■ SYSTEM CONTROL

Entry Function

The entry function consists of the following functions:

Function	Details
Wireless Door Lock Control	This function is a convenient system for locking and unlocking all the doors at a distance. The operation of this function in the entry and start system is the same as that of wireless door lock control system. However, the receiver in the certification ECU (smart key ECU assembly) uses a door control receiver to perform the control.
Entry Unlock	When a key is located in the exterior actuation area of the front outside door handle RH/LH or license plate light cord, pressing a lock/unlock switch will cause all doors to unlock.
Entry Lock	When a key is located in the exterior actuation area of the front outside door handle RH/LH or license plate light cord and the engine switch is off (Lock), all doors can be locked by simply pressing the lock/unlock switch.
Prevention of Key Confinement	Prevents the confinement of the key if the door is locked from the door outside handle while the key is still inside the vehicle. When locking the doors while the key is inside actuation area, a buzzer sounds to prevent the key from being confined.
Key Cancel	The following key functions can be cancelled by following certain procedures: ● Entry unlock/lock ● Prevention of key confinement ● Warning
Warning	The entry and start system causes the certification ECU (smart key ECU assembly) to sound the buzzer, displays a message on the multi-information display and illuminates the key operation/warning light in the combination meter assembly and wireless door lock buzzer in order to alert the driver.
Key Code Registration Function	A total of 4 keys can be registered. Key registration enables the registering (writing and storing) of transmitter recognition codes in the EEPROM that is contained in the certification ECU (smart key ECU assembly).

Wireless Door Lock Function

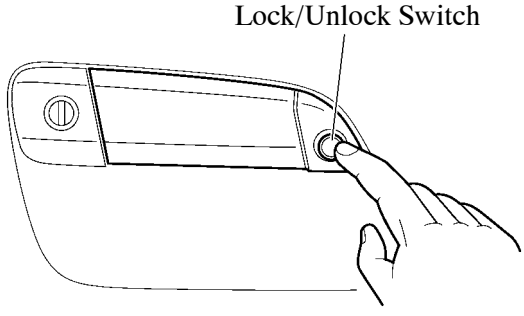
The wireless door lock control function has the following functions:

Function	Details
All Doors Lock	Pressing the lock button of the electrical key transmitter sub-assembly locks all doors.
All Doors Unlock	Pressing the unlock button of the electrical key transmitter sub-assembly unlocks all doors.
Automatic Lock	If none of the doors are opened for approximately 30 seconds after being unlocked by the wireless door lock control, all the doors are locked again automatically.
Answer Back	The hazard lights blink once and wireless door lock buzzer sounds when locking, and blink twice when unlocking, to inform that the operation has been completed.

Entry Unlock

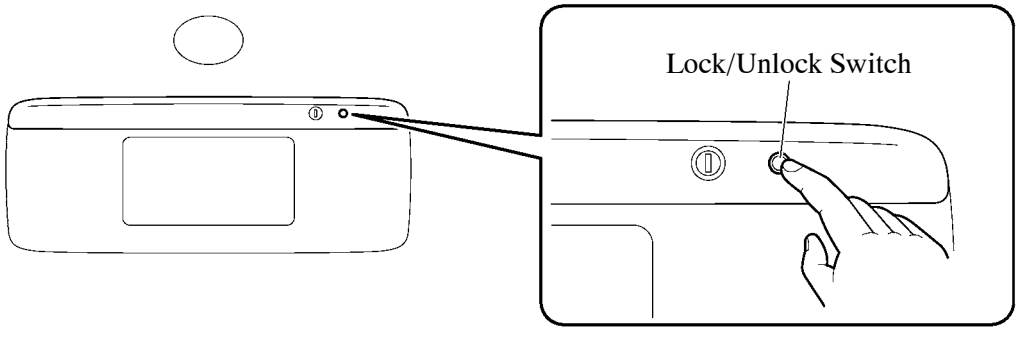
While the user carries the key in the exterior actuation area, and presses the lock/unlock switch of the front outside door handle RH/LH or license plate light cord.
When the doors are unlocked, the hazard warning lights blink twice and the buzzer sounds twice as an answer back.

▶ Front Door ◀



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▶ Back Door ◀

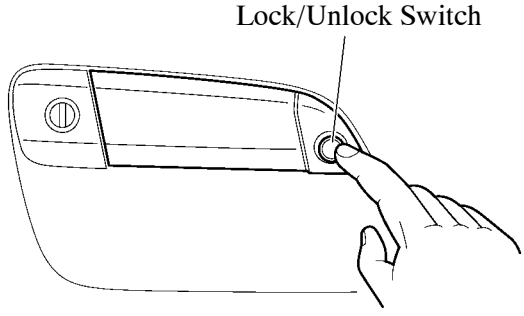


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Entry Lock

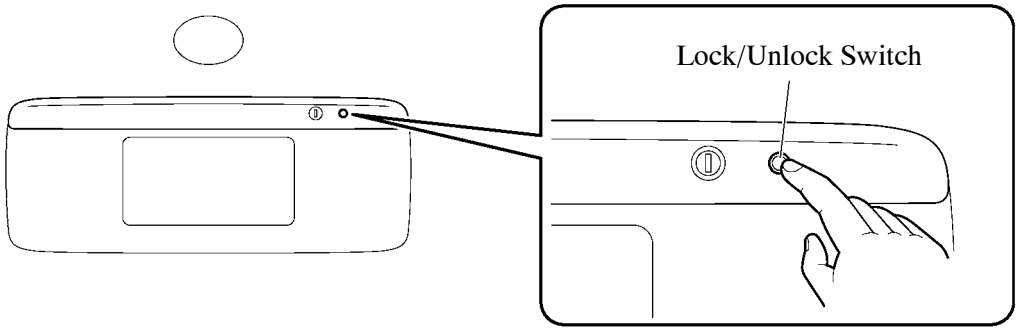
When the user gets out of the vehicle while carrying the key and presses the lock/unlock switch of the front outside door handle RH/LH or license plate light cord within the exterior actuation area with all the doors closed, the doors are locked.
When the doors are locked, the hazard warning lights blink once and the buzzer sounds ones as an answer back.

▶ Front Door ◀



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▶ Back Door ◀



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Warning Function

a. General

When any of the situations below occur, the entry and start system causes the certification ECU to sound a buzzer in the combination meter assembly and the wireless door lock buzzer, display a message in the multi-information display and illuminates the key operation/warning light in order to alert the driver.

Situation	Condition
A	Warning that the shift lever is in a position other than P (power remaining on) when the driver gets out of the vehicle
B	Key reminder warning
C	Warning that when a passenger gets out of the vehicle while holding the key
D	Warning that the key is not within the actuation areas
E	Warning that the vehicle is driven first time without a key
F	Warning that the key is left in the vehicle
G	Warning that the doors are locked while a key is left in the vehicle
H	Warning for the smart door lock that a door is ajar
I	Warning that the key battery is weak
J	Warning that the steering lock does not release
K	Warning that a malfunction has been detected in the smart relating system
L	Display of operation method in the event of emergency
M	Notification of the completion of engine immobiliser certification

b. 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.
In this situation, the following control is performed:

Events		Sudden vehicle start, Vehicle theft, Vehicle roll-away
Warning Condition		The warning is activated when all of the following conditions are met: ● Engine switch is in IG mode. ● Shift lever is in any position except P. ● Driver door is opened. ● Vehicle speed is 0 km/h (0 mph).
Combination Meter Assembly	Buzzer	Sounds continuously
	Multi-information Display	The following warning message is displayed: ● SHIFT TO P POSITION WHEN PARKED
Wireless Door Lock Buzzer		—
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Engine switch is OFF. ● Shift lever is in the P position. ● Driver door is closed. ● Vehicle speed is above 5 km/h (3 mph).

Pattern 2:

Under the situation of pattern 1, the driver closes the door and attempts to leave the vehicle while holding the electrical key transmitter sub-assembly.
In this situation, the following control is performed:

Events		Sudden vehicle start, Vehicle theft, Vehicle roll-away
Warning Condition		The warning is activated when all of the following conditions are met: ● Engine switch is in IG mode. ● Shift lever is in any position except P. ● Driver door is opened → closed. ● Key is not in the vehicle. (Interior key certification result is NG). ● Vehicle speed is 0 km/h (0 mph).
Combination Meter Assembly	Buzzer	Sounds continuously
	Multi-information Display	The following warning messages are alternately displayed: ● SHIFT TO P POSITION WHEN PARKED ● KEY NOT DETECTED
	Key Operation/Warning Light	Blinks (Amber).
Wireless Door Lock Buzzer		Sounds continuously
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Engine switch is OFF. ● Shift lever is in P position. ● Vehicle speed is above 5 km/h (3 mph). ● Key is in the vehicle. (Interior key certification result is OK).

c. Situation: B

There are 3 patterns for situation B.

Pattern 1:

When the shift lever is in P and the engine switch is in a mode other than off (the steering remains unlocked), the driver door is opened and the driver attempts to leave the vehicle.
In this situation, the following control is performed:

Events		Vehicle theft
Warning Condition		With the shift lever is in the P position, when one of the following condition is met: ● Engine switch is in ACC mode and the driver door is opened. ● Engine switch is in OFF mode the steering is unlocked, and the driver door is opened.
Combination Meter Assembly	Buzzer	Continues sound with short intervals
	Multi-information Display	—
Wireless Door Lock Buzzer		—
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Engine switch is in IG mode. ● Driver door is closed. ● Engine switch is in OFF mode and the steering is locked.

Pattern 2:

Under the situation of pattern 1, the driver opens and closes the driver door and attempts to leave the vehicle while holding the electrical key transmitter sub-assembly.
In this situation, the following control is performed:

Events		Vehicle theft
Warning Condition		When all of the following conditions are met: ● Engine switch is in IG mode. ● Shift lever is in P position. ● Driver door is opened → closed. ● Key is not in the vehicle (Interior key certification result is NG). ● Vehicle speed is 0 km/h (0 mph).
Combination Meter Assembly	Buzzer	Sounds once
	Multi-information Display	The following warning message is displayed: ● KEY NOT DETECTED
	Key Operation/Warning Light	Blinks (Amber).
Wireless Door Lock Buzzer		Sounds 3 times
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Engine switch is OFF. ● Key is in the vehicle (Interior key certification result is OK).

Pattern 3:

Under the situation of pattern 2, the driver pressing the lock/unlock switch on the outside door handle. In this situation, the following control is performed:

Events		Vehicle theft
Warning Condition		When all of the following conditions are met: ● Engine switch is in IG mode. ● Shift lever is in P position. ● Key is not in the vehicle (Interior key certification result is NG). ● Key is in an outside detection area (exterior key certification result is OK). ● The lock/unlock switch of the front outside door handle assembly is pressed. ● Vehicle speed is 0 km/h (0 mph).
Combination Meter Assembly	Buzzer	Sounds once
	Multi-information Display	The following warning messages are alternately displayed: ● TURN POWER OFF ● KEY NOT DETECTED
	Key Operation/Warning Light	Blinks (Amber).
Wireless Door Lock Buzzer		Sounds continuously
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Engine switch is OFF. ● Key is in the vehicle (Interior key certification result is OK). (Only “TURN POWER OFF.” is displayed.) ● Shift lever is in any position except P. (Only “KEY NOT DETECTED” is displayed.) ● Vehicle speed is above 5 km/h (3 mph). (Only “KEY NOT DETECTED” is displayed.) ● Any of the doors is opened. (Only the wireless door lock buzzer is stopped.) ● Any of the doors is closed. (Only the wireless door lock buzzer is stopped.) ● 5 seconds elapse. (Only the wireless door lock buzzer is stopped.) ● 60 seconds elapse. (Only “KEY NOT DETECTED” is displayed.)

d. Situation: C

When the engine is left running, a passenger leaves the vehicle while holding the electrical key transmitter sub-assembly.
In this situation, the following control is performed:

Events		Engine cannot be restarted.
Warning Condition		When all of the following conditions are met: ● Engine switch is in IG mode. ● Any of the doors other than the door for the driver's seat is closed. ● Key is not in the vehicle (Interior key certification result is NG). ● Vehicle speed is 0 km/h (0 mph).
Combination Meter Assembly	Buzzer	Sounds once
	Multi-information Display	The following warning message is displayed: ● KEY NOT DETECTED
	Key Operation/Warning Light	Blinks (Amber).
Wireless Door Lock Buzzer		Sounds 3 times
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Engine switch is OFF. ● Key is in the vehicle (Interior key certification result is OK).

e. Situation: D

When the electrical key transmitter sub-assembly is not in the vehicle, the driver attempts to turn the engine switch on (IG) (emergency key operation* is included).
In this situation, the following control is performed:

Events		User becomes confused
Warning Condition		With the engine switch is pressed, when all of the following conditions are met: ● Engine immobiliser system is set. ● Key is not in the vehicle (interior key certification result is NG and transponder certification result is NG.). ● There is no history regarding unlocking using a mechanical key and there is no history regarding the failed certification when the engine switch was turned on.
Combination Meter Assembly	Buzzer	Sounds once
	Multi-information Display	The following warning message is displayed: ● KEY NOT DETECTED
	Key Operation/Warning Light	Blinks (Amber).
Wireless Door Lock Buzzer		—
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● 15 seconds elapse. ● Key is in the vehicle (interior key certification result is OK and transponder certification result is OK.) ● Pre-certification is stopped. (30 seconds elapse after a door is opened.)

*: Emergency key operation is an operation that changes the power source by touching the engine switch with the electrical key transmitter sub-assembly.

f. Situation: E

The vehicle starts moving without a registered electrical key transmitter sub-assembly in the vehicle. In this situation, the following control is performed:

Events		Engine cannot be restarted.
Warning Condition		When all of the following conditions are met: ● Engine switch is in IG mode. ● The warning that when a passenger gets out of the vehicle while holding the key is being issued. ● Vehicle speed is above 5 km/h (3 mph). ● Key is not in the vehicle (Interior key certification result is NG).
Combination Meter Assembly	Buzzer	Sounds 9 times
	Multi-information Display	The following warning message is displayed: ● KEY NOT DETECTED
	Key Operation/Warning Light	Blinks (Amber).
Wireless Door Lock Buzzer		—
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Engine switch is OFF. ● Key is in the vehicle (Interior key certification result is OK).

g. Situation: F

The lock/unlock switch on a door outside handle is pressing to perform entry lock with the electrical key transmitter sub-assembly left in the vehicle.
In this situation, the following control is performed:

Events		Vehicle theft
Warning Condition		When all of the following conditions are met: ● Engine switch is OFF. ● All doors are closed. ● Key is in the vehicle (Interior key certification result is OK). ● The lock/unlock switch of the front outside door handle assembly is pressed. ● Any of the doors is unlocked. ● Vehicle speed is 0 km/h (0 mph).
Combination Meter Assembly	Buzzer	—
	Multi-information Display	The following warning message is displayed: ● KEY DETECTED IN VEHICLE
Wireless Door Lock Buzzer		Sounds continuously
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Engine switch is in IG mode. ● Any of the doors is opened. (Only the wireless door lock buzzer is stopped.) ● Vehicle speed is above 5 km/h (3 mph). ● A lock operation is performed. ● Approximately 5 seconds elapse from the start of warning. (Only the wireless door lock buzzer is stopped.) ● 60 seconds elapse.

h. Situation: G

The door is locked with the electrical key transmitter sub-assembly left in the vehicle.
In this situation, the following control is performed:

Events		Vehicle theft
Warning Condition		When all of the following conditions are met: ● Key is in the vehicle (Interior key certification result is OK). ● A key-less lock operation* is performed. ● Vehicle speed is 0 km/h (0 mph).
Combination Meter Assembly	Buzzer	Sounds once
	Multi-information Display	The following warning message is displayed: ● KEY DETECTED IN VEHICLE
Wireless Door Lock Buzzer		Sounds continuously
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● A power switchover operation is performed. ● Any of the doors is opened. (Only the wireless door lock buzzer is stopped.) ● A lock operation is performed. ● Vehicle speed is above 5 km/h (3 mph). ● Approximately 5 seconds elapse from the start of warning. (Only the wireless door lock buzzer is stopped.) ● 60 seconds elapse.

*: Keyless lock operation is door lock operation without using the electrical key transmitter subassembly. First, set the lock position (door lock knob) when the door is open, and close the door while pulling the door handle to lock the door.

i. Situation: H

The lock/unlock switch on the door outside handle is pressing to perform entry lock, however, a door is open.
In this situation, the following control is performed:

Events		Vehicle theft
Warning Condition		The warning is activated when all of the following conditions are met: ● The engine switch is off. ● Any door is open other than the door where the entry lock operation is performed. ● The lock/unlock switch on the outside door handle is on or the lock button on the key is pressed. ● Key is in an outside detection area (exterior key certification result is OK).
Combination Meter Assembly	Buzzer	Sounds continuously
	Multi-information Display	—
Wireless Door Lock Buzzer		—
Warning Stop Condition		The warning is stopped when one of the following conditions is met: ● Engine switch is in IG mode. ● All doors are closed. ● Unlock operation is performed using the wireless door lock remote function. ● 5 seconds elapse.

j. Situation: I

The vehicle is driven using an electrical key transmitter sub-assembly that has a low battery.
In this situation, the following control is performed:

Events		Usability function, engine cannot be restarted
Warning Condition		Condition 1: The warning is activated when all of the following conditions are met: ● The engine switch is turned off after being left on (IG) for more than 20 minutes. ● The key battery voltage is low (key battery low code is received). ● Key is in the vehicle (interior key certification result is OK). ● Vehicle speed is 0 km/h (0 mph). Condition 2: The warning is activated when all of the following conditions are met: ● The engine is stopped → restarted (engine speed is 500 rpm or more). ● The key battery voltage is low (key battery low code is received). ● Key is in the vehicle (Interior key certification result is OK). ● Vehicle speed is 0 km/h (0 mph). ● The low key battery warning for condition 1 was performed.*
Combination Meter Assembly	Buzzer	Sounds once
	Multi-information Display	The following warning message is displayed: ● KEY BATTERY LOW
	Key Operation/Warning Light	Blinks (Amber).
Wireless Door Lock Buzzer		—
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Vehicle speed is above 5 km/h (3 mph). ● 15 seconds elapse.

*: Warning performed after 20 minutes of the engine switch being turned on (IG)

k. Situation: J

The steering lock cannot be released or the shift lever is moved to a position other than P before the steering lock is unlocked.
In this situation, the following control is performed:

Events		Usability function
Warning Condition		The warning is activated when the following condition is met: The steering lock cannot be released (the steering lock ECU judgment).
Combination Meter Assembly	Buzzer	Sounds once
	Multi-information Display	The following warning message is displayed: ● STEERING LOCK ACTIVE
	Key Operation/Warning Light	Blinks (Green).
Wireless Door Lock Buzzer		—
Warning Stop Condition		The engine switch is pushed while the steering wheel is turned left and right. The warning is stopped when either of the following conditions is met: ● Steering lock is released. ● 15 seconds elapse.

l. Situation: K

A vehicle speed signal malfunction or malfunction that interferes with steering lock actuator assembly (steering lock ECU) operation has been detected.
In this situation, the following control is performed:

Events		Malfunction Detection
Warning Condition		The warning is activated when either of the following conditions is met: ● Steering lock actuator assembly (steering lock ECU), driver of the power ECU or steering lock/unlock position switch is malfunctioning. ● Vehicle speed is judged as abnormal or vehicle speed signal communication is malfunctioning.
Combination Meter Assembly	Buzzer	Sounds once
	Multi-information Display	The following warning message is displayed: ● CHECK ENTRY & START SYSTEM
	Key Operation/Warning Light	Blinks (Amber).
Wireless Door Lock Buzzer		—
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● The system returns to normal. ● 15 seconds elapse.

m. Situation: L

When the driver attempts to start the engine after unlocking the driver door using the mechanical key, the electrical key transmitter sub-assembly cannot be detected in the vehicle or cannot be detected in the vehicle 2 times in a row.
In this situation, the following control is performed:

Events		Usability function
Warning Condition		The warning is activated when the engine switch is pressed with all of the following conditions met: ● Engine immobiliser system is set. ● Key is not in the vehicle (interior key certification results is NG). ● The doors were unlocked using a mechanical key or when the engine switch is pressed, a certification error occurs 2 times in a row.
Combination Meter Assembly	Buzzer	Sounds once
	Multi-information Display	The following warning message is displayed for 60 seconds (and then automatically turned off): ● DEPRESS BRAKE PEDAL, TOUCH ENGINE SWITCH WITH KEY
	Key Operation/Warning Light	Blinks (Amber).
Wireless Door Lock Buzzer		—
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Key is in the vehicle (interior key certification result is OK and transponder certification result is OK.). ● 60 seconds elapse. ● 30 seconds have elapsed since the door was opened using a door outside door handle.

n. Situation: M

The engine switch is touched with an electrical key transmitter sub-assembly when the transmitter battery voltage is low, smart operation is canceled or radio interference occurs.
In this situation, the following control is performed:

Events		Usability function
Warning Condition		Transponder certification result is OK.
Combination Meter Assembly	Buzzer	Sounds once
	Multi-information Display	The following warning message is displayed: ● DEPRESS BRAKE PEDAL AND PUSH ENGINE SWITCH TO START
	Key Operation/Warning Light	Turned on (Green).
Wireless Door Lock Buzzer		—
Warning Stop Condition		The warning is stopped when one of the following condition is met: ● Key is in the vehicle (interior key certification results is OK). ● 10 seconds elapse. ● The engine is running at 500 rpm or more. ● The engine is started. ● The immobiliser system is set and interior certification is stopped or key certification fails.

■ CRANKING HOLD FUNCTION

Once the engine switch is pressed, this function operates the starter until the engine starts, provided that the brake pedal is depressed. This prevents application of the starter for an inadequate length of time and it also prevents the engine from being cranked after it has started. For details, see for 1KD-FTV engine.