
GROUP 42

BODY

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GENERAL INFORMATION

FEATURES

WEIGHT REDUCTION AND HIGH RIGIDITY

Use of high-tensile steel panels and steel plate with varying thickness.

REDUCTION OF VIBRATION, NOISE, AND AERODYNAMIC NOISE

Effective positioning of sound-deadening materials.

IMPROVEMENTS IN SAFETY

- Features an impact safety body for the main body.
- Features a side door beam to boost safety upon side impact.
- Features an inside lock cable on the front door to prevent door locking due to door deformation upon frontal impact.
- The impact detection door unlock mechanism is adopted.

M2420000100530

- The one touch power window with anti-trapping safety mechanism is used.
- The new power window switch is adopted. The switch enables to open the power window even if the vehicle is submerged.

IMPROVEMENTS IN OPERATION QUALITY

The central door locking system, which locks/unlocks all the doors and the tailgate, is adopted.

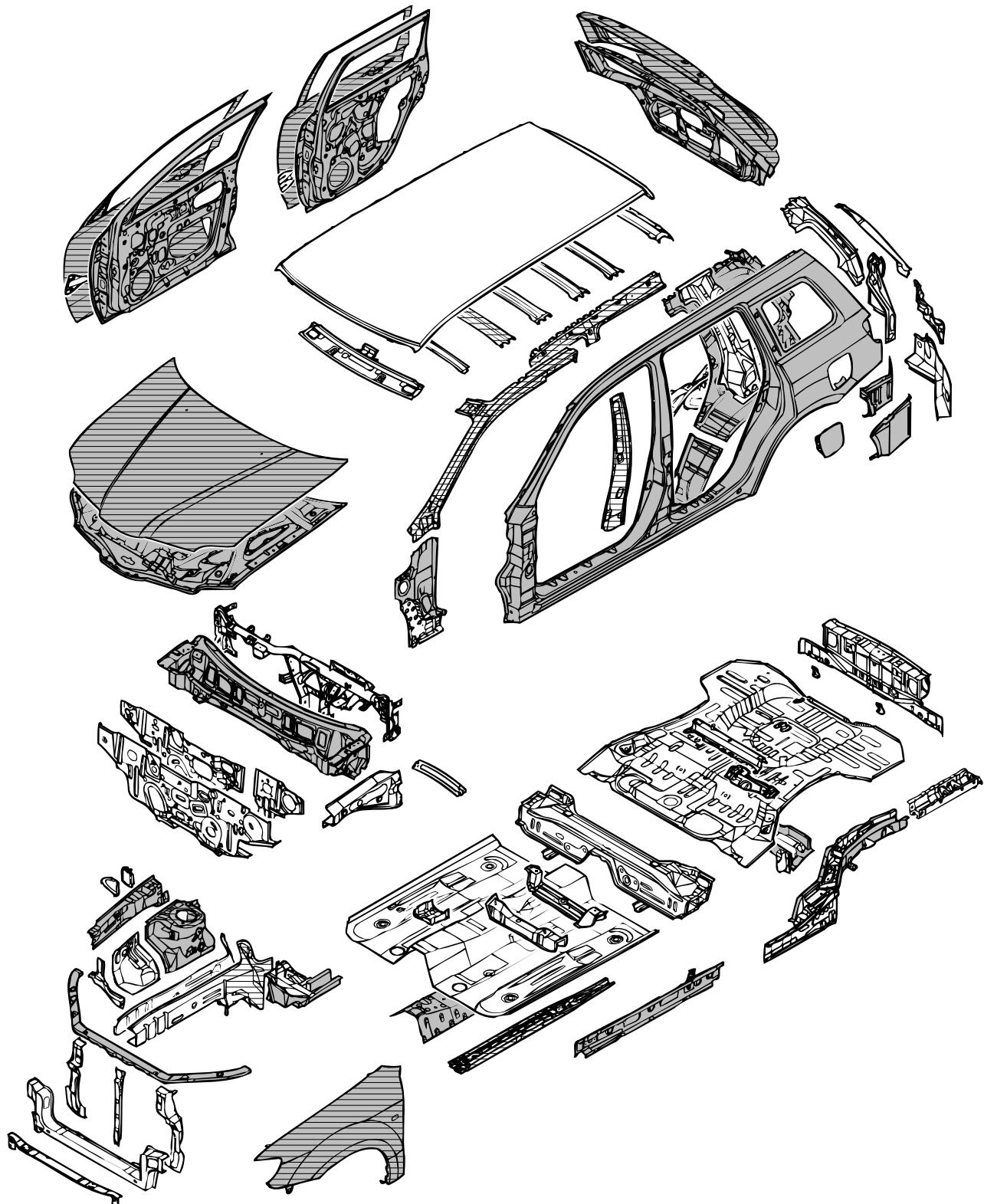
IMPROVEMENTS OF PRODUCT PACKAGE AND APPEARANCE

- Acoustic foam material has been installed to the front door waterproof film.
- Comes with a privacy glass for the rear door window glass, quarter window glass, tailgate glass (Option).
- The sunroof and roof window glass are used (Option).
- Standard keyless entry system (INTENSE and TURBO: standard, INVITE: option).

MAIN BODY

BODY PANELING

M2420002000368



 : Anti-corrosion steel panels
 : High-tensile steel panels

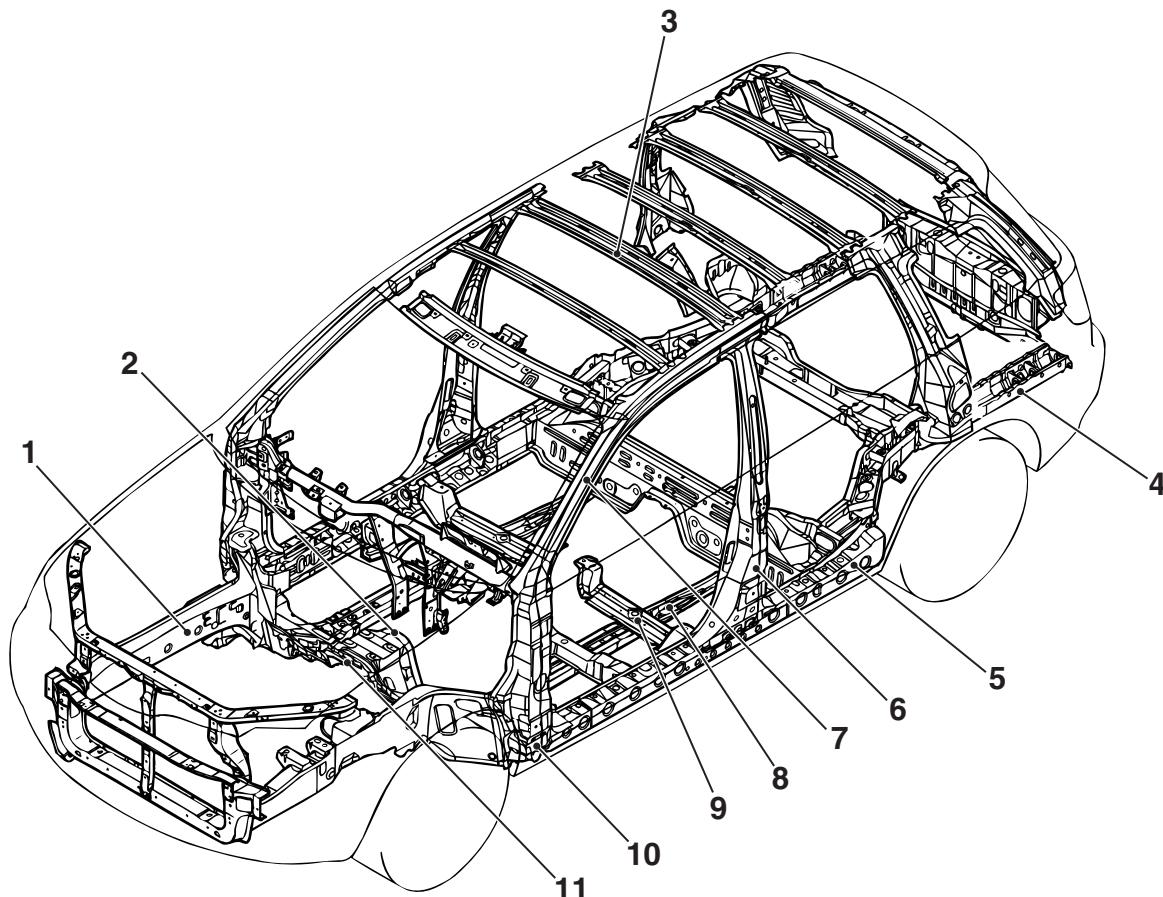
AB400049AC

The main body features an impact safety reinforced body to ensure safety upon impact from all directions and thus, to provide a high level of protection. A lighter weight main body and better anti-corrosive properties are achieved by appropriately use of highly tensile steel plate and anti-corrosive steel plate.

BODY SHELL

IMPACT SAFETY BODY

M2420003000178



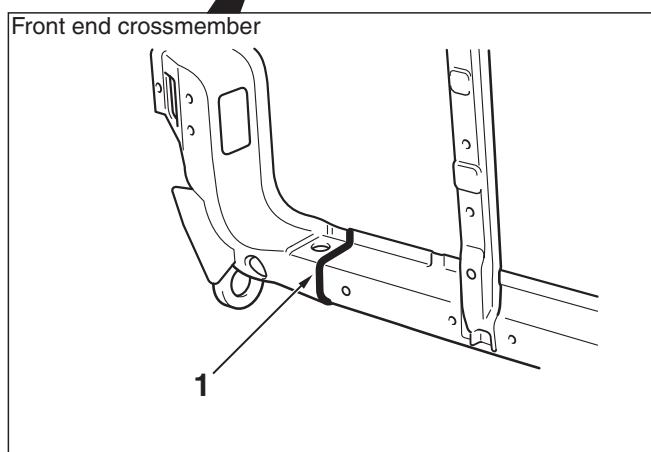
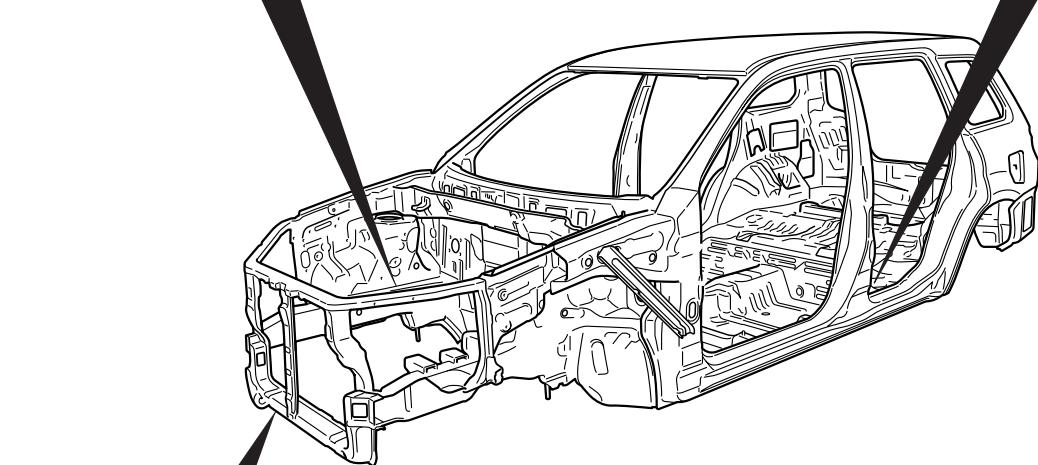
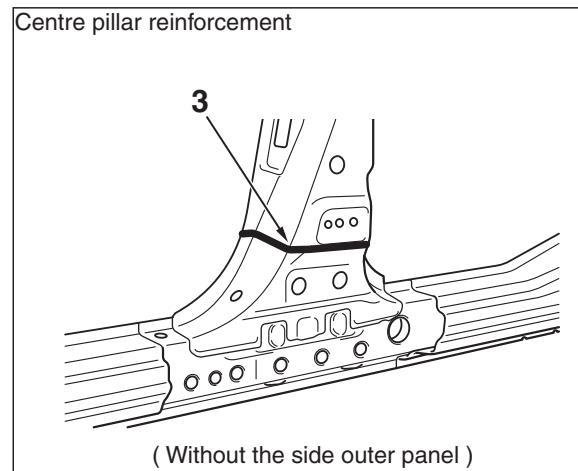
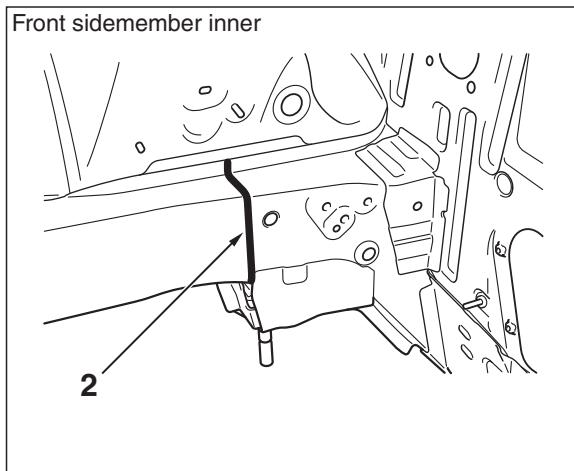
AB201992 AC

The body structure featuring a high-energy absorbing structure (front and rear) and high rigidity cabin structure combination reduces the chance of passenger injury, maintains cabin space and improves passenger rescue upon frontal, rear and side impact.

1. Larger cross section and straighter front side member.
2. Thicker dash panel lower plate.
3. Larger roof bow cross section.

4. Addition of reinforcement in rear side member.
5. Larger side sill outer reinforcement cross section.
6. Thicker centre pillar reinforcement plate.
7. Larger front pillar reinforcement.
8. Larger front floor side member cross section.
9. Larger front floor crossmember cross section.
10. Thicker front pillar reinforcement plate.
11. Addition of dash panel crossmember.

STEEL PLATE WITH UNEVEN THICKNESS



The following parts are made of an unequal thick steel plates*. Safety upon impact and lightness is improved with the integrated varying thickness structure.

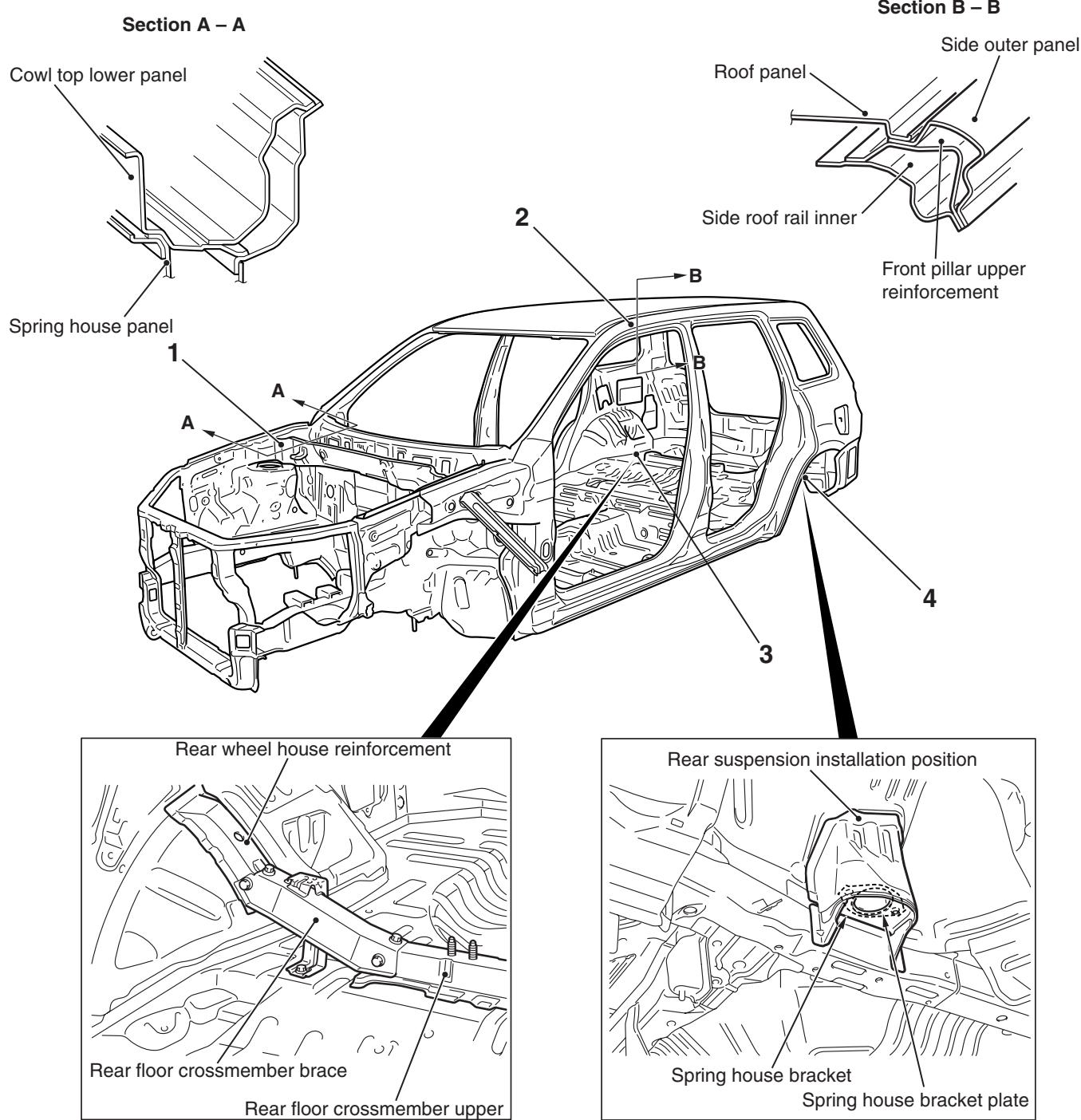
1. The thickness of the front end crossmember outer applied at the right side of the vehicle is increased.

2. The thickness of the front side member inner applied at the rear is increased.
3. The thickness of the centre pillar reinforcement applied at the upper is increased.

*NOTE: *: Steel plates with different thickness welded together to make one steel plate*

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DRIVING STABILITY



Driving stability and quietness have been improved by increasing the rigidity of the front pillar and suspension assembly.

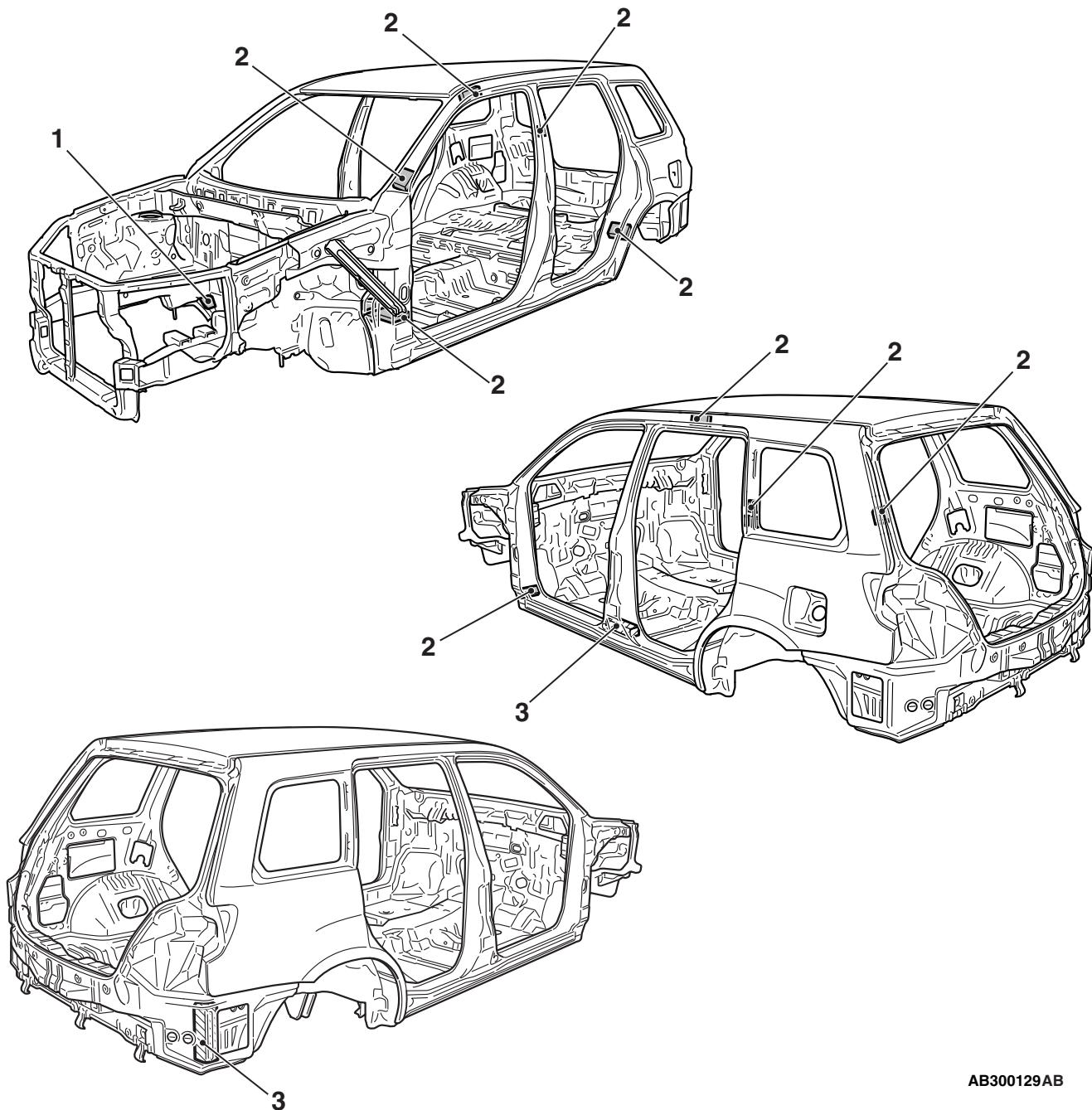
1. The left, right, up and down rigidity of the front suspension has been improved by surface mounting the cowl top lower panel and spring house panel.
2. The overall body torsional rigidity was improved by bonding the side outer panel, front pillar reinforcement and side roof rail inner.

3. The overall body torsional rigidity has been improved by adding a rear floor crossmember brace and bonding the rear floor crossmember upper and rear wheel house reinforcement.
4. The left, right and front, rear rigidity of the body has been improved with a low position support of the rear suspension assembly. Local rigidity has also been improved by adding a spring house bracket plate to the spring house bracket.

AC201181AC

QUIETNESS

M2420004000319



Quietness has been improved with acoustic foam materials and urethane foam.

1. High rigidity foam material

The road noise was lowered road noises by packing highly rigid form material in the front side members (right-hand side) to suppress panel vibration.

2. Acoustic foam materials

Noise intrusion is reduced by adding acoustic foam materials to the front pillar, roof side rail, centre pillar, rear pillar, gate pillar and inside of the wheel house arch area.

3. Urethane foam

Noise intrusion is also reduced by inserting urethane foam inside the centre pillar and quarter outer extension lower (right-hand side).

BODY COLOUR CHARTS

M2420005001296

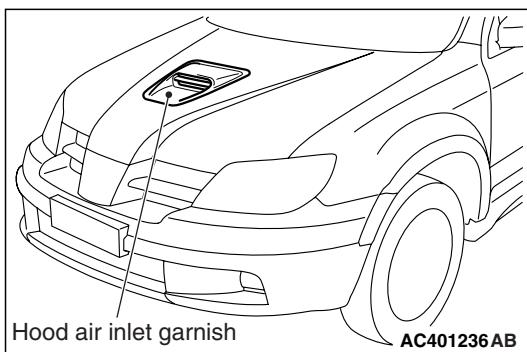
Colour	Colour code	Colour number	Colour name (Previous name)	Composition of film
SILVER	A31	CMA10031	Cool Silver Metallic	Metallic
MEDIUM PURPLISH GREY	A39	CMA10039	Medium Purplish Grey Mica	Pearl
BLUE	T70	CMT10070	Blue Mica	Pearl
BLACK	X42	AC11342	Black Mica (Amethyst Black)	Interference Pearl
WHITE	W13	CMW10013	White Pearl	Pearl
RED	P23*	CMP10023	Red Solid	Solid

NOTE:

- *: It is a solid, but clear coating is applied.
- For painting, inner panel colours should be similar to the outer panel colours.

HOOD <TURBO>

M2420023000170



A hood air inlet garnish has been added on the hood for turbocharger models in order to improve cooling performance.

DOOR

DOOR LOCK

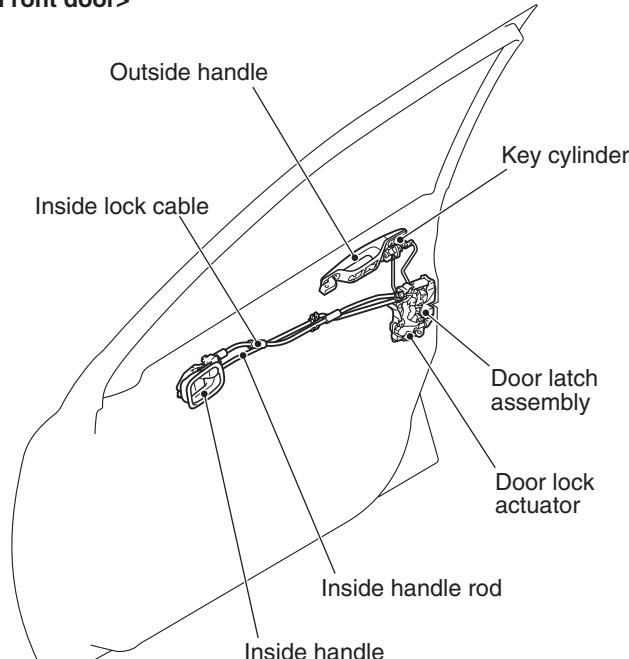
M2420009000314

- A central door lock system that locks and unlocks all doors (including the tailgate) via the driver's door key cylinder or the driver's door inner lock knob is optionally available.

- As an added safety measure, the front doors incorporate an inside lock cable to prevent the door from locking during an impact.
- Key-in prevention function has been introduced for driver's door.

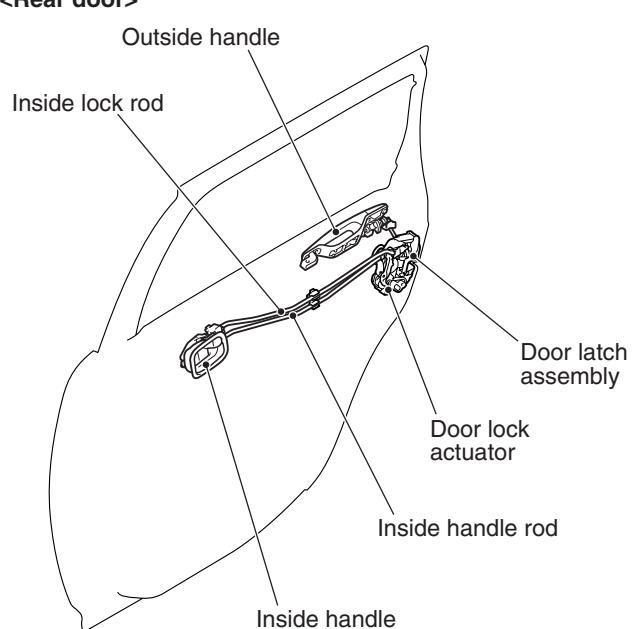
CONSTRUCTION DIAGRAM

<Front door>



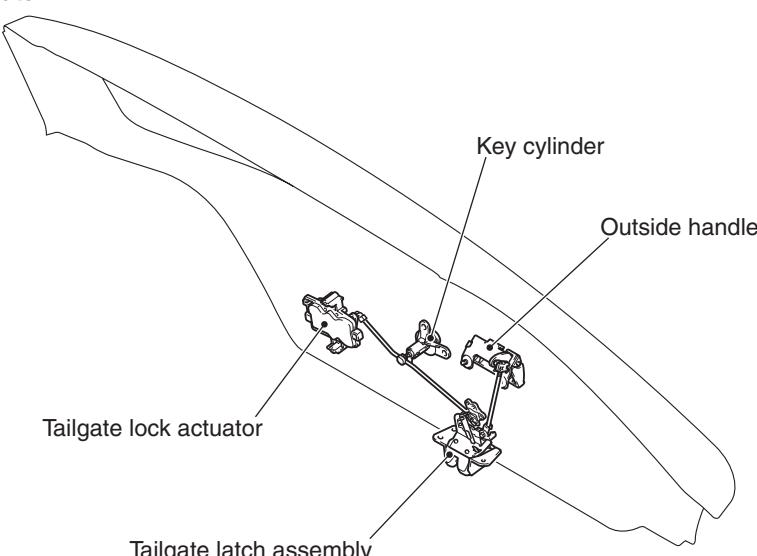
AC313491

<Rear door>



AC313492

<Tailgate>



AC313493

AC313606 AC

DESCRIPTION OF STRUCTURE AND
OPERATION

CENTRAL DOOR LOCKING

- When the driver's door inner lock knob is operated to the lock position with all doors closed, all the doors (including tailgate) will lock. When the driver's door inner lock knob is operated with the driver's door opened, front passenger's door and rear doors (including tailgate) will lock but the driver's door will not lock.

- The driver's door can be opened by pulling the driver's door inner handle even when the driver's door inner lock knob is in the lock position. This function is called "Override function". All doors and tailgate can be unlocked at the same time that the driver's door is opened.

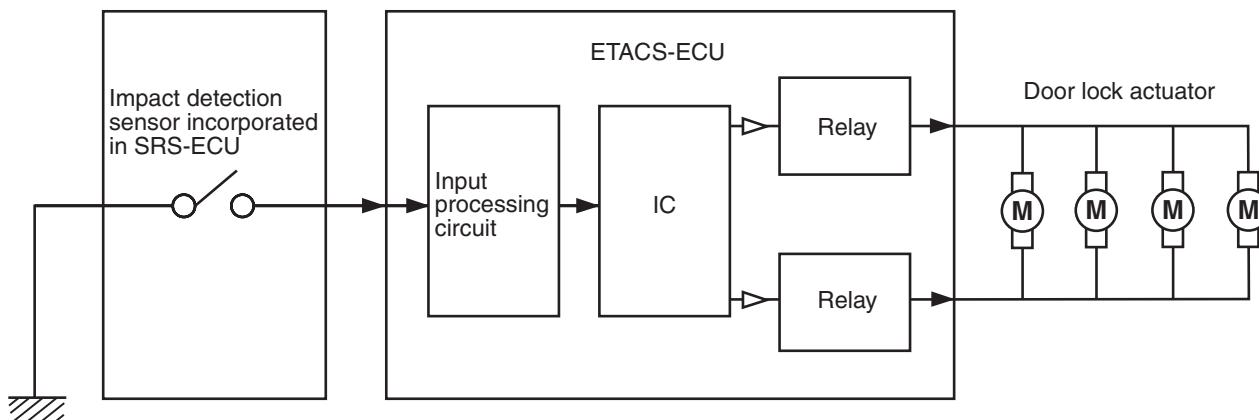
KEY-IN PREVENTION FUNCTION

If the driver's door remained open, it cannot be locked even though the driver's door key cylinder or driver's side inside lock knob is pushed. This prevents the ignition key from being left in the passenger compartment.

IMPACT DETECTION DOOR UNLOCK MECHANISM

The impact detection door unlock mechanism is adopted. This function unlocks all doors, if the vehicle crashes when the ignition switch is ON or within 30 seconds after the ignition switch is turned to OFF, allowing to rescue passengers from the vehicle immediately.

SYSTEM SCHEMATIC DIAGRAM



AC101376AD

KEYLESS ENTRY SYSTEM

M2420010000619

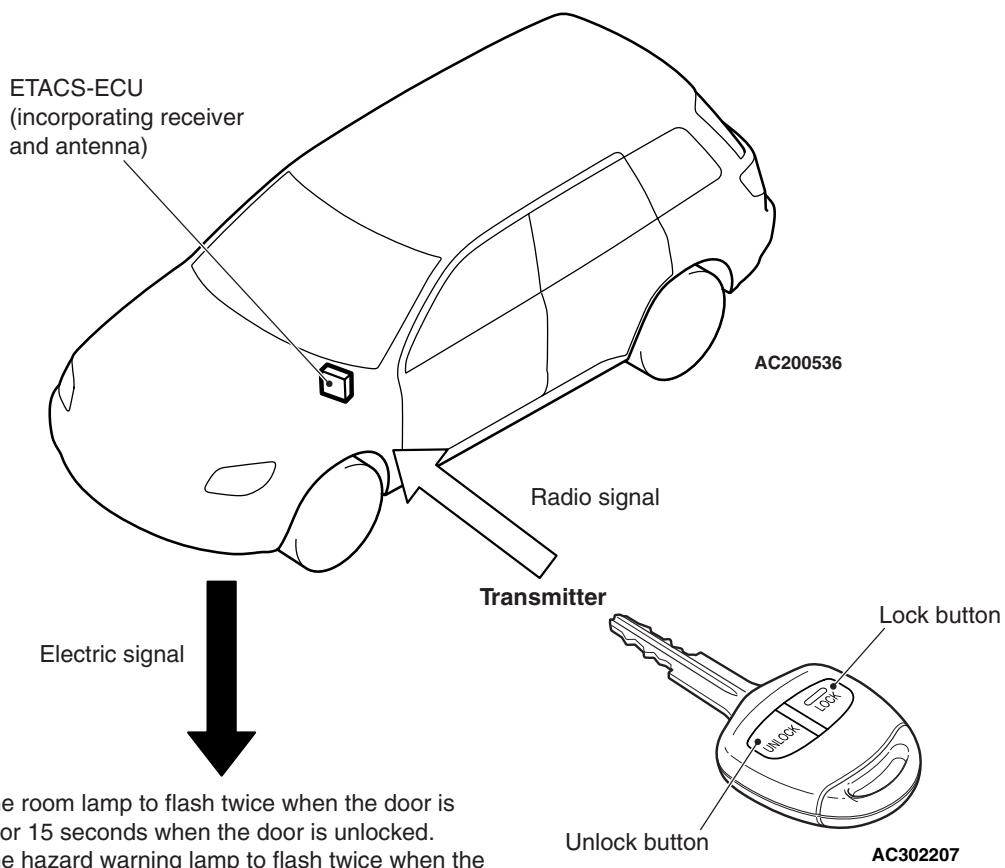
The keyless entry system is installed. (INTENSE and TURBO: standard, INVITE: option)

There are the following features.

- The 2-button transmission switch type (lock/unlock buttons) transmitter which transmits the radio signal is adopted.

- The ETACS-ECU is equipped with the integral receiver and receiving antenna.
- It can memorize up to 4 secret codes using M.U.T.-II/III.
- The room lamp answerback and hazard answerback are adopted.
- The lock/unlock buttons can lock or unlock all doors (including the tailgate).

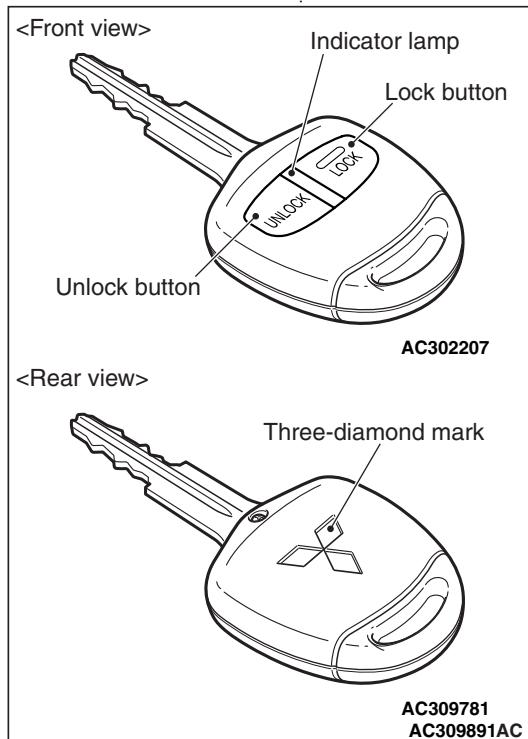
CONSTRUCTION DIAGRAM



AC400949AB

DESCRIPTION OF STRUCTURE AND OPERATION

TRANSMITTER

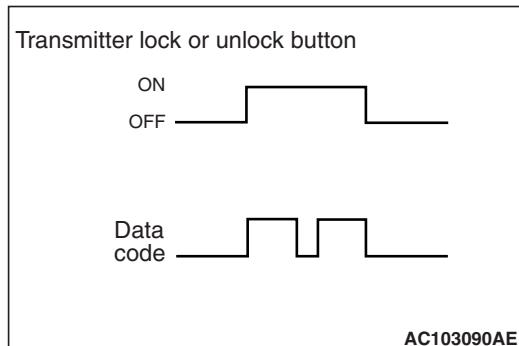


The transmitter is integrated into the master key.

- There are two buttons on the transmitter; the lock button and the unlock button.
- When either button is pressed, the transmitter emits a radio signal representing a specific ID code.
- An indicator lamp, which illuminates when signals are transmitted, is added on the key grip. This indicator lamp informs you of the signal transmission status and warns you of flat battery.
- A brilliant silver Three-diamond mark is stamped on the back side of the key grip to improve appearance.
- A signal transmission circuit (printed circuit) and a battery are housed in one case. The case is housed in the key grip, thus improving resistance to water ingress.
- A coin type battery, CR1616 is used in the transmitter.
- The transmitter button operation allows the system to operate as follows:

Operation of keyless entry system	Operation of transmitter
Lock all doors and tailgate	Lock button (pressed once)
Unlocks all doors and tailgate	Unlock button (pressed once)

SECRET CODE



The figure above shows the codes transmitted from the transmitter. Every time the button is pressed, the data code is transmitted twice. The secret code for user identification is a combination of 0 and 1, and more than 1 million different combinations are available. In addition to the secret code, the data code contains a rolling code which changes at each transmission, protecting transmission codes from theft by coping.

ETACS-ECU (RECEIVER)

- The ETACS-ECU incorporates a receiver with an antenna. The receiver compares the code sent from the transmitter with the code retained in the receiver through the antenna.
- The ETACS-ECU will send a signal to the door lock actuators only when these two codes are matched and the rolling code is correct.
- All of those output signals are processed internally in the ETACS-ECU.
- A maximum of four secret code (4 transmitters) can be registered by connecting the diagnosis connector to the M.U.T.-II/III.

FUNCTION FOR CONFIRMING ETACS-ECU (RECEIVER) OUTPUT AND OPERATION

When the ETACS-ECU (receiver) sends a signal to the door lock actuators and tailgate lock actuator, the hazard warning lamp and room lamp illuminate, indicating that the keyless entry system is activated. The hazard warning lamp answerback can be switched between "lock/unlock yes", "lock only yes", "unlock only yes" and "none" with the adjustment function*. This feature is factory preset (default) to "lock/unlock yes".

NOTE: *:Refer to GROUP 54B, SMART WIRING SYSTEM (SWS) [P.54B-19](#).

Item	Operation	
	Doors and tailgate locked	Doors and tailgate unlocked
ETACS-ECU (receiver)	Sends lock signal	Sends unlock signal
Room lamp	Flashes twice	Illuminates for 15 seconds
Hazard warning lamp	Flashes twice	Flashes once

KEYLESS ENTRY TIMER LOCK TIME

If any door (including the tailgate) is not opened or closed within 30 seconds after the doors (including the tailgate) are unlocked by the keyless entry system, ETACS-ECU automatically outputs the door lock signal to lock the doors (including the tailgate). This function prevents the doors (including the tailgate) from being unlocked unexpectedly by operation errors.

OPERATION INHIBITION CONDITIONS

The operation of the keyless entry system is inhibited in the following conditions.

- When the ignition key is inserted into the ignition switch.
- When either door (including the tailgate) is open (the door switch: ON). (including door ajar)

WINDOW GLASS REGULATOR

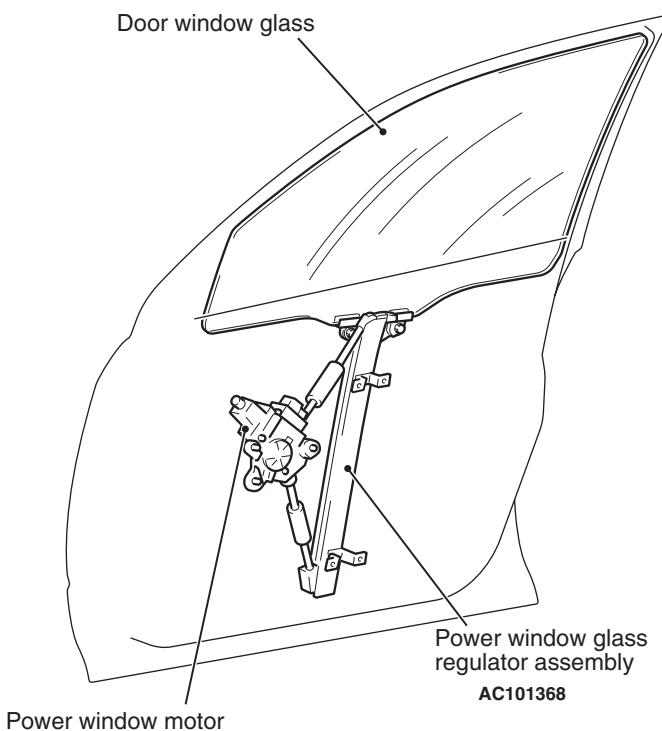
M2420011000173

The power window has the following features.

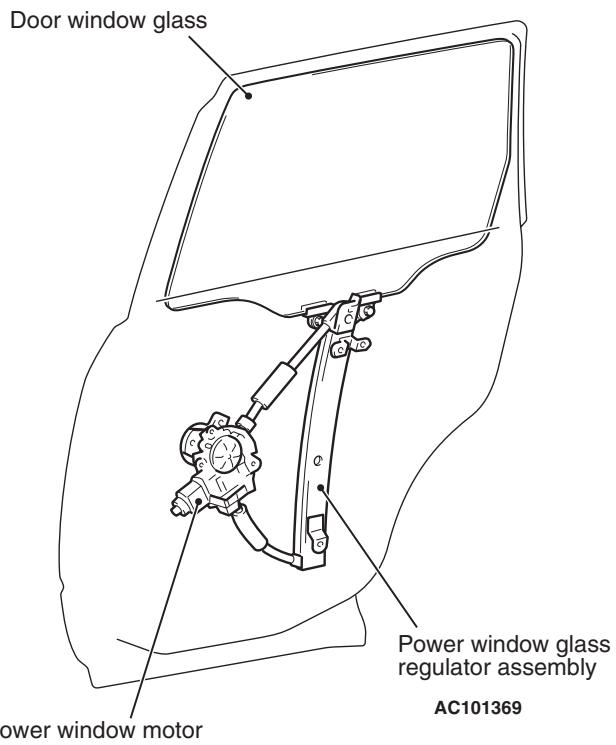
- The window glass regulator is a compact and light-weight wire winding type.
- The new power window system is adopted. The system enables to open the power window even if the vehicle is submerged.
- The auto-up/down with the anti-trapping function is adopted on all window regulators.
- The power window timer function is adopted.
- The power window lock switch is adopted.
- The SMART WIRING SYSTEM (SWS) is adopted to transmit the main switch signal of the power window. (Refer to GROUP 54B, SMART WIRING SYSTEM [P.54B-3](#).)

CONSTRUCTION DIAGRAM

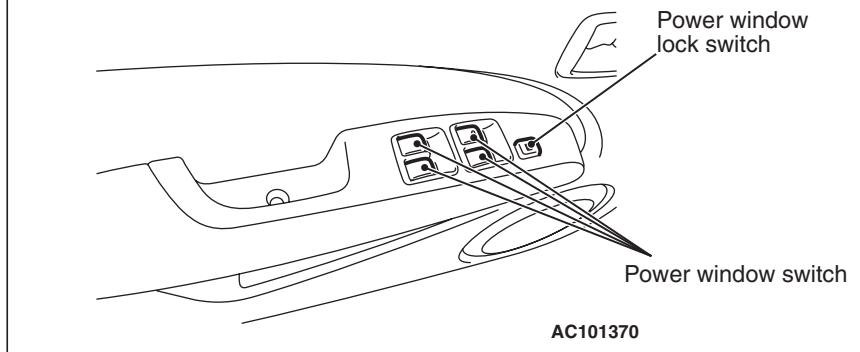
<Front>



<Rear>



Power window main switch (driver's side)



AC300069AB

DESCRIPTION OF STRUCTURE AND
OPERATION

POWER WINDOW SYSTEM

- If the vehicle should be submerged in river or sea, each power window can be opened for a while to improve safety.

"For a while" means that the period while the operation voltage is supplied from the battery to the power windows. The duration varies depending on the severity of the submergence, battery capacity, and battery charging level.

- The power window switch has a waterproofing structure which prevents water such as rain drops from entering via the upper side. If water should be entered, it is drained through the hole located on the lower area of the switch. No water may be accumulated.

NOTE: Only if the whole switch is submerged in water, the switch determines that the vehicle is submerged.

ANTI-TRAPPING FUNCTION

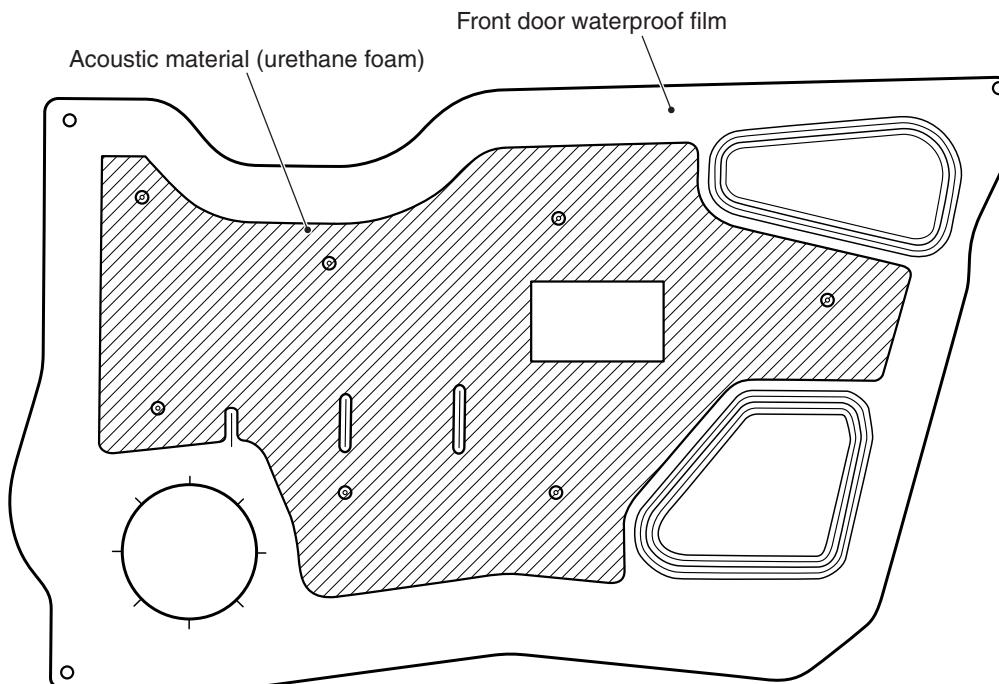
The power window with the safety mechanism is adopted. If any obstacle such as a hand or a head is detected to be trapped during a window glass closing operation, the window glass is opened by approximately 150 mm to improve safety.

NOTE: If anti-trapping function is activated consecutively three times or more, the fully closed position that power window switch has learned will be erased. With this state, auto-up/down function become in effective. To make the power window switch learn the fully closed position the initialisation is required. Please refer to Workshop Manual for how to initialise.

WATERPROOF FILM

Road noise into passenger compartment has been reduced by installing sound absorbent material (urethane foam) to the front door waterproof film.

M2420001600011



AC309174 AB

POWER WINDOW SWITCH

The power window switch employs the push-pull operation method to improve safety. To close a door window glass, press in the switch knob, and to open, pull it up.

The one-touch mechanism is adopted to the driver's power window switch to fully open or close any door window glass in a single operation.

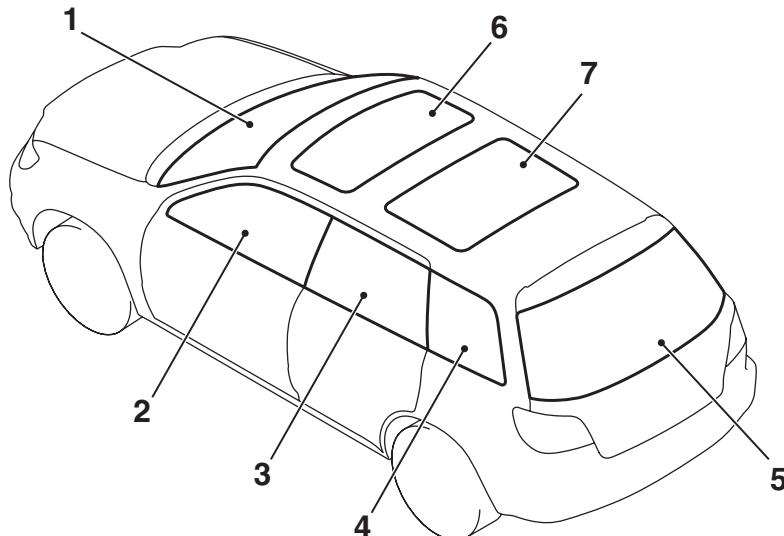
POWER WINDOW LOCK SWITCH

The driver power window switch is equipped with the lock switch. This switch inhibits the opening/closing operation of the door window glass by the front passenger's power window switch or rear power window switches.

WINDOW GLASS

M2420015000227

The windshield is laminated glass and the other glass is made of tempered glass. As an optional, the privacy glasses are used for the rear window glasses, quarter window glasses and tailgate window glass.



AC101372 AC

No.	Name	Type	Thickness (mm)	Colour	Visible lamp permeation rate (%)
1	Windshield	Laminated glass	4.7	Green	78.7
2	Front door window glass	Tempered glass	3.5	Green	80.9
3	Rear door window glass		3.1	Green	82.3
				Dark grey (privacy glass)	25
4	Quarter window glass		3.1	Green	82.3
				Dark grey (privacy glass)	25
5	Tailgate window glass		3.1	Green	82.3
				Dark grey (privacy glass)	25
6	Roof lid glass		4.0	Dark grey	18
7	Roof window glass		4.0	Dark grey	18

NOTE: The figure at the visible lamp permeation rate is a reference value. There could be marginal tolerance.

SUNROOF

M2420016000145

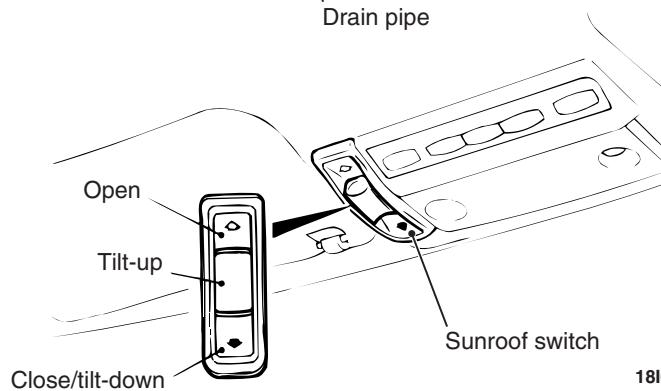
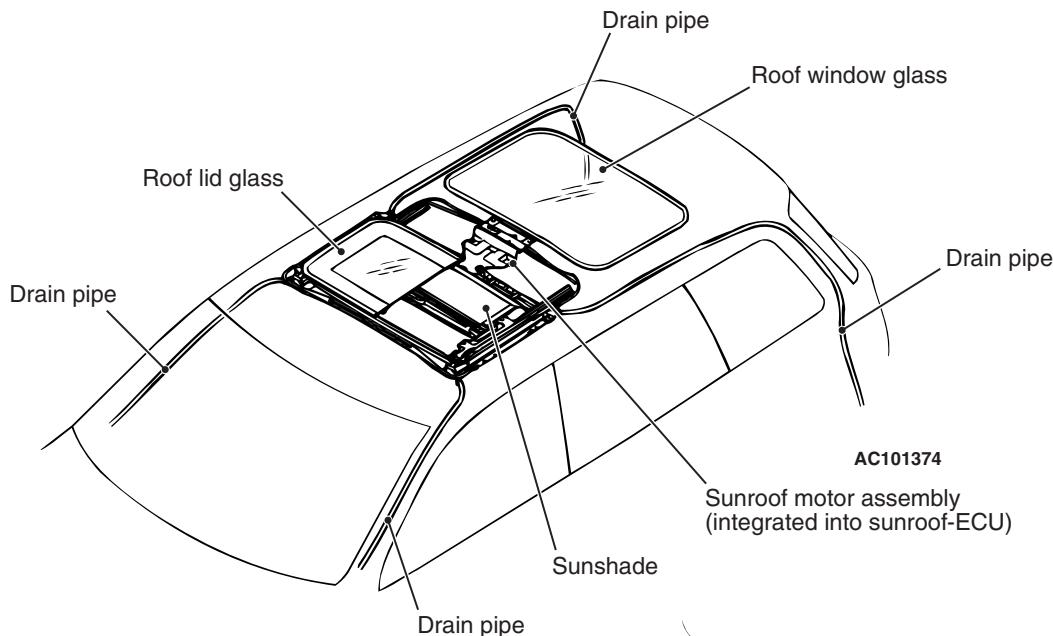
As an optional equipment, the electrical sliding glass sunroof with the tilt-up mechanism is available in front, and the fixed-type roof window glass is available in rear.

This sunroof features the following characteristics.

- The sunroof tilts up approximately 30 mm to improve ventilation.
- The sunroof features an outer slider mechanism and enhances head clearance in the front and back seat to improve riding comfort.
- The integrated switch allows for all slide open/close, tilt up/down and stop operations. All operations are available at one touch.

- If external force is applied during slide closing or tilt down operations that obstructs operations, then the roof lid glass will reverse and stop according to the jam prevention mechanism.
- The system features a function to open approximately 30 mm every time the close/tilt down switch is pressed, until the sunroof is fully open, by cancelling the jam prevention mechanism.
- The fixed roof window glass at rear can let plenty of lamp into the passenger compartment and increase open airy feeling.

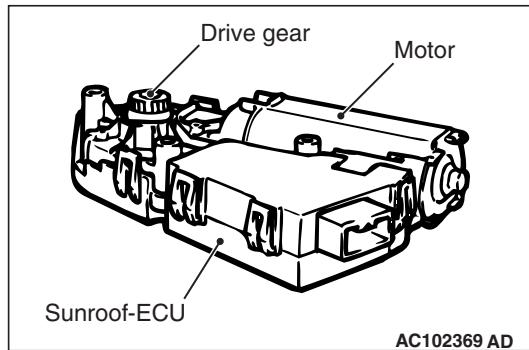
CONSTRUCTION DIAGRAM



AC300125 AC

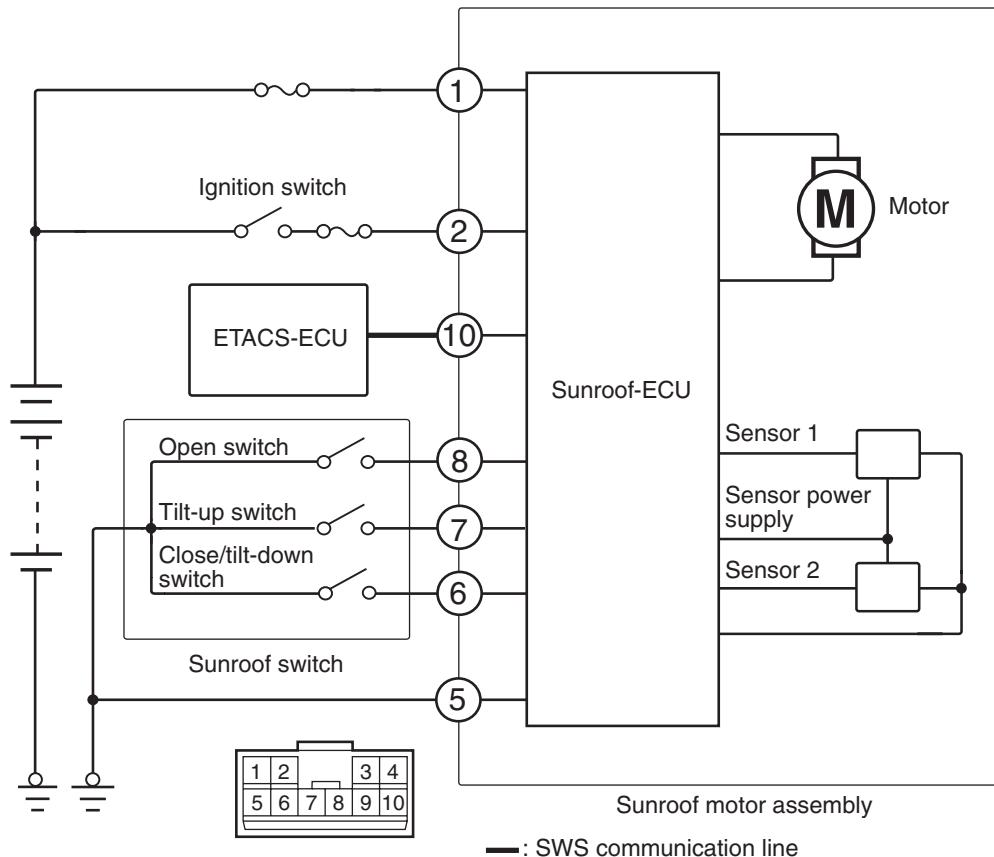
DESCRIPTION OF STRUCTURE AND OPERATION

MOTOR



There is a motor assembled on the rear-side of the housing and the structure consists of the motor unit, drive gear and sunroof ECU.

SUNROOF-ECU



The sunroof ECU incorporates a microcomputer and controls the motor operations according to the sunroof switch signal and ETACS signal state.