). • All doors are closed. • The shift lever is moved out of the P position. • Any of the doors are unlocked.
Shift-linked automatic door unlock function	When the power switch is on (IG), if moving the shift lever to the P position from any other position, all the doors will be automatically unlocked.
One-motion open	When the door is locked, this function enables the door to be unlocked by pulling the inside handle of the door.
2-step unlock function	This function is provided to unlock the driver's door by turning the key cylinder once and to unlock the remaining doors by turning it the second time.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedures to troubleshoot the power door lock control system.
- The intelligent tester should be used in steps 5 and 7.

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

DL

2	CUSTOMER PROBLEM ANALYSIS CHECK

HINT:

- In troubleshooting, confirm that the problem symptoms have been accurately identified. Preconceptions should be discarded in order to make an accurate judgment. To clearly understand what the problem symptoms are, it is extremely important to ask the customer about the problem and the conditions at the time the malfunction occurred.
- Gather as much information as possible for reference. Past problems that seem unrelated may also help in some cases.
- The following 5 items are important points in the problem analysis:

What	Vehicle model, system name
When	Date, time, occurrence frequency
Where	Road conditions
Under what conditions?	Running conditions, driving conditions, weather conditions
How did it happen?	Problem symptoms

NEXT

3	INSPECT BATTERY VOLTAGE

Standard voltage:
11 to 14 V
If the voltage is below 11 V, recharge or replace the battery before proceeding to the next step.

NEXT

4	PROBLEM SYMPTOMS TABLE

Result

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B → GO TO STEP 6

A

5	OVERALL ANALYSIS AND TROUBLESHOOTING

(a) Terminals of ECU
(See page DL-13)
(b) DATA LIST/ACTIVE TEST
(See page DL-17)

NEXT

6	REPAIR OR REPLACE

NEXT

7	CONFIRMATION TEST

NEXT

END

OPERATION CHECK

1. **CHECK ELECTRICAL DOOR LOCK OPERATION**
   NOTICE:
   The initial condition that the customizing function using the intelligent tester is not chosen is shown.
   (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 mechanical key.
   (b) Check the electrical key lock-in prevention function.
   NOTICE:
   In order to prevent the electrical key from being actually locked-in, the following inspection should be performed with the driver side door window open.
   (1) Place the electrical key in the cabin.
   (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 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 electrical key, open the driver side door and then close and lock the door using the electrical 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 electrical key, and close and lock the driver side door by mechanical 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 electrical 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 turned to UNLOCK from outside the vehicle.
   HINT:
   Check that the security function is canceled under the following conditions:

- The power switch is turned on (IG).
- The driver side door is unlocked using the mechanical key or the electrical key.
- The door control switch (for manual operation) is turned to UNLOCK after the door control knob is turned to UNLOCK manually.

(d) Check the illumination function.
(1) Set the room light switch to the DOOR position.
(2) With all doors locked, check that driver's door unlock when the driver side door lock cylinder is turned to UNLOCK using the key. At the same time, the room light comes on.
(3) Check that the room light goes off in approximately 15 seconds if the doors have not been opened.

(e) Check the AUTO lock function.
(1) Lock all doors.
(2) Unlock driver's door using the electrical key.
(3) Allow 30 seconds to elapse while all doors remain closed and the electrical key switch and the entry unlock switch remain untouched. Then, check that all doors will lock automatically.

(f) 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) 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 power switch is turned off.

CUSTOMIZE PARAMETERS

1. CUSTOMIZING FUNCTION WITH INTELLIGENT TESTER

HINT:

The following items can be customized.

NOTICE:

- **Before attempting to customize vehicle settings, confirm whether it is possible to make the change that the customer has requested.**
- **Be sure to record the current settings before customizing.**
- **When troubleshooting, make sure that the item in question has not been disabled using the customizing function.**

DL

DOOR LOCK:

Display (Item)	Default	Contents	Setting
UNLOCK/PARK (Unlock, power switch on (IG), shift P, speed 0 km/h (0 mph))	ON	Function that unlocks doors when the shift lever is moved to the P position from any other position while the power switch is on (IG)	ON/OFF
ALL UNLK/OPN-CL (All unlock, D door open-close)	OFF	Function that unlocks all other doors when opening driver side door within 10 seconds after turning the power switch off from on (IG)	ON/OFF
UNLK/KEY TWICE (Unlock, 2 times D key operation)	ON	• Function that unlocks only the driver side door when the driver side door key cylinder is turned to unlock once and unlocks all the doors when it is turned to unlock twice • In the OFF setting, turning it once unlocks all doors	ON/OFF
AUTO LOCK/SHIFT (Auto lock/shift not P)	ON	Function that locks doors when the shift lever is moved from the P position to any other position	ON/OFF
AUTO LOCK	OFF	Function that locks doors when vehicle reaches a vehicle speed 20 km/h (13 mph)	ON/OFF

WIRELESS D LOCK

Display (Item)	Default	Contents	Setting
AUTO LOCK DELAY	60s	Function that selects AUTO LOCK time (30 sec. or 60 sec.)	30s/60s

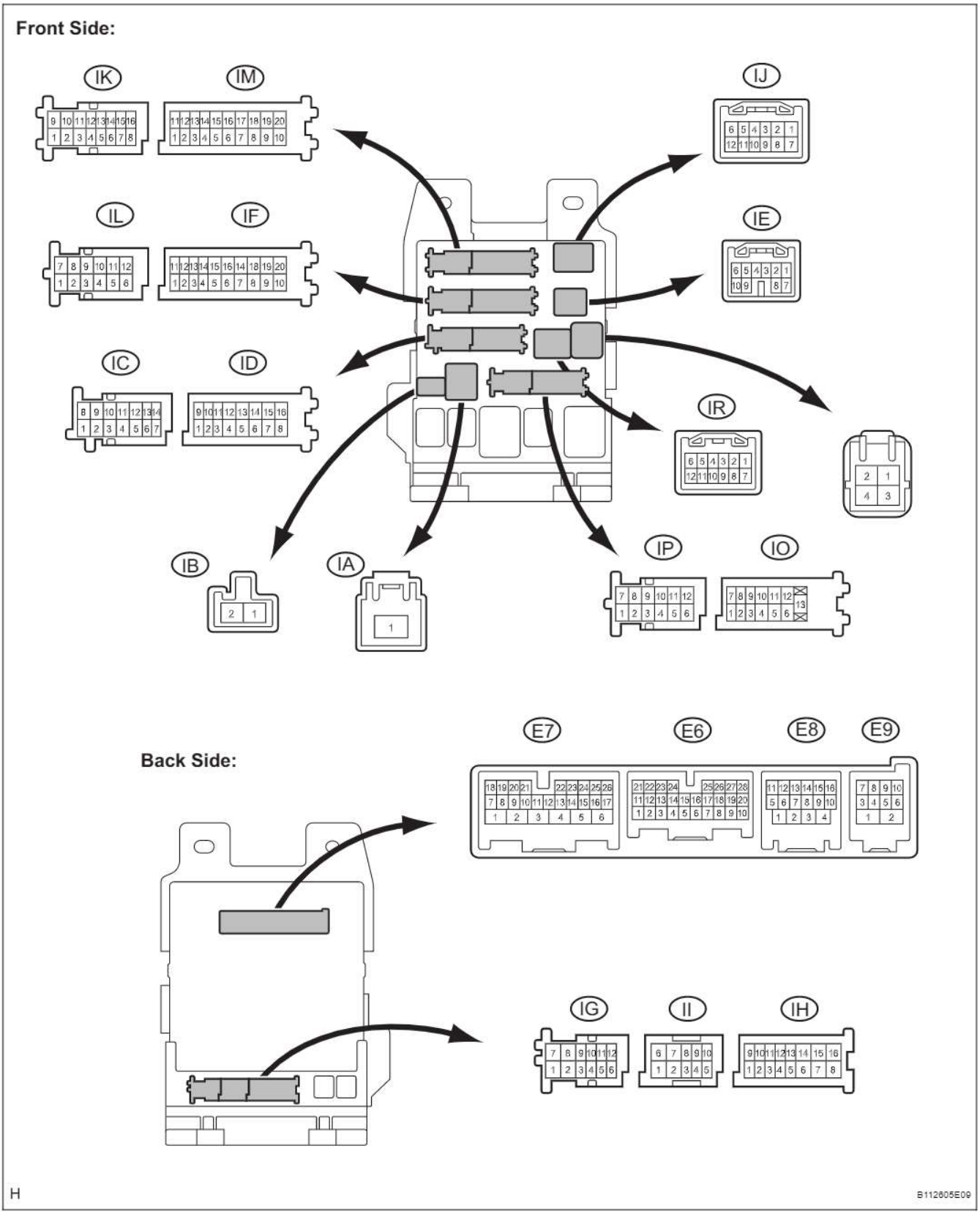
PROBLEM SYMPTOMS TABLE

POWER DOOR LOCK CONTROL SYSTEM:

Symptom	Suspected Area	See page
All doors cannot be locked/unlocked simultaneously by neither door control switch nor door key cylinder	1. Power source circuit (Main body ECU)	DL-13
	2. Replace main body ECU (Instrument panel J/B)	-
All doors cannot be locked/unlocked simultaneously by driver side door control switch	1. Door control switch circuit (Driver side)	DL-56
	2. Replace main body ECU (Instrument panel J/B)	-
All doors cannot be locked/unlocked simultaneously by front passenger side door control switch	1. Door control switch circuit (Front passenger side door)	DL-56
	2. Replace main body ECU (Instrument panel J/B)	-
All doors cannot be locked/unlocked simultaneously by door key cylinder	1. Driver side door key lock and unlock switch circuit	DL-52
	2. Multiplex network master switch assembly	DL-13
	3. Replace main body ECU (Instrument panel J/B)	-
Driver side door lock does not operate	1. Driver side door lock motor circuit	DL-31
	2. Replace main body ECU (Instrument panel J/B)	-
Passenger side door lock does not operate	1. Front passenger side door lock motor circuit	DL-34
	2. Replace main body ECU (Instrument panel J/B)	-
Rear LH side door lock does not operate	1. Rear door lock motor LH circuit	DL-37
	2. Replace main body ECU (Instrument panel J/B)	-
Rear RH side door lock does not operate	1. Rear door lock motor RH circuit	DL-40
	2. Replace main body ECU (Instrument panel J/B)	-
Luggage compartment door unlock does not operate	1. Luggage compartment door lock circuit	DL-46
	2. Luggage compartment door courtesy switch circuit	DL-43
	3. Luggage compartment door key cylinder switch circuit	DL-49
	4. Replace main body ECU (Instrument panel J/B)	-
Key lock-in prevention function does not work properly (manual operation and key-linked lock are active)	1. Door courtesy switch circuit (Driver side)	LI-41
	2. Smart key system (Entry)	DL-121
	3. Replace main body ECU (Instrument panel J/B)	-
Shift-linked automatic door lock does not operate	1. CAN communication system	CA-7
	2. Replace main body ECU (Instrument panel J/B)	-
One or more doors cannot be locked/unlocked simultaneously (Wireless key operation)	1. Wireless door lock system	DL-71
	2. Driver side door unlock detection switch circuit	DL-19
	3. Front passenger door unlock detection switch circuit	DL-22
	4. Rear door unlock detection switch LH circuit	DL-25
	5. Rear door unlock detection switch RH circuit	DL-28
	6. Replace main body ECU (Instrument panel J/B)	-

TERMINALS OF ECU

1. CHECK MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)



(a) Disconnect the E6, E7, IO, IK, IM, ID, IJ, and E9 J/B and ECU connectors.
(b) Measure the voltage and resistance according to the value(s) in the table below.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
DCTY (E7-24) - Body ground	L - Body ground	Driver door courtesy switch	Driver door CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
RCTY (E6-7) - Body ground	GR - Body ground	Rear right door courtesy switch input	Rear right door CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
PCTY (E6-21) - Body ground	Y - Body ground	Passenger door courtesy switch input	Passenger door CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
LCTY (IO-7) - Body ground	LG - Body ground	Rear left door courtesy switch input	Rear left door CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
GND2 (IM-9) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
GND1 (IF-10) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
L1 (IJ-3) - Body ground	L - Body ground	Passenger door control switch LOCK input	Passenger door control switch OFF → LOCK	10 kΩ or higher → Below 1 Ω
UL1 (IJ-4) - Body ground	G - Body ground	Passenger door control switch UNLOCK input	Passenger door control switch OFF → UNLOCK	10 kΩ or higher → Below 1 Ω
L1 (IK-15) - Body ground	V - Body ground	Driver door control switch LOCK input	Driver door control switch OFF → LOCK	10 kΩ or higher → Below 1 Ω
UL1 (IK-12) - Body ground	G - Body ground	Driver door control switch UNLOCK input	Driver door control switch OFF → UNLOCK	10 kΩ or higher → Below 1 Ω
LGCY (E6-25) - Body ground	W - Body ground	Luggage compartment door courtesy switch input	Luggage compartment door CLOSED → OPEN	10 kΩ or higher → Below 1 Ω
TCAN (E8-2) - Body ground	O - Body ground	Luggage compartment door key-linked door unlock input	Using mechanical key, operate luggage compartment door lock cylinder to CENTER → CANCEL	10 kΩ or higher → Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.
(c) Reconnect the J/B and ECU connectors.
(d) Measure the voltage according to the value(s) in the table below.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
IG (IF-11) - Body ground	B - Body ground	Engine power supply	Power switch on (IG) → off	10 to 14 V → Below 1 V
ACC (IF-2) - Body ground	L - Body ground	ACC power supply	Power switch on (ACC) → off	10 to 14 V → Below 1 V
LSWL (IP-5) - Body ground	GR - Body ground	Rear left door lock position switch input	Rear left door UNLOCK → LOCK	Below 1 V → 10 to 14 V (or pulse generation)
LSWD (E7-9) - Body ground	L - Body ground	Driver door lock position switch input	Driver door UNLOCK → LOCK	Below 1 V → 10 to 14 V (or pulse generation)
UL3 (E7-10) - Body ground	GR - Body ground	Driver door key-linked door unlock input	Using mechanical key, operate driver door lock cylinder to LOCK → UNLOCK	10 to 14 V (or pulse generation) → Below 1 V
L2 (IK-16) - Body ground	BR - Body ground	Driver door key-linked door lock input	Using mechanical key, operate driver door lock cylinder to UNLOCK → LOCK	10 to 14 V (or pulse generation) → Below 1 V

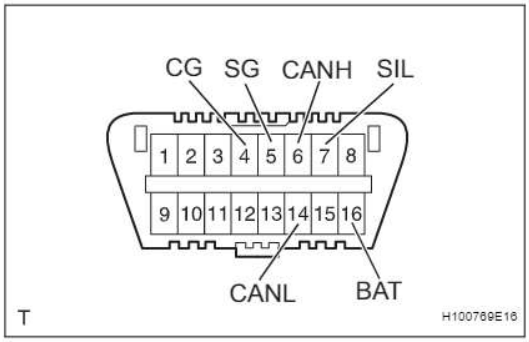
Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ACT+ (IJ-1) - Body ground	L - Body ground	Door lock motor LOCK drive output (Front passenger door)	Door control switch (Master switch or passenger side switch) or driver side door key cylinder OFF → LOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACT+ (IP-11) - Body ground	W - Body ground	Door lock motor LOCK drive output (Rear door LH)	Door control switch (Master switch or passenger side switch) or driver side door key cylinder OFF → LOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACT+ (IF-5) - Body ground	L - Body ground	Door lock motor LOCK drive output (Rear door RH)	Door control switch (Master switch or passenger side switch) or driver side door key cylinder OFF → LOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACT- (IP-6) - Body ground	G - Body ground	Door lock motor UNLOCK drive output (Rear door LH)	Door control switch (Master switch or passenger side switch) or driver side door key cylinder OFF → UNLOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACT- (IF-18) - Body ground	B - Body ground	Door lock motor UNLOCK drive output (Rear door RH)	Door control switch (Master switch or passenger side switch) or driver side door key cylinder OFF → UNLOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
TR+ (E7-1) - Body ground	B - Body ground	Door lock motor UNLOCK drive output (Luggage compartment door)	Luggage compartment open switch (Transmitter) or luggage compartment door key cylinder OFF → UNLOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACTD (E7-5) - Body ground	GR - Body ground	Door lock motor UNLOCK drive output (Driver door)	Door control switch (Master switch or passenger side switch) or driver side door key cylinder OFF → UNLOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACT+ (IK-2) - Body ground	W - Body ground	Door lock motor LOCK drive output (Driver door)	Door control switch (Master switch or passenger side switch) or driver side door key cylinder OFF → LOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACT- (IJ-2) - Body ground	LG - Body ground	Door lock motor UNLOCK drive output (Front passenger)	Door control switch (Master switch or passenger side switch) or driver side door key cylinder OFF → UNLOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
LSWR (E6-5) - Body ground	V - Body ground	Rear right door lock position switch input	Rear right door UNLOCK → LOCK	Below 1 V → 10 to 14 V (or pulse generation)
LSWP (E6-27) - Body ground	LG - Body ground	Passenger door lock position switch input	Passenger door UNLOCK → LOCK	Below 1 V → 10 to 14 V (or pulse generation)

If the result is not as specified, the main body ECU (instrument panel J/B) may have a malfunction.

DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) Power door lock control system data and Diagnostic Trouble Codes (DTCs) can be read through 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

HINT:

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

DL

Symbols (Terminal No.)	Terminal Description	Condition	Specified Condition
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
BAT (16) - Body ground	Battery positive	Always	10 to 14 V
CANH (6) - CANL (14)	CAN bus line	Power Switch OFF*	54 to 69 Ω
CANH (6) - CG (4)	HIGH-level CAN bus line	Power Switch OFF*	200 Ω or more
CANL (14) - CG (4)	LOW-level CAN bus line	Power Switch OFF*	200 Ω or more
CANH (6) - BAT (16)	HIGH-level CAN bus line	Power Switch OFF*	6 kΩ or more
CANL (14) - BAT (16)	LOW-level CAN bus line	Power Switch OFF*	6 kΩ or more

NOTICE:

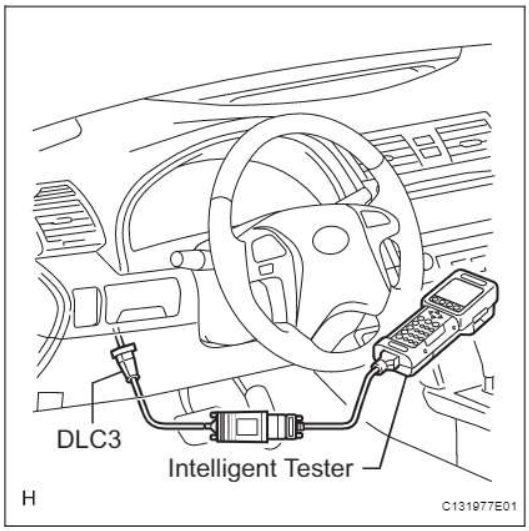
***: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the power switch, any other switches or the doors.**

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

HINT:

Connect the cable of the intelligent tester to the DLC3, turn the power switch on (IG) and attempt to use the tester. If the display indicates that a communication error has occurred, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still not possible 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. INSPECT BATTERY VOLTAGE

Standard voltage:

11 to 14 V

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

DATA LIST / ACTIVE TEST

1. READ 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 to the DLC3.
(b) Turn the power switch on (IG).
(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / DATA LIST.
(d) Read the DATA LIST according to the display on the tester.

MAIN BODY:

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D DOR CTY SW	Driver side door courtesy light switch signal/ON or OFF	ON: Driver side door is OPEN OFF: Driver side door is CLOSED	-
P DOR CTY SW	Passenger side door courtesy light switch signal/ON or OFF	ON: Passenger side door is OPEN OFF: Passenger side door is CLOSED	-
RR DOR CTY SW	Rear right door courtesy light switch signal/ON or OFF	ON: Rear right door is OPEN OFF: Rear right door is CLOSED	-
RL DOR CTY SW	Rear left door courtesy light switch signal/ON or OFF	ON: Rear left door is OPEN OFF: Rear left door is CLOSED	-
D LOCK POS SW	Driver side door lock position switch signal/ON or OFF	ON: Driver side door is unlocked OFF: Driver side door is locked	-
P LOCK POS SW	Front passenger side door lock position switch signal/ON or OFF	ON: Front passenger side door is unlocked OFF: Front passenger side door is locked	-
RR LOCK POS SW	Rear right door lock position switch signal/ON or OFF	ON: Rear right door is unlocked OFF: Rear right door is locked	-
RL LOCK POS SW	Rear left door lock position switch signal/ON or OFF	ON: Rear left door is unlocked OFF: Rear left door is locked	-
LUGG COURTSY SW	Luggage compartment door courtesy light switch signal/ON or OFF	ON: Luggage compartment door is OPEN OFF: Luggage compartment door is CLOSED	-
D/L SW-LOCK	Door control switch lock signal/ ON or OFF	ON: Door control switch is pushed to lock position OFF: Door control switch is not pushed to lock position	-
D/L SW-UNLOCK	Door control switch unlock signal/ ON or OFF	ON: Door control switch is pushed to unlock position OFF: Door control switch is not pushed to unlock position	-
DOR KEY SW-LOCK	Driver door lock/unlock switch lock signal (key-linked lock switch)/ON or OFF	ON: Driver side door key cylinder is turned to lock position OFF: Driver side door key cylinder is turned to unlock position	-
D DOR KEY SW-ULCK	Driver door lock/unlock switch unlock signal (key-linked unlock switch)/ON or OFF	ON: Driver side door key cylinder is turned to unlock position OFF: Driver side door key cylinder is turned to lock position	-

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
TRUNK KEY UNLK	Luggage compartment door key cylinder switch/ON or OFF	ON: Mechanical key is inserted and turned to CANCEL position OFF: Mechanical key is inserted and turned to except CANCEL position	-

2. PERFORM ACTIVE TEST

HINT:

Performing the intelligent tester's ACTIVE TEST allows relays, VSVs, actuators, 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 to the DLC3.
(b) Turn the power switch on (IG).
(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / ACTIVE TEST.
(d) Perform the ACTIVE TEST according to the display on the tester.

DL

MAIN BODY:

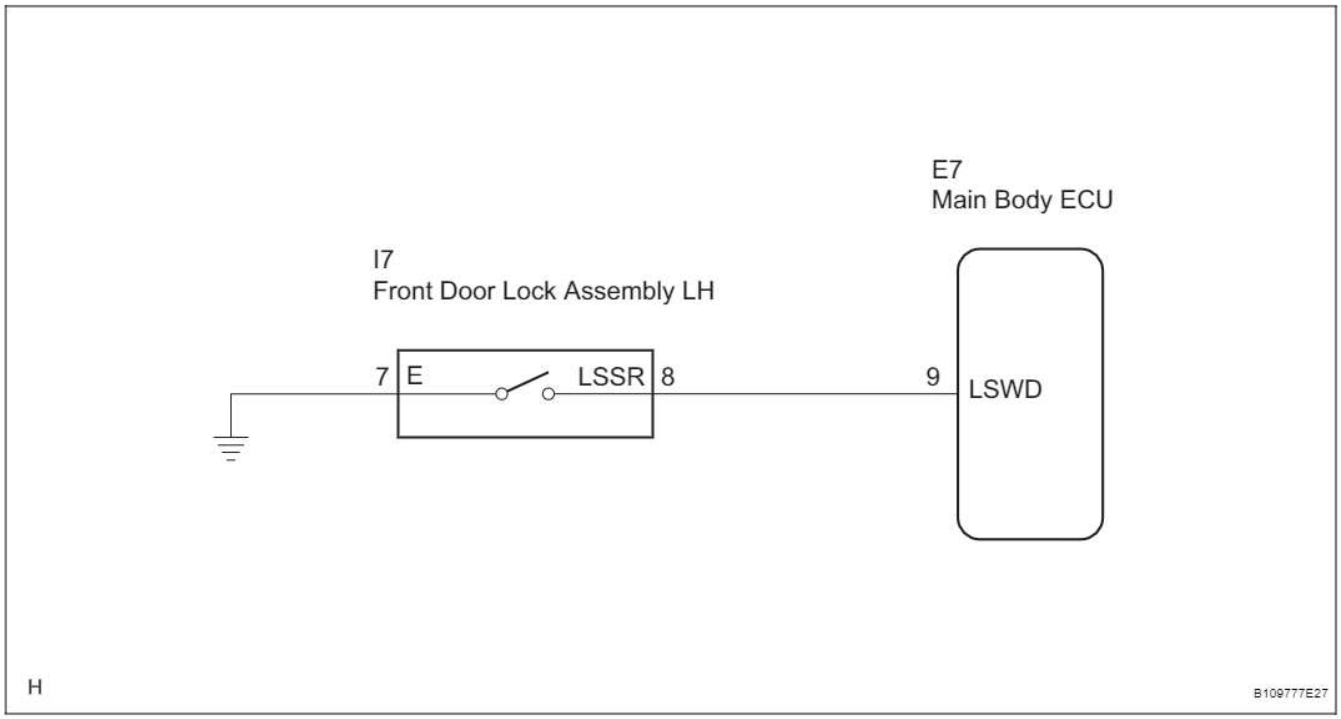
Tester Display	Test Part	Control Range	Diagnostic Note
DOOR LOCK	Operate door lock motor	LOCK/UNLOCK	-
D DOOR UNLOCK	Operate driver door lock motor	UNLOCK	-
TRUNK/BDOR OPEN	Operate luggage compartment door unlock motor	UNLOCK	-

Driver Side Door UNLOCK Detection Switch Circuit

DESCRIPTION

The driver's door unlock detection switch is built into the driver's door lock assembly. The switch turns on when the driver's door is locked and turns off when the door is unlocked.
The main body ECU is connected to the driver's door lock assembly via terminal LSWD and driver's door lock/unlock state signals are input to the main body ECU.
The main body ECU applies voltage to the door unlock detection switch via terminal LSWD. When the door unlock detection switch is on (there is continuity between the switch terminals), a lock state signal is input to the main body ECU. When the switch is off (there is no continuity between the switch terminals), an unlock state signal is input.

WIRING DIAGRAM



INSPECTION PROCEDURE

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

(a) Check the DATA LIST to ensure proper function of the door unlock detection switch.

MAIN BODY:

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

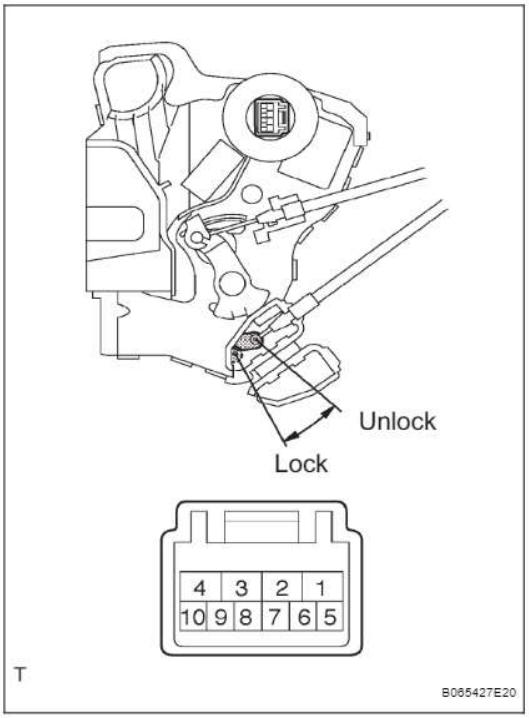
OK:
The display is as specified in the normal condition column.

NG	Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

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



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

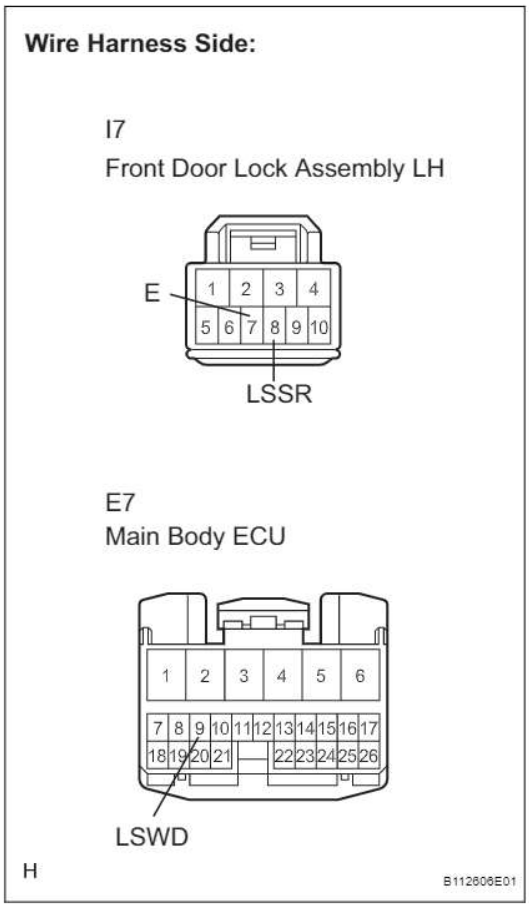
Standard resistance

Tester Connection	Measurement Condition	Door Lock Condition	Specified Condition
7 - 8	Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock	10 kΩ or higher
7 - 8	Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock	Below 1 Ω

NG → **REPLACE FRONT DOOR LOCK ASSEMBLY**

OK

3	CHECK WIRE HARNESS (FRONT DOOR LOCK ASSEMBLY - MAIN BODY ECU)



(a) Disconnect the front door lock assembly LH connector.
(b) Disconnect the main body ECU connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
I7-8 (LSSR) - E7-9 (LSWD)	Always	Below 1 Ω
I7-8 (LSSR) - Body ground	Always	10 kΩ or higher
I7-7 (E) - Body ground	Always	Below 1 Ω

DL

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

OK

REPLACE MAIN BODY ECU

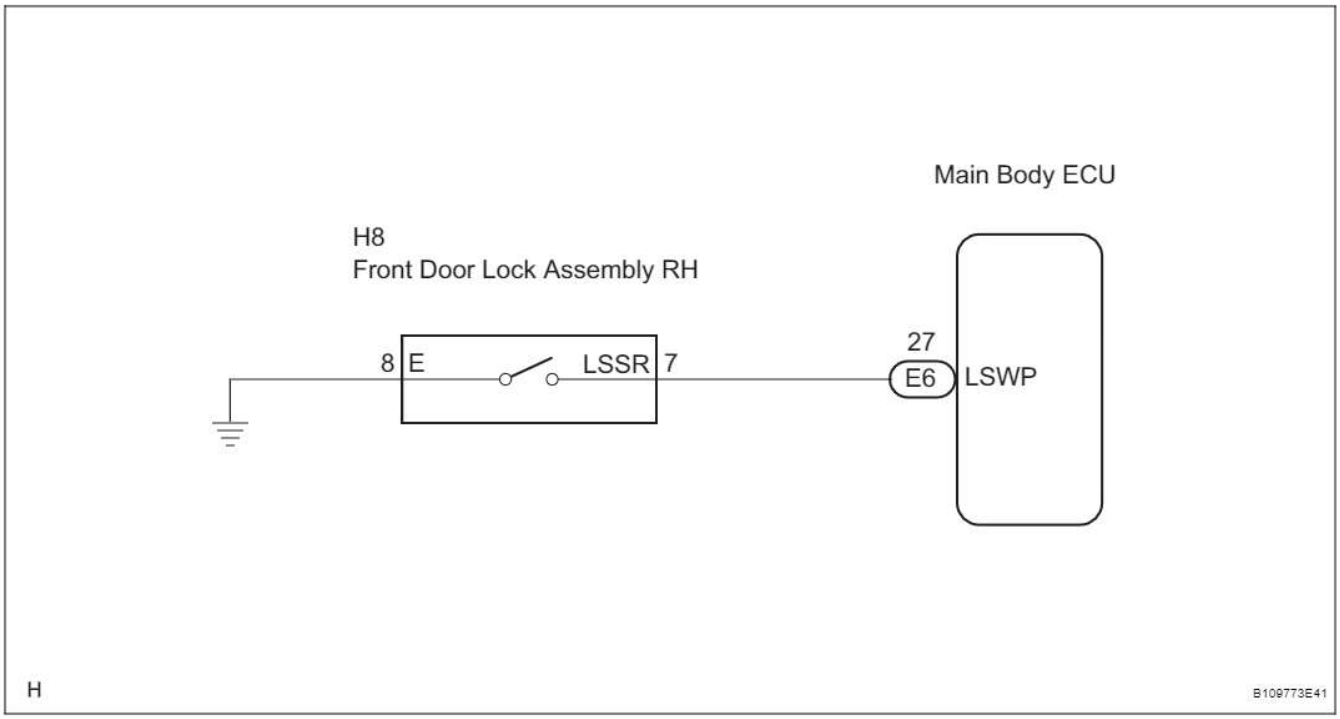
Front Passenger Side Door UNLOCK Detection Switch Circuit

DESCRIPTION

The front passenger door unlock detection switch is built into the front passenger door lock assembly. The switch turns on when the front passenger door is locked and turns off when the door is unlocked.
The main body ECU is connected to the front passenger door lock assembly via terminal LSWP and front passenger door lock/unlock state signals are input to the ECU.
The main body ECU applies voltage to the door unlock detection switch via terminal LSWP. When the door unlock detection switch is on (there is continuity between the switch terminals), a lock state signal is input to the ECU. When the switch is off (there is no continuity between the switch terminals), an unlock state signal is input.

WIRING DIAGRAM

DL



INSPECTION PROCEDURE

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

(a) Check the DATA LIST to ensure proper function of the door unlock detection switch.

MAIN BODY:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
P LOCK POS SW	Passenger side door lock position switch signal /ON or OFF	ON: Passenger side door lock is in UNLOCK position OFF: Passenger side door lock is in LOCK position	-

OK:

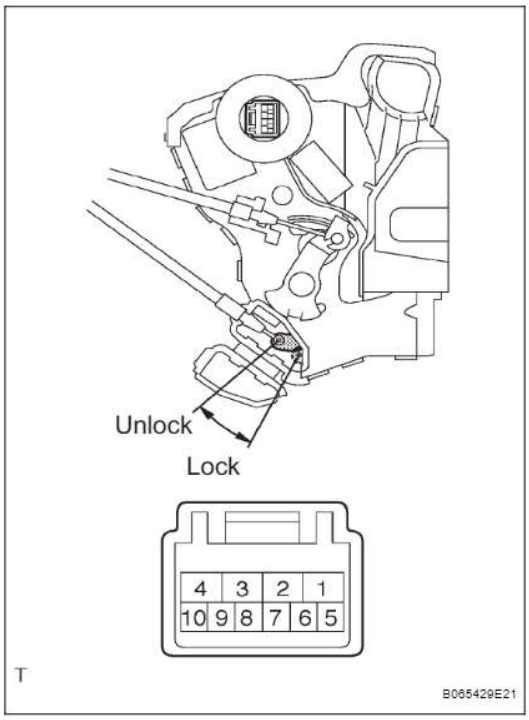
The display is as specified in the normal condition column.

NG → Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

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



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

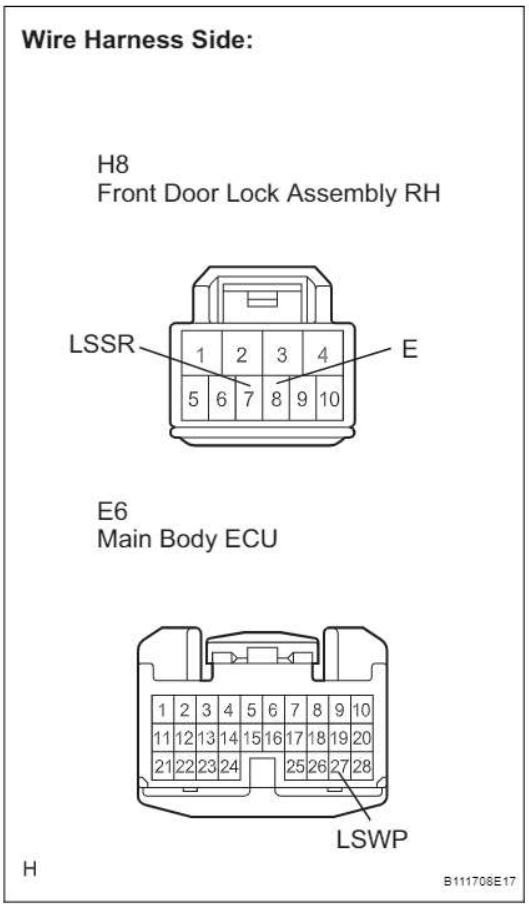
Standard resistance

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

NG → REPLACE FRONT DOOR LOCK ASSEMBLY

OK

3	CHECK WIRE HARNESS (FRONT DOOR LOCK ASSEMBLY - MAIN BODY ECU)



(a) Disconnect the front door lock assembly RH connector.
(b) Disconnect the ECU connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
H8-7 (LSSR) - E6-27 (LSWP)	Always	Below 1 Ω
H8-7 (LSSR) - Body ground	Always	10 kΩ or higher
H8-8 (E) - Body ground	Always	Below 1 Ω

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

OK

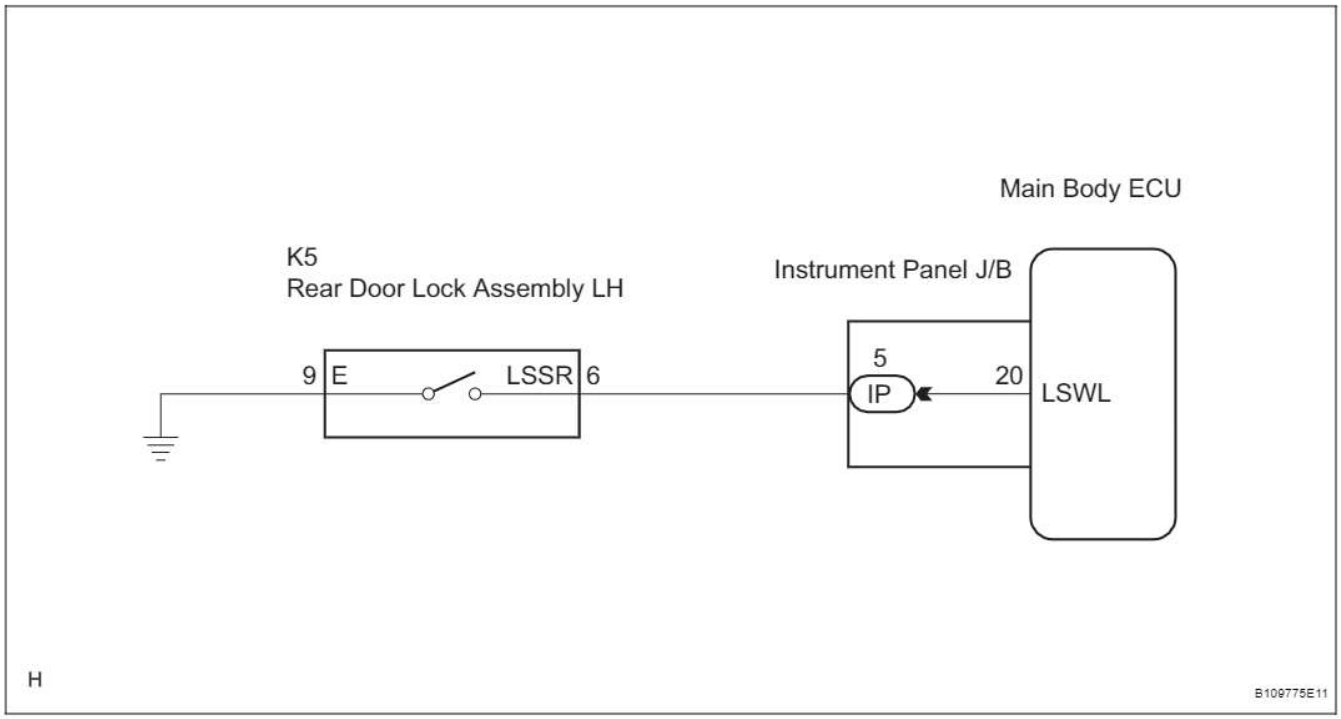
REPLACE MAIN BODY ECU

Rear Door UNLOCK Detection Switch LH Circuit

DESCRIPTION

The rear left door unlock detection switch is built into the rear left door lock assembly. The switch turns on when the rear left door is locked and turns off when the door is unlocked.
The main body ECU is connected to the rear left door lock assembly via terminal LSWL and rear left side door lock/unlock state signals are input to the ECU.
The main body ECU applies voltage to the door unlock detection switch via terminal LSWL. When the door unlock detection switch is on (there is continuity between the switch terminals), a lock state signal is input to the ECU. When the switch is off (there is no continuity between the switch terminals), an unlock state signal is input.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (UNLOCK DETECTION SWITCH)

(a) Check the DATA LIST to ensure proper function of the door unlock detection switch.

MAIN BODY:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
RL LOCK POS SW	Rear left door lock position switch signal / ON or OFF	ON: Rear left door lock is in UNLOCK position OFF: Rear left door lock is in LOCK position	-

OK:

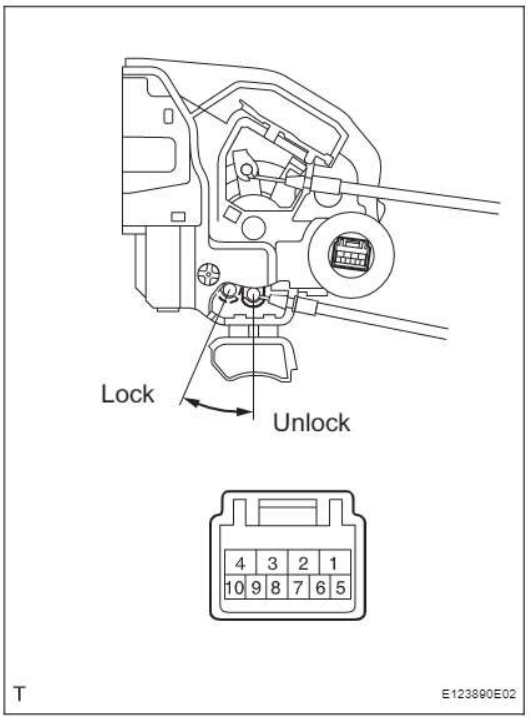
The display is as specified in the normal condition column.

NG → Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT REAR DOOR LOCK ASSEMBLY (UNLOCK DETECTION SWITCH)



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

Standard resistance

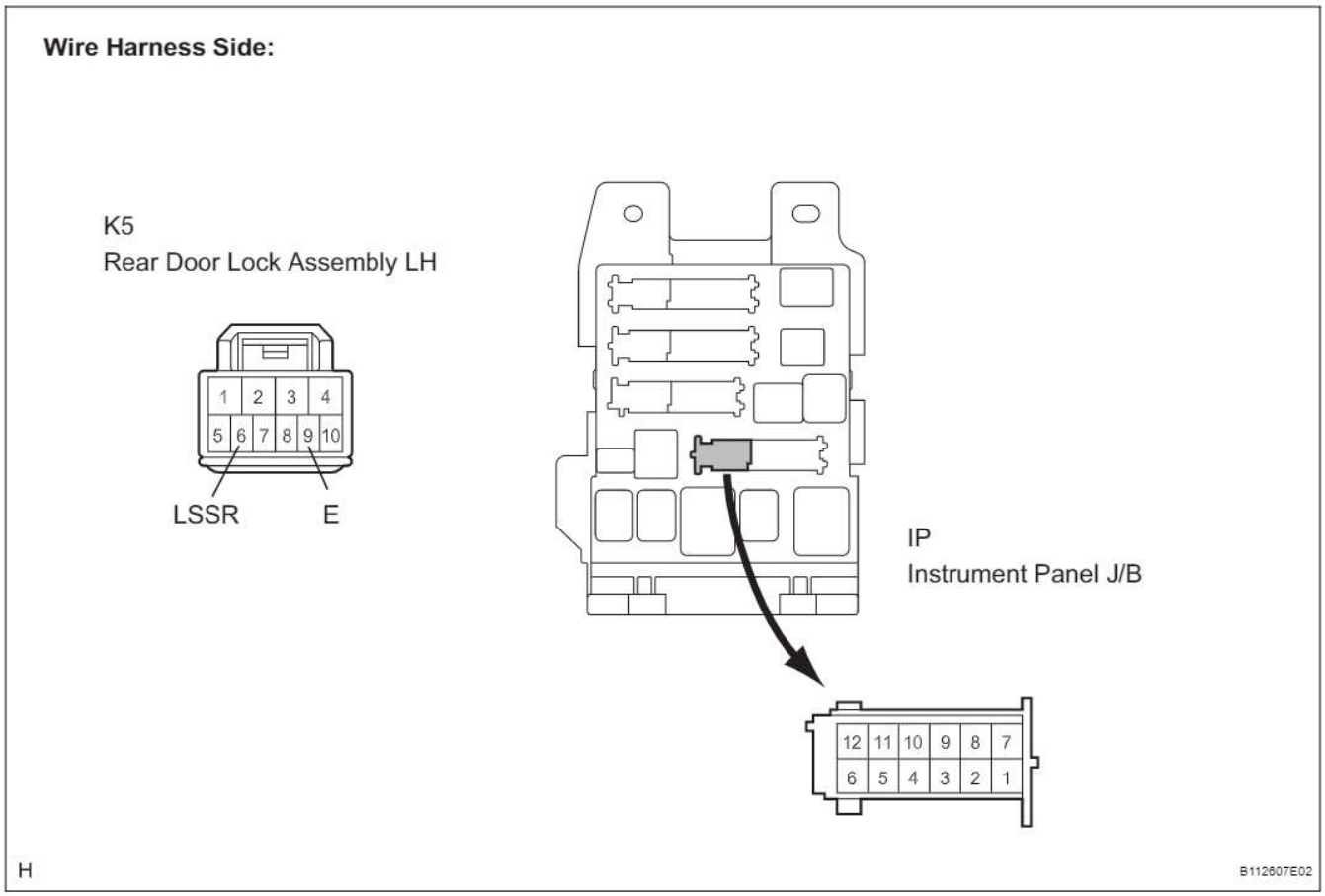
Tester Connection	Measurement Condition	Door Lock Condition	Specified Condition
6 - 9	Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock	10 kΩ or higher
6 - 9	Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock	Below 1 Ω

NG → REPLACE REAR DOOR LOCK ASSEMBLY

OK

3 CHECK WIRE HARNESS (REAR DOOR LOCK ASSEMBLY - MAIN BODY ECU)

(a) Disconnect the rear door lock assembly LH connector.



(b) Disconnect the ECU (instrument panel J/B) connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
K5-6 (LSSR) - IP-5	Always	Below 1 Ω
K5-6 (LSSR) - Body ground	Always	10 kΩ or higher
K5-9 (E) - Body ground	Always	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE MAIN BODY ECU (INSTRUMENT PANEL J/B)

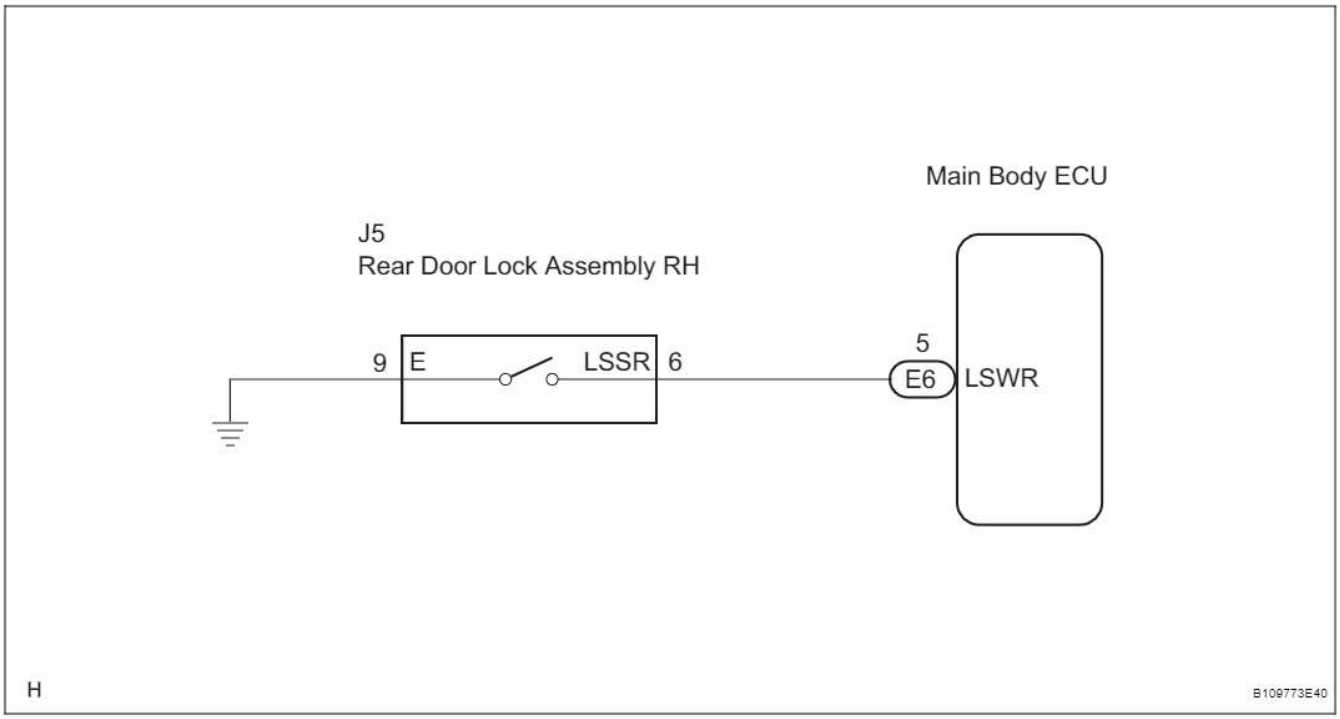
Rear Door UNLOCK Detection Switch RH Circuit

DESCRIPTION

The rear right door unlock detection switch is built into the rear right door lock assembly. The switch turns on when the rear right door is locked and turns off when the door is unlocked.
The main body ECU is connected to the rear right door lock assembly via terminal LSWR and rear right side door lock/unlock state signals are input to the ECU.
The main body ECU applies voltage to the door unlock detection switch via terminal LSWR. When the door unlock detection switch is on (there is continuity between the switch terminals), a lock state signal is input to the ECU. When the switch is off (there is no continuity between the switch terminals), an unlock state signal is input.

WIRING DIAGRAM

DL



INSPECTION PROCEDURE

1	READ VALUE OF DATA LIST (UNLOCK DETECTION SWITCH)

(a) Check the DATA LIST to ensure proper function of the door unlock detection switch.

MAIN BODY:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
RR LOCK POS SW	Rear right door lock position switch signal / ON or OFF	ON: Rear right door lock is in UNLOCK position OFF: Rear right door lock is in LOCK position	-

OK:

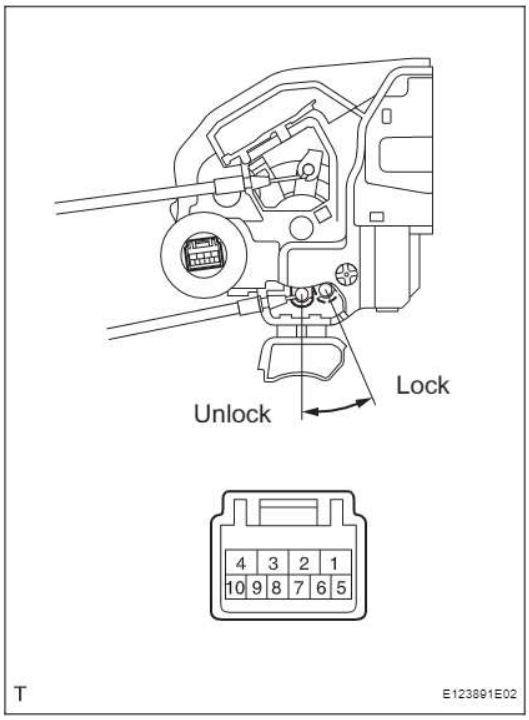
The display is as specified in the normal condition column.

NG → Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT REAR DOOR LOCK ASSEMBLY (UNLOCK DETECTION SWITCH)



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

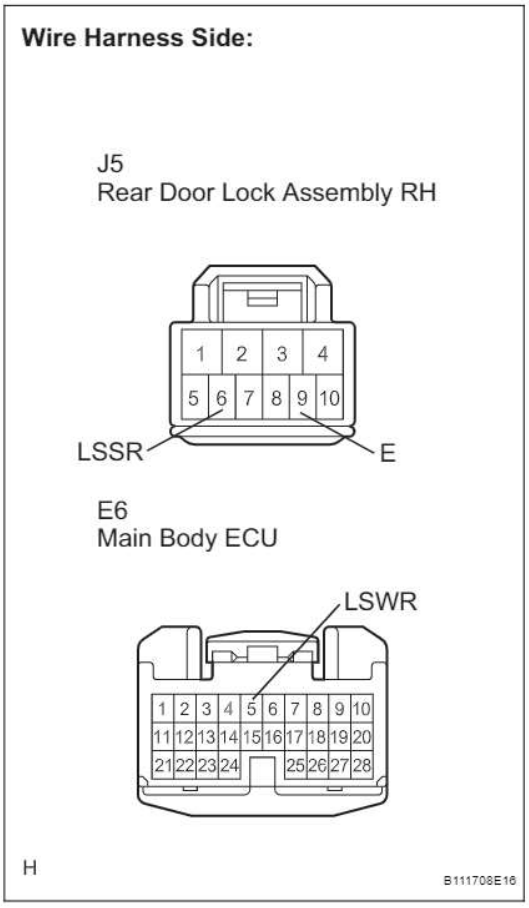
Standard resistance

Tester Connection	Measurement Condition	Door Lock Condition	Specified Condition
6 - 9	Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock	10 kΩ or higher
6 - 9	Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock	Below 1 Ω

NG → REPLACE REAR DOOR LOCK ASSEMBLY

OK

3	CHECK WIRE HARNESS (REAR DOOR LOCK - MAIN BODY ECU (INSTRUMENT PANEL J/B))



(a) Disconnect the rear door lock assembly RH connector.
(b) Disconnect the ECU (instrument panel J/B) connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
J5-6 (LSSR) - E6-5 (LSWR)	Always	Below 1 Ω
J5-6 (LSSR) - Body ground	Always	10 kΩ or higher
J5-9 (E) - Body ground	Always	Below 1 Ω

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

OK

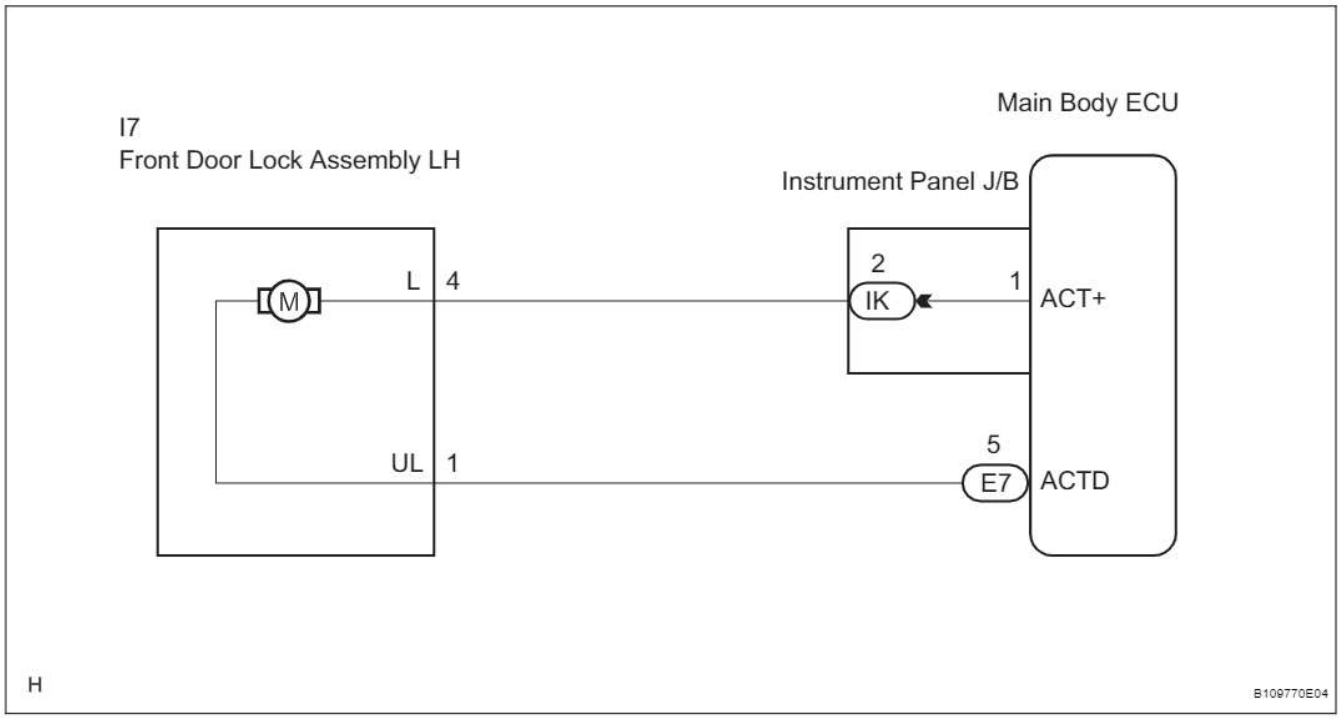
REPLACE MAIN BODY ECU (INSTRUMENT PANEL J/B)

Driver Side Door Lock Motor Circuit

DESCRIPTION

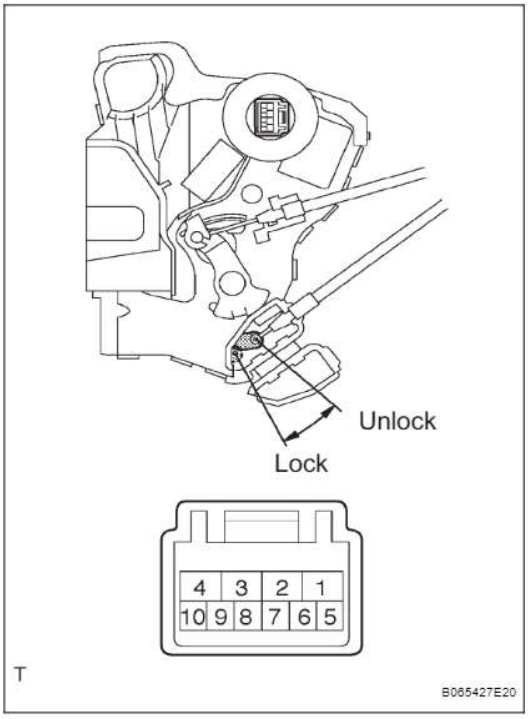
The driver's door lock motor is built into the driver's door lock assembly.
The main body ECU controls the driver's door lock motor to lock/unlock the driver's door. This ECU applies current from terminal ACT+ to terminal ACTD to operate the motor to lock the door. It reverses the direction of the current flow to operate the motor to unlock the door.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT FRONT DOOR LOCK ASSEMBLY (DOOR LOCK MOTOR)



(a) Remove the front door lock assembly LH.
(b) Apply battery voltage 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

DL

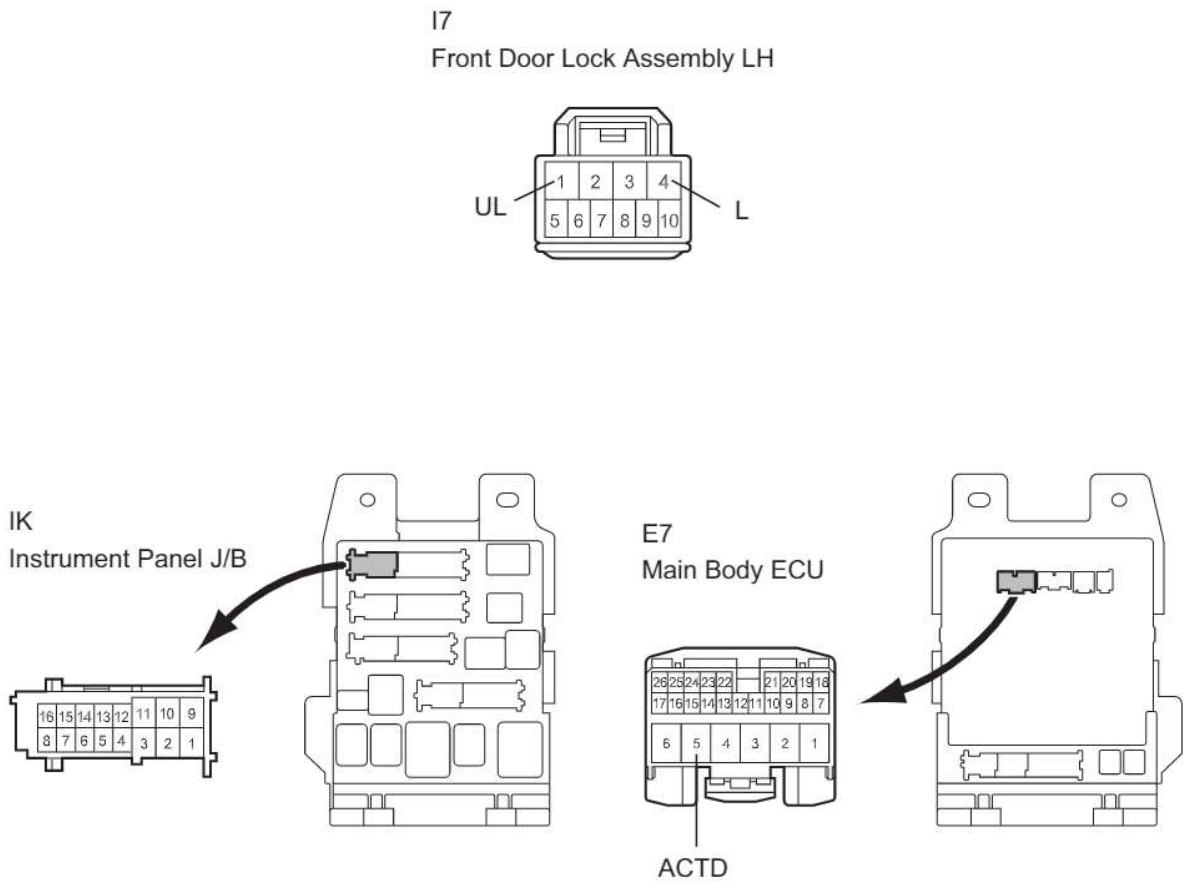
NG → REPLACE FRONT DOOR LOCK ASSEMBLY

OK

2	CHECK WIRE HARNESS (FRONT DOOR LOCK - MAIN BODY ECU (INSTRUMENT PANEL J/B))

(a) Disconnect the front door lock assembly LH connector.

Wire Harness Side:



(b) Disconnect the ECU (instrument panel J/B) connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
I7-4 (L) - IK-2	Always	Below 1 Ω
I7-1 (UL) - E7-5 (ACTD)	Always	Below 1 Ω
IK-2 - Body ground	Always	10 kΩ or higher
E7-5 (ACTD) - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

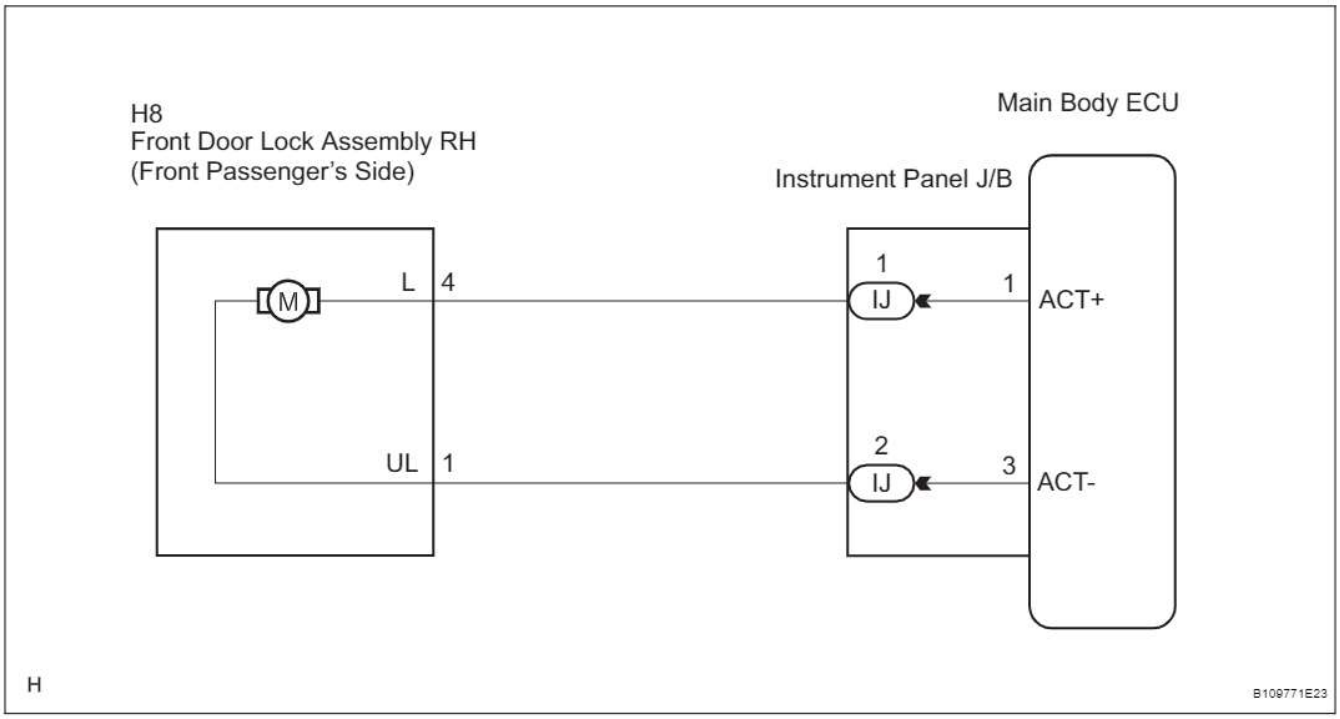
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Front Passenger Side Door Lock Motor Circuit

DESCRIPTION

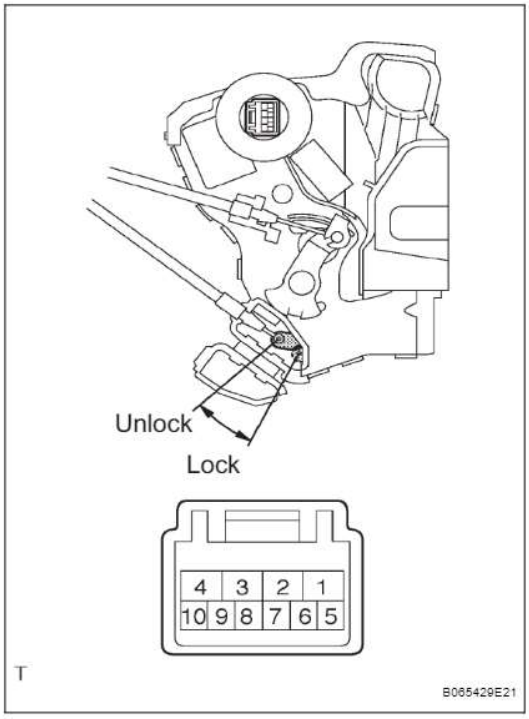
The front passenger door lock motor is built into the front passenger door lock assembly.
The main body ECU controls the front passenger door lock motor to lock/unlock the front passenger door. This ECU applies current from terminal ACT+ to terminal ACT- to operate the motor to lock the door. It reverses the direction of the current flow to operate the motor to unlock the door.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT FRONT DOOR LOCK ASSEMBLY (DOOR LOCK MOTOR)



(a) Remove the front door lock assembly RH.
(b) Apply battery voltage 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

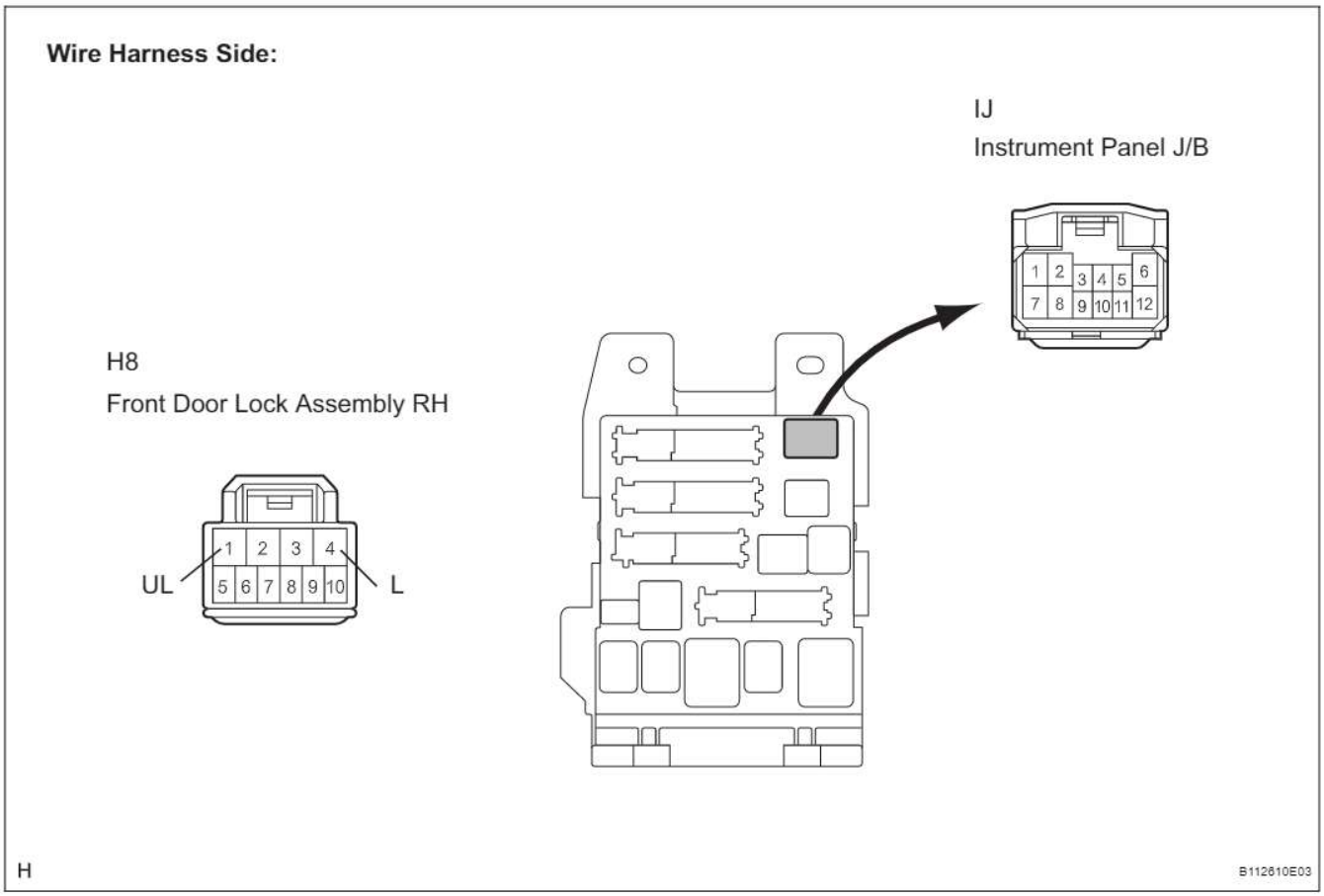
NG → REPLACE FRONT DOOR LOCK ASSEMBLY

DL

OK

2	CHECK WIRE HARNESS (FRONT DOOR LOCK - MAIN BODY ECU (INSTRUMENT PANEL J/B))

(a) Disconnect the front door lock assembly RH connector.



(b) Disconnect the ECU (instrument panel J/B) connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
H8-4 (L) - IJ-1	Always	Below 1 Ω
H8-1 (UL) - IJ-2	Always	Below 1 Ω
IJ-1 - Body ground	Always	10 kΩ or higher
IJ-2 - Body ground	Always	10 kΩ or higher

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

OK

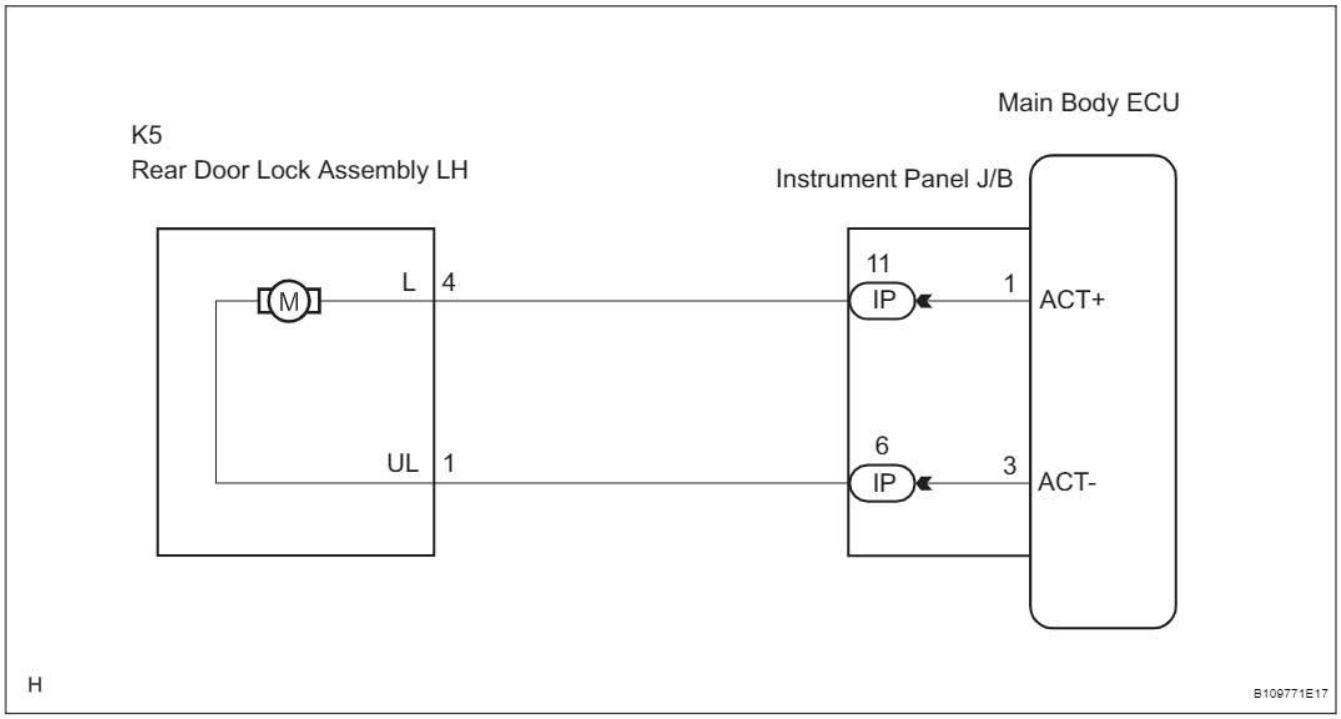
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Rear Door Lock Motor LH Circuit

DESCRIPTION

The rear left door lock motor is built into the rear left door lock assembly.
The main body ECU controls the rear left door lock motor to lock/unlock the rear left door. This ECU applies current from terminal ACT+ to terminal ACT- to operate the motor to lock the door. It reverses the direction of the current flow to operate the motor to unlock the door.

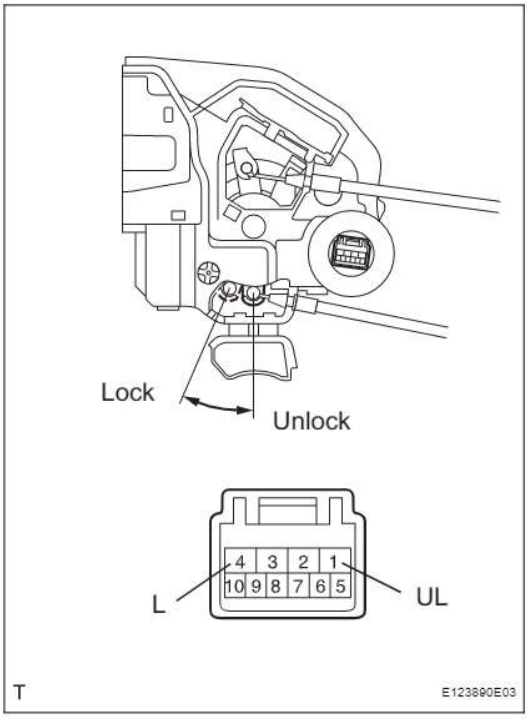
WIRING DIAGRAM



DL

INSPECTION PROCEDURE

1	INSPECT REAR DOOR LOCK ASSEMBLY



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

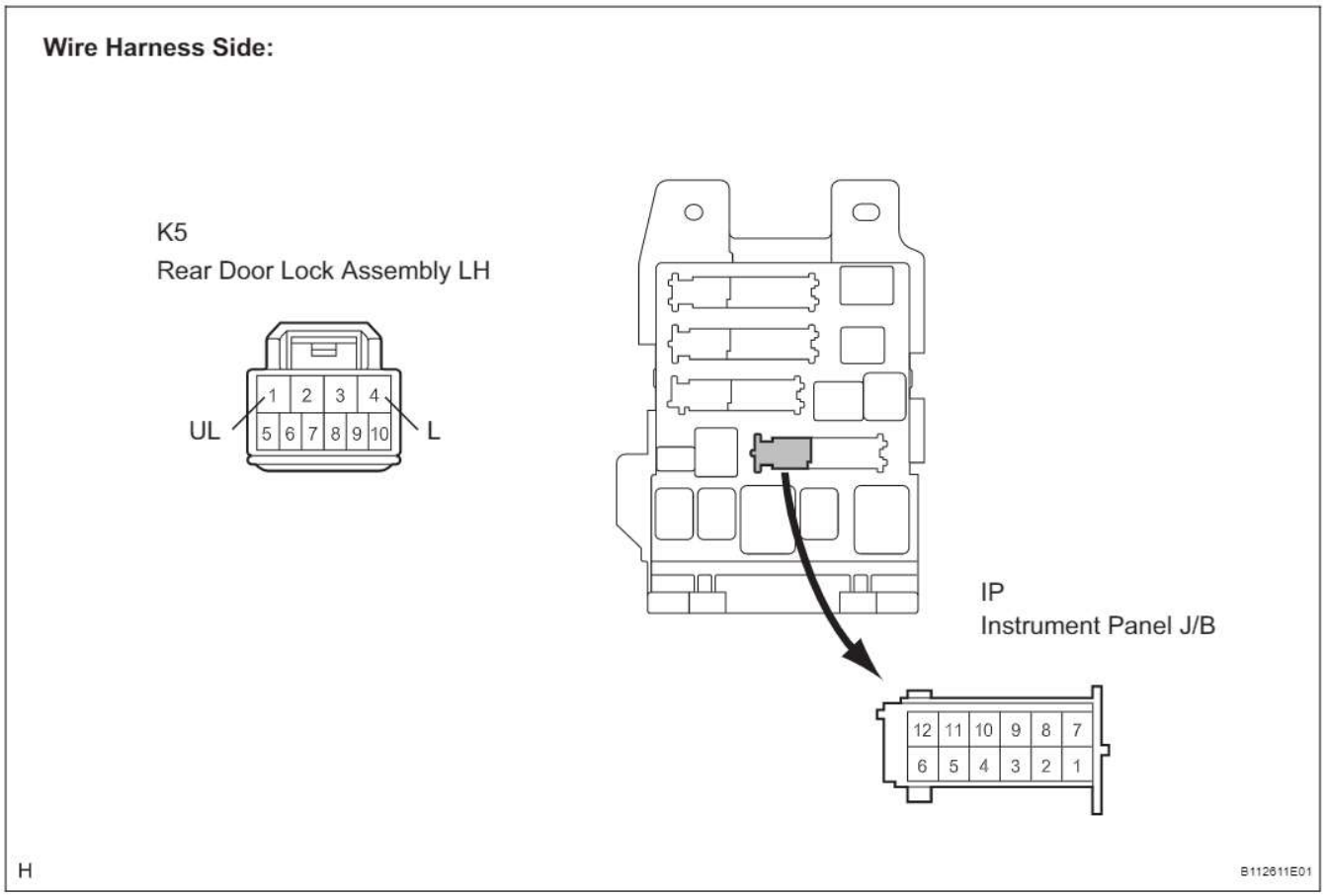
Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

NG → REPLACE REAR DOOR LOCK ASSEMBLY

OK

2	CHECK WIRE HARNESS (REAR DOOR LOCK - MAIN BODY ECU (INSTRUMENT PANEL J/B))

(a) Disconnect the rear door lock assembly LH connector.



(b) Disconnect the ECU (instrument panel J/B) connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
K5-4 (L) - IP-11	Always	Below 1 Ω
K5-1 (UL) - IP-6	Always	Below 1 Ω
IP-11 - Body ground	Always	10 kΩ or higher
IP-6 - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

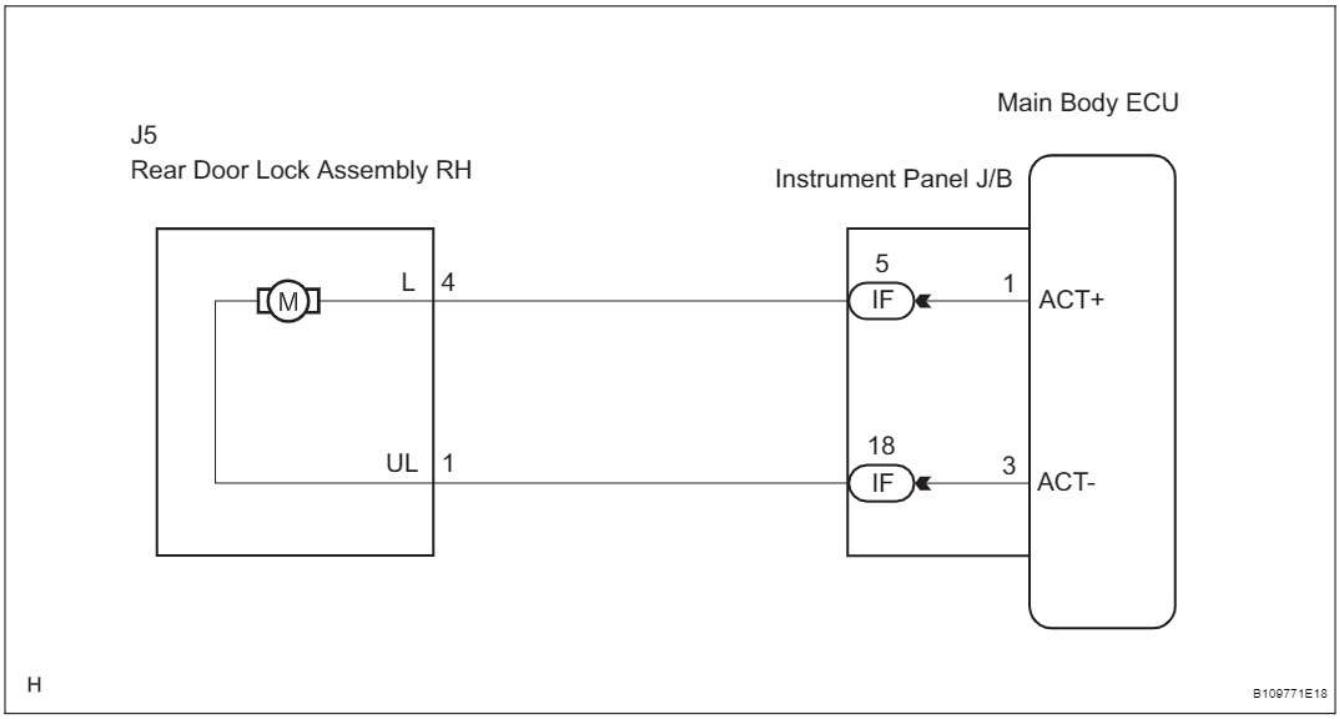
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Rear Door Lock Motor RH Circuit

DESCRIPTION

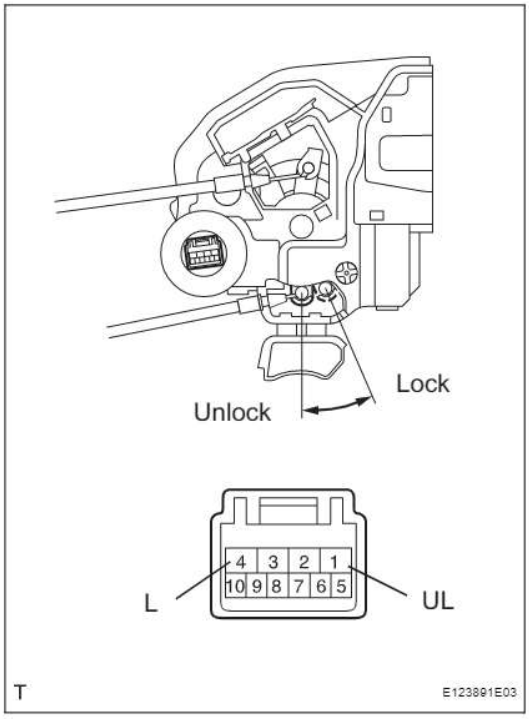
The rear right door lock motor is built into the rear right door lock assembly.
The main body ECU controls the rear right door lock motor to lock/unlock the rear right door. This ECU applies current from terminal ACT+ to terminal ACT- to operate the motor to lock the door. It reverses the direction of the current flow to operate the motor to unlock the door.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT REAR DOOR LOCK ASSEMBLY



(a) Remove the rear door lock assembly RH.
(b) Apply battery voltage 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

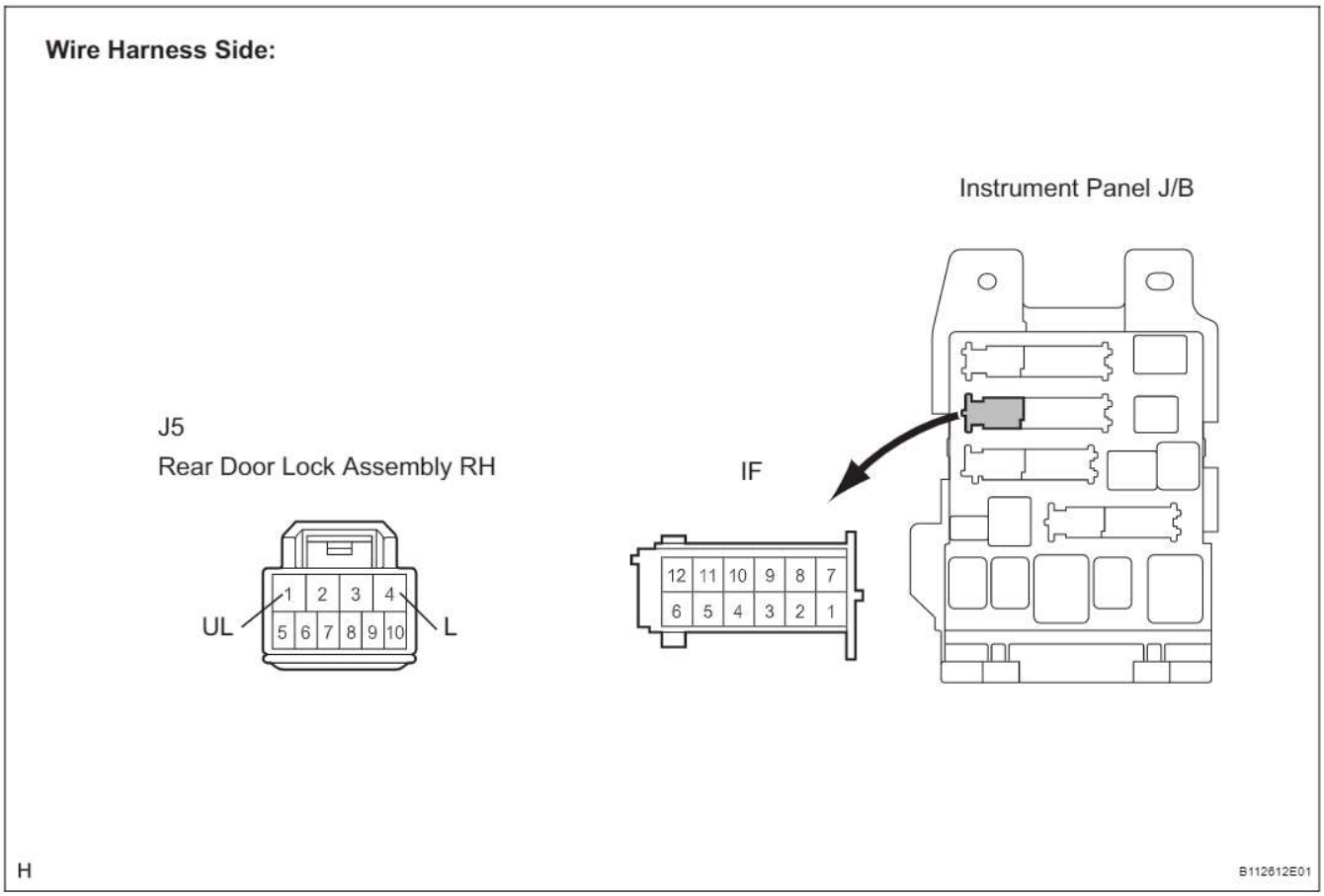
NG → REPLACE REAR DOOR LOCK ASSEMBLY

DL

OK

2	CHECK WIRE HARNESS (REAR DOOR LOCK - MAIN BODY ECU (INSTRUMENT PANEL J/B))

(a) Disconnect the rear door lock assembly RH connector.



(b) Disconnect the ECU (instrument panel J/B) connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
J5-4 (L) - IF-5	Always	Below 1 Ω
J5-1 (UL) - IF-18	Always	Below 1 Ω
IF-5 - Body ground	Always	10 kΩ or higher
IF-18 - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

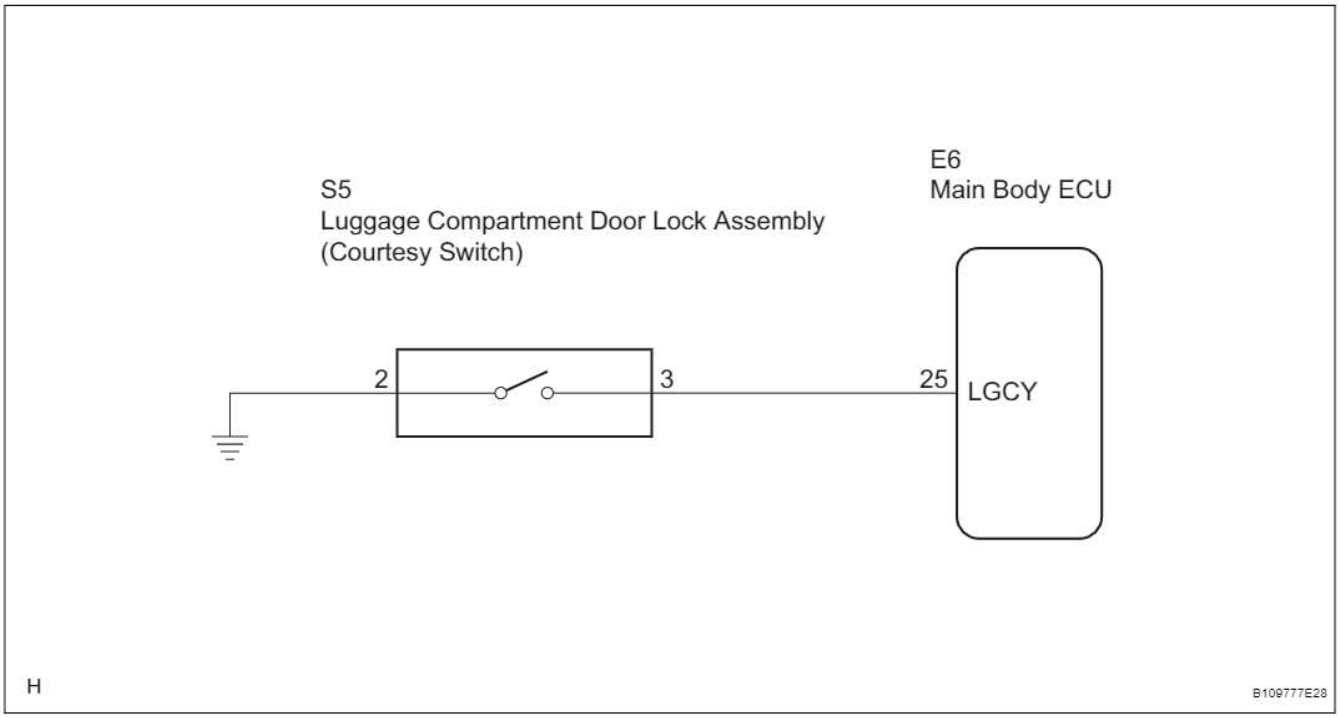
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Luggage Compartment Door Courtesy Switch Circuit

DESCRIPTION

The door courtesy switch turns on when the door is open and turns off when the door is closed.
The main 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.

MAIN BODY:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
LUGG COURTSY SW	Luggage compartment door courtesy light switch signal / ON or OFF	ON: Luggage compartment door is OPEN OFF: Luggage compartment door is CLOSED	-

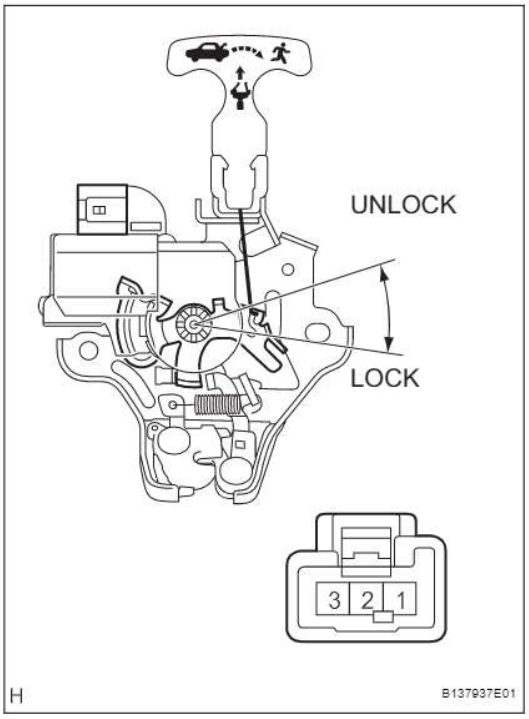
OK:
"ON" (door is open) and "OFF" (door is closed) appear on the screen.

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 compartment door lock.
(b) Measure the resistance between the specified terminals of the switch.

Standard resistance

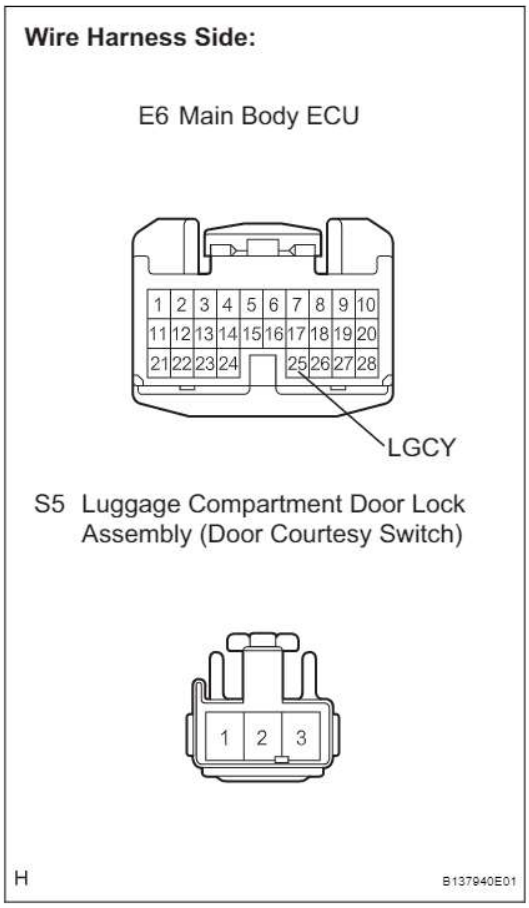
Tester Connection	Condition	Specified Condition
2 - 3	UNLOCK	Below 1 Ω
2 - 3	LOCK	10 kΩ or higher

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

OK

DL

3	CHECK WIRE HARNESS (LUGGAGE COMPARTMENT DOOR LOCK - MAIN BODY ECU)



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

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
S5-3 - E6-25 (LGCY)	Always	Below 1 Ω
S5-3 - Body ground	Always	10 kΩ or higher
S5-2 - Body ground	Always	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

DL

OK

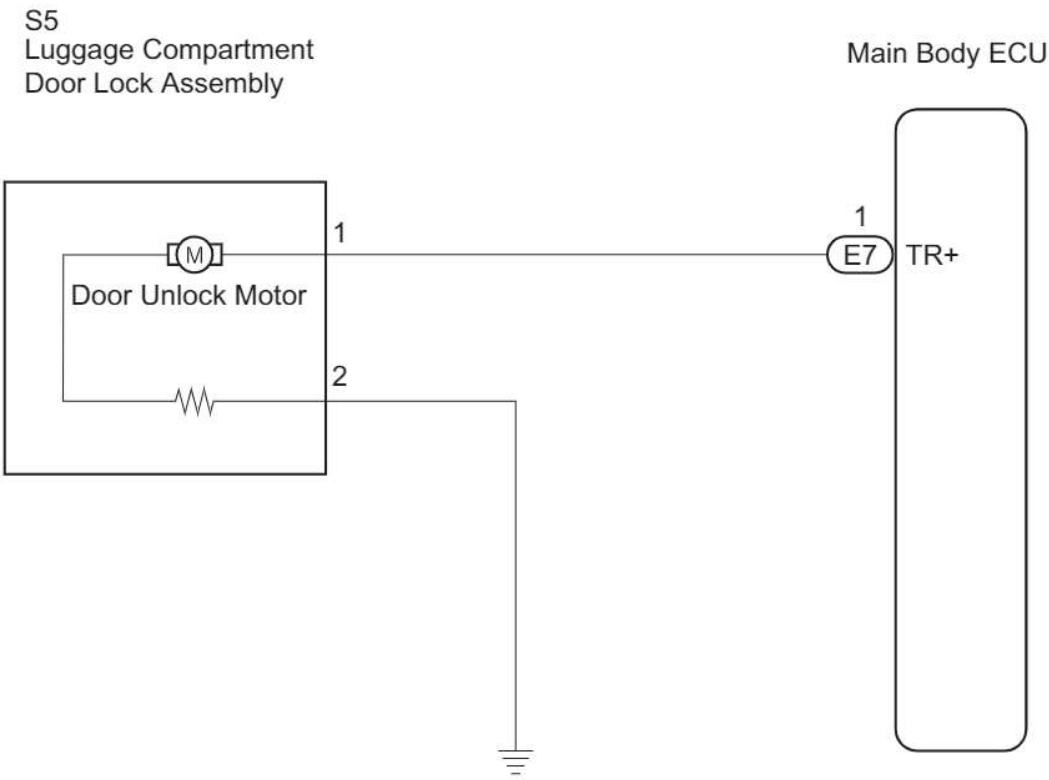
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Luggage Compartment Door Lock Circuit

DESCRIPTION

The luggage compartment door unlock motor is built into the luggage compartment door lock assembly. The main body ECU receives a luggage compartment door unlock signal from the luggage compartment door lock cylinder or electrical key switch and operates the door unlock motor.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST (LUGGAGE COMPARTMENT DOOR)

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

MAIN BODY:

Item	Test Details	Diagnostic Note
TRUNK/BDOR OPEN	Operate luggage compartment door unlock motor UNLOCK	-

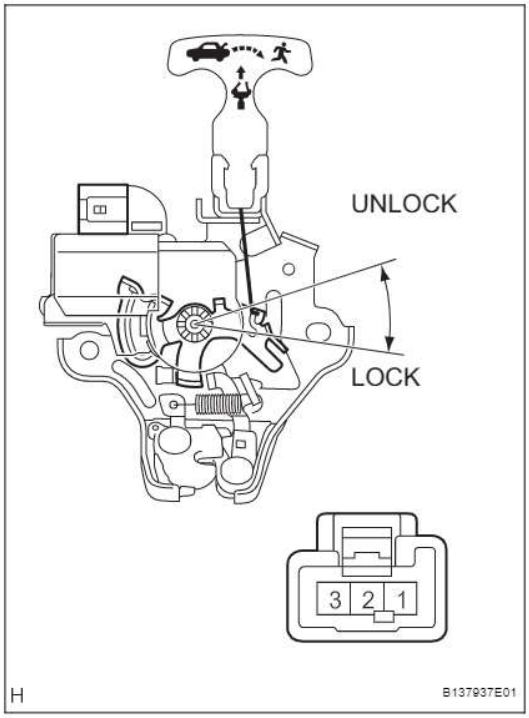
OK:
Door lock is locked/unlocked.

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.

OK

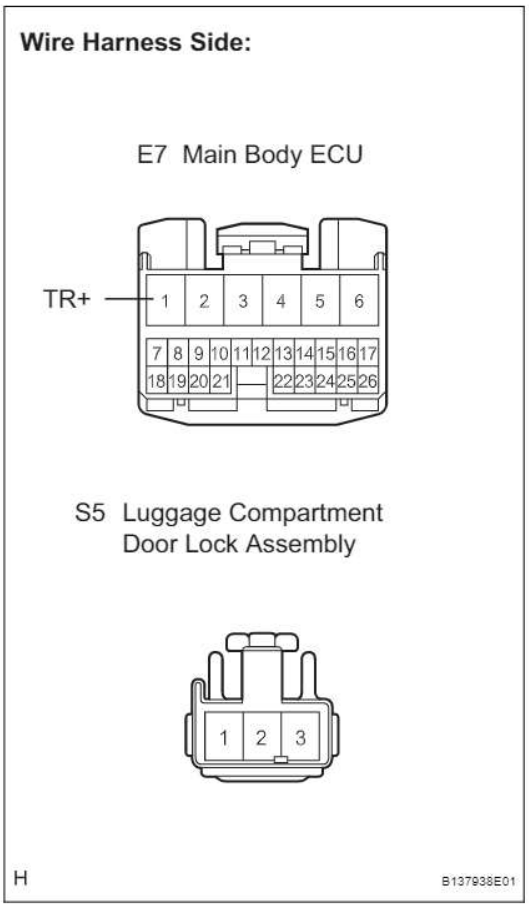
Measurement Condition	Specified Condition
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 2	Unlock

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

OK

DL

3	CHECK WIRE HARNESS (LUGGAGE COMPARTMENT DOOR LOCK - MAIN BODY ECU)



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

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E7-1 (TR+) - S5-1	Always	Below 1 Ω
S5-1 - Body ground	Always	10 kΩ or higher
S5-2 - Body ground	Always	Below 1 Ω

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

OK

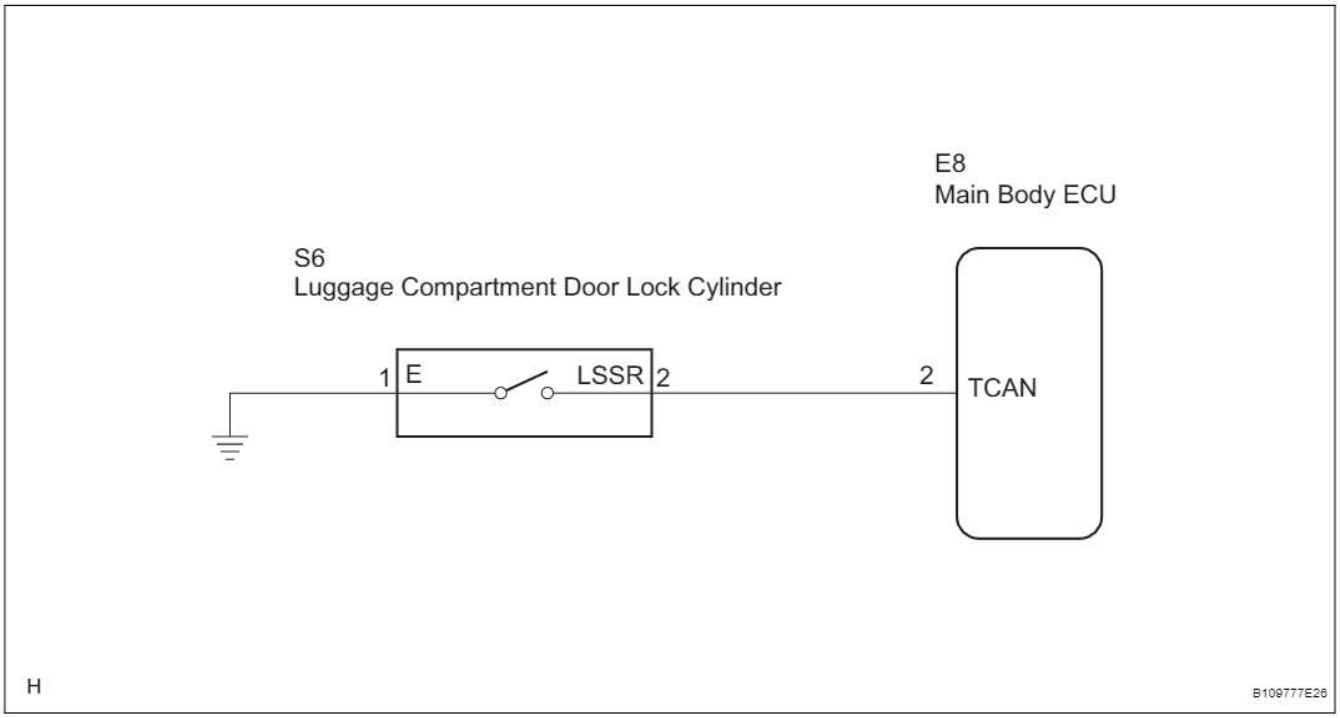
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Luggage Compartment Door Key Cylinder Switch Circuit

DESCRIPTION

When the luggage compartment door lock cylinder is turned to CANCEL the door by key, there is continuity between terminal TCAN of the main body ECU and body ground.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER

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

MAIN BODY:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
TRUNK KEY UNLK	Luggage compartment door key cylinder switch/ON or OFF	ON: Mechanical key inserted and turned to CANCEL position OFF: Mechanical key inserted and turned to except CANCEL position	-

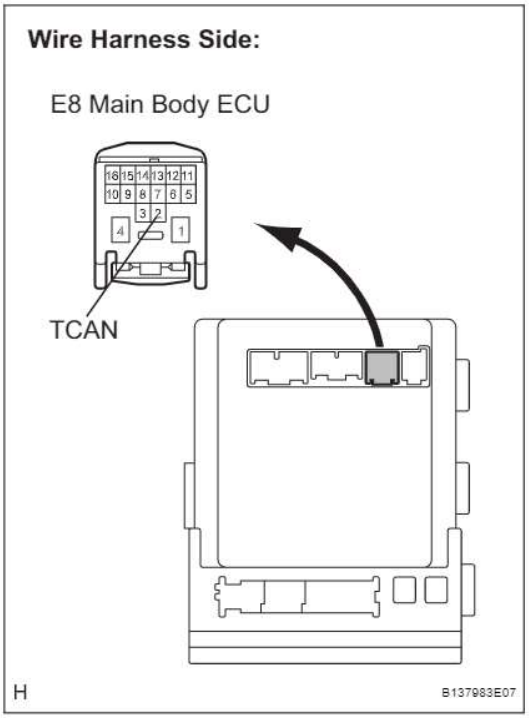
OK:
When the mechanical key is operated, the display changes as shown above.

NG → **Go to step 2**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 INSPECT MAIN BODY ECU (TCAN TERMINAL)



(a) Turn the power switch off.
(b) Disconnect the ECU connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

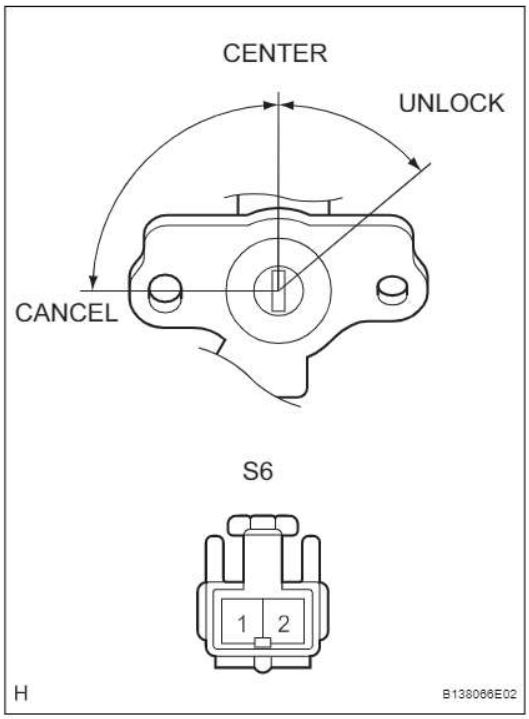
Tester Connection	Condition	Specified Condition
E8-2 (TCAN) - Body ground	Luggage compartment door lock cylinder CENTER	10 kΩ or higher
E8-2 (TCAN) - Body ground	Luggage compartment door lock cylinder CANCEL	Below 1 Ω
E8-2 (TCAN) - Body ground	Luggage compartment door lock cylinder UNLOCK	10 kΩ or higher

NG → **Go to step 3**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

3	INSPECT LUGGAGE COMPARTMENT DOOR LOCK CYLINDER



(a) Disconnect the luggage compartment door lock cylinder connector.

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

Standard resistance

Tester Connection	Condition	Specified Condition
S6-1 - S6-2	Luggage compartment door lock cylinder CENTER	10 kΩ or higher
S6-1 - S6-2	Luggage compartment door lock cylinder CANCEL	Below 1 Ω
S6-1 - S6-2	Luggage compartment door lock cylinder UNLOCK	10 kΩ or higher

DL

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

OK

REPAIR OR REPLACE HARNESS OR CONNECTOR (MAIN BODY ECU, BODY GROUND - DOOR LOCK CYLINDER)

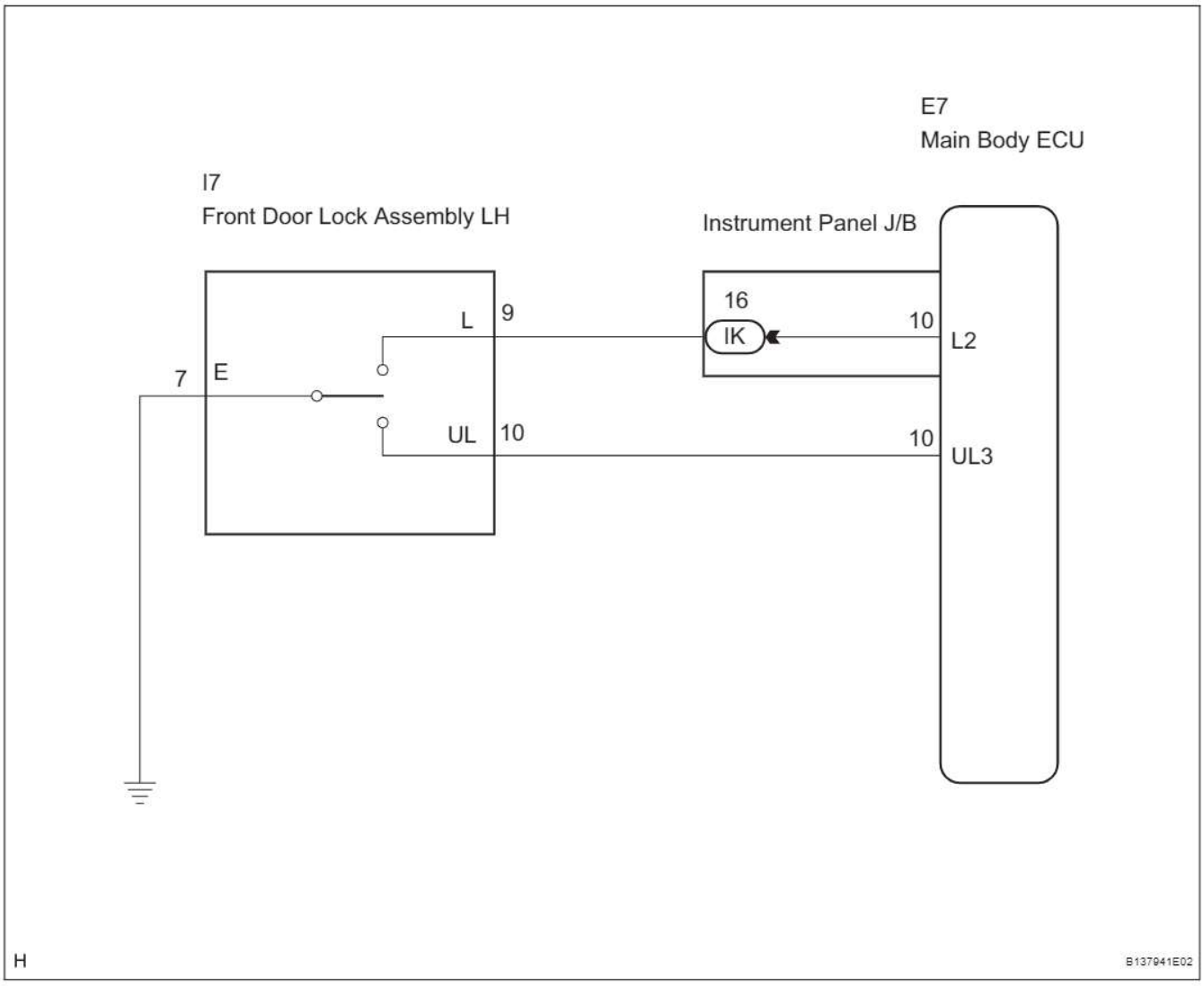
Driver Side Door Key Lock and Unlock Switch Circuit

DESCRIPTION

The driver's door key lock and unlock switch is built into the driver's door lock assembly.
When the driver's door key cylinder is turned to lock all the doors by key, there is continuity between terminals L and E of the key lock and unlock switch. When the cylinder is turned to unlock the door(s), there is continuity between terminals UL and E.
Terminals L2 and UL3 of the main body ECU are connected to the door lock assembly, and door lock/unlock request signals (by key) are input to the main body ECU.
The main body ECU constantly applies voltage to terminal L of the driver's door lock assembly via terminal L2. When the driver's door key cylinder is turned to lock all the doors by key, current flows from terminal L2 to terminal L.
The main body ECU also applies constant voltage to terminal UL of the door lock assembly via terminal UL3. When the door key cylinder is turned in the direction to unlock the door(s) by key, current flows from terminal UL3 to terminal UL.

DL

WIRING DIAGRAM



INSPECTION PROCEDURE

1 READ VALUE OF DATA LIST

(a) Check the DATA LIST to ensure proper function of the door unlock detection switch.

MAIN BODY:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
DOR KEY SW-LOCK	Driver door lock/unlock switch lock signal (key-linked lock switch) /ON or OFF	ON: Driver side door key cylinder is turned to LOCK OFF: Driver side door key cylinder is not turned to LOCK	-
DOR KEY SW-ULCK	Driver door lock/unlock switch unlock signal (key-linked unlock switch) /ON or OFF	ON: Driver side door key cylinder is turned to UNLOCK OFF: Driver side door key cylinder is not turned to UNLOCK	-

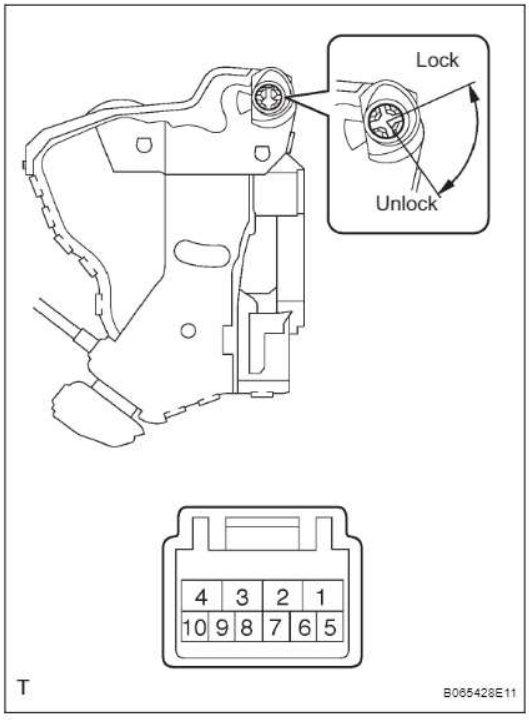
OK:
The display is as specified in the normal condition column.

NG → **Go to step 2**

OK →

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

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



(a) Remove the front door lock assembly LH.
(b) Measure the resistance according to the value(s) in the table below.
Standard resistance

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

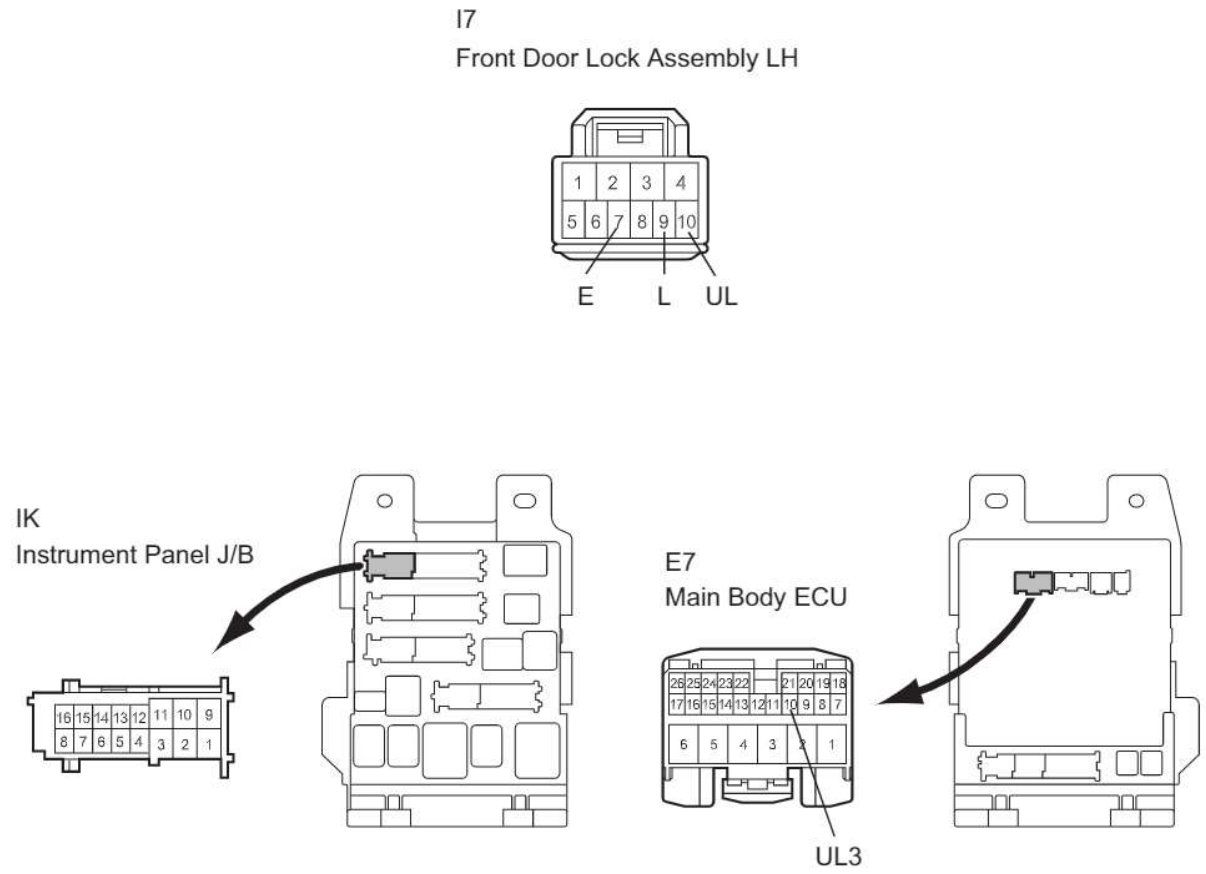
NG → **REPLACE FRONT DOOR LOCK ASSEMBLY**

OK →

3	CHECK WIRE HARNESS (FRONT DOOR LOCK ASSEMBLY - MAIN BODY ECU)

(a) Disconnect the front door lock assembly LH connector.

Wire Harness Side:



(b) Disconnect the main body ECU connector.

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

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
I7-9 (L) - IK-16	Always	Below 1 Ω
I7-10 (UL) - E7-10 (UL3)	Always	Below 1 Ω
I7-7 (E) - Body ground	Always	Below 1 Ω
I7-9 (L) - Body ground	Always	10 kΩ or higher
I7-10 (UL) - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE MAIN BODY ECU

Door Control Switch Circuit

DESCRIPTION

When the lock side of the door control switch is pressed, continuity is established between terminal 2 (driver side) or 4 (passenger side) and terminal 1 (driver side) or 3 (passenger side) of the switch. When the unlock side of the switch is pressed, continuity is established between terminal 9 (driver side) or 2 (passenger side) and terminal 1 (driver side) or 3 (passenger side).

Terminals L1 and UL1 of the main body ECU are connected to the door control switch and door lock/unlock request signals (by door control switch operation) are input to the ECU.

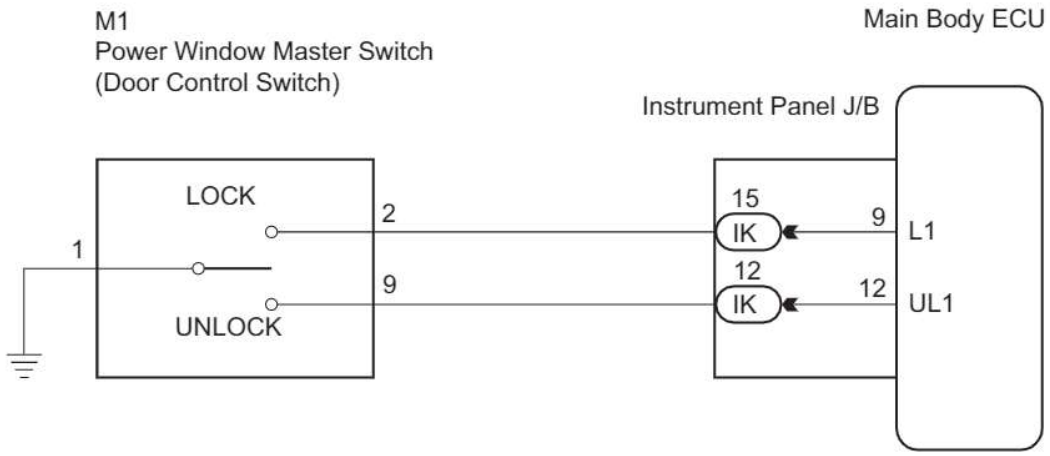
The main body ECU constantly applies voltage to terminal 2 (driver side) or 4 (passenger side) of the door control switch via terminal L1. When the door control switch is operated to lock all doors, current flows from terminal L1 to terminal 2 (driver side) or 4 (passenger side). The main body ECU determines that this is door lock request signal input.

DL

The main body ECU also applies constant voltage to terminal 9 (driver side) or 2 (passenger side) of the door control switch via terminal UL1. When the door control switch is operated to unlock the doors, current flows from terminal UL1 to terminal 9 (driver side) or 2 (passenger side). The main body ECU determines that this is door unlock request signal input.

WIRING DIAGRAM

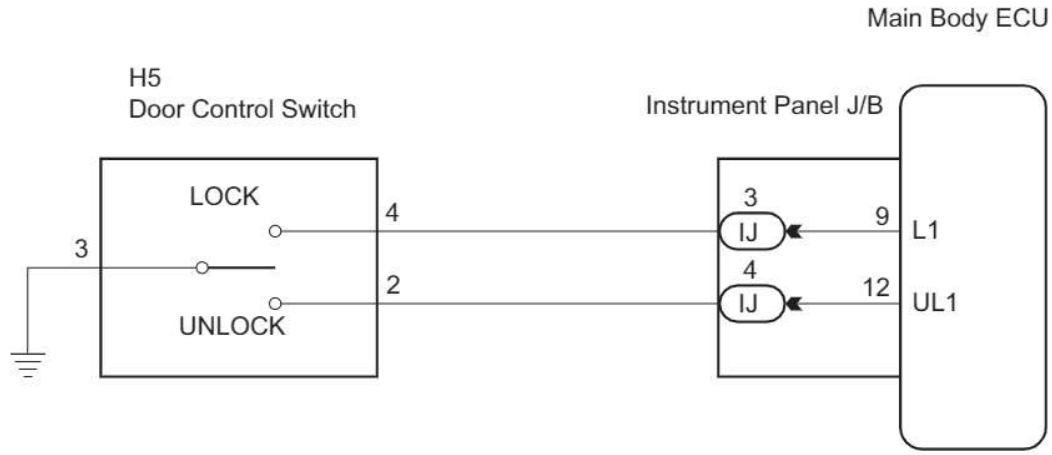
DRIVER SIDE:



H

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PASSENGER SIDE:



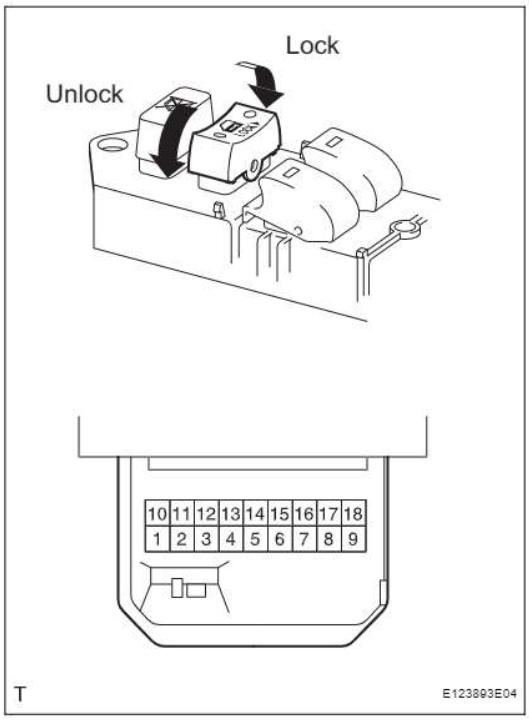
H

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DL

INSPECTION PROCEDURE

1	INSPECT DOOR CONTROL SWITCH ASSEMBLY

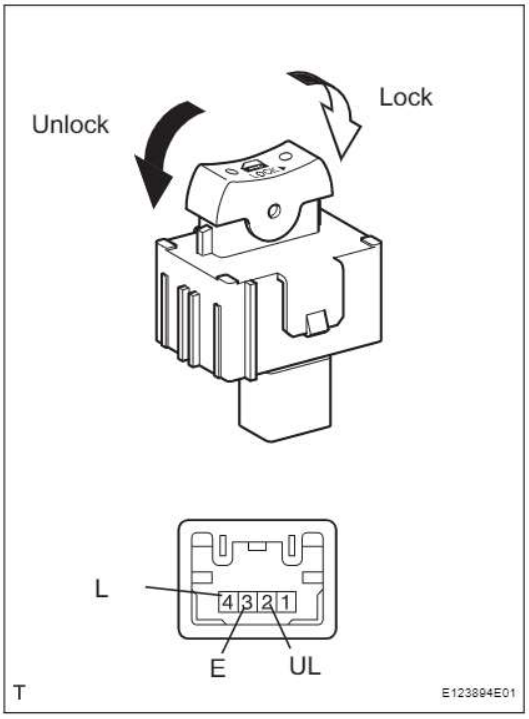


T

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(a) Inspect driver side.
(1) Remove the master switch.
(2) Measure the resistance of the door control switch.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
2 - 1	Lock	Below 1 Ω
2 - 1	OFF (Free)	10 kΩ or higher
9 - 1	Unlock	Below 1 Ω
9 - 1	OFF (Free)	10 kΩ or higher



(b) Inspect passenger side.
(1) Remove the door control switch assembly.
(2) Measure the resistance according to the value(s) in the table below.

Standard resistance

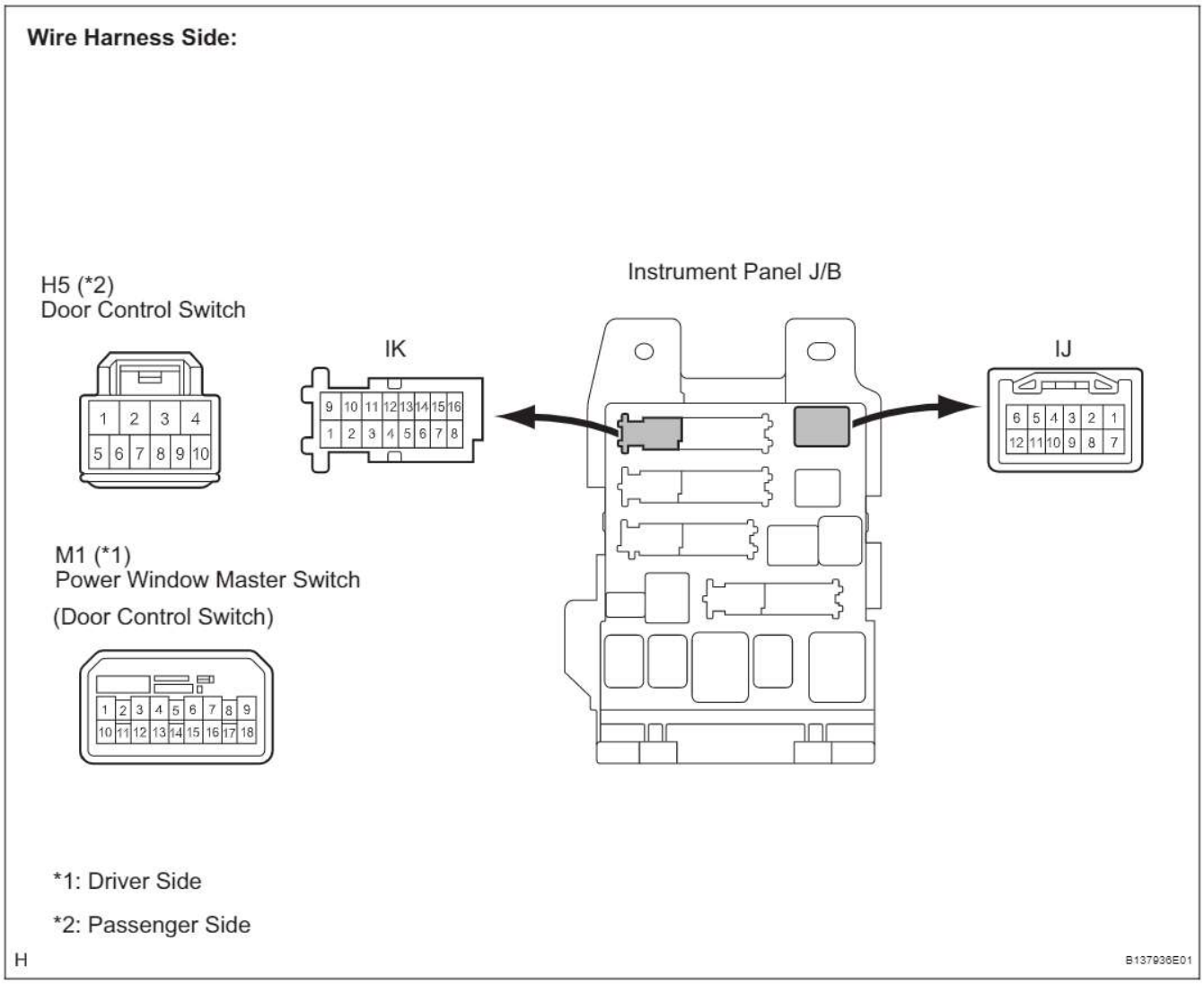
Tester Connection	Switch Condition	Specified Condition
4 - 3	Lock	Below 1 Ω
4 - 3 2 - 3	OFF (Free)	10 kΩ or higher
2 - 3	Unlock	Below 1 Ω

NG → **REPLACE DOOR CONTROL SWITCH OR MASTER SWITCH**

OK

2	**CHECK WIRE HARNESS (DOOR CONTROL SWITCH - MAIN BODY ECU (INSTRUMENT PANEL J/B))**

(a) Disconnect the door control switch connector.



(b) Disconnect the ECU (instrument panel J/B) connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
*1 M1-2 - IK-15	Always	Below 1 Ω
*1 M1-9 - IK-12	Always	Below 1 Ω
*1 M1-1 - Body ground	Always	Below 1 Ω
*1 IK-15 - Body ground	Always	10 kΩ or higher
*1 IK-12 - Body ground	Always	10 kΩ or higher
*2 H5-4 - IJ-3	Always	Below 1 Ω
*2 H5-2 - IJ-4	Always	Below 1 Ω
*2 H5-3 - Body ground	Always	Below 1 Ω
*2 IJ-3 - Body ground	Always	10 kΩ or higher
*2 IJ-4 - Body ground	Always	10 kΩ or higher

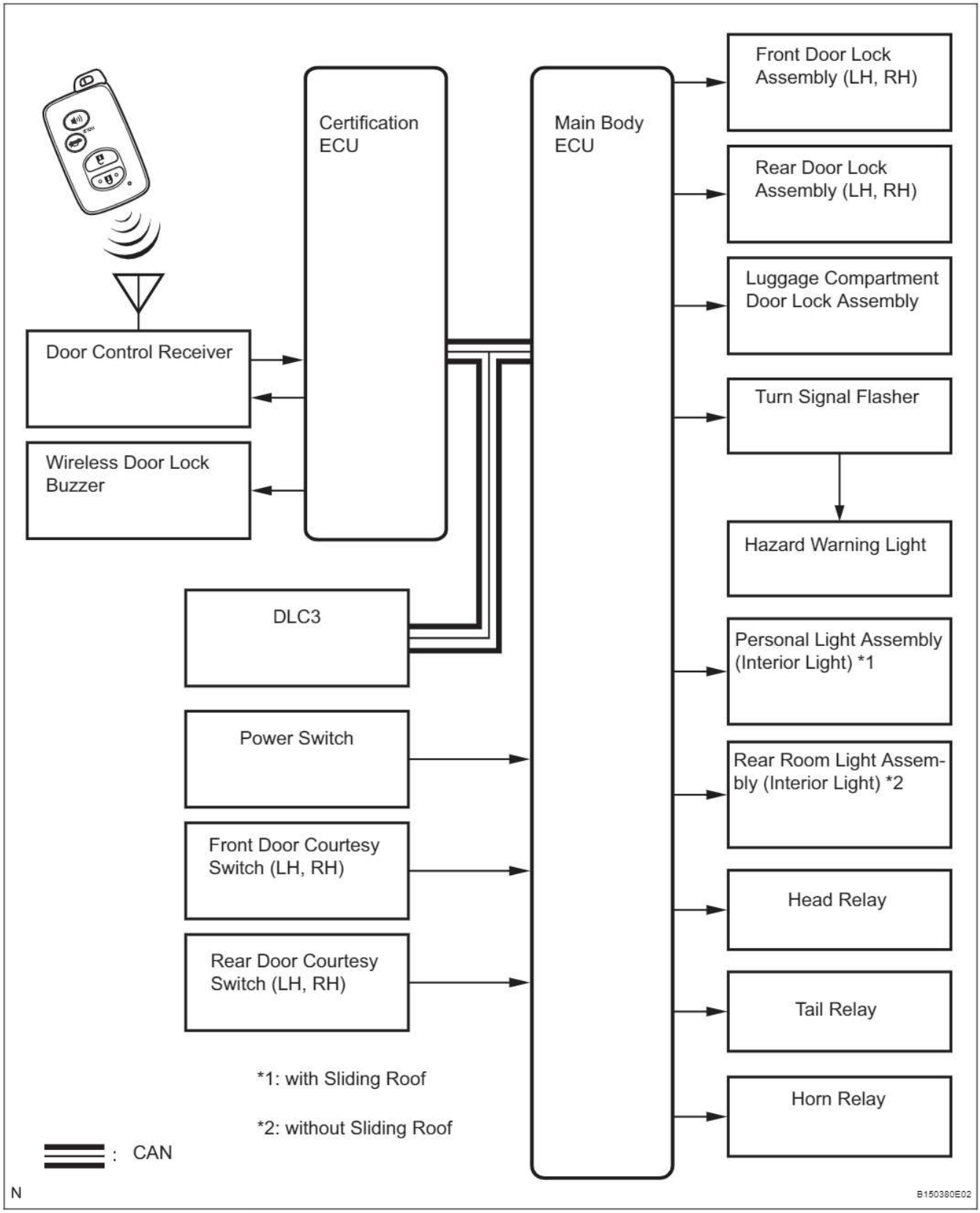
*1: Driver Side
*2: Passenger Side

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

SYSTEM DIAGRAM



Transmitting ECU (Transmitter)	Receiving ECU (Receiver)	Signal	Line
Certification ECU	Main body ECU	Wireless door lock signal	CAN

SYSTEM DESCRIPTION

1. WIRELESS DOOR LOCK CONTROL SYSTEM

The wireless door lock control system functions to lock and unlock all the doors from a distance. The system is controlled by a hand-held transmitter which sends radio waves to the door control receiver. The certification 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, LUGGAGE OPEN, and PANIC switches. • Transmits weak radio waves (recognition codes and function codes) to the door control receiver.
Door control receiver	Receives weak radio waves from the door control transmitter and sends them to the certification ECU.
• Front door courtesy light switch • Rear door courtesy light switch • Luggage compartment door courtesy light switch	Turns on when a door is opened and turns off when it is closed. Outputs door status codes (open or closed) to the main body ECU.
Door lock position switch	Transmits the door lock positions of each door to the main body ECU.
Wireless door lock buzzer	Emits beep (answer back) when doors are locked or unlocked, or luggage compartment door is opened by wireless operation.
Certification ECU	Sends wireless door lock control signals in response to the code data from the door control receiver and signals from each ECU.

3. SYSTEM FUNCTION

The door control transmitter has the LOCK, UNLOCK, LUGGAGE OPEN, and PANIC switches. Operating these switches activates each function.

The wireless door lock control system has the following functions:

HINT:

The default settings of the following functions are ON. Part of these functions can be customized (See page DL-71).

Function	Operation
All door lock	Pressing the LOCK switch locks all doors.
All door unlock (2-step unlock)	Pressing the UNLOCK switch twice within 3 seconds unlocks all the doors after the driver's door is unlocked.
Automatic lock	If none of the doors is opened within 60 seconds after they are unlocked by the wireless door lock control, all the doors will lock again automatically.
Luggage compartment door open	Pressing the LUGGAGE OPEN switch of the transmitter opens the luggage compartment door.
Answer back	• When the doors are locked by wireless operation, the hazard warning lights flash once and the wireless door lock buzzer sounds once. • When the doors are unlocked by wireless operation, the hazard warning lights flash twice and the wireless door lock buzzer sounds twice. • When the luggage compartment door is opened by wireless operation, the wireless door lock buzzer sounds.
Panic alarm	Pressing the PANIC switch of the transmitter for longer than about 0.8 seconds causes the following alarms to activate: • Sounds the horn and security horn. • Flashes the hazard lights, headlights, and taillights. • Illuminates the front interior light (when the switch is in the DOOR position). While the panic alarm is operating, pressing any switch of the transmitter cancels the alarm operation.

Function	Operation
Door ajar warning	The buzzer sounds when LOCK is pressed when any of the doors are ajar. When all the doors are closed or when UNLOCK is pressed, the buzzer will stop after it sounds for 10 seconds continuously.
Illuminated entry	When all the doors are locked, pressing the UNLOCK switch causes the interior light to come on simultaneously with the unlock operation.

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.

DL

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	CUSTOMER PROBLEM ANALYSIS

(a) Interview the customer to confirm the trouble (See page IN-72).

NEXT

3	INSPECT COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM

(a) Use the intelligent tester to check for normal function of the CAN communication system.
Result

Result	Proceed to
CAN DTC is not output	A
CAN DTC is output	See page CA-29

A

4	DTC CHECK

(a) Check for a DTC and note any codes that are output.
(b) Delete the DTC.
(c) Recheck for DTCs. Try to prompt the DTC by simulating the original activity that the DTC suggests.
Result

Result	Proceed to
DTC does not recur	A
DTC recurs	See page DL-78

A

5	SYMPTOM SIMULATION

NEXT

6	PROBLEM SYMPTOMS TABLE

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

B	Go to step 8

A

7	PERFORM TROUBLESHOOTING ACCORDING TO MALFUNCTION SYMPTOM

(a) Terminals of ECU (See page DL-74).
(b) DATA LIST/ACTIVE TEST (See page DL-78).

NEXT

8	ADJUST, REPAIR OR REPLACE

NEXT

9	CONFIRMATION TEST

NEXT

END

DL

OPERATION CHECK

1. FUNCTIONS AND OPERATING CONDITIONS

(a) The wireless door LOCK/UNLOCK function:
This wireless door lock control function operates only when the following 4 conditions are met:
(1) There is no wireless transmitter in the cabin.
(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) 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.

2. CHECK WIRELESS DOOR LOCK CONTROL FUNCTIONS

HINT:
- The switches built into the door control transmitter send radio waves to the door lock control receiver.
- 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 the driver's door unlocks when the UNLOCK switch is pressed once, and all doors unlock when pressed twice within 3 seconds.
(c) Check the automatic lock function.
(1) Check that if the driver's door or all doors are unlocked with the UNLOCK switch and none of the doors are opened or locked within approximately 60 seconds, the doors automatically re-lock.

(2) Check that if the driver's door or all doors are unlocked with the UNLOCK switch and a door is opened or locked within approximately 60 seconds, the automatic lock function does not operate.

(d) Check the interior light ON function.
HINT:
Turn the interior light switch to the DOOR position before the check.
(1) Check that the interior light comes on simultaneously with the unlocking operation when the UNLOCK switch has been pressed.
(2) Check that the interior light goes off in approximately 15 seconds if none of the doors is opened after the unlocking operation.

(e) Check the answer back function.
(1) When the doors are locked by wireless operation, the hazard warning lights flash once and the wireless door lock buzzer sounds once.
(2) When the doors are unlocked by wireless operation, the hazard warning lights flash twice and the wireless door lock buzzer sounds twice.
(3) When the luggage compartment door is opened by wireless operation, the wireless door lock buzzer sounds.

(f) Check the switch operation fail-safe function.
(1) Check that the doors cannot be locked by operating a switch while the wireless transmitter is in the cabin.
(2) Check that the doors cannot be locked or unlocked by operating a switch on the unregistered transmitter, and that the doors are locked and unlocked by operating a switch on the registered transmitter.

(g) 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.

(h) Check the luggage compartment door opener function.
(1) Check that the luggage compartment door opens when the LUGGAGE OPEN switch is held down for 0.6 seconds or more.

(i) Check the door ajar warning function.
(1) Check that the wireless door lock buzzer sounds for approximately 10 seconds when the LOCK switch is pressed with any of the doors ajar or open.

(j) Check the panic alarm function.

(1) Check that the following alarms operate when the PANIC switch is pressed longer than about 0.8 seconds:

- The vehicle horns and security horn sounds.
- The hazard warning lights, head lights and taillights flash.
- The interior light illuminates (when the switch is in the DOOR position).

(2) Check that during the panic alarm is operating, pressing any switch of transmitter cancels the alarm operation.

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. PERFORM CUSTOMIZATION

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch on(IG).
(c) Enter the following menus: CUSTOMIZE / INDIVIDUAL CHANGE / WIRELESS D LOCK.

WIRELESS DOOR LOCK CONTROL SYSTEM

Display (item)	Default	Function	Setting
TRUNK LID OPER (Wireless trunk opener function setting)	0.8 s PR ON	This function changes operation method of transmitter to open luggage compartment door. • 1 TIME: Push once • 2 TIMES: Push twice • 0.8 s PR: Push and hold for 0.8 seconds • OFF: Does not operate	1 TIME/2 TIMES/0.8 s PR/ OFF
WIRELESS OPER (Wireless door lock control function)	ON	Function that turns wireless door lock function ON/OFF	ON/OFF
HAZARD ANS BACK (Hazard answer-back for wireless door lock control)	ON	• When the doors are locked by wireless operation, the hazard warning lights flash once. • When the doors are unlocked by wireless operation, the hazard warning lights flash twice.	ON/OFF
OPEN DOOR WARN (Door ajar warning)	ON	The buzzer sounds when LOCK is pressed when any of the doors are ajar.	ON/OFF
AUTO LOCK DELAY (Auto lock time)	60 s	This function regulates the interval between unlocking and automatic relocking of doors.	30 s/60 s
UNLOCK /2OPER (Wireless unlock operated twice)	ON	This function unlocks the driver's door when the UNLOCK switch is pressed once, and unlocks all doors when pressed twice within 3 seconds. If set to OFF, pressing UNLOCK once unlocks all doors.	ON/OFF
ALARM FUNCTION (Panic function)	ON	This function operates the theft deterrent system when PANIC is pressed and held for 0.8 seconds.	ON/OFF
WIRLS BUZZ RESP (Wireless buzzer answer-back)	ON	Wireless door lock buzzer response/ON or OFF	ON/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 wireless door lock control system (without 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.

DL

WIRELESS DOOR LOCK CONTROL SYSTEM:

Symptom	Suspected Area	See page
The wireless door lock control system does not operate.	1. Perform the operation check	DL-68
	2. Check if the CAN communication DTC is output	CA-22
	3. Door control transmitter	DL-168
	4. Door courtesy switch circuit	LI-41
	5. Luggage compartment door courtesy switch	DL-43
	6. Power source circuit	DL-86
	7. Replace the door control receiver	-
	8. Replace the certification ECU	-
	9. If the symptom still occurs after the above areas have been inspected and proved to be normal, replace the main body ECU (Instrument panel J/B)	-
The automatic lock function does not operate normally.	1. Perform the operation check	DL-68
	2. Door courtesy switch circuit	LI-41
	3. If the symptom still occurs after the above areas have been inspected and proved to be normal, replace the main body ECU (Instrument panel J/B)	-
The illuminated entry function only does not operate.	1. Perform the operation check	DL-68
	2. Lighting system	LI-12
	3. If the symptom still occurs after the above areas have been inspected and proved to be normal, replace the main body ECU (Instrument panel J/B)	-
The answer back function does not operate (Wireless door lock buzzer).	1. Perform the operation check	DL-68
	2. Wireless door lock buzzer circuit	DL-83
	3. Replace the certification ECU	-
	4. If the symptom still occurs after the above areas have been inspected and proved to be normal, replace the main body ECU (Instrument panel J/B)	-
The answer back function does not operate (Hazard warning light).	1. Perform the operation check	DL-68
	2. Wire harness	-
	3. Turn signal flasher assembly	LI-113
	4. If the symptom still occurs after the above areas have been inspected and proved to be normal, replace the main body ECU (Instrument panel J/B)	-

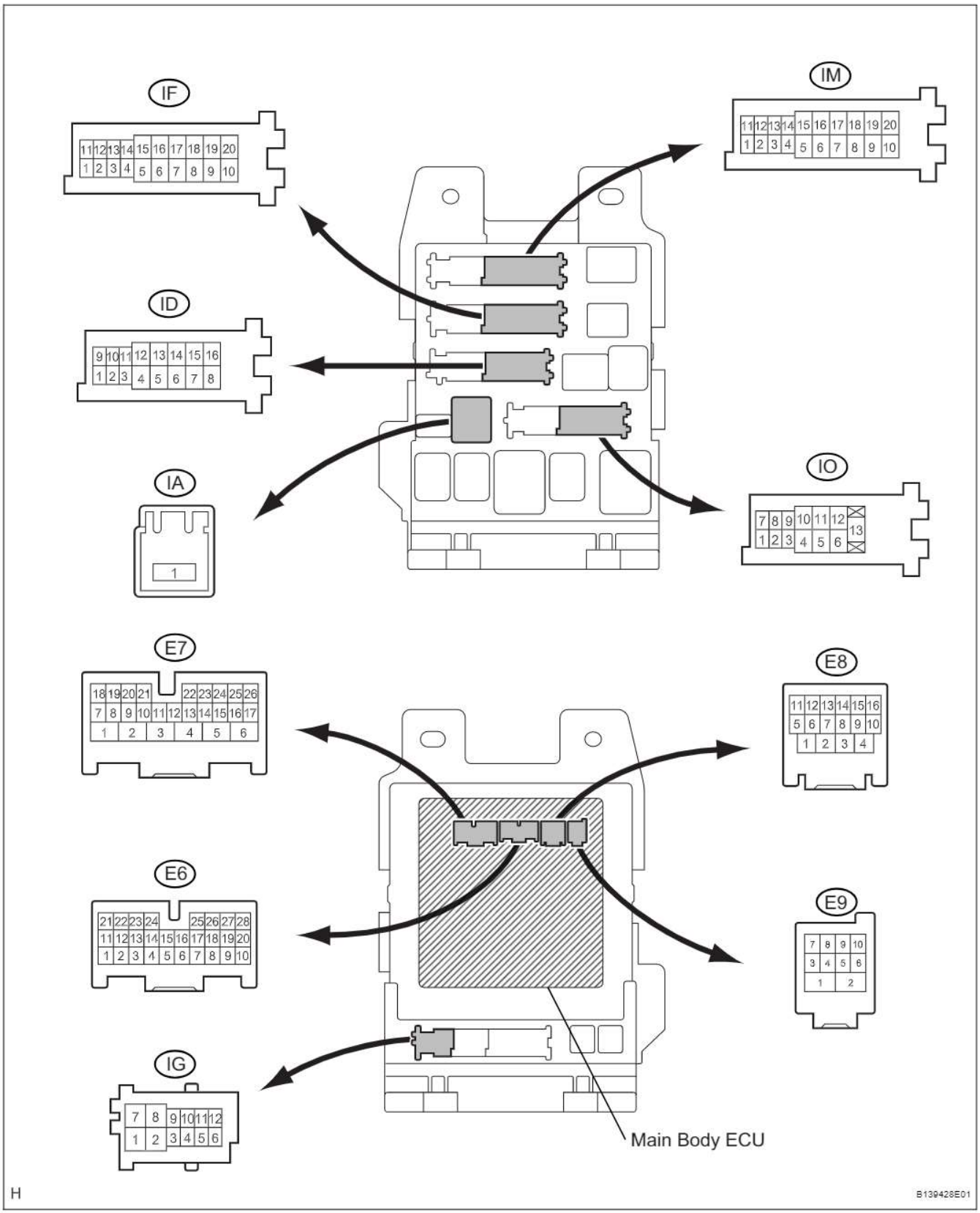
Symptom	Suspected Area	See page
The door ajar warning function only does not operate.	1. Perform the operation check	DL-68
	2. Door courtesy switch circuit	LI-41
	3. If the symptom still occurs after the above areas have been inspected and proved to be normal, replace the main body ECU (Instrument panel J/B)	-
The panic alarm function only does not operate.	1. Perform the operation check	DL-68
	2. Door control transmitter	DL-168
	3. If the symptom still occurs after the above areas have been inspected and proved to be normal, replace the main body ECU (Instrument panel J/B)	-
The panic alarm function does not operate (Vehicle horn).	1. Perform the operation check	DL-68
	2. Horn system	HO-3
	3. If the symptom still occurs after the above areas have been inspected and proved to be normal, replace the main body ECU (Instrument panel J/B)	-
The panic alarm function does not operate (Hazard warning light).	1. Perform the operation check	DL-68
	2. Wire harness	-
	3. Turn signal flasher assembly	LI-113
	4. If the symptom still occurs after the above areas have been inspected and proved to be normal, replace the main body ECU (Instrument panel J/B)	-
The panic alarm function does not operate (Headlight or taillight).	1. Perform the operation check	DL-68
	2. Lighting system	LI-12
	3. If the symptom still occurs after the above areas have been inspected and proved to be normal, replace the main body ECU (Instrument panel J/B)	-

DL

TERMINALS OF ECU

1. CHECK MAIN BODY ECU (INSTRUMENT PANEL J/B)

(a) Disconnect the main body ECU (instrument panel J/B) connectors.



(b) Measure the resistance and voltage between each terminal of the wire harness side connectors and body ground.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
RCTY (E6-7) - Body ground	GR - Body ground	Rear courtesy light switch RH input	Rear door RH CLOSED (OFF) → OPEN (ON)	10 kΩ or higher → Below 1 Ω
PCTY (E6-21) - Body ground	Y - Body ground	Passenger side courtesy light switch input	Passenger side door CLOSED (OFF) → OPEN (ON)	10 kΩ or higher → Below 1 Ω
LGCY (E6-25) - Body ground	W - Body ground	Luggage compartment door courtesy light switch input	Luggage compartment door CLOSED (OFF) → OPEN (ON)	10 kΩ or higher → Below 1 Ω
DCTY (E7-24) - Body ground	L - Body ground	Driver side door courtesy light switch input	Driver side door CLOSED (OFF) → OPEN (ON)	10 kΩ or higher → Below 1 Ω
ACC (IA-1) - Body ground	B - Body ground	Ignition power supply (ACC signal)	Power switch on (ACC) → off	10 to 14 V → Below 1 V
IG (IA-1) - Body ground	B - Body ground	Ignition power supply (IG signal)	Power switch on (IG) → off	10 to 14 V → Below 1 V
BATB (IA-1) - Body ground	B - Body ground	+B (power battery system) power supply	Always	10 to 14 V
ALTB (ID-16) - Body ground	W - Body ground	+B (power system alternator system) power supply	Always	10 to 14 V
GND1 (IF-10) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
GND2 (IM-9) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
LCTY (IO-7) - Body ground	LG - Body ground	Rear courtesy light switch LH input	Rear door LH CLOSED (OFF) → OPEN (ON)	10 kΩ or higher → Below 1 Ω

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

(c) Reconnect the main body ECU (instrument panel J/B) connectors.

(d) Measure the voltage between each terminal of the wire harness side connectors and body ground.

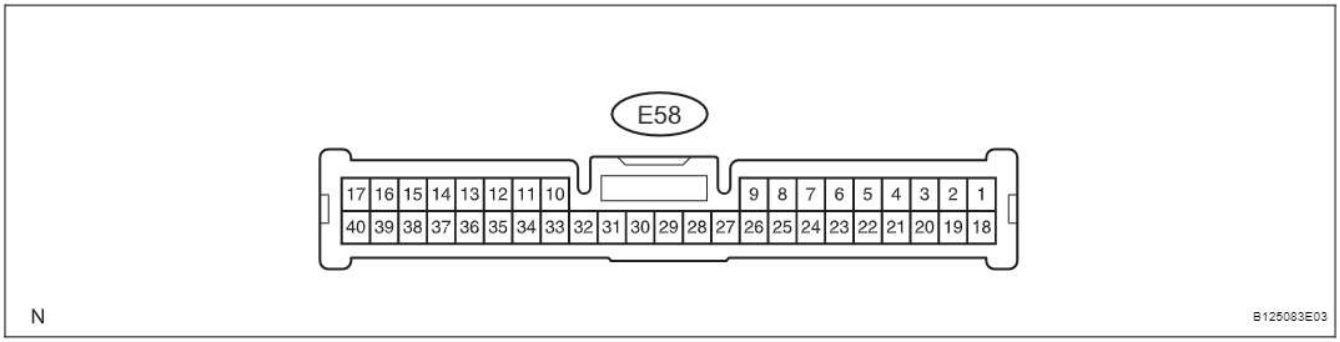
Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
TR+ (E7-1) - Body ground	B - Body ground	Luggage compartment door opener motor input	Luggage compartment door CLOSED (LOCKED) → OPEN (UNLOCKED)	Below 1 V → 10 to 14 V*1
HAZ (E8-4) - Body ground	W - Body ground	Turn signal flasher relay signal	Any transmitter switch is pressed → not pressed	Below 1 V → 10 to 14 V*2

HINT:

- *1: When operating the motor.
- *2: When operating the answer back function.

2. CHECK CERTIFICATION ECU ASSEMBLY

(a) Disconnect the E58 ECU connector.



(b) Measure the voltage and resistance of the wire harness side connector.

DL

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
+B (E58-1) - E (E58-17)	W - W-B	Battery power supply	Always	10 to 14 V
E (E58-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
IG (E58-18) - E (E58-17)	LG - W-B	IG power supply	Power switch on (IG)	10 to 14 V
IG (E58-18) - E (E58-17)	LG - W-B	IG power supply	Power switch off	Below 1 V

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

(c) Reconnect the E58 ECU connector.

(d) Measure the voltage according to the values(s) in the table below.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BZR (E58-21) - Body ground	O - Body ground	Wireless door lock buzzer	Wireless door lock buzzer OFF → ON	0 V → Pulse generation
RC0 (E58-29) - E (E58-17)	G - W-B	Door control receiver power supply	Power switch off, all doors closed and transmitter switch not pressed	Below 1 V
RC0 (E58-29) - E (E58-17)	G - W-B	Door control receiver power supply	Power switch off, all doors closed and transmitter switch pressed	4.6 to 5.4 V
RDA (E58-38) - E (E58-17)	Y - W-B	Door control receiver output signal	Power switch off, all doors closed and transmitter switch not pressed	10 to 14 V
RDA (E58-38) - E (E58-17)	Y - W-B	Door control receiver output signal	Power switch off, all doors closed and transmitter switch pressed	Pulse generation

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

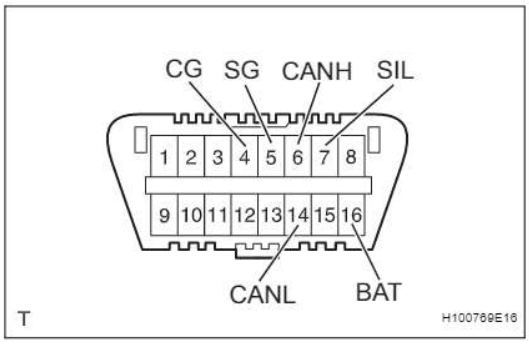
DIAGNOSIS SYSTEM

1. DESCRIPTION

The main body ECU stores trouble codes when trouble occurs on the vehicle.
The diagnostic system allows for reading of the trouble codes from the DLC3.
Use the intelligent tester to check and solve the problem.

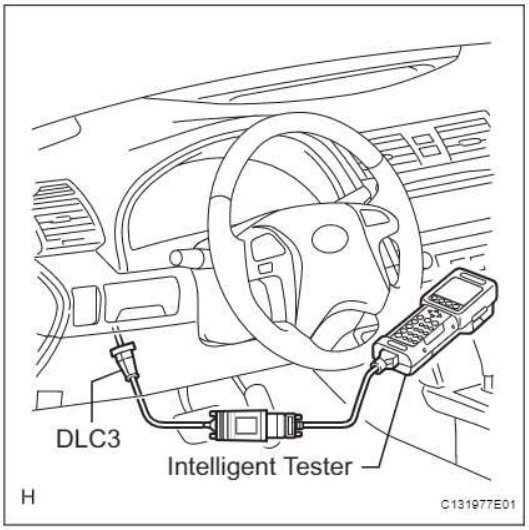
2. CHECK DLC3

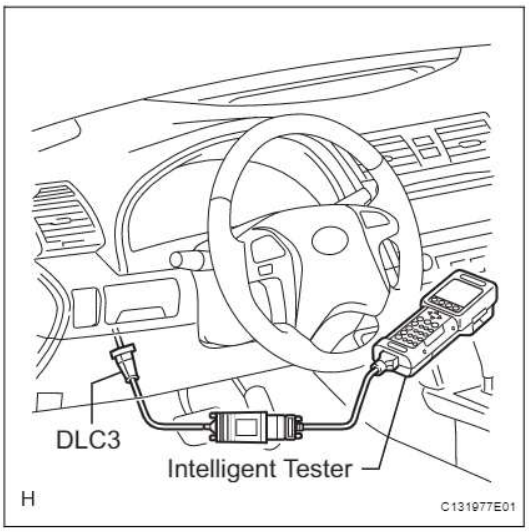
(a) The main body ECU uses ISO 15765-4 for communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



Symbols (Terminal 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)	CAN bus line	Power switch off*	54 to 69 Ω
CANH (6) - CG (4)	HIGH-level CAN bus line	Power switch off*	200 Ω or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Power switch off*	200 Ω or higher
CANH (6) - BAT (16)	HIGH-level CAN bus line	Power switch off*	6 kΩ or higher
CANL (14) - BAT (16)	LOW-level CAN bus line	Power switch off*	6 kΩ or higher

NOTICE:
***: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the power switch, any other switches or the doors.**
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 (with CAN VIM) to the DLC3, turn the power switch on (READY) and attempt to use the intelligent tester. If the screen displays a communication error message, a problem exists in the vehicle or in the tester.
- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still impossible when the tester is connected to another vehicle, the problem is probably in the tester itself. Consult the Service Department listed in the tester's instruction manual.

DTC CHECK / CLEAR

1. CHECK DTC

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch on (READY).
(c) Enter the following menu items: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.
(d) Read DTC's by following the prompts 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 power switch on (READY).
(c) Enter the following menu items: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CLEAR CODES.
(d) Erase the DTC's by following the directions on the tester screen.

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

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

Using the intelligent tester DATA LIST allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to shorten diagnostic time.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch on (READY).
(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / MAIN BODY or SMART / DATA LIST / DIAG&CUSTOMIZE.
(d) Read the DATA LIST according to the display on the tester.

DL

MAIN BODY (Main body ECU):

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
WIRELESS OPER	Wireless door lock control function / ON or OFF	ON: Operating OFF: Not operating	-
HAZARD ANS BACK	Hazard answer-back of wireless / 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 /2OPER	2 time operation of wireless unlock / ON or OFF	ON: All doors unlock when UNLOCK is pressed twice OFF: All doors unlock when UNLOCK is pressed once	-
WIRLS BUZZ RESP	Wireless door lock buzzer response / ON or OFF	ON: Operating OFF: Not operating	-
TRUNK LID OPER	Luggage compartment door open function type / 1 TIME/2 TIMES/0.8 s PR/OFF	1 TIME: Luggage compartment door opens when LUGGAGE OPEN switch is pressed once 2 TIMES: Luggage compartment door opens when LUGGAGE OPEN switch is pressed twice 0.8 s PR: Luggage compartment door opens when LUGGAGE OPEN switch is pressed and held down for 0.8 seconds OFF: Not operating	-

SMART (Certification ECU):

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ALARM FUNCTION	Panic function / ON or OFF	ON: Operating OFF: Not operating	-

2. ACTIVE TEST

HINT:

Performing the intelligent tester 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 shorten the diagnostic 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 power switch on (READY).
(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / MAIN BODY or SMART / ACTIVE TEST.

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

MAIN BODY (Main body ECU):

Tester Display	Test Part	Control Range	Diagnostic Note
HAZARD	Turns the turn signal flasher relay	ON/OFF	Observe headlight and rear combination light for correct operation
VEHICLE HORN	Vehicle horn	ON/OFF	-
TRUNK/BDOR OPEN	Turns luggage compartment door opener motor	ON/OFF	Observe luggage compartment door

SMART (Certification ECU):

Tester Display	Test Part	Control Range	Diagnostic Note
WIRELESS BUZZER	Wireless door lock buzzer	ON/OFF	-

DL

DIAGNOSTIC TROUBLE CODE CHART

HINT:
If a trouble code is indicated during the DTC check, check the circuit listed for that code in the table below. Then proceed to the appropriate page.

WIRELESS DOOR LOCK CONTROL SYSTEM:

DTC Code	Detection Item	Trouble Area	See page
B1242	Wireless Door Lock Tuner Circuit Malfunction	1. Door control receiver 2. Wire harness 3. Certification ECU	DL-80

DL

DTC	B1242	Wireless Door Lock Tuner Circuit Malfunction

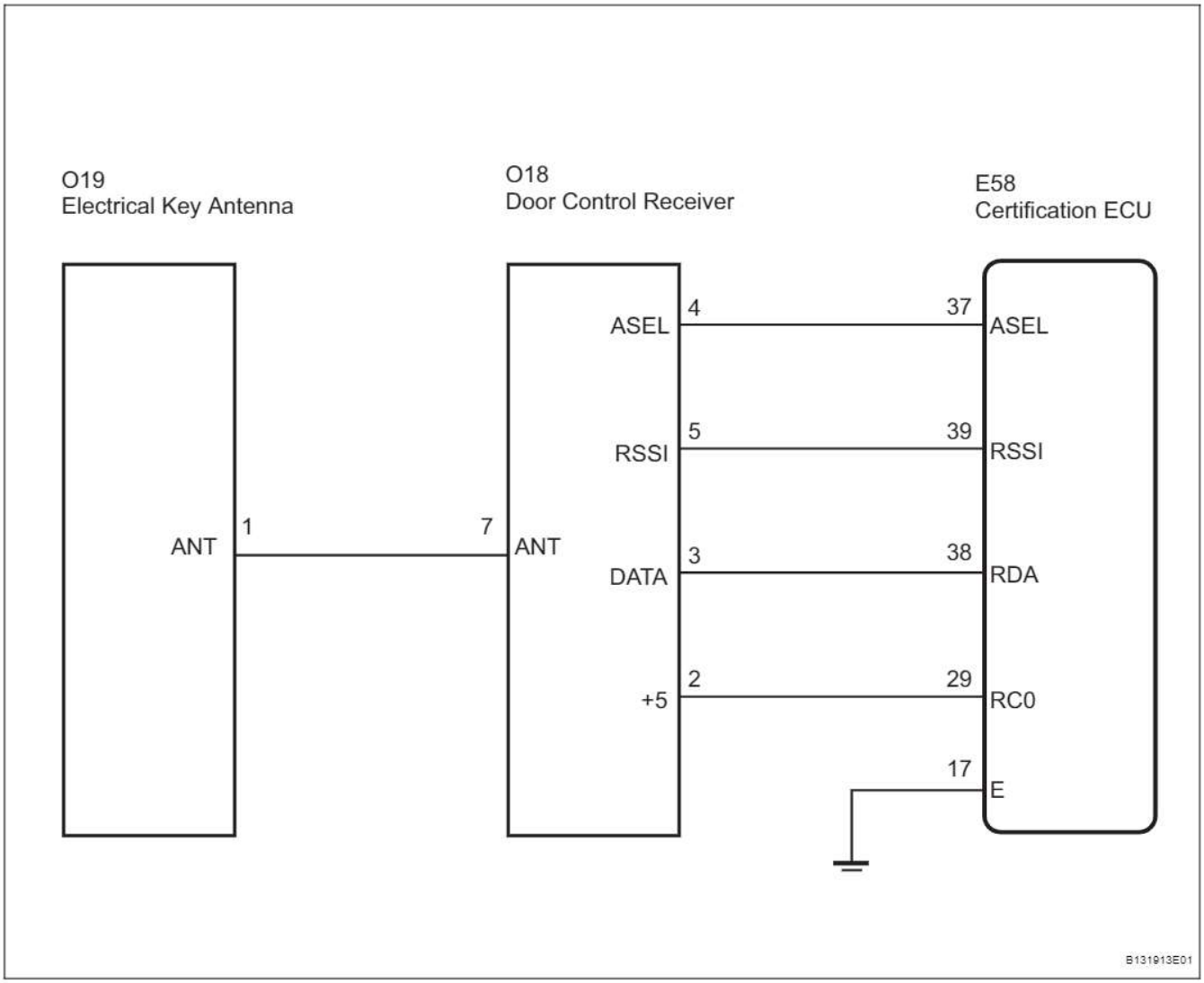
DESCRIPTION

- The electrical key antenna is used to receive electric waves relating to the entry functions of the smart access system with push-button start. The certification ECU decodes the requested smart access system with push-button start operation by identifying a key code based on electric waves received via the electrical key antenna and the door control receiver.
- The door control receiver receives a signal from the wireless door control transmitter and sends signals to the main body ECU through the certification ECU.
- The certification ECU then sends a command to each ECU according to the requested operation. (e.g. If door lock operation is requested, the ECU sends a door lock command to the main body ECU.)

DTC No.	DTC Detection Condition	Trouble Area
B1242	The certification ECU detects that there is a short in the circuit between terminals RSSI, or between terminals DATA and RDA.	• Door Control Receiver • Wire harness • Certification ECU

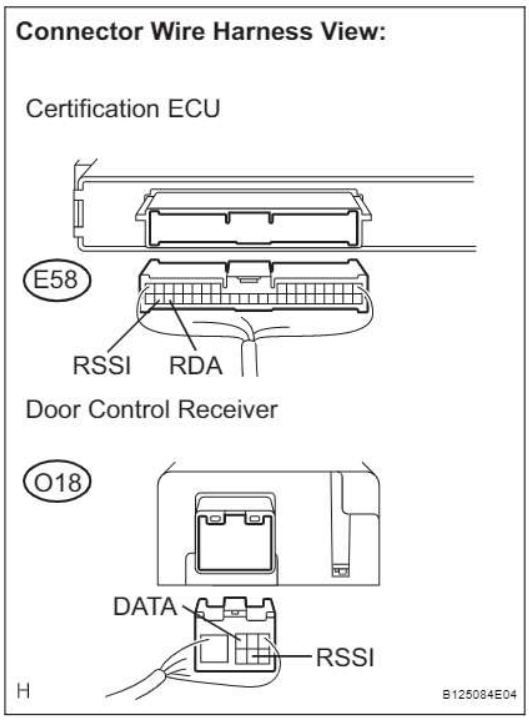
DL

WIRING DIAGRAM



INSPECTION PROCEDURE

1 CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - DOOR CONTROL RECEIVER)



(a) Disconnect the E58 certification ECU connector and O18 door control receiver connector.
(b) Measure the resistance according to the value(s) in the table below.

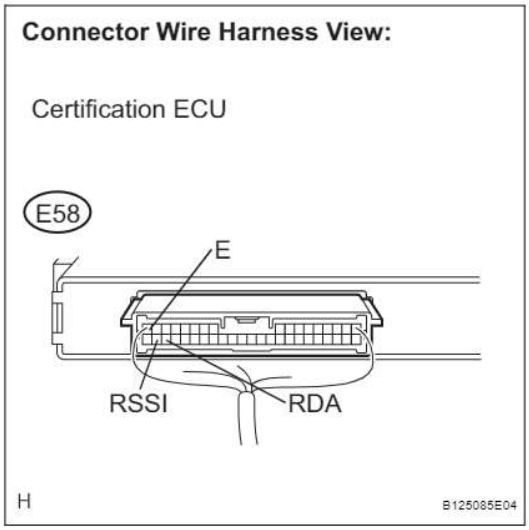
Standard resistance

Symbol (Tester Connection)	Condition	Specified Condition
RSSI (E58-39) - RSSI (O18-5)	Always	Below 1 Ω
RDA (E58-38) - DATA (O18-3)	Always	Below 1 Ω
RSSI (E58-39) - RDA (E58-38)	Always	10 kΩ or higher
RSSI (E58-39) - Body ground	Always	10 kΩ or higher
RDA (E58-38) - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

2 INSPECT CERTIFICATION ECU



(a) Reconnect the E58 ECU connector.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Symbol (Tester Connection)	Condition	Specified Condition
RSSI (E58-39) - E (E58-17)	Power switch OFF, all doors closed, the electrical key is not in the actuation area	Below 1 V
	Power switch OFF, all doors closed, the electrical key is in the actuation area	4.6 to 5.4 V
RDA (E58-38) - E (E58-17)	Power switch OFF, all doors closed and transmitter switch not pressed	Below 1 V
	Power switch OFF, all doors closed and transmitter switch pressed	4.6 to 5.4 V

NG → REPLACE CERTIFICATION ECU

OK

3	REPLACE DOOR CONTROL RECEIVER

(a) Replace the door control receiver with a normal one.
(b) Perform the registration procedure.
OK:
The system returns to normal operation.

NG → REPLACE CERTIFICATION ECU

OK

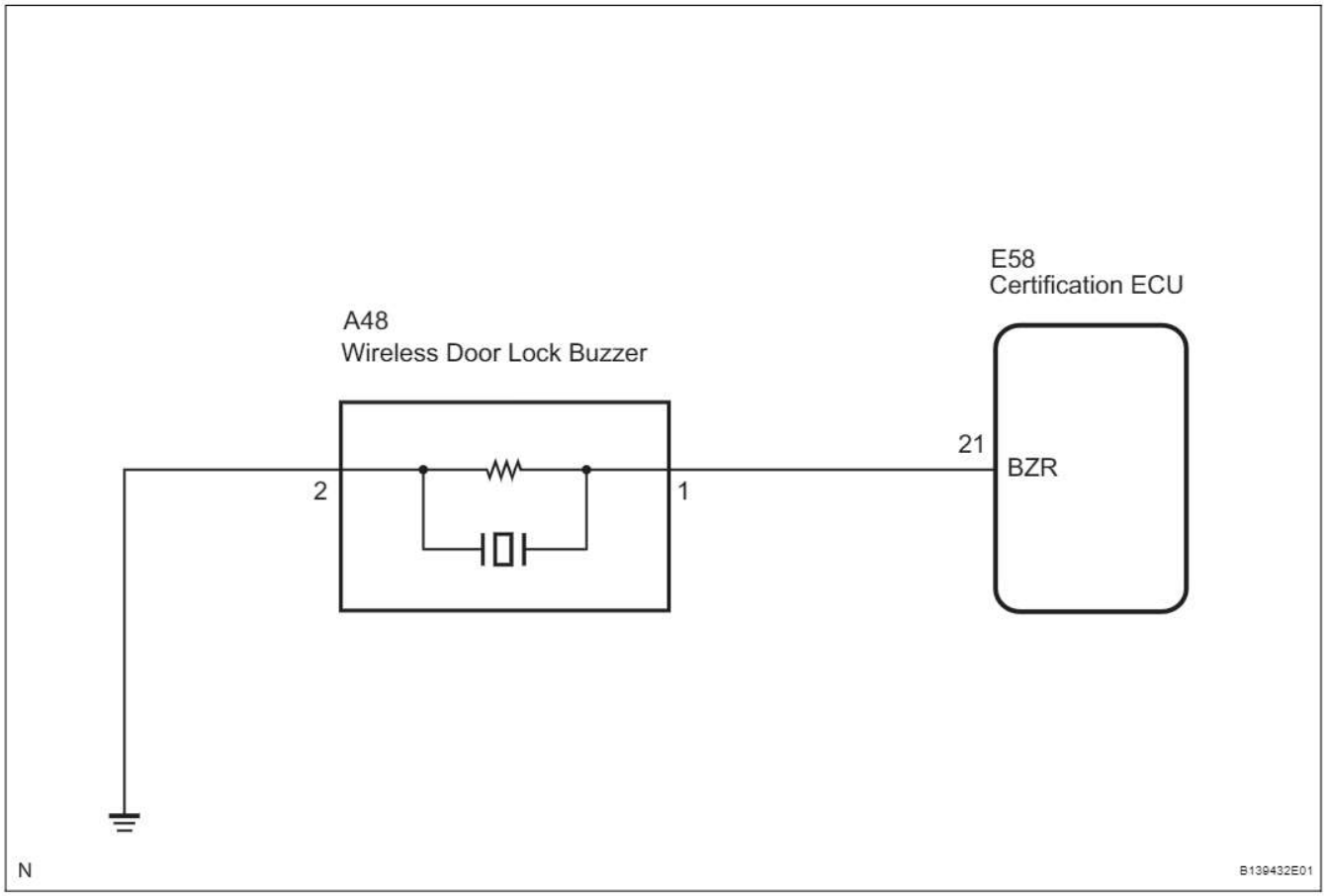
DL END

Wireless Door Lock Buzzer Circuit

DESCRIPTION

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

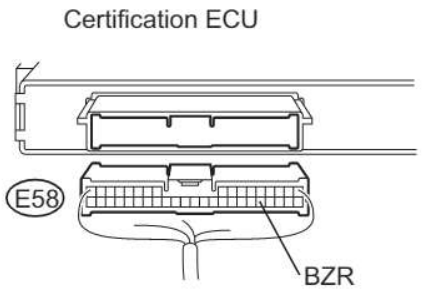
WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - WIRELESS DOOR LOCK BUZZER - BODY GROUND)

Connector Wire Harness View:



Wire Harness Side Connector Front View:



B150399E02

(a) Disconnect the E58 certification ECU connector and A48 wireless door lock buzzer connector.

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

Standard resistance

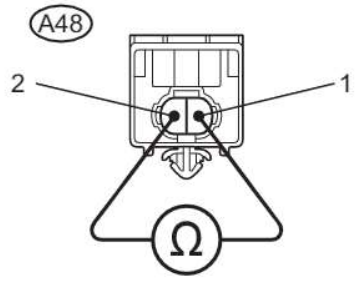
Symbol (Tester Connection)	Condition	Specified Condition
BZR (E58-21) - A48-1	Always	Below 1 Ω
BZR (E58-21) - Body ground	Always	10 kΩ or higher
A48-2 - Body ground	Always	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

2	INSPECT WIRELESS DOOR LOCK BUZZER

Wireless Door Lock Buzzer:



N B144393E01

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

HINT:

The buzzer activation 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.

Standard resistance

Tester Connection	Condition	Specified Condition
A48-1 - A48-2	Always	Approx. 1 kΩ

NG → REPLACE WIRELESS DOOR LOCK BUZZER

OK

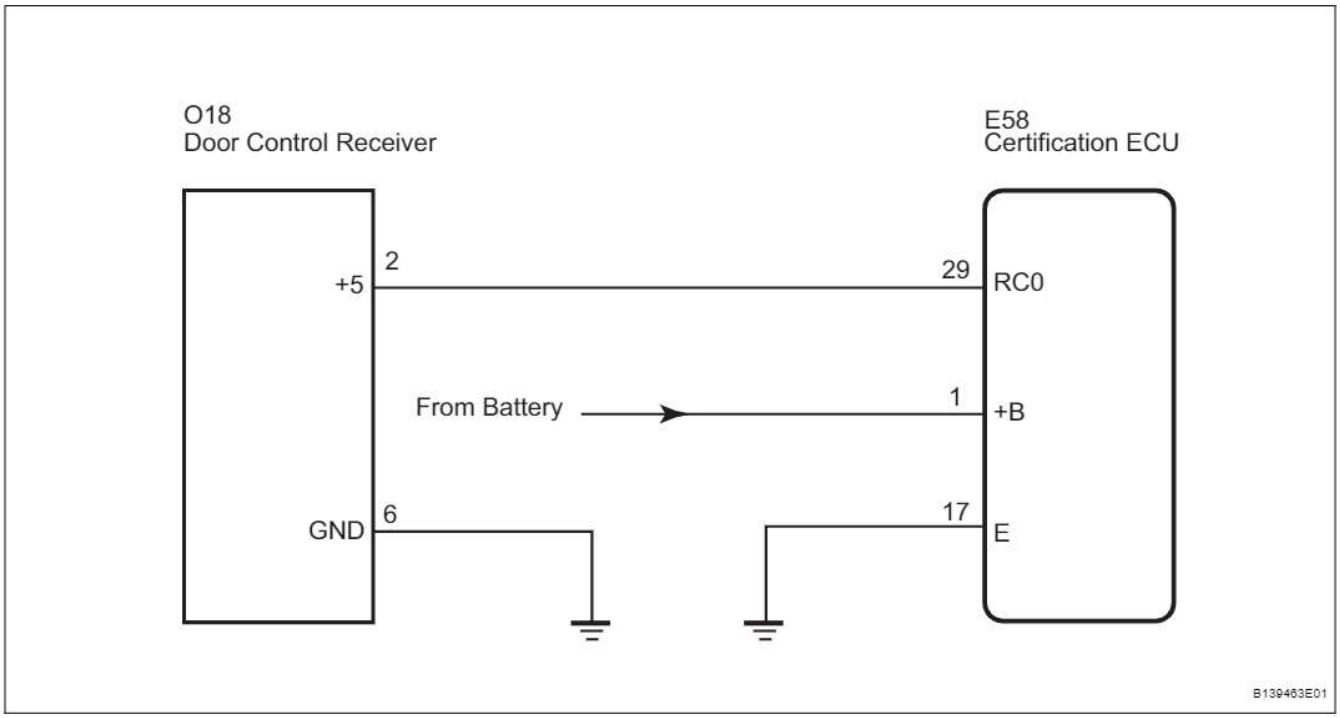
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Power Source Circuit

DESCRIPTION

The certification ECU provides power for the door control receiver operation.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT CERTIFICATION ECU (+B TERMINAL)



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

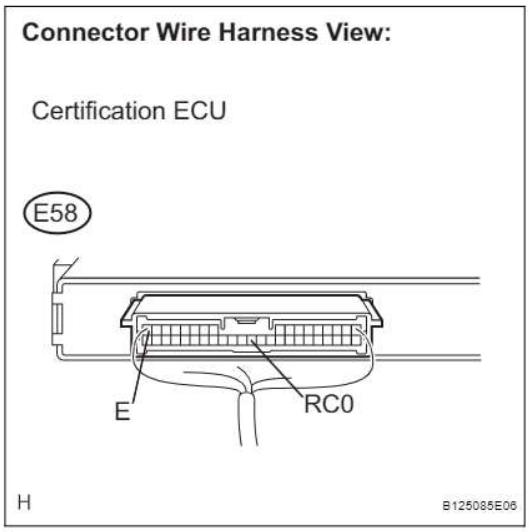
Standard voltage

Symbol (Tester Connection)	Condition	Specified Condition
+B (E58-1) - E (E58-17)	Always	10 to 14 V

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

2	INSPECT CERTIFICATION ECU (RC0 TERMINAL)



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

Standard voltage

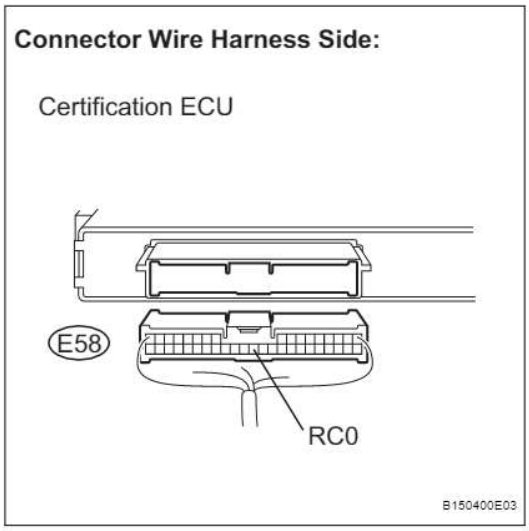
Symbol (Tester Connection)	Condition	Specified Condition
RC0 (E58-29) - E (E58-17)	Power switch off, all doors closed and transmitter switch not pressed	Below 1 V
	Power switch off, all doors closed and transmitter switch pressed	4.6 to 5.4 V

DL

OK → Go to step 4

NG

3	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - BATTERY - BODY GROUND)



(a) Disconnect the E58 certification ECU connector.
(b) Measure the voltage and resistance according to the value(s) in the table below.

Standard resistance

Symbol (Tester Connection)	Condition	Specified Condition
RC0 (E58-29) - Body ground	Always	Below 1 V
	Always	10 kΩ or higher

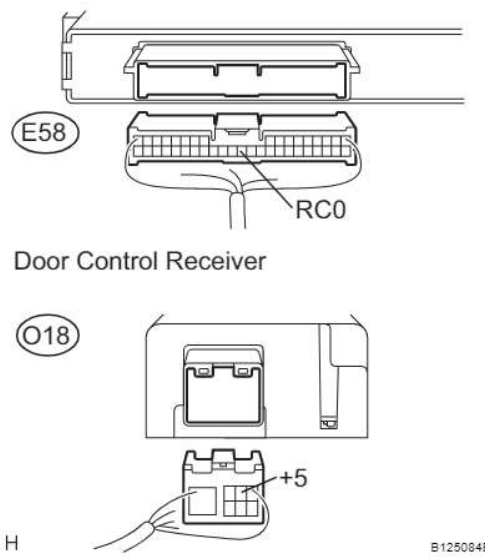
NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE CERTIFICATION ECU

4	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - DOOR CONTROL RECEIVER)

Connector Wire Harness View:



(a) Disconnect the O18 door control receiver connector.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

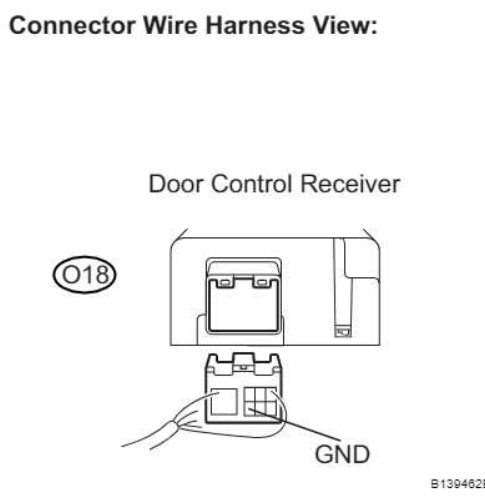
Symbol (Tester Connection)	Condition	Specified Condition
RC0 (E58-29) - +5 (O18-2)	Always	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

5	CHECK HARNESS AND CONNECTOR (BODY GROUND)

Connector Wire Harness View:



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

Standard resistance

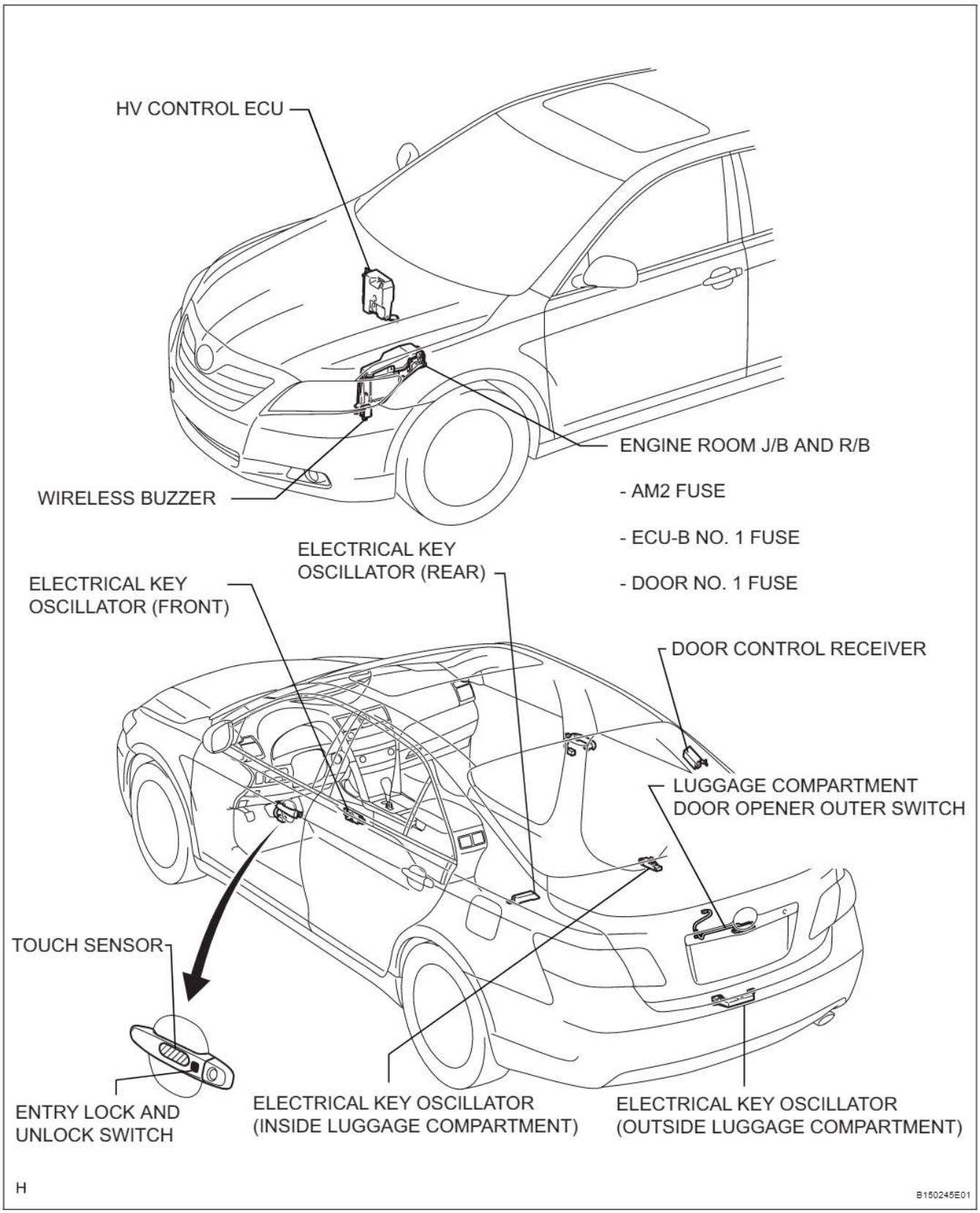
Symbol (Tester Connection)	Condition	Specified Condition
GND (O18-6) - Body ground	Always	Below 1 Ω

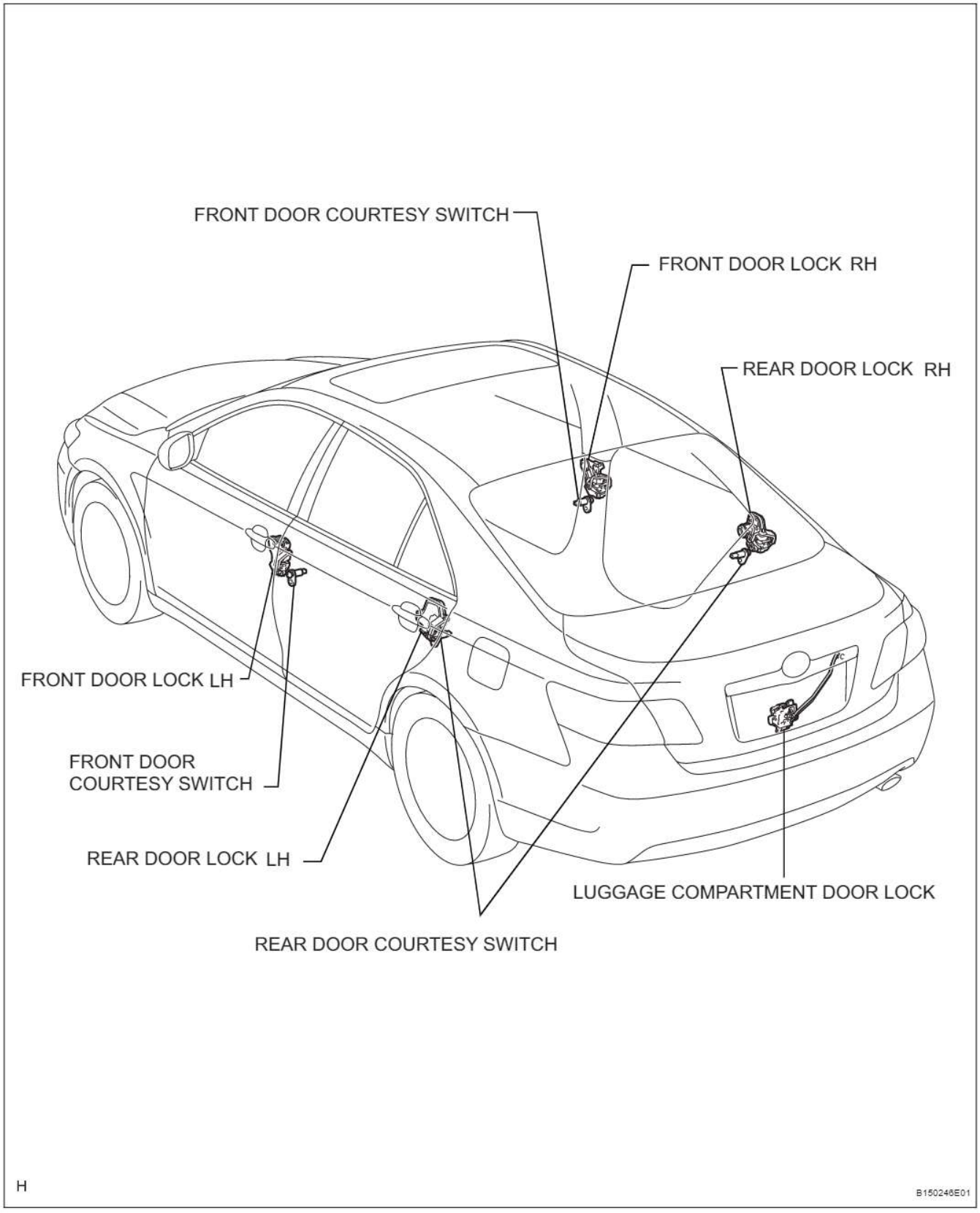
NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

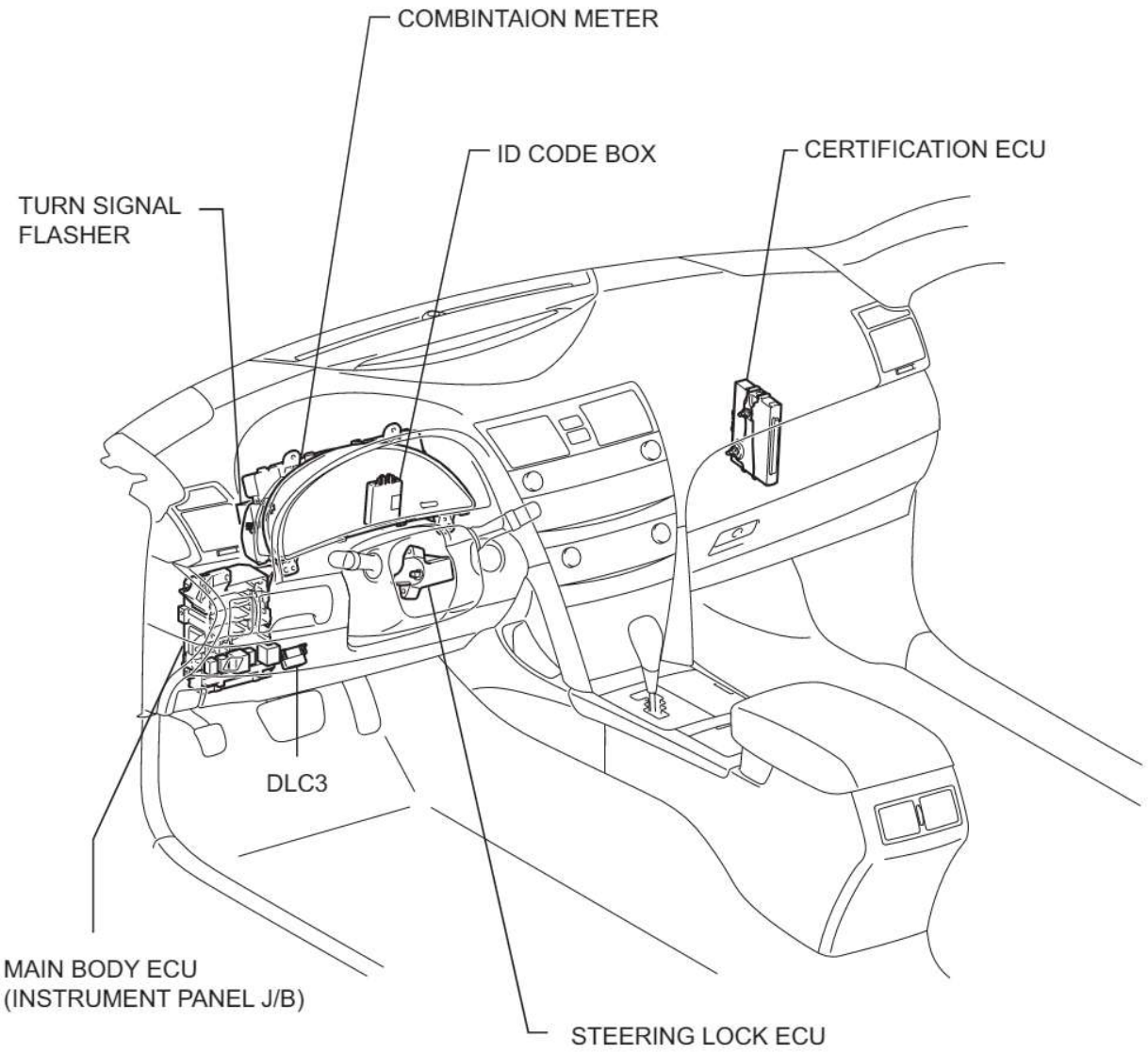
OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

PARTS LOCATION




FRONT DOOR COURTESY SWITCH
FRONT DOOR LOCK RH
REAR DOOR LOCK RH
FRONT DOOR LOCK LH
FRONT DOOR
COURTESY SWITCH
REAR DOOR LOCK LH
LUGGAGE COMPARTMENT DOOR LOCK
REAR DOOR COURTESY SWITCH
H
B150246E01

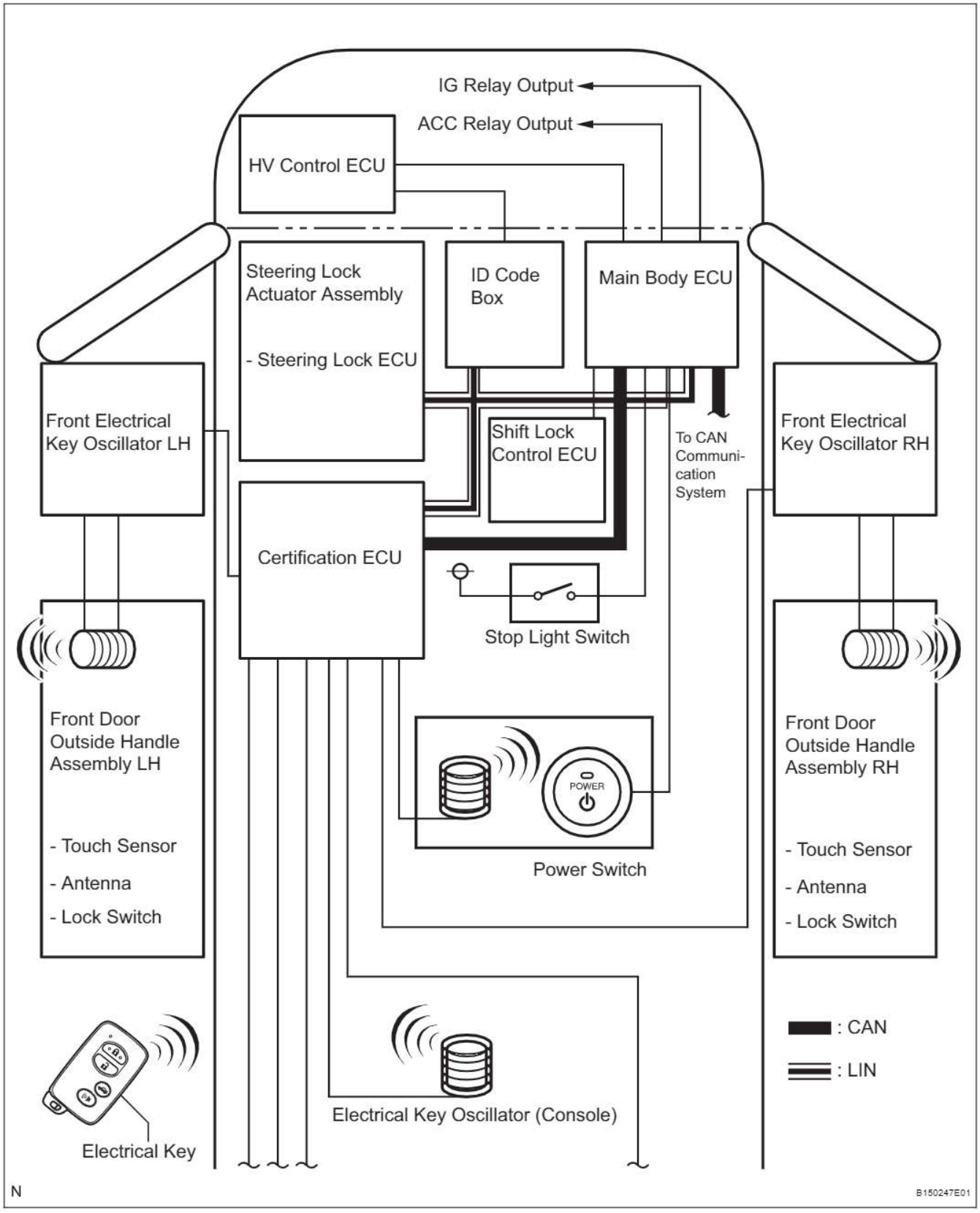


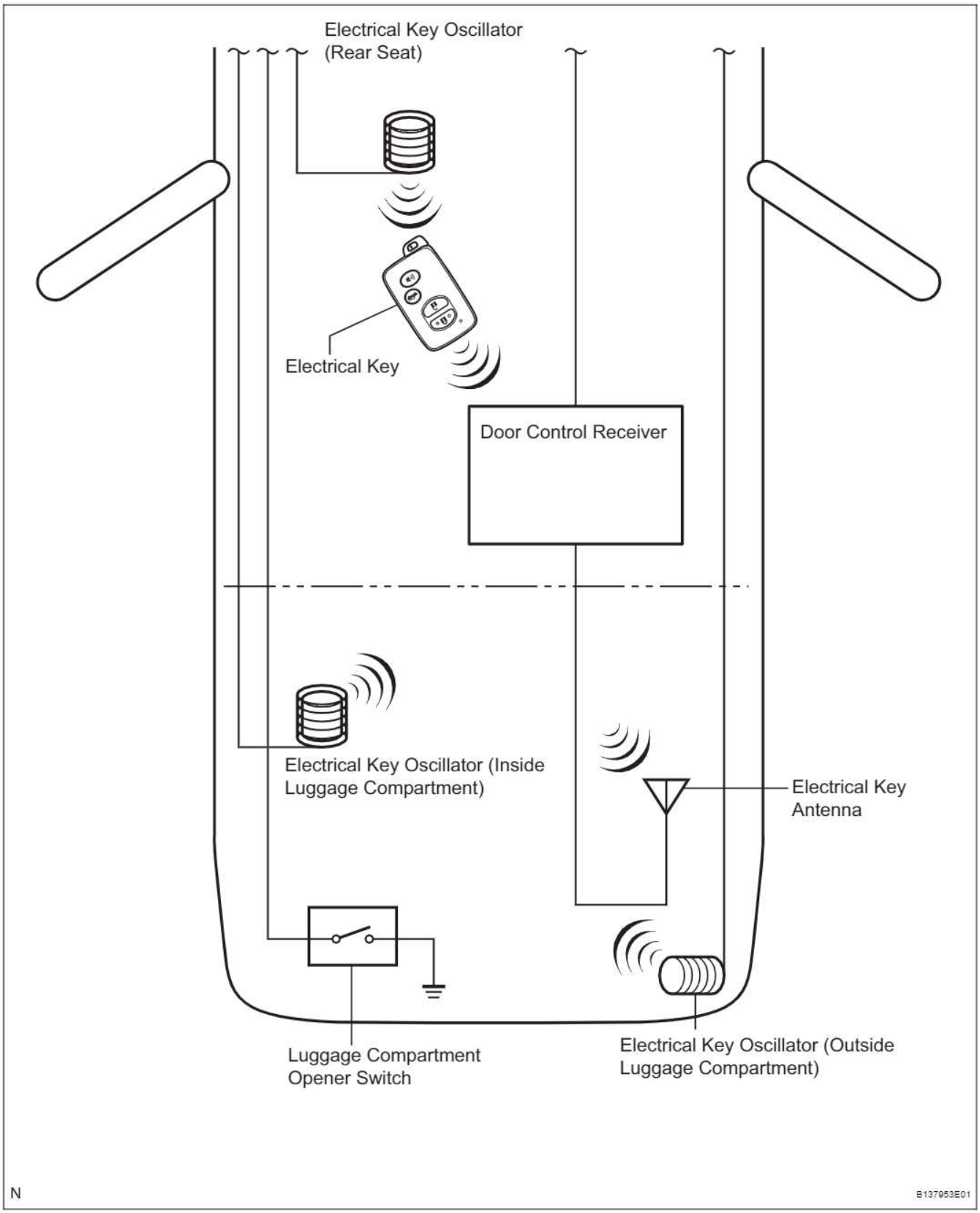
- DOOR NO. 2 FUSE
- ECU-ACC FUSE
- ECU IG NO. 1 FUSE

H

B138029E01

SYSTEM DIAGRAM




Electrical Key Oscillator
(Rear Seat)
Electrical Key
Door Control Receiver
Electrical Key Oscillator (Inside
Luggage Compartment)
Electrical Key
Antenna
Luggage Compartment
Opener Switch
Electrical Key Oscillator (Outside
Luggage Compartment)
N
B137953E01

Transmitting ECU (Transmitter)	Receiving ECU	Signals	Communication method
Main body ECU	Certification ECU	Power switch signal	CAN
		Courtesy light switch signal	
		Door lock output signal	
		Luggage compartment door output request signal	
		Wireless door lock buzzer request signal	
		Door lock position switch signal	
		D/P door key operated switch signal	
		Luggage compartment door key operated switch signal	
Main body ECU	Combination meter	Wireless door lock buzzer request signal	CAN
Certification ECU	Main body ECU	Illumination light request signal	CAN
		Light answer back signal	
		Door lock/unlock request signal	
Certification ECU	Driver seat ECU	Memory call replay request signal	CAN
Certification ECU	Combination meter	Meter buzzer single-shot request signal	CAN
		Meter buzzer intermittence request signal	
		Meter buzzer continuation request signal	
		Door open display signal	
		Keyless warning signal	
		Low key battery warning signal	
		Shift position warning signal	
		Steering lock abnormal warning	
		Steering lock unlock warning	
Combination meter	Certification ECU/Main body ECU	Vehicle speed signal	CAN
ID code box	Certification ECU	Matching request random number signal	LIN
		EEP ROM access malfunction	
		Model code matching signal	
		Model code mismatching signal	
		HV control ECU code receiving status	
		Registered key number response signal	
		Diagnosis mode switching signal	
		Registered key number signal	
Certification ECU	ID code box	3 bit code request signal	LIN
		ID code matching result signal	
		Registered key number signal	
		Vehicle type handle signal	
Certification ECU	• ID code box • Steering lock ECU	L code registration mode signal	LIN
		Diagnosis mode request signal	
		DTC clear request signal	
		L code registration status signal	
Steering lock ECU	• Certification ECU • ID code box	Steering lock request signal	LIN
		Steering unlock signal	
		Steering lock confirmation signal	
		Steering unlock confirmation signal	
		Diagnosis response signal	
		Steering unlock drive relay signal	
		Steering lock drive relay signal	
		Steering lock motor operation signal	

Transmitting ECU (Transmitter)	Receiving ECU	Signals	Communication method
Main body ECU	Certification ECU	Shift position P signal	LIN
		HV control system on (READY) status signal	
		ACC relay operating status signal	
		IG relay operating status signal	
Main body ECU	Steering lock ECU	Steering lock relay power supply status signal	LIN
Steering lock ECU	• Certification ECU • Main body ECU	Steering lock catching malfunction signal	LIN
		Push button start malfunction signal	

SYSTEM DESCRIPTION

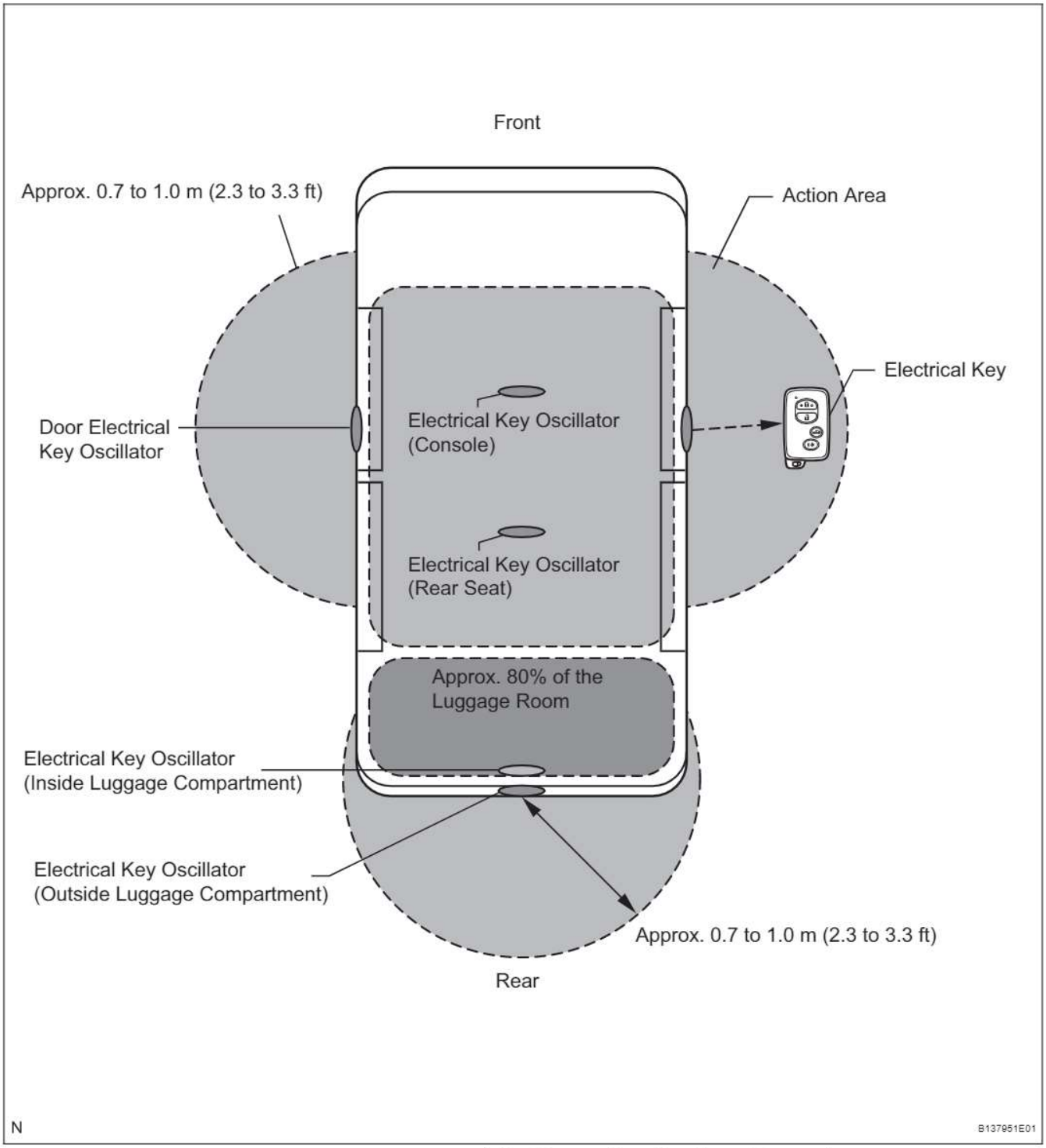
CAUTION:
If using a pacemaker, be sure to read the manual of the pacemaker before using the electrical key because the radio waves of the electrical key may affect the pacemaker.

1. SMART KEY SYSTEM DESCRIPTION

(a) In addition to conventional mechanical key and wireless door lock control functions, the smart key system enables door locking/unlocking, steering lock releasing, and luggage compartment door opening without operating the electrical key. The only requirement is that the electrical key is in the user's possession.

- This system is controlled by the certification ECU. When the certification ECU detects the presence of an electrical key in one of the detection areas, 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 6 oscillators (2 door oscillators, 2 luggage compartment oscillators, and 2 cabin oscillators).

2. DETECTION AREA



(a) Precautions for the entire system:
- Be sure to carry the electrical key during inspection of the smart key system.
- As weak radio waves are used to detect the electrical key, the electrical key detection area may decrease, or the electrical key may not be detected correctly in the following situations:
(a)The electrical key battery is depleted.

(b) Any facilities that generate strong radio waves, such as a TV tower, power plant, broadcast station, or gas station, are located near the inspection site.
(c) A wireless device, such as a cellular phone, is carried with the electrical key.
(d) The electrical key is in contact with or covered with metal.
(e) Another wireless door lock control function is operated near the vehicle.
(f) The electrical key is located near a device that generates high voltage or noise.

- The electrical key may be difficult to operate for a reason relating to the vehicle body shape.
- The electrical key may not be detected correctly if it is around the vehicle's windows, the door handle, or the center of the bumper even when it is in the detection area outside the vehicle.
- The electrical key may not be detected correctly if it is on the instrument panel, auxiliary box of the driver's side instrument panel, rear package tray, floor, or in the glove box even when it is in the detection area inside the vehicle.
- The HV control system cannot be on (READY) even when the electrical key is in the detection area inside the luggage compartment.
- The electrical key may not operate if the electrical key is not held properly.
- The smart key system does not operate in the following conditions:
  (a) The smart key system is canceled.
  (b) The electrical key battery is completely depleted (the indicator does not blink when pushing any of the buttons on the electrical key).

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3. FUNCTION OF MAIN COMPONENTS

Component	Function
Electrical Key	Consists of mechanical key, transmitter for wireless door lock control, and transceiver for smart key system
Certification ECU	Controls smart key system in accordance with signals from each oscillator, various switches, ECUs, and electrical key • Judges and certifies ID code from entry door control receiver • Transmits Power immobiliser unset signal to ID code box • Transmits steering unlock signals to steering lock ECU
Main Body ECU (Instrument Panel J/B)	Controls push button start function in accordance with signals from various switches, ECUs, and combination meter • Transmits electrical key verification request signal to certification ECU in accordance with power switch signal, and turns relays ON and OFF • Receives request signal from certification ECU and actuates door lock motor to unlock or lock door • Transmits each door condition signal to certification ECU
ID Code ECU	Receives steering unlock or Power immobiliser unset signals from certification ECU, certifies them, and transmits unset signals to steering lock ECU or HV control ECU
Outside Door Handle (driver and front passenger doors) (touch sensor)	Detects that person touches inside of outside handle

Component	Function
Outside Door Handle (driver and front passenger doors) (lock switch)	Transmits door lock request signals to certification ECU
Door Electrical Key Oscillator (driver and passenger doors)	Receives request signal from certification ECU, and forms detection area around front door
Indoor Electrical Key Oscillator (console and rear seat)	Receives request signal from certification ECU, and forms detection area in vehicle interior
Luggage Compartment Electrical Key Oscillator (inner)	Receives request signal from certification ECU, and forms detection area in luggage compartment
Luggage Compartment Electrical Key Oscillator (outer)	Receives request signal from certification ECU, and forms detection area around luggage compartment door
Door Control Receiver	• Receives ID code from electrical key in detection area and transmits it to certification ECU • Receives ID code from electrical key in luggage compartment and transmits it to certification ECU
Electrical Key Antenna	Receives ID code from electrical key and transmits it to entry door control receiver
Luggage Compartment Opener Switch	Transmits luggage compartment door open request signal to certification ECU
Stop Light Switch	Outputs state of brake pedal to main body ECU
Wireless Door Lock Buzzer • Combination Meter – Multi-information Display – Buzzer	When certification ECU detects human errors such as those below, it warns driver by sounding wireless door lock buzzer, displaying information and sounding a buzzer in combination meter in accordance with request signal from ECU Example: • Electrical key is taken out of vehicle • Driver leaves vehicle while Power is still running • Driver leaves vehicle while shift lever is in any position other than P

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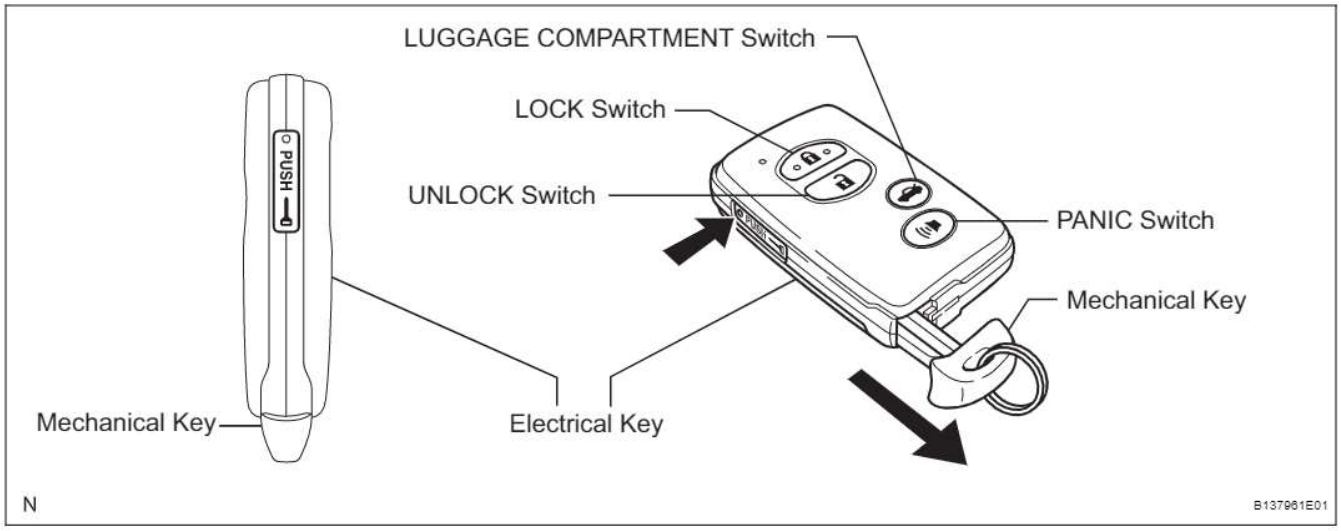
4. CONSTRUCTION AND OPERATION

(a) Electrical Key

The electrical key consists of a mechanical key, a transmitter for the wireless door lock control, and a transceiver for the smart key system.

- The transceiver for the smart key system receives signals from the oscillators and sends the ID code to the tuner.
- The transmitter for the wireless door lock control has a LOCK switch, UNLOCK switch, LUGGAGE COMPARTMENT switch, and PANIC switch.
- This mechanical key works for the driver door, luggage compartment door, and glove box, but cannot start the HV control system.

A total of 7 electrical keys can be registered.



(b) Oscillator (front door oscillator, front and rear oscillator, luggage compartment inner oscillator, luggage compartment outer oscillator)
Each oscillator transmits the request signal received from the certification ECU, and forms an electrical key detection area to detect the presence of an electrical key. The detection area formed by front 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 front door or the center of the rear bumper.

- The detection area of front door oscillator is formed by transmitting a request signal every 0.25 seconds while the power switch is off and each door is locked. In this way, it detects the proximity of an electrical key. During entry lock, the detection area is formed with the lock switch on.
- The detection area of the luggage compartment outer oscillator is formed when the power luggage door open switch is on.
- The detection area of the indoor oscillator (front and rear) is formed when the driver door is opened or closed entry luggage compartment open, electrical key lock-in prevention, while HV control system is on (READY), when a warning is activated, or when the lock switch is on.
- The detection area of the luggage compartment inner oscillator is formed when the luggage compartment door is closed, entry luggage compartment open, electrical key lock-in prevention the luggage compartment open switch is pressed.

5. ENTRY FUNCTION OPERATION

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

Function	Outline
Mechanical Key	Operation is same as conventional mechanical key.
Wireless Door Lock Control	This function remotely locks and unlocks all doors or luggage compartment. Operation is same as wireless door lock control system. However, receiver in certification ECU uses entry door control receiver to control locking and unlocking.
Entry Illumination	When person carrying electrical key enters detection area, door will enter unlock standby mode and front map light will illuminate.
Entry Unlock	When electrical key is located in detection area of door oscillator, door will unlock by touching inside of outside door handle.
Entry Unlock Mode Switching (See page DL-118)	Changes doors that can be unlocked with entry unlock function between 2 modes. • Driver door mode • All door mode
Entry Lock	When electrical key is located in detection area of door oscillator and power switch is off, door can be locked by pressing lock switch on outside door handle.
Entry Luggage Compartment Open	When electrical key is in detection area of luggage compartment outer oscillator, luggage compartment opens by pressing luggage compartment open switch.
Window Close	With the electrical key in the actuation area of any door oscillators, all open windows are closed when the lock switch on the door outside handle is pressed for 3 seconds or more.
Electrical Key Lock-in Prevention	• Prevents confinement of electrical key if door is locked using outside door handle while electrical key is still inside vehicle. • If all doors are locked and luggage compartment door is closed while electrical key is still in luggage compartment, warning buzzer sounds. If luggage compartment open switch is operated, luggage compartment door can be opened.
Warning	When any of situations below occur, smart key system causes certification ECU to sound buzzer in combination meter and wireless door lock buzzer, and display information in order to alert driver. • Exit warning if shift lever position is not P and power source mode is not off. • Exit warning if shift lever position is P and power source mode is not off. • Warning if occupant leaves with electrical key. • Warning if power switch is operated while electrical key is outside actuation area. • Warning if entry lock is operated while electrical key is inside cabin. • Warning if electrical key battery is weak. • The electrical key is left in the vehicle. • A door is ajar. • The electrical key is left in the luggage compartment. • Steering lock does not release. • The steering lock mechanism is malfunctioning. • The main body ECU is malfunctioning. • An Power start method is displayed.
Battery Saving	If electrical key is constantly located within actuation area of door oscillator, system maintains periodic communication with electrical key. Therefore, if vehicle remains parked in that state for a long time, electrical key battery and vehicle battery could be drained.
Key Cancel (See page DL-118)	Following electrical key functions can be cancelled by performing certain operations: • Entry Unlock/Lock • Entry Luggage Compartment Open • Electrical key Lock-in Prevention • Warning
Electrical Key Code Registration	The total number of electrical keys that can be registered is seven. Enables the registration (writing and storing) of transmitter recognition codes in the EEPROM that is contained in the certification ECU.

6. WIRELESS DOOR LOCK AND UNLOCK AND LUGGAGE COMPARTMENT OPEN FUNCTION

Push the LOCK/UNLOCK/PANIC/LUGGAGE COMPARTMENT switch on the electrical key to operate each function. For details, (See page DL-68).

7. ENTRY UNLOCK FUNCTION

(a) The detection area is formed by communication between a door oscillator and door control receiver when the door is locked in order to detect access of the person carrying the electrical key.

(b) When the person carrying the electrical key enters the detection area around the vehicle, the matching of the ID codes for a door oscillator and electrical 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 sensing. If the outside handle is held (the back side of the handle is touched), the door unlock operation will be performed. At this time, the hazard warning light blinks twice and the wireless door lock buzzer sounds twice.

(d) If any of the doors are not opened after a door unlock operation, all doors will automatically lock after 60 seconds.

8. ENTRY LOCK FUNCTION

(a) After leaving the vehicle carrying the electrical key, push the lock switch on the outside handle when all the doors are closed.

(b) The certification ECU determines whether the electrical key is located inside or outside of the cabin based on the information from a door oscillator and room oscillator. Then matching of the ID codes is performed.

(c) When the matching result shows that the ID codes of the electrical key and indoor antenna do not match and the ID codes of the electrical key and door oscillator match, the door lock function will operate. At this time, the hazard warning lights blink once and the wireless door lock buzzer sounds once.

(d) If the electrical key is located inside of the cabin, the door lock function will not operate and the alarm buzzer (beep sound) will sound for 2 seconds.

9. ENTRY LUGGAGE COMPARTMENT OPEN FUNCTION

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

10. PREVENTION OF ELECTRICAL 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 electrical key in the cabin, the system determines that the electrical key is located in the cabin and unlocks the door.

(b) If the luggage compartment is closed with the electrical 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 electrical key confinement in the vehicle.

11. ENTRY ILLUMINATION FUNCTION

When a person carrying the electrical key enters the detection area, the door will enter unlock standby mode and the front map light will illuminate.

HINT:

The entry illumination function operates when the electrical key enters the vehicle exterior detection area from out of the detection area. If the electrical key remains in the detection area for 3 seconds or more, the illumination function does not operate.

12. WARNING FUNCTION

(a) General

When any of the situations below occur, the smart key system causes the certification ECU to sound the buzzer in the combination meter and the wireless door lock buzzer, and illuminate the combination meter's multi-information display in order to alert the driver.

Warning Function Operation Condition	Situation
Exit warning if shift lever position is not P and power source mode is not off.	A
Exit warning if shift lever position is P and power source mode is not off.	B
Warning if occupant leaves with electrical key.	C
Warning if power switch is operated while electrical key is outside detection area.	D
Warning if entry lock is operated while electrical key is inside cabin.	E
Warning if electrical key battery is weak.	F
The electrical key is left in the vehicle.	G
A door is ajar.	H
The electrical key is left in the luggage compartment.	I
Steering lock does not release.	J
The steering lock mechanism is malfunctioning.	K
The main body ECU is malfunctioning.	L
An Power start method is displayed.	M

(b) Situation A

There are 2 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 electrical 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 theft, vehicle roll-away
Warning Condition	Certification ECU gives warning when all following conditions are satisfied: • Shift lever position is not P • Power switch is not off • Driver side door is opened • Vehicle speed is 5 km/h (3.1 mph)
Combination Meter • Buzzer	Warning: Continuous sound Warning is stopped when one of following conditions is met: • Power switch is off • Shift lever position is P • Driver side door is opened • Vehicle speed is above 5 km/h (3.1 mph)
Combination Meter • Multi-information Display	Warning: Information below is displayed alternately on combination meter: • "SHIFT TO P RANGE" Warning is stopped when one of following conditions is met: • Power switch is off • Shift lever position is P • Driver side door is opened • Vehicle speed is above 5 km/h (3.1 mph)
Wireless Door Lock Buzzer	-

- Pattern 2

Possible Effects without Warning	Sudden vehicle start, vehicle theft, vehicle roll-away
Warning Condition	Certification ECU gives warning when all following conditions are satisfied: • Shift lever position is not P • Power switch is not off • Driver side door is opened and closed • Vehicle speed is 0 km/h (0 mph) • Electrical key is not in cabin or luggage compartment
Combination Meter • Buzzer	Warning: Continuous sound Warning is stopped when one of following conditions is met: • Power switch is off • Shift lever position is P • Electrical key is in cabin or luggage compartment • Vehicle speed is above 0 km/h (0 mph)
Combination Meter • Multi-information Display	Warning: Information below is displayed alternately on combination meter: • "SHIFT TO P RANGE" • "KEY IS NOT DETECTED" "Key is not detected" warning is stopped when either of following conditions is met: • Power switch is off • Electrical key is in cabin "Shift to P range" warning is stopped when one or following conditions is met: • Power switch is off • Vehicle speed is above 0 km/h (0 mph) • Shift lever position is P

Possible Effects without Warning	Sudden vehicle start, vehicle theft, vehicle roll-away
Wireless Door Lock Buzzer	Warning: Continuous sound Warning is stopped when one of following conditions is met: • Power switch is off • Shift lever position is P • Electrical key is in cabin or luggage compartment • Vehicle speed is above 0 km/h (0 mph)

(c) Situation B

There are 2 patterns for situation B.

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

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

Pattern 2: Then the user tries 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, Power cannot be restarted
Warning Condition	Certification ECU gives warning when all following conditions are satisfied: • Shift lever position is P • Power switch is not off • Driver side door is opened and closed • Electrical key is not in cabin or luggage compartment
Combination Meter • Buzzer	Warning: Sounds once
Combination Meter • Multi-information Display	Warning: Information below is displayed on combination meter: • "KEY IS NOT DETECTED" Warning is stopped when either of following conditions is met: • Power switch is off • Electrical key is in cabin or luggage compartment
Wireless Door Lock Buzzer	Warning: Sounds 3 times Warning is stopped when either of following conditions is met: • Power switch is off • Electrical key is in cabin or luggage compartment

• Pattern 2

Possible Effects without Warning	Vehicle theft
Warning Condition	Certification ECU gives warning when all following conditions are satisfied: • Shift lever position is P • Power switch is not off • All doors are closed • Lock switch is "ON" • Electrical key is not in cabin or luggage compartment
Combination Meter • Buzzer	-
Combination Meter • Multi-information Display	-
Wireless Door Lock Buzzer	Warning: Sounds for 2 seconds

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

Possible Effects without Warning	Power cannot be restarted
Warning Condition	Certification ECU gives warning when all following conditions are satisfied: • Power switch is not off • Door other than driver side door is opened and closed • Vehicle speed is 0 km/h (0 mph) • Electrical key is not in cabin or luggage compartment
Combination Meter • Buzzer	Warning: Sounds once
Combination Meter • Multi-information Display	Warning: Information below is displayed on combination meter: • "KEY IS NOT DETECTED" Warning is stopped when one of following conditions is met: • Power switch is off • Vehicle speed is above 0 km/h (0 mph) • Electrical key is in cabin or luggage compartment
Wireless Door Lock Buzzer	Warning: Sounds 3 times Warning is stopped when one of following conditions is met: • Power switch is off • Vehicle speed is above 0 km/h (0 mph) • Electrical key is in cabin or luggage compartment

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

Possible Effects without Warning	Confuses the user
Warning Condition	Certification ECU gives warning when both following conditions are satisfied: • Power switch is not off • Electrical key is not in cabin
Combination Meter • Buzzer	Warning: Sounds once
Combination Meter • Multi-information Display	Warning: Information below is displayed on combination meter for 8 seconds (disappears after 8 seconds): • "KEY IS NOT DETECTED"
Wireless Door Lock Buzzer	-

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

Possible Effects without Warning	Vehicle theft
Warning Condition	Certification ECU gives warning when all following conditions are satisfied: • Power switch is off • All doors are closed • Lock switch is "ON" • Electrical key is in cabin or luggage compartment
Combination Meter • Buzzer	-
Combination Meter • Multi-information Display	-
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	Certification ECU gives warning when all following conditions are satisfied: • Power switch is turned off after being left on (IG) for over 20 minutes • Electrical key battery voltage is low • Electrical key is in cabin or luggage compartment
Combination Meter • Buzzer	Warning: Sounds once
Combination Meter • Multi-information Display	Information below is displayed on combination meter: • "LOW KEY BATTERY"
Wireless Door Lock Buzzer	-

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(h) Situation: G
There are two patterns for situation G:
Pattern 1: When the driver's door is open, the driver changes the power source mode to ACC and attempts to leave the vehicle.
Pattern 2: When the driver's door is open, the driver changes the power source mode from ON to OFF and attempts to leave the vehicle. In these situations, the following control is performed:
• Pattern 1. and Pattern 2.

Possible Effects without Warning	Vehicle theft
Warning Condition	The warning is activated when one of the following conditions is met: • Power switch is on (ACC) and the driver door is opened • Power switch is off, the steering is unlocked, and the driver door is opened
Combination Meter • Buzzer	Continues to sound at short and even intervals
Combination Meter • Multi-information Display	-
Wireless Door Lock Buzzer	-
Power Switch Indicator Light	-
Warning Stop Condition	Warning is stopped when one of the following conditions is met: • Power switch is not off • Driver side door is closed • Power switch is off and the steering is locked

(i) Situation: H
The lock switch on the door outside handle is pressed to perform entry lock with a door open.
In this situation, the following control is performed:

Possible Effects without Warning	Vehicle theft
Warning Condition	The warning is activated when all of the following conditions are met: • Power switch is off • Any doors are opened • Entry lock button on the outer door handle is operated
Combination Meter • Buzzer	-
Combination Meter • Multi-information Display	-
Wireless Door Lock Buzzer	Warning: Continuous sound
Power Switch Indicator Light	-

Possible Effects without Warning	Vehicle theft
Warning Stop Condition	Warning is stopped when one of the following conditions is met: • Power switch is off • All doors are closed • Wireless door lock remote function is unlocked • Entry unlock is operated • 10 seconds have elapsed since the wireless door lock buzzer was activated

(j) Situation: I
The luggage compartment door is closed with the electrical key left in the luggage compartment.
In this situation, the following control is performed:

Possible Effects without Warning	Key Confinement
Warning Condition	The warning is activated when all of the following conditions are met: • Vehicle speed is 5 mph (3.1 km/h) • All doors are closed • Entry luggage compartment open function is available
Combination Meter • Buzzer	-
Combination Meter • Multi-information Display	-
Wireless Door Lock Buzzer	Sounds for 2 seconds
Warning Stop Condition	The luggage compartment is opened using the entry luggage compartment open function and the electrical key is removed from the luggage compartment

(k) Situation: J
Steering lock cannot be released. In this situation, the following control is performed.:

Possible Effects without Warning	Steering usability function
Warning Condition	The steering lock cannot be released, thus the HV control system is prevented from on (READY)
Combination Meter • Buzzer	-
Combination Meter • Multi-information Display	Warning Information below is displayed alternately on combination meter: Displayed for 15 seconds (and then automatically turned off) "S/T IS NOT UNLOCED"
Wireless Door Lock Buzzer	-
Power Switch Indicator Light	The green indicator blinks at 1-second intervals (goes off automatically in 15 seconds)
Warning Stop Condition	The power switch is pressed while the steering wheel is turned left and right, and the steering lock successfully disengages

(l) Situation: K
A malfunction of the steering lock ECU is detected.
In this situation, the following control is performed:

Possible Effects without Warning	Malfunction detection
Warning Condition	A malfunction of the steering lock ECU is detected
Combination Meter • Buzzer	-
Combination Meter • Multi-information Display	Warning: Information below is displayed alternately on combination meter: "CHECK S/T OFF"
Combination Meter • Master Warning Light	Flash
Wireless Door Lock Buzzer	-
Power Switch Indicator Light	The amber indicator blinks at 2-second intervals

Possible Effects without Warning	Malfunction detection
Warning Stop Condition	The steering lock ECU returns to normal

(m) Situation: L
A malfunction of the main body ECU is detected.
In this situation, the following control is performed:

Possible Effects without Warning	Malfunction detection
Warning Condition	A malfunction in the main body ECU is detected
Combination Meter • Buzzer	-
Combination Meter • Multi-information Display	-
Combination Meter • Master Warning Light	-
Wireless Door Lock Buzzer	-
Power Switch Indicator Light	The amber indicator blinks at 2-second intervals
Warning Stop Condition	The main body ECU returns to normal

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(n) Situation: M
A warning message appears on the meter when the driver does not follow the proper procedure to start the vehicle.
In this situation, the following control is performed:

Possible Effects without Warning	Usability function
Warning Condition	The warning is activated when all of the following conditions are met: • Power source is in a mode other than "ON" • Any doors are closed and opened • The power source is changed from OFF to ACC more than once with the Power off and brake pedal not depressed
Combination Meter • Buzzer	-
Combination Meter • Multi-information Display	Warning • Information below is displayed alternately on combination meter: "WHEN STARTING THE Power DEPRESS THE BRAKE PEDAL"
Combination Meter • Master Warning Light	-
Wireless Door Lock Buzzer	-
Power Switch Indicator Light	-
Warning Stop Condition	The warning is stopped when one of the following conditions is met: • 10 seconds have elapsed since a warning message was displayed • The Power switch is pushed with the brake pedal depressed

13. BATTERY SAVING

(a) Vehicle Battery Saving Function
In the smart key system, signals are emitted outside of the vehicle at a prescribed interval (0.25 seconds) 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 carried out:

Condition	Control
Both conditions below are met for 5 days: • Electrical key is not in detection area • Touch sensor or lock switch operation is not performed	Signal transmission interval is extended from 0.25 to 0.75 seconds
Both conditions below are met for 14 days: • Electrical key is not in detection area • Touch sensor or lock switch operation is not performed	Automatically deactivates the smart key system

Reinstatement Conditions

- A wireless door lock control signal (lock, unlock) is input and the ID code matches.
- A user carries the electrical key and pushes a lock switch on an outside door handle.
- A door is locked or unlocked by the mechanical key.

(b) Electrical Key Battery and Vehicle Battery Saving Function

In the smart key system, if the electrical key is constantly located within the vehicle exterior detection area of the doors, the system maintains periodic communication with the electrical key. Therefore, if the vehicle remains parked in that state for a long time, the electrical 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 control signal (lock, unlock) is input and the ID code matches.
- A user carries the electrical key and pushes a lock switch on an outside door handle.
- A door is locked or unlocked by the mechanical key.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedures to troubleshoot the smart key system.
- The intelligent tester can be used in steps 4, 5 and 7.
- When troubleshooting the smart key system using the intelligent tester with the power 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.).

DL

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	CUSTOMER PROBLEM ANALYSIS CHECK

HINT:

- In troubleshooting, confirm that the problem symptoms have been accurately identified. Preconceptions should be discarded in order to make an accurate judgment. To clearly understand what the problem symptoms are, it is extremely important to ask the customer about the problem and the conditions at the time the malfunction occurred.
- Gather as much information as possible for reference. Past problems that seem unrelated may also help in some cases.
- The following 5 items are important points in the problem analysis:

What	Vehicle model, system name
When	Date, time, occurrence frequency
Where	Road conditions
Under what conditions?	Running conditions, driving conditions, weather conditions
How did it happen?	Problem symptoms

NEXT

3	INSPECT BATTERY VOLTAGE

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding to the next step.

NEXT

4 **INSPECT COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM**

(a) Use the intelligent tester to check if the CAN Communication System is functioning normally (See page CA-7).

Result

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

B → **GO TO CAN COMMUNICATION SYSTEM**

A

5 **CHECK FOR DTC**

(a) Check for DTCs and note any codes that are output (See page DL-130).
(b) Delete the DTCs.
(c) Recheck for DTCs.

Result

Result	Proceed to
DTC does not reoccur	A
DTC reoccurs	B

B → **GO TO DIAGNOSTIC TROUBLE CODE CHART**

A

6 **PROBLEM SYMPTOMS TABLE**

NEXT

7 **OVERALL ANALYSIS AND TROUBLESHOOTING**

(a) On-vehicle inspection (See page DL-133)
(b) DATA LIST/ACTIVE TEST (See page DL-130)
(c) Terminals of ECU (See page DL-124)

NEXT

8 **REPAIR OR REPLACEMENT**

NEXT

9	CONFIRMATION TEST

NEXT

END

CUSTOMIZE PARAMETERS

1. CUSTOMIZING FUNCTION WITH INTELLIGENT TESTER

HINT:

The items in the table below can be customized.

NOTICE:

- **When the customer requests a change in a function, first make sure that the function can be customized.**
- **Be sure to make a note of the current setting before customizing.**
- **When troubleshooting a function, first make sure that the function is set to the default setting.**

SMART:

Display (Item)	Default	Contents	Setting
PARK WAIT TIME (Wait time to permit opening door after locking)	2.5s	Function that sets waiting time to permit opening door after door is locked with entry lock function.	0.5s / 1.5s / 2.5s / 5.0s
SMART UNLOCK	D_DOOR	Function that switches the entry unlock detection area.	ALL / D_DOOR
IGNITION AREA (SMART ignition available area)	ALL	Function to choose the available area for electrical key to start HV control system and cancel the steering lock.	FRONT / ALL
SMART TRUNK (Luggage compartment opening operation)	ON	Function to open a luggage compartment when the driver has the electrical key and presses the luggage open button.	ON / OFF

WIRELESS DOOR LOCK:

Display (Item)	Default	Contents	Setting
ALARM FUNCTION (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

WARNING:

Display (Item)	Default	Contents	Setting
KEY LOW-BATT WRN	ON	Function to set a warning function for the time when a key battery becomes weak.	ON / OFF

2. CUSTOMIZING FUNCTION WITHOUT INTELLIGENT TESTER (Entry Unlock Mode Switching Function)

(a) To change the vehicle to entry unlock mode switching function, make sure the vehicle power is off and simultaneously press and hold the electrical key's LOCK switch and another electrical key switch for 4.5 seconds.

When the switches are pressed and held for 4.5 seconds, the entry door unlock mode changes in the following order: driver door mode, all door mode.

NOTICE:

After pressing and holding the switches for 4.5 seconds, wait 4.5 seconds before performing the same procedure again.

- Driver door unlock mode:
  When the driver door's touch sensor is touched, only the driver door unlocks. When another touch sensor is touched, all doors unlock.

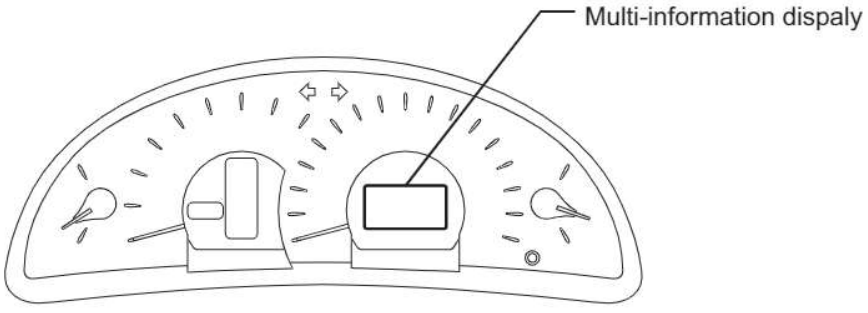
- All door unlock mode:
  When the touch sensor is touched, all doors unlock.

(b) The certification ECU receives this signal from the door control receiver and changes the smart key system to the entry unlock mode.

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

DL

Mode	Wireless Door Lock Buzzer	Combination Meter		
		Multi-information Display		Buzzer
Driver Door (Default)	ON / OFF  Sounds 3 times	 Displayed for 5 sec.	Passenger, rear LH and RH door “open” indication	Sounds once
All Doors (Customized)	ON / OFF  Sounds 2 times	 Displayed for 5 sec.	All door “open” indication	Sounds once



N B137954E01

HINT:
The function only changes the entry unlock mode of the smart key system. It does not switch the unlocking of the wireless door lock control.

3. CUSTOMIZING FUNCTION WITHOUT INTELLIGENT TESTER (Electrical Key Cancel)

The electrical key cancel operation disables the following functions:

- Entry Ignition (HV control system is on (READY))
- Entry Unlock/Lock
- Entry Luggage Compartment Open
- Electrical Key Lock-in Prevention
- Warning
- Memory Call

The operation procedures are as follows:

Precondition:

Power switch off, driver side door closed and unlocked.

(a) Unlock the driver side door once with the UNLOCK switch of the electrical key.

(b) Open the driver door within 5 seconds.

(c) Unlock the driver side door twice with the UNLOCK switch of the electrical key within 5 seconds.

(d) Repeat open → close twice for the driver door within 30 seconds, and open again.
(Driver door: Open → Close → Open → Close → Open)

(e) Unlock the driver side door twice with the UNLOCK switch of the electrical key within 5 seconds.

(f) Repeat open → close once for the driver door within 30 seconds, and open again.
(Driver door: Open → Close → Open)

(g) Close the driver door within 5 seconds.
When electrical key cancel is activated, the wireless door lock buzzer sounds twice.
To return to the original condition, perform the procedures again. When the original condition is returned, the wireless door lock buzzer sounds once.

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of the problem symptoms. The potential causes of the symptoms are listed in order of probability in the "Suspected area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

SMART KEY SYSTEM:

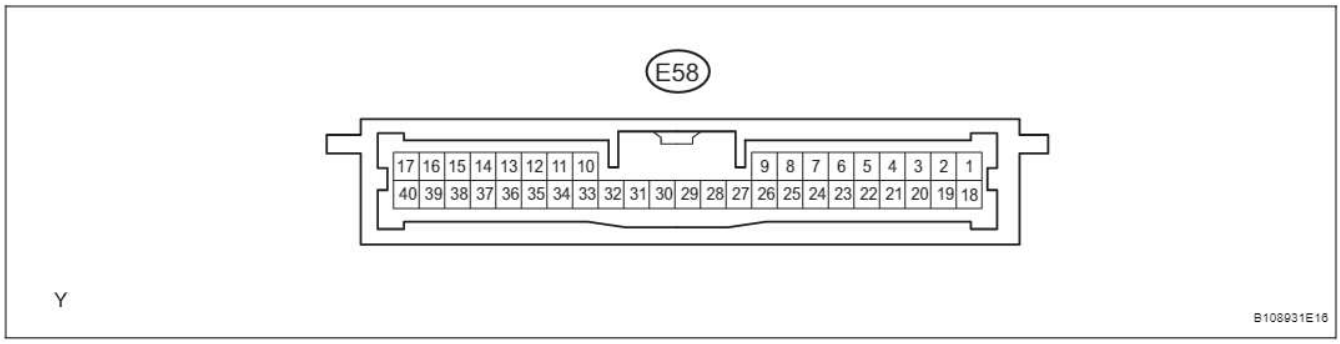
Symptom	Suspected Area	See page
Entry lock/unlock does not operate.	1. Check for DTCs in the smart key system (Starting function).	ST-23
	2. Refer to PROBLEM SYMPTOMS TABLE of the power door lock control system ("All doors cannot be locked/unlocked simultaneously by neither door control switch nor door key cylinder").	DL-11
	3. Courtesy light switch circuit	LI-41
	4. Lock position switch circuit	-
	- Driver door	DL-19
	- Front passenger door	DL-22
	- Rear passenger door LH	DL-25
	- Rear passenger door RH	DL-28
	5. Entry lock switch circuit	DL-147
	6. Touch sensor circuit	DL-151
	7. Antenna circuit	DL-154
	8. Refer to "ID code matching inside the cabin cannot be performed".	-
	9. Door oscillator circuit	DL-142
	10. Replace the main body ECU.	-
	11. Replace the certification ECU.	-
Luggage compartment does not open (when the electrical key is outside the vehicle).	1. Check for DTCs in the smart key system (Starting function).	ST-23
	2. Check if any function is cancelled due to customization.	DL-118
	3. Operate the luggage compartment opener switch on the electrical key to check the wireless function.	DL-68
	4. Refer to PROBLEM SYMPTOMS TABLE of the wireless door lock control system ("The wireless door lock control system does not operate").	DL-71
	5. Check operation of the cabin oscillator in active test.	DL-130
	6. Luggage oscillator circuit	DL-156
	7. Luggage compartment opener switch circuit	DL-162
	8. Replace the main body ECU.	-
	9. Replace the certification ECU.	-
All entry function does not operate.	1. Registration of the key.	EI-9
	2. Certification ECU power source circuit	DL-164
	3. Replace certification ECU.	-

Symptom	Suspected Area	See page
Function to prevent electrical key confinement in the luggage compartment does not operate. (The luggage compartment does not open.)	1. Check for DTCs in the smart key system (Starting function).	ST-23
	2. Power door lock control system	DL-11
	3. Courtesy light switch circuit	LI-41
	4. Lock position switch circuit	-
	- Driver door	DL-19
	- Front passenger door	DL-22
	- Rear passenger door LH	DL-25
	- Rear passenger door RH	DL-28
	5. Check if any function is not cancelled due to customization.	DL-118
	6. Operate the LOCK/UNLOCK switch on the key to check the wireless function.	DL-68
	7. Refer to PROBLEM SYMPTOMS TABLE of the wireless door lock control system ("The wireless door lock control system does not operate").	DL-71
	8. Check operation of the cabin oscillator in active test.	DL-130
	9. Luggage oscillator circuit	DL-156
	10. Replace the main body ECU.	-
	11. Replace the certification ECU.	-
Function to prevent electrical key confinement in the luggage compartment does not operate. (The alarm does not sound.)	1. Check if the function to prevent electrical key confinement in the luggage compartment operates.	DL-133
	2. Check if answer back is performed when the wireless door lock is operated.	DL-68
	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 electrical key confinement in the luggage compartment operates.	DL-133
	2. Check that "WIRELESS BUZZER" and "HAZARD" in the ACTIVE TEST of the main body ECU are YES. (If it is NO, go to wireless door lock control system.)	DL-130
	3. Wireless door lock tuner circuit (DTC B1242)	DL-138
	4. Replace the certification ECU.	-
The inside alarm of the entry system does not sound.	1. Operate the LOCK/UNLOCK switch on the electrical key to check the wireless function.	DL-68
	2. Refer to PROBLEM SYMPTOMS TABLE of the wireless door lock control system ("Wireless door lock function").	DL-71
	3. Check if the electrical key reminder buzzer sounds.	DL-133
	4. Replace the certification ECU.	-
ID code matching inside the cabin cannot be performed.	1. Check if any function is cancelled due to customization.	DL-118
	2. Operate the LOCK/UNLOCK switch on the key to check the wireless function.	DL-68
	3. Refer to PROBLEM SYMPTOMS TABLE of the wireless door lock control system ("The wireless door lock control system does not operate").	DL-71
	4. Check the cabin oscillator operation in the active test.	DL-130
	5. Room oscillator circuit	DL-159
	6. Luggage oscillator circuit	DL-156
	7. Replace the certification ECU.	-

Symptom	Suspected Area	See page
ID code matching outside the cabin cannot be performed.	1. Check if any function is cancelled due to customization.	DL-118
	2. Operate the LOCK/UNLOCK switch on the electrical key to check the wireless function.	DL-68
	3. Refer to PROBLEM SYMPTOMS TABLE of the wireless door lock control system ("The wireless door lock control system does not operate").	DL-71
	4. Check operation of each door oscillator in active test.	DL-130
	5. Door oscillator circuit	DL-142
	6. Normal	-
Key reminder buzzer does not sound.	1. Perform ACTIVE TEST for the combination meter.	DL-130
	2. Check "COURTESY SW" in the DATA LIST of the door control system.	DL-17
	3. Check the key reminder buzzer when the power 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.	-
	5. Refer to PROBLEM SYMPTOMS TABLE of the steering lock system ("Steering wheel cannot be locked").	SR-10
	6. Check that the "LCK BAR STUCK" item in the DATA LIST of the certification ECU displays OK.	DL-130
	7. Replace the steering lock ECU.	-
	8. Replace the certification ECU.	-

TERMINALS OF ECU

1. CHECK CERTIFICATION ECU



(a) Disconnect the E58 ECU connector.
(b) Measure the voltage and resistance according to the value(s) in the table below.

DL

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
+B (E58-1) - Body ground	W - Body ground	+B power supply	Always	10 to 14 V
IG (E58-18) - Body ground	LG - Body ground	Ignition power supply	Power switch off	Below 1 V
IG (E58-18) - Body ground	LG - Body ground	Ignition power supply	Power switch on (IG)	10 to 14 V
E (E58-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
ACC (E58-19) - Body ground	L - Body ground	ACC power supply	Power switch off	Below 1 V
ACC (E58-19) - Body ground	L - Body ground	ACC power supply	Power switch on (ACC)	10 to 14 V
TSW1 (E58-3) - Body ground	GR - Body ground	Entry lock switch signal	Front lock switch LH not pushed	10 kΩ or higher
TSW1 (E58-3) - Body ground	GR - Body ground	Entry lock switch signal	Front lock switch LH pushed	Below 1 Ω
TSW2 (E58-4) - Body ground	L - Body ground	Entry lock switch signal	Front lock switch RH not pushed	10 kΩ or higher
TSW2 (E58-4) - Body ground	L - Body ground	Entry lock switch signal	Front lock switch RH pushed	Below 1 Ω
LIN (E58-10) - Body ground	O - Body ground	LIN line	Always	10 kΩ or higher
CANH (E58-27) - Body ground	B - Body ground	CAN line	Always	10 kΩ or higher
CANL (E58-28) - Body ground	W - Body ground	CAN line	Always	10 kΩ or higher
AGND (E58-40) - Body ground	G - Body ground	Ground	Always	Below 1 Ω
TSW5 (E58-7) - Body ground	G - Body ground	Luggage compartment opener switch signal	Opener switch OFF	10 kΩ or higher
TSW5 (E58-7) - Body ground	G - Body ground	Luggage compartment opener switch signal	Opener switch ON	Below 1 Ω

If the result is not as specified, the wire harness side may have a malfunction.
(c) Reconnect the E58 ECU connector.
(d) Measure the voltage according to the value(s) in the table below.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CLG1 (E58-33) - CG1B (E58-34)	LG - L	Door electrical key oscillator (front LH) sensor signal	All doors closed, all doors locked and power switch off	Alternating between 5 V and below 1 V
CLG1 (E58-33) - CG1B (E58-34)	LG - L	Door electrical key oscillator (front LH) sensor signal	Door unlocked or door open	Below 1 V
SEN1 (E58-22) - E (E58-17)	B - W-B	Touch sensor detection signal	Outside door handle touched	Below 1 V

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
SEN1 (E58-22) - E (E58-17)	B - W-B	Touch sensor detection signal	Outside door handle not touched	10 to 14 V
SEL1 (E58-5) - E (E58-17)	V - W-B	Touch sensor activation control signal	Move the key more than 5 m (16.4 ft) away from the front door LH	10 to 14 V
SEL1 (E58-5) - E (E58-17)	V - W-B	Touch sensor activation control signal	Bring key to the outside handle	Below 1 V
CLG2 (E58-35) - CG2B (E58-36)	GR - BR	Door electrical key oscillator (front RH) sensor signal	All doors closed, all doors locked and power switch off	Alternating between 5 V and below 1 V
CLG2 (E58-35) - CG2B (E58-36)	GR - BR	Door electrical key oscillator (front RH) sensor signal	Door unlocked or door open	Below 1 V
SEN2 (E58-23) - E (E58-17)	O - W-B	Touch sensor detection signal	Outside door handle touched	Below 1 V
SEN2 (E58-23) - E (E58-17)	O - W-B	Touch sensor detection signal	Outside door handle not touched	10 to 14 V
SEL2 (E58-6) - E (E58-17)	P - W-B	Touch sensor activation control signal	Move the key more than 5 m (16.4 ft) away from the front door RH	10 to 14 V
SEL2 (E58-6) - E (E58-17)	P - W-B	Touch sensor activation control signal	Bring key to the outside handle	Below 1 V
CLG5 (E58-11) - CG5B (E58-12)	R - W	Indoor electrical key oscillator (front) sensor signal	Within 30 seconds driver side door opened and closed, power switch off	Alternating between 5 V and below 1 V
CLG5 (E58-11) - CG5B (E58-12)	R - W	Indoor electrical key oscillator (front) sensor signal	Power switch on (IG)	Below 1 V
CLG6 (E58-13) - CG6B (E58-14)	Y - B	Indoor electrical key oscillator (rear) sensor signal	Within 30 seconds after driver side door opened and closed, power switch off	Alternating between 5 V and below 1 V
CLG6 (E58-13) - CG6B (E58-14)	Y - B	Indoor electrical key oscillator (rear) sensor signal	Power switch on (IG)	Below 1 V
CLG7 (E58-15) - CG7B (E58-16)	R - W	Luggage electrical key oscillator (inner) sensor signal	Luggage compartment door opening switch ON	Alternating between 5 V and below 1 V
CLG7 (E58-15) - CG7B (E58-16)	R - W	Luggage electrical key oscillator (inner) sensor signal	Luggage compartment door opening switch OFF	Below 1 V
CLG8 (E58-31) - CG8B (E58-32)	V - P	Luggage electrical key oscillator (outer) sensor signal	Luggage compartment door opening switch ON	Alternating between 5 V and below 1 V
CLG8 (E58-31) - CG8B (E58-32)	V - P	Luggage electrical key oscillator (outer) sensor signal	Luggage compartment door opening switch OFF	Below 1 V
RC0 (E58-29) - E (E58-17)	G - W-B	Entry door control receiver power source	Power switch off, all doors closed and electrical key switch on	4.5 to 5.5 V
RC0 (E58-29) - E (E58-17)	G - W-B	Entry door control receiver power source	Power switch off, all doors closed and electrical key switch off	Below 1 V
RSSI (E58-39) - E (E58-17)	R - W-B	Entry door control receiver electric wave existence signal	Power switch off, all doors closed, the electrical key is not in the action area	10 to 14 V
RSSI (E58-39) - E (E58-17)	R - W-B	Entry door control receiver electric wave existence signal	Power switch off, all doors closed, the electrical key is in the action area	Below 1 V

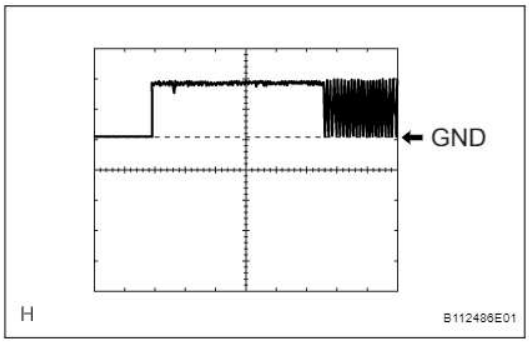
Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
RDA (E58-38) - E (E58-17)	Y - W-B	Entry door control receiver data input signal	Power switch off, all doors closed and electrical key switch off	10 to 14 V (Pulse generation)
RDA (E58-38) - E (E58-17)	Y - W-B	Entry door control receiver data input signal	Power switch off, all doors closed and electrical key switch on	Pulse generation
RDA (E58-38) - Body ground	Y - Body ground	Tuner input signal	Power switch off, all doors closed, the electrical key is not in the action area	10 to 14 V (Pulse generation)
RDA (E58-38) - Body ground	Y - Body ground	Tuner input signal	The electrical key is in the action area.	Pulse generation
ASEL (E58-37) - Body ground	V - Body ground	Cabin / luggage receiver select signal	Power switch off, luggage compartment door closed and the electrical key is in the luggage action area	4.6 to 6 V
ASEL (E58-37) - Body ground	V - Body ground	Cabin / luggage receiver select signal	Power switch off, luggage compartment door open	Below 1 V
VC5 (E58-30) - Body ground	R - Body ground	Transponder key amplifier power supply	Electrical key is not in the cabin.	Below 1 V
VC5 (E58-30) - Body ground	R - Body ground	Transponder key amplifier power supply	Have the electrical key outside the cabin and open the driver's door.	4.6 to 5.4 V
TXCT (E58-8) - Body ground	GR - Body ground	Transponder key amplifier output signal	Electrical key is not in the cabin.	Below 1 V
TXCT (E58-8) - Body ground	GR - Body ground	Transponder key amplifier output signal	• Have the electrical key outside the cabin and open the driver's door. • Hold the electrical key close to the power switch with the brake pedal depressed.	Pulse generation (see waveform 1)
CODE (E58-9) - Body ground	W - Body ground	Transponder key amplifier communication signal	Electrical key is not in the cabin.	Below 1 V
CODE (E58-9) - Body ground	W - Body ground	Transponder key amplifier communication signal	Have the electrical key outside the cabin and open the driver's door.	Pulse generation (see waveform 2)
BZR (E58-21) - Body ground	O - Body ground	Wireless door lock buzzer signal	Wireless door lock buzzer OFF	Below 1 V
BZR (E58-21) - Body ground	O - Body ground	Wireless door lock buzzer signal	Wireless door lock buzzer ON	Pulse generation

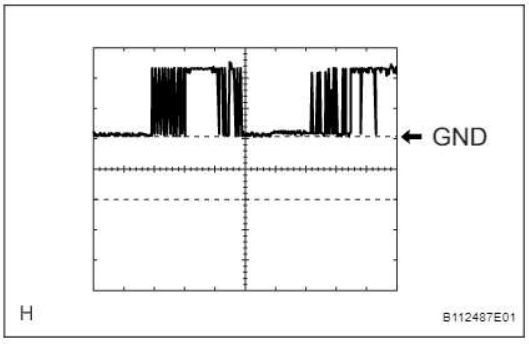
If the result is not as specified, the ECU may have a malfunction.

(e) Inspect using an oscilloscope.

Waveform 1 (Reference):

Terminal	TXCT - Body ground
Tool Setting	2 V/DIV., 10 ms./DIV.
Condition	Have the electrical key outside the cabin and open the driver's door.





(f) Inspect using an oscilloscope.

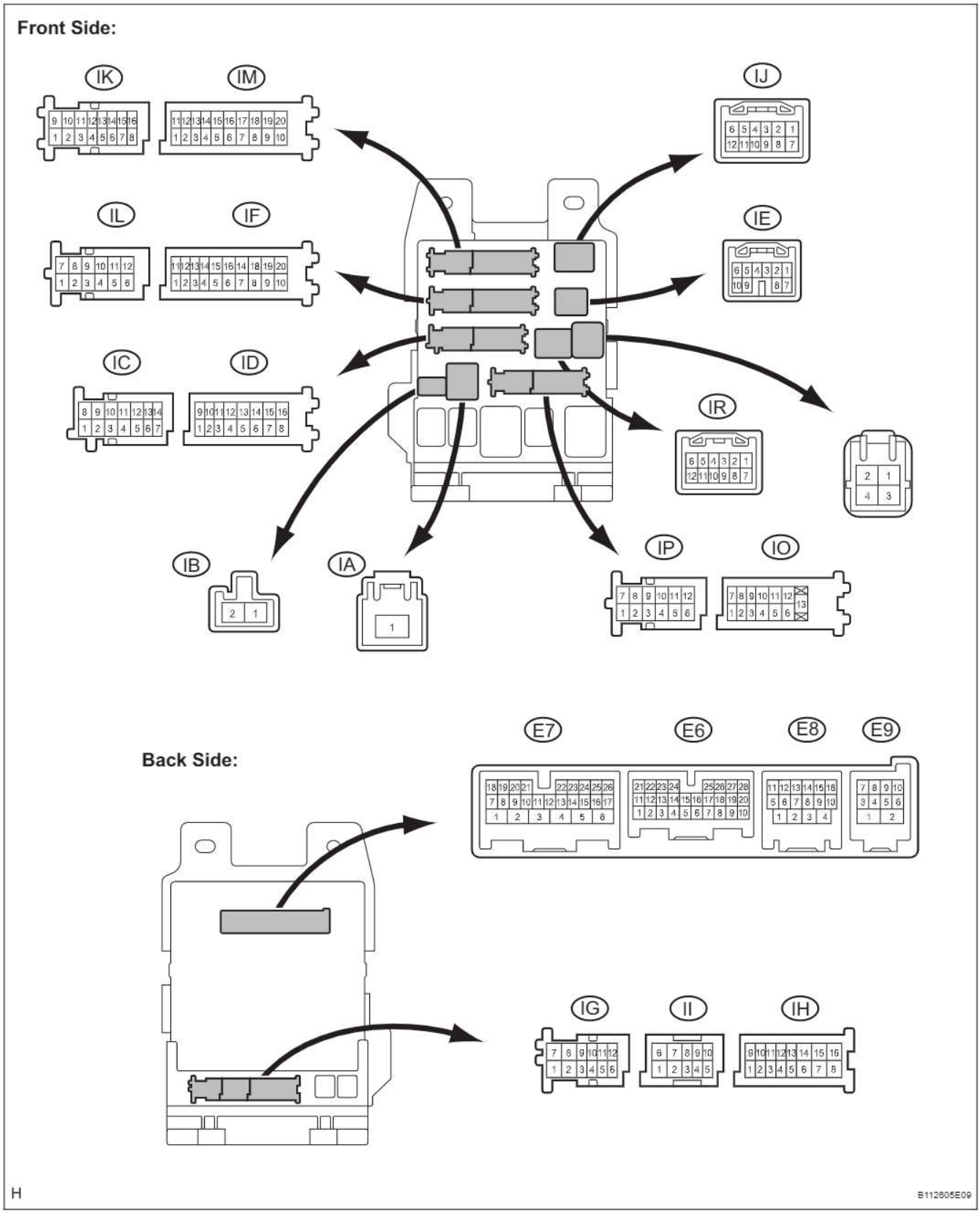
Waveform 2 (Reference):

Terminal	CODE - Body ground
Tool Setting	2 V/DIV., 20 ms./DIV.
Condition	• Have the electrical key outside the cabin and open the driver's door. • Hold the electrical key close to the power switch with the brake pedal depressed.

DL

2. MAIN BODY ECU (INSTRUMENT PANEL JUNCTION BLOCK)

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



Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CANN (E8-15) - Body ground	W - Body ground	CAN Line	Always	10 kΩ or higher
CANP (E8-16) - Body ground	B - Body ground	CAN Line	Always	10 kΩ or higher
STP (IL-7) - Body ground	L - Body ground	Stop light switch signal	Brake pedal depressed	10 to 14 V
STP (IL-7) - Body ground	L - Body ground	Stop light switch signal	Brake pedal depressed	Below 1 V

If the result is not as specified, the junction block may have a malfunction.

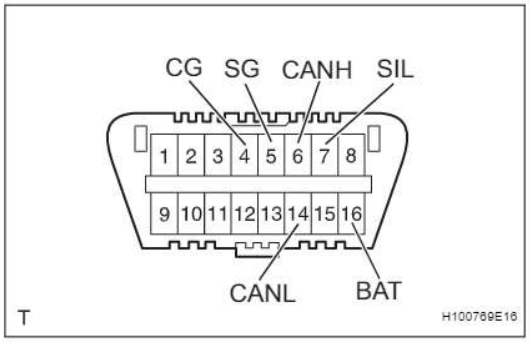
DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) Smart key system data and the Diagnostic Trouble Codes (DTCs) can be read from 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

The ECU uses ISO 15765-4 for communication. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



Symbols (Terminal 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)	CAN bus line	Power switch OFF*	54 to 69 Ω
CANH (6) - Battery positive (+)	HIGH-level CAN bus line	Power switch OFF*	6 kΩ or higher
CANH (6) - CG (4)	HIGH-level CAN bus line	Power switch OFF*	200 Ω or higher
CANL (14) - Battery positive (+)	LOW-level CAN bus line	Power switch OFF*	6 kΩ or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Power switch OFF*	200 Ω or higher

NOTICE:

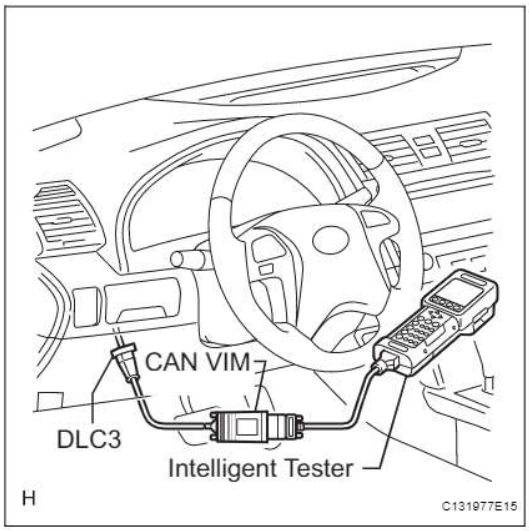
***: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the power switch, any other switches or the doors.**

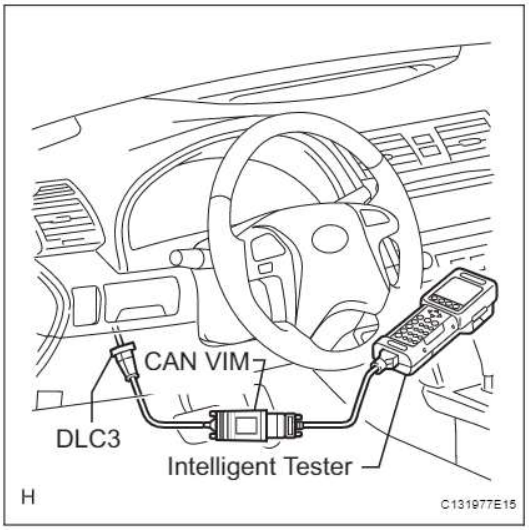
If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

HINT:

Connect the cable of the intelligent tester (with CAN VIM) to the DLC3, turn the power switch on (IG) and attempt to use the tester. If the display indicates that a communication error has occurred, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still not possible 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.





DTC CHECK / CLEAR

1. CHECK DTC

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch on (IG).
(c) Enter the following menu items: DIAGNOSIS / OBD/ MOBD / DTC INFO / CURRENT CODES.
(d) Read the DTC by following the prompts 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 power switch on (IG).
(c) Enter the following menu items: DIAGNOSIS / OBD/ MOBD / DTC INFO / CLEAR CODES.
(d) Erase the DTC by following the directions on the tester screen.

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

DATA LIST / ACTIVE TEST

1. READ 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 relay in troubleshooting is one way to save time.

(a) Connect the intelligent tester to the DLC3.

(b) Turn the power switch on (IG). When the intelligent tester cannot be turned on due to a malfunction or other problem, refer to "precautions when using the intelligent tester" (See page DL-89).

(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / DATA LIST.

(d) Read the DATA LIST according to the display on the tester.

DL

SMART KEY (Certification ECU):

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D TOUCH SENSOR	Driver side door touch sensor / ON or OFF	ON: Sensor is touched OFF: Sensor is not touched	-
P TOUCH SENSOR	Front passenger side door touch sensor / ON or OFF	ON: Sensor is touched OFF: Sensor is not touched	-
D TRIGGER SW	Driver side door lock switch / ON or OFF	ON: Switch is touched OFF: Switch is not touched	-
P TRIGGER SW	Front passenger side door lock switch / ON or OFF	ON: Switch is touched OFF: Switch is not touched	-
TR/B-DOOR UNLK	Luggage compartment door unlock switch / ON or OFF	ON: Switch is pushed OFF: Switch is not pushed	-
IG SW	Power switch / ON or OFF	ON: Power switch is on (IG) OFF: Power switch is off	-
ACC SW	Power switch / ON or OFF	ON: Power switch is on (ACC) OFF: Power switch is off	-
P/S 10-MIN	Power save counter - 10 minutes / Min: 0; Max: 255	Power save counter after door LOCK/UNLOCK-10 minutes	-
P/S 5-DAY	Power save counter - 5 days / Min: 0; Max: 255	Power save counter after door LOCK/UNLOCK-5 days	-
P/S 14-DAY	Power save counter - 14 days / Min: 0; Max: 255	Power save counter after door LOCK/UNLOCK-14 days	-
UNMATCH V-ID	Unmatched vehicle-ID / YES or NO	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	-
WRONG CODE	ID code difference / YES or NO	YES: Key ID code matches NO: Key ID code does not match	-
WRONG C CODE	Challenge code difference (Response) / YES or NO	YES: Key ID code matches NO: Key ID code does not match	-
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	-

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
DOOR UNLOCK MOD	Door unlock mode / ALL, D_DOOR	Mode status is displayed	-
FUNCTION CANCEL	Entry door lock function cancel / ON or OFF	Mode status is displayed	-
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	Transponder chip data / OK or NG	OK: Correct data sensing NG: Incorrect data sensing	-
STATUS	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	-
SERIAL NUMBER	Transponder chip data / OK or NG	OK: Data OK NG: Data error	-
FRAME	Transponder chip data / OK or NG	OK: Data OK NG: Data error	-
RESPONSE	Transponder chip data / OK or NG	OK: With no response NG: With a response	-
#CODE	Diagnostic trouble code / Min.: 0, Max.: 255	-	-
IGNITION AREA	Entry available area / FRONT or ALL	Customization status is displayed	-
PARK WAIT TIME	Parking wait time / 0.5s, 1.5s, 2.5s, 5.0s	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	Key low battery warning / ON or OFF	Customization status is displayed	-

MAIN BODY:

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
LUGG COURTESY SW	Luggage compartment door courtesy light switch signal / ON or OFF	ON: Luggage compartment door open OFF: Luggage compartment door closed	-
D DOR CTY SW	Driver side door courtesy light switch signal / ON or OFF	ON: Driver side door open OFF: Driver side door closed	-
P DOR CTY SW	Front passenger side door courtesy light switch signal / ON or OFF	ON: Front passenger side door open OFF: Front passenger side door closed	-
RL DOR CTY SW	Rear door courtesy light switch LH signal / ON or OFF	ON: Rear door open OFF: Rear door closed	-
RR DOR CTY SW	Rear door courtesy light switch RH signal / ON or OFF	ON: Rear door open OFF: Rear door closed	-
TRUNK KEY UNLOCK	Luggage compartment door lock/ unlock switch / ON or OFF	ON: Luggage compartment door lock switch is pushed OFF: Luggage compartment door lock switch is not pushed	-
IG SW	Power switch / ON or OFF	ON: Power switch is on (IG) OFF: Power switch is off	-

2. PERFORM 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 to the DLC3.
(b) Turn the power switch on (IG).
(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / ACTIVE TEST.
(d) Perform the ACTIVE TEST according to the display on the tester.

SMART KEY (Certification ECU):

Tester Display	Test Part	Control Range	Diagnostic Note
OVERHEAD TUNER	Door control receiver	ON / OFF	-
IN LUG TUNER	Luggage receiver	ON / OFF	-
D TRANSMITTER	Driver side electrical key oscillator	ON / OFF	-
P TRANSMITTER	Front passenger side electrical key oscillator	ON / OFF	-
FR TRANSMITTER	Indoor electrical key oscillator (console)	ON / OFF	-
RR TRANSMITTER	Indoor electrical key oscillator (rear seat)	ON / OFF	-
IN_BDR TRNSMTTR	Luggage compartment door inner oscillator	ON / OFF	-
BDOOR TRNSMTTR	Luggage compartment door outer oscillator	ON / OFF	-
D SELECT SIG	Driver side select	ON / OFF	-
P SELECT SIG	Front passenger side select	ON / OFF	-
WIRELESS BUZZER	Wireless buzzer	ON / OFF	-

MAIN BODY:

Tester Display	Test Part	Control Range	Diagnostic Note
TRNK/BDOR OPEN	Luggage compartment door open signal	ON / OFF	-
HAZARD	Hazard warning light	ON / OFF	-

DIAGNOSTIC TROUBLE CODE CHART

HINT:
If a trouble code is indicated during the DTC check, check the circuit listed for that code in the table below. Then proceed to the appropriate page.

Power door lock control system:

DTC Code	Detection Item	Trouble Area	See page
B1242	Wireless Door Lock Tuner Circuit Malfunction	1. Electrical key antenna 2. Door control receiver 3. Wire harness 4. Certification ECU	DL-138

DL

ON-VEHICLE INSPECTION

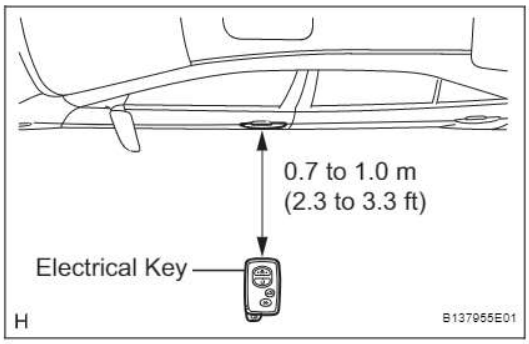
1. SMART KEY SYSTEM OPERATION INSPECTION

HINT:

Refer to PROBLEM SYMPTOMS TABLE if the results of the following checks are not normal (See page DL-121).

(a) Check the entry unlock function.

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



(b) Check the entry unlock operation's detection area.

(1) Step 1: Hold the electrical key at the same height as the door's outside handle (approximately 0.8 m (2.6 ft)). Pay attention to the direction of the electrical key in the illustration.

(2) Step 2: When the electrical key is brought within 0.7 to 1.0 m (2.3 to 3.3 ft) of the vehicle, check that the system enters unlock standby mode.

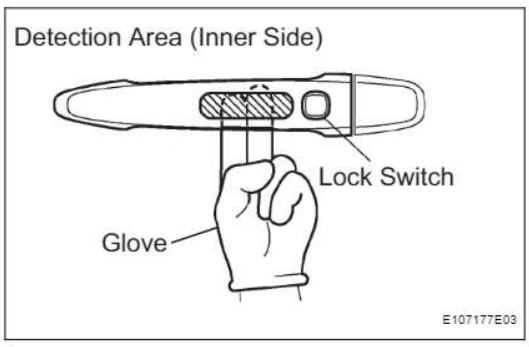
HINT:

Unlock standby mode is signified by the electrical key's red LED illuminating.

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

NOTICE:

The electrical key cannot communicate with the system within a 0.2 m (0.6 ft) radius of each outside handle.



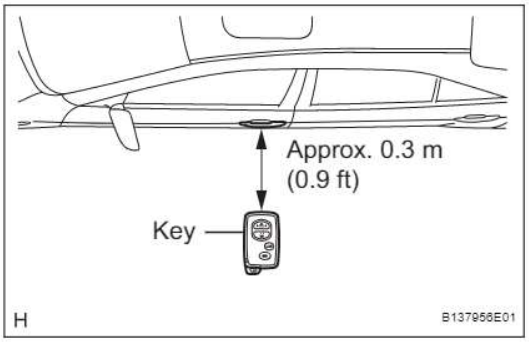
(4) Step 4: Repeat steps 2 and 3 for the remaining doors.

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

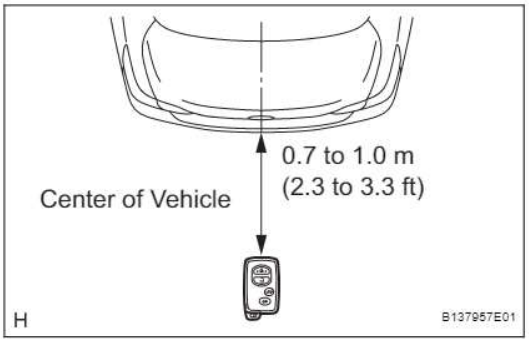
NOTICE:

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) Step 6: Repeat step 5 for the remaining doors.



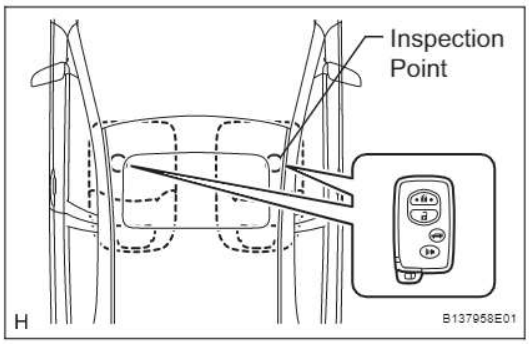
(c) Check the entry lock function.
(1) Step 1: Close all of the vehicle's doors. With the electrical key in your possession outside the vehicle, check that pressing the lock switch locks the doors.
(2) Step 2: Inspect the entry lock operation's detection area and the indoor electrical key antenna for wave leaks. Hold the electrical key at a height of 1 m (3.3 ft) (0.1 m (0.3 ft) above the lower edge of the window frame. Pay attention to the direction and position of the electrical key in the illustration. When the electrical key is approximately 0.3 m (0.9 ft) from the vehicle and the lock switch is pressed, check that the all doors lock and the warning buzzer (for when the electrical key is forgotten) does not sound. If the warning buzzer sounds, the indoor electrical key antenna may have a wave leak.
HINT:
Do not press the lock switch with the same hand that is holding the electrical key because the electrical key cannot communicate with the system within a 0.2 m (0.6 ft) radius of the outside handle. The doors will not lock.
(3) Step 3: Repeat steps 1 and 2 for the remaining doors.



(d) Check the entry luggage compartment door open function.
(1) Close the luggage compartment door. With the electrical key in your possession, check that pressing the power luggage door open switch opens the luggage compartment door.
(2) Inspect the entry luggage compartment door open operation's detection area. Hold the electrical key at the same height as the power luggage door open switch (approximately 0.8 m (2.6 ft)) and align the key with the center of the rear of the vehicle. Pay attention to the direction of the electrical key shown in the illustration. When the electrical key is brought within 0.7 to 1.0 m (2.3 to 3.3 ft) of the vehicle, check that pressing the power luggage door open switch opens the luggage compartment door.

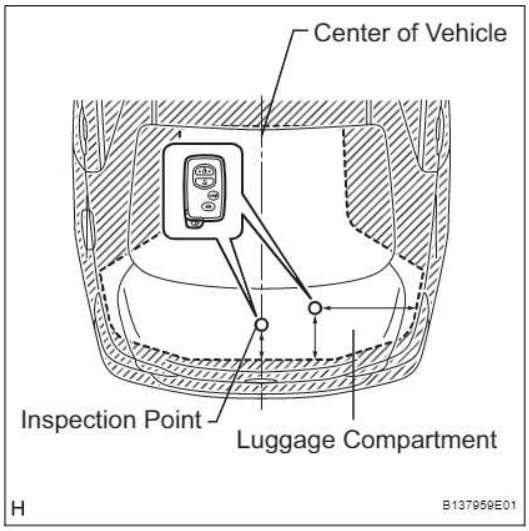
(e) Check the entry ignition function (HV control system is on (READY)).
(1) When the HV control system is off:
With the electrical key in your possession and the brake pedal depressed and the shift position is P, check that pressing the power switch releases the steering wheel lock and the HV control system is on (READY).

HINT:
The HV control system can be on (READY) only when the power switch indicator illuminates in green.

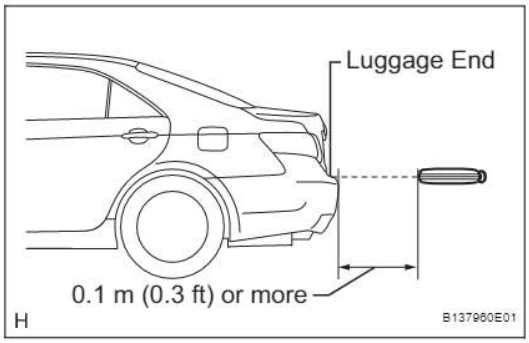


(2) When the HV control system is on (READY): With the electrical key in your possession and vehicle stopped, check that pressing the power switch stops the engine.
HINT:
The shift position must be P to stop the HV control system.

(3) Inspect the entry ignition (HV control system on (READY)) operation's detection area. Pay attention to the direction of the electrical key in the illustration. When the electrical key is in either of the 2 inspection points in the illustration, check that the HV control system can be on (READY).
NOTICE:
The engine cannot be started when the electrical key is on the instrument panel, rear package tray, or in the glove box.



(f) Check the electrical key lock-in prevention function.
(1) Place the electrical key in the luggage compartment with all doors locked. Check that: 1) closing the luggage compartment door triggers the electrical key's wireless buzzer (which lasts approximately 2 seconds), and 2) pressing the power luggage door open switch opens the luggage compartment door.



(2) Inspect the electrical key lock-in prevention's detection area. Pay attention to the direction of the electrical key shown in the illustration. When the electrical key is in either of the 2 inspection points in the illustration, check that: 1) closing the luggage compartment door sounds the electrical key's wireless buzzer, and 2) pressing the power luggage door open switch opens the luggage compartment door.
NOTICE:
If the electrical key is inside a metal storage item, such as a metal briefcase or metal box, the electrical key will not be detected by the system.

(3) Inspect the electrical key lock-in prevention's detection area and the entry door control receiver for wave leaks. Hold the electrical key at the same height as the lower edge of the luggage compartment door and align the key with the center of the rear of the vehicle. Pay attention to the direction and position of the electrical key shown in the illustration. When the electrical key is over 0.1 m (0.3 ft) from the vehicle's rear bumper, check that the electrical key's wireless buzzer does not sound.
If the warning buzzer sounds, the entry door control receiver may have a wave leak.

(g) Check the electrical key cancel function.
(1) While the power switch is on (IG), check that the power luggage door open switch, entry ignition, electrical key lock-in prevention and warning are the only switch in the smart key system that can be operated.
(2) While the electrical key cancel function (smart key system cancel function) is ON, check that all functions in the smart key system cannot be operated.

(h) Check the answer-back function (hazard warning light flashing and buzzer sounding).

Entry Operation	Hazard Warning Light	Buzzer
Entry Door Lock	Flashes once	Sounds once
Entry Door Unlock	Flashes twice	Sounds twice
Entry Luggage Compartment Door Open	Does not flash	Does not sound

(i) Check that the electrical key reminder warning buzzer sounds.
(1) Carry the electrical key in the vehicle and close the driver side door. Then turn the power switch off or on (ACC).
(2) Open the driver side door and check that the buzzer sounds intermittently.

(j) Check that the electrical key reminder warning buzzer stops.
(1) When the buzzer is sounding, check that the buzzer stops sounding if either of the following is performed:
- Close the driver side door (front door courtesy light switch is off).
- Turn the power switch on (IG, ACC) and lock the steering lock.

DTC	B1242	Wireless Door Lock Tuner Circuit Malfunction

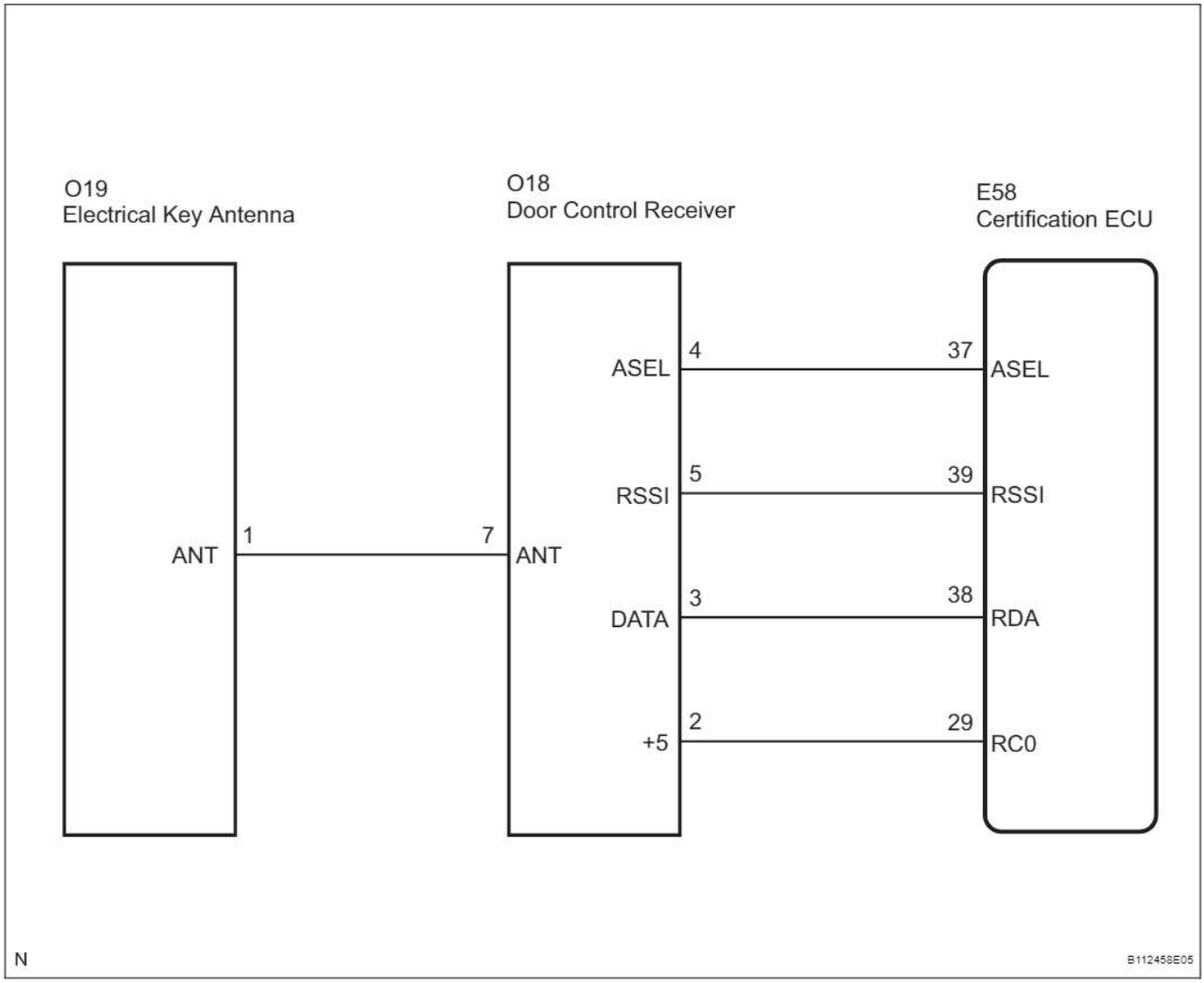
DESCRIPTION

- The electrical key antenna and the door control receiver 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 electrical key antenna and the door control receiver. 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 main body ECU RH.)

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.	• Electrical key antenna • Door control receiver • Wire harness • Certification ECU

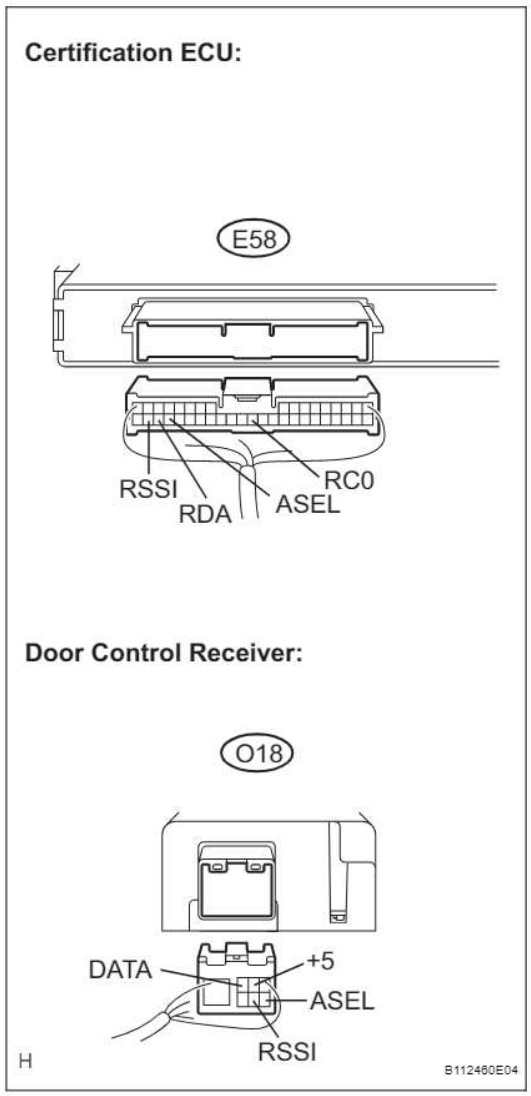
DL

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - DOOR CONTROL RECEIVER)



(a) Disconnect the E58 ECU connector.
(b) Disconnect the O18 receiver connector.
(c) Measure the resistance according to the value(s) in the table below.

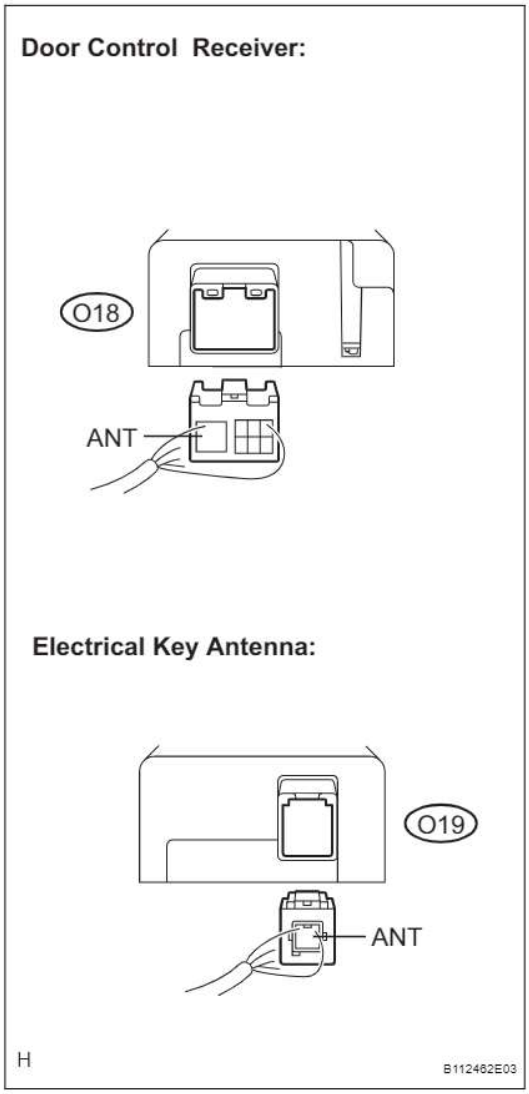
Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E58-37 (ASEL) - O18-4 (ASEL)	Always	Below 1 Ω
E58-39 (RSSI) - O18-5 (RSSI)	Always	Below 1 Ω
E58-38 (RDA) - O18-3 (DATA)	Always	Below 1 Ω
E58-29 (RC0) - O18-2 (+5)	Always	Below 1 Ω
E58-37 (ASEL) - Body ground	Always	10 kΩ or higher
E58-39 (RSSI) - Body ground	Always	10 kΩ or higher
E58-38 (RDA) - Body ground	Always	10 kΩ or higher
E58-29 (RC0) - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK →

2	CHECK HARNESS AND CONNECTOR (DOOR CONTROL RECEIVER - ELECTRICAL KEY ANTENNA)



(a) Disconnect the O19 antenna connector.
(b) Measure the resistance according to the value(s) in the table below.
HINT:
Perform the measurement with the O18 receiver connector disconnected.
Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
O18-7 (ANT) - O19-1 (ANT)	Always	Below 1 Ω
O18-7 (ANT) - Body ground	Always	10 kΩ or higher

DL

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3	CHECK AND REPLACE DOOR CONTROL RECEIVER (RECONFIRM DTC)

(a) Replace the receiver.
(b) Clear the DTCs and repeat the procedure to recheck for DTCs (See page DL-130).
OK:
DTC is not output.

OK → END (RECEIVER IS DEFECTIVE)

NG

4	CHECK AND REPLACE ELECTRICAL KEY ANTENNA (RECONFIRM DTC)

(a) Replace the antenna.
(b) Clear the DTCs and repeat the procedure to recheck for DTCs (See page DL-130).
OK:
DTC is not output.

OK → **END (ANTENNA IS DEFECTIVE)**

NG → **REPLACE CERTIFICATION ECU**

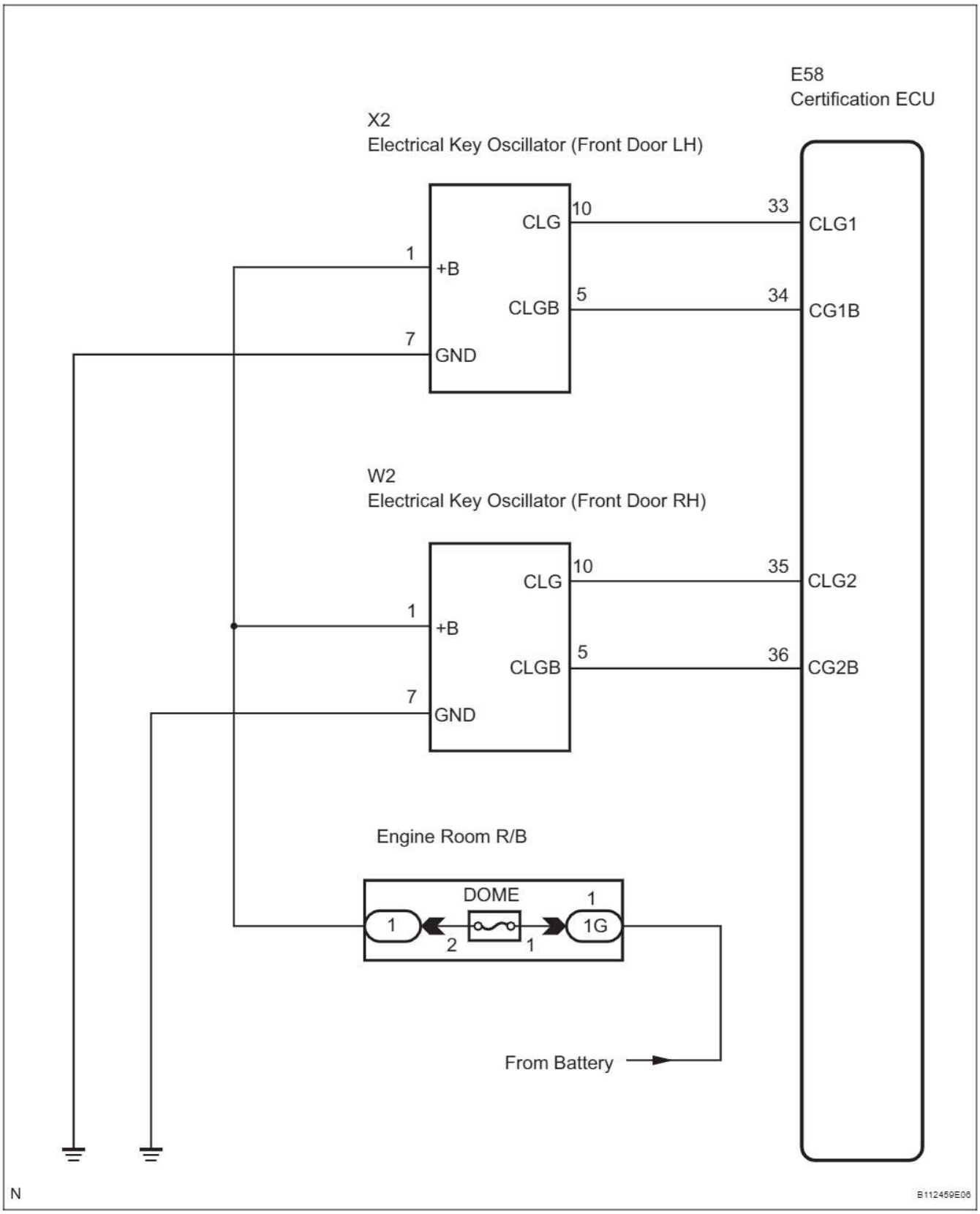
DL

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 electrical key.

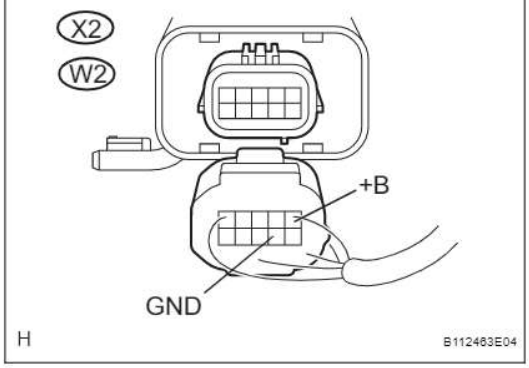
WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT ELECTRICAL KEY OSCILLATOR

Door Oscillator:



(a) Disconnect the oscillator connectors.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage:

Front LH side

Tester Connection (Symbols)	Condition	Specified Condition
X2-1 (+B) - X2-7 (GND)	Always	10 to 14 V

Front RH side

Tester Connection (Symbols)	Condition	Specified Condition
W2-1 (+B) - W2-7 (GND)	Always	10 to 14 V

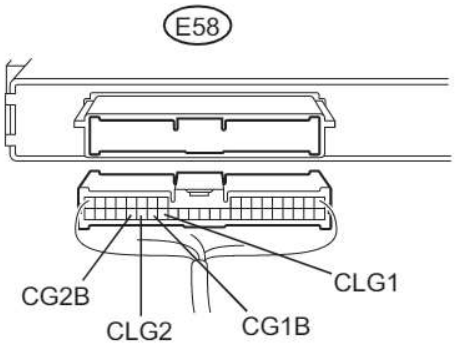
NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

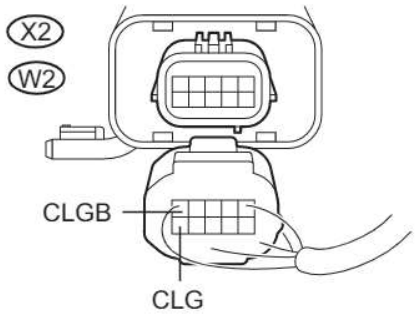
DL

2	CHECK HARNESS AND CONNECTOR (ELECTRICAL KEY OSCILLATOR - CERTIFICATION ECU)

Certification ECU:



Door Oscillator:



(a) Disconnect the E58 ECU connector.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E58-33 (CLG1) - X2-10 (CLG)	Always	Below 1 Ω
E58-34 (CG1B) - X2-5 (CLGB)	Always	Below 1 Ω
E58-35 (CLG2) - W2-10 (CLG)	Always	Below 1 Ω
E58-36 (CG2B) - W2-5 (CLGB)	Always	Below 1 Ω
E58-33 (CLG1) - Body ground	Always	10 kΩ or higher
E58-34 (CG1B) - Body ground	Always	10 kΩ or higher
E58-35 (CLG2) - Body ground	Always	10 kΩ or higher
E58-36 (CG2B) - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3	CHECK AND REPLACE ELECTRICAL KEY OSCILLATOR (CHECK OPERATION OF OSCILLATOR)

(a) Replace the door oscillator.
(b) Check that the entry LOCK/UNLOCK function operates normally.

OK:

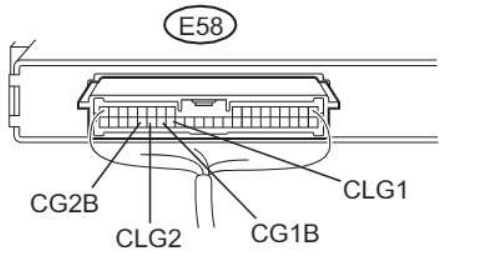
Entry LOCK/UNLOCK function operates normally.

OK → END (ELECTRICAL KEY OSCILLATOR IS DEFECTIVE)

NG

4	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (CERTIFICATION ECU OUTPUT SIGNAL)

Certification ECU:



(a) Reconnect the ECU and the oscillator connectors.
(b) Connect the intelligent tester to the DLC3.
(c) Turn the power switch on (IG).
(d) Enter the following menus: DIAGNOSIS / OBD/MOBD / ACTIVE TEST.
(e) Following the display on the tester, select the "ACTIVE TEST".

SMART KEY (Certification ECU):

Item	Vehicle Condition/Test Details
D TRANSMITTER	Door Oscillator ON/OFF
P TRANSMITTER	Door Oscillator ON/OFF

DL

(f) Measure the frequency according to the value(s) in the table below.

Standard

Tester Connection (Symbols)	Condition	Specified Condition
E58-33 (CLG1) - E58-34 (CG1B)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)
E58-35 (CLG2) - E58-36 (CG2B)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)

NG → REPLACE CERTIFICATION ECU

OK

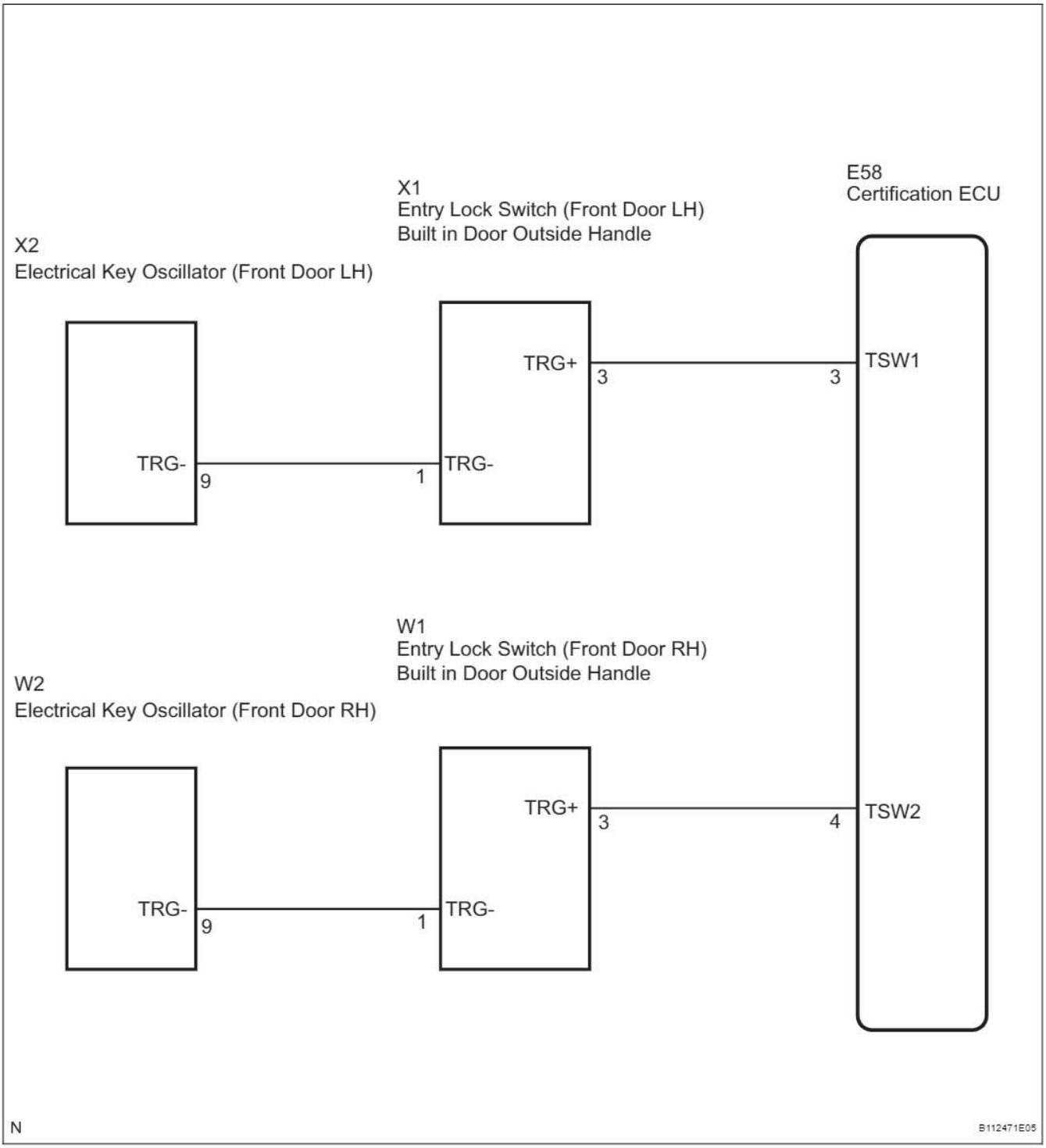
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Entry Lock Switch Circuit

DESCRIPTION

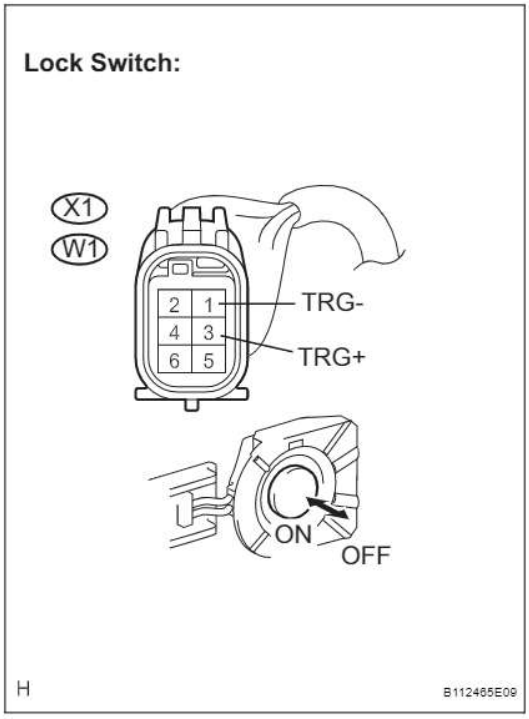
The entry lock switches (trigger switch) are built into the outside handles of the LH/RH door. The certification ECU detects the conditions of each lock switch.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT ENTRY LOCK SWITCH



(a) Remove the outside handle.
(b) Disconnect the connectors.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
X1-1 (TRG-) - X1-3 (TRG+)	Lock switch not pushed	10 kΩ or higher
	Lock switch pushed	Below 1 Ω
W1-1 (TRG-) - W1-3 (TRG+)	Lock switch not pushed	10 kΩ or higher
	Lock switch pushed	Below 1 Ω

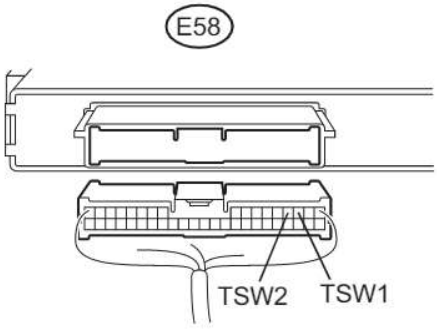
NG → REPLACE OUTSIDE HANDLE ASSEMBLY

OK

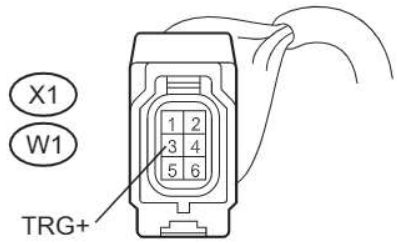
DL

2	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - ENTRY LOCK SWITCH)

Certification ECU:



Lock Switch Wire Harness:



H

B138034E02

(a) Disconnect the E58 ECU connector.
(b) Measure the resistance according to the value(s) in the table below.

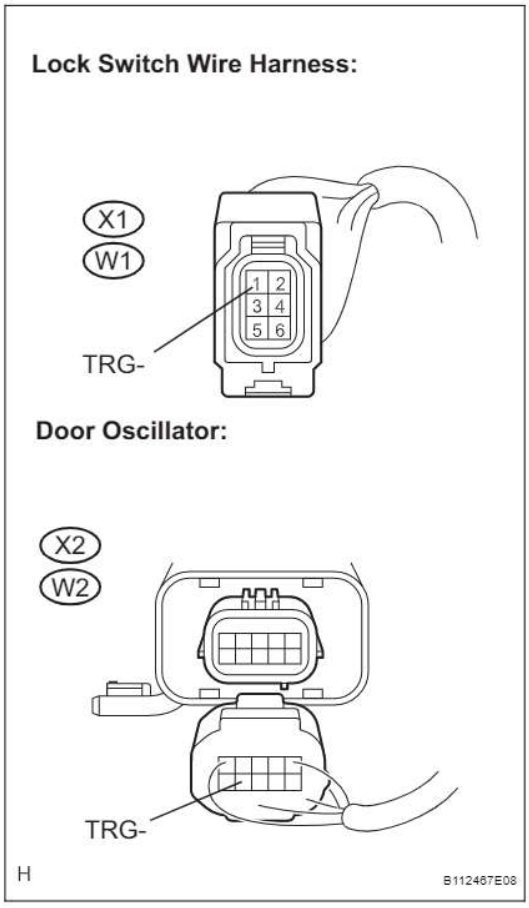
Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E58-3 (TSW1) - X1-3 (TRG+)	Always	Below 1 Ω
E58-4 (TSW2) - W1-3 (TRG+)	Always	Below 1 Ω
E58-3 (TSW1) - Body ground	Always	10 kΩ or higher
E58-4 (TSW2) - Body ground	Always	10 kΩ or higher

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

OK

3	CHECK HARNESS AND CONNECTOR (ELECTRICAL KEY OSCILLATOR - ENTRY LOCK SWITCH)



(a) Disconnect the door oscillator connector.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
X2-9 (TRG-) - X1-1 (TRG-)	Always	Below 1 Ω
W2-9 (TRG-) - W1-1 (TRG-)	Always	Below 1 Ω
X2-9 (TRG-) - Body ground	Always	10 kΩ or higher
W2-9 (TRG-) - Body ground	Always	10 kΩ or higher

DL

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

4	CHECK AND REPLACE ELECTRICAL KEY OSCILLATOR

(a) Replace the electrical key 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

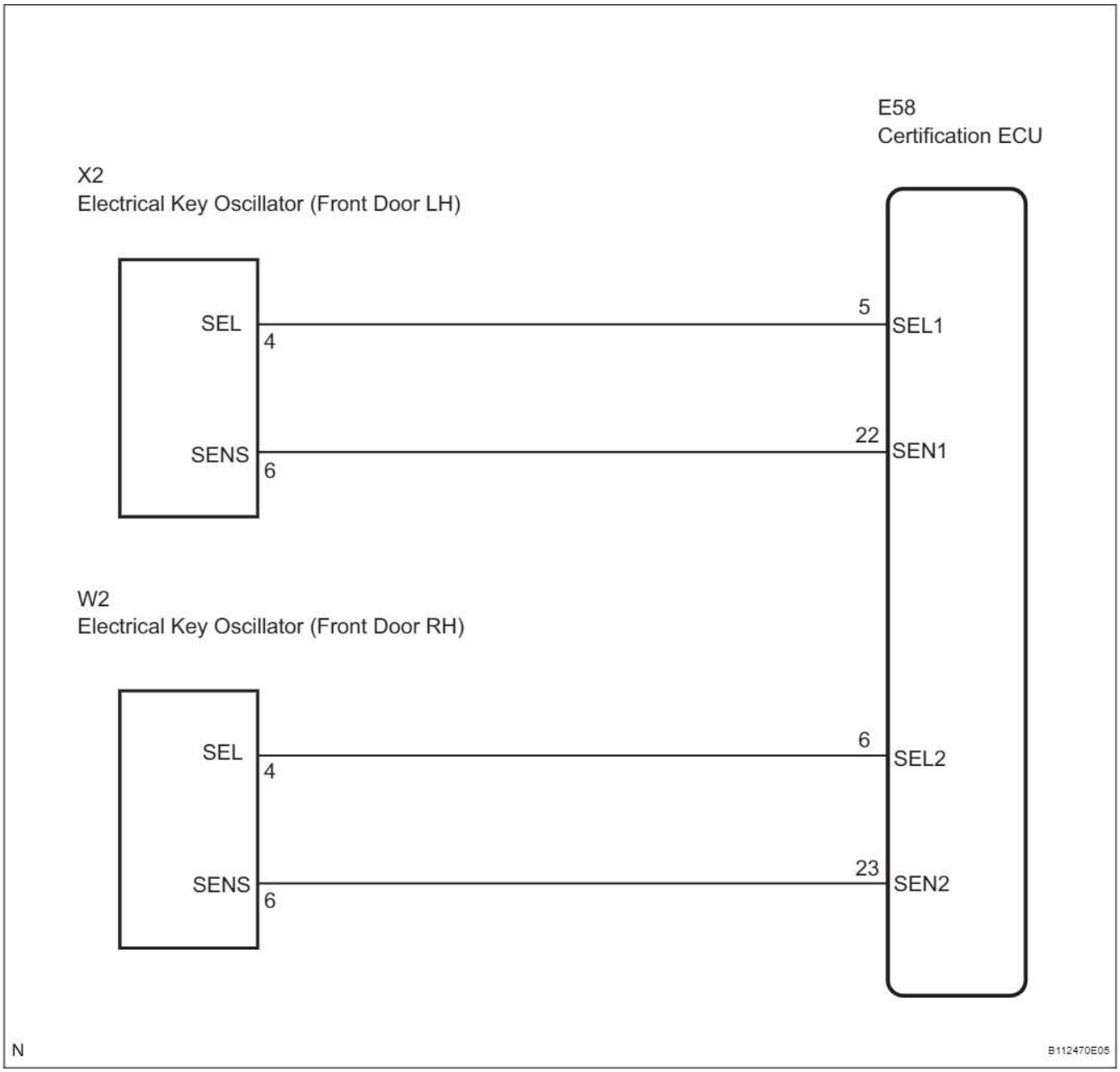
END (ELECTRICAL KEY OSCILLATOR IS DEFECTIVE)

Touch Sensor Circuit

DESCRIPTION

This circuit receives a signal indicating whether a touch sensor signal is detected.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power 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	-

OK:
"ON" (screen is touched) or "OFF" (screen is not touched) appears on the tester screen.

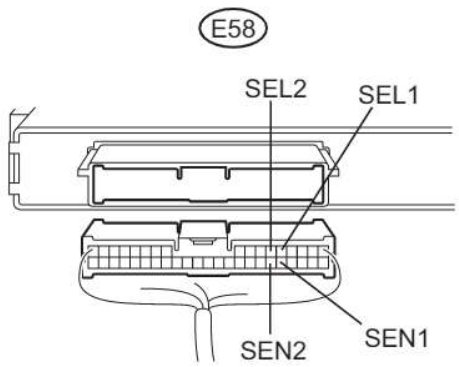
OK → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

NG

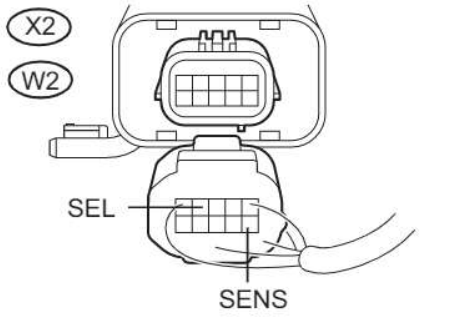
DL

2 CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - ELECTRICAL KEY OSCILLATOR)

Certification ECU:



Door Oscillator:



(a) Disconnect the E58 ECU connector.
(b) Disconnect the oscillator connectors.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E58-5 (SEL1) - X2-4 (SEL)	Always	Below 1 Ω
E58-22 (SEN1) - X2-6 (SENS)	Always	Below 1 Ω
E58-6 (SEL2) - W2-4 (SEL)	Always	Below 1 Ω
E58-23 (SEN2) - W2-6 (SENS)	Always	Below 1 Ω
E58-5 (SEL1) - Body ground	Always	10 kΩ or higher
E58-22 (SEN1) - Body ground	Always	10 kΩ or higher
E58-6 (SEL2) - Body ground	Always	10 kΩ or higher
E58-23 (SEN2) - Body ground	Always	10 kΩ or higher

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

OK

3	CHECK AND REPLACE ELECTRICAL KEY OSCILLATOR (CHECK OPERATION OF OSCILLATOR)

(a) Replace the electrical key oscillator.
(b) Check that the entry UNLOCK function operates normally.
OK:
Entry UNLOCK function operates normally.

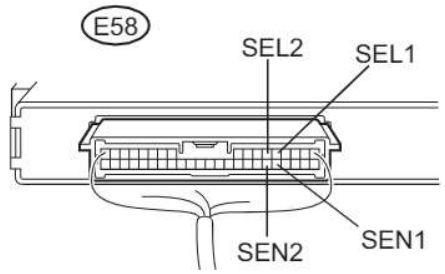
OK → END (ELECTRICAL KEY OSCILLATOR IS DEFECTIVE)

DL

NG

4	INSPECT CERTIFICATION ECU

Certification ECU:



(a) Reconnect the ECU and the oscillator connectors.
(b) Connect the intelligent tester to the DLC3.
(c) Turn the power switch on (IG).
(d) Measure the voltage according to the value(s) in the table below.
Standard voltage

Tester Connection (Symbols)	Condition	Specified Condition
E58-5 (SEL1) - Body ground	Move the key more than 5 m (16.4 ft) away from the front door LH	10 to 14 V
E58-5 (SEL1) - Body ground	Bring key to the outside handle	Below 1 V
E58-6 (SEL2) - Body ground	Move the key more than 5 m (16.4 ft) away from the front door RH	10 to 14 V
E58-6 (SEL2) - Body ground	Bring key to the outside handle	Below 1 V
E58-22 (SEN1) - Body ground	Front door LH outside handle is not held (Bring the electrical key to the outside handle)	10 to 14 V
E58-22 (SEN1) - Body ground	Front door LH outside handle is held	Below 1 V
E58-23 (SEN2) - Body ground	Front door RH outside handle is not held (Bring the electrical key to the outside handle)	10 to 14 V
E58-23 (SEN2) - Body ground	Front door RH outside handle is held	Below 1 V

NG → REPLACE CERTIFICATION ECU

OK

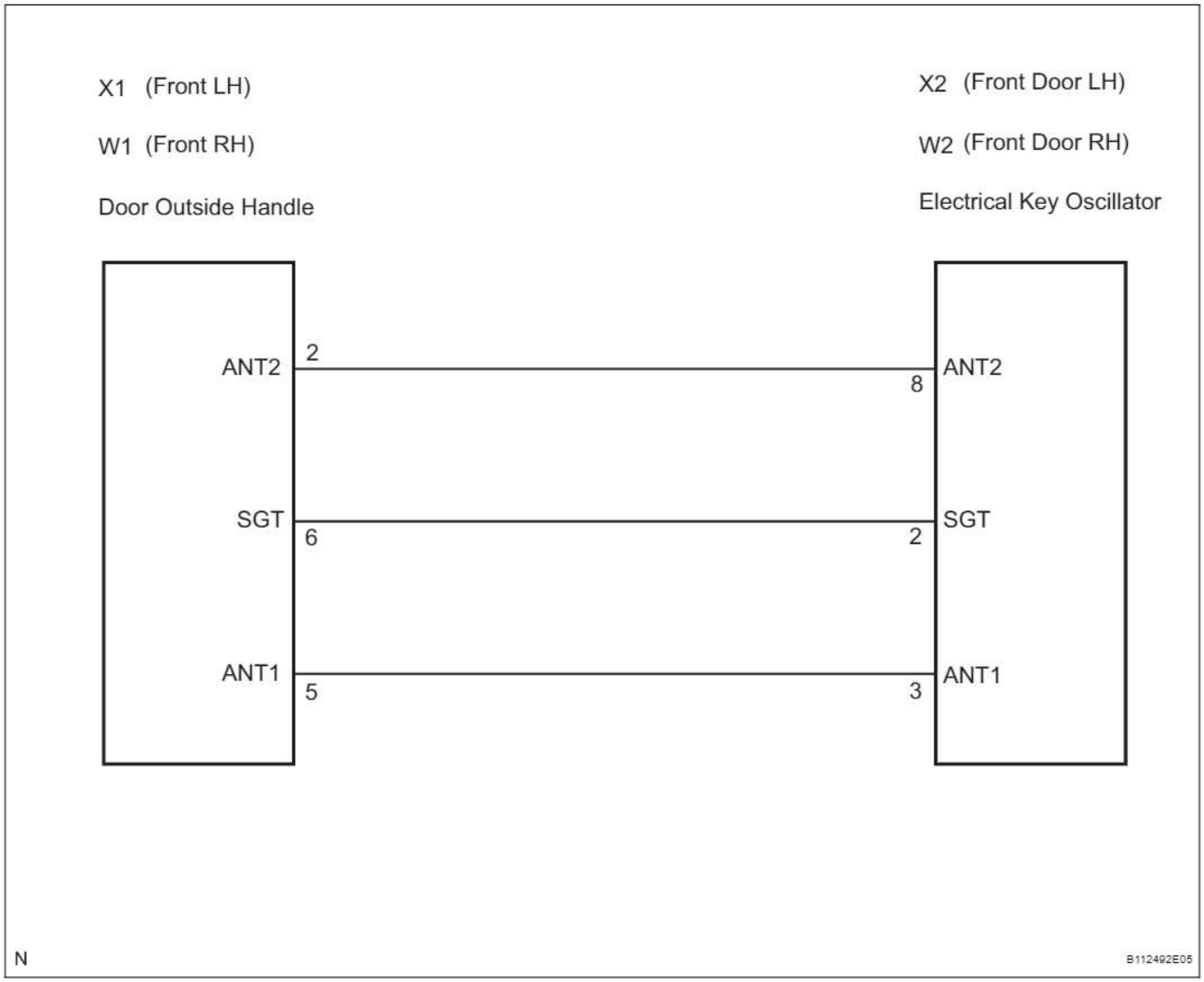
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Antenna Circuit

DESCRIPTION

Terminals ANT1 and ANT2 of the antenna (door outside handle) detect if the electrical key is within the action area around the door outside handle.

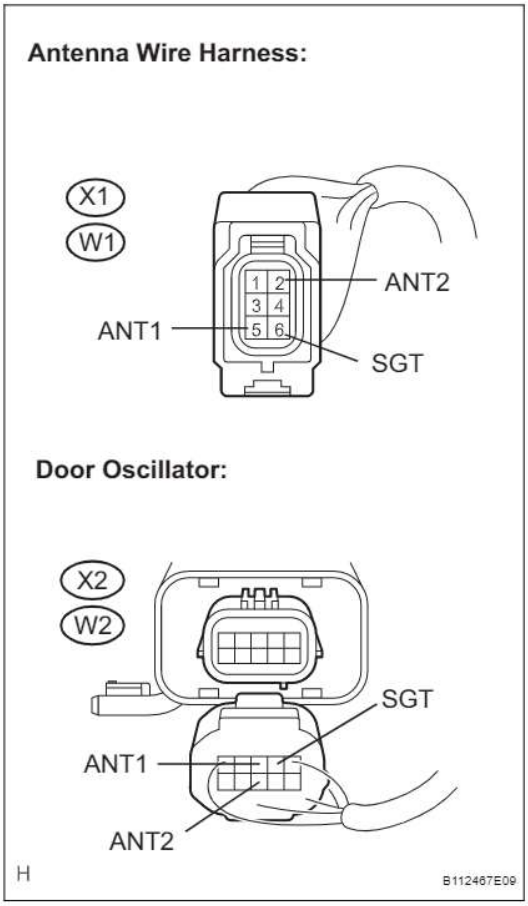
WIRING DIAGRAM



DL

INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR (ELECTRICAL KEY OSCILLATOR - ANTENNA)



(a) Remove the outside handle.
(b) Disconnect the antenna and door oscillator connectors.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
X1-2 (ANT2) - X2-8 (ANT2) (*1)	Always	Below 1 Ω
X1-6 (SGT) - X2-2 (SGT) (*1)	Always	Below 1 Ω
X1-5 (ANT1) - X2-3 (ANT1) (*1)	Always	Below 1 Ω
X1-2 (ANT2) - Body ground (*1)	Always	10 kΩ or higher
X1-6 (SGT) - Body ground (*1)	Always	10 kΩ or higher
X1-5 (ANT1) - Body ground (*1)	Always	10 kΩ or higher
W1-2 (ANT2) - W2-8 (ANT2) (*2)	Always	Below 1 Ω
W1-6 (SGT) - W2-2 (SGT) (*2)	Always	Below 1 Ω
W1-5 (ANT1) - W2-3 (ANT1) (*2)	Always	Below 1 Ω
W1-2 (ANT2) - Body ground (*2)	Always	10 kΩ or higher
W1-6 (SGT) - Body ground (*2)	Always	10 kΩ or higher
W1-5 (ANT1) - Body ground (*2)	Always	10 kΩ or higher

*1: Driver side
*2: Passenger side

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

OK

2	CHECK AND REPLACE DOOR OUTSIDE HANDLE

(a) Replace the door outside handle.
(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

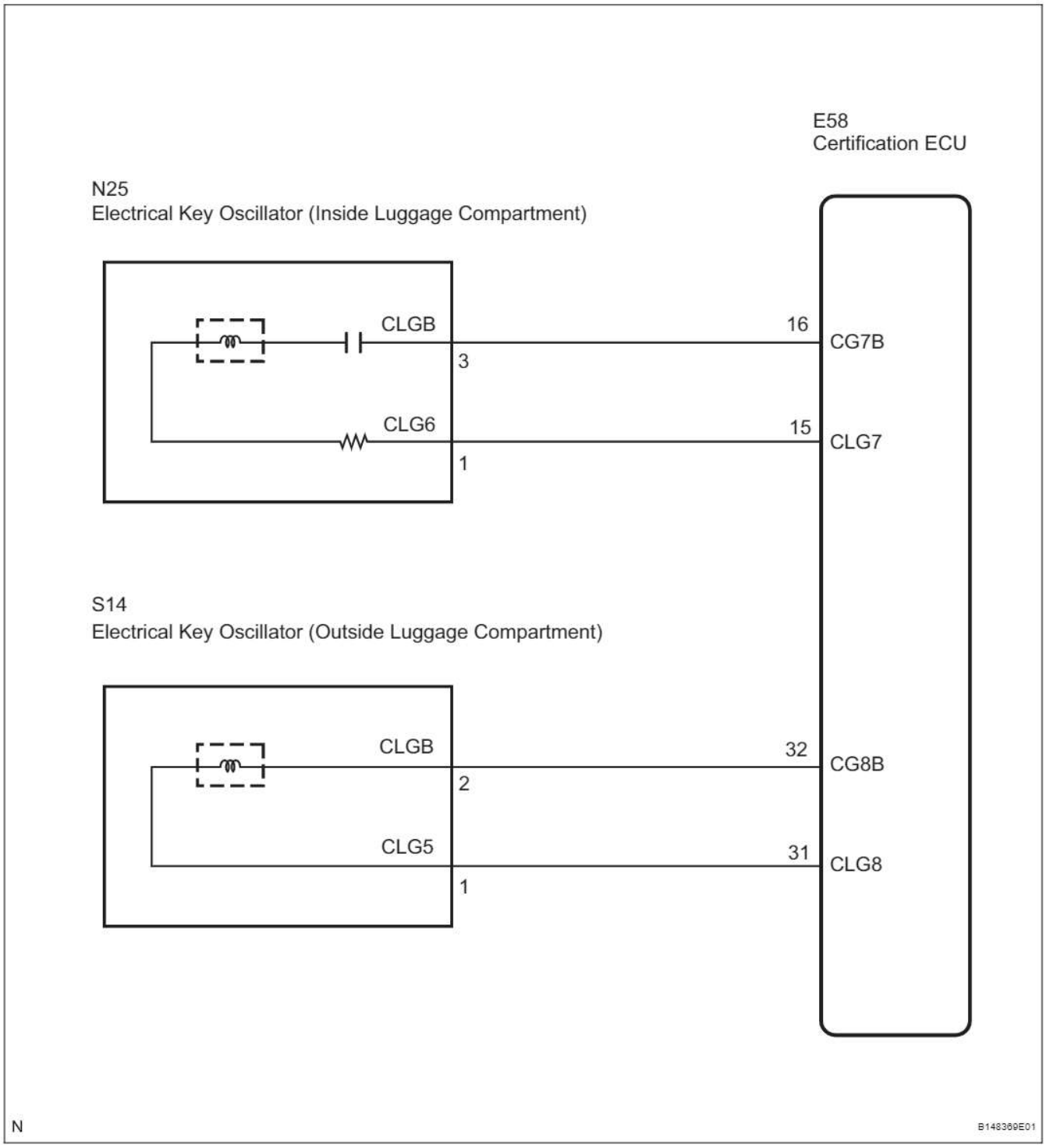
END (DOOR OUTSIDE HANDLE IS DEFECTIVE)

Luggage Oscillator Circuit

DESCRIPTION

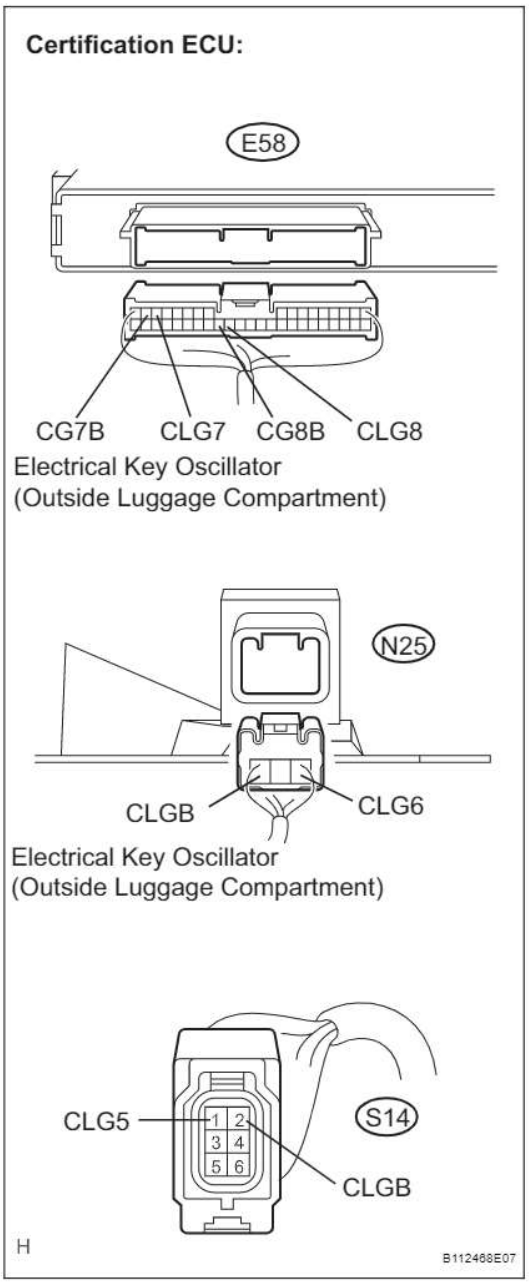
The certification ECU activates the inner and outer luggage compartment oscillators. The power is supplied from the certification ECU to both the inner and outer luggage compartment oscillators. The inner and outer luggage compartment oscillator circuits have the same wiring. If the entry luggage compartment function has a problem, check both the inner and outer luggage compartment oscillator circuits.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - ELECTRICAL KEY OSCILLATOR)



(a) Disconnect the E58 ECU connector.
(b) Disconnect the oscillator connectors.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E58-16 (CG7B) - N25-3 (CLGB)	Always	Below 1 Ω
E58-15 (CLG7) - N25-1 (CLG6)	Always	Below 1 Ω
E58-32 (CG8B) - S14-2 (CLGB)	Always	Below 1 Ω
E58-31 (CLG8) - S14-1 (CLG5)	Always	Below 1 Ω
E58-16 (CG7B) - Body ground	Always	10 kΩ or higher
E58-15 (CLG7) - Body ground	Always	10 kΩ or higher
E58-32 (CG8B) - Body ground	Always	10 kΩ or higher
E58-31 (CLG8) - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

2	CHECK AND REPLACE ELECTRICAL KEY OSCILLATOR

(a) Replace the electrical key oscillator.
(b) Check that the luggage compartment door entry LOCK/UNLOCK function operates normally.

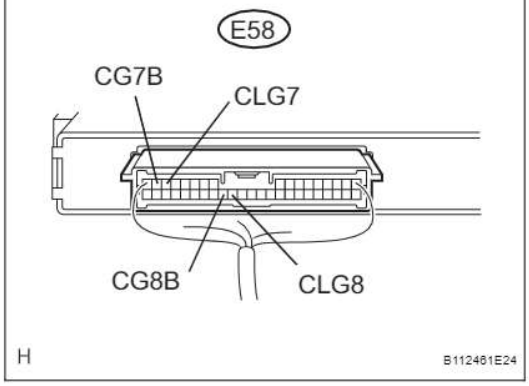
OK:
Luggage compartment door entry LOCK/UNLOCK function operates normally.

OK → **END (ELECTRICAL KEY OSCILLATOR IS DEFECTIVE)**

NG

3 PERFORM ACTIVE TEST BY INTELLIGENT TESTER

Certification ECU:



(a) Reconnect the oscillator and the ECU connectors.
(b) Connect the intelligent tester to the DLC3.
(c) Turn the power switch on (IG).
(d) Following the display on the tester, select the "ACTIVE TEST".
SMART KEY (Certification ECU):

Item	Vehicle Condition/Test Details
IN-BDR TRNSMTTR	Electrical key oscillator (Luggage compartment inner) ON/OFF
BDOOR TRNSMTTR	Electrical key oscillator (Luggage compartment outer) ON/OFF

(e) Measure the frequency according to the value(s) in the table below.
Standard

Tester Connection (Symbols)	Condition	Specified Condition
E58-16 (CG7B) - E58-15 (CLG7)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)
E58-32 (CG8B) - E58-31 (CLG8)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)

NG → **REPLACE CERTIFICATION ECU**

OK

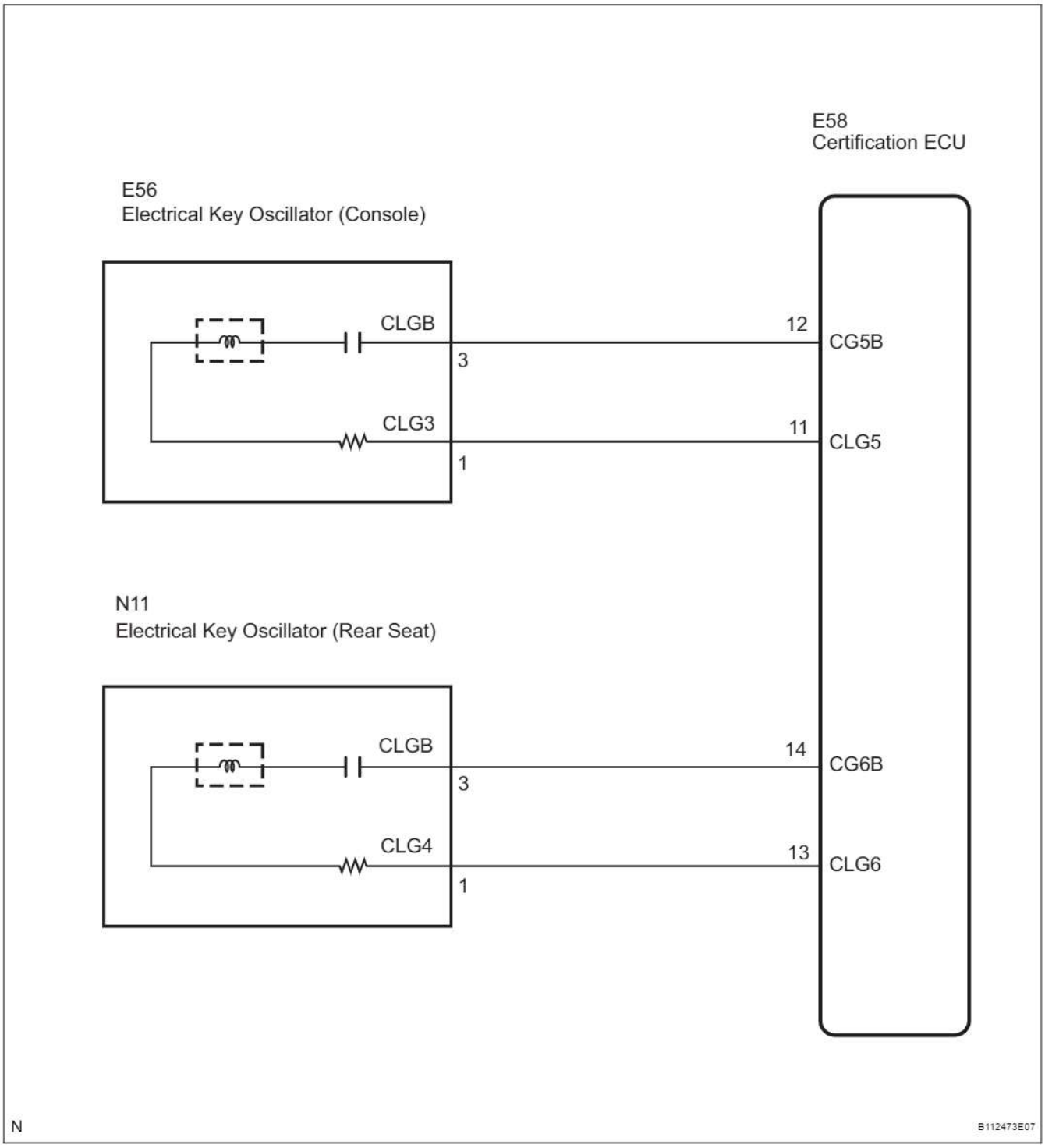
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Room Oscillator Circuit

DESCRIPTION

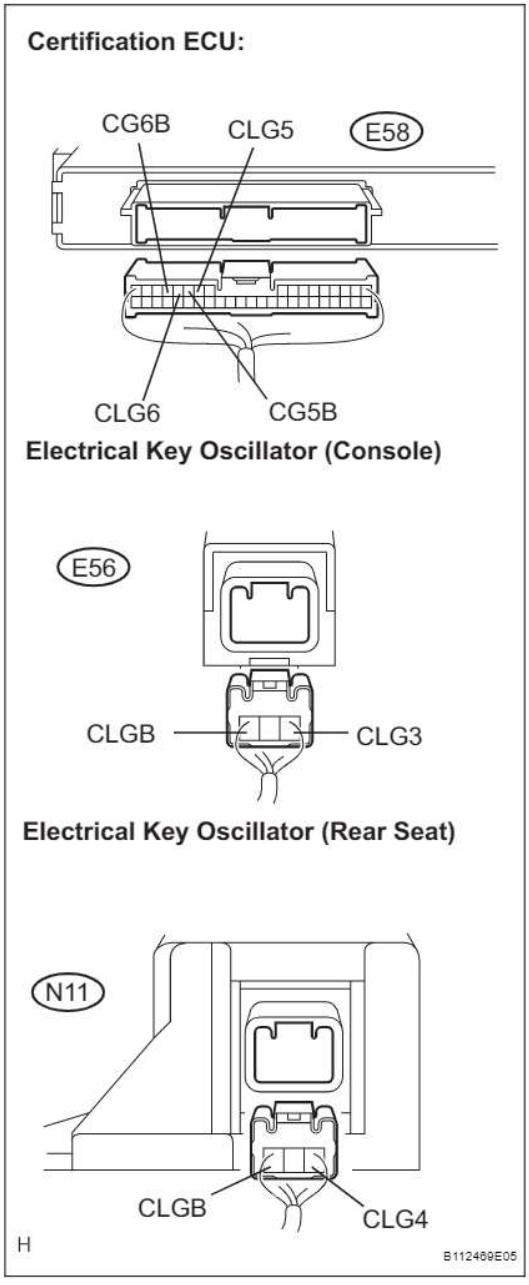
The certification ECU activates the front and rear cabin oscillators. The power is supplied from the certification ECU to both the front and rear cabin oscillators. The front and rear cabin oscillator circuits have the same wiring. If the smart key system does not operate properly inside the vehicle, check both the front and rear cabin oscillator circuits.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - ELECTRICAL KEY OSCILLATOR)



(a) Disconnect the E58 ECU connector.
(b) Disconnect the oscillator connectors.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E58-12 (CG5B) - E56-3 (CLGB)	Always	Below 1 Ω
E58-11 (CLG5) - E56-1 (CLG3)	Always	Below 1 Ω
E58-14 (CG6B) - N11-3 (CLGB)	Always	Below 1 Ω
E58-13 (CLG6) - N11-1 (CLG4)	Always	Below 1 Ω
E58-12 (CG5B) - Body ground	Always	10 kΩ or higher
E58-11 (CLG5) - Body ground	Always	10 kΩ or higher
E58-14 (CG6B) - Body ground	Always	10 kΩ or higher
E58-13 (CLG6) - Body ground	Always	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

2	CHECK AND REPLACE ELECTRICAL KEY OSCILLATOR

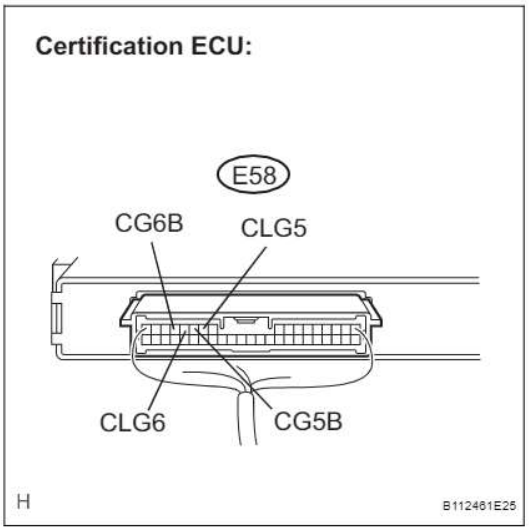
(a) Replace the electrical key oscillator.
(b) Check that the entry LOCK/UNLOCK function operates normally.

OK:
Entry LOCK/UNLOCK function operates normally.

OK → **END (ELECTRICAL KEY OSCILLATOR IS DEFECTIVE)**

NG

3	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (CERTIFICATION ECU OUTPUT SIGNAL)



(a) Reconnect the oscillator and the ECU connectors.
(b) Connect the intelligent tester to the DLC3.
(c) Turn the power switch on (IG).
(d) Following the display on the tester, select the "ACTIVE TEST".
SMART KEY (Certification ECU):

Item	Vehicle Condition/Test Details
Fr TRANSMITTER	Electrical key oscillator (console) ON/OFF
Rr TRANSMITTER	Electrical key oscillator (rear seat) ON/OFF

(e) Measure the frequency according to the value(s) in the table below.
Standard

Tester Connection (Symbols)	Condition	Specified Condition
E58-12 (CG5B) - E58-11 (CLG5)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)
E58-14 (CG6B) - E58-13 (CLG6)	During ACTIVE TEST	Frequency is generated (higher than 0 Hz)

NG → **REPLACE CERTIFICATION ECU**

OK

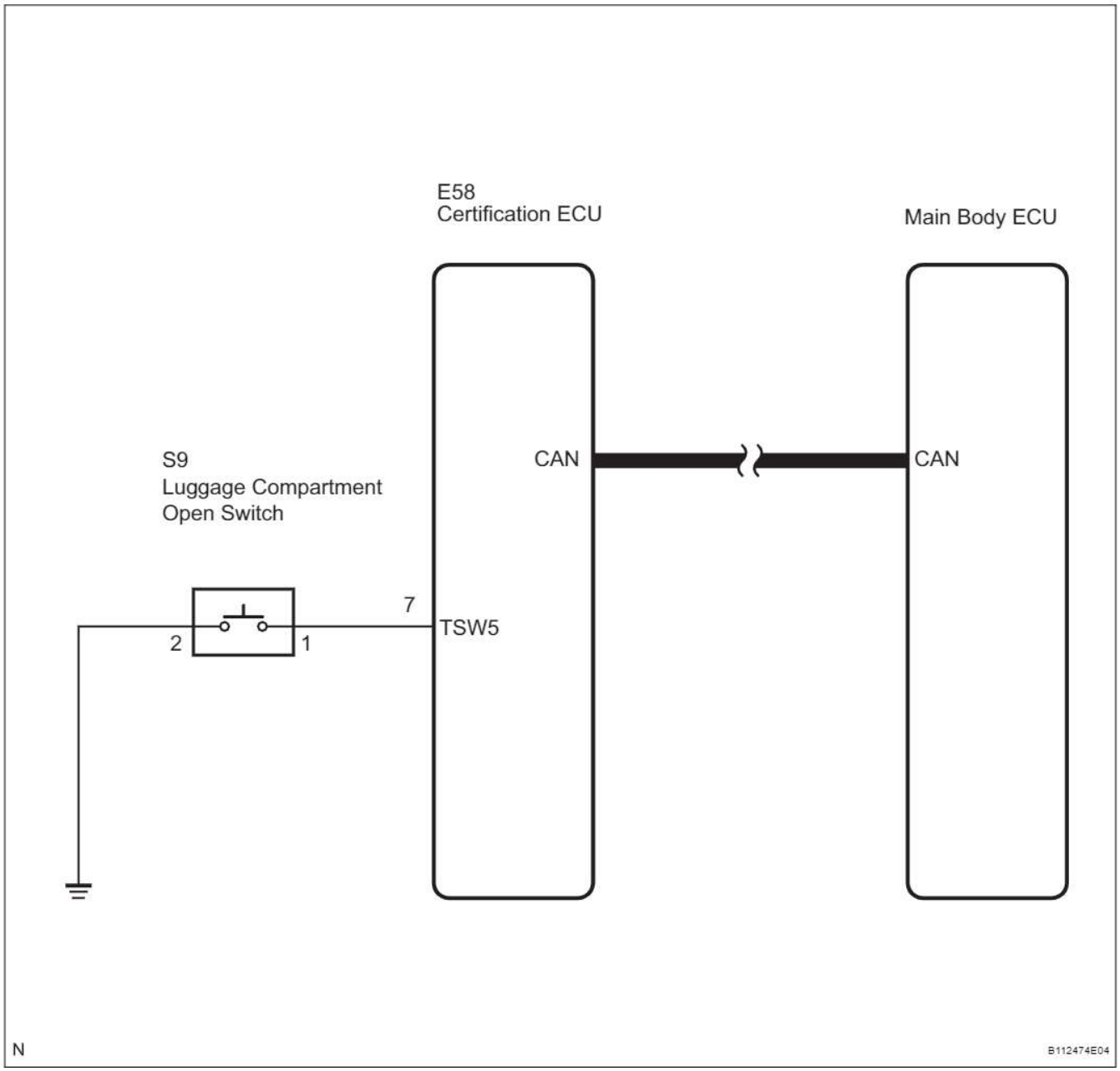
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Luggage Compartment Door Open Switch Circuit

DESCRIPTION

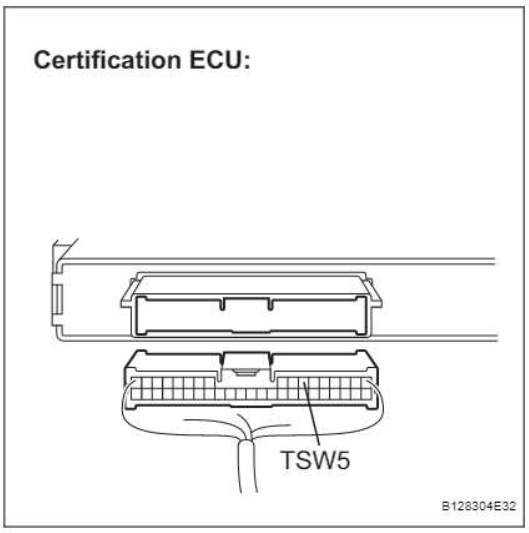
If the certification ECU detects that the luggage compartment open switch is pressed when the driver is carrying the electrical key or when the electrical key is locked in the luggage compartment door, the certification ECU sends a luggage compartment door open motor drive request signal to the main body ECU.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - LUGGAGE COMPARTMENT OPENER SWITCH)



(a) Disconnect the E58 ECU connector.
(b) Measure the resistance according to the value(s) in the table below.

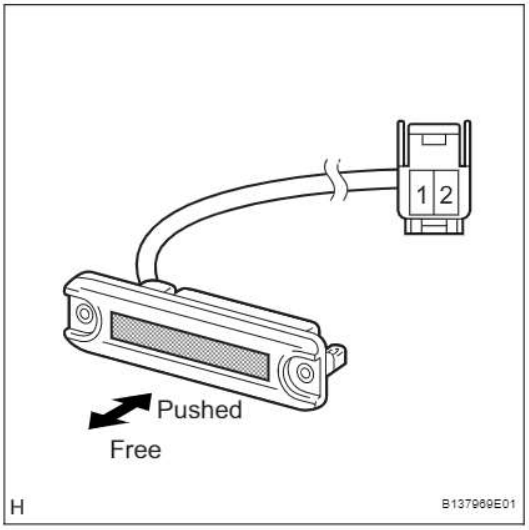
Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E58-7 (TSW5) - Body ground	Luggage compartment open switch not pushed (OFF)	10 kΩ or higher
	Luggage compartment open switch pushed (ON)	Below 1 Ω

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

NG

2	INSPECT LUGGAGE COMPARTMENT OPEN SWITCH



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

Standard resistance

Tester connection	Condition	Specified condition
S9-1 - S9-2	Luggage compartment open switch not pushed (OFF)	10 kΩ or higher
	Luggage compartment open switch pushed (ON)	Below 1 Ω

NG → REPLACE LUGGAGE COMPARTMENT OPEN SWITCH

OK

REPLACE CERTIFICATION ECU

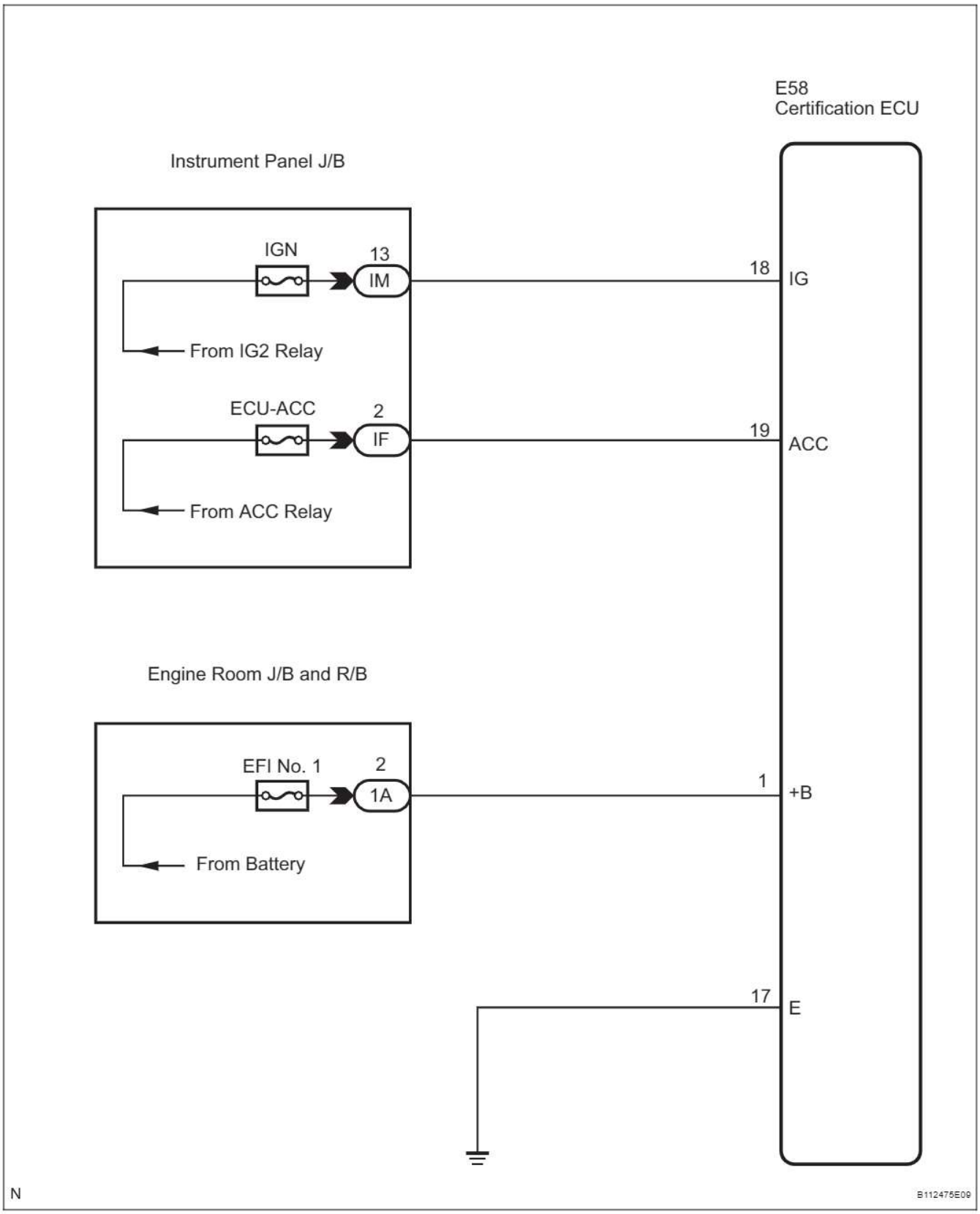
Certification ECU Power Source Circuit

DESCRIPTION

This is the power source circuit of the certification ECU.
The certification ECU controls the following:

- Electrical key verification confirmation
- Cabin and door oscillator control
- Entry door LOCK/UNLOCK request to the main body ECU
- Steering LOCK/UNLOCK request
- Immobiliser SET/UNSET request to the ID code box

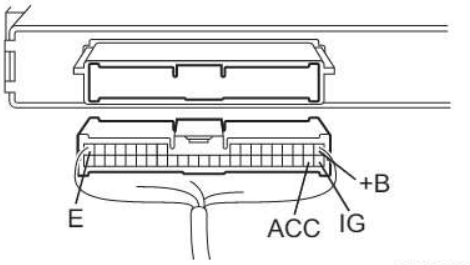
WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR (POWER SOURCE CIRCUIT)

Certification ECU:



(a) Disconnect the E58 certification ECU connector.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection (Symbols)	Condition	Specified Condition
E58-1 (+B) - Body ground	Always	10 to 14 V
E58-18 (IG) - Body ground	Power switch OFF	Below 1 V
	Power switch ON (IG)	10 to 14 V
E58-19 (ACC) - Body ground	Power switch OFF	Below 1 V
	Power switch ON (ACC)	10 to 14 V

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

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E58-17 (E) - Body ground	Always	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

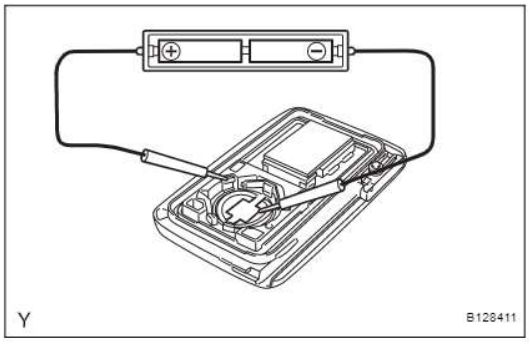
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

INSPECTION

1. INSPECT DOOR CONTROL TRANSMITTER

(a) Inspect operation of the transmitter.

(1) Remove the battery (lithium battery) from the transmitter (See page DL-168).

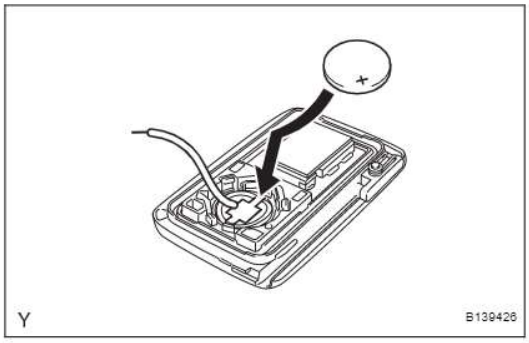


(2) Install a new or normal battery (lithium battery).
HINT:
If a new or normal battery is not available, first connect 2 new 1.5 V batteries in series. Then connect leads to the batteries and apply 3 V to the transmitter, as shown in the illustration.

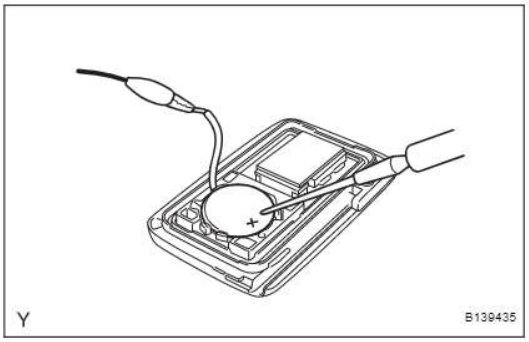
(3) From outside the vehicle, approximately 1 m (3.28 ft) away from the driver side outside door handle, test the transmitter by pointing its key plate at the vehicle and pressing a transmitter switch.
OK:
The door lock can be operated via the transmitter.
The LED comes on more than once.
- The operational area differs depending on the user, the way the transmitter is held, and the location.
- The transmitter's faint electric waves may be affected if the area has strong electric waves or noise. The transmitter's operation area may be shortened or the transmitter may not function.

(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 (removed from the vehicle), 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 will be inaccurate.

(1) Remove the battery (lithium battery) from the transmitter (See page DL-168).



(2) Connect a wire to the negative (-) terminal of the transmitter and install the battery.



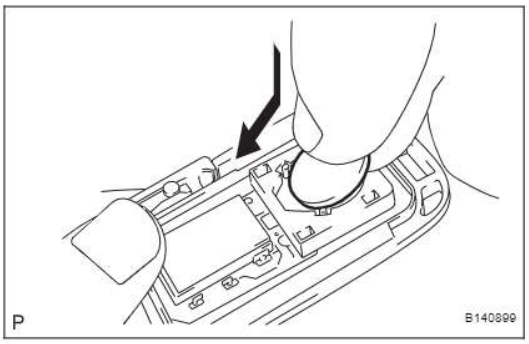
(3) Connect the tester positive (+) lead to the positive (+) battery (lithium battery), and the tester negative (-) lead to the wire connected in the previous step.
(4) Press one of the transmitter switches on the transmitter for approximately 1 second.
(5) Press the transmitter switch on the transmitter again to check the voltage.
Voltage:
2.2 V or higher
HINT:
- If the temperature of the battery is low, the inspection cannot be performed correctly. If the result of the test is less than 2.2 V, perform the test again after leaving the battery in a place at a temperature of 18°C (64°F) for 30 minutes or more.
- 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 the 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.

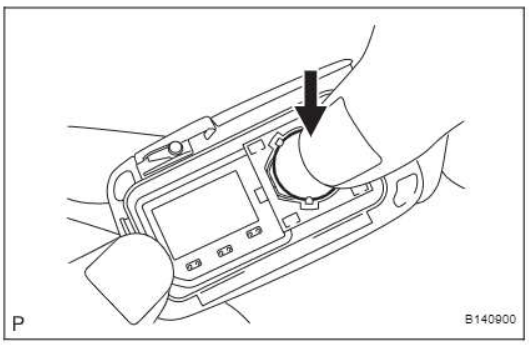
DL

INSTALLATION

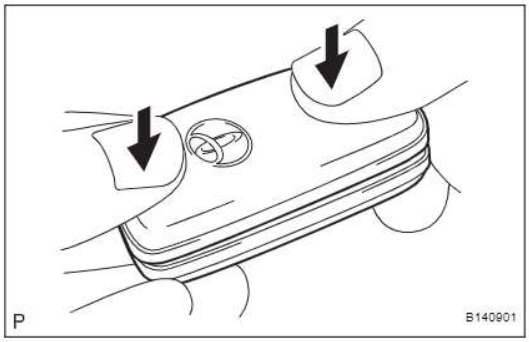
1. INSTALL TRANSMITTER BATTERY

(a) Install a new battery (lithium battery) with the positive (+) side up as shown in the illustration.

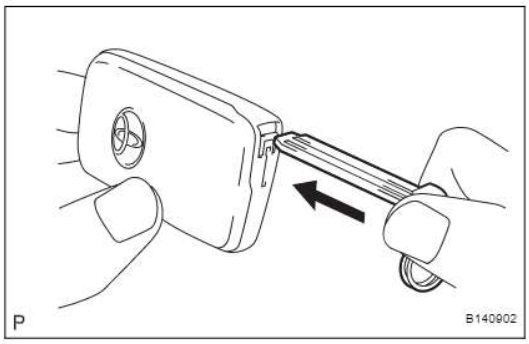




(b) Press down gently on the battery to set it in place.
NOTICE:
- **Be sure that the positive and negative sides of the transmitter battery are positioned correctly.**
- **Be careful not to bend the terminals of the transmitter battery during installation.**
- **Keep the interior of the transmitter case free of dust, water, and oil.**



(c) Install the cover by pressing down on it as shown in the illustration.



(d) Install the mechanical key.
HINT:
After the installation, press one of the transmitter switches and check that the LED illuminates.

DL

INSPECTION

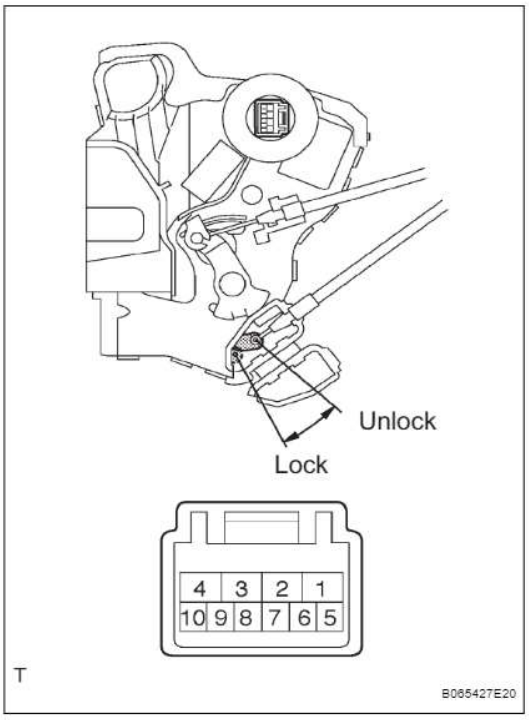
1. INSPECT FRONT DOOR LOCK LH ASSEMBLY

(a) Remove the front door lock assembly LH.

(b) Check operation of the door lock motor.

(1) Apply battery voltage and check operation of the door lock motor.

OK

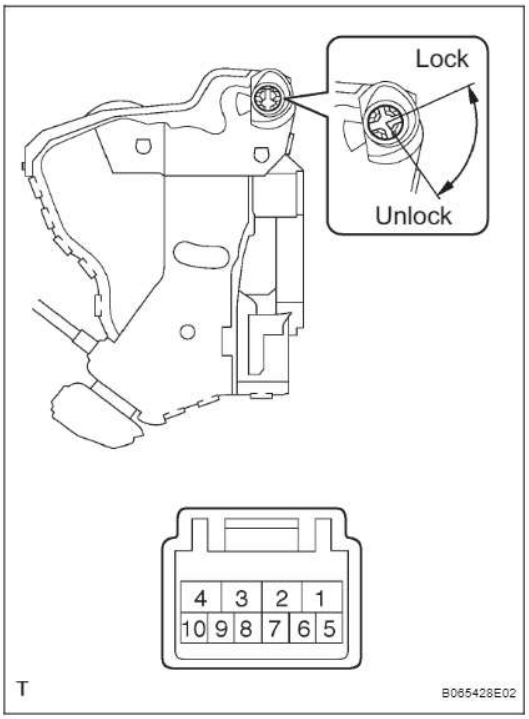


Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

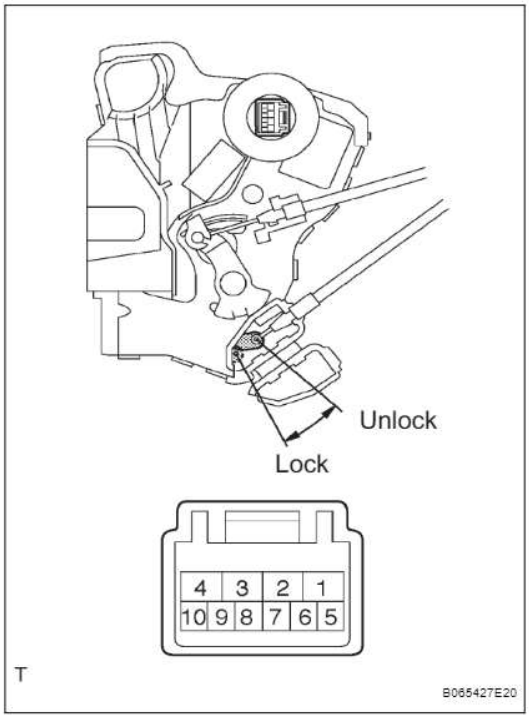
(c) Check operation of the door key lock and unlock switch.

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

Standard resistance



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

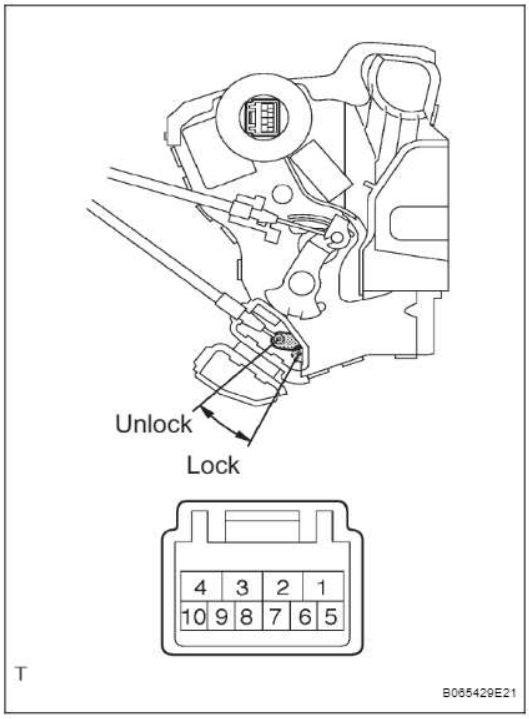


(d) Check operation of the door unlock detection switch.
(1) Measure the resistance according to the value(s) in the table below.
Standard resistance

Tester Connection	Measurement Condition	Door Lock Condition	Specified Condition
7 - 8	Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock	10 kΩ or higher
7 - 8	Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock	Below 1 Ω

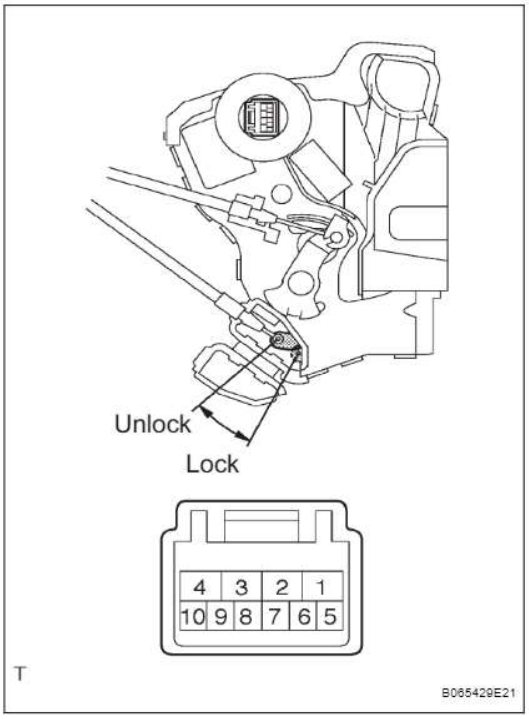
2. INSPECT FRONT DOOR LOCK RH ASSEMBLY

(a) Remove the front door lock assembly RH.



(b) Check operation of the door lock motor.
(1) Apply battery voltage 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



(c) Check operation of the door unlock detection switch.

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

Standard resistance

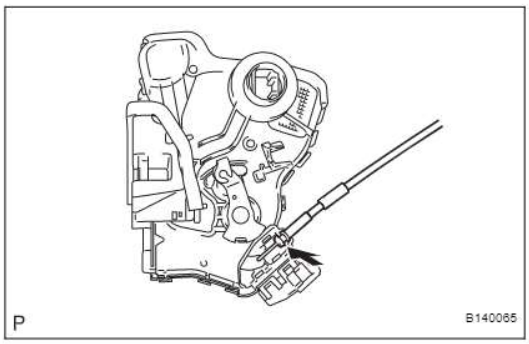
Tester Connection	Measurement Condition	Door Lock Condition	Specified Condition
7 - 8	Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	LOCK	10 kΩ or higher
7 - 8	Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	UNLOCK	Below 1 Ω

INSTALLATION

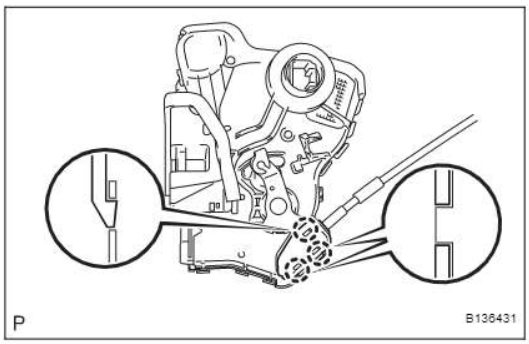
1. **INSTALL FRONT DOOR LOCK ASSEMBLY**

NOTICE:

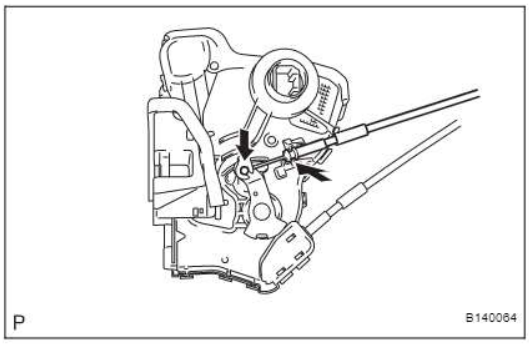
- **When reusing the removed front door lock assembly, replace the door lock wiring harness seal on the door lock with a new one.**
- **Do not allow grease or dust to adhere to the surface of the door lock where the seal attaches.**
- **Reusing the door lock wiring harness seal or using a damaged door lock wiring harness seal may allow water intrusion to the connection, and result in a malfunction in the front door lock assembly.**



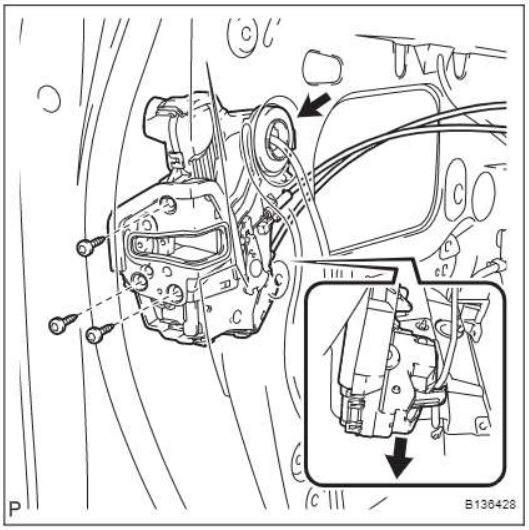
(a) Install the front door inside locking cable assembly.



(b) Engage the 3 claws.



(c) Install the front door lock remote control cable assembly.
(d) Apply MP grease to the sliding parts on the front door lock assembly.
(e) Install a new door lock wiring harness seal to the front door lock assembly.



(f) Insert the front door lock open rod to the front door lock assembly, and set the assembly to the front door outside handle frame.
(g) Make sure that the front door lock open rod is securely connected to the front door lock assembly.
(h) Using a "torx" socket wrench (T30), install the front door lock assembly with the 3 screws.
Torque: 5.0 N*m (51 kgf*cm, 44 in.*lbf)
(i) Connect the connector.

2. **INSTALL FRONT DOOR OUTSIDE HANDLE COVER (See page ED-55)**
3. **INSTALL FRONT DOOR REAR LOWER FRAME SUB-ASSEMBLY (See page ED-56)**
4. **INSTALL FRONT DOOR GLASS SUB-ASSEMBLY (See page ED-57)**
5. **INSTALL FRONT DOOR SERVICE HOLE COVER (See page ED-57)**
6. **INSTALL FRONT NO. 1 SPEAKER ASSEMBLY (See page AV-147)**
7. **INSTALL FRONT DOOR INNER GLASS WEATHERSTRIP (See page ED-58)**
8. **INSTALL FRONT DOOR INSIDE HANDLE SUB-ASSEMBLY (See page ED-59)**
9. **INSTALL FRONT DOOR TRIM BOARD SUB-ASSEMBLY (See page ED-59)**
10. **INSTALL COURTESY LIGHT ASSEMBLY (See page ED-59)**
11. **INSTALL ASSIST GRIP COVER (See page ED-60)**
12. **INSTALL FRONT DOOR INSIDE HANDLE BEZEL PLUG (See page ED-60)**
13. **INSTALL FRONT DOOR LOWER FRAME BRACKET GARNISH (See page ED-60)**

INSPECTION

1. INSPECT REAR DOOR LOCK LH ASSEMBLY

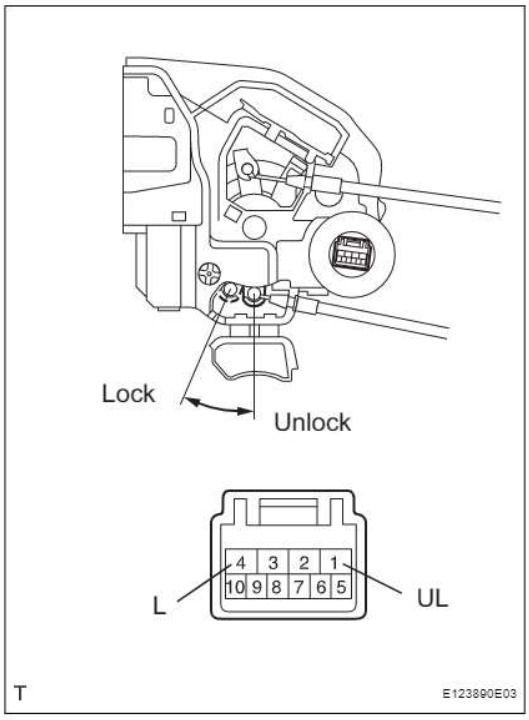
(a) Remove the rear door lock assembly LH.

(b) Check operation of the door lock motor.

(1) Apply battery voltage 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

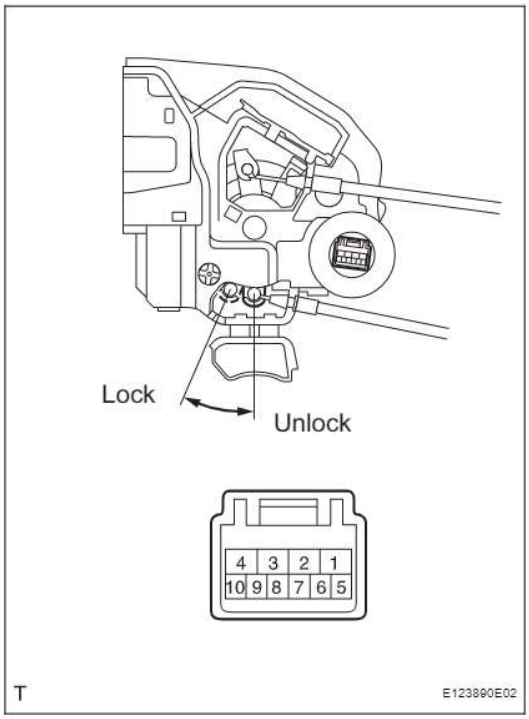


(c) Check operation of the unlock detection switch.

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

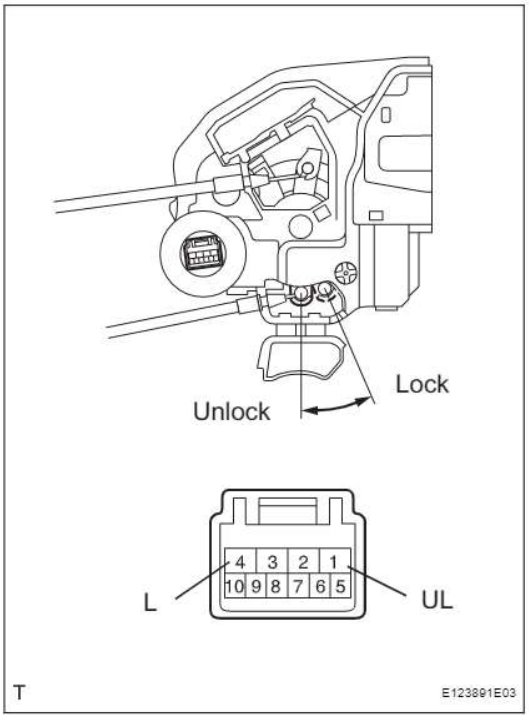
Standard resistance

Tester Connection	Measurement Condition	Door Lock Condition	Specified Condition
6 - 9	Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock	10 kΩ or higher
6 - 9	Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock	Below 1 Ω



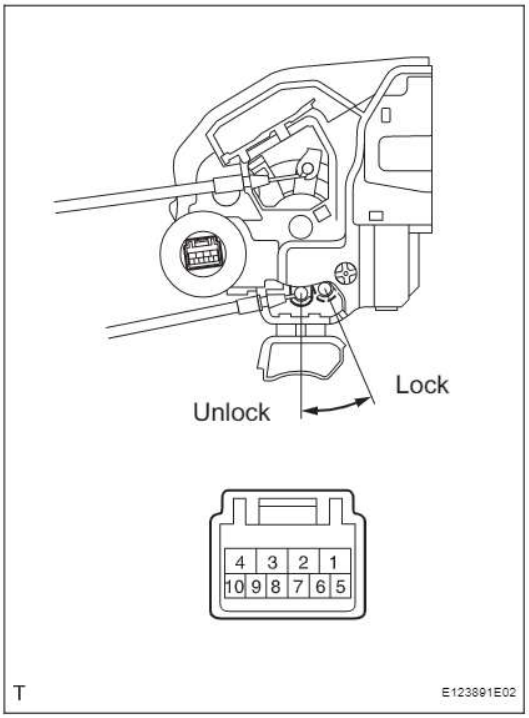
2. INSPECT REAR DOOR LOCK RH ASSEMBLY

(a) Remove the rear door lock assembly RH.



(b) Check operation of the door lock motor.
(1) Apply battery voltage 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

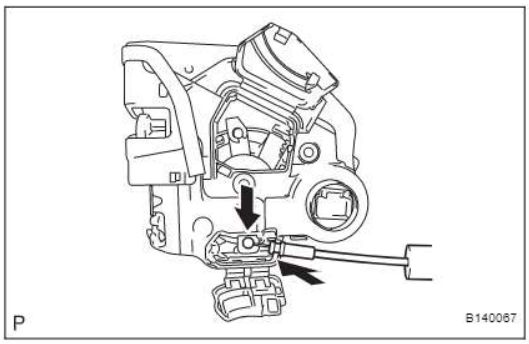


(c) Check operation of the unlock detection switch.
(1) Measure the resistance according to the value(s) in the table below.
Standard resistance

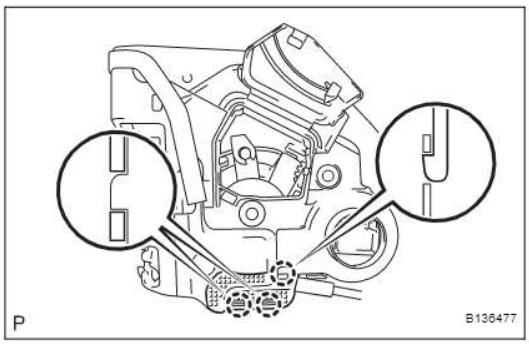
Tester Connection	Measurement Condition	Door Lock Condition	Specified Condition
6 - 9	Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock	10 kΩ or higher
6 - 9	Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock	Below 1 Ω

INSTALLATION

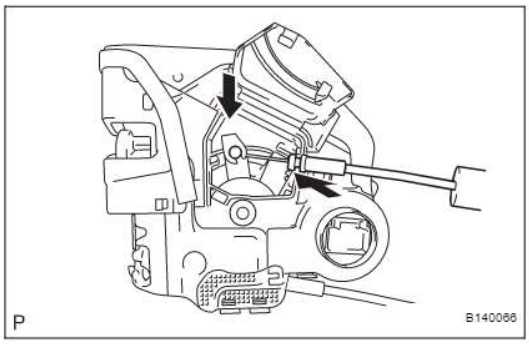
1. **INSTALL REAR DOOR LOCK ASSEMBLY**
   NOTICE:
   - **When reusing the removed rear door lock assembly, replace the door lock wiring harness seal on the door lock with a new one.**
   - **Do not allow grease or dust to adhere to the surface of the door lock where the seal attaches.**
   - **Reusing the door lock wiring harness seal or using a damaged door lock wiring harness seal may allow water intrusion to the connection, and result in a malfunction in the rear door lock assembly.**



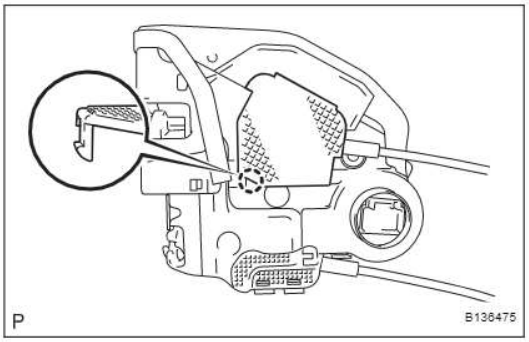
(a) Install the rear door inside locking cable assembly.



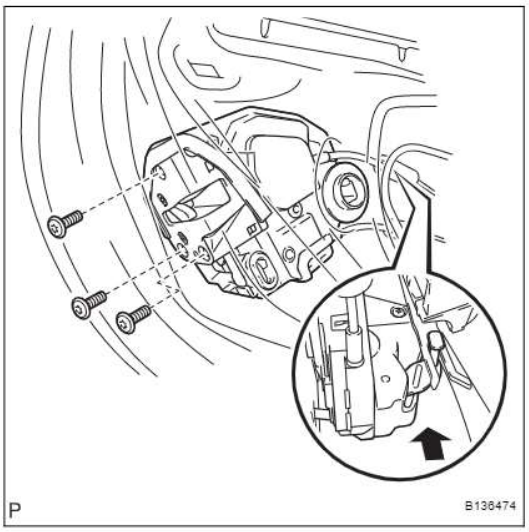
(b) Engage the 3 claws.



(c) Install the rear door lock remote control cable assembly.



(d) Engage the claw.
(e) Apply MP grease to the sliding parts on the rear door lock assembly.
(f) Install a new door lock wiring harness seal to the rear door lock assembly.



(g) Insert the rear door lock assembly to the rear door outside handle release plate, and set the assembly to the rear door panel.
(h) Make sure that the rear door outside handle frame release plate is securely connected to the rear door lock assembly.
(i) Using a "torx" socket wrench (T30), install the rear door lock assembly with the 3 screws.
Torque: 5.0 N*m (51 kgf*cm, 44 in.*lbf)
(j) Connect the connector.

2. **INSTALL REAR DOOR SERVICE HOLE COVER (See page ED-79)**
3. **INSTALL REAR DOOR INSIDE HANDLE SUB-ASSEMBLY (See page ED-80)**
4. **INSTALL REAR DOOR INNER GLASS WEATHERSTRIP (See page ED-80)**
5. **INSTALL REAR DOOR TRIM BOARD SUB-ASSEMBLY (See page ED-81)**
6. **INSTALL DOOR ASSIST GRIP COVER (See page ED-82)**
7. **INSTALL REAR DOOR INSIDE HANDLE BEZEL PLUG (See page ED-82)**

INSTALLATION

1. **INSTALL LUGGAGE DOOR OPENING SWITCH ASSEMBLY**
   (a) Install the luggage door opening switch assembly with the 2 screws.
   (b) Connect the connector.
2. **INSTALL LUGGAGE COMPARTMENT DOOR COVER (See page ET-53)**

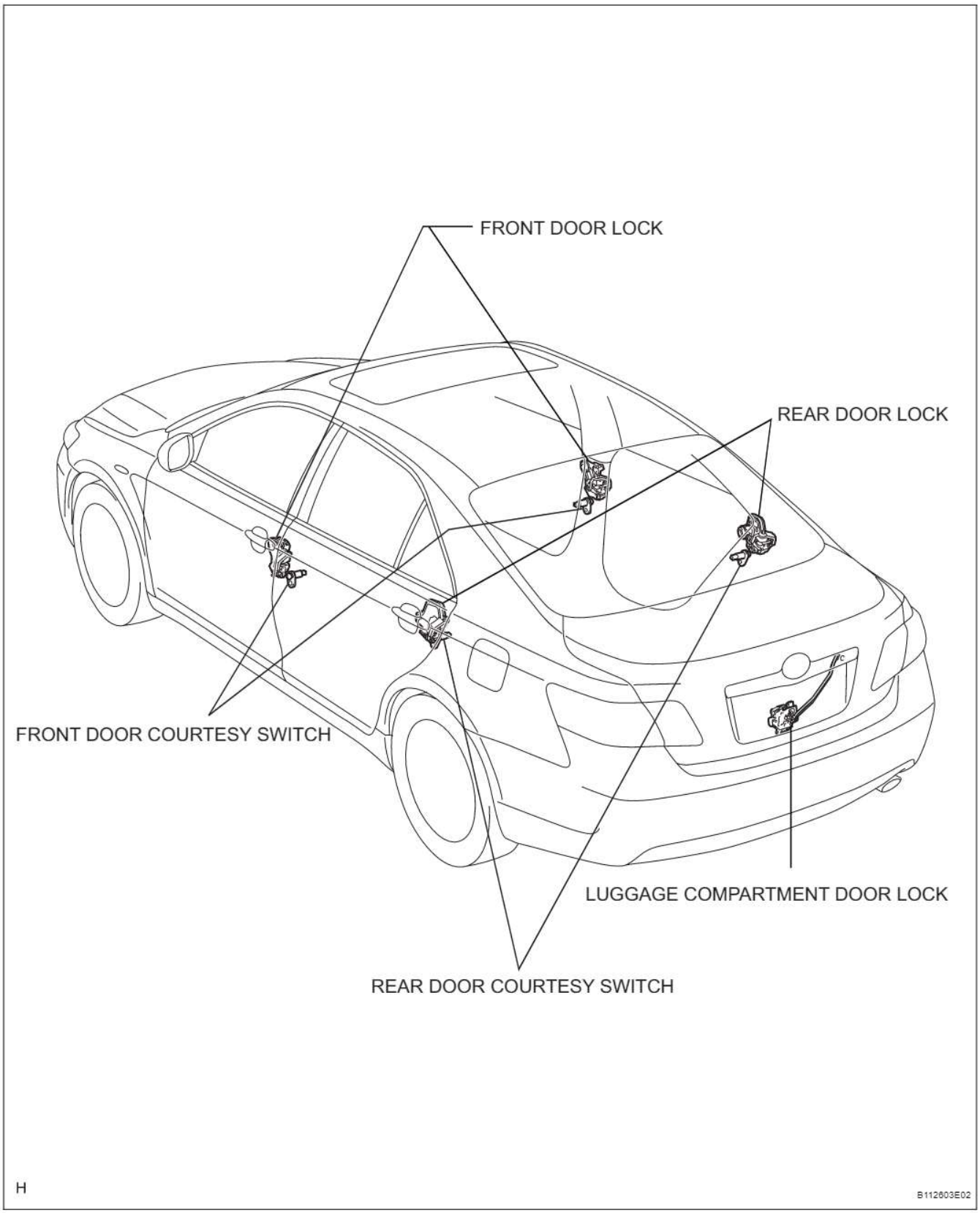
POWER DOOR LOCK CONTROL SYSTEM

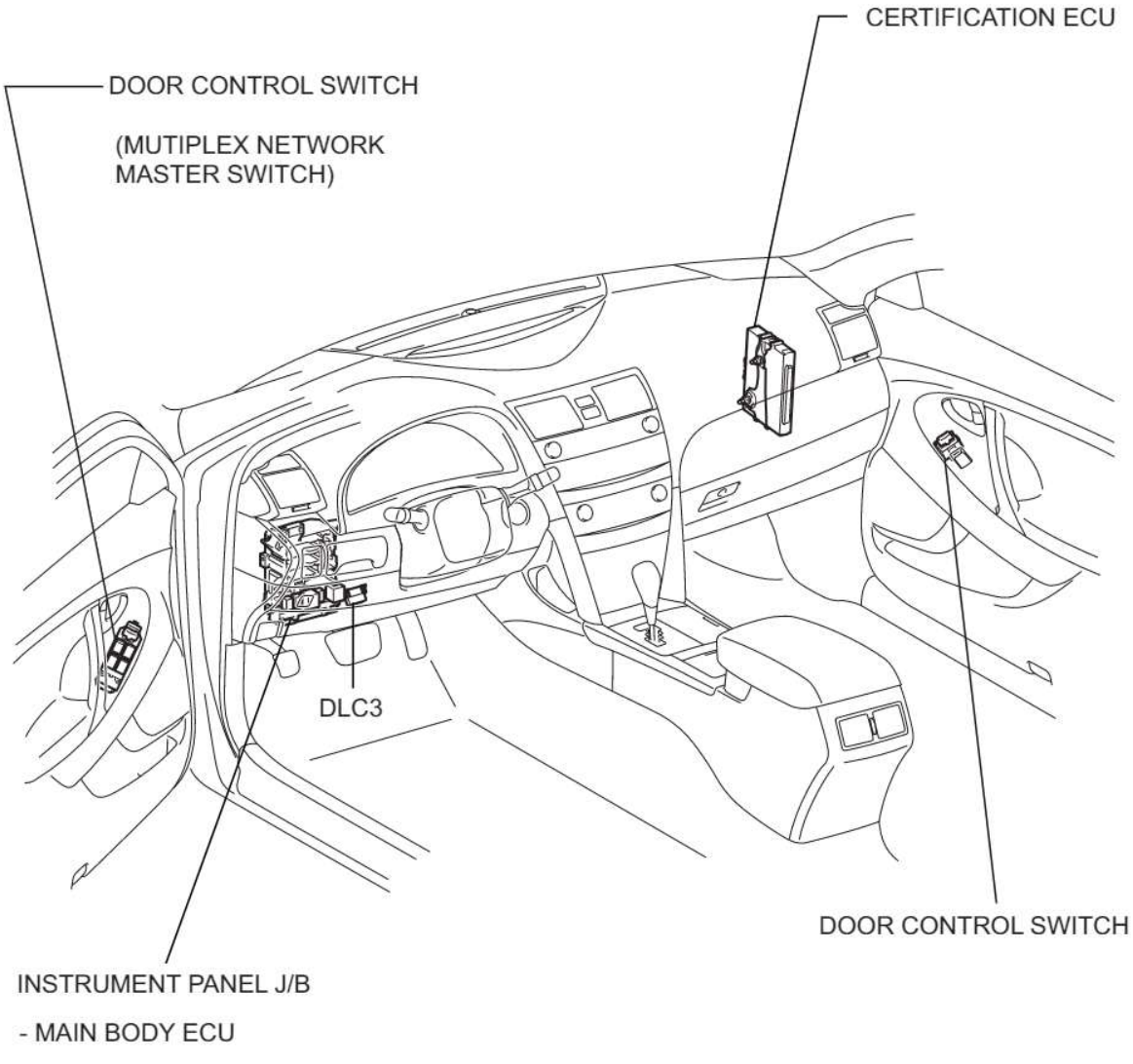
PRECAUTION

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

System Name	See procedure
SFI System	IN-43

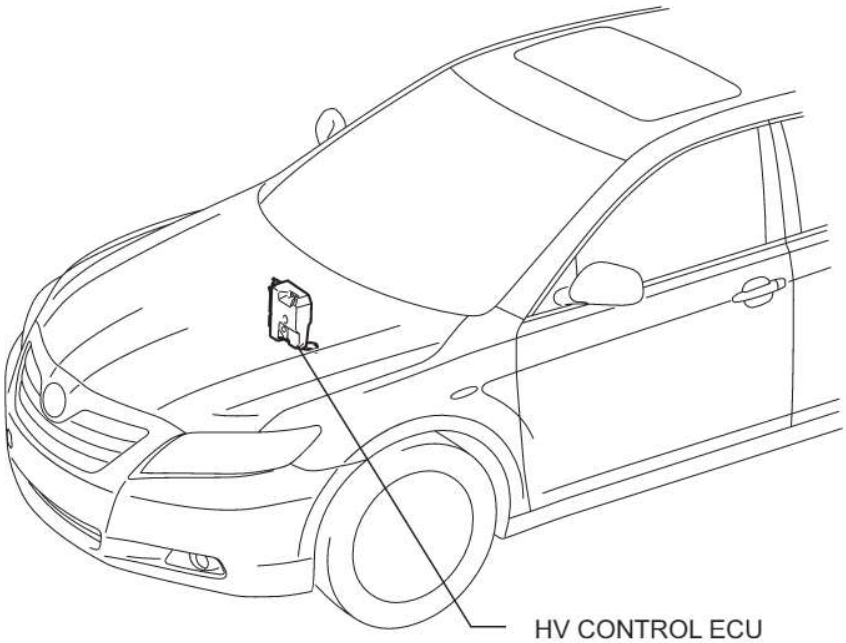
PARTS LOCATION





H

B138025E01


HV CONTROL ECU
B138082E01

WIRELESS DOOR LOCK CONTROL SYSTEM

PRECAUTION

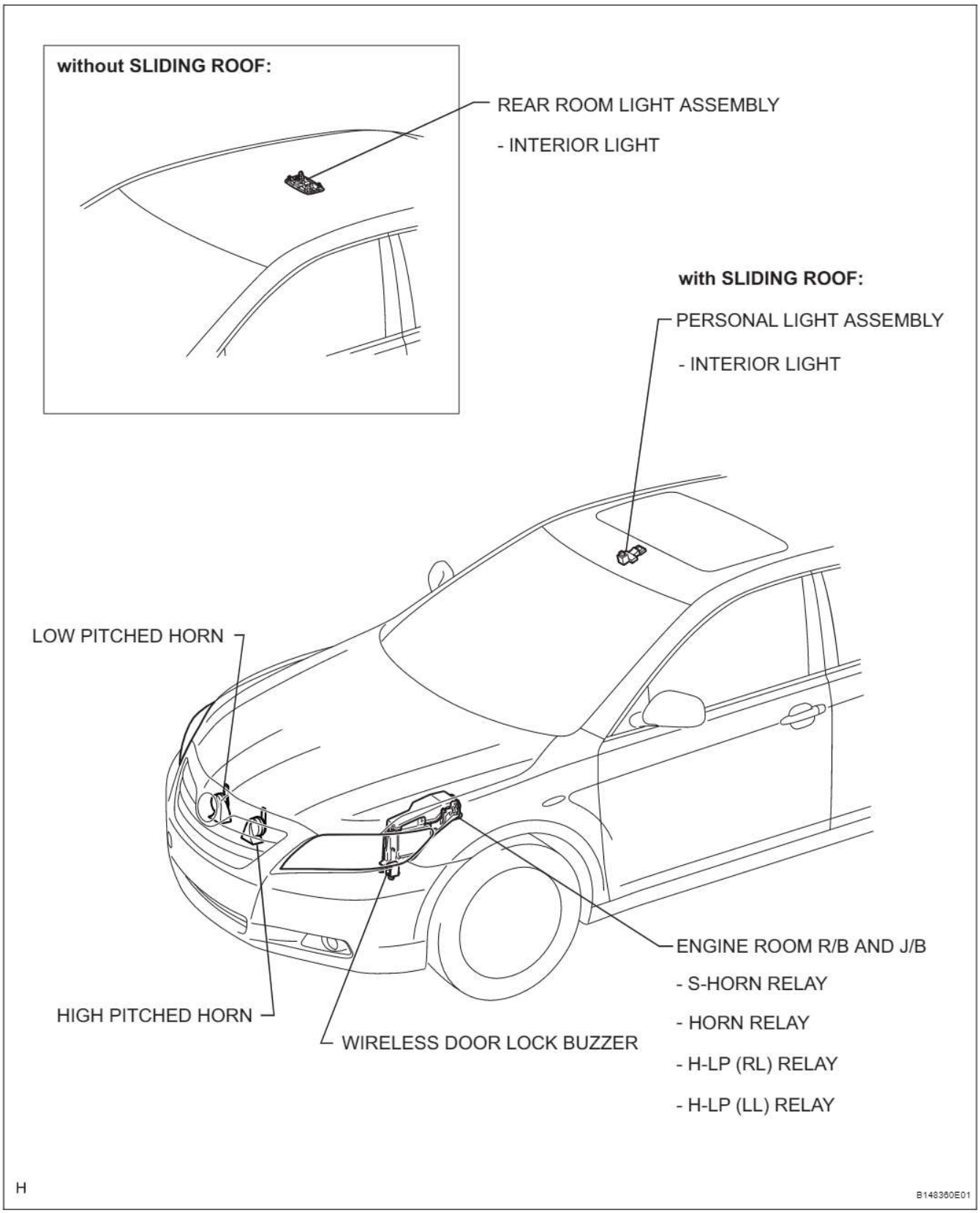
1. NOTICE FOR INITIALIZATION

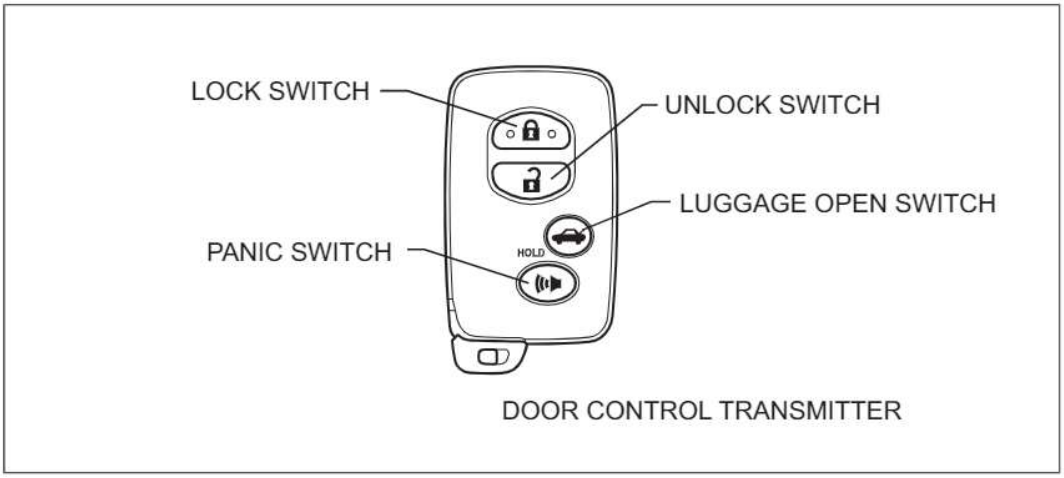
NOTICE:
When disconnecting the negative (-) battery terminal, initialize the following systems after the terminal is reconnected.

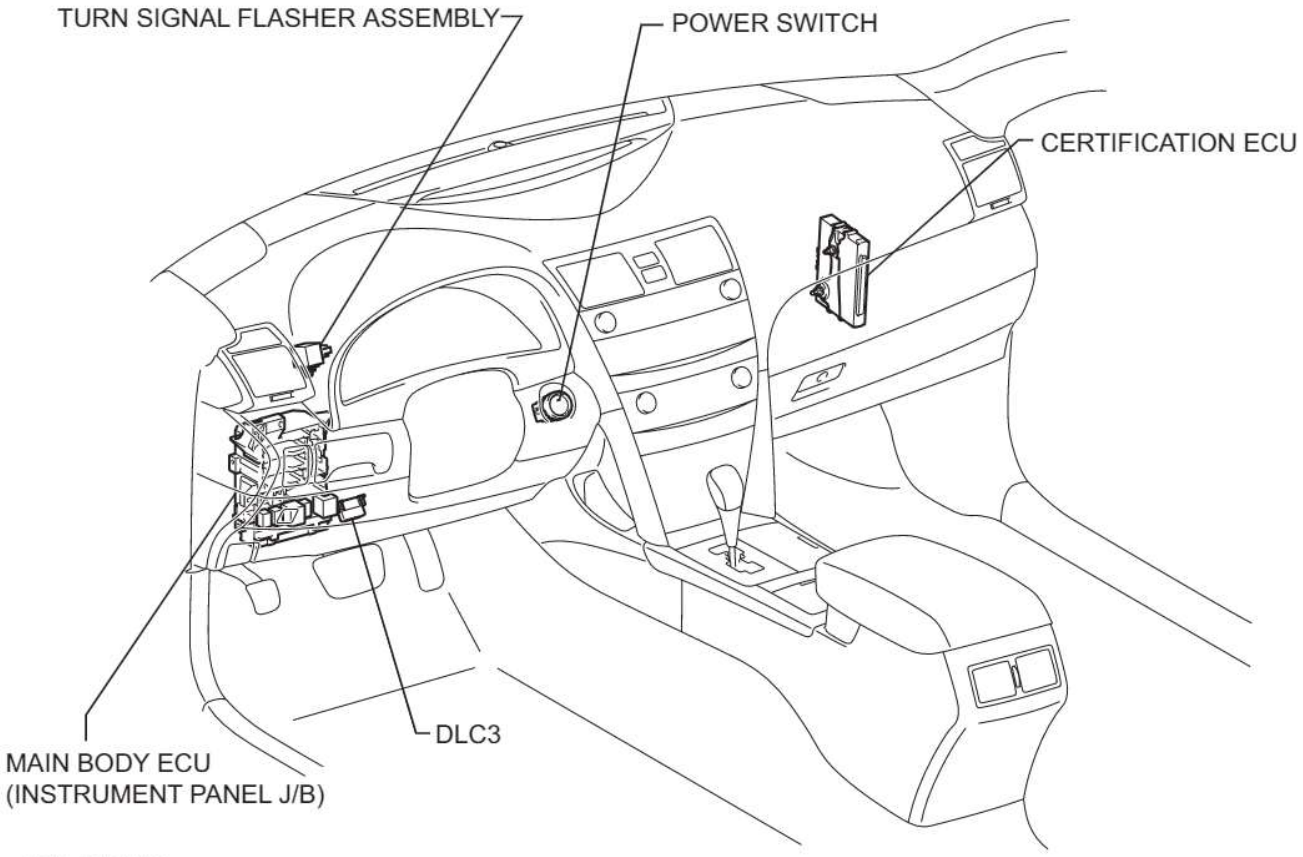
System Name	See procedure
SFI System	(See page IN-43)

DL

PARTS LOCATION

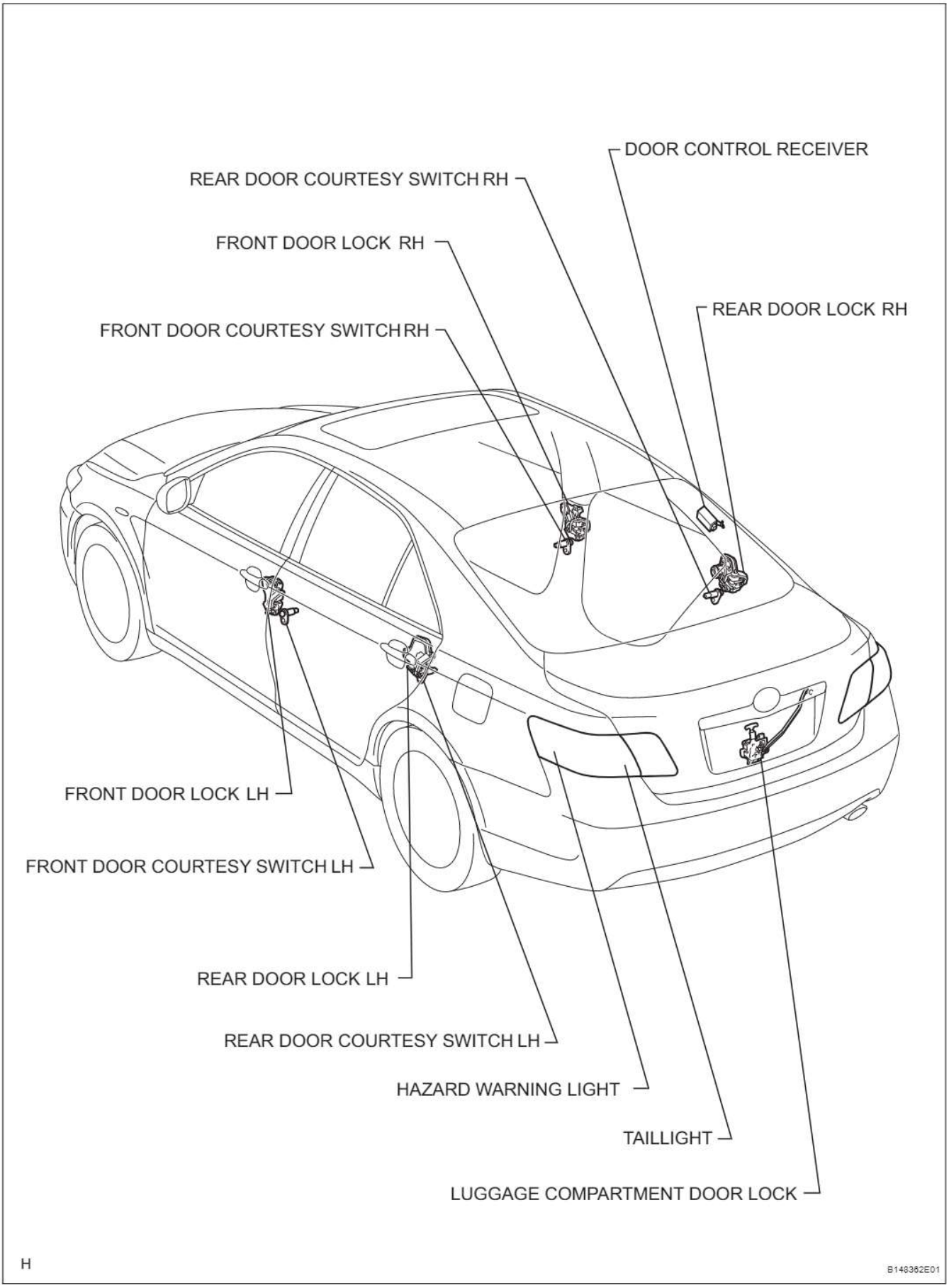






H

B148361E02


DOOR CONTROL RECEIVER
REAR DOOR COURTESY SWITCH RH
FRONT DOOR LOCK RH
REAR DOOR LOCK RH
FRONT DOOR COURTESY SWITCH RH
FRONT DOOR LOCK LH
FRONT DOOR COURTESY SWITCH LH
REAR DOOR LOCK LH
REAR DOOR COURTESY SWITCH LH
HAZARD WARNING LIGHT
TAILLIGHT
LUGGAGE COMPARTMENT DOOR LOCK
H
B148362E01

SMART KEY SYSTEM

PRECAUTION

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

System Name	See procedure
SFI System	IN-43

1. PRECAUTIONS WHEN USING INTELLIGENT TESTER

(a) When troubleshooting the smart key system using the intelligent tester with the power 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 seconds).

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

2. PRECAUTIONS FOR EACH FUNCTION

(a) Precautions for the electrical key:
The electrical key is a precision instrument. Be sure to observe the following:
(1) Do not drop or strike the electrical key.
(2) Do not keep the electrical key in a high temperature area for a long time.
(3) Do not use an ultrasonic washing machine to clean the electrical key.
(4) Keep the electrical key away from magnets or magnetized items during use.
(5) Do not attach any stickers to the electrical key.
(6) If an electrical key is lost, delete all registered electrical key ID codes and then reregister the remaining electrical keys.

(b) Precautions for the entry unlock function:
(1) As the sensor is built into the backside of the outside door handle, the user must touch the backside of the handle when performing the unlock function.
(2) If touched with gloved hands, the response of the door may be delayed.
(3) During the entry unlock operation, if the door handle is pulled before the door unlocks, the unlock function cannot be completed. Confirm that the door has been unlocked before pulling the door handle to open the door.

(4) Make sure that the doors are unlocked when touching the touch sensor on the outside door handle while the electrical key is being carried.
If the doors cannot be unlocked, the certification ECU orders the main body ECU to perform the door unlock operation 4 times at intervals of 0.75 seconds.
At this time, the door may not be unlocked because the handle is being pulled due to some mechanical reasons.
Be sure to return the door handle to its original position.
If the door cannot be opened by pulling the handle, perform the entry unlock operation again.

DL

(5) If the electrical key is too close to the oscillator on the outside of the vehicle, the door may not be unlocked because the electrical key cannot react to the strong wave output from the transmitter.

(6) If the electrical key is within the vehicle exterior detection area, the door can be unlocked even when a person other than the person carrying the electrical key holds the door handle.
However, the doors other than the door that the codes match will not be unlocked.
(If the electrical key is within the driver side door's detection area outside the vehicle, the doors will be unlocked when the person carrying the electrical key holds the driver side door handle. However, if any door handle other than that of the driver side door is held, the doors will not be unlocked).

(7) If a door is not opened after the door unlock operation, the doors automatically lock after approximately 60 seconds.

(8) If a large amount of water is applied to the door handle due to a car wash or heavy rain, the electrical key being within the vehicle exterior detection area may cause the doors to be unlocked.
However, the doors will be locked again after approximately 60 seconds if a door is not opened.

(9) If the electrical key of the smart key system is used while it is being carried with the electrical 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 the entry lock function:

(1) When performing the entry lock operation, firmly press the lock switch on the outside door handle.
If pressed too quickly or lightly, the entry lock may not operate.

(2) It is possible that signals output from the indoor electrical key antenna may leak through the window. Also, if the electrical key is too close to a door oscillator, the oscillator output signals are too strong and the electrical key cannot respond. As a result, when the electrical key is near the vehicle interior (window, door handle), the entry lock function may not operate. Also, the electrical key reminder warning buzzer may sound and the entry unlock operation may stop functioning. In this situation, move the electrical key away from the vehicle interior (window, door handle), perform the entry lock operation and perform the entry unlock operation.

(3) Do not touch the lock switch while opening or closing the door.
If the lock switch is pressed when opening or closing the door while the electrical key is being carried, the door ajar warning buzzer sounds (beeps outside the vehicle for 10 seconds).

(4) If the electrical key is on the instrument panel, rear package tray, floor, or in the glove box, the electrical key reminder function may not operate and the electrical key may be locked in the vehicle. Always carry the electrical key.

(5) If the electrical key is outside the vehicle but is very close to a window or door handle (the ECU determines that the electrical key is inside the vehicle) and the transmitter or mechanical key is used to lock the doors (entry lock is not used), entry unlock will not operate. To unlock the doors, perform a wireless door unlock operation. The entry lock function operates in this way to prevent the user from unintentionally unlocking the doors from outside the vehicle. For example, when a user operates the wireless door lock operation from inside the vehicle, radio waves from a door oscillator may leak into the vehicle interior and the doors may unlock.

(6) To allow the user enough time to check if the doors are locked after performing a door lock operation (entry lock function or wireless door lock operation), the entry unlock function will not be permitted for 3 seconds after the door lock operation.

(d) Precautions for the entry ignition function:

(1) To start the HV control system, first depress the brake pedal firmly until the power switch indicator illuminates green.

(2) When operating the power switch, firmly press the switch. If the switch is pressed too quickly, power source control and HV control system may not operate.

(3) While driving the vehicle, continuously pressing the power switch for 3 seconds or more will turn off the HV control system. Do not touch the power switch while driving, except in an emergency.
(4) Do not touch the power switch with oily hands.
(5) If the vehicle has been in a high temperature location for an extended period of time, be careful when touching the power switch. It may be very hot and lead to burns.
(6) Take care to avoid spilling beverages on the power switch. Keep all liquids away from the power switch.
(7) Do not use the power switch if it seems to be sticking or feels abnormal.
(8) The vehicle continually records the power source mode (off, on (ACC), on (IG), on (READY)). When the battery cable is disconnected and reconnected, the power source mode will return to the mode that was selected before disconnecting the battery cable. Always turn the power off before disconnecting the battery cable. When the vehicle battery is fully depleted, power will be cut. As a result, the power source mode before the power was cut cannot be recognized, so be extremely careful.
(9) Do not connect any electronic products to the ACC, IG1 or IG2 coil side wiring, as the vehicle power supply may be unable to be turned on, or other problems may occur.
(10) After the battery cable has been disconnected and reconnected, the engine will not start on the first attempt. The HV control system will be on (READY) normally on the second attempt.
(11) When HV control system is on (READY) immediately after reconnecting the battery cable, connect the cable and wait at least 10 seconds before attempting to start HV control system. The HV control system may not be on (READY) when attempting an HV control system on (READY) immediately after disconnecting and reconnecting the battery cable.
(12) If the electrical key is held over the power switch to start the HV control system because the electrical key battery is depleted, the following warnings will sound:
- Driver's door open → closed:
  – An exit warning if the shift lever is in a position other than P and the power source is in a mode other than off.
  – An exit warning if the shift lever is in the P position and the power source is in a mode other than off.

- Doors other than the driver door open → closed:
  Warning to inform that the electrical key has been taken out of the vehicle.

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

(e) Precautions for luggage compartment door entry function:
Even if the electrical key is within the electrical key oscillator (outside luggage compartment) detection area, the luggage compartment door cannot be opened if the electrical key is in the following areas:
- Near the center of the bumper
- Too close to the ground or in a high place

(f) Precautions for the function to prevent electrical key confinement in the luggage compartment:
(1) Do not place the electrical key in the luggage compartment.
If the luggage compartment is closed with the electrical key in it when all the doors are locked, the alarm to indicate electrical key confinement will operate (beeping sound for 2 seconds outside of the vehicle). However, the alarm may not operate for some reason relating to the electrical key location (near the spare tire or the side of the luggage compartment), the electrical key condition (covered with metal or near metal), or ambient radio waves.
(2) If the luggage compartment is closed with the electrical key in it when any of the doors is unlocked or open, the electrical 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 electrical key.
(3) The alarm may erroneously operate in the following conditions. If you can confirm that you are carrying the electrical key or that the electrical 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 a wireless operation to open the luggage compartment.
- The electrical key is brought into the cabin after the luggage compartment is opened, and then the luggage compartment is closed.
- The luggage compartment is closed by the person who is carrying the electrical key.

(4) If the alarm operates when the luggage compartment is closed with all the doors locked, the electrical key is in the cabin or luggage compartment. Check the cabin and luggage compartment to find the electrical key.
(5) If the luggage compartment is closed with the electrical key in it when all the doors are locked, the alarm will sound and the luggage compartment can be opened. This may increase the risk of the vehicle being stolen.
(6) Do not open or close the luggage compartment after all the doors are locked if you want to keep the spare electrical keys in the cabin. As a result, the alarm may sound and the luggage compartment can be opened. This may increase the risk of the vehicle being stolen.

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(g) Precautions for the battery built into the electrical key and the vehicle battery:
(1) The electrical key is constantly checking for signals from the vehicle, which requires power from the electrical key's built-in battery. The life of the battery is approximately 1 to 2 years depending on the usage conditions. Be sure to replace the battery when its power is low. When replacing the battery, do not touch the inner circuit board or other inner parts.
(2) The electrical key is constantly checking for signals from the vehicle using battery power to determine whether the electrical key is being used or not. Even if the user is carrying 2 electrical keys and only 1 electrical key is used, both electrical keys will consume battery power.
(3) The electrical key receives radio waves at approximately 314 MHz. If the electrical key continuously receives strong, identical frequency waves, this may drain the electrical key's battery. Store the electrical key at least 1 m (3.3 ft) from TVs, personal computers, or other electrical products.
(4) When a door is being locked, the vehicle battery is used to transmit radio waves. 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.
(5) When a door is being locked with the electrical key in the detection area of a door oscillator, the battery is used for regular communication between the electrical key and vehicle. If the vehicle is not used, keep the electrical key away from the vehicle (more than 2 m (6.6 ft)).

(6) After disconnecting and reconnecting the battery cable, the entry unlock function may not operate. If this occurs, perform a wireless door unlock and lock operation.

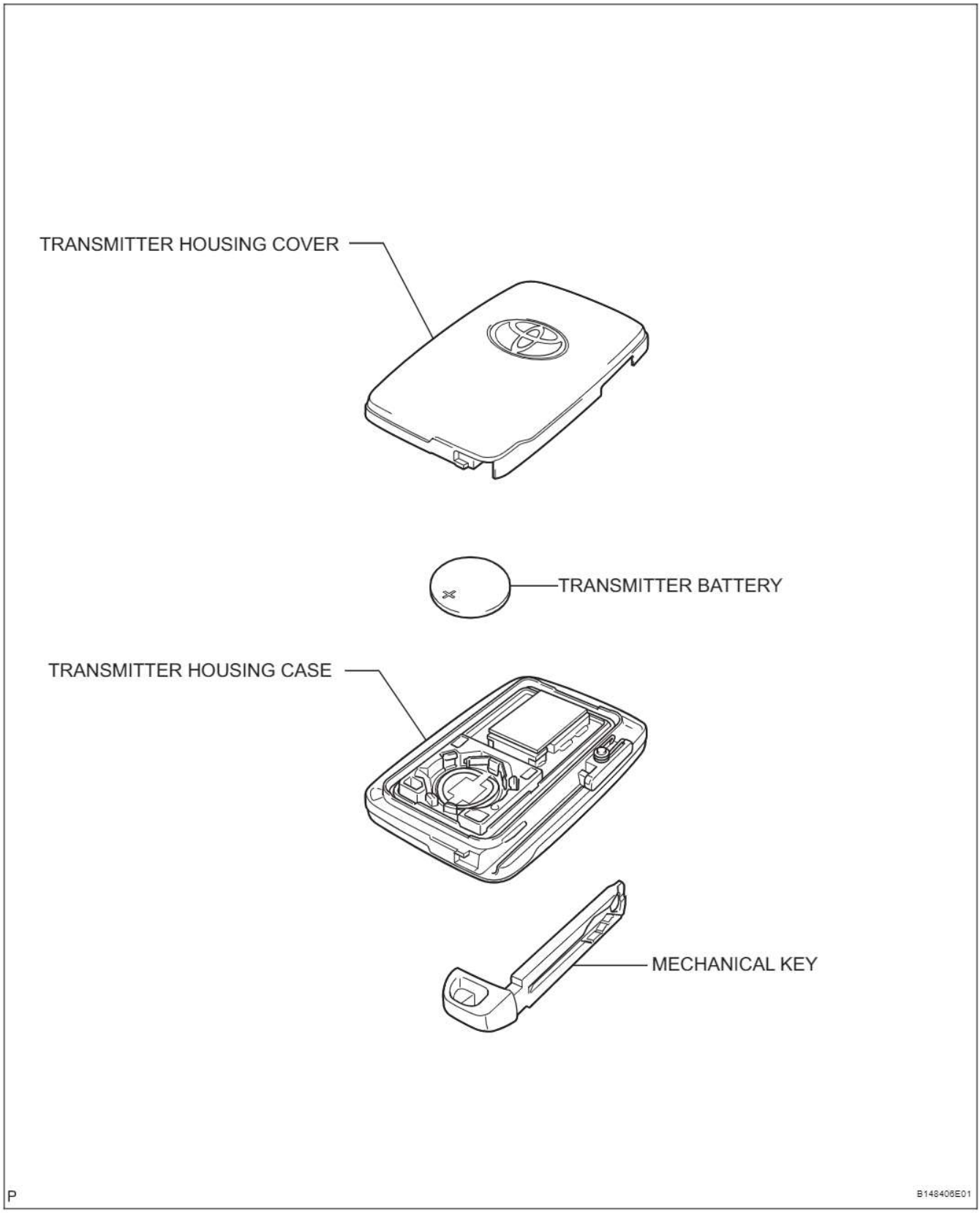
(h) Precautions for the entry unlock mode switching function:

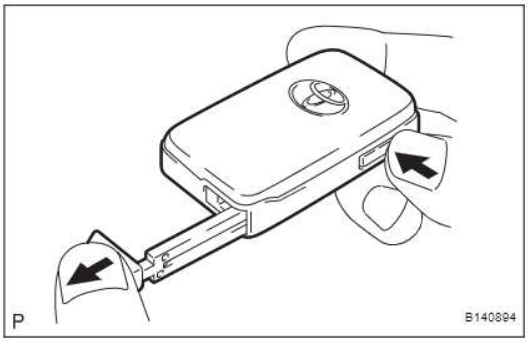
(1) Perform the entry unlock mode switching function within a 1 m (3.3 ft) area around the vehicle.

(2) The entry unlock mode switching function cannot be performed within 5 seconds of the previous mode change. Wait 5 seconds or more before performing a mode change.

DOOR CONTROL TRANSMITTER

COMPONENTS

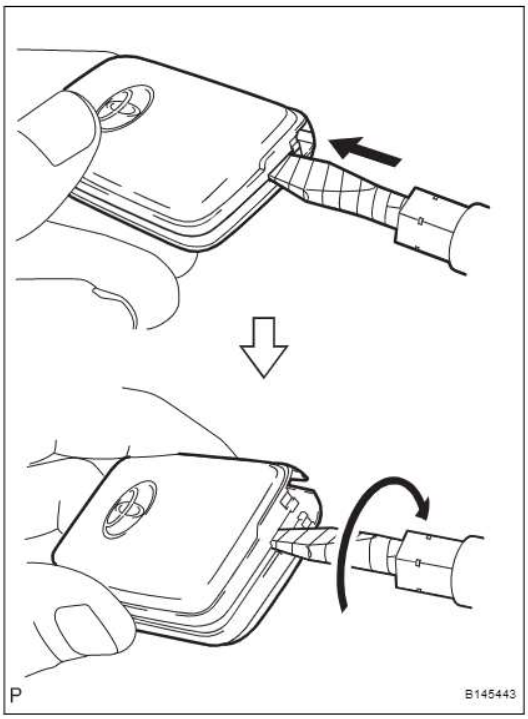




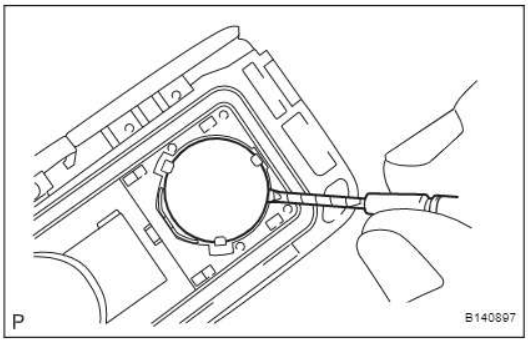
REMOVAL

1. REMOVE TRANSMITTER BATTERY

(a) Remove the mechanical key.



(b) Insert a screwdriver into the gap, and turn the screwdriver to detach the cover.
HINT:
Tape the screwdriver tip before use.

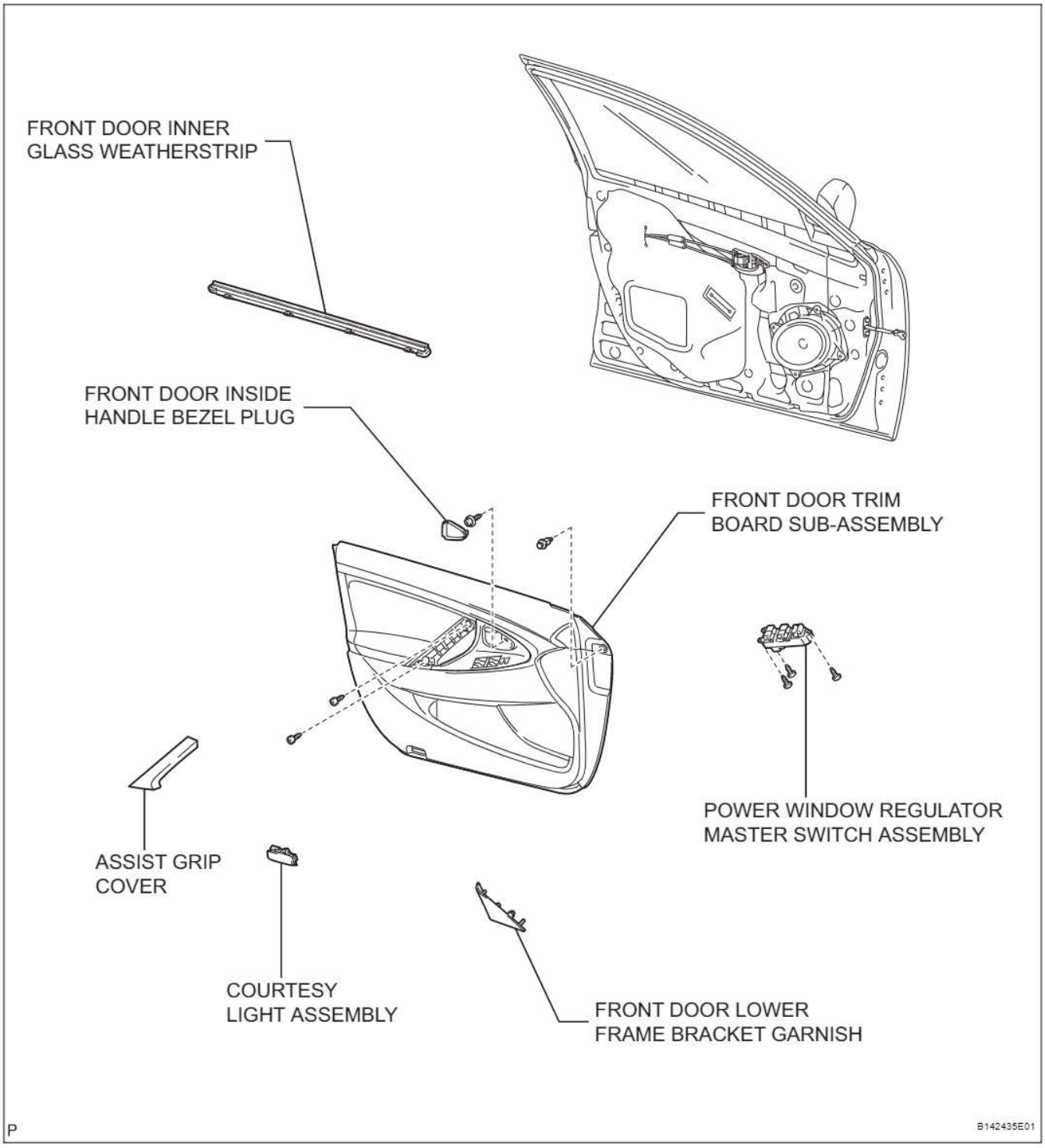


(c) Insert a screwdriver into the gap and gently remove the battery (lithium battery).
NOTICE:

- **Do not push the terminals with your finger.**
- **Do not forcibly pry up the battery (lithium battery) because doing so will deform the terminals.**
- **Do not touch the battery with wet hands. Water may result in corrosion.**
- **Do not touch or move any components inside the transmitter because handling the components may interfere with proper operation of the transmitter.**

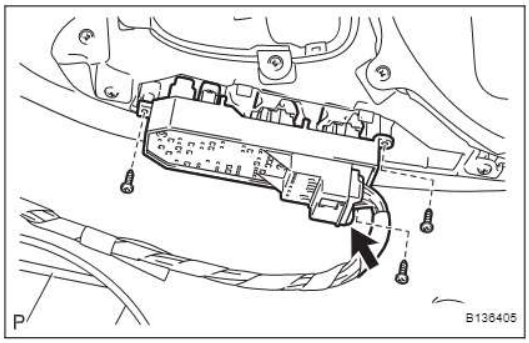
DOOR CONTROL SWITCH

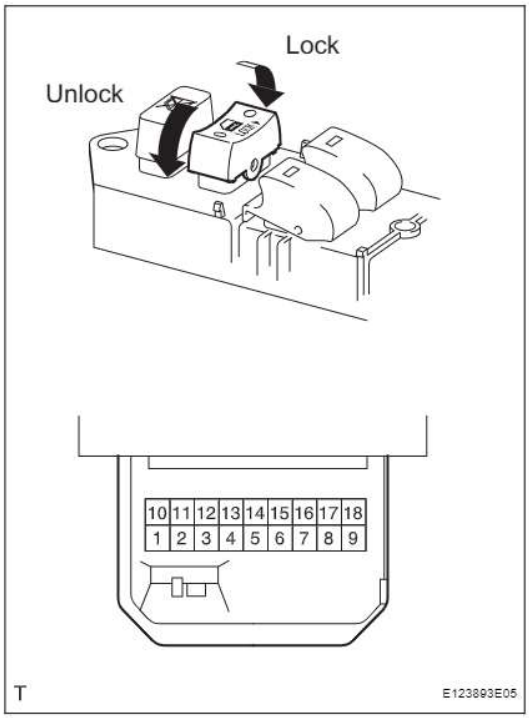
COMPONENTS



REMOVAL

1. REMOVE FRONT DOOR LOWER FRAME BRACKET GARNISH (See page ED-41)
2. REMOVE FRONT DOOR INSIDE HANDLE BEZEL PLUG (See page ED-41)
3. REMOVE ASSIST GRIP COVER (See page ED-42)
4. REMOVE COURTESY LIGHT ASSEMBLY (See page ED-42)
5. REMOVE FRONT DOOR TRIM BOARD SUB-ASSEMBLY (See page ED-42)
6. REMOVE FRONT DOOR INNER GLASS WEATHERSTRIP (See page ED-43)
7. REMOVE POWER WINDOW REGULATOR MASTER SWITCH ASSEMBLY
   (a) Disconnect the connector.
   (b) Remove the 3 screws and the power window regulator master switch assembly.

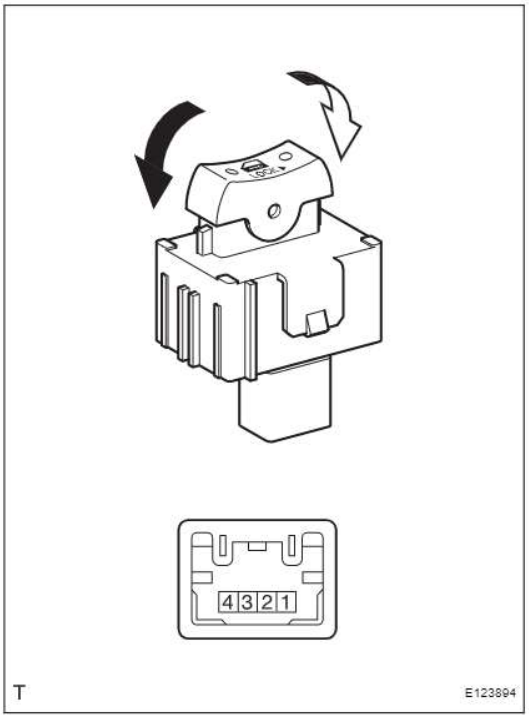




INSPECTION

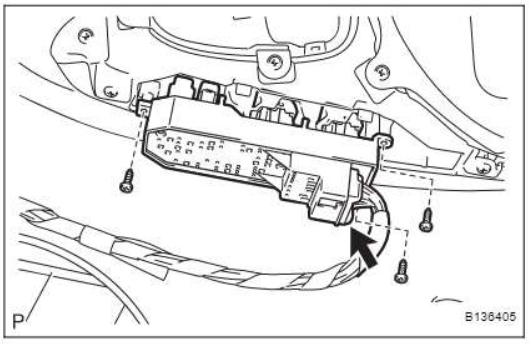
1. INSPECT DOOR CONTROL SWITCH (for Driver Side)
   (a) Measure the resistance of the door control switch.
   Standard resistance

Tester Connection	Switch Condition	Specified Condition
2 - 1	Lock	Below 1 Ω
2 - 1	OFF (Free)	10 kΩ or higher
9 - 1	Unlock	Below 1 Ω
9 - 1	OFF (Free)	10 kΩ or higher



2. **INSPECT DOOR CONTROL SWITCH (for Front Passenger Side)**
   (a) Measure the resistance according to the value(s) in the table below.
   Standard resistance

Tester Connection	Switch Condition	Specified Condition
4 - 3	Lock	Below 1 Ω
4 - 3 2 - 3	OFF (Free)	10 kΩ or higher
2 - 3	Unlock	Below 1 Ω

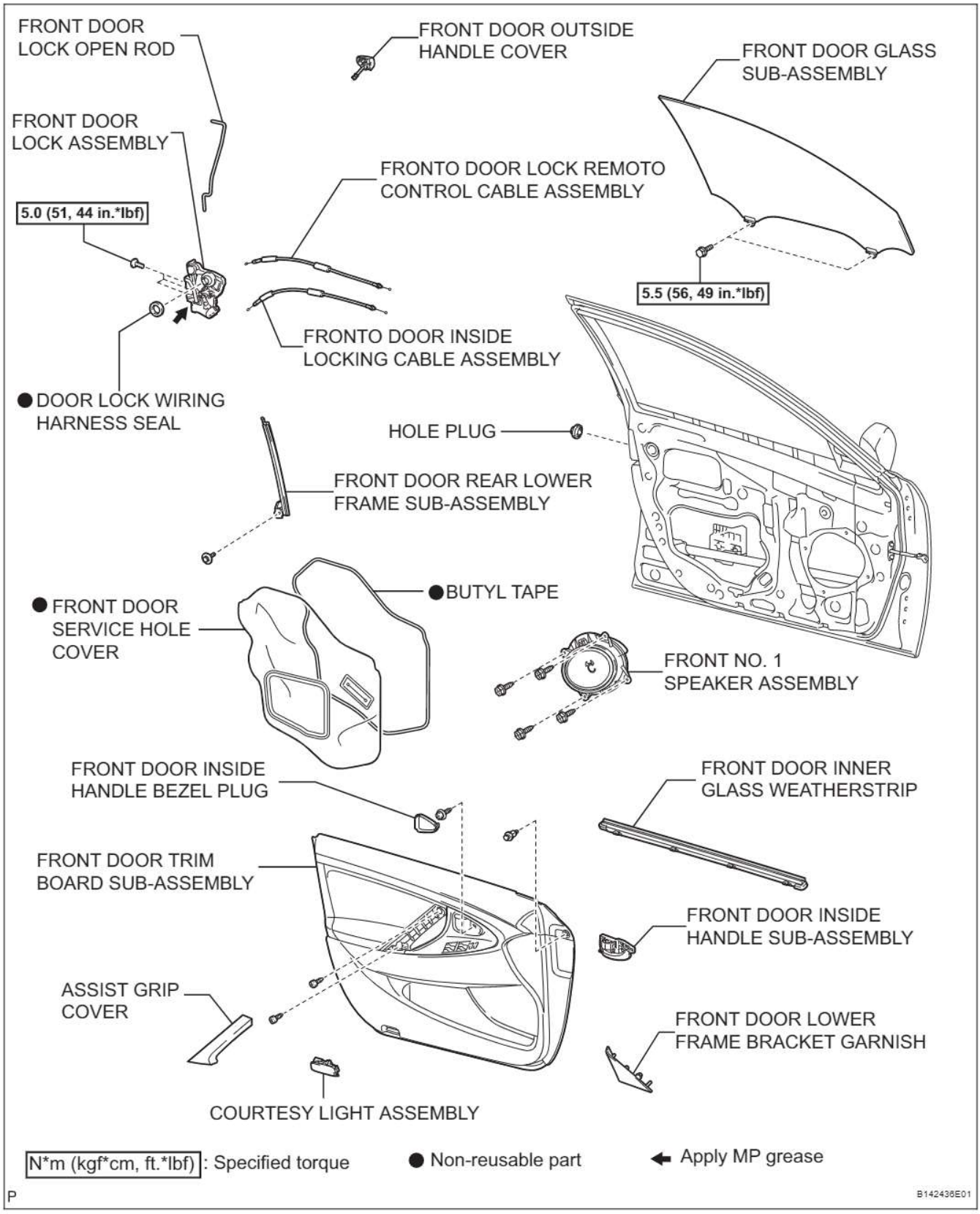


INSTALLATION

1. **INSTALL POWER WINDOW REGULATOR MASTER SWITCH ASSEMBLY**
   (a) Install the power window regulator master switch assembly with the 3 screws.
   (b) Connect the connector.
2. **INSTALL FRONT DOOR INNER GLASS WEATHERSTRIP (See page ED-58)**
3. **INSTALL FRONT DOOR TRIM BOARD SUB-ASSEMBLY (See page ED-59)**
4. **INSTALL COURTESY LIGHT ASSEMBLY (See page ED-59)**
5. **INSTALL ASSIST GRIP COVER (See page ED-60)**
6. **INSTALL FRONT DOOR INSIDE HANDLE BEZEL PLUG (See page ED-60)**
7. **INSTALL FRONT DOOR LOWER FRAME BRACKET GARNISH (See page ED-60)**

FRONT DOOR LOCK

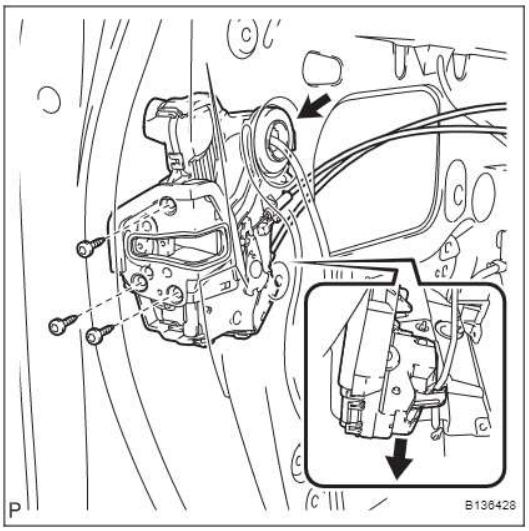
COMPONENTS

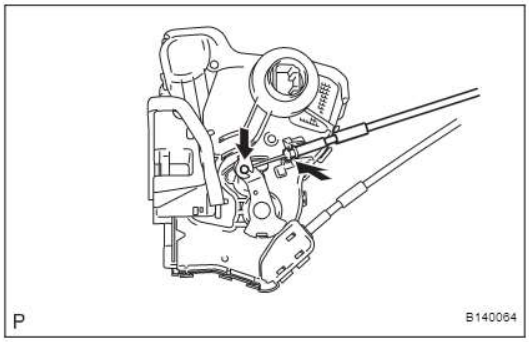


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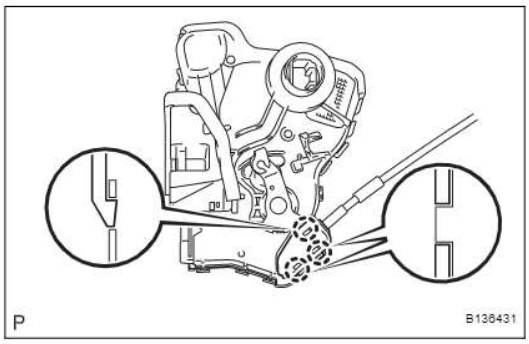
REMOVAL

1. REMOVE FRONT DOOR LOWER FRAME BRACKET GARNISH (See page ED-41)
2. REMOVE FRONT DOOR INSIDE HANDLE BEZEL PLUG (See page ED-41)
3. REMOVE ASSIST GRIP COVER (See page ED-42)
4. REMOVE COURTESY LIGHT ASSEMBLY (See page ED-42)
5. REMOVE FRONT DOOR TRIM BOARD SUB-ASSEMBLY (See page ED-42)
6. REMOVE FRONT DOOR INNER GLASS WEATHERSTRIP (See page ED-43)
7. REMOVE FRONT DOOR INSIDE HANDLE SUB-ASSEMBLY (See page ED-44)
8. REMOVE FRONT NO. 1 SPEAKER ASSEMBLY (See page AV-145)
9. REMOVE FRONT DOOR SERVICE HOLE COVER (See page ED-44)
10. REMOVE FRONT DOOR GLASS SUB-ASSEMBLY (See page ED-44)
11. REMOVE FRONT DOOR REAR LOWER FRAME SUB-ASSEMBLY (See page ED-46)
12. REMOVE FRONT DOOR OUTSIDE HANDLE COVER (See page ED-46)
13. REMOVE FRONT DOOR LOCK ASSEMBLY
    (a) Disconnect the connector.
    (b) Using a "torx" socket wrench (T30), remove the 3 screws.
    (c) Slide the front door lock assembly downward and pull out the front door lock open rod from the outside handle frame. Remove the front door lock assembly and cables as a unit.
    (d) Remove the front door lock open rod from the front door lock assembly.
    (e) Remove the door lock wiring harness seal from the front door lock assembly.

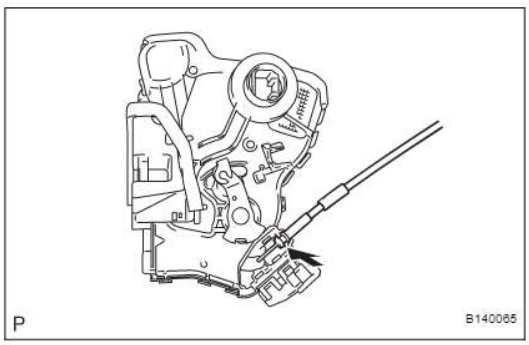




(f) Remove the front door lock remote control cable assembly.



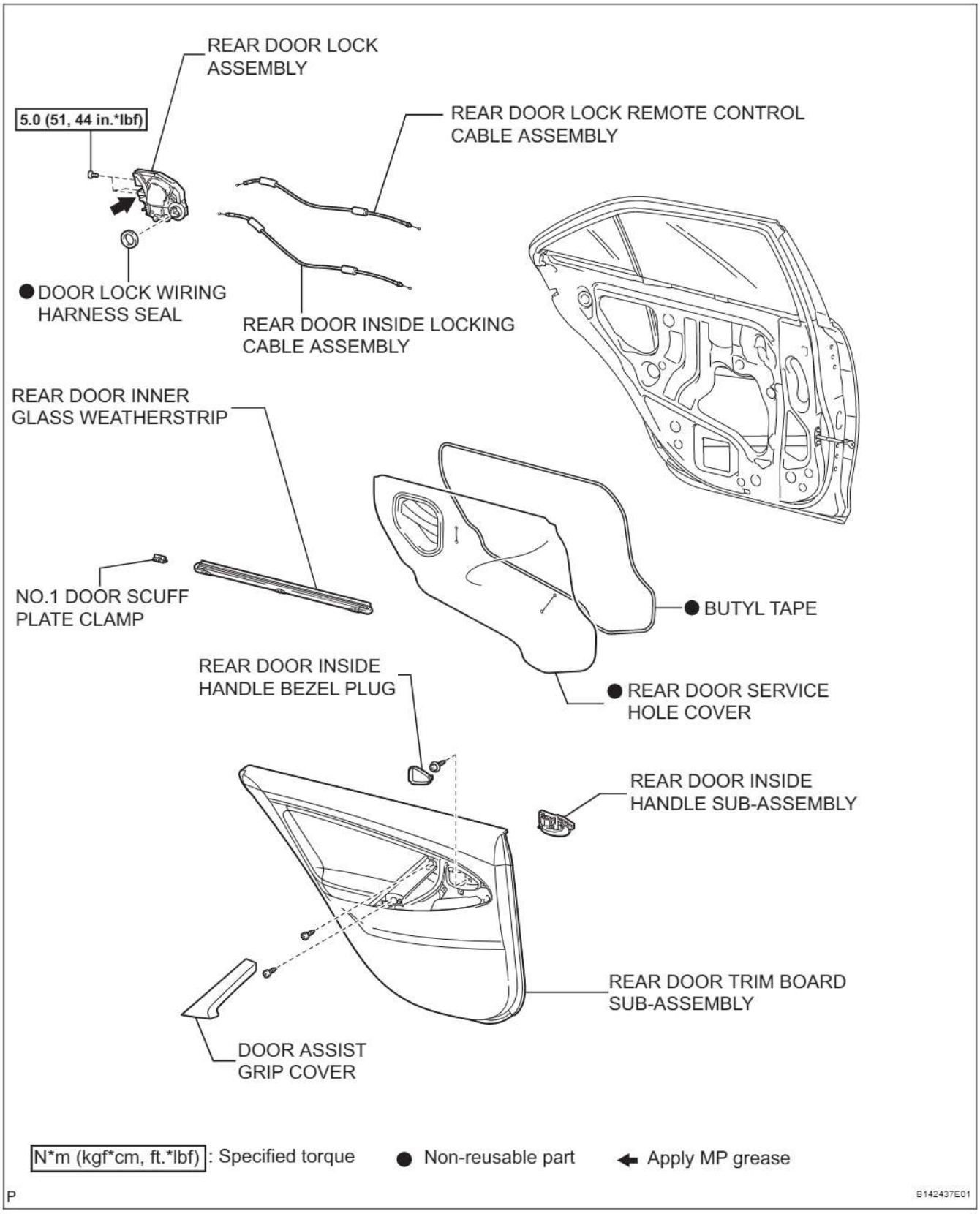
(g) Using a screwdriver, disengage the 3 claws.
HINT:
Tape the screwdriver tip before use.



(h) Remove the front door inside locking cable assembly.

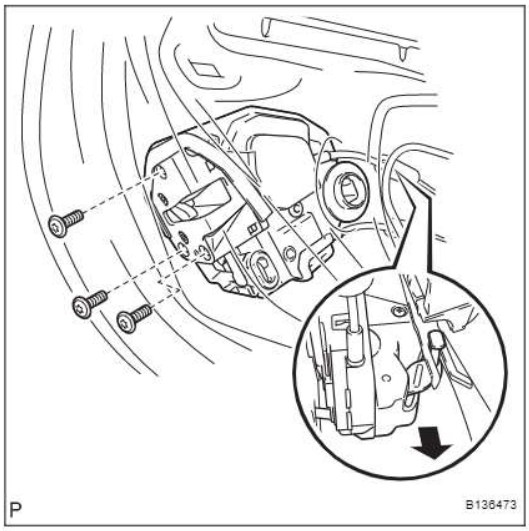
REAR DOOR LOCK

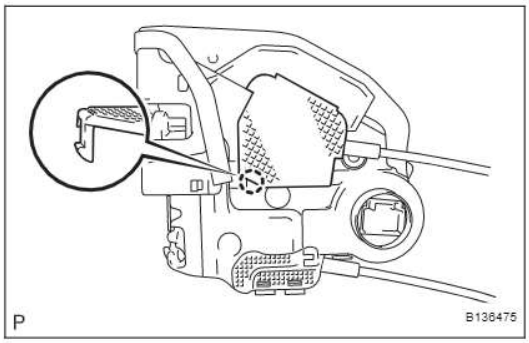
COMPONENTS



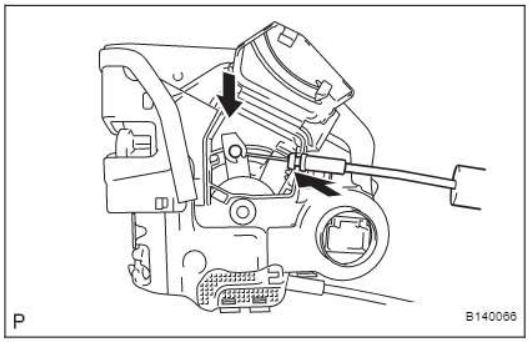
REMOVAL

1. **REMOVE REAR DOOR INSIDE HANDLE BEZEL PLUG (See page ED-64)**
2. **REMOVE DOOR ASSIST GRIP COVER (See page ED-64)**
3. **REMOVE REAR DOOR TRIM BOARD SUB-ASSEMBLY (See page ED-65)**
4. **REMOVE REAR DOOR INNER GLASS WEATHERSTRIP (See page ED-66)**
5. **REMOVE REAR DOOR INSIDE HANDLE SUB-ASSEMBLY (See page ED-66)**
6. **REMOVE REAR DOOR SERVICE HOLE COVER (See page ED-67)**
7. **REMOVE REAR DOOR LOCK ASSEMBLY**
   (a) Using a "torx" socket wrench (T30), remove the 3 screws.
   (b) Move the rear door lock assembly downward and pull the release plate out of the rear door outside handle frame.
   (c) Remove the door lock wiring harness seal from the rear door lock assembly.

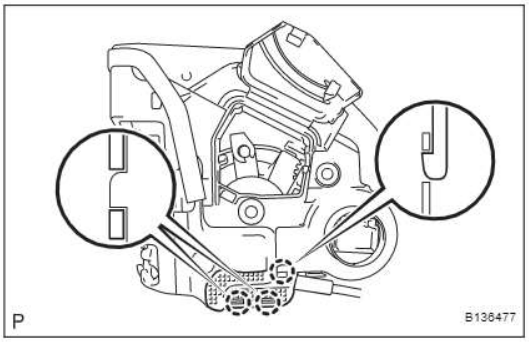




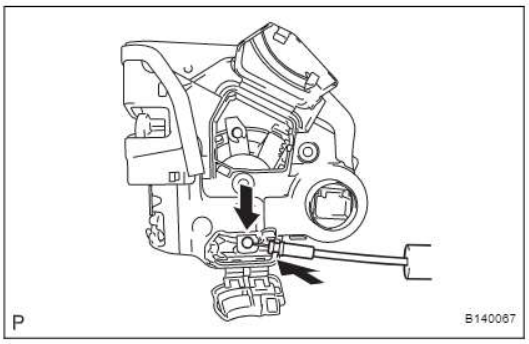
   (d) Using a screwdriver, disengage the claw.
   HINT:
   Tape the screwdriver tip before use.



   (e) Remove the rear door inside locking cable assembly.



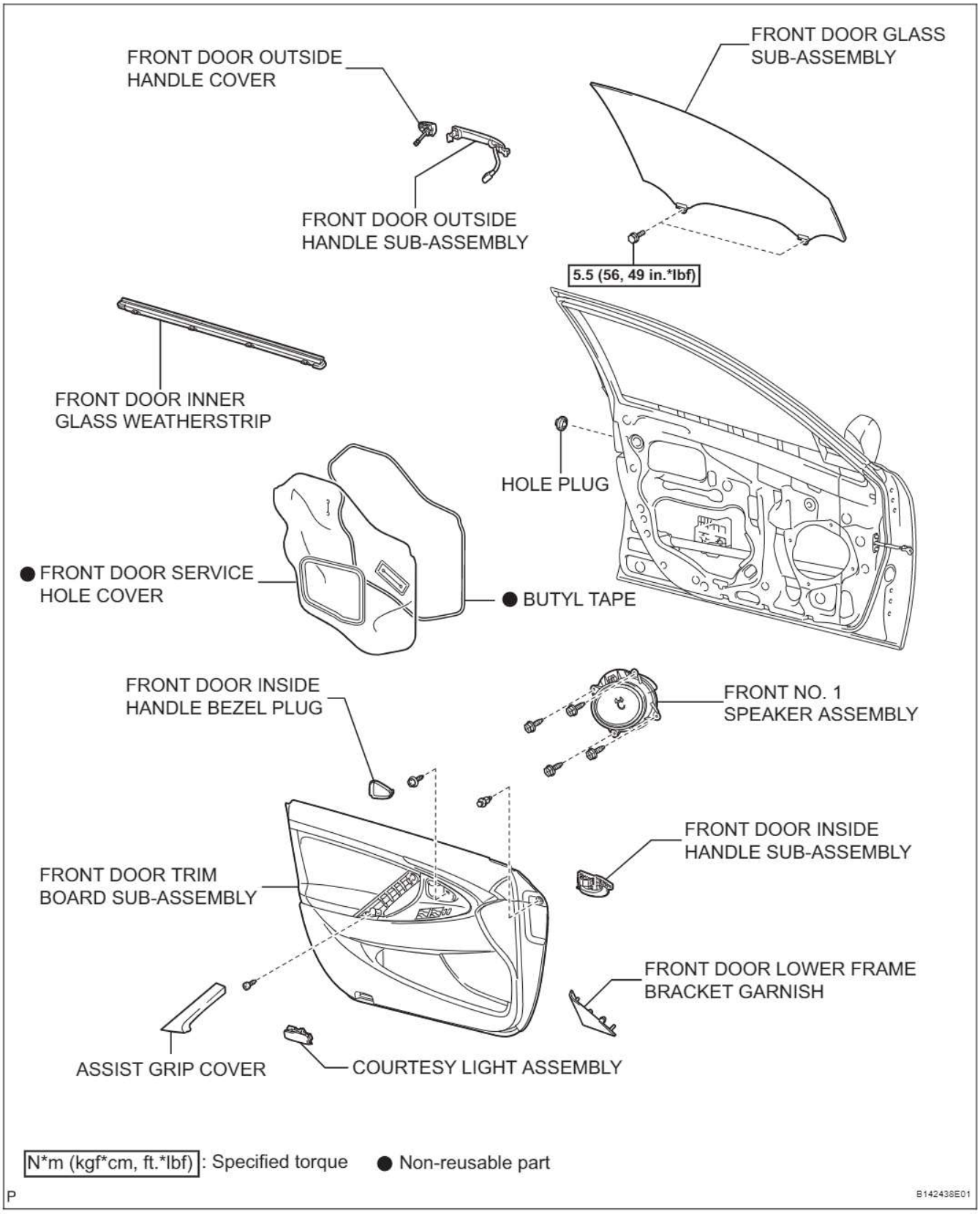
(f) Using a screwdriver, disengage the 3 claws.
HINT:
Tape the screwdriver tip before use.



(g) Remove the rear door inside locking cable assembly.

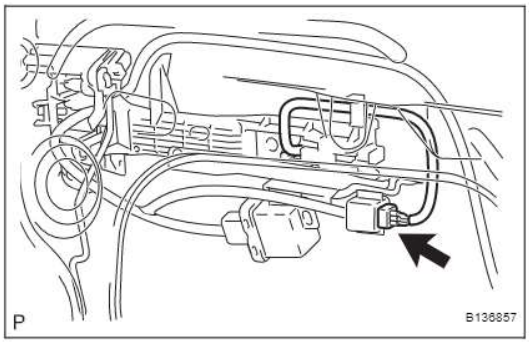
ENTRY LOCK AND UNLOCK SWITCH

COMPONENTS

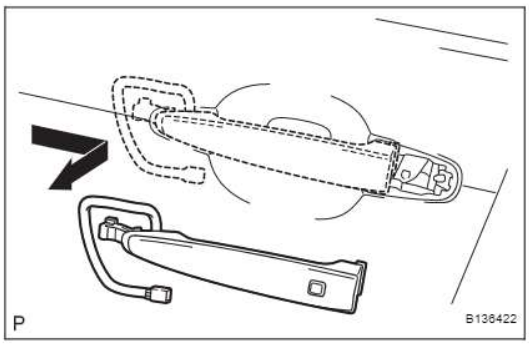


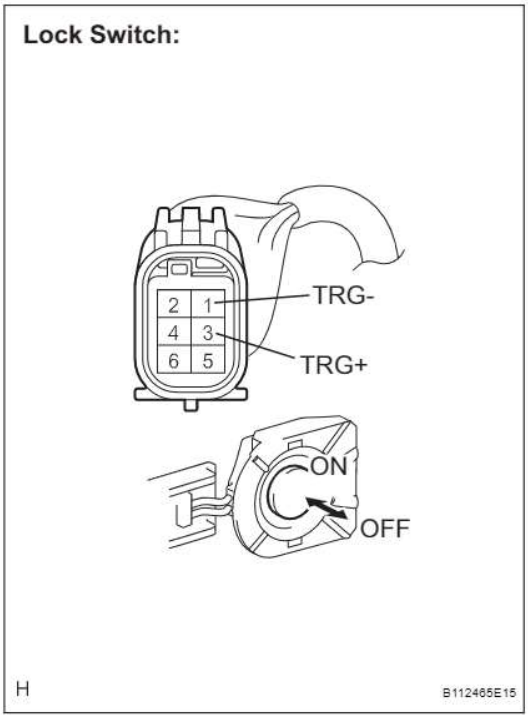
REMOVAL

1. REMOVE FRONT DOOR LOWER FRAME BRACKET GARNISH (See page ED-41)
2. REMOVE FRONT DOOR INSIDE HANDLE BEZEL PLUG (See page ED-41)
3. REMOVE ASSIST GRIP COVER (See page ED-42)
4. REMOVE COURTESY LIGHT ASSEMBLY (See page ED-42)
5. REMOVE FRONT DOOR TRIM BOARD SUB-ASSEMBLY (See page ED-42)
6. REMOVE FRONT DOOR INNER GLASS WEATHERSTRIP (See page ED-43)
7. REMOVE FRONT DOOR INSIDE HANDLE SUB-ASSEMBLY (See page ED-44)
8. REMOVE FRONT NO. 1 SPEAKER ASSEMBLY (See page AV-145)
9. REMOVE FRONT DOOR SERVICE HOLE COVER (See page ED-44)
10. REMOVE FRONT DOOR GLASS SUB-ASSEMBLY (See page ED-44)
11. REMOVE FRONT DOOR OUTSIDE HANDLE COVER (See page ED-46)
12. REMOVE FRONT DOOR OUTSIDE HANDLE SUB-ASSEMBLY
    (a) Disconnect the connector.



    (b) Remove the front door outside handle assembly as shown in the illustration.

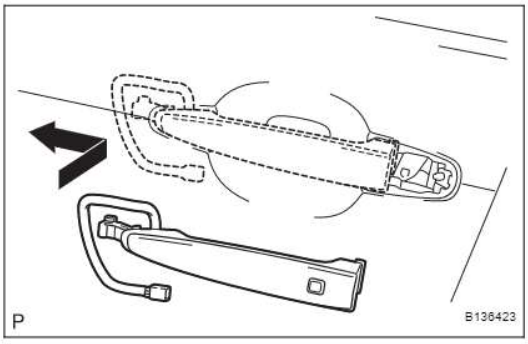


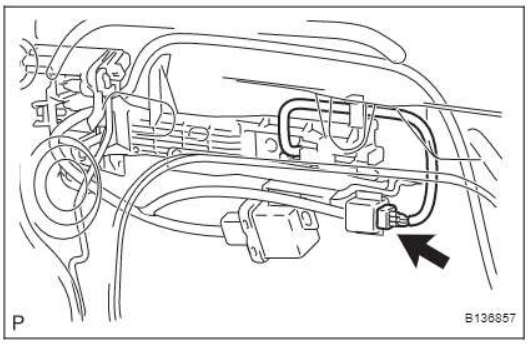


INSPECTION

1. **INSPECT ENTRY LOCK AND UNLOCK SWITCH**
   (a) Remove the outside handle.
   (b) Disconnect the connectors.
   (c) Measure the resistance according to the value(s) in the table below.
   Standard resistance

Tester Connection	Condition	Specified Condition
TRG- - TRG+	Lock switch not pushed	10 kΩ or higher
	Lock switch pushed	Below 1 Ω





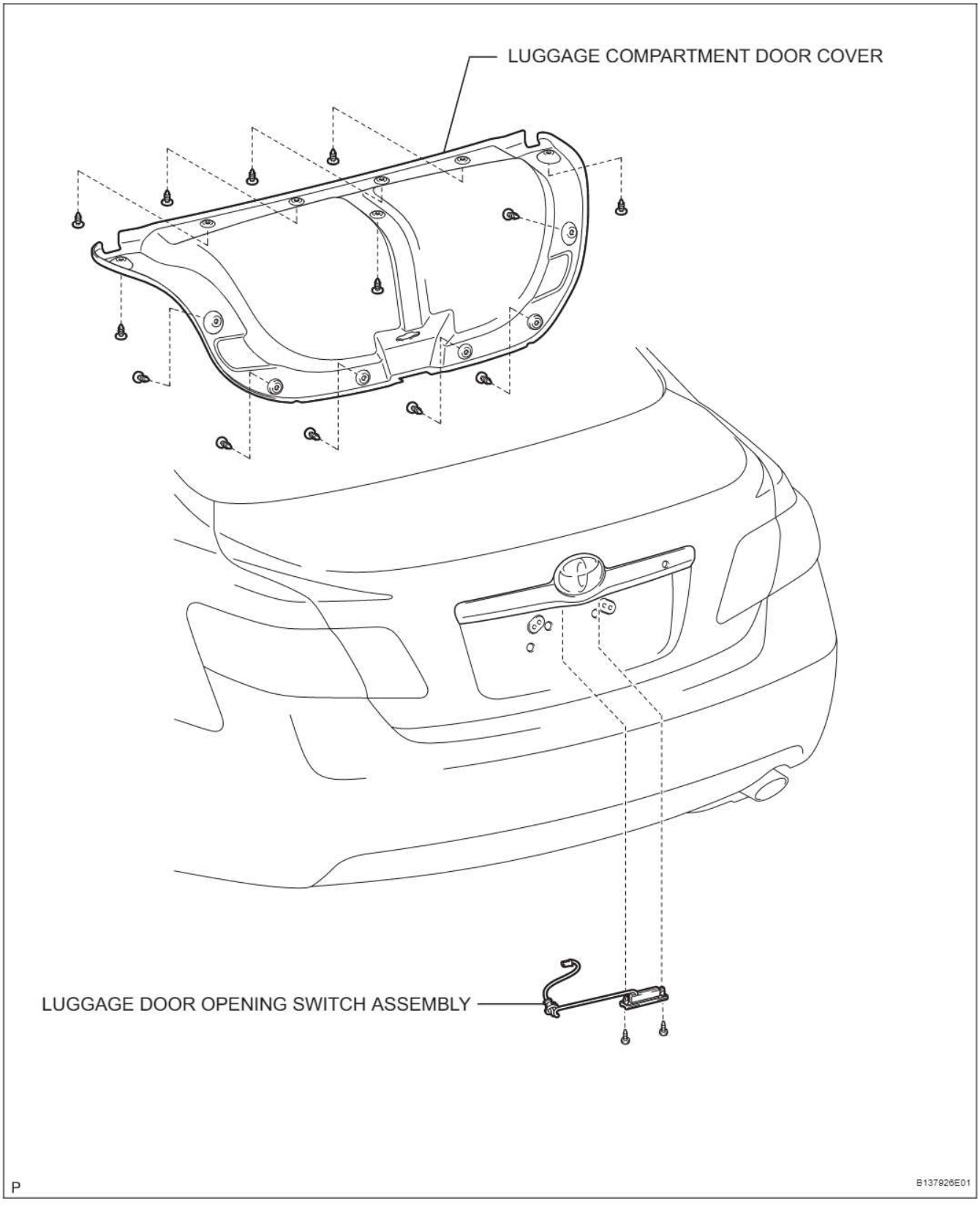
INSTALLATION

1. **INSTALL FRONT DOOR OUTSIDE HANDLE SUB-ASSEMBLY**
   (a) Insert the front end of the front door outside handle assembly into the front door outside handle frame.
   (b) Insert the rear end of the front door outside handle assembly into the front door outside handle frame. Slide the front door outside handle assembly to the front of the vehicle to install it.
   (c) Connect the connector.
2. **INSTALL FRONT DOOR OUTSIDE HANDLE COVER (See page ED-55)**
3. **INSTALL FRONT DOOR GLASS SUB-ASSEMBLY (See page ED-57)**
4. **INSTALL FRONT DOOR SERVICE HOLE COVER (See page ED-57)**
5. **INSTALL FRONT NO. 1 SPEAKER ASSEMBLY (See page AV-147)**
6. **INSTALL FRONT DOOR INSIDE HANDLE SUB-ASSEMBLY (See page ED-59)**
7. **INSTALL FRONT DOOR INNER GLASS WEATHERSTRIP (See page ED-58)**

8. INSTALL FRONT DOOR TRIM BOARD SUB-ASSEMBLY (See page ED-59)
9. INSTALL COURTESY LIGHT ASSEMBLY (See page ED-59)
10. INSTALL ASSIST GRIP COVER (See page ED-60)
11. INSTALL FRONT DOOR INSIDE HANDLE BEZEL PLUG (See page ED-60)
12. INSTALL FRONT DOOR LOWER FRAME BRACKET GARNISH (See page ED-60)

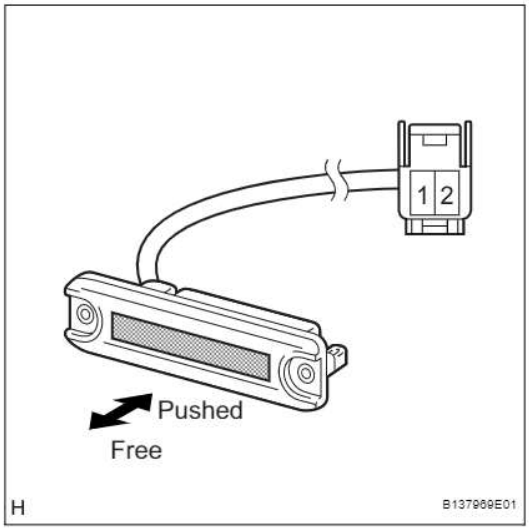
LUGGAGE COMPARTMENT DOOR OPENER OUTER SWITCH

COMPONENTS



REMOVAL

1. **REMOVE LUGGAGE COMPARTMENT DOOR COVER (See page ET-50)**
2. **REMOVE LUGGAGE DOOR OPENING SWITCH ASSEMBLY**
   (a) Disconnect the connector.
   (b) Remove the 2 screws and the luggage door opening switch assembly.



INSPECTION

1. **INSPECT LUGGAGE COMPARTMENT OPEN SWITCH**
   (a) Disconnect the switch connector.
   (b) Measure the resistance according to the value(s) in the table below.
   Standard resistance

Tester connection	Condition	Specified condition
1 - 2	Luggage compartment open switch not pushed (OFF)	10 kΩ or higher
	Luggage compartment open switch pushed (ON)	Below 1 Ω

DL