BODY

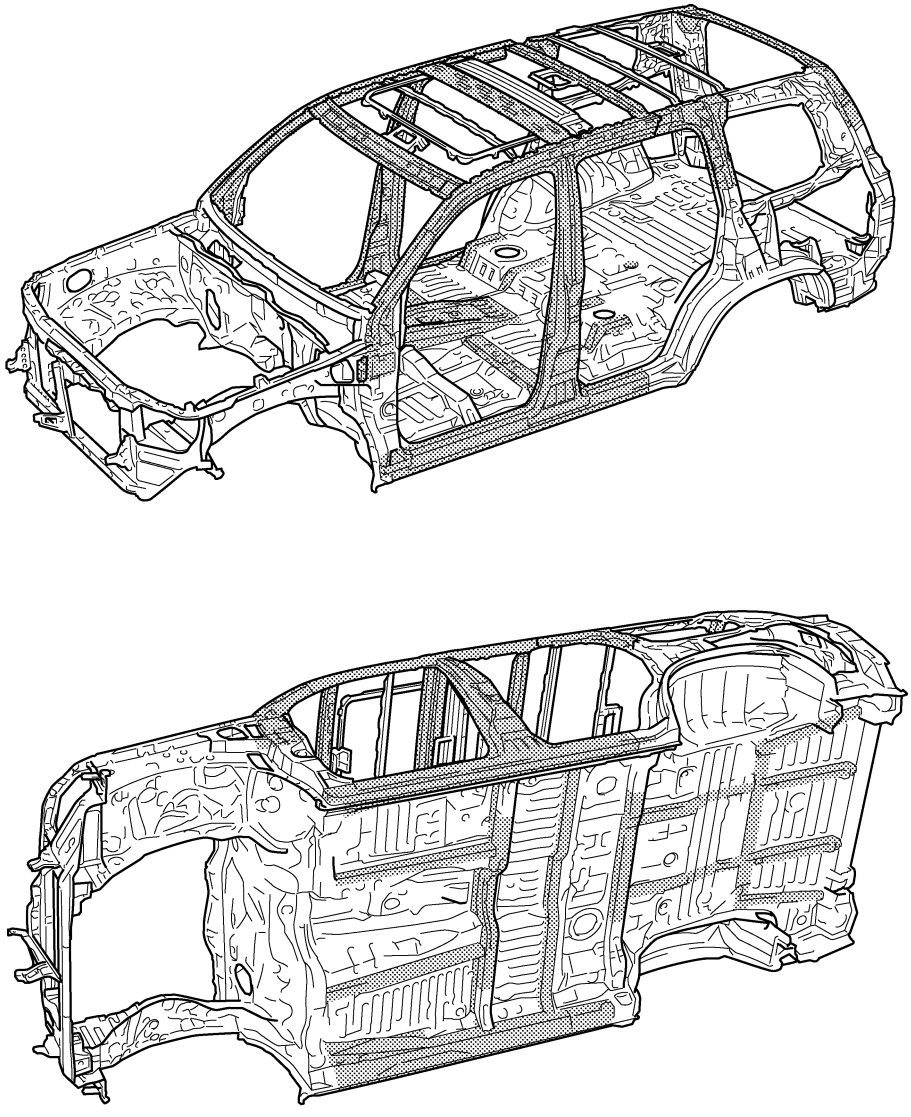
BODY STRUCTURE

■ LIGHTWEIGHT AND HIGHLY RIGID BODY

High Strength Sheet Steel

- High strength sheet steel is provided on the new Land Cruiser (Station Wagon) in an effort to reduce the vehicle weight while increasing the rigidity.
- High strength sheet steel with a body shell mass ratio of 33% is used in the pillar reinforcements, floor reinforcements and rocker members.

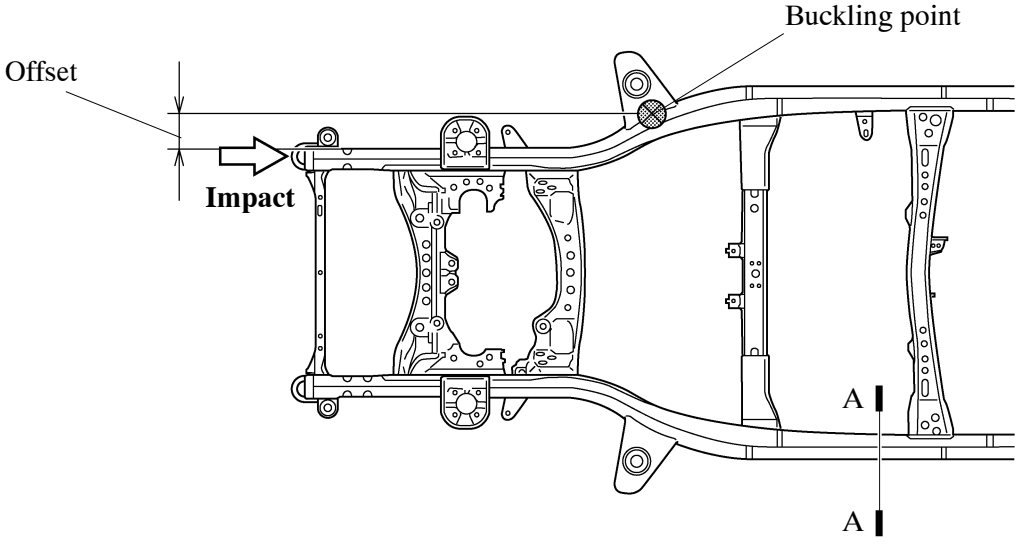
: High Strength Sheet Steel



080BO01Y

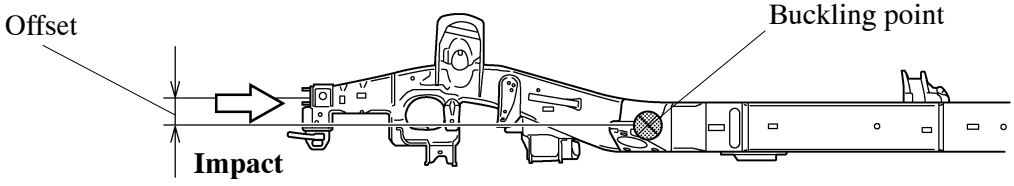
■FRAME

New Land Cruiser (Station Wagon), a high-strength, high-rigidity, axial-compression collision safety frame structure is used. This frame structure helps minimize frame buckling as much as possible, and considerably reduces the amount of offset between the load application point and the frame buckling point at the point a collision occurs.



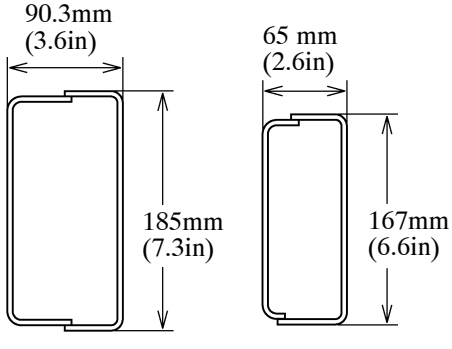
080BO02Y

Top View



080BO03Y

Side View



080BO04Y

New Model **Current Model**

A-A Cross section

BO

■SAFETY FEATURES

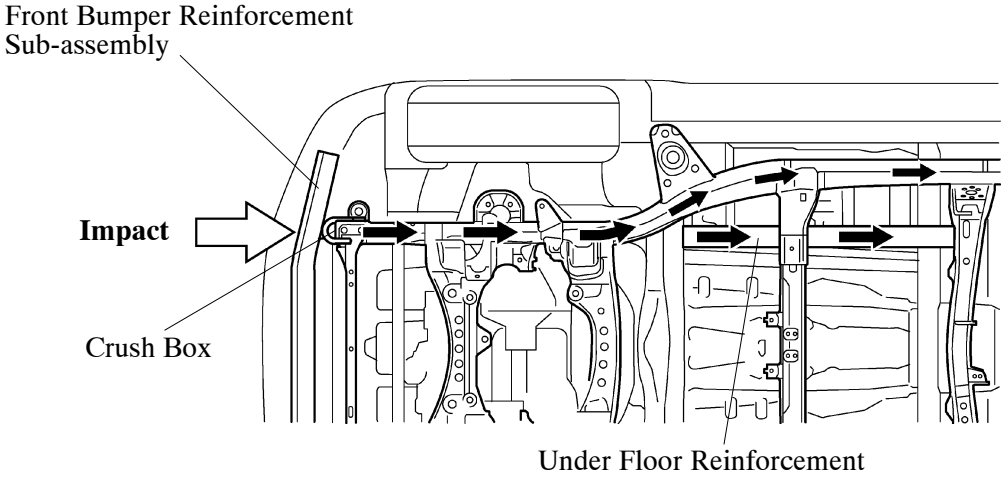
5. General

The impact absorbing structure of the new Land Cruise (Station Wagon) minimizes cabin deformation by effectively helping to absorb the impact energy in the event of a front, side or rear collision. This provides high-performance occupant protection.

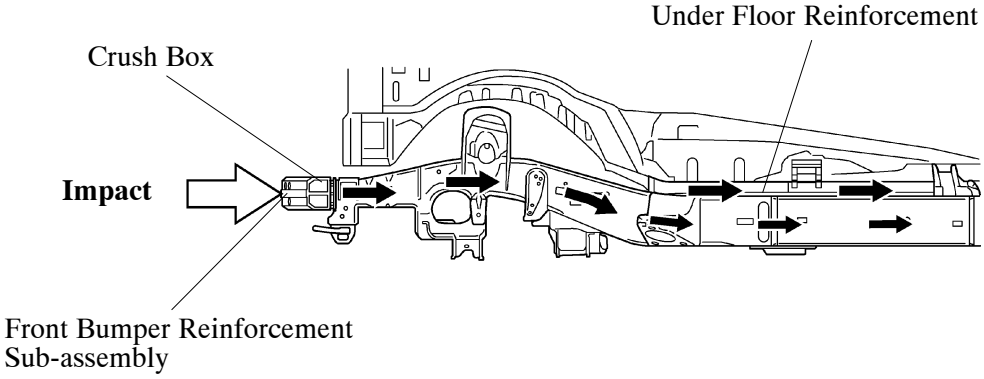
6. Impact Absorbing Structure for Front Collision

High strength sheet steel is used in the reinforcements located under the floor and on the rocker panels, and a new structure that can effectively provide the axial-compression load to the frame is used. This is to absorb the collision energy efficiently and to disperse the load. As a result, cabin deformation will be minimized. (See BO-2 and 3.)

- A large front bumper reinforcement is used to efficiently dissipate the impact energy into the frame side rails.
- Crush boxes are provided at the front ends of the frame side rails. These crush boxes reduce the impact that acts on the side rails and minimize body deformation during a minor collision.
- In order to disperse the impact load which is caused by a frontal offset collision, the frame structure has been designed to minimize the frame buckling and transfer collision energy more linearly. In addition, high strength sheet steel is used in the reinforcements under the floor. As a result, a more efficient dispersal of the collision impact load has been made possible by controlling frame distortion mode through a combination of the body and frame during a major collision.



Bottom View

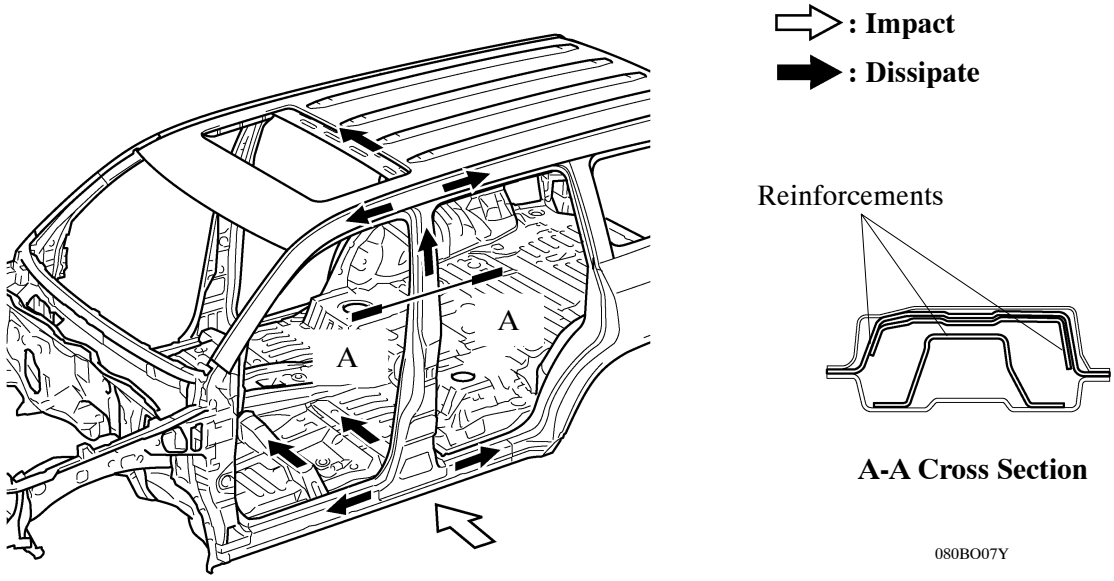


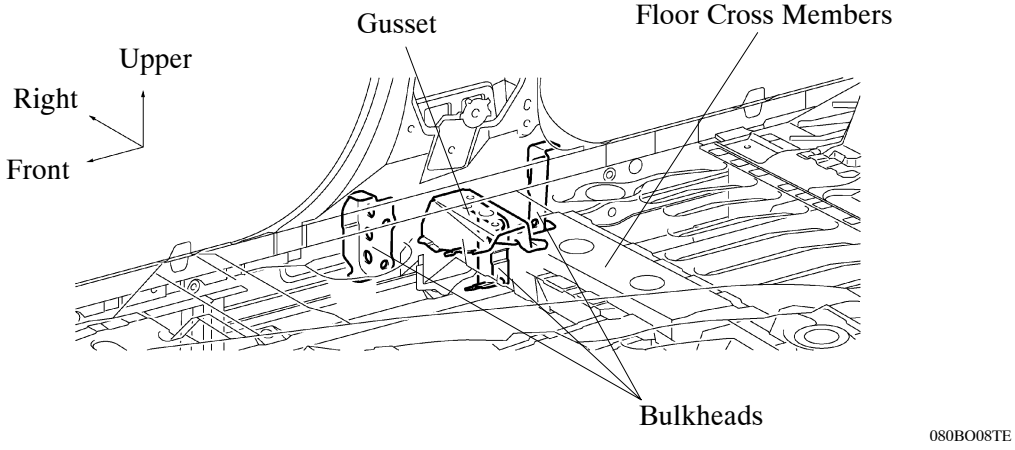
Side View

7. Impact Absorbing Structure for Side Collision

The body construction has been optimized to realize an effective transmission of the collision impact to the peripheral parts, such as from the center pillar to the roof reinforcements, rocker reinforcements, and floor cross members. This ensures the integrity of the cabin space and dramatically reduces body deformation.

- High strength sheet steel is used in the center pillar reinforcements, thus realizing a compact, lightweight, and highly rigid center pillar construction (A-A cross section).
- Bulkheads and gussets are placed at optimum locations within the rockers. As a result, the load from a center pillar can be transmitted to a floor cross member, absorbing the impact energy.



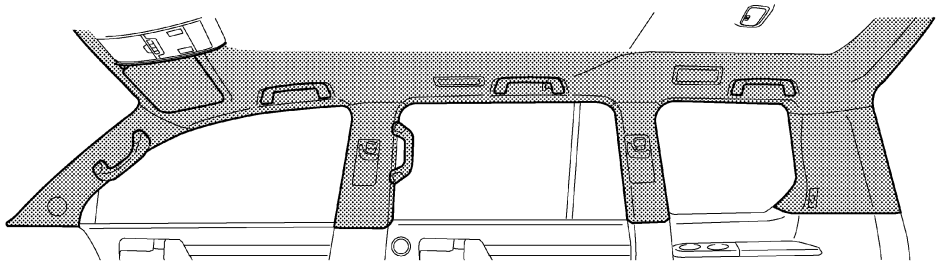


Rocker Member Section

BO

- A head impact protection structure is used. With this type of construction, if the occupant's head hits against the roof side rail or pillar due to a collision, the inner panels of the roof side rail and pillar collapse to help reduce the impact.

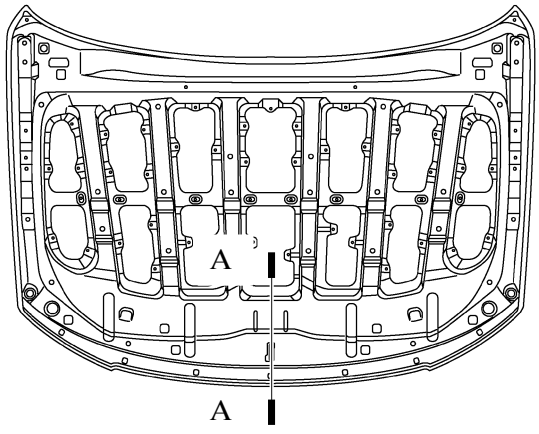
: Head Impact Protection Structure



080BO09Y

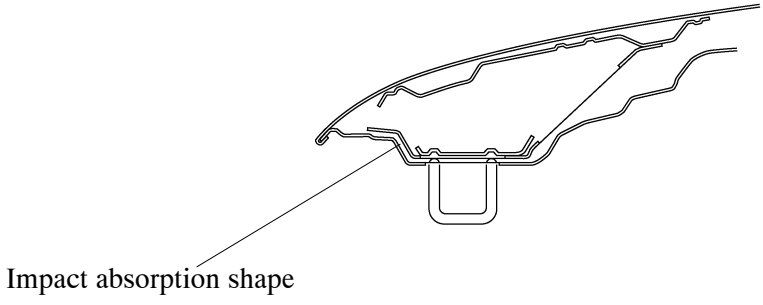
8. Lessening Pedestrian Head Injury

- In order to enhance the pedestrian protection performance, the hood has been designed with a longitudinal frame structure which brings uniform hood rigidity and efficiently absorbs the impact.
- An impact absorption shape has been provided at the front of the hood. If someone short such as a child hits the front, the impact will be absorbed more efficiently, and head injuries will be minimized.



080BO10Y

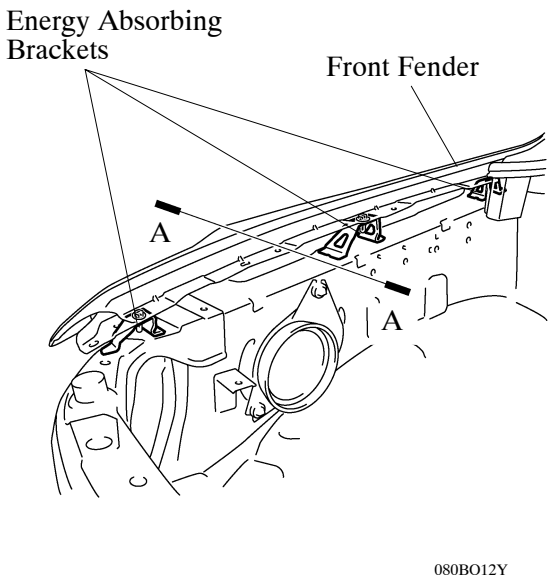
Engine Hood

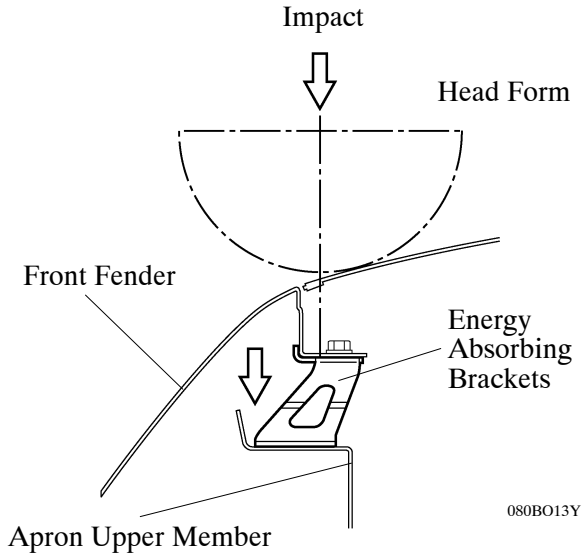


080BO11Y

A-A Cross Section

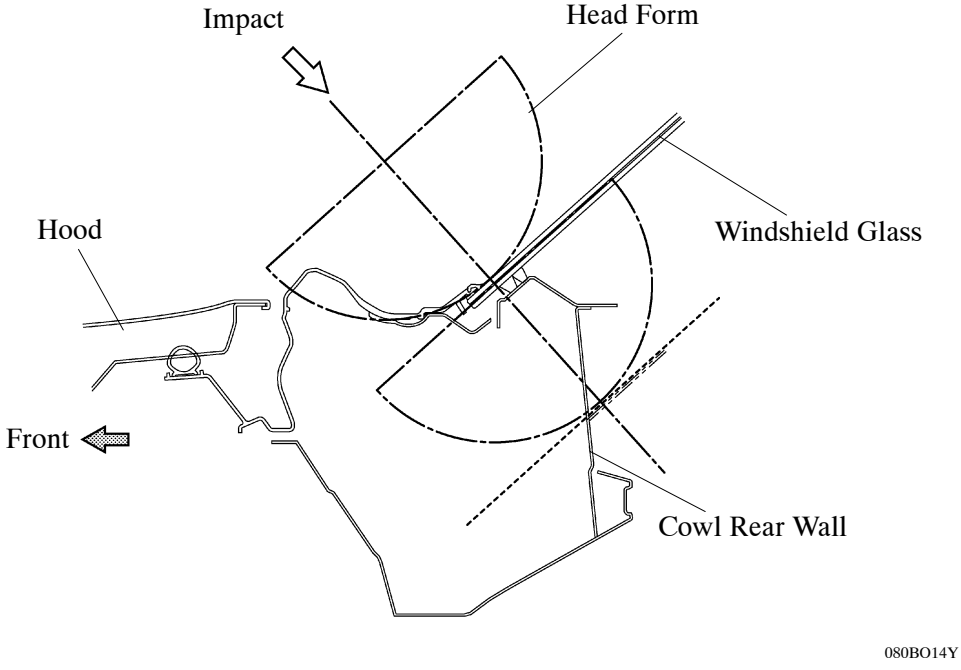
- Energy absorbing brackets are used in the joint portion of the front fender. Thus, a certain deformation stroke in the event of a head form collision has been ensured and help reduce the impact.





A-A Cross Section

- Both body rigidity and energy absorption stroke have been achieved by optimizing the shape at the back of the cowl. Thus, good excellent pedestrian protection performance has been secured.



Cross Section at Lower Portion of Windshield

■RUST-RESISTANT BODY

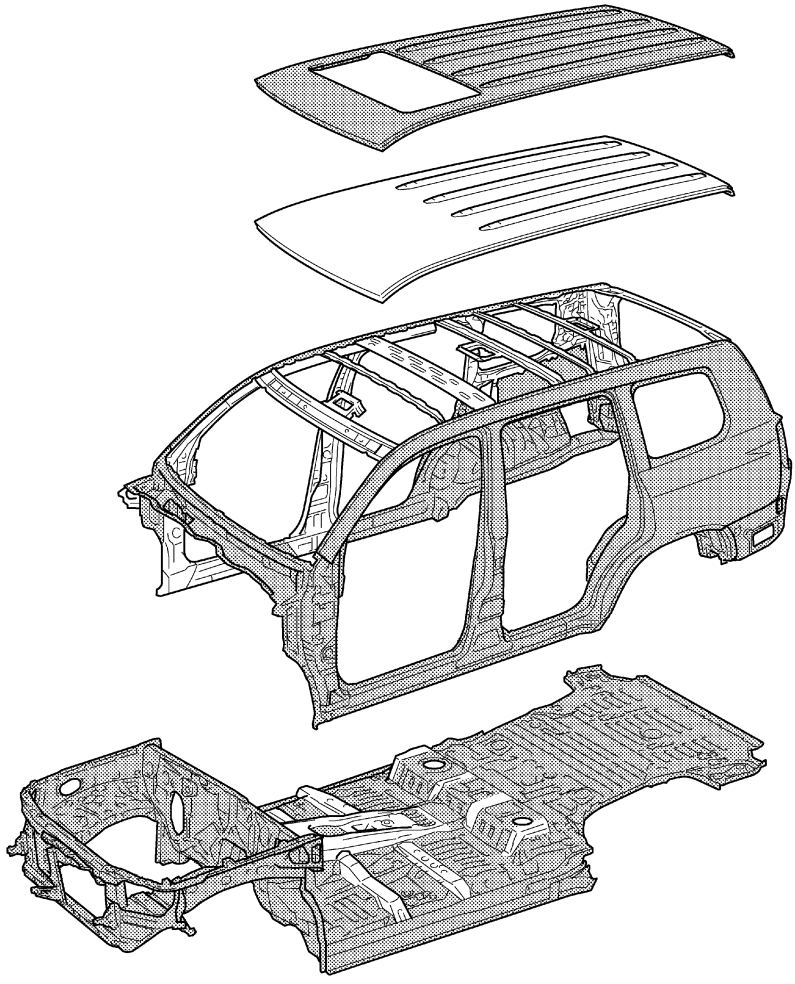
1. General

Rust-resistant performance is enhanced extensive use of anti-corrosion sheet steel, as well as by an anti-corrosion treatment that includes the application of anti-rust wax, sealer and anti-chipping paint to easily corroded part such as the hood and fender.

2. Anti-corrosion Sheet Steel

- Anti-corrosion sheet steel is used as the following illustration.
- On models equipped with the standard roof, body shell mass ratio 74% of anti-corrosion sheet steel is used.

: Anti-corrosion Sheet Steel



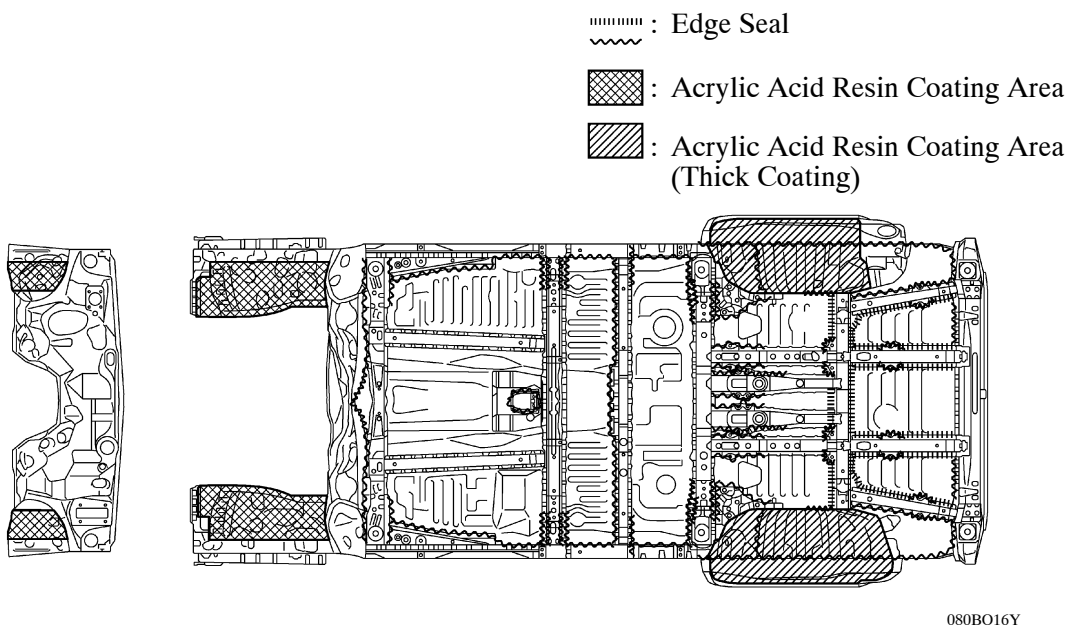
080BO15Y

3. Wax and Sealer

Wax is applied to edge of the door lower portion, door hinge and fuel filler lid hinge to improve rust-resistant performance. Sealer is applied to hemmed portions of the door panels and engine hood.

4. Under Coat

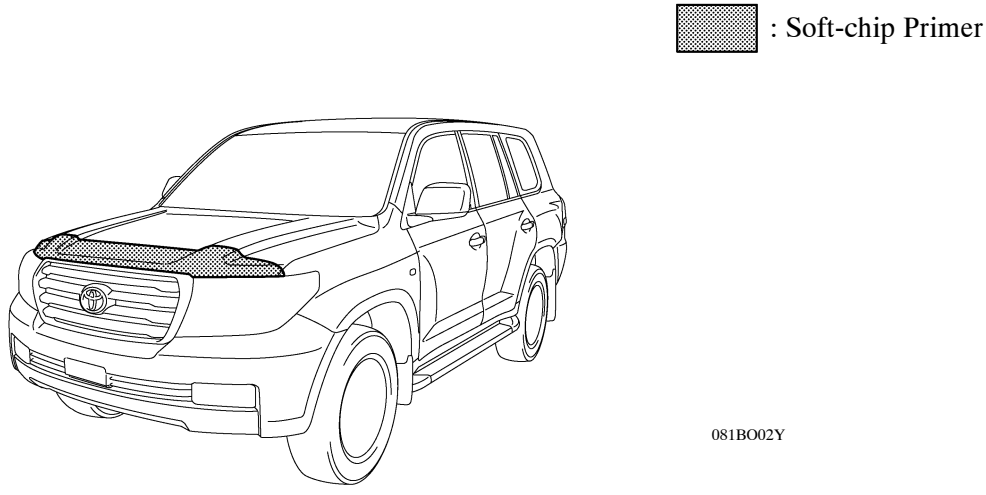
Acrylic acid resin is applied to under side of the body, inside the wheel housing and other parts that are susceptible to damage from stone chips, thus improving the rust resistance of these areas.



View from Bottom Side

5. Anti-chipping Application

Only on European models, a soft-chip primer is used on the front end of the hood in order to minimize paint damage due to chipping and improve the anti-corrosion performance.



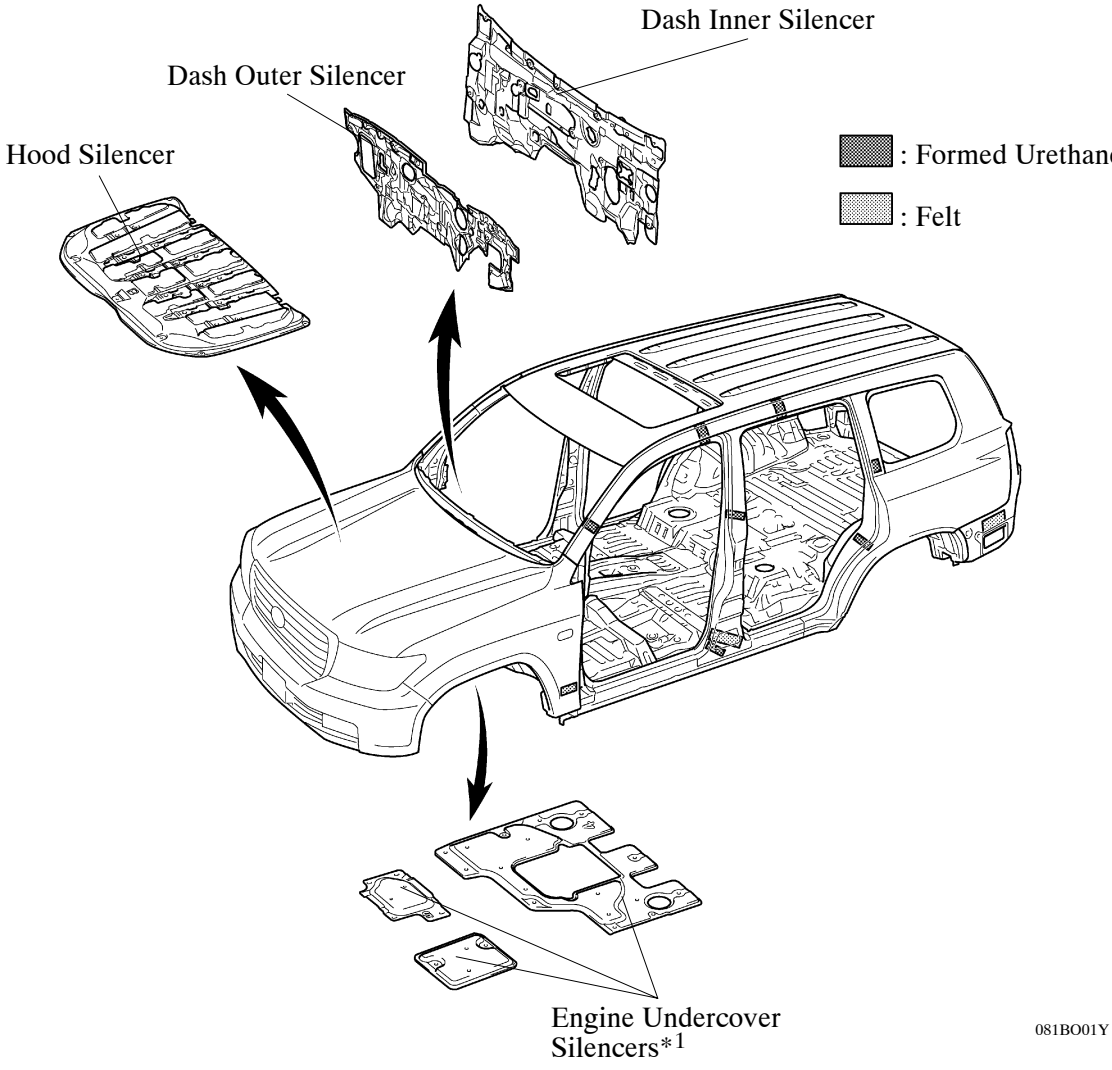
■LOW VIBRATION AND LOW NOISE BODY

1. General

Effective application of vibration damping and noise suppressant materials reduces engine, wind and road noise.

2. Sound Absorbing and Vibration Damping Materials

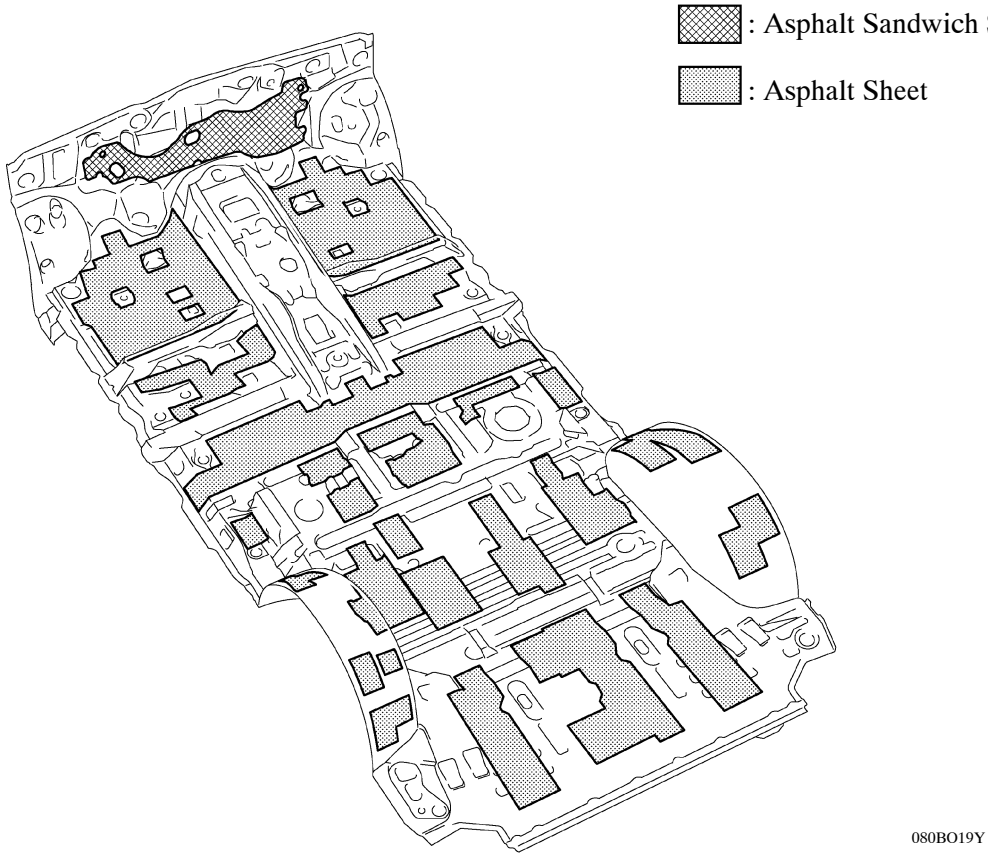
- Foamed urethane sponge and foamed sealing material are applied onto the roof side rail and pillars to reduce wind and road noise.
- A large-size dash inner silencer, dash outer silencer, hood silencer, and engine under cover silencer*1 are used to reduce engine and road noise to improve quietness inside the passenger compartment.
- A material having high sound-shielding property*2 is used for the intermediate film of the laminated glass of the windshield to reduce wind noise.



*1: Except general countries

*2: Provided as standard on VX grade models for Europe, Australia and general countries

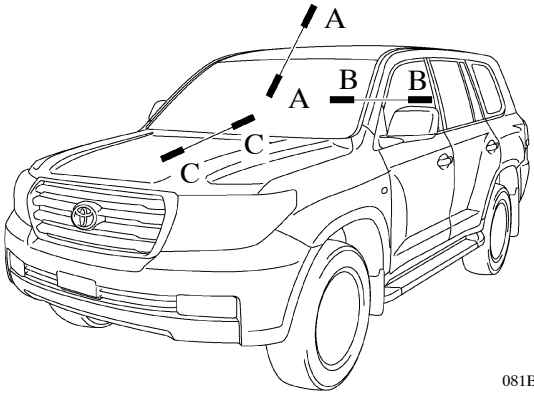
- The asphalt sheet has been optimized entirely, in terms of material, thickness, and allocation, in order to reduce the droning sound and road noise.

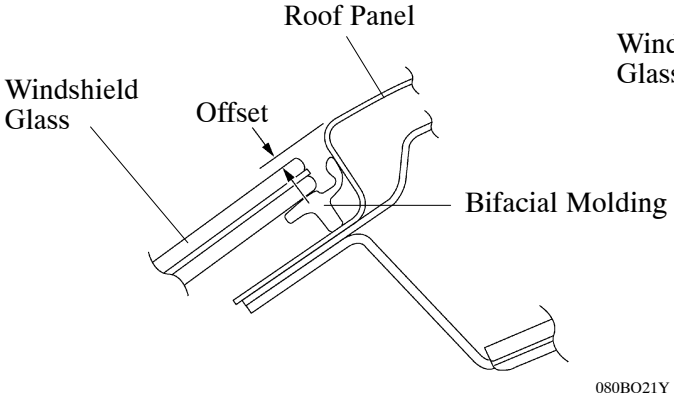


View from Top Side

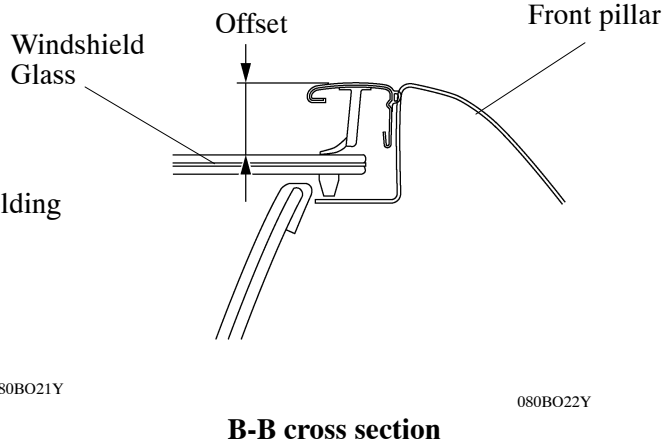
3. Reducing Wind Noise

- A foam material is optimally allocated inside the body side members, pillars, and front header in order to reduce the wind noise created by air turbulence (See page BO-11).
- CSE (Curved Seal Extrusion) bifacial molding is used around the windshield glass to minimize the offset between the windshield glass and the roof. This reduces air turbulence and wind noise (A-A cross section).
- The offset of the front pillars and the windshield grass has been optimized to minimize air turbulence, thereby reducing the wind noise. (B-B cross section)
- Through a modification of the cowl louver shape, the course of airflow across the hood has been directed upward, and this prevents wind from interfering with the wipers. Therefore, air turbulence has been minimized, reducing the wind noise. (C-C cross section)

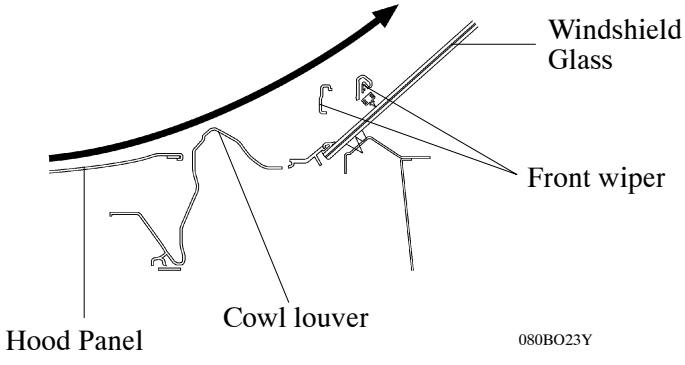




A-A cross section



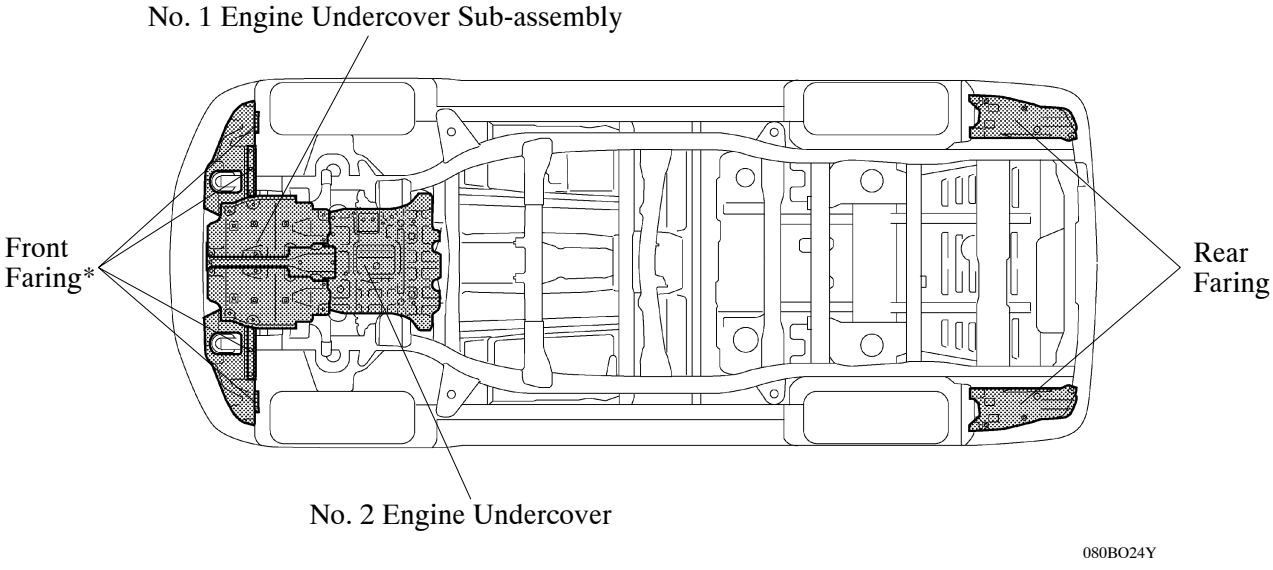
B-B cross section



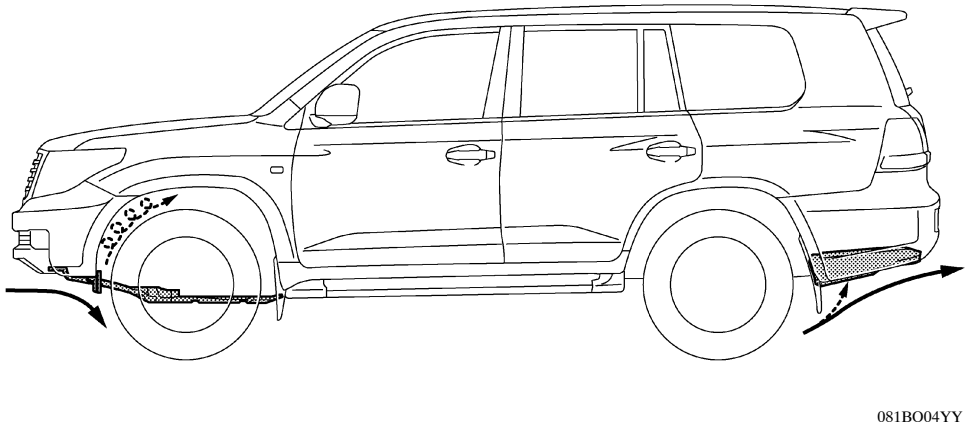
C-C cross section

■ AERODYNAMICS

In order to ensure excellent aerodynamic performance and driving stability, airflow routing parts which direct the airflow have been provided in front of the front wheels and behind the rear wheels.



View from Bottom Side



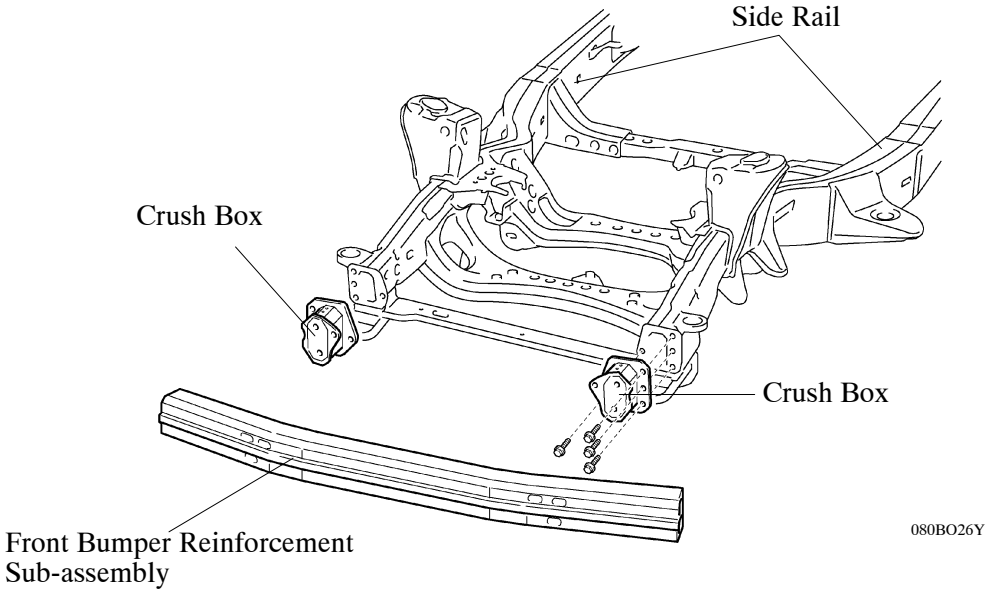
View from Side profile

* Except for GX grad models

ENHANCEMENT OF PRODUCT APPEAL

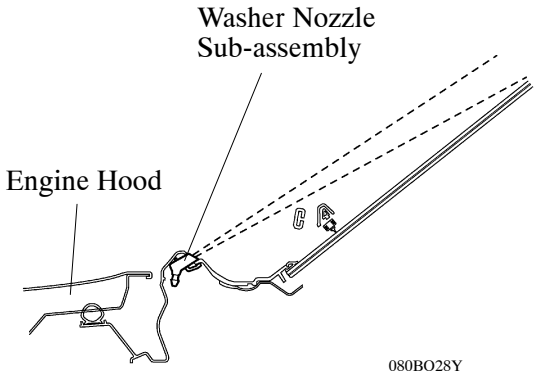
■ PARTS WITH LOW REPAIR COST

In order to minimize body damage during a minor collision and reduce the repair costs, crush boxes are fitted at the front ends of the frame side rails.

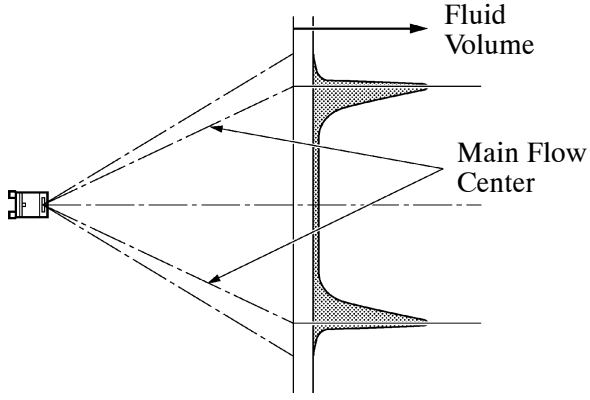


■WASHER NOZZLE

Spray type washer nozzles are located inside the cowl louver to ensure a good appearance. These nozzles can spray windshield washer fluid over a wide area by spraying it in a fan shape. The washer fluid volume has been reduced so as not to hinder the driver's view when washer system is operated.



080BO28Y



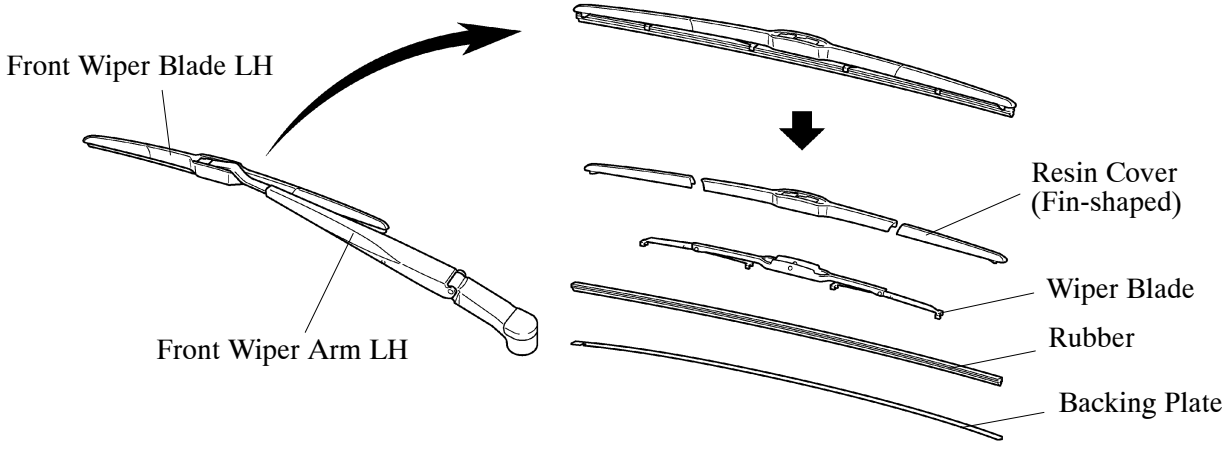
080BO29Y

Service Tip

Spray type washer nozzles cannot be adjusted because of their structure. Do not attempt to adjust the nozzles as it could damage them.
If adjustment is necessary, adjust the nozzles after replacing them with those selected from three part numbers with different spray angles. For details, see the Land Cruiser (Station Wagon) Repair Manual (Pub. No. RM0810E).

■WIPER ARM AND BLADE

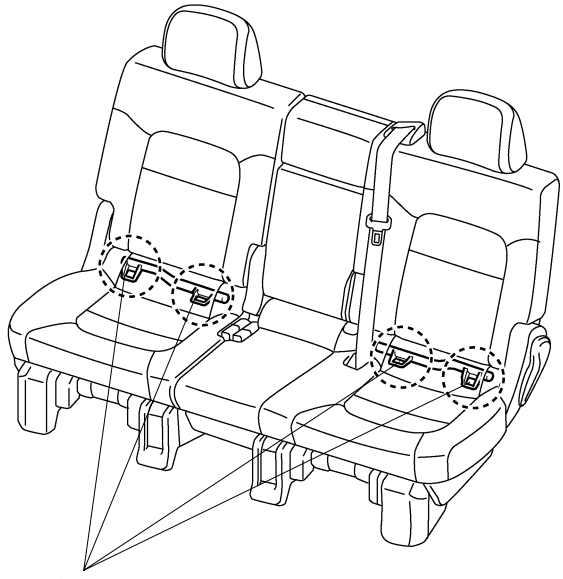
The well-integrated, stylish wiper consists of a styled wiper arm and an aero-type wiper blade with a fin-shaped resin cover. Furthermore, graphite rubber is used in the blade to achieve good wiping characteristics, as well as to lessen the noise generated when the rubber flips during the wiper return movement. In addition, the low home position of the wiper contributes to a wind noise reduction.



080BO30Y

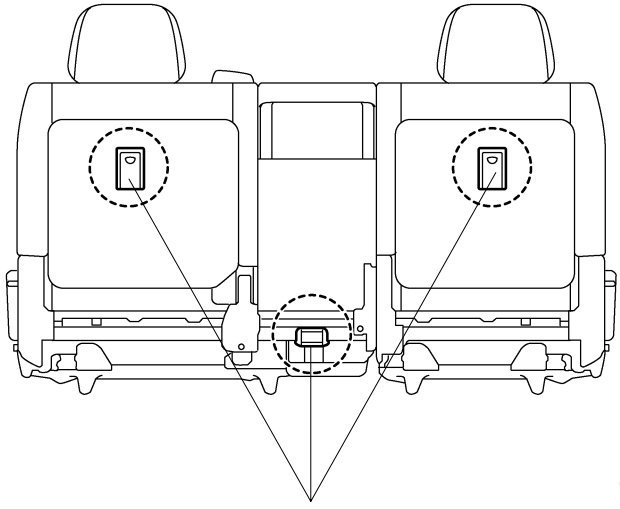
■CHILD RESTRAINT SYSTEM

ISO-FIX bars and three CRS anchor brackets for securing child seats are provided as standard on European and Australian models and available as an option on VX grade models for other countries. The ISO fix bars are provided behind the seat cushion of the rear No.1 seat and the CRS anchor brackets are provided on the seatback and the center seat cushion.



080BO31Y

ISO-FIX bars



080BO32Y

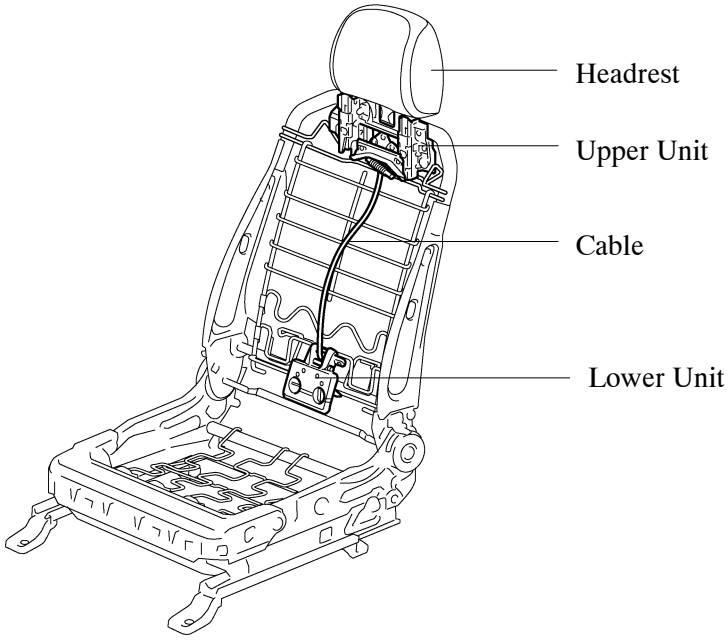
CRS Anchor Brackets

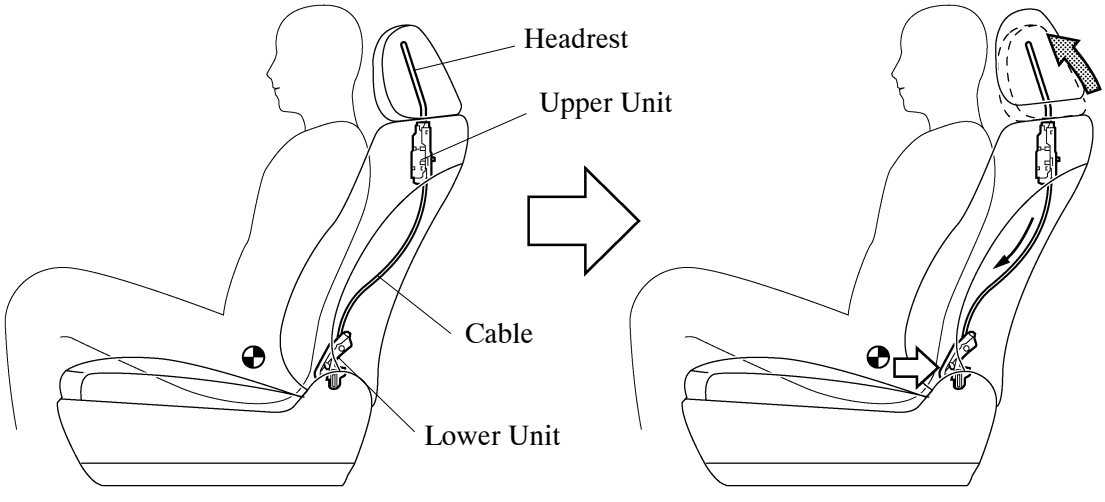
■ SEAT

1. Front Seat

A new seat frame structure and an active headrest mechanism, in which the seat back frame upper pipe has been shifted rearward, reduce neck injury during a rear-end collision. The new seat frame structure is provided as standard on all models and the active headrest mechanism is provided as standard on European models and Chinese VX grade models. Furthermore, by using high strength sheet steel in the seat frame, a weight reduction has also been achieved.

- Active headrests are provided*, which move up and forward almost instantly in the event of a rear-end collision when the force of the occupant body is applied to the seat back and reduce the distance between the occupant's head and the headrest.
- The active headrest consists of the lower unit, cable and upper unit.
- When the lower unit built into the seat back is pressed by the occupant's lumbar as the occupant's body slides down during a rear-end collision, the cable is pulled and the headrest is moved up and forward by the upper unit, reducing the distance between the occupant's head and the headrest.





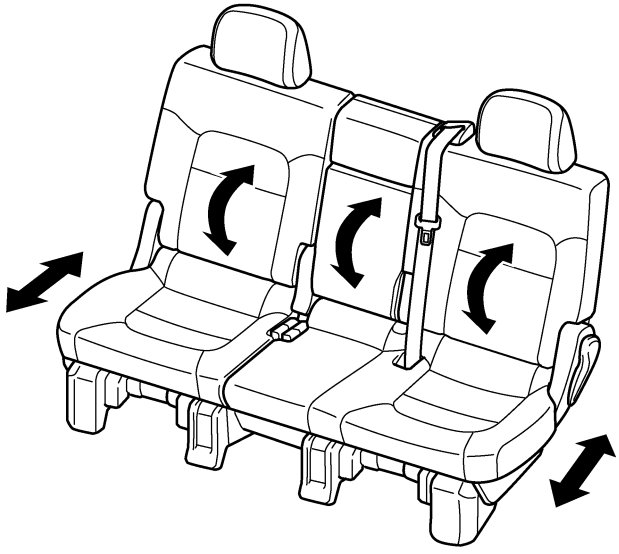
080BO33Y

Normal Position **Operating Position**

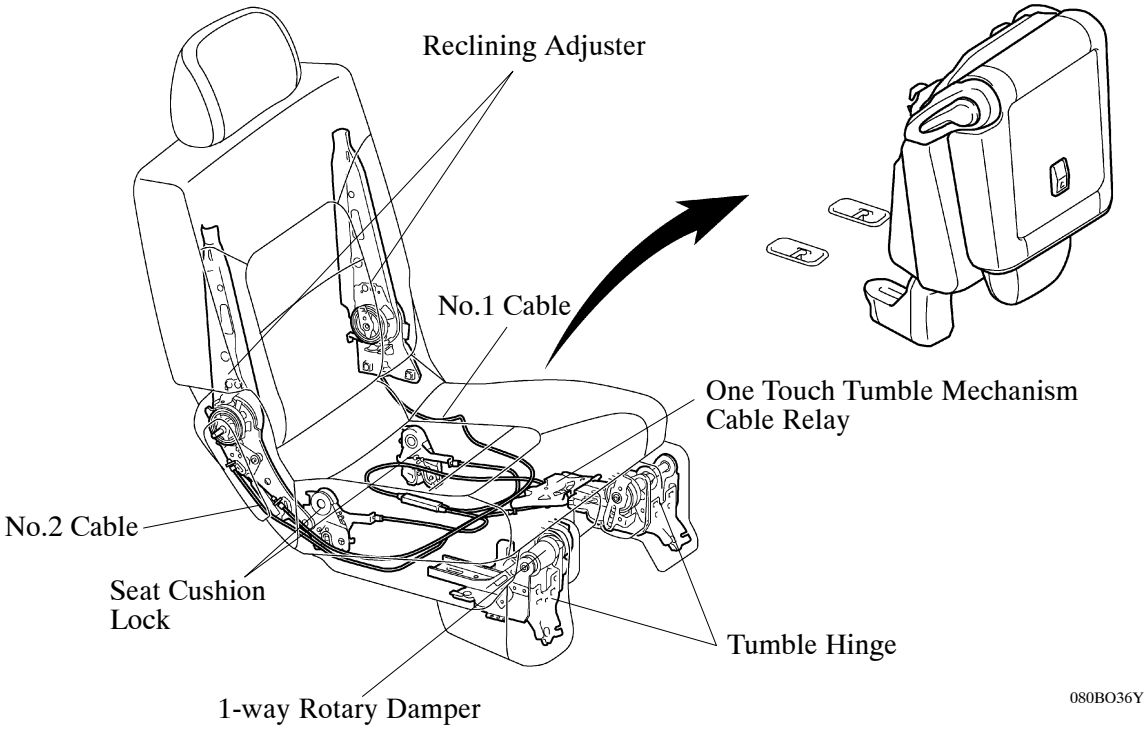
2. Rear Seat

Rear No.1 Seat

- A 4-2-4 split seatback, in which the center seatback can be used as an armrest, has been provided on the 6-4 split sliding seat as standard on VX grade models.
- A one touch tumble mechanism has been provided on the seat immediately behind the front passenger seat to make it easier to get in and out of the vehicle. The one touch tumble mechanism releases the seat lock when the seatback is folded, allowing the seat itself to fold down.
- The one touch tumble mechanism uses a 1-way rotary damper which dampens the seat folding movement and allows the seat to fold back up gently, thus improving the ease of use as well.



080BO35Y



080BO36Y

One Touch Tumble Mechanism

■SEAT BELT

1. General

The following types of seat belts are provided. (See MO-33 for the settings)

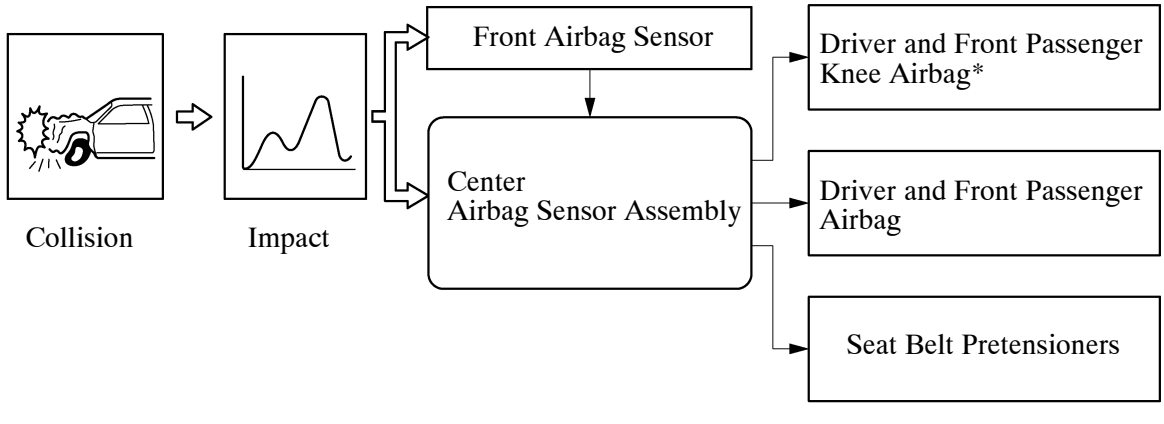
Seat Position	Seat Belt Type	Remarks
Driver & Front Passenger	3-point ELR*1	Electrical Sensing Type Pretensioner, Force Limiter and Tension Reducer
		Electrical Sensing Type Pretensioner, Force Limiter
		Pre-collision Seat Belt (Option)
Rear No.1 Passenger	3-point ELR*1& ALR*2	Electrical Sensing Type Pretensioner*3
	3-point ELR*1& ALR*2,*3	Electrical Sensing Type Pretensioner*3
	3-point ELR	—
Rear No.2 Passenger	3-point ELR*1& ALR*2	—
	3-point ELR	—

*1: Emergency Locking Retractor
*2: Automatic Locking Retractor
*3: Seats other than rear center seat

2. Pretensioner and Force Limiter

In accordance with the ignition signal from the airbag center sensor assembly, the seat belt pretensioner activates simultaneously with the deployment of SRS airbag for the driver and front passenger.
In the beginning of the collision if the tension of the seat belt applied to the occupant reaches a predetermined level, the force limiter activates to control the force.

▶ Front Airbag Operation ◀

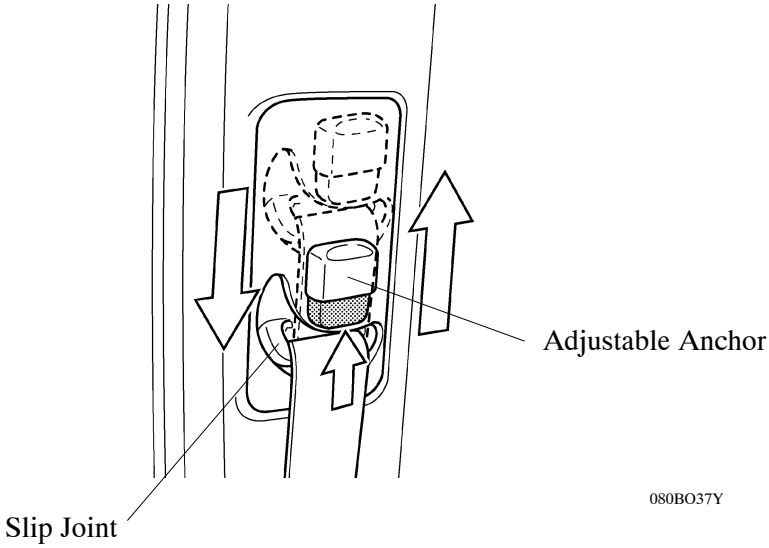


037BO04Y

*: Standard on European and Australian VX grade models, and optional on VX grade models for other countries

3. Adjustable shoulder belt Anchor

A pillar-built-in adjustable shoulder anchor has been provided on the front seat belts and rear No. 1 outside seat belt to enhance safety and improve appearances.



4. Rear No.2 Seat Belt

A 3-point seat belt is provided for the rear No.2 center seat, with the slip joint and belt retraction box located in the roof, thus realizing an excellent appearance and the usability of the seat when the seat belt is not used.

