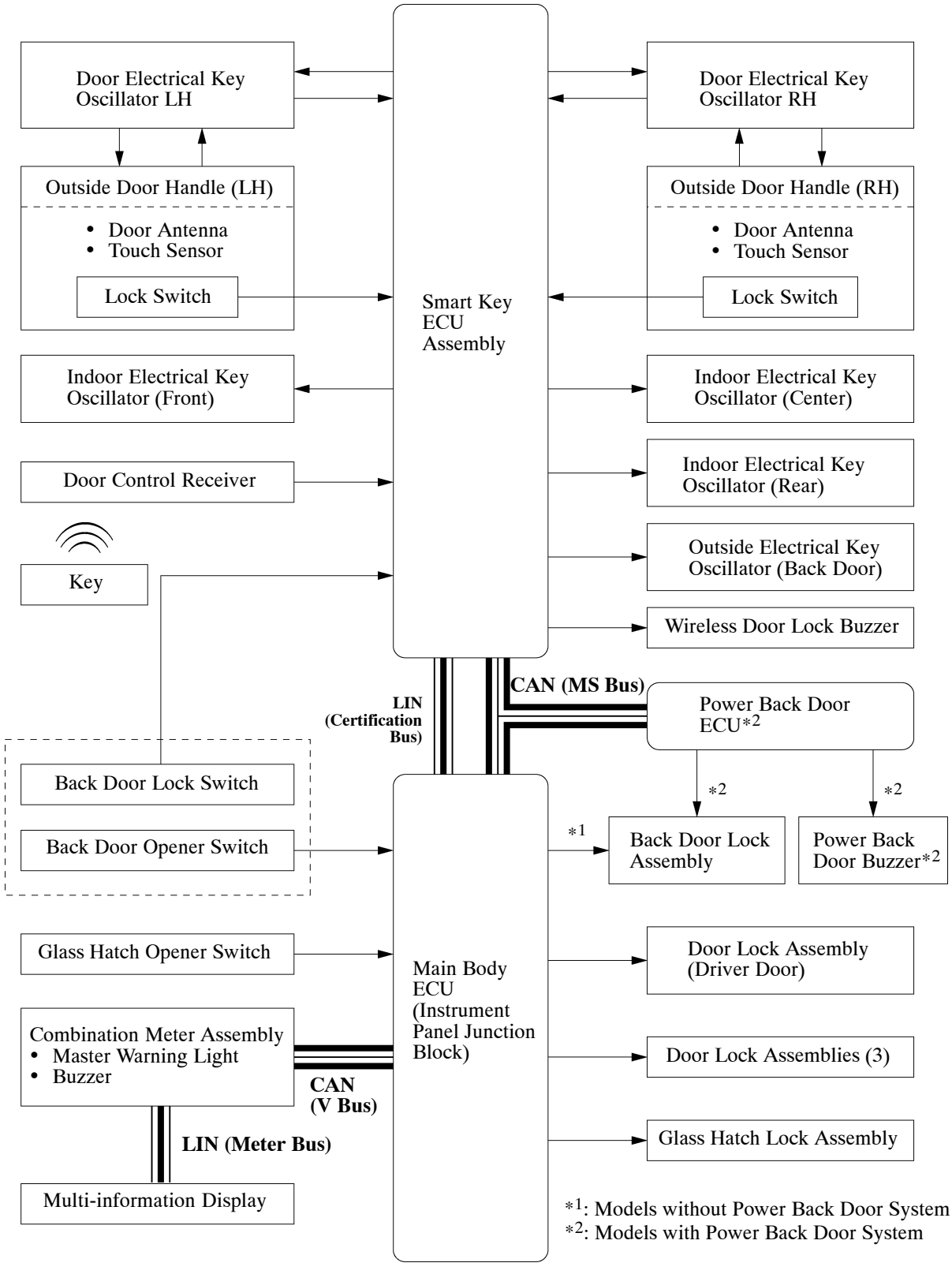
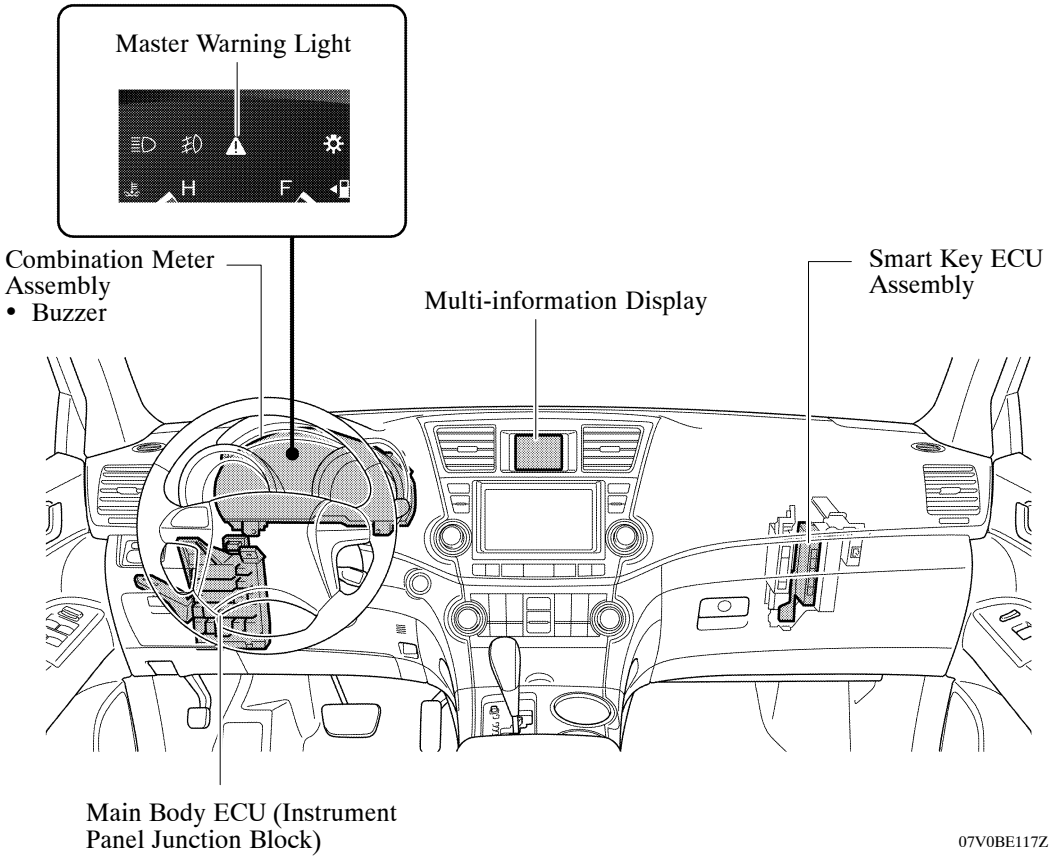
■ ENTRY FUNCTION

1. System Diagram

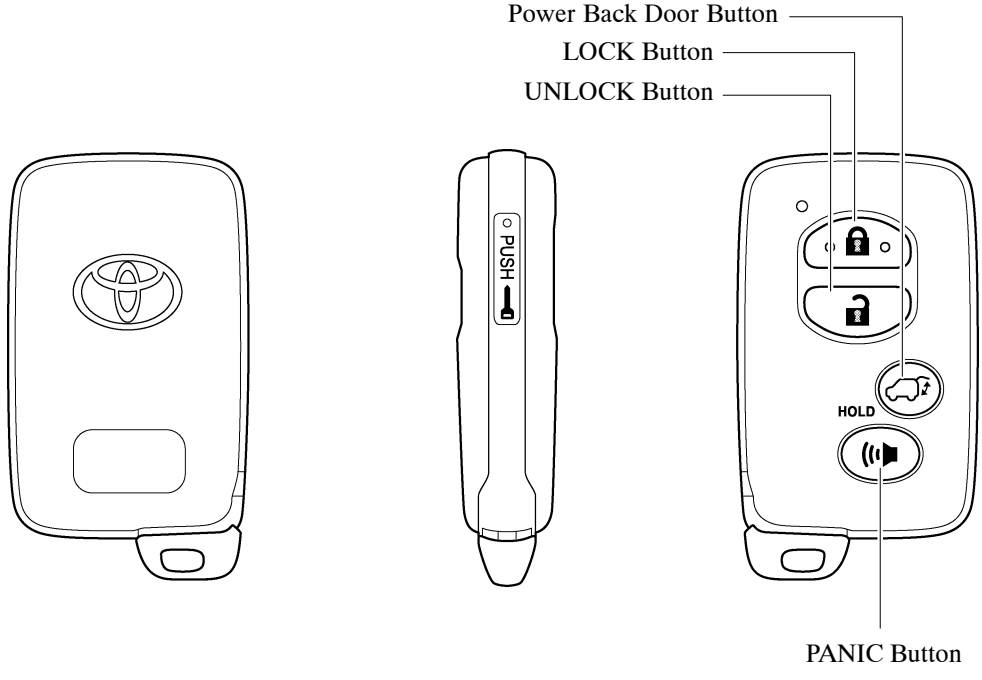
The smart key ECU assembly controls the entry function. The system diagram below shows the components that relate to this function.



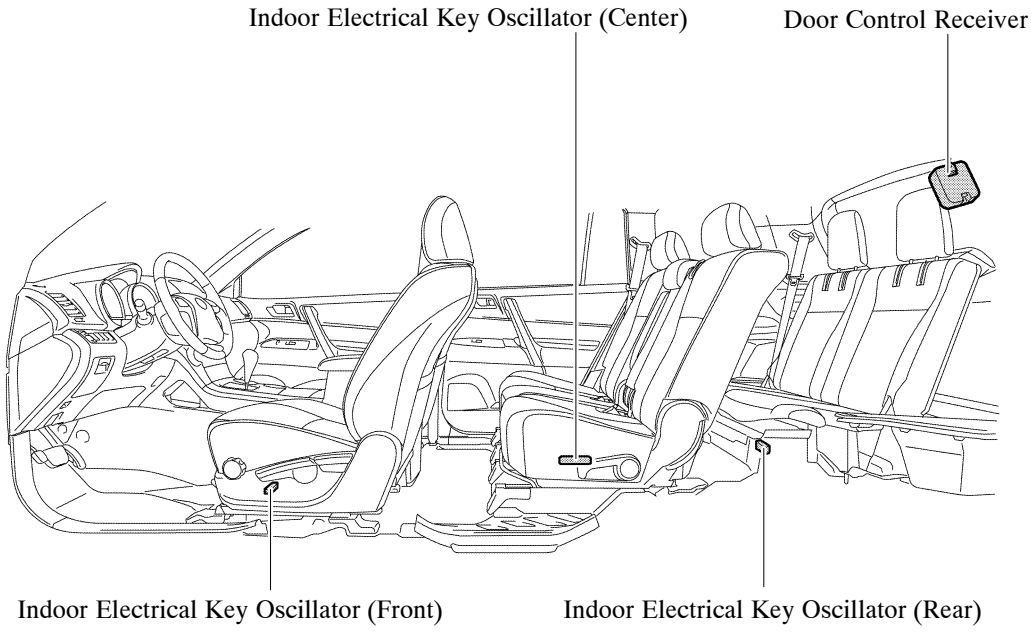
2. Layout of Main Components



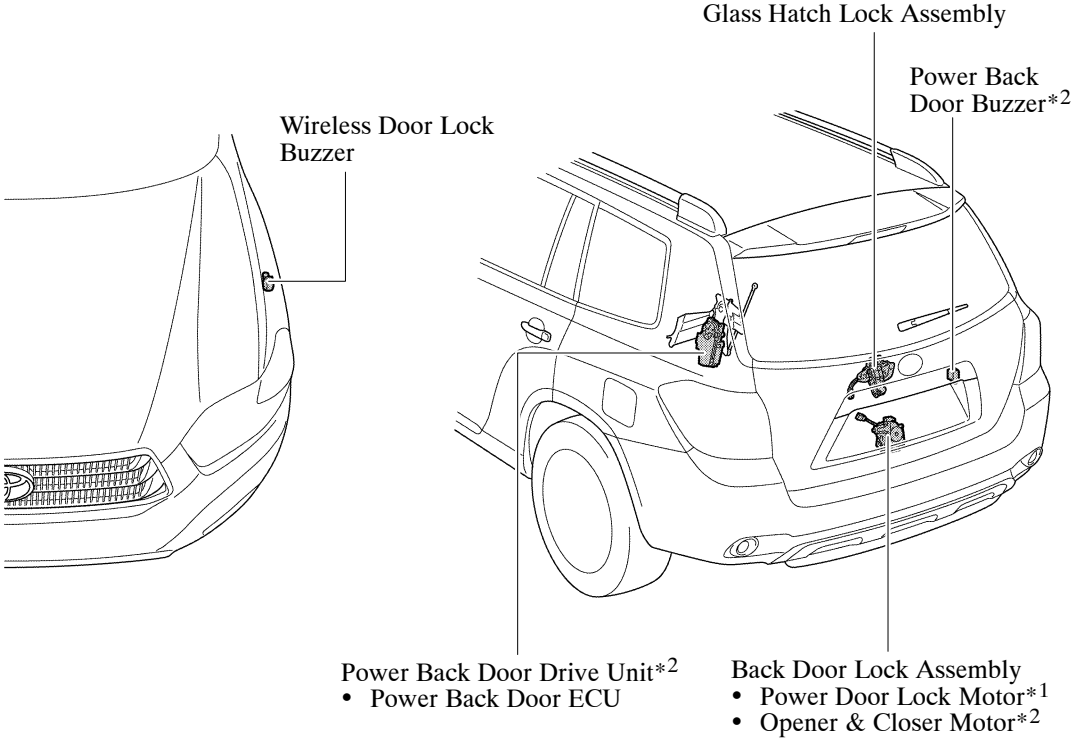
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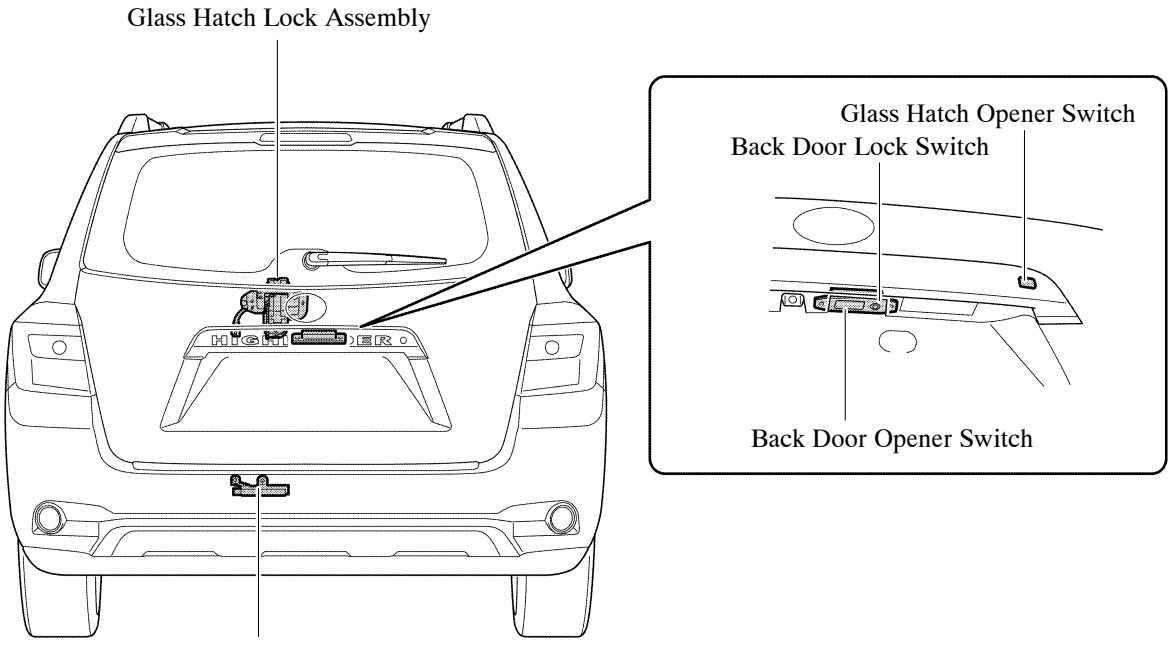


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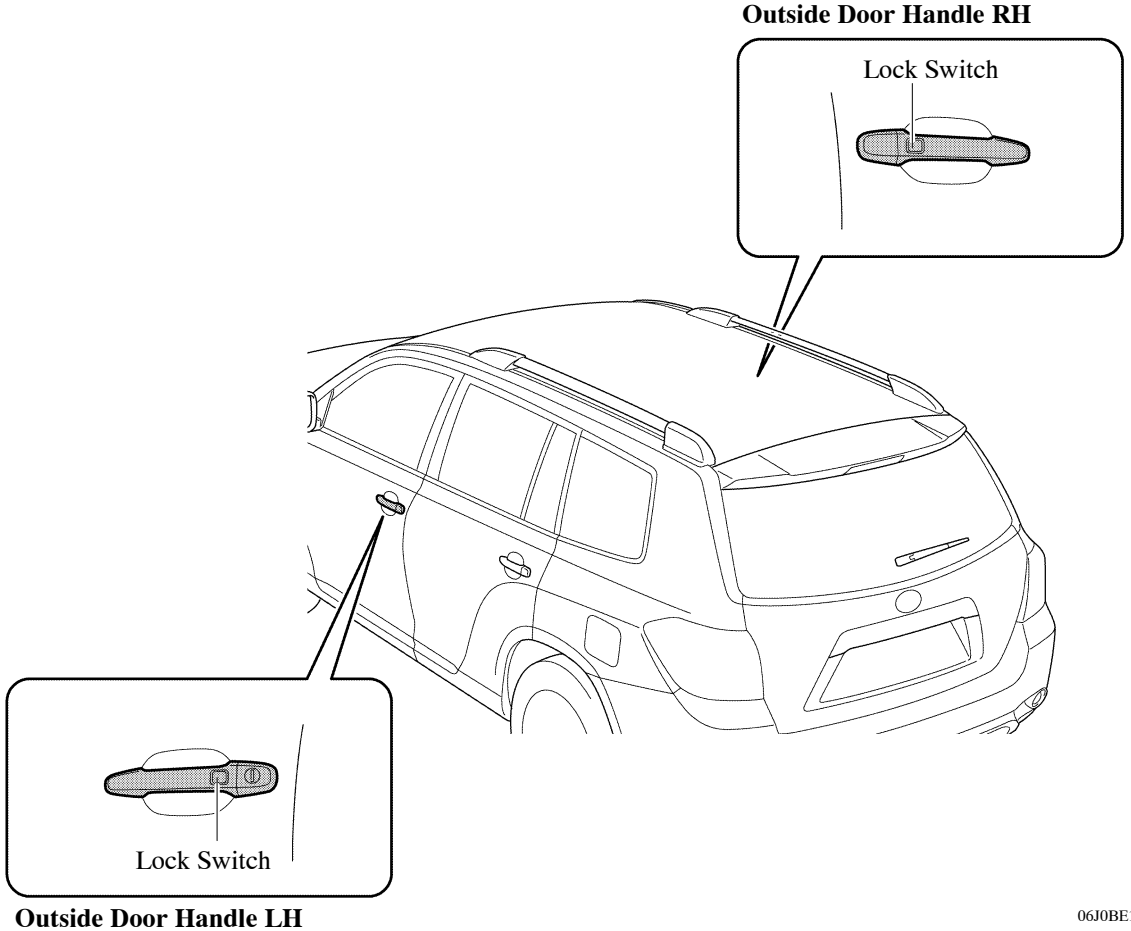


*1: Models without Power Back Door System
*2: Models with Power Back Door System

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3. Function of Main Components

Component		Function
Key		• When receiving the request signals that are output by the room and door oscillators, outputs the information such as the key ID and vehicle ID. • When a driver pushes the LOCK, UNLOCK, PANIC, or power back door button on the key, outputs the request signal. • When receiving the radio wave that is output by the transponder key amplifier in the power switch, outputs the information such as the key ID and vehicle ID. • Integrates the mechanical key in order to unlock the doors when the key battery is low.
Main Body ECU (Instrument Panel Junction Block)		• Receives the request signal from the smart key ECU assembly and actuates the door lock motor to unlock or lock all the doors, back door, and glass hatch. • Transmits each door condition, back door condition, and glass hatch condition to the smart key ECU assembly.
Smart Key ECU Assembly		• Certifies the ID code received from the door control receiver and transmits the certification results to the immobilizer code ECU and steering lock ECU. • Controls the oscillators and the touch sensor. • Transmits the door lock/unlock request signals during the entry function.
Door Electrical Key Oscillator LH and RH		Transmits the request signals.
Outside Door Handle	Door Oscillator	Receives a request signal from the smart key ECU assembly, and forms an actuation area around the front door.
	Lock Switch	Transmits door lock request signals to the smart key ECU assembly.
	Touch Sensor	Detects when a person touches the inside of an outer door handle.
Outside Electrical Key Oscillator		Receives the request signal from the smart key ECU assembly, and forms an actuation area around the back door.
Indoor Electrical Key Oscillator • Front, Center, Rear		Receives a request signal from the smart key ECU assembly and forms an actuation area in the vehicle interior.
Door Control Receiver		Receives the ID code from the key and transmits it to the smart key ECU assembly.
Glass Hatch Opener Switch		Transmits a glass hatch open request signal to the main body ECU (instrument panel junction block).
Back Door Opener Switch		Transmits a back door open request signal to the main body ECU (instrument panel junction block).
Back Door Lock Switch		Transmits a back door lock request signal to the smart key ECU assembly.
Combination Meter Assembly • Master Warning Light • Buzzer		Illuminates simultaneously with a buzzer in the combination meter assembly to inform the driver of malfunctions in the smart key system.
Multi-information Display		The following warning messages appear to alert the driver. • Shift to P range • Key is not detected • To start, depress the brake pedal, and push the POWER switch • Low Key Battery • Steering Lock is still active • Check Steering Lock System

(Continued)

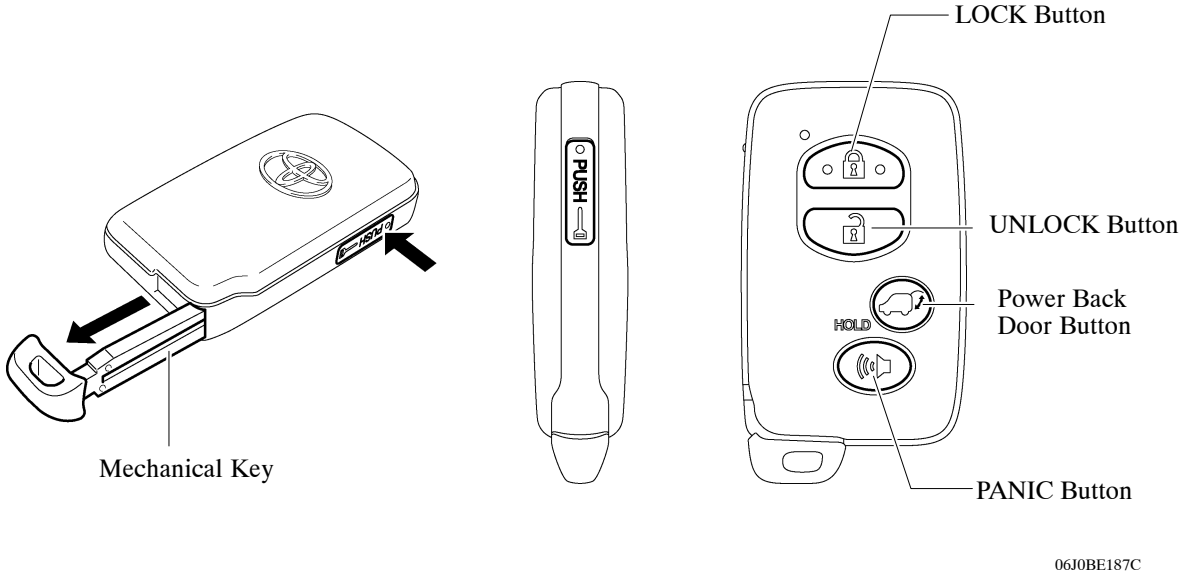
Component	Function
Wireless Door Lock Buzzer	• Sounds as an answer back for entry lock or unlock to inform the driver. • Sounds to inform the driver of malfunctions in the smart key system.
Power Back Door Buzzer	• Sounds to inform the driver that the system is operating. • Sounds if the operating conditions have not been met or if a jammed object has been detected.
Power Back Door ECU	Controls the power back door system in accordance with the signals received from the smart key ECU assembly.
Outside Rear View Mirror • Foot Lights	When the key enters the exterior actuation area, the foot lights are illuminated in accordance with the request signals from the smart key ECU assembly.

4. Construction and Operation

Key

The key consists of a mechanical key, transmitter for the wireless door lock control, transceiver for the entry function, and transponder chip for the HV immobilizer function.

- This mechanical key operates the driver door lock cylinder and glove box lock cylinder, but cannot be used to start the THS-II. When the mechanical key is used, the cap of the driver door lock cylinder must be removed.
- The transmitter for the wireless door lock control has a LOCK button, UNLOCK button, PANIC button, and power back door button.
- The transceiver of the key receives the signals from the oscillators and returns the ID code to the door control receiver.
- The transponder chip for the HV immobilizer function returns a signal to the power switch as a response to the radio wave it received from the power switch.



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5. Construction of Entry Function

General

The entry function consists of the following functions:

Function	Outline
Wireless Door Lock Control	This function is convenient for locking and unlocking all the doors and back door at a distance. The operation of this function is the same as that in the wireless door lock control system. For details, see page BE-159.
Entry Illumination	When a key enters the exterior actuation area of the door electrical key oscillators (LH and RH) the foot lights illuminate.
Entry Unlock	When a key is located in the exterior actuation area of any door electrical key oscillator, the door will unlock after the inside of either front outside door handle is touched. • The driver's outside door handle unlocks the driver's door. • The front passenger outside door handle unlocks all doors and the back door.
Entry Unlock Mode Switching	Allows switching between 2 entry unlock function operation modes. • Driver Door Mode (Default Setting) • All Door Mode
Entry Lock	When a key is located in the exterior actuation area of any electrical key oscillator (driver, front passenger, or back door) and the power switch is OFF, all doors can be locked by simply pressing the lock switch.
Back Door Open	When a key is in the exterior actuation area of the outside electrical key oscillator (back door), the back door can be opened manually by simply pressing the back door opener switch.
Glass Hatch Open	When a key is in the exterior actuation area of the outside electrical key oscillator (back door), the glass hatch can be opened manually by simply pressing the glass hatch opener switch.
Prevention of Key Confinement	The key confinement prevention function prevents the key from being locked inside the vehicle. This function operates in 3 different situations: keyless lock, lock switch and glass hatch close. For details, see page BE-165.
Warning	When any of the situations below occur, the smart key system causes the smart key ECU assembly to sound the buzzer in the combination meter and the wireless door lock buzzer, and indicate a warning on the multi-information display in order to the alert the driver. • An exit warning if the shift lever is in a position other than "P" and the power source is in a mode other than "OFF" • An exit warning if the shift lever is in "P" and the power source is in a mode other than "OFF". • A warning if the occupant leaves with the key in inappropriate circumstances. • A warning if the power switch is operated while the key is outside the actuation area. • A warning if the lock button is operated while the key is inside the vehicle. • A warning if the key battery is weak.
Battery Saving	If the key remains within the exterior actuation area of any electrical key oscillator (driver, front passenger, or back door), the system maintains periodic communication with the key. Therefore, if the vehicle remains parked in that state for a long time, the key battery and the vehicle auxiliary battery could be drained.

(Continued)

Function	Outline
Key Cancel	The following key functions can be cancelled. • Entry Unlock/Lock • Back Door Open • Prevention of Key Confinement • Warning
Key Code Registration	A total of 7 keys can be registered. Enables the registering (writing and storing) of transmitter recognition codes in the EEPROM that is contained in the smart key ECU assembly.

Wireless Door Lock Control Functions

The wireless door lock control functions are as follows. Some of them can be customized.

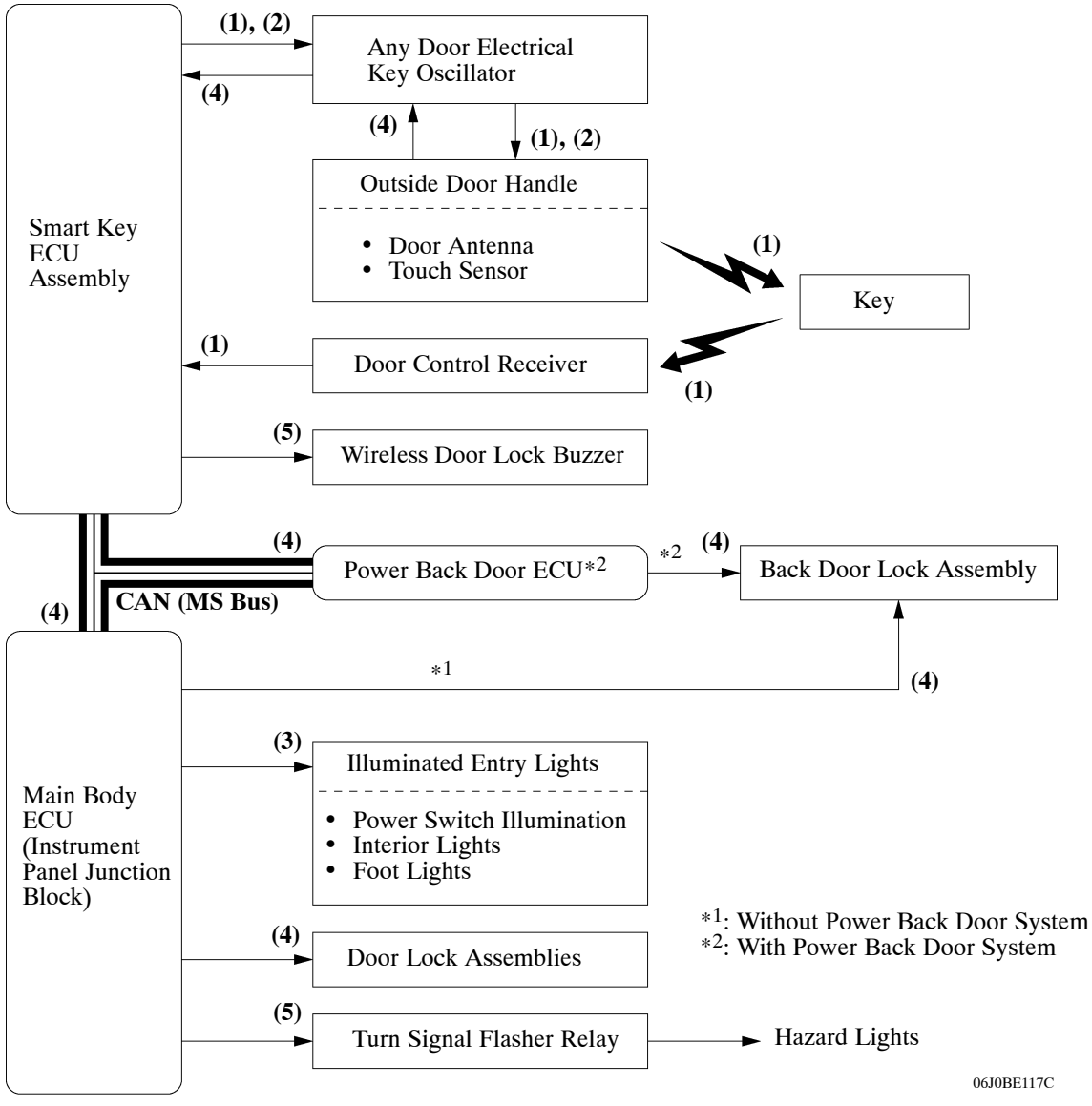
×: Standard (Non customizable) *: Customizable

Function	Outline	Customizable
All Doors Lock	Pressing the LOCK button of the key locks all doors.	*1
All Doors Unlock (2-step Unlock)	Pressing the UNLOCK button of the key twice within 3 seconds unlocks all doors after it first unlocks the driver's door.	*1
All Doors Unlock (1-step Unlock)	This function is provided to unlock all the doors when the key is turned in the key cylinder one time.	*2
Power Back Door Open/Close	Keeping the power back door button of the key pressed for longer than about 0.8 seconds opens or closes the back door.	*1
Answer Back	When the doors are being locked or unlocked through the operation of the key, the wireless door lock buzzer sounds and the hazard lights blink once during locking and twice during unlocking. Also, the answer back function operates when the doors are locked by the auto relock function.	*1
Answer Back (For Power Back Door)	When the key is used for opening the power back door, this function sounds the wireless door lock buzzer and power back door buzzer once to inform the user that the operation has been started.	*1
	When the key is used for closing the power back door, this function sounds the power back door buzzer once to inform the user that the operation has been started.	
Panic Alarm	Keeping the PANIC button of the key pressed for longer than about 0.8 seconds causes the following to activate as an alarm: • Sounds the horn and security horn. • Flashes the hazard lights, headlights, and taillights. • Illuminates the interior light (Switch is in the DOOR position).	*1
Automatic Relock	If none of the doors are opened within 60 seconds after they are unlocked using the wireless door lock remote control, all the doors will be locked again automatically.	*1
Repeat	If a door is not locked in response to the locking operation of the key, the main body ECU (instrument panel junction block) will output a lock signal again after 1 second passes.	×
Security	Sends a door lock/unlock operation request signal as a rolling code.	×
Door Ajar Warning	If any door is open or ajar, pressing the LOCK button of the key will cause the wireless door lock buzzer to sound for about 10 seconds as a warning.	×

*1: Default setting is on. *2: Default setting is off.

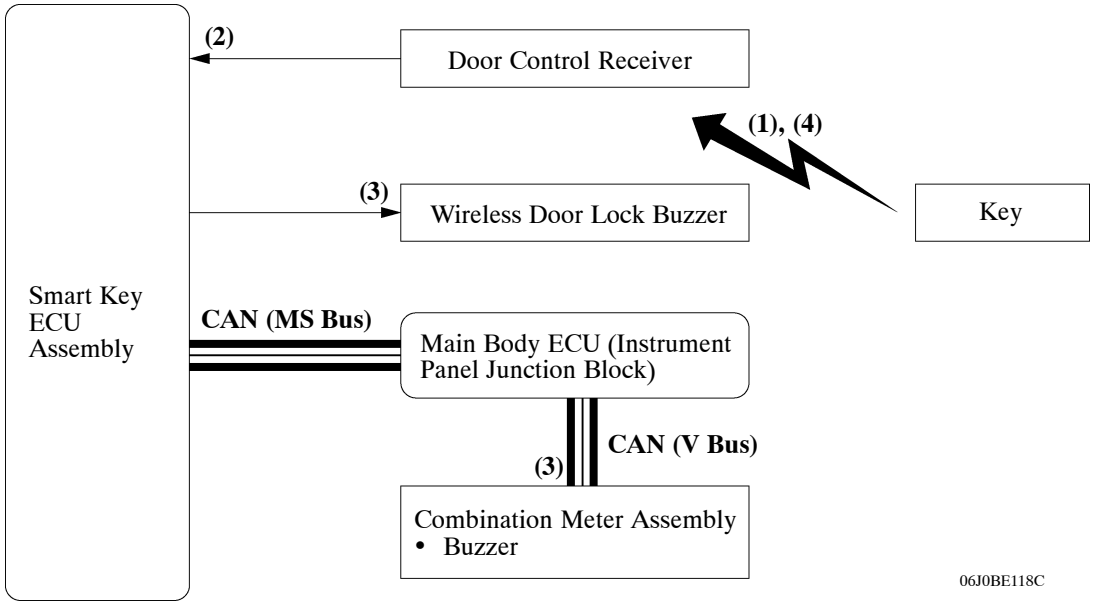
Entry Unlock

(1) When the key enters any exterior actuation area of the front door, the smart key ECU assembly judges and certifies the key ID code received from the door control receiver.
(2) After the key certification OK is confirmed, the smart key ECU assembly transmits an unlock stand-by signal to the touch sensor of the relevant door.
(3) At the same time, the smart key ECU assembly transmits the lighting signals to the foot lights on the outside rear view mirror and interior lights (power switch illumination and interior lights), and turns ON these illuminations (Entry Illumination Function).
(4) If the touch sensor is touched in this condition, the smart key ECU assembly transmits a door unlock request signal to the main body ECU (instrument panel junction block) or power back door ECU, and unlocks either the driver's door or all doors.
   - The driver's outside door handle unlocks the driver's door.
   - The front passenger's outside door handle unlocks all doors.
(5) The smart key ECU assembly sounds the wireless door lock buzzer twice, and the main body ECU (instrument panel junction block) flashes the hazard lights twice, as an answer back for entry unlock.



Entry Unlock Mode Switching

(1) When the power switch is OFF, press the LOCK button and one of the other buttons on the key at the same time for approximately 5 seconds while the key is in the actuation area.
(2) The smart key ECU assembly receives this signal from the door control receiver and switches the entry unlock mode.
(3) The smart key ECU assembly sounds the wireless door lock buzzer and the buzzer in the combination meter to inform the user that the mode has been switched.
(4) If the entry unlock mode needs to be switched again, press the LOCK button and one of the other three buttons on the key at the same time for approximately 5 seconds after the LED of the key goes off.



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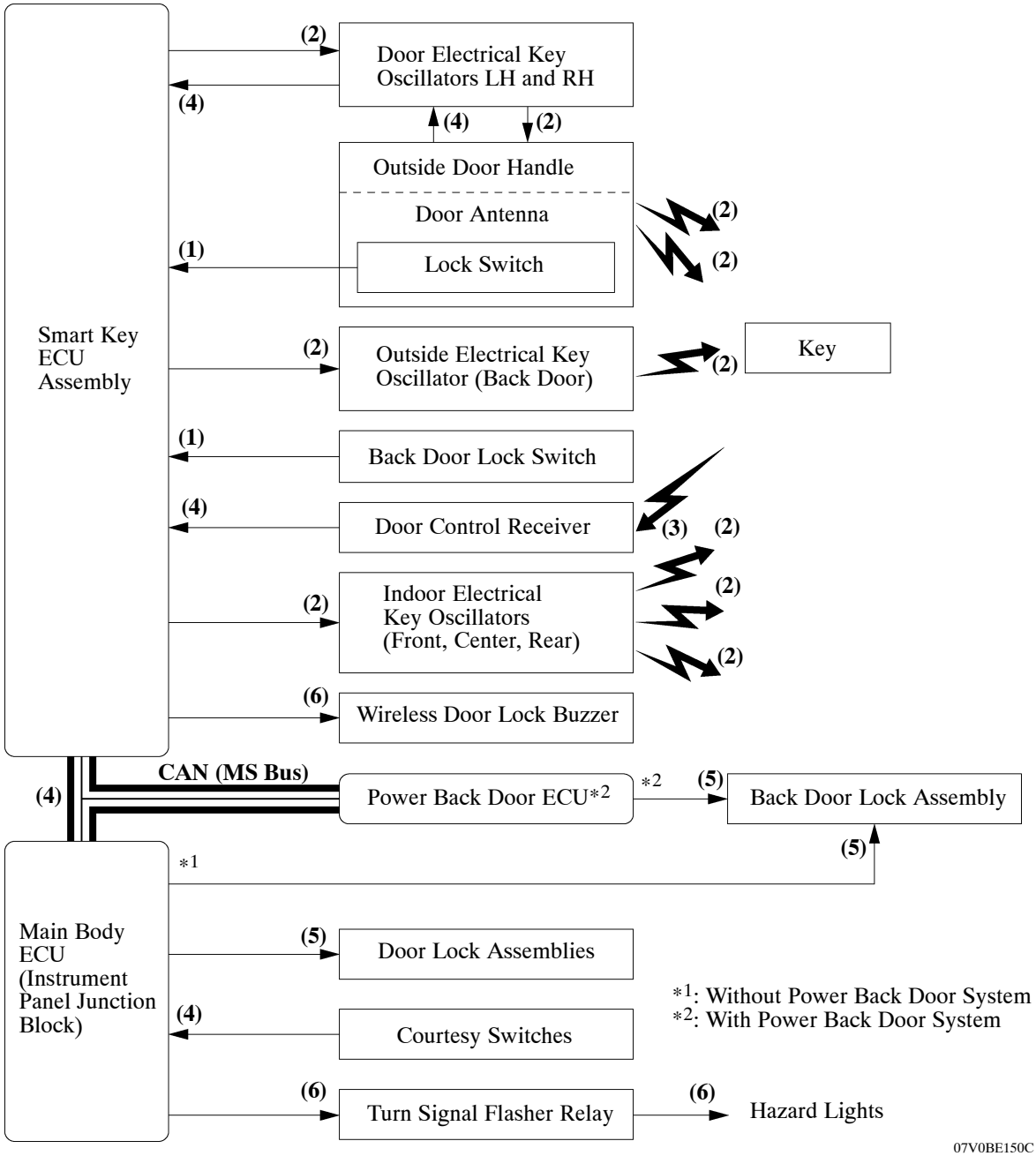
Mode	Wireless Door Lock Buzzer	Buzzer in Combination Meter Assembly	Multi-information Display
Driver Door (Default)	Sounds 3 times	Sounds once	Displayed for 4seconds.
All Doors (Customized)	Sounds 2 times	Sounds once	Displayed for 4seconds.

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NOTE: This function only switches the entry unlock mode of the smart key system. It is not applied to the unlock function using the wireless door lock control.

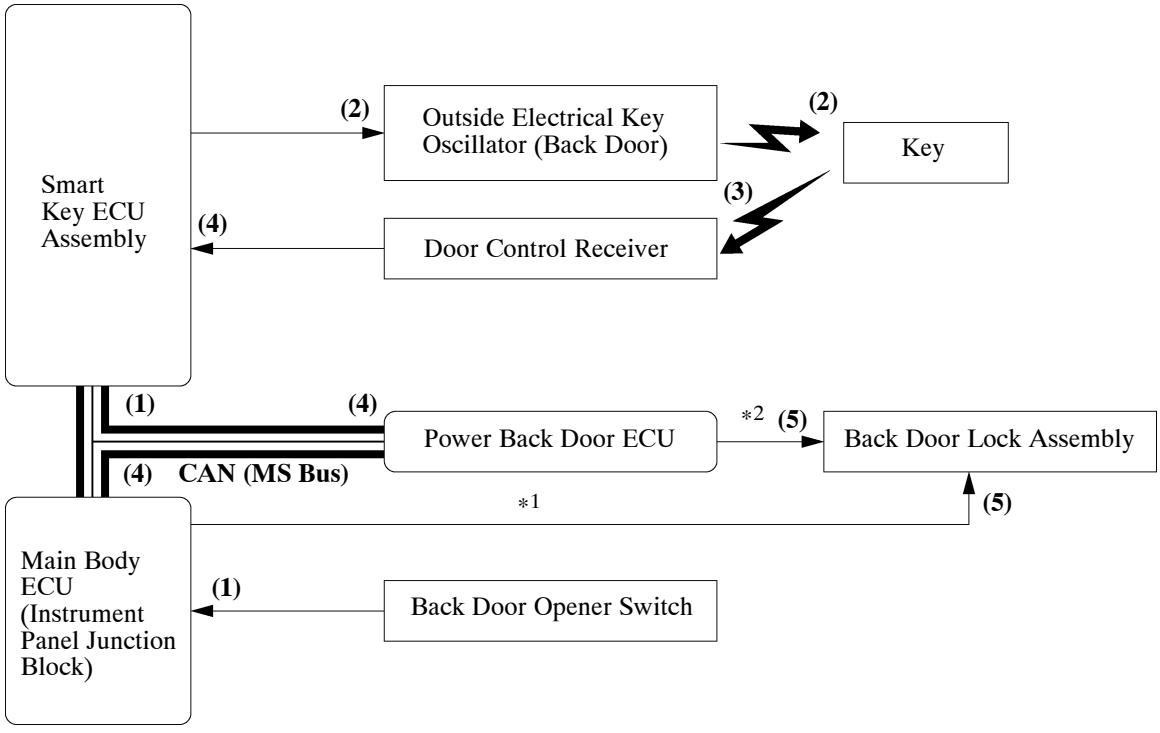
Entry Lock

(1) This signal is transmitted to the smart key ECU assembly when the user (who has the key in their possession) exits the vehicle and presses the lock switch or the back door lock switch.
(2) The smart key ECU assembly transmits a request signal to the indoor electrical key oscillators (front, center, rear) and electrical key oscillators (driver, front passenger, back door) to form actuation areas.
(3) The key receives this signal and returns the ID code to the door control receiver.
(4) The smart key ECU assembly judges and certifies the ID code. It then checks the location of the key and, if all the doors are closed, the ECU transmits a door lock request signal to the main body ECU (instrument panel junction block) or power back door ECU.
(5) The main body ECU (instrument panel junction block) or power back door ECU receives this signal and actuates the lock motors.
(6) The main body ECU (instrument panel junction block) blinks hazard lights once and the smart key ECU assembly sounds the wireless door lock buzzer once as an answer back for the entry lock function.



Back Door Open

(1) The unlock signal is transmitted to the smart key ECU assembly from the main body ECU (instrument panel junction block) when the driver pushes the back door opener switch with the key in their possession.
(2) The smart key ECU assembly transmits a request signal to the outside electrical key oscillator (back door) to form actuation areas.
(3) The key receives this signal and returns the ID code to the door control receiver.
(4) The smart key ECU assembly judges and certifies the ID code, and checks the location of the key. The ECU transmits a back door open request signal to the main body ECU (instrument panel junction block) or power back door ECU.
(5) The main body ECU (instrument panel junction block) or power back door ECU receives this signal and actuates the back door lock assembly motor to manually open the back door.



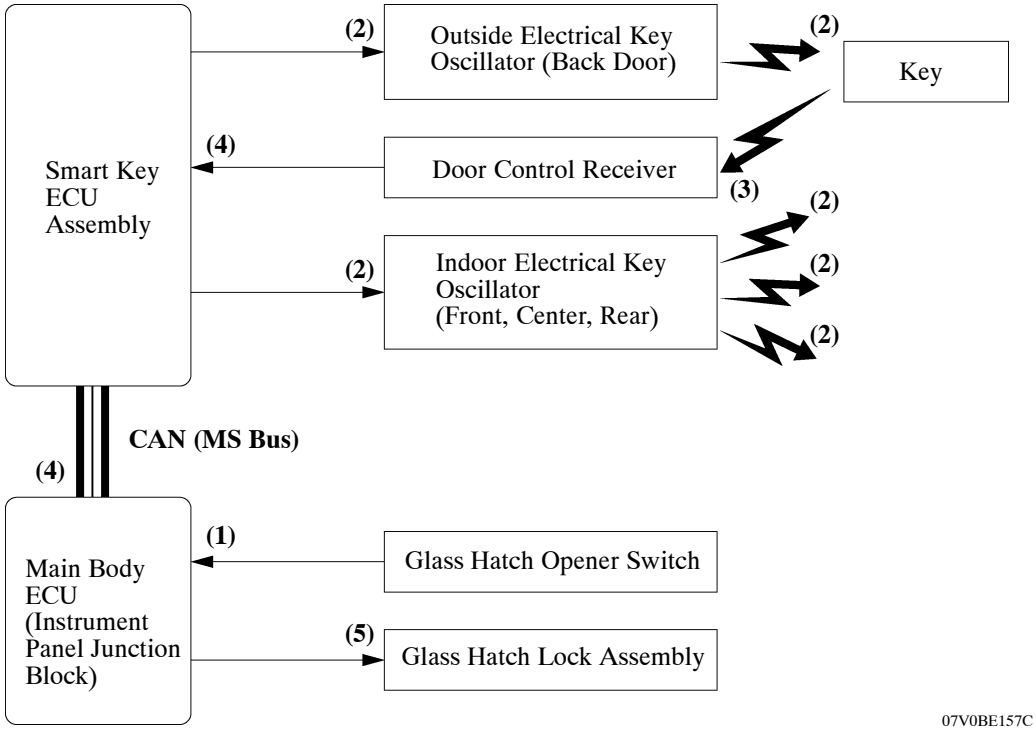
*1: Without Power Back Door System
*2: With Power Back Door System

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Glass Hatch Open

(1) The unlock signal is transmitted to the smart key ECU assembly from the main body ECU (instrument panel junction block) when the driver pushes the glass hatch opener switch with the key in their possession.
(2) The smart key ECU assembly transmits a request signal to the indoor electrical key oscillators (front, center, rear) and the outside electrical key oscillator (back door) to form actuation areas.
(3) The key receives this signal and returns the ID code to the door control receiver.
(4) The smart key ECU assembly judges and certifies the ID code, and checks the location of the key. The ECU transmits a glass hatch open request signal to the main body ECU (instrument panel junction block).
(5) The main body ECU (instrument panel junction block) receives this signal and actuates the lock motor to open the glass hatch.



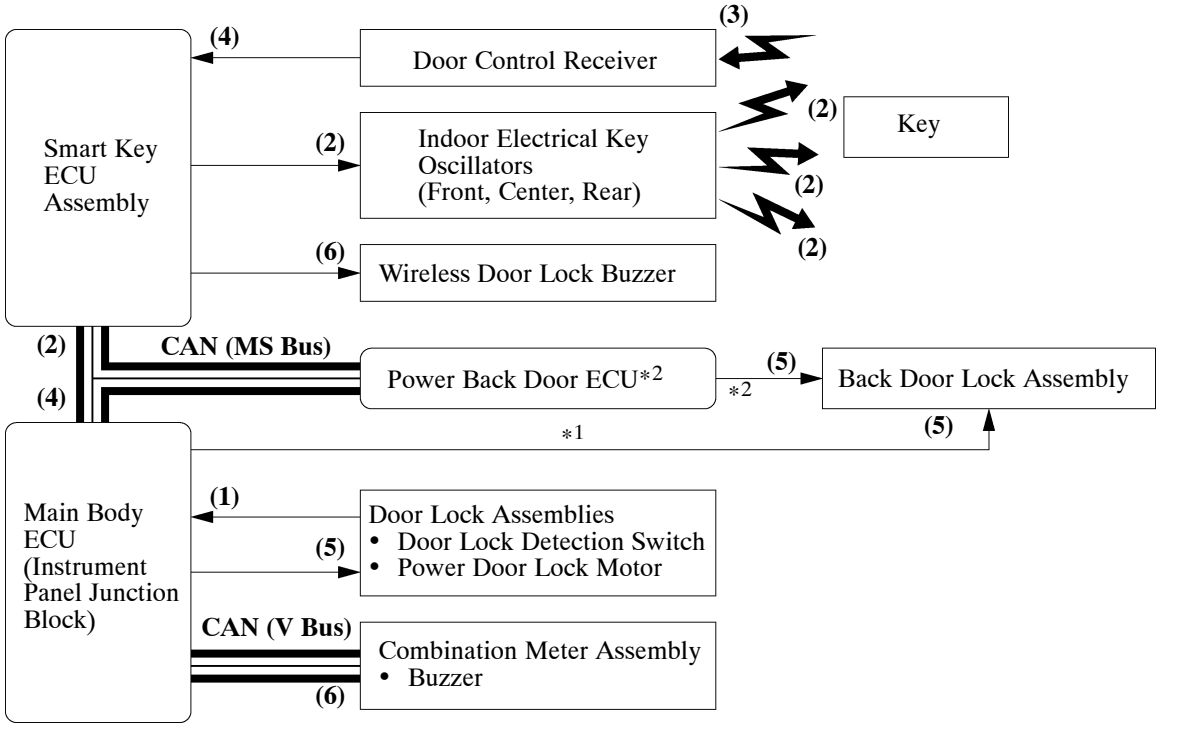
Prevention of Key Confinement

1) General

The key confinement prevention function prevents the key from being locked inside the vehicle. This function operates in 2 different situations: keyless lock, glass hatch close.

2) Keyless Lock (Lock Knob)

(1) When the door is locked by the lock knob in the inside door handle while the key is still the vehicle interior, the main body ECU (instrument panel junction block) receives this signal and transmits the door condition signal to the smart key ECU assembly.
(2) The smart key ECU assembly transmits a request signal to the indoor electrical key oscillators (front, center, rear) to form actuation areas.
(3) The key receives this signal and returns the ID code to the door control receiver.
(4) The smart key ECU assembly judges and certifies the ID code, and checks the location of the key. The ECU transmits a door unlock request signal to the main body ECU (instrument panel junction block) or power back door ECU.
(5) The main body ECU (instrument panel junction block) or power back door ECU receives this signal and actuates all door lock assemblies and the back door lock assembly to unlock.
(6) The smart key ECU assembly sounds the wireless door lock buzzer and buzzer in the combination meter as an answer back for unlocking.



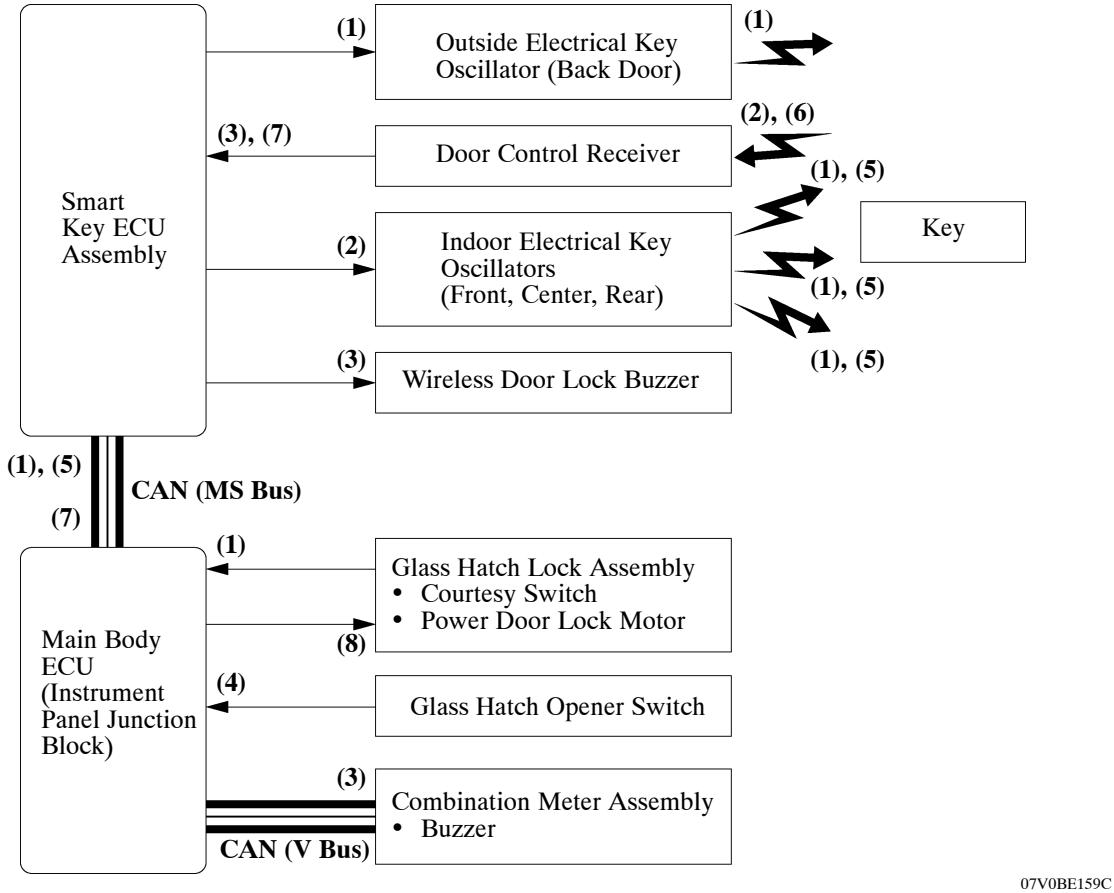
*1: Without Power Back Door System
*2: With Power Back Door System

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3) Glass Hatch Close

(1) When the glass hatch is closed with all doors locked while the key is still in the vehicle interior, the smart key ECU assembly receives this signal and transmits a request signal to the indoor electrical key oscillators (front, center, rear) and the outside electrical key oscillator (back door) to form actuation areas.
(2) The key receives this signal and returns the ID code to the door control receiver.
(3) The smart key ECU assembly judges and certifies the ID code, and checks the location of the key. The smart key ECU assembly sounds the wireless door lock buzzer and buzzer in the combination meter assembly for 2 seconds.
(4) At the same time, the smart key ECU assembly changes the glass hatch opener to the stand-by condition. The driver presses the glass hatch opener switch.
(5) The smart key ECU assembly receives this signal and transmits a request signal to the indoor electrical key oscillators (front, center, rear) to form actuation areas.
(6) The key receives this signal and returns the ID code to the door control receiver.
(7) The smart key ECU assembly judges and certifies the ID code, and checks the location of the key. The ECU transmits a glass hatch open request signal to the main body ECU (instrument panel junction block).
(8) The main body ECU (instrument panel junction block) receives this signal and actuates the glass hatch lock assembly to open the glass hatch.



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Warning

1) General

When any of the situations below occur, the smart key system causes the smart key ECU assembly to sound a buzzer in the combination meter assembly and the wireless door lock buzzer, indicate a warning on the multi-information display, and illuminate the power switch in order to the alert the driver.

Situation (See page)	Condition
A (BE-168)	The shift lever is in a position other than P when the driver gets out of the vehicle.
B (BE-169)	The driver door is opened while the steering is unlocked.
C (BE-170)	The shift lever is in P when the driver gets out of the vehicle and power source is not OFF.
D (BE-171)	A door is ajar and the lock switch is pushed.
E (BE-172)	A passenger gets out of the vehicle holding the key.
F (BE-172)	The key is not within the actuation areas.
G (BE-173)	The key is left in the vehicle interior and the lock switch is pushed.
H (BE-173)	The key is left in the vehicle interior and the glass hatch is closed.
I (BE-174)	The key battery is weak.
J (BE-174)	Steering lock does not release.
K (BE-175)	A malfunction in the steering lock ECU is detected.
L (BE-175)	The main body ECU (instrument panel junction block) is malfunctioning.
M (BE-176)	The THS-II start method is displayed.

2) Situation: A

There are 2 patterns for situation A.

- Pattern 1: When the shift lever is in a position other than P, the driver opens the door and attempts to get out of the vehicle.
- Pattern 2: In addition to the conditions of pattern 1, the driver closes the door and attempts to leave the vehicle holding the key.

In these situations, the following control is performed:

Pattern 1:		
Possible Effects without Warning	Sudden vehicle start, Vehicle theft, Vehicle roll-away	
Warning Active Condition		
The warning is activated when all of the following conditions are met: • Power source is in a mode other than OFF. • Shift lever is in any position except “P”. • Vehicle speed is 0 mph (0 km/h). • Driver door is opened.		
Waning Method		
Combination Meter Assembly	Buzzer	Sounds continuously
	Master Warning Light	-
Multi-information Display	The following warning messages is displayed: • Shift to P range	
Wireless Door Lock Buzzer	-	
Power Switch Illumination	-	
Warning Stop Condition		
The warning is stopped when one of the following conditions is met: • Power source mode is changed to OFF. • Shift lever is moved to the “P” position. • Vehicle speed is above 0 mph (0 km/h). • Driver door is closed.		
Pattern 2:		
Possible Effects without Warning	Sudden vehicle start, Vehicle theft, Vehicle roll-away	
Warning Active Condition		
The warning is activated when all of the following conditions are met: • Power source is in a mode other than OFF. • Shift lever is in any position except “P”. • Vehicle speed is 0 mph (0 km/h). • Driver door is opened → closed. • Key is not in the vehicle interior.		
Waning Method		
Combination Meter Assembly	Buzzer	Sounds continuously
	Master Warning Light	Flashes
Multi-information Display	The following warning messages are alternately displayed: • Shift to P range • Key is not detected	
Wireless Door Lock Buzzer	Sounds continuously	
Power Switch Illumination	-	

(Continued)

Warning Stop Condition			
The warning is stopped when one of the following conditions is met:			
• Power source mode is changed to OFF.			
All warning operations stop.			
• Vehicle speed rise above 0 mph (0 km/h).			
	Combination Meter Assembly	Buzzer	Stops sounding
		Master Warning Light	Turns OFF
	Multi-information Display	The following warning message is displayed: • Key is not detected	
	Wireless Door Lock Buzzer	Stops sounding	
• Key returns to the vehicle interior.			
	Combination Meter Assembly	Buzzer	Stops sounding
		Master Warning Light	Turns OFF
	Multi-information Display	The following warning message is displayed: • Shift to P range	
	Wireless Door Lock Buzzer	Stops sounding	

3) Situation: B

In situation B (the driver door is opened while the steering is unlocked), the following control is performed:

Possible Effects without Warning	Vehicle theft		
Warning Active Condition			
The warning is activated when one of the following conditions is met: • Power source mode is ACC and the driver door is opened. • Power source mode is OFF, the steering is unlocked, and the driver door is opened.			
Waning Method			
	Combination Meter Assembly	Buzzer	Continuously sounds at short and even intervals
		Master Warning Light	-
	Multi-information Display	-	
	Wireless Door Lock Buzzer	-	
	Power Switch Illumination	-	
Warning Stop Condition			
The warning is stopped when one of the following conditions is met: • Power source mode is changed to IG-ON or the driver door is closed. • Power source mode is changed to OFF and the steering is locked.			

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4) Situation: C

There are 2 patterns for situation C.

- Pattern 1: When the shift lever is in the P position, the driver closes the driver's door and attempts to leave the vehicle while holding the key and the power source is not OFF.
- Pattern 2: In addition to the conditions of pattern 1, the driver presses the lock switch.

In these situations, the following control is performed:

Pattern 1:		
Possible Effects without Warning	Vehicle theft, THS-II cannot be restarted, Discharged auxiliary battery	
Warning Active Condition		
The warning is activated when all of the following conditions are met: • Power source is in a mode other than OFF. • Shift lever is in the "P" position. • Key is not in the vehicle interior. • Driver door is opened → closed.		
Waning Method		
Combination Meter Assembly	Buzzer	Sounds once
	Master Warning Light	Flashes
Multi-information Display	The following warning message is displayed: • Key is not detected	
Wireless Door Lock Buzzer	Sounds 3 times	
Power Switch Illumination	-	
Warning Stop Condition		
The warning is stopped when one of the following conditions is met: • Power source mode is changed to OFF. • Key returns to the vehicle interior.		
Pattern 2:		
Possible Effects without Warning	Vehicle theft, Discharged auxiliary battery	
Warning Active Condition		
The warning is activated when all of the following conditions are met: • Power source is in a mode other than OFF. • Shift lever is in the "P" position. • All doors are closed. • The lock switch is "ON". • The key is not in the vehicle interior (within one of the actuation areas). • Vehicle speed is 0 mph (0 km/h).		
Warning Method		
Combination Meter Assembly	Buzzer	-
	Master Warning Light	-
Multi-information Display	-	
Wireless Door Lock Buzzer	Sounds for 60 seconds	
Power Switch Illumination	-	

(Continued)

Warning Stop Condition
The warning is stopped when one of the following conditions is met: • Power source mode is changed to OFF. • Vehicle speed is above 0 mph (0 km/h). • Key returns to the vehicle interior. • Shift lever is not in the “P” position.

5) Situation: D

In situation D (a door is ajar and the lock switch is pushed), the following control is performed:

Possible Effects without Warning	Vehicle theft		
Warning Active Condition			
The warning is activated when all of the following conditions are met: • Power source mode is OFF. • Any door is opened. • Lock switch is ON.			
Warning Method			
Combination Meter Assembly	Buzzer	-	
	Master Warning Light	-	
Multi-information Display	-		
Wireless Door Lock Buzzer	Sounds continuously		
Power Switch Illumination	-		
Warning Stop Condition			
The warning is stopped when one of the following conditions is met: • Power source is changed to a mode other than OFF. • All doors are closed. • The wireless door unlock function is operated. • Entry unlock is operated. • 10 seconds have elapsed after the wireless door lock buzzer was activated.			

6) Situation: E

In situation E (a passenger gets out of the vehicle holding the key), the following control is performed:

Possible Effects without Warning	THS-II cannot be restarted		
Warning Active Condition			
The warning is activated when all of the following conditions are met: • Power source is in a mode other than OFF. • A door except the driver door is opened → closed. • Vehicle speed is 0 mph (0 km/h). • Key is not in the vehicle interior.			
Warning Method			
Combination Meter Assembly	Buzzer	Sounds once	
	Master Warning Light	Flashes	
Multi-information Display	The following warning message is displayed: • Key is not detected		
Wireless Door Lock Buzzer	Sounds 3 times		
Power Switch Illumination	-		
Warning Stop Condition			
The warning is stopped when one of the following conditions is met: • Power source mode is changed to OFF. • Vehicle speed is above 0 mph (0 km/h). • Key returns to the vehicle interior.			

7) Situation: F

In situation F (the key is not within an actuation area), the following control is performed:

Possible Effects without Warning	Confuses the user		
Warning Active Condition			
The warning is activated when all of the following conditions are met: • Power switch is pushed. • Key is not inside the vehicle.			
Warning Method			
Combination Meter Assembly	Buzzer	Sounds once	
	Master Warning Light	Flashes	
Multi-information Display	The following warning message is displayed for 8 seconds (and then automatically turned off). • Key is not detected		
Wireless Door Lock Buzzer	-		
Power Switch Illumination	-		
Warning Stop Condition			
Check if the key is in the actuation area. If the key is in the actuation area, press the wireless door lock switch and confirm that the indicator on the key comes on. If the indicator does not come on, replace the key battery with a new one.			

8) Situation: G

In situation G (the key is left inside the vehicle and the lock switch is pushed), the following control is performed:

Possible Effects without Warning	Vehicle theft		
Warning Active Condition			
The warning is activated when all of the following conditions are met: • Power source mode is OFF. • All doors are closed. • Key is not in the vehicle interior. • Lock switch is operated (turned ON).			
Warning Method			
Combination Meter Assembly	Buzzer	-	
	Master Warning Light	-	
Multi-information Display	-		
Wireless Door Lock Buzzer	Sounds for 2 seconds		
Power Switch Illumination	-		
Warning Stop Condition			
The key is removed from the vehicle interior and the lock switch is operated (turned ON).			

9) Situation: H

In situation H (the key is left inside the vehicle and the glass hatch is closed), the following control is performed:

Possible Effects without Warning	Key confinement		
Warning Active Condition			
The warning is activated when all of the following conditions are met: • Vehicle speed is 0 mph (0 km/h). • All doors are closed. • Key is inside the vehicle. • Glass hatch is closed.			
Warning Method			
Combination Meter Assembly	Buzzer	-	
	Master Warning Light	-	
Multi-information Display	-		
Wireless Door Lock Buzzer	Sounds for 2 seconds		
Power Switch Illumination	-		
Warning Stop Condition			
The glass hatch opener switch is operated (turned ON).			

10) Situation: I

In situation I (the key battery is weak), the following control is performed:

Possible Effects without Warning		Smart key system does not function	
Warning Active Condition			
	The warning is activated when all of the following conditions are met: • Power source mode is changed to OFF after being left in IG-ON for over 20 minutes. • Key battery voltage is low. • Key is in the vehicle interior.		
Waning Method			
	Combination Meter Assembly	Buzzer	Sounds once
		Master Warning Light	Flashes
	Multi-information Display	The following warning message is displayed for 5 seconds (and then automatically turned off): • Low Key Battery	
	Wireless Door Lock Buzzer	-	
	Power Switch Illumination	-	
Warning Stop Condition			
	The key battery is replaced with a new one.		

11) Situation: J

In situation J (steering lock does not release), the following control is performed:

Possible Effects without Warning		Steering usability function	
Warning Active Condition			
	The steering lock does not release, thus the THS-II is prevented from starting.		
Warning Method			
	Combination Meter Assembly	Buzzer	-
		Master Warning Light	Flashes
	Multi-information Display	The following warning message is displayed for 15 seconds (and then automatically turned off). • Steering Lock is still active	
	Wireless Door Lock Buzzer	-	
	Power Switch Illumination	The green indicator blinks at 1-second intervals (and goes off automatically).	
Warning Stop Condition			
	If the power switch is pressed again while the steering wheel is tuned left and right, and the steering lock successfully disengages, the warning will stop.		

12) Situation: K

In situation K (a malfunction in the steering lock ECU is detected), the following control is performed:

Possible Effects without Warning	Malfunction detection	
Warning Active Condition		
A malfunction in the steering lock ECU is detected.		
Warning Method		
Combination Meter Assembly	Buzzer	Sounds once
	Master Warning Light	Flashes
Multi-information Display	The following warning message is displayed for 15 seconds (and then automatically turned off): • Check Steering Lock System	
Wireless Door Lock Buzzer	-	
Power Switch Illumination	The amber indicator blinks at 2-second intervals.	
Warning Stop Condition		
The steering lock ECU returns to normal.		

13) Situation: L

In situation L (The main body ECU (instrument panel junction block) is malfunctioning), the following control is performed:

Possible Effects without Warning	Malfunction detection	
Warning Active Condition		
A malfunction in the main body ECU (instrument panel junction block) is detected.		
Warning Method		
Combination Meter Assembly	Buzzer	-
	Master Warning Light	-
Multi-information Display	-	
Wireless Door Lock Buzzer	-	
Power Switch Illumination	The amber indicator blinks at 2-second intervals.	
Warning Stop Condition		
The main body ECU (instrument panel junction block) returns to normal.		

14) Situation: M

In situation M (the THS-II start hint is displayed), the following control is performed:

Possible Effects without Warning		Usability function	
Warning Active Condition			
	The warning is activated when all of the following conditions are met: • Any door is closed → opened. • Power source mode is changed from OFF to ACC more than once with the power off and the brake pedal not depressed.		
Warning Method			
	Combination Meter Assembly	Buzzer	Sounds once
		Master Warning Light	-
	Multi-information Display	The following warning message is displayed for 10 seconds (and then automatically turned off). • To start, depress the brake pedal, and push the POWER switch	
	Wireless Door Lock Buzzer	-	
	Power Switch Illumination	-	
Warning Stop Condition			
	The power switch is pushed with the brake pedal depressed or the power source mode is changed to OFF.		

Battery Saving

Battery saving preserves the vehicle auxiliary battery and key battery. It is activated when the vehicle remains parked for a long time and when the key is left inside the exterior actuation area.

When the vehicle remains parked for a long time
Step 1: No response from key for more than 5 days
Signal transmission interval is extended from 250 msec. to 750 msec.
Step 2: No response from key for more than 14 days
The smart key system is automatically deactivated.
These controls are stopped when one of the following conditions is met: • A wireless door lock control signal of the key is input and the ID matches. • A user carries the key and pushes the lock switch. • A door is locked or unlocked using the mechanical key.
When the key is left in the exterior actuation area
Step 1: This state continues for longer than 10 minutes
The smart key system is automatically deactivated.
The control is stopped when one of the following conditions is met: • A wireless door lock control signal of the key is input and the ID matches. • A user carries the key and pushes the lock switch. • A door is locked or unlocked using the mechanical key.

Key Cancel

- It is possible to deactivate the following smart key system functions.
  - Entry Lock
  - Entry Unlock
  - Entry Unlock Mode Switching
  - Back Door Open
  - Glass Hatch Open
  - Prevention of Key Confinement
  - Warning
- Key cancel is operated when certain operations are performed under the following conditions:
  - Power source mode is OFF.
  - Driver door is closed.
  - Driver door is unlocked.

Service Tip

The operation procedure is as follows:

1) Unlock the driver side door once with the UNLOCK button of the key.
2) Open the driver door within 5 seconds.
3) Unlock the driver side door twice with the UNLOCK button of the key within 5 seconds.
4) Repeat open → close twice for the driver door within 30 seconds, and open again. (Driver Door: Open → Close → Open → Close → Open)
5) Unlock the driver side door twice with the UNLOCK button of the key within 30 seconds.
6) Repeat open → close once for the driver door within 30 seconds, and open again. (Driver Door: Open → Close → Open)
7) Close the driver door within 5 seconds.

When key cancel is activated, the wireless door lock buzzer sounds twice.
To return to the original condition, perform the procedure again. When the original condition is returned, the wireless door lock buzzer sounds once.

Key Code Registration Function

The table below shows the four ID registration modes through which up to four different codes can be registered. The codes are electronically registered (written and stored) in the EEPROM. For details of the recognition code registration procedure, refer to the 2008 HIGHLANDER HYBRID VEHICLE Repair Manual (Pub. No. RM07V0U).

Mode	Function
Rewrite	Erases all previously registered codes and registers only the newly received codes. This mode is used whenever a transmitter or the integration relay is replaced.
Add	Adds a newly received code while preserving previously registered codes. This mode is used when adding a new transmitter. If the number of codes exceeds 4, the oldest registered code is erased first.
Confirm	Confirms how many codes are currently registered. When adding a new code, this mode is used to check how many codes already exist.
Prohibit	Deletes all the registered codes and prohibits the wireless door lock function. This mode is used when a key is lost.