

GROUP 42

BODY

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GENERAL INFORMATION

M2420000100444

FEATURES

WEIGHT REDUCTION, HIGH RIGIDITY AND CORROSION PROTECTION

Use of high-tensile steel panels anti-corrosion 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 one-touch mechanism is adopted at the driver's door window.
- The new power window switch is adopted. The switch enables to open the power windows even if the vehicle is submerged.
- Strut tower bar is used <VR-X>.

IMPROVEMENTS IN OPERATION QUALITY

- Panel thicknesses for rear trailing arm bracket and the spring house panel have been increased.
- The central door locking system, which locks/unlocks all the doors and the tailgate, is adopted.
- When all the doors are locked, driver's door can be opened using the driver's side inside door handle (Override function).

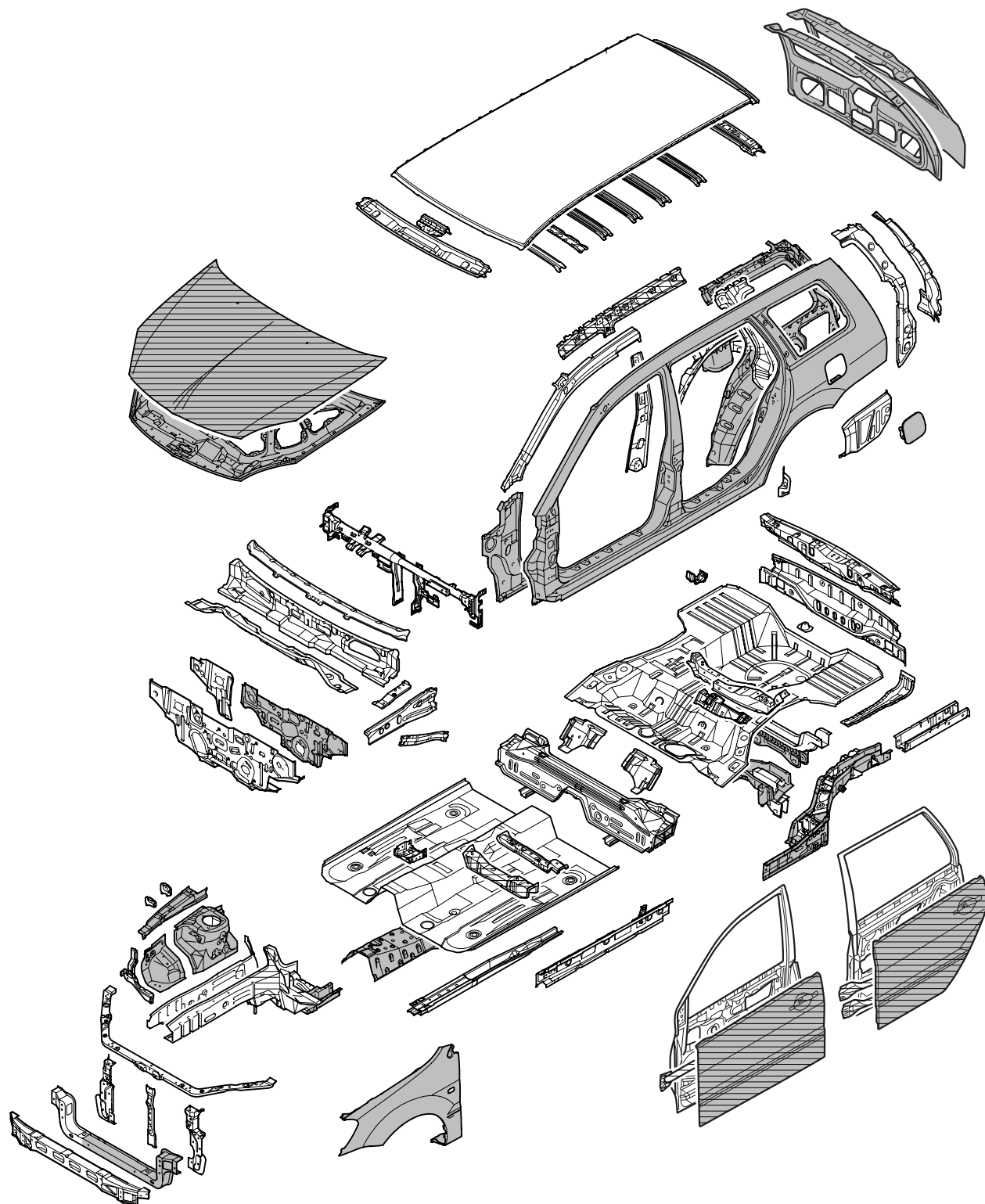
IMPROVEMENTS OF PRODUCT PACKAGE AND APPEARANCE

- A cover has been installed to the upper side of the hood latch to deter thieves.
- By improving the engaging sound in the door latch and striker, the door locking sound has been enhanced.
- UV-cut glasses are used for the front door window glasses <Option>.
- Comes with a privacy glass for the rear door window glasses, rear stationary window glasses quarter window glasses and tailgate window glass <Option>.
- Keyless entry system is used.
- Sunroof with safety mechanism has been installed <Option>.

MAIN BODY

BODY PANELING

M2420002000443



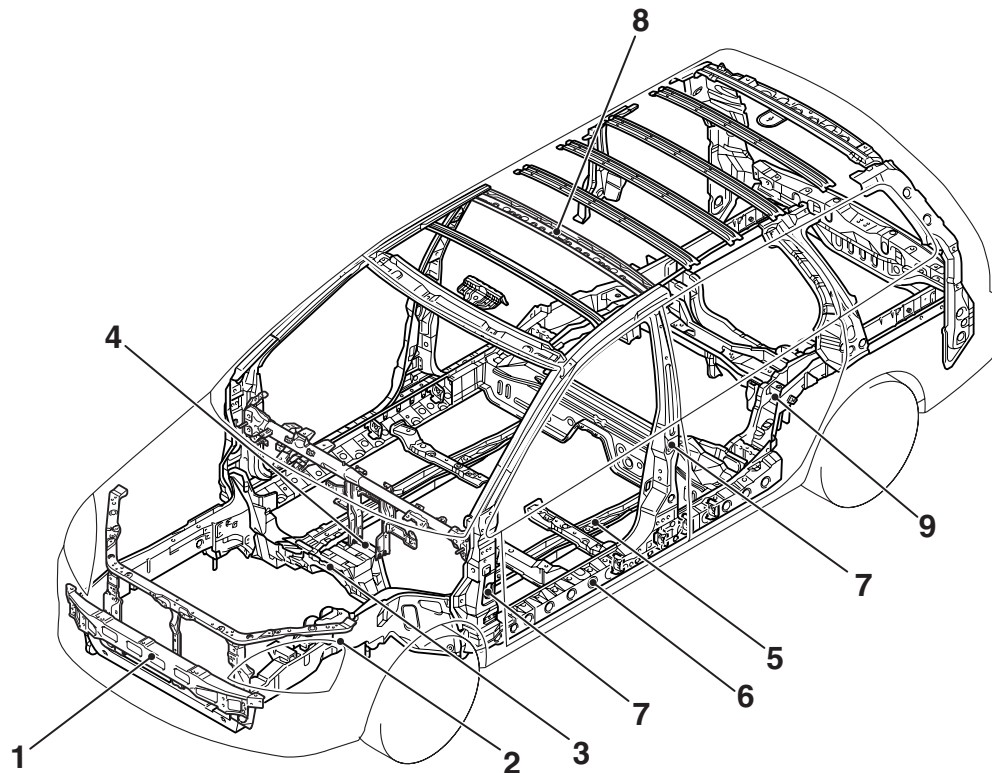
■ : Anti-corrosion steel panels
□ : High-tensile steel panels

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 high-tensile steel panel and anti-corrosion steel panel.

BODY SHELL

M2420003000394

IMPACT SAFETY BODY RISE (REINFORCED IMPACT SAFETY EVOLUTION)



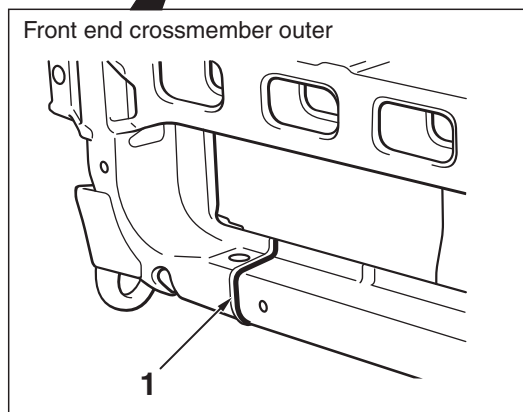
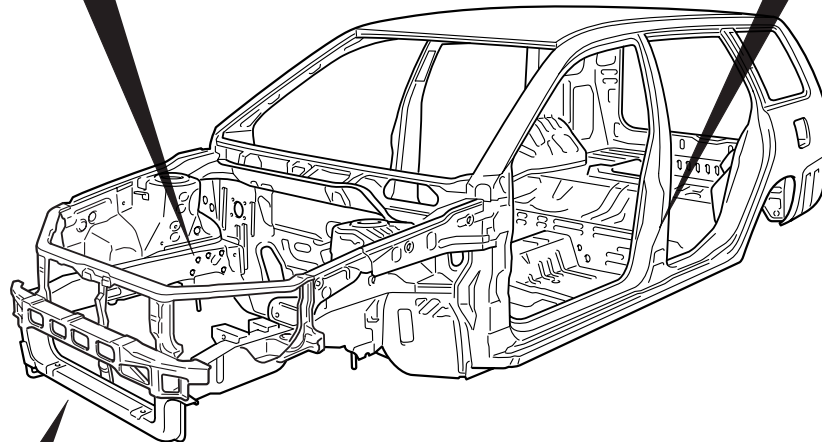
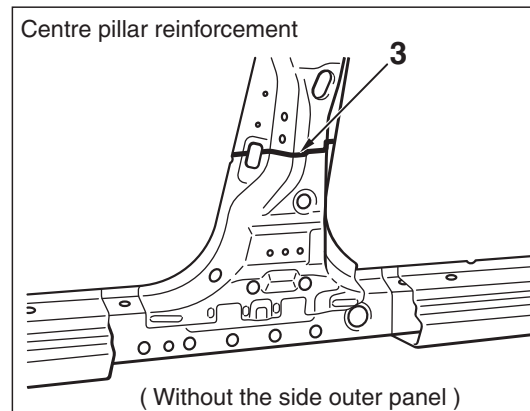
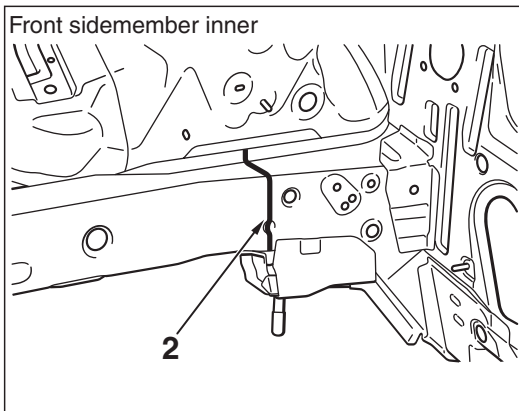
AB400499AD

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. Application of front bumper reinforcement.
2. Application of enlarged and linear cross section of front sidemember.
3. Application of dash panel crossmember.
4. Application of thicker dash panel lower.

5. Application of enlarged cross section of front floor sidemember.
6. Application of enlarged cross section of side sill outer reinforcement.
7. Application of thicker front pillar reinforcement and centre pillar reinforcement.
8. Application of enlarged cross section of roof bow.
9. Application of enlarged cross section of rear floor sidemember.

STEEL PLATE WITH UNEVEN THICKNESS



AB400526AB

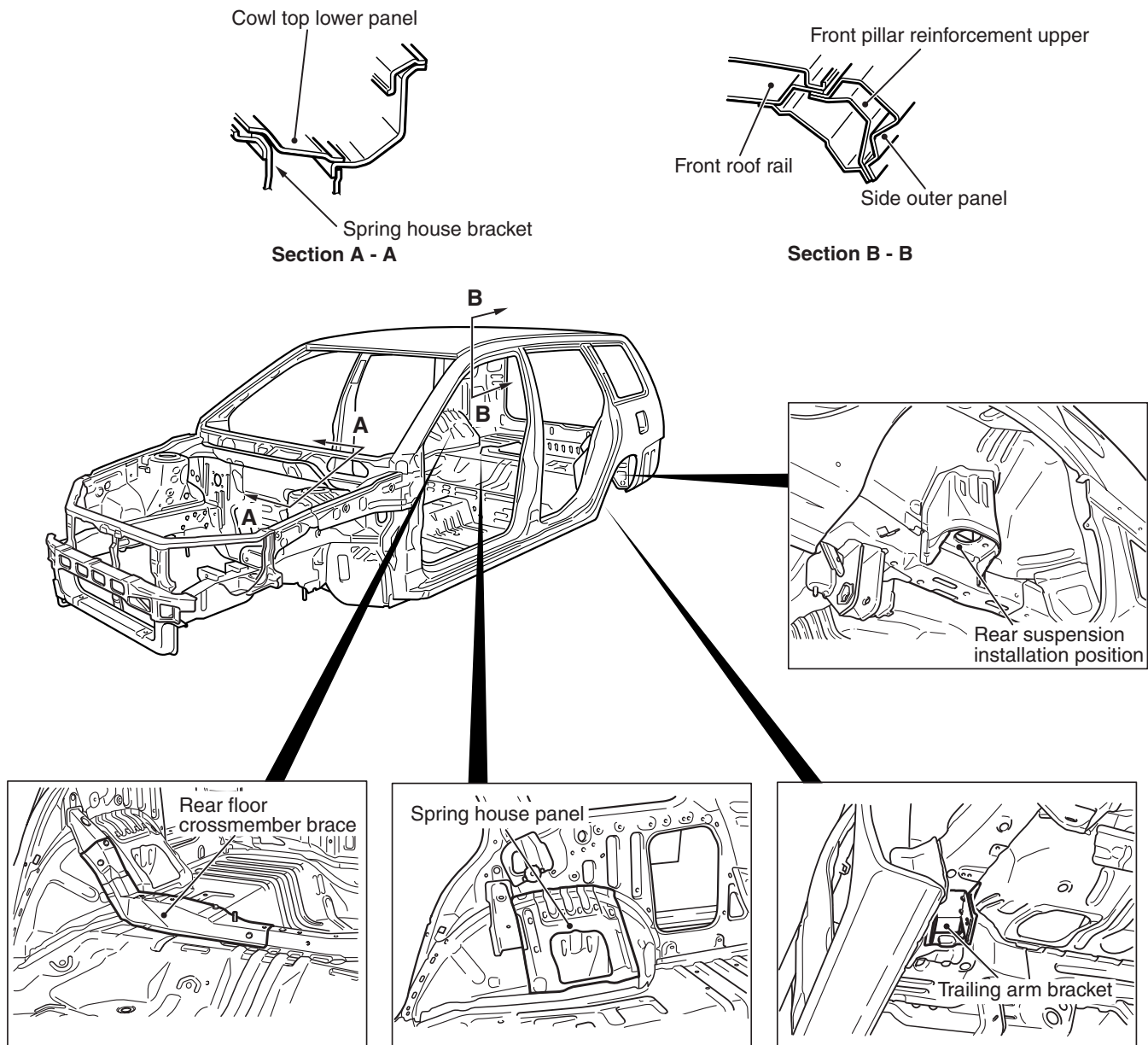
The following parts are made of an uneven thick steel plates*. Safety upon impact and lightness is improved with the integrated varying thickness structure.

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 sidemember 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

DRIVING STABILITY



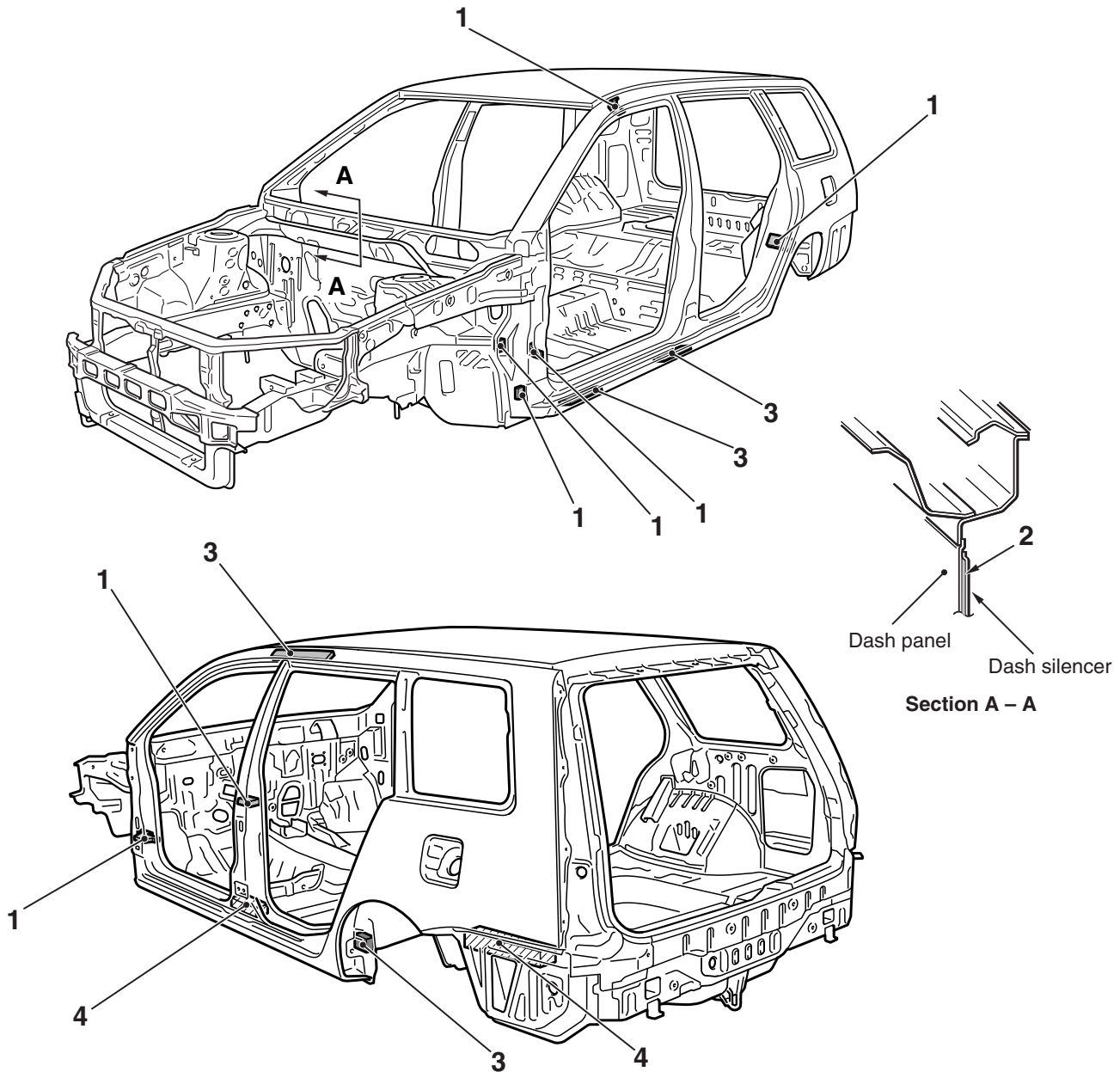
AB400527AB

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

1. The spring house bracket has been directly attached to the cowl top lower panel to increase rigidity of the front suspension in the horizontal and vertical directions.
2. The roof rail front, front pillar reinforcement upper, and side outer panel have been jointed with each other to increase torsion rigidity.
3. The rear shock absorber assembly has been sustained at the lower position to increase rigidity of the body in the horizontal and vertical directions.
4. A rear floor crossmember brace has been added to joint the rear wheelhouse with the rear floor more rigidly. This improves the overall body torsional rigidity.
5. The trailing arm bracket and the spring house panel have been thickened, and the suspension mountings has become more rigid, thus improving steering stability and reducing vibration and noise.

QUIETNESS

M2420004000386



AB400528AB

Quietness has been improved with foam sound absorbent material and urethane foam.

1. Foaming sound absorption materials have been filled into the front pillar, the roof side rail, the centre pillar and the inside the wheel house arch to prevent noise getting inside the vehicle.
2. Steel plate restricted anti-vibration materials (silencer sandwiched inside the panel) has been adopted to suppress operating sound and the vibration from the engine.
3. Filling high rigid foam materials into the side sill, the rear floor sidemember and the roof side rail to suppress panel vibration has reduced noise from the road.
4. Urethane foam has been inserted into the centre pillar and inside the quarter to prevent noise getting into the vehicle.

BODY COLOUR CHARTS

M2420005000969

Colour	Colour code	Colour number	Colour name (Previous name)	Composition of film
SILVER	A31	CMA10031	Cool Silver Metallic (Cool Silver)	Metallic
MEDIUM PURPLISH GREY	A39	CMA10039	Medium Purplish Grey Mica	Metallic + Interferenced Pearl
RED	P23	CMP10023	Red Solid	Solid
DARK BLUE	T54	CMT10054	Deep Blue Mica (Flop Blue)	Pearl
WHITE	W37	CMW10037	White Solid	Solid
BLACK	X42	AC11342	Black Mica (Amethyst Black)	Pearl
YELLOW	Y12	CMY10012	Yellow Solid	Solid

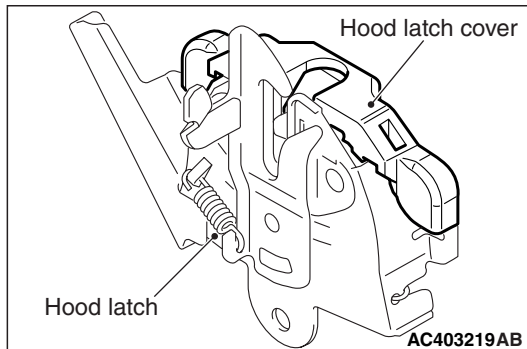
NOTE:

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

HOOD

M2420023000200

HOOD LATCH COVER

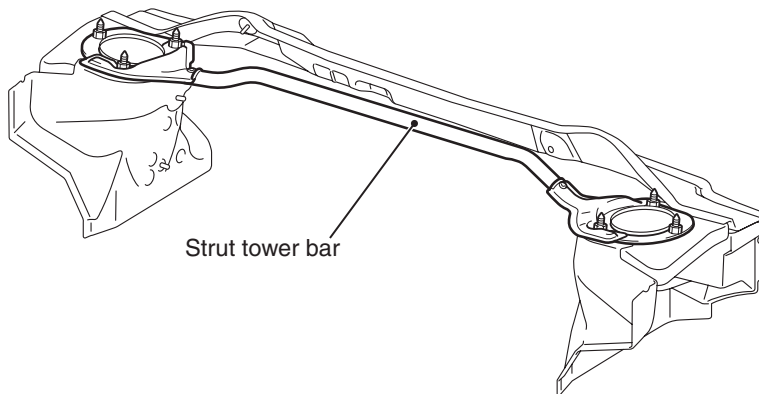


A cover is added to the hood latch upper part to deter thieves.

STRUT TOWER BAR <VR-X>

M2420001300117

CONSTRUCTION DIAGRAM



A strut tower bar has been adopted to the strut attachment point to improve body rigidity.

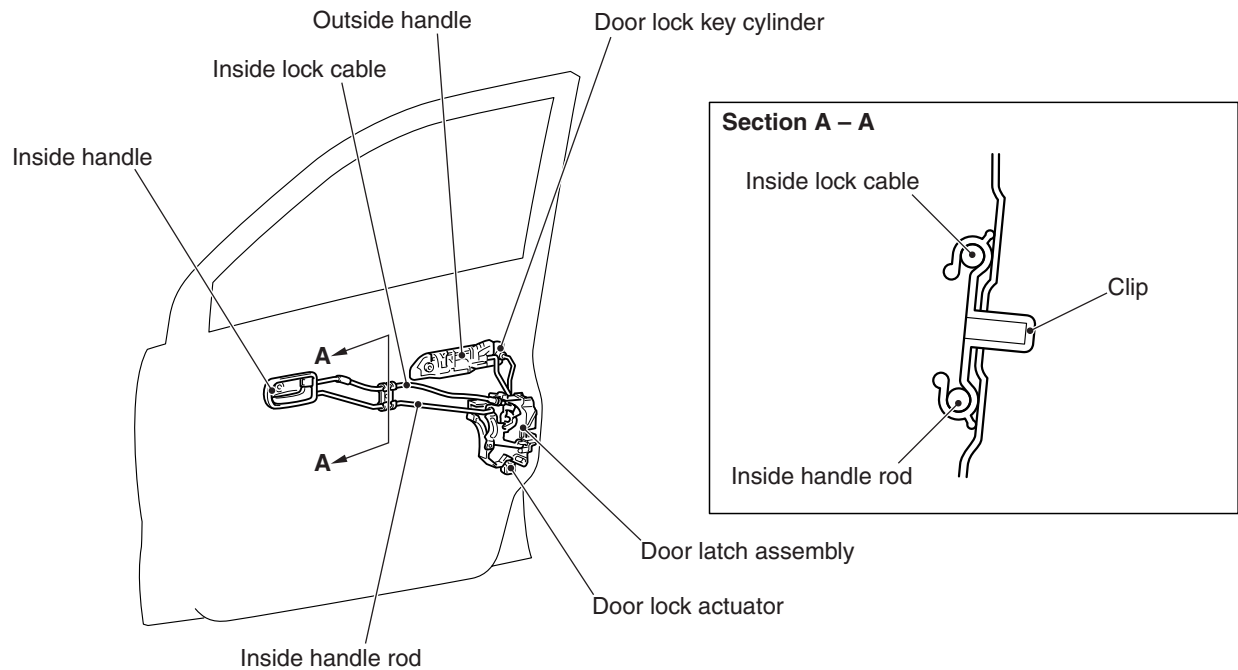
AC304679AB

DOOR

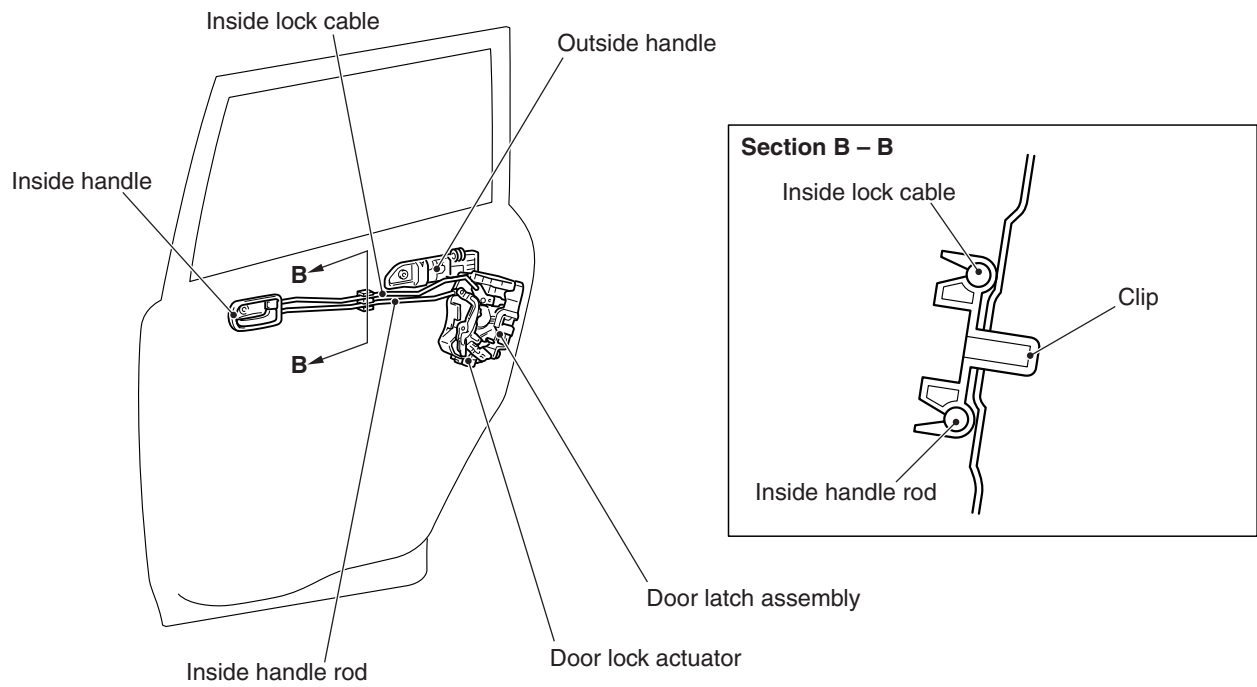
DOOR LOCK
CONSTRUCTION DIAGRAM

M2420009000369

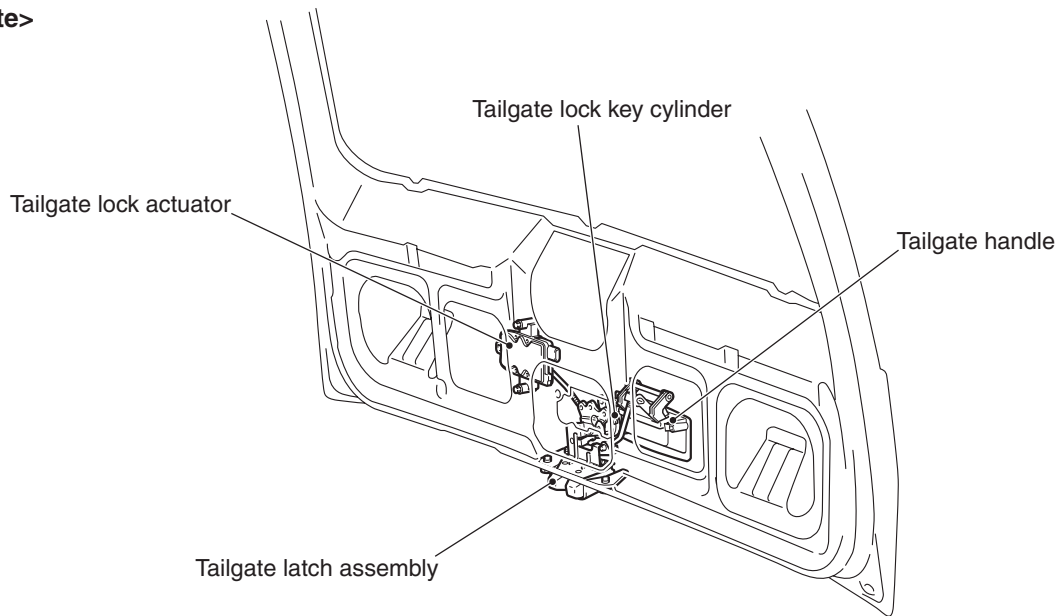
<Front door>



<Rear door>



<Tailgate>



AC403220AB

- A central door locking system to lock/unlock all doors and tailgate with a key cylinder at the front doors is used.
- A child protection is used to prevent the doors from being opened accidentally during driving.
- Key-in prevention function has been introduced.
- As an added safety measure, the front doors incorporate an inside lock cable to prevent the door from locking during an impact.

DESCRIPTION OF CONSTRUCTION AND OPERATION

CENTRAL DOOR LOCKING

- When the driver's inner lock knob is operated to the lock position with all the doors closed, they will be locked. When the driver's inner lock knob is operated with the driver's door opened, the driver's door is not locked.
- 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 locked position. This function is called "Override function". At the same time, all the doors can be locked.

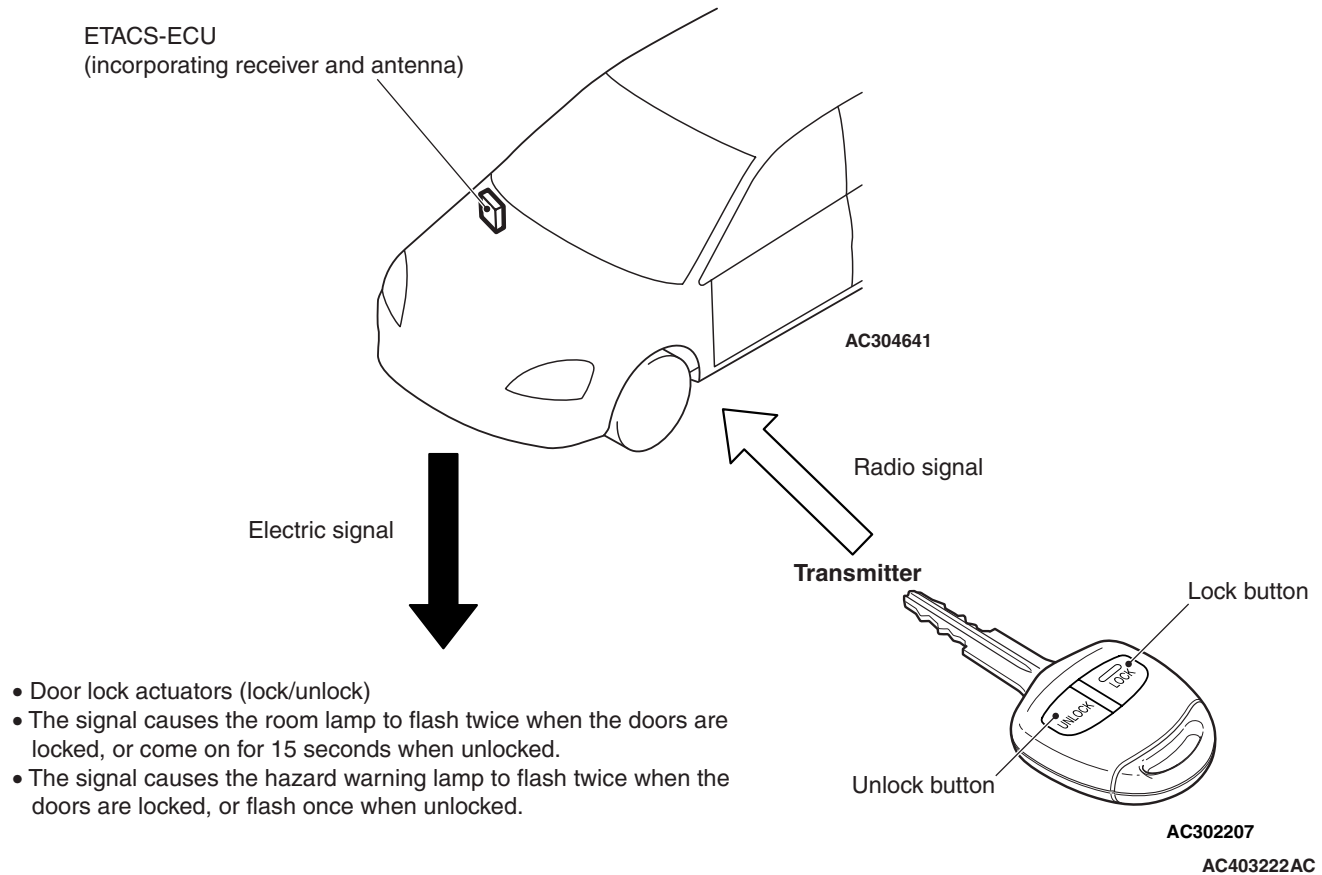
KEY-IN PREVENTION FUNCTION

When the driver's inner lock knob is operated to the lock position with the driver's door open, the driver's door cannot be locked, thus preventing it from being locked with the key inside the vehicle.

KEYLESS ENTRY SYSTEM

M2420010000482

CONSTRUCTION DIAGRAM



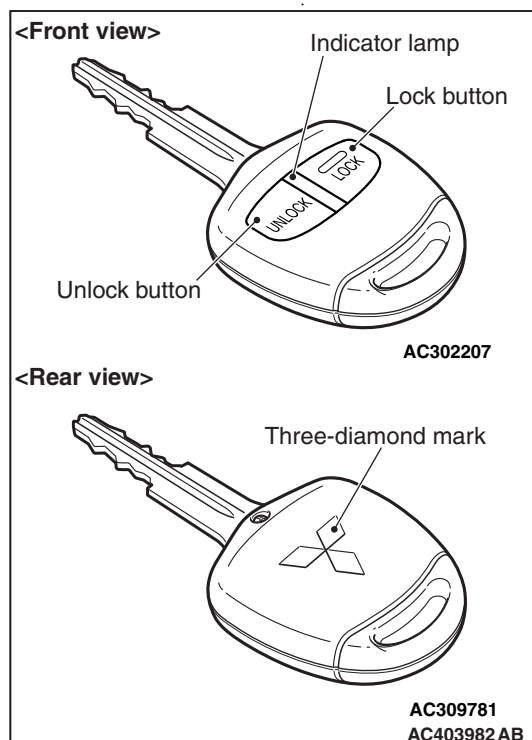
The keyless entry system is installed. There are the following features:

- The 2-button 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 encrypted codes using M.U.T.-II/III.
- The room lamp answerback and hazard warning lamp answerback are adopted.
- The lock/unlock buttons can lock or unlock all doors (including the tailgate).

DESCRIPTION OF STRUCTURE AND OPERATION

TRANSMITTER

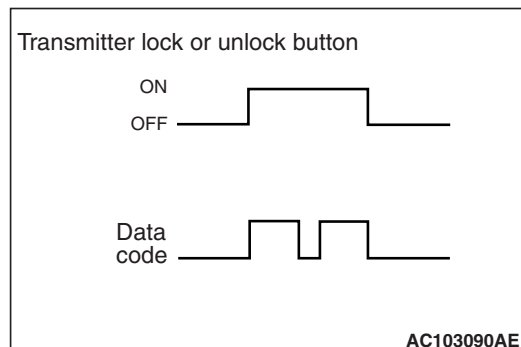


The transmitter is integrated with the key.

- There are two buttons on the transmitter; the lock button and the unlock button.
- 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 Tree-diamond mark is inlaid 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.
- When either button is pressed, the transmitter emits a radio signal representing a specific ID code.
- A coin type battery, CR1616 is used in a transmitter.

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)

ENCRYPTED CODE



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

ETACS-ECU (RECEIVER)

- The ETACS-ECU incorporates a receiver with an antenna. The receiver compares the code sent through the antenna from the transmitter with the code retained in the receiver.
- A maximum of four encrypted 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 SWS configuration function*. This feature is factory preset (default) to "lock/unlock yes".

NOTE: *:Refer to **GROUP 54B, SMART WIRING SYSTEM** (SWS) [P.54B-17](#).

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
FUNCTION**

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 sends 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)

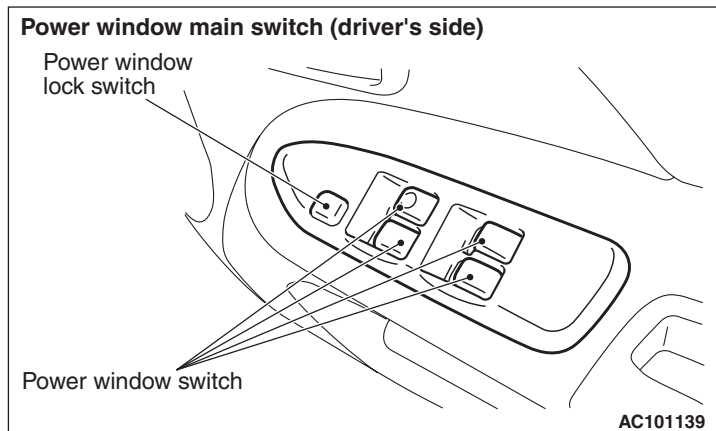
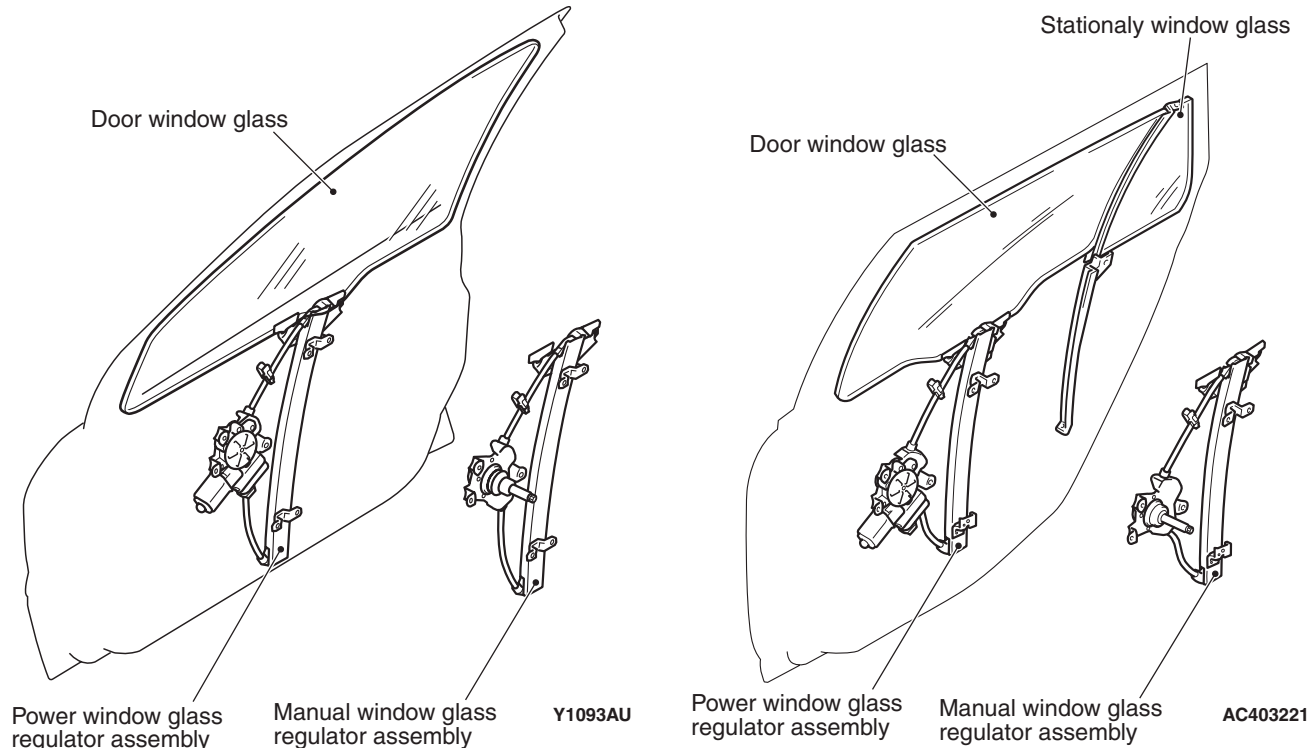
WINDOW GLASS REGULATOR

M2420011000258

CONSTRUCTION DIAGRAM

<Front door>

<Rear door>



AC403326AB

- 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 windows even if the vehicle is submerged.
- The power window timer function is adopted.
- The power window lock switch is adopted.

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.

POWER WINDOW TIMER FUNCTION

The power window has a timer function which allows the window glass to be closed or opened after the ignition switch is turned LOCK (OFF). (During the timer operation, if the driver's door or front passenger's door is opened, the timer is expired at the moment.)

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 power window main switch to fully open or close any door window glass in a single operation.

POWER WINDOW LOCK SWITCH

The power window main switch (driver's side) 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.

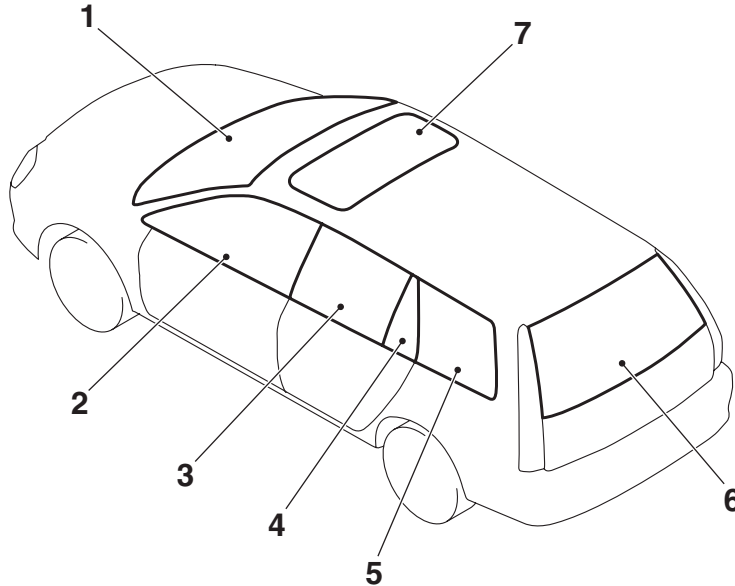
WINDOW GLASS

M2420015000487

The windshield is laminated glass and the other glass is made of reinforced glass. Window glass has the following features.

- UV-cut glasses are used for the front door window glasses as an option.
- Privacy glasses for rear door window glasses, rear stationary window glasses, quarter window glasses, and tailgate window glass have been introduced as an option.

VISIBLE RAY TRANSMISSIVITY RATE FOR WINDOW GLASS



AC403218AB

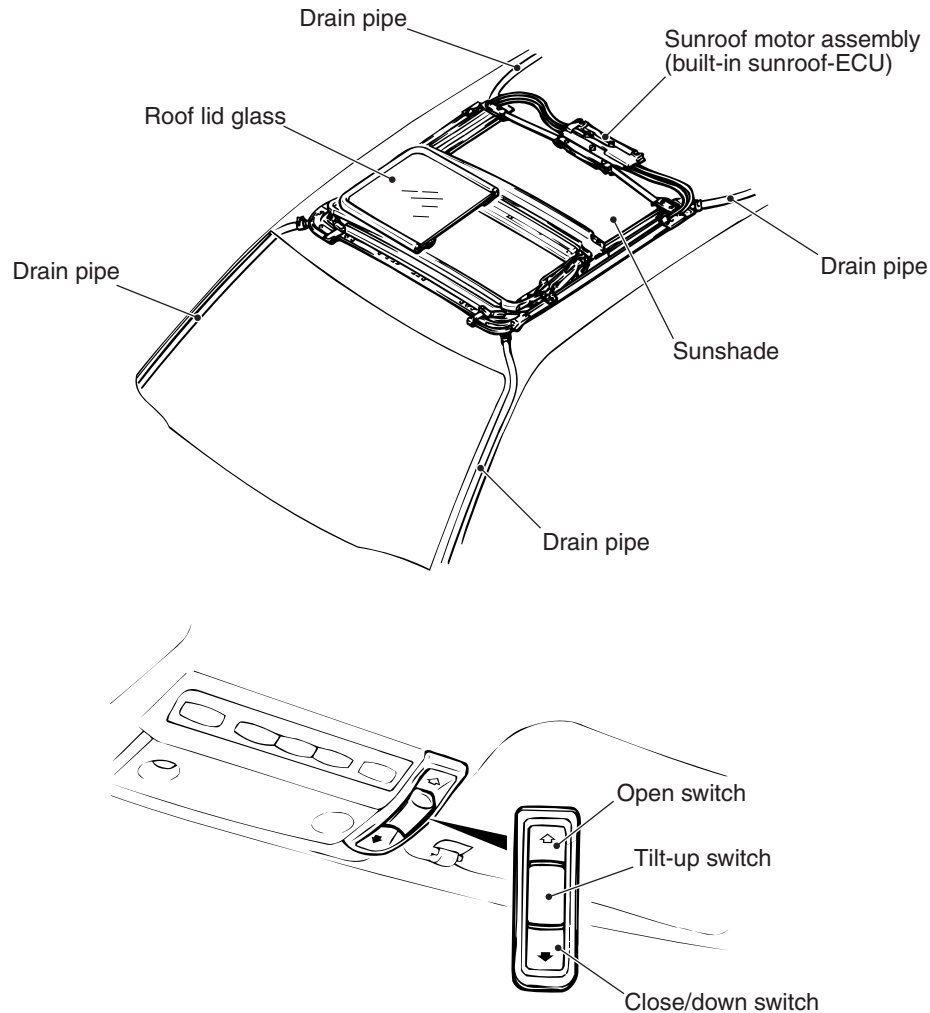
No.	Name	Type	Thickness (mm)	Colour	Visible ray transmissivity rate (%)
1	Windshield	Laminated glass	4.7	Green	78.7
2	Front door window glass	Tempered glass	3.5	Green	80.9
				Green (UV-cut glass)	74.6
3	Rear door window glass		3.1	Green	82.3
				Dark grey (privacy glass)	25.0
4	Rear stationary window glass		3.1	Green	82.3
				Dark grey (privacy glass)	25.0
5	Quarter window glass		3.1	Green	82.3
				Dark grey (privacy glass)	25.0
6	Tailgate window glass		3.1	Green	82.3
				Dark grey (privacy glass)	25.0
7	Roof lid glass		4.0	Dark grey	18.0

NOTE: The figure at the visible ray transmissivity rate is a reference value. There could be marginal errors.

SUNROOF

M2420016000082

CONSTRUCTION DIAGRAM

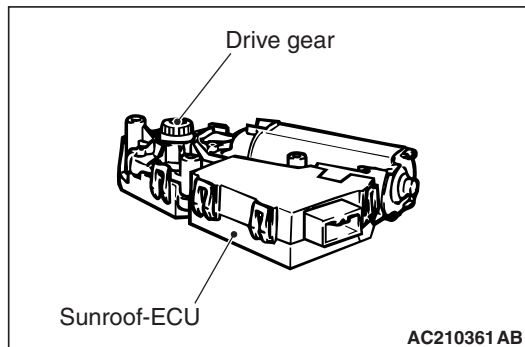


AC210365AB

The power sliding glass sunroof with the tilt-up function to provide sufficient ventilation by tilting up (30 mm) as well as sufficient sunlight and a sense of emancipation by opening the sunshade even if the roof lid glass is fully closed is installed on some models as an option. This sunroof has the following features:

- All functions, including sliding open/close, tilting up/down, and stop can be done by operating a single switch. Also, all functions can be done by one touch operation.
- Jamming prevention mechanism in which the roof lid glass moves in the opposite direction and stops during sliding close or tilt down movement when the outside force is applied is featured.
- Due to the elimination of manual operation in the event of a malfunction, a new function of moving the roof approximately 30 mm increments to the fully closed position is adopted. This occurs whenever the close/down switch is pressed after jamming prevention mechanism is disabled, when a reverse movement repeated for 5 times or more is triggered by deformation, or when jamming prevention mechanism is activated by error.
- After the ignition switch is turned to the "LOCK" (OFF) position, the sunroof can be operated for 30 seconds. (If the driver's seat door is open during that particular time, the sunroof can be operated for another 30 seconds. However, as soon as the door is closed, the key off operation function is disabled.)

DESCRIPTION OF STRUCTURE AND OPERATION MOTOR



The motor is installed at the front of the housing. It consists of the motor body, drive gear and sunroof-ECU.

SUNROOF-ECU

The sunroof-ECU has a built-in microprocessor which controls motor operation in accordance with signals from the sunroof switches and from the ETACS-ECU.

SYSTEM DIAGRAM

