



GM South Africa



**Model Introduction Training For
Approved Body Repairers**



Isuzu – The Bakkie Specialists

The launch of the all-new Isuzu KB continues Isuzu's iconic heritage of innovation, toughness, durability, functionality and appeal.

More powerful than ever before, and with bold new styling inside and out, the all-new Isuzu KB is set to generate some serious excitement and business. Providing a class leading 3.5 tonne towing capacity, as well as exceptional levels of comfort and technology, it's the next step forward in the Bakkie Specialists' extraordinary journey.

For Isuzu, reliability is still everything. To that end over 4 million kilometres of driving tests in the all-new Isuzu KB have been conducted around the world – the equivalent of driving 100 times around the globe – in conditions that have varied from Kalahari heat to North Pole snow. Now it is ready to conquer South Africa.

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This self-study programme highlights the design and function of new vehicle models, new automotive components or new technologies.

The self-study programme is not a repair manual!
All values given are intended as a guideline only.

For maintenance and repair work, always refer to the current technical literature.

Bigger and bolder

The all-new Isuzu KB is designed to make a lasting impression. The first thing you'll notice is that it's a lot bigger than its predecessor, and longer than the competition, giving it a commanding presence on the road.

The new attention grabbing interior design includes a modern and fresh twin cockpit concept that delivers a passenger car-like look and feel, while striking the perfect balance of style and substance.

Best in class features

- **Best in class towing capacity** of 3.5 tones (all KB 300 models fitted with optional heavy duty towbar)
- **Best in class fuel efficiency** (KB 300 D-TEQ Diesel)
- **Best in class payload** (KB 300 4x4 Double Cabs & KB 300 4x2 Extended Cabs)
- **Best in class CO2 emissions:** 204g/km (all KB 300 D-TEQ models)
- **Best in class warranty** All KBs come standard with a 5 year/120 000km warranty

Comfort and convenience

Continuing Isuzu's long standing tradition of comfort both off- and on-road, the all-new Isuzu KB has excellent head, shoulder and leg room, and ultra-smooth handling. The new standout features employed includes:

- **Increased occupant safety** with higher levels of active and passive safety features.
- All-new **5-speed automatic transmission** with sequential shift, improved drivability and more features for work and play.
- **Improved 4WD controls** that are easier to operate.
- **NEW 2.4 litre petrol engines** added to line-up with excellent fuel economy and more power and torque.
- **All-new suspension** – coil spring front suspension and longer leaf springs on rear suspension for improved ride and handling and increased comfort. The rear suspension now features an over-slung leaf spring configuration.
- **All-new chassis** – longer, wider and stronger for improved ride and handling and increased comfort.
- **FlexDoors** for the all-new Extended Cab – provides excellent access to the area behind the front seats, for easy loading.



Models

Single Cab

Petrol

KB 240
KB 240 Fleetside
KB 240 Fleetside 4x4
KB 240 LE



Diesel

KB 250
KB 250 Fleetside
KB 250 D-TEQ
KB 250 D-TEQ Fleetside
KB 250 D-TEQ Fleetside (SAFETY)
KB 250 D-TEQ LE
KB 250 D-TEQ LE 4x4
KB 300 D-TEQ LX
KB 300 D-TEQ LX 4x4

Extended Cab

Diesel

KB 250 D-TEQ LE
KB 300 D-TEQ LX
KB 300 D-TEQ LX 4x4



Double Cab

Petrol

KB 240 LE
KB 240 LE 4x4

Diesel

KB 250 D-TEQ LE
KB 250 D-TEQ LE 4x4
KB 300 D-TEQ LX
KB 300 D-TEQ LX AUTO
KB 300 D-TEQ LX 4x4



Doublecab model overview

- Effortlessly adapting to any environment or situation, the all-new Isuzu KB Double Cab is ideal for work and play.
- Representing the ultimate in Isuzu engineering and design, this versatile Double Cab is up for any challenge. Whether you're towing, trekking long distances or hauling heavy loads, you can trust it to tackle every task in class-leading style.
- Besides brains and brawn, the Isuzu KB Double Cab has the inner beauty of a luxury passenger car. The plush cabin is all about comfort and convenience, with more space and storage, increased legroom, less cabin noise and lower vibration levels. Entry and exit is car-like too, thanks to the optimum height, wider opening rear doors and chamfered design of the rear seats.
- The Double Cab range consists of 7 models in LE and LX trim levels, incorporating both petrol and diesel derivatives.
- The range is based on three engine derivatives: the all-new 2.4L petrol engine, the tried and tested 2.5L D-TEQ, and the refined and upgraded 3.0L D-TEQ engines.
- The drivetrain offering includes three 4x4 models. Differential Lock is standard on all LE and LX models.



Isuzu towing performance

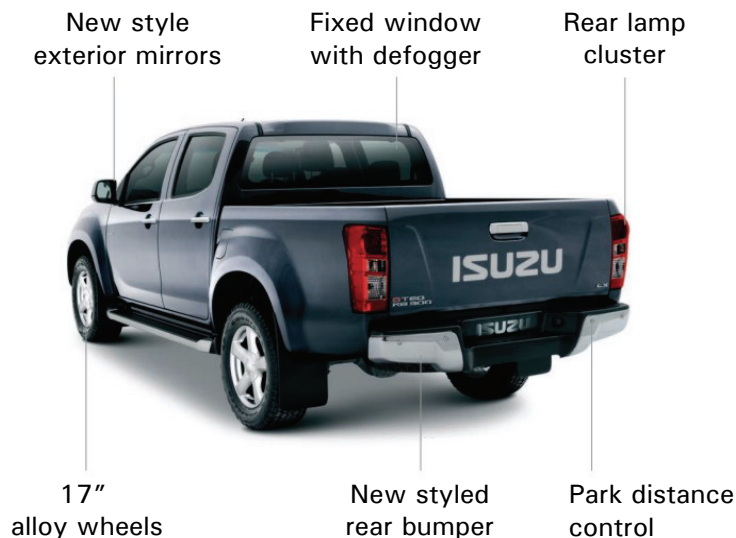
- The top-of-the range KB 300 models powered by the 130 kW Isuzu 3,0 litre D-TEQ engine have a towing capacity of 3 500 kilograms for trailers fitted with a service brake. To realize the full potential of this stump pulling performance a heavy duty tow-bar, rated for 3,5 tons, is available as an accessory. This towbar has been designed to integrate into the rear step bumper, whilst minimizing the impact on departure angle, a particularly important aspect in off road motoring.
- Models across the range below these top-spec KBs have a towing capacity of 2100 kg, a significant improvement over the previous generation KB.
- When it comes to payload capacity the new Isuzu KB is again at the top of the class with LX 300 4X2 Double Cab capable of carrying a payload of 1133 kg, well up on its opposition. This situation is reflected across the range with excellent load capacity for all of the various KBs, from entry level petrol models to mid- to high-range diesel double and single cab models. The lowest payload specified in the range is for the KB 250 D-TEQ Double Cab 4X2 which is rated at 962 kg.
- The inherent fuel efficiency of the 3,0 litre Isuzu D-TEQ engine with its electronically controlled variable vane turbo charger with charge-air cooling and common rail direct fuel injection gives the Isuzu KB exceptional operating efficiency with just 7,7 l/100km consumed by the 4X2 variant on the combined cycle test (7,8 l/100km for the 4X4) with CO₂ emissions a low 204 g/km (209g/km for the 4 × 4).
- The Isuzu KB 250 D-TEQ models can boast of a record breaking heritage. Fitted to the previous model Isuzu KB, the 250 LE and the KB 72, this engine powered the Isuzu pick-up to an expansive set of speed and endurance records over a 72 hour period. In April 2010 a KB 250 LE covered a record breaking 11 496 km in the 72 hour period for an average speed of 159,7 km/h in the 2,5 litre commercial diesel class.
- The KB 240 models with their 2,4 litre petrol engine complete the line-up with a 112 kW of power and 233 Nm of torque. Towing capacity, even at this entry level to the Isuzu KB range is a full 2100 kg. Payload capacity for the Base model KB 240 is 1146 kg. A 2100 kg capacity tow bar is available as a dealer installed accessory for all models.



The all-new Isuzu KB is designed to be bigger, more spacious and more comfortable than its predecessor. Perfectly proportioned, the design lines flow continuously from the side profile to the tailgate presenting a fluid and visually harmonious appearance. Its aggressive form includes a wedge shaped design with a powerful, sporty look and muscular expression, while the innovative structure is in keeping with modern design trends.



- **New style front fascia and bumper:** the all-new Isuzu KB presents a striking front-on view with its aerodynamic shape and bold new Isuzu logo. LX models feature a chrome grille and bonnet garnish, LE models feature a body colour grille and chrome bonnet garnish while Base and Fleetside models feature a black grille and bonnet garnish.
- **New-style projector headlamps:** standard on all LX Single, Extended and Double Cabs – these emphasise the flowing lines, giving the all-new Isuzu KB an assertive appearance that is in keeping with the overall design philosophy. The **fresnel blister**, found on the **projector headlamp protector**, reflects the parking lights at an 80 degree angle to increase the vehicle's visibility at night for other road users.
- **Front fog lamps:** standard on LE and LX models for excellent driver visibility during severe weather.
- **Deeper A-pillar rain channels:** on either side of the windscreen to help channel water off the windscreen and direct the water over the roof. This prevents water flowing over the side glass, which also improves vision.
- **New style side steps:** available on all LX Single, Extended and Double Cabs, offering ease of entry and exit of the vehicle (also available as a P&A accessory item on all other models). Also helps prevent stone damage to the paintwork when travelling on unmade or gravel roads and features a non-slip upper surface.
- **Steel wheel arch flares:** integrated with the fenders on High Ride models replacing the previous KB's plastic items. The large wheel openings give the new KB a bolder appearance.



- **New style external mirrors:** on the LE and LX models these feature body colour and chrome finish respectively both with **side turn signal lamps** – providing a very passenger car-like appearance – and **power adjustment** plus **power fold functions** on the LX. On the Base and Fleetside models, the external mirrors have black body finish mirrors with manual adjustment.
- **17" Alloy wheels:** available on all LX models. Optional on LE models.
- **Rear lamp clusters:** the combination tail lamp and brake lamp provides bright and clear vehicle visibility. An additional feature for LX models is that the **combination tail lamps** and **brake lamps** are **LED**.
- **LED combination lamps:** additional value luxury feature on the LX models. Offers brighter illumination, which is especially beneficial during daylight hours.
- **New styled rear bumper:** available on LX models, it has a wide non-slip upper surface and chrome highlights.
- **Park distance control:** is standard on LX and optional on LE models.
- **Rear window:** all **Extended and Double Cab LE and LX models** come with a fixed rear window incorporating an electrically operated defogger. **Rear sliding windows** are optional on all models in the all-new Isuzu KB range and do not incorporate defogger capabilities.
- **When rear sliding windows are specified** as options on **LE** Extended and Double Cabs, these will lose the defogger function even though the light will illuminate on the centre dash when the defogger button is activated.
- **When rear sliding windows are specified** as options on the LX Extended and Double Cabs, these will lose the defogger functionality for the rear slider glass and still retain the defogger capabilities for the exterior rear-view mirrors when the defogger button is activated and the light illuminates on the centre dash.

All-New Chassis

- The latest 6th Generation Isuzu KB incorporates a chassis that is optimised for load carrying, ride and handling, comfort, towing capacity – with best in class performance in this area – off-road performance and occupant safety.
- The new Isuzu KB's chassis is longer and wider than the previous generation's and has a longer wheelbase, up by 45mm on the previous model. Track on both the 4X2 and 4X4 models has increased by 50mm. The new dimensions improve ride and handling, overall vehicle stability and comfort. There is a noticeable improvement in cornering performance, lane changing stability, and off-road performance and comfort over the previous model.
- Despite its larger chassis and body, the 6th Generation Isuzu KB still has an excellent turning radius of 6 metres for the base models and 6,3 metres for Fleetside/LE/LX model.
- The increased chassis dimensions have also allowed for an increase in cab dimensions with more in interior space available and thus a higher level of passenger comfort. Also up is the size of the load box on all models.
- The chassis has added strength derived from an increase in chassis rail section from 89 X 138,9 mm to 90 X 173,6 mm. In addition cross member to chassis braces have been added at the second and fourth cross members for improved rigidity and safety. The chassis incorporates crumple zones at the front for impact absorption in the event of a front collision.



Off-road performance

- The Isuzu KB has established a legendary reputation for off-road performance in its 34 years in South Africa. With the new 6th generation model comes not just an all-round improvement in on-road comfort, stability and ride and handling, but also an improvement in off-road capability.
- Contributing factors are the new wider and longer chassis design with increased wheelbase and track as well as a low centre of gravity. Whilst designing and developing the new KB chassis Isuzu engineers took advantage of the opportunity to place the engine further back and lower in the chassis to significantly lower the centre of mass of the vehicle. This trend of moving weight lower in the vehicle was carried through into the design of the cab and loadbox.
- The new suspension geometry front and rear also makes a meaningful contribution to the total off-road package. An improved seating position places the driver more than ever in a commanding position to exert effective control over the vehicle in the most demanding of driving conditions.
- On this 6th generation Isuzu KB the driver is able to select from a number of 4X4 driving modes using the Terrain Command Dial. The 2 wheel drive to 4 wheel drive high ratio change can be implemented on the fly at speeds of up to 100km/h. The vehicle, as with all 4X4 vehicles, must be stopped to change to the extreme condition 4L (low-range) mode. This selection is also initiated via the Terrain Command Dial.
- All LE and LX models, as well as the 4X4 Fleetside models, have a driver activated differential lock as standard equipment, operated by an easily accessed push-button switch. This feature is offered as a production option on the remaining model line-up. The new Electronic Differential lock system allows engagement at vehicle speeds below 60km/h, and automatically disengages when the vehicle speed exceeds 80km/h.



Various colours



Athenian white



Vector blue



Thunder flash



Star silver



Maranello red



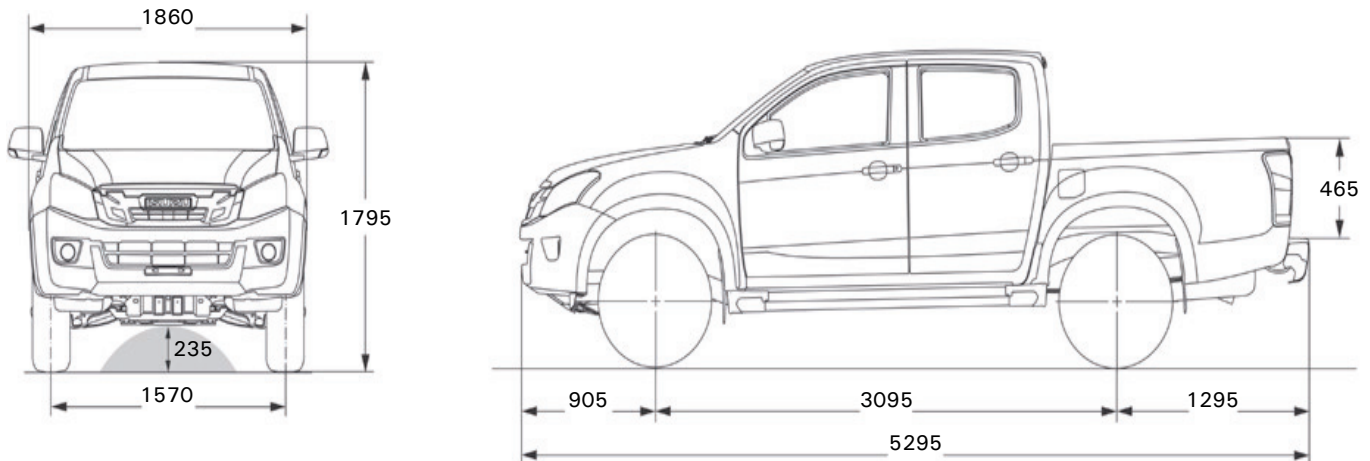
Magna bronx



Armour grey

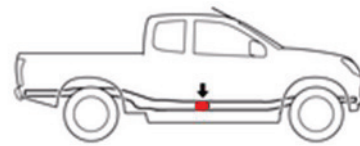
Dimensions

The overall design of the all-new Isuzu KB keeps the vehicle's weight closer to the ground, thus improving an already excellent centre of gravity while still providing great ground clearance in the High Ride models. This all has a positive impact on the vehicle's handling and is vitally important when driving in off-road conditions.



Chassis number

The chassis number is stamped on the right side of the chassis side member under the right door.

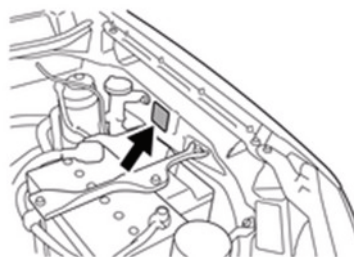


Vehicle identification plate

The vehicle identification plate is attached to the vehicle. The vehicle identification plate contains the following information:

- VIN.
- Paint information.
- Three-digit option code which means production options or special equipment installed on the vehicle at the factory.

Refer to the vehicle identification plate when ordering replacement parts.



Lifting instructions

If it is necessary to use a lifting device other than the ordinary jack, confirm acceptable lifting points as referring to the illustration.

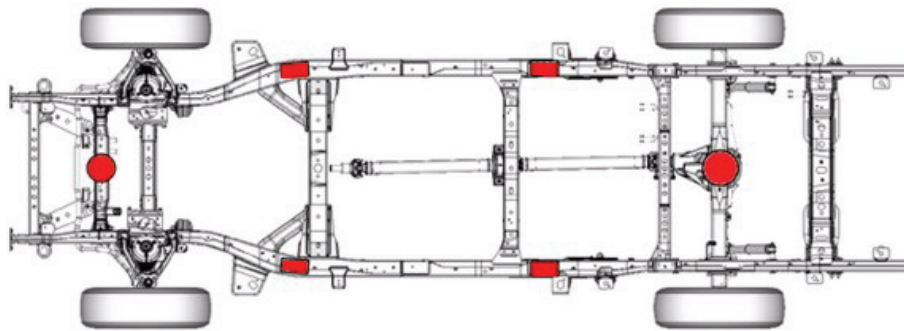
Lifting should only be done in the positions illustrated in the diagram to prevent possible damage to the vehicle.

Caution

- Failure to observe the acceptable lift points may cause unsatisfactory vehicle performance or durability failure, resulting in loss of control of the vehicle.
- Never work under a vehicle supported only by a jack.
Always use jack stands to support the frame when working under a vehicle.

In order to prevent scratches. (To prevent corrosion caused by damage the coating)

- When support surface is flat: place a wooden or rubber block between floor jack or jack stand and frame.
- When support surface is not flat: place a piece of cloth on the floor jack or jack stand's contact surface.

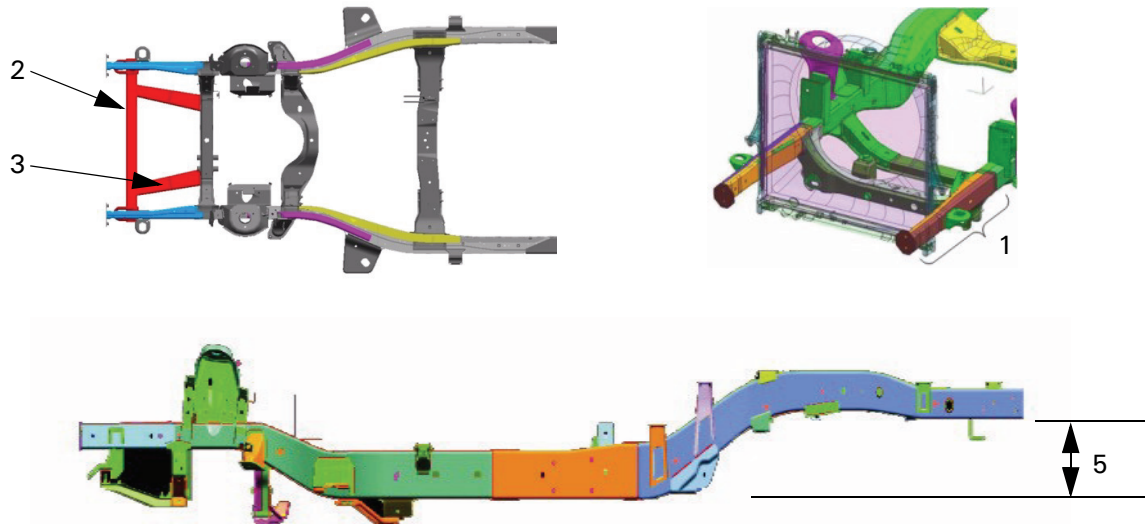


- Garage jack lifting point
- Safety stand lifting point

Frame

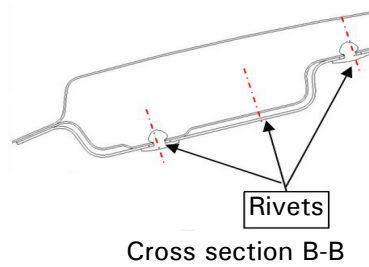
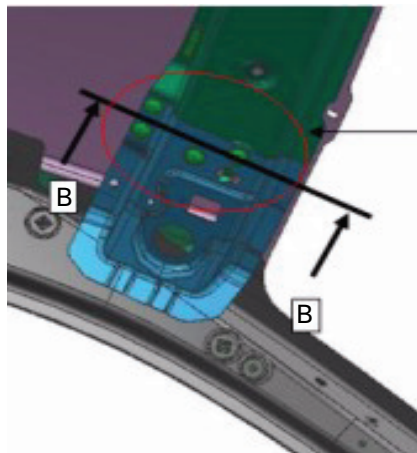
The following items have been changed to improve the impact performance:

1. 150mm expansion of the forward end.
2. Addition of the front cross members.
3. Addition of the front brace.
4. The wheel base has been extended.
5. the kick up has been increased by 29mm to obtain better ride comfort.

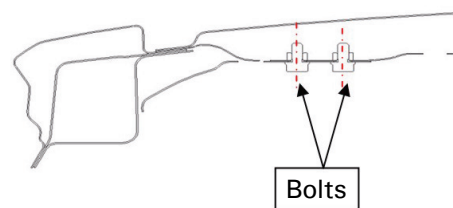


Roof Panel

The roof strength has been improved for collision safety. On the previous model, spot welding was used. In order to increase the strength, it has been changed to the rivet method.

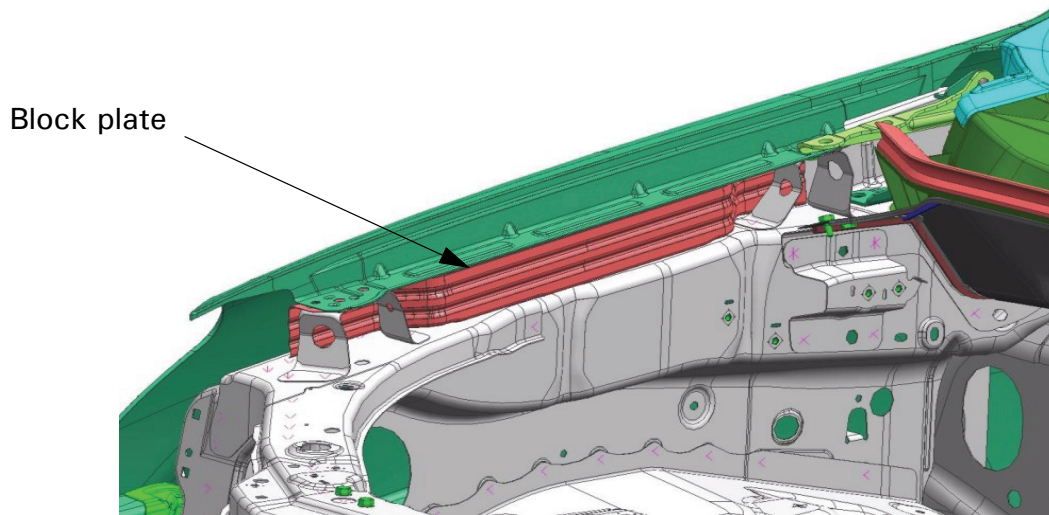


Bolts have been used to connect the roof bow with the body, which has increased the strength.



Block Plate

A block plate has been used between the right hand side fender and the fender reinforcing to prevent the mixing of hot air from the engine compartment with the cooler intake air.



Radiator grille

Depending on the vehicle model, the radiator grilles can be different.



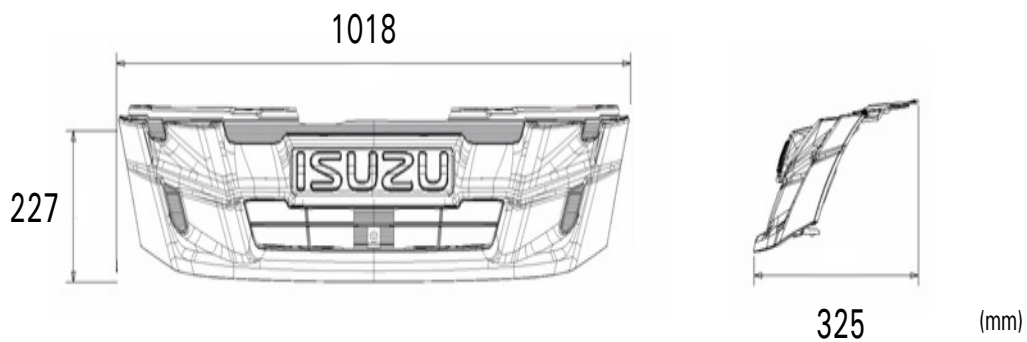
Material grey



Paint



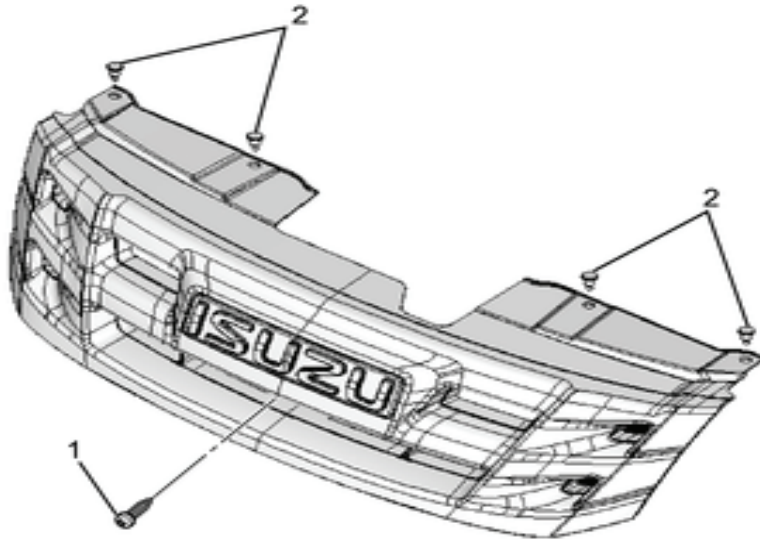
Chrome



Front bumper removal (All models)

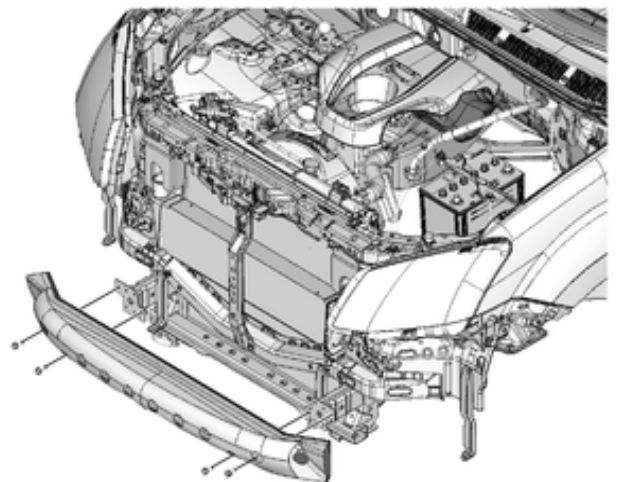
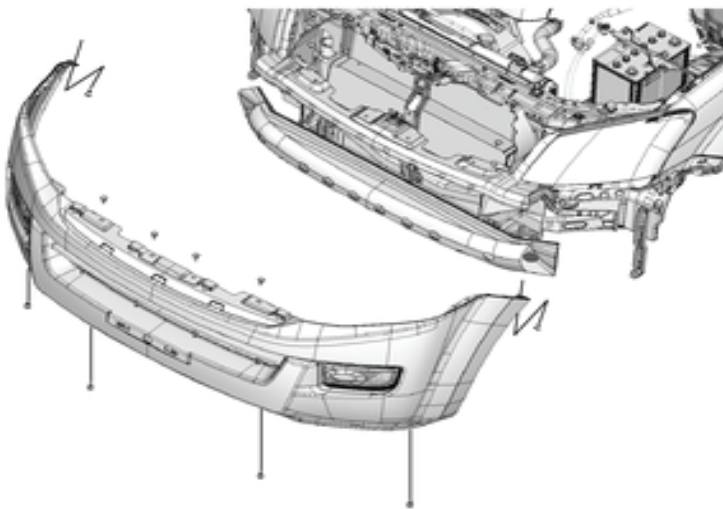
Remove the radiator grille from vehicle.

Remove the screws.
Remove the 4 clips.



1. screws
2. clips

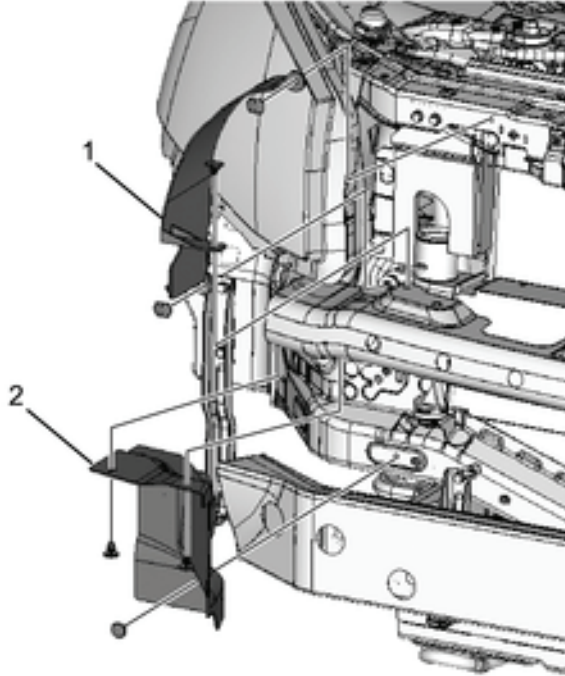
Remove the front bumper assembly from vehicle.
Remove the 10 clips.



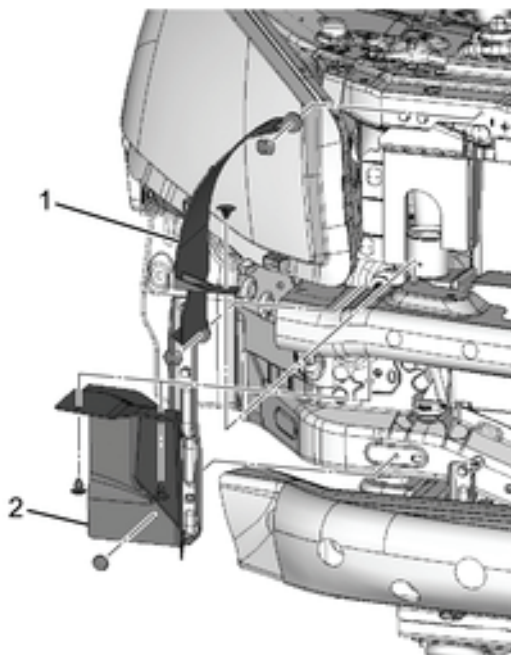
Front bumper impact bar assembly removal.

1. Remove the bumper seal from vehicle.

Remove the 6 clips on one side.

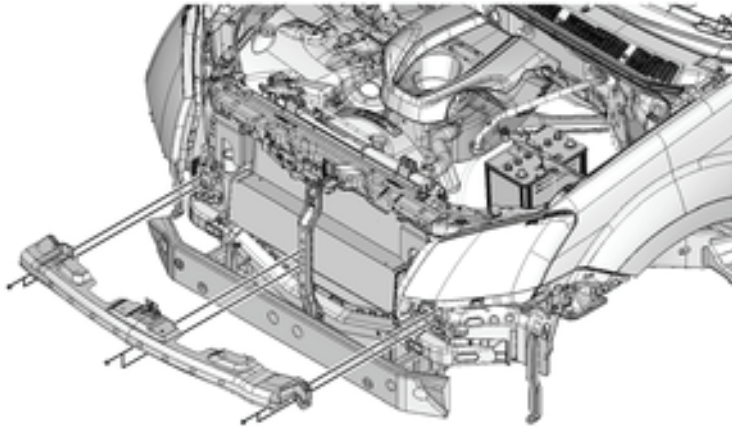


1	Upper bumper seal
2	Lower bumper seal

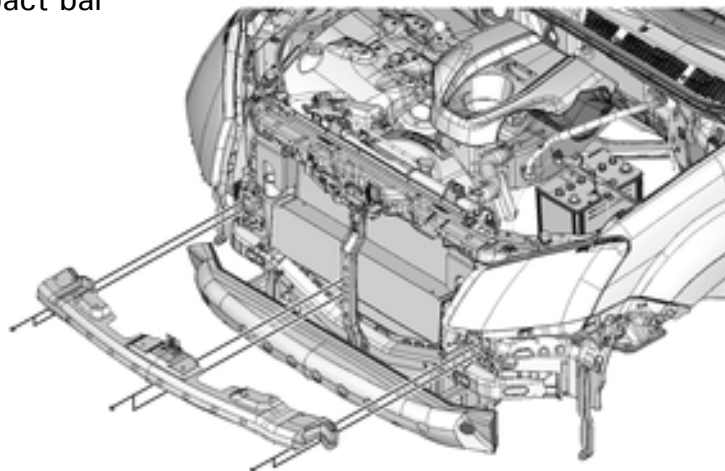


Remove the front bumper support from vehicle.

Remove the six nuts.



Remove the front bumper impact bar assembly from vehicle.



Remove the fixing bolts at the front of the under guard.
The following applies to vehicles with under air deflectors.

Rear step bumper removal

1. Remove the step pad from the reinforcement.

Note

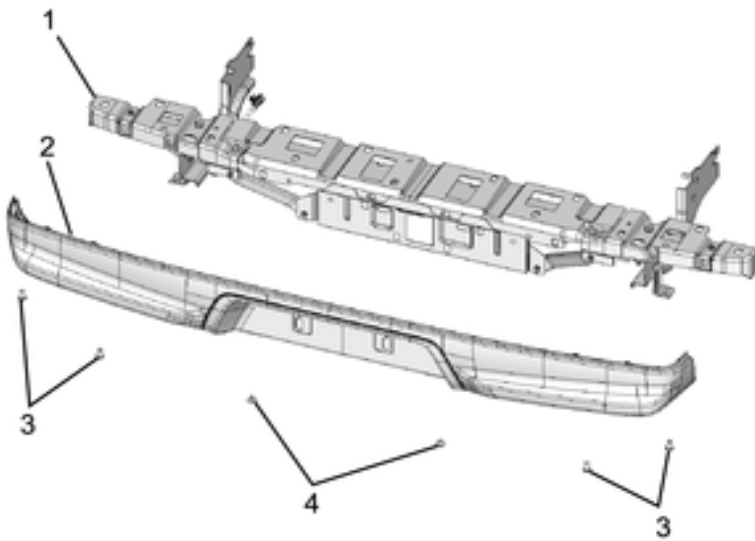
Push out the fixing part of the step pad from the rear side of the reinforcement.

2. Remove the shell from the reinforcement.

The following applies to the 2WD models

3. Remove the 6 clips.

Rear Bumper



1	Reinforcement
2	Shell
3	Clip, push-lock type
4	Clip

4. Remove the back bar from the reinforcement.

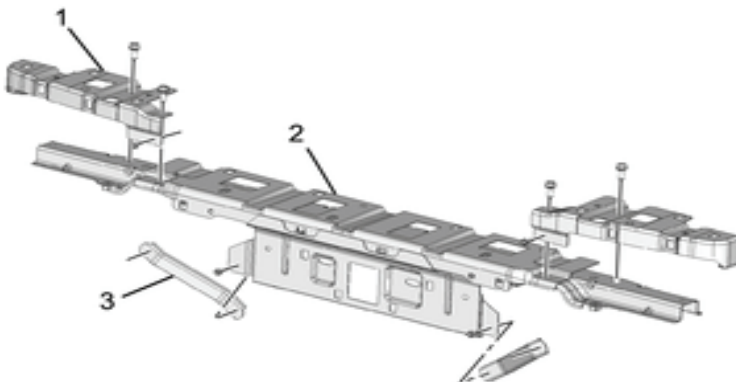
5. Disconnect the connector from the license plate light assembly.

6. Remove the license plate light assembly from the reinforcement.

7. Remove the extension harness from the reinforcement.

8. Disassemble the reinforcement.

Rear Bumper Reinforcement



1	Side bracket
2	Center bar
3	Support bracket

Tail gate removal

Note

The following applies to the center pull handle model.

1. Remove the hole cover from the tail gate.
2. Remove the outside handle from the tail gate.

Note

Disconnect the lock link and remove the 2 fixing bolts.

1. Remove the tail gate lock assembly from the tail gate.
2. Remove the tail gate link from the tail gate and the rear body.
3. Remove the tail gate from the rear body.
4. The tailgate removal work requires 2 workers.
5. Remove the tailgate hinge fixing bolt.
6. Remove the tail gate hinge from the tail gate.
7. Remove the tail gate lock striker from the rear body.

Note

The following applies to the side lock handle model

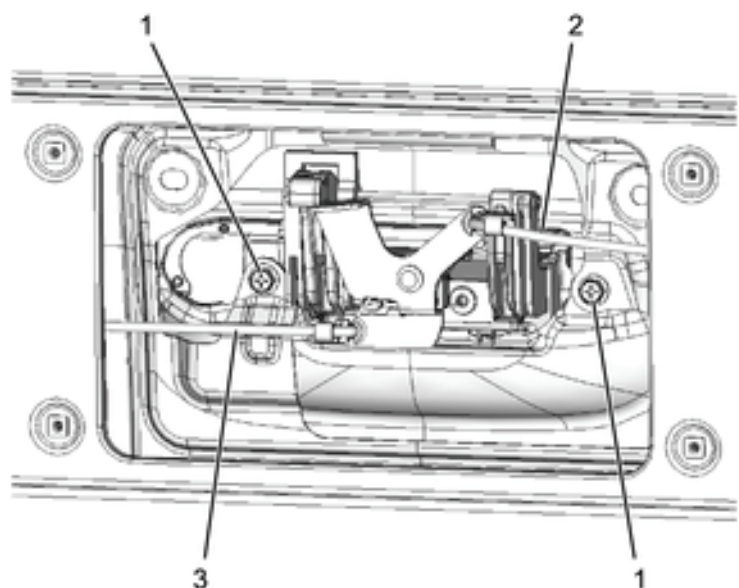
8. Remove the outside handle from the tail gate.

Note

Remove the bolt.

9. Remove the tail gate link from the tail gate and the rear body.
10. Remove the tail gate from the rear body.
11. Remove the tailgate hinge fixing bolt.
12. Remove the tail gate hinge from the tail gate.

1	Bolt
2	Lock link, left side
3	Lock link, right side



Rear body removal

1. Disconnect the battery ground cable from the battery.

2. Chassis harness disconnect.

Disconnect the chassis harness from the connector.

A. Disconnect the rear combination light.

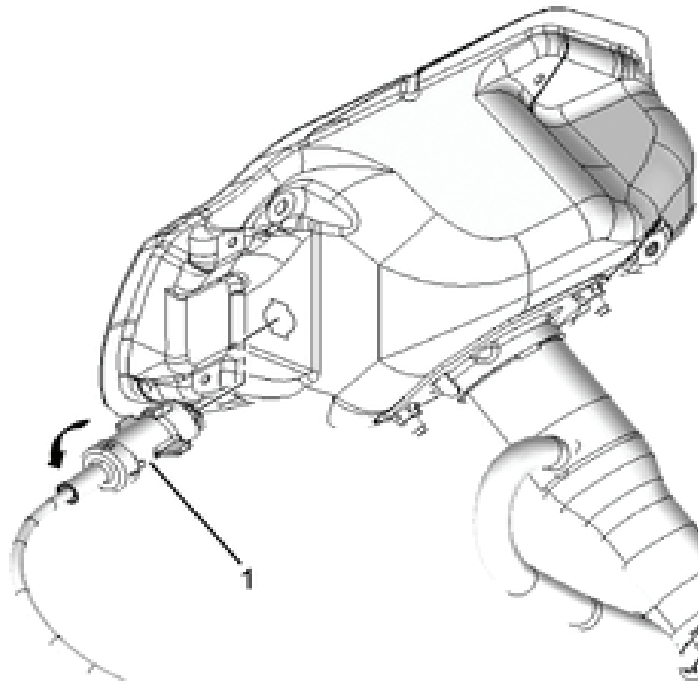
B. Disconnect the license light harness connector.

Fuel filler lid cable assembly disconnect

Disconnect the fuel filler lid cable assembly from the rear body.

Note:

Remove the fixing clip, and turn the cable holder counterclockwise by 90° to remove it from the rear body.



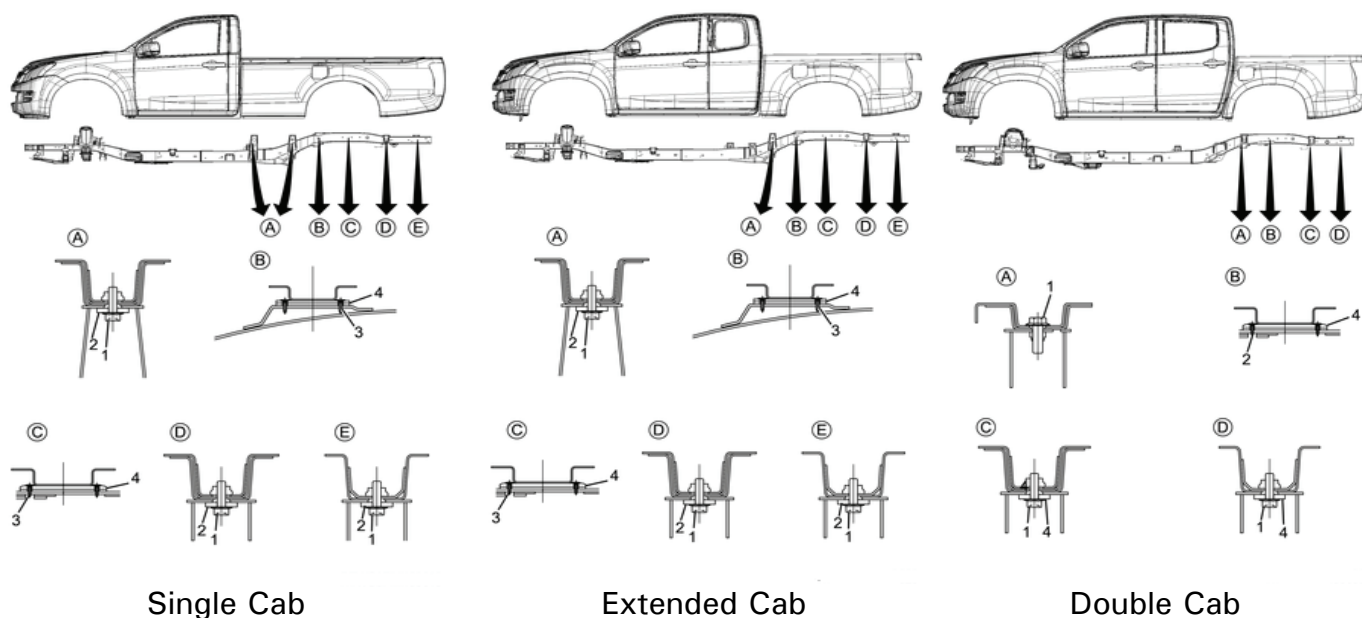
1: Cable holder.

A. Remove the filler neck from the rear body and the fuel filler hose.

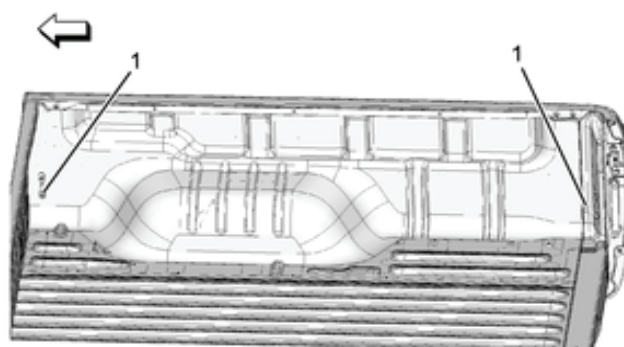
B. Disconnect the evaporator hose from the filler neck.

Rear body assembly removal

Remove the bolt from the rear body and the frame.
 Remove the clip from the rear body and the frame.
 Remove rear body assembly from the frame.



1	Bolt	3	Clip
2	Washer	4	Cushion



Note:
 Install the hoisting wire to the hook of the rear body and hoist the rear body.

Caution:
 When hoisting the rear body, be careful not to hit the cab body.

Powertrain

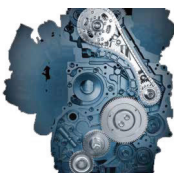
The Isuzu D-MAX comes from a lineage of the world's toughest, most reliable workhorses. Almost a century of truck-manufacturing DNA has gone into the Isuzu D-MAX. A brand new truck-tough chassis means even better balance and performance whether loaded or not, delivering superior stability and road holding in all conditions



Advanced anti-friction melt-in liner technology eliminates the need for cylinder liners



Independent double wishbone and gas shock absorber front suspension. Over slung rear springs for improved off-road operation



Lifetime stainless steel timing chain (not poly belt)



Common rail hyper-pressure fuel injection



Optimised automatic and manual transmissions with equal maximum torque output



Larger sized intercooler means a greater thermo-cooling capacity

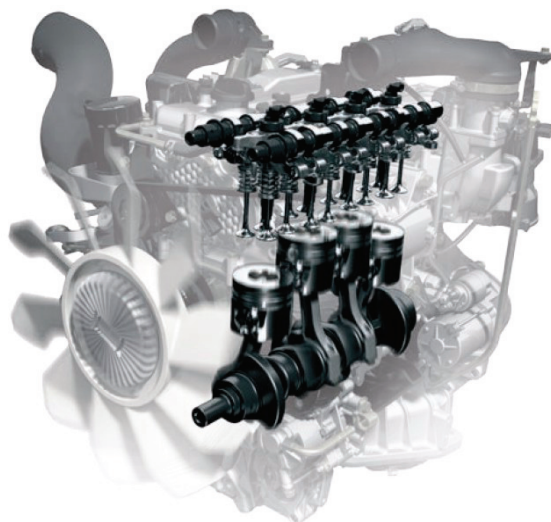


Sophisticated engine head; cam-to-valve roller bearings and variable swirl action gas flow

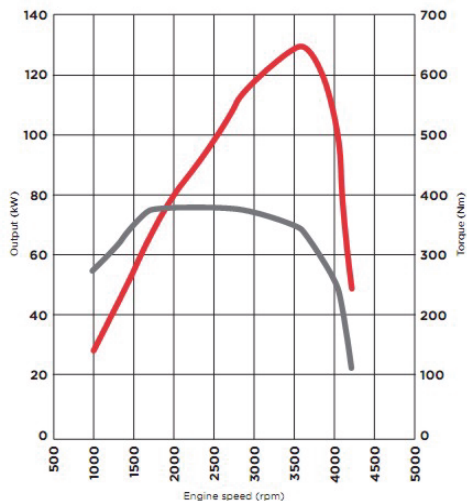


A stronger, durable yet lighter ladder chassis design

Engines

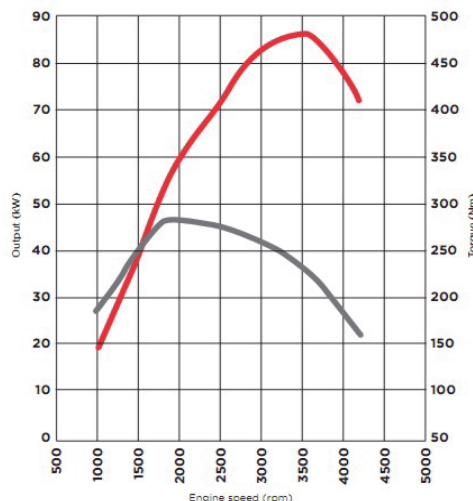


KB 300 D-TEQ



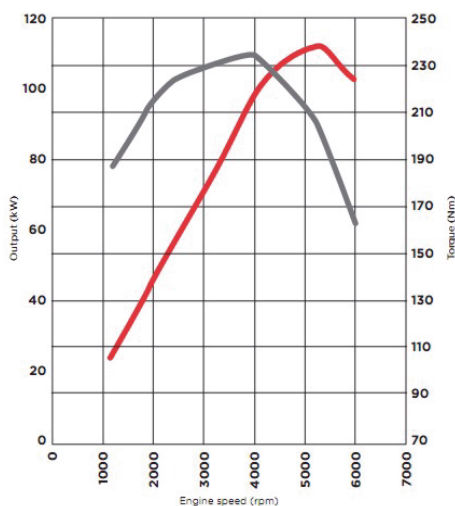
Maximum power = 130kW @ 3600 rpm
 Maximum torque = 380Nm @ 1800 - 2800 rpm

KB 250 D-TEQ



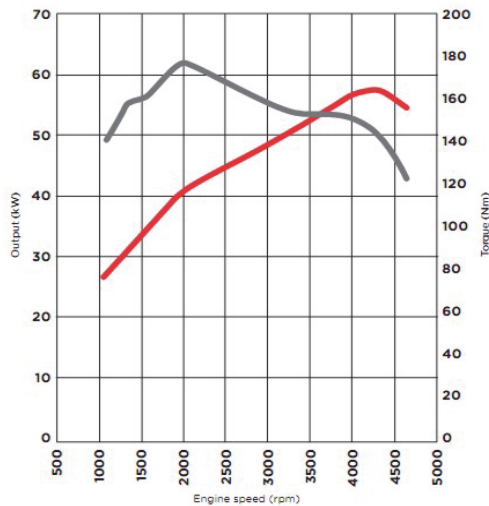
Maximum power = 85kW @ 3600 rpm
 Maximum torque = 280Nm @ 1800 rpm

KB 240 DOHC 16v



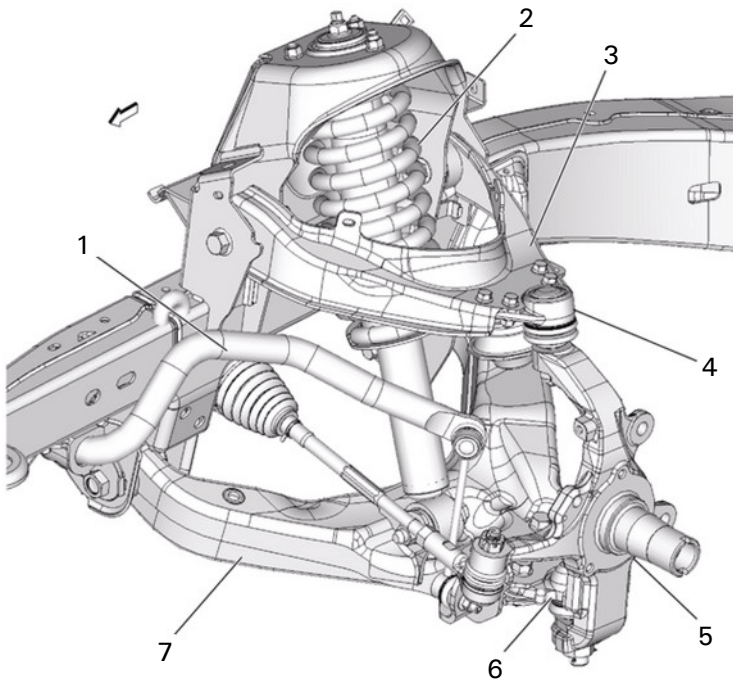
Maximum power = 112kW @ 5200 rpm
 Maximum torque = 234Nm @ 4000 rpm

KB 250 (LEED)



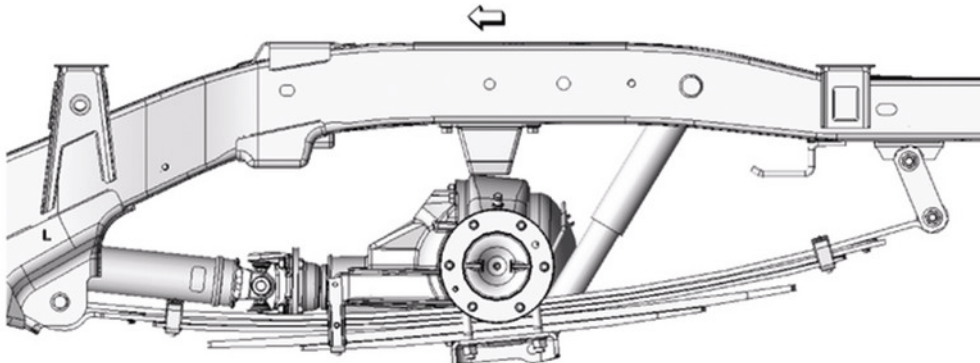
Maximum power = 58kW @ 3800 rpm
 Maximum torque = 176Nm @ 1800 rpm

Front suspension

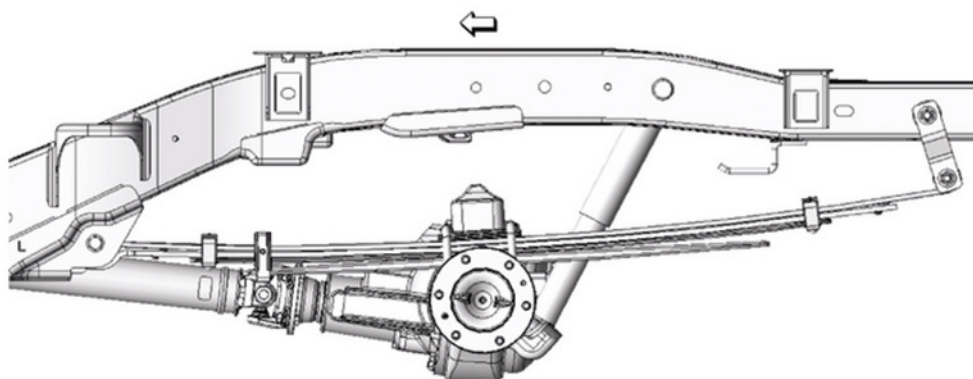


1	Stabilizer bar
2	Shock absorber
3	Upper control arm
4	Upper ball joint
5	Knuckle
6	Lower ball joint
7	Lower control arm

Rear suspension (low ride)



Rear suspension (high ride)

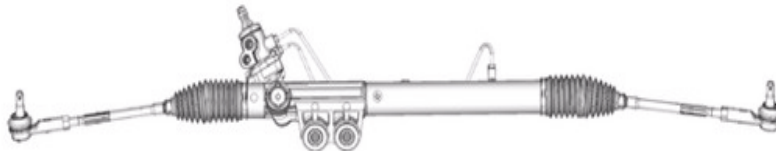


Power steering

The oil pressure power steering system consists of a pump, oil reservoir, steering unit, pressure hose and return hose.

The power steering unit is a rack and pinion type.

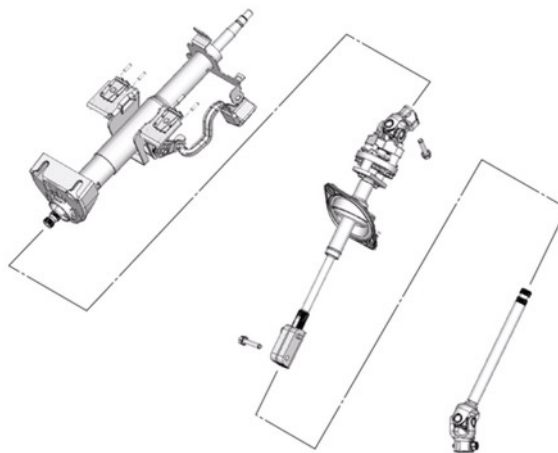
To adjust the toe-in angle, turn the rod located on each side. The steering housing cannot be disassembled.



The steering column has 3 more important functions in addition to the steering function.

1. The column is designed to absorb energy to reduce the impact of the front-end collision, so that the risk of driver injury can be minimized.
2. The ignition switch and the lock are properly installed on the column.
3. By installing the lock onto the column, locking of the ignition and steering is possible for the prevention of vehicle theft.

The column can be disassembled and reassembled. Further, to guarantee energy absorbing operation, use the specified screw bolts and nuts, and tighten them to the specified torque. When removing the column from the vehicle, be careful when handling it. The fastener maintaining the column rigidity may be sheared or loosened if the tip of the steering shaft or shift lever is hit hard or the assembly is dropped.

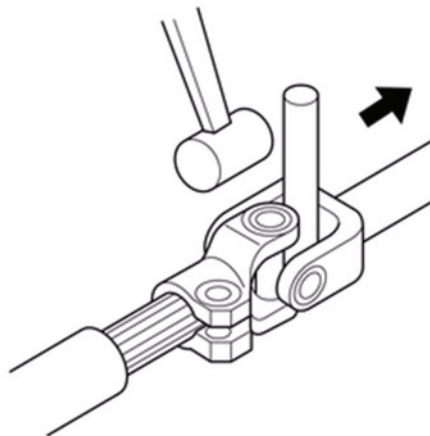


Removal of the universal joint section

When removing the steering shaft and the universal joint section, take note of the following cautions.

Caution

- If the slit is forcibly opened using a screwdriver or chisel, the joint may be deformed, causing an uncomfortable feeling in the handle operation. Therefore, do not forcibly open the slit to prevent the shaft from being damaged when removing the universal joint.
- If it is difficult to remove the universal joint due to rust, etc., insert a metal rod in the gaps of the joint as shown in the diagram, and remove the universal joint by gently tapping it in the shaft direction.



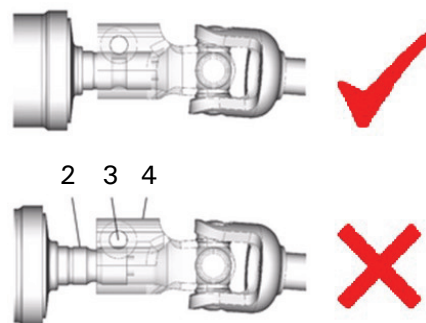
Installation of the universal joint

When installing the steering shaft and the universal joint section, take note of the following cautions.

Caution

- Align the position where the universal joint installation bolt crosses the groove sections of the steering unit shaft with the position of the bolt hole of the universal joint, insert the key bolt while keeping the state, and temporarily tighten it manually.
- Make sure to align the position before inserting the key bolt into the bolt hole.
- If significant rust, flaws or damage are found on the key bolt or the spring washer, replace them with new ones.
- Make sure to visually confirm that the serrated part towards the back side cannot be seen as shown in the diagram after tightening the key bolt to the specified torque.

1	Key bolt
2	Serrated axle
3	Key bolt hole
4	Yoke



Isuzu KB lighting

Polycarbonate headlamp covers have a higher resistance to shattering on impact and less of a tendency to cause severe lacerations generally associated with glass covers.

All new Isuzu comes equipped with LED brake lights and projector lens headlamps.

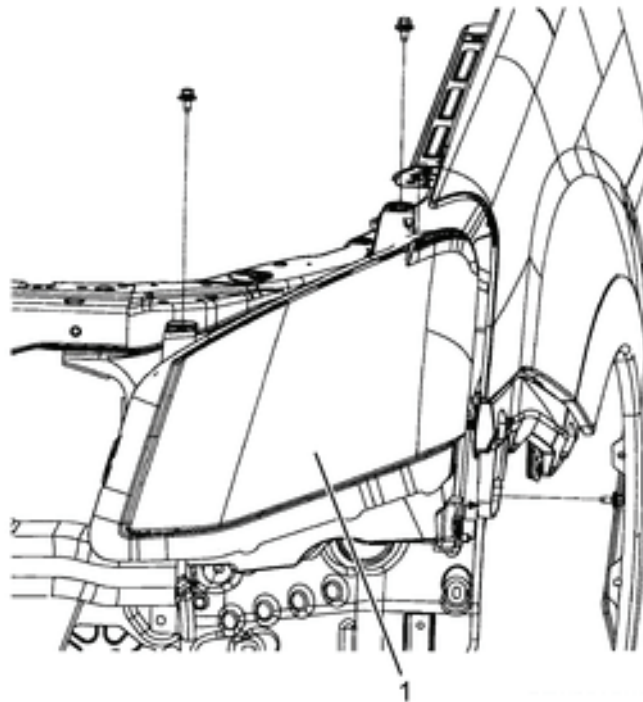
The rear of the new Isuzu KB is defined by bold new lamp clusters for bright and clear rear-end lighting.

Headlight assembly removal

1. Remove the front bumper assembly from vehicle.
2. Remove the headlight assembly from vehicle.

Remove the 4 screws.

Remove the harness connector from the headlight assembly.

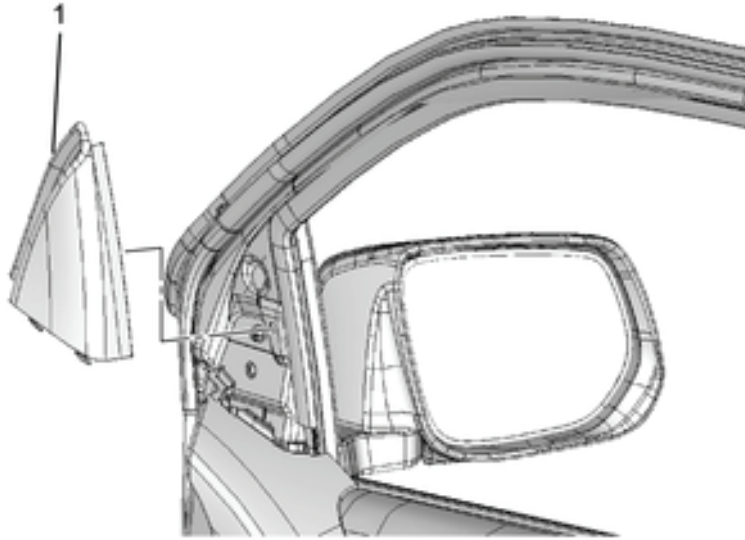


Headlight Assembly

Door mirror removal

Remove the door mirror cover from the front door.

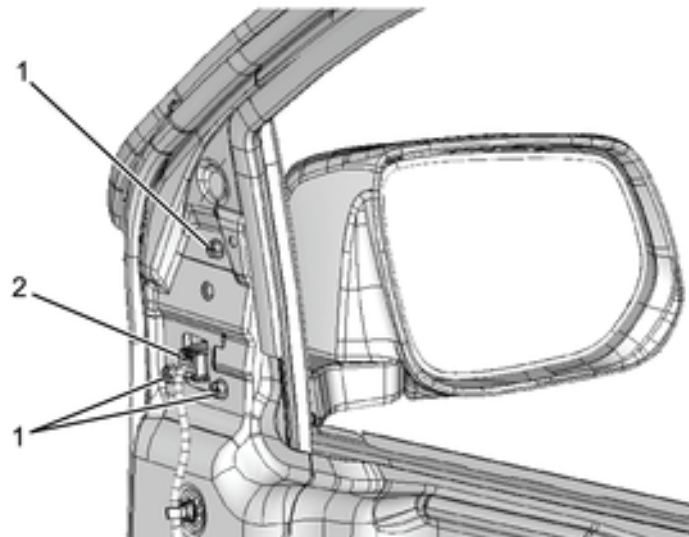
Pull out the clip, and remove the cover in the upward direction.



1. Door mirror cover

Door mirror assembly removal

Remove the 3 fixing bolts, and disconnect the connector.



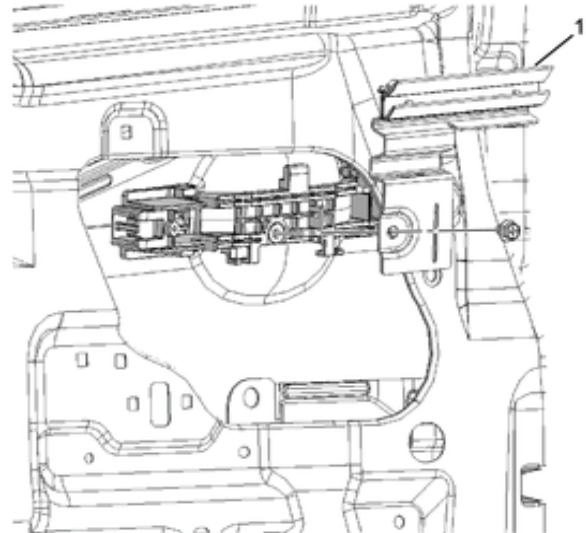
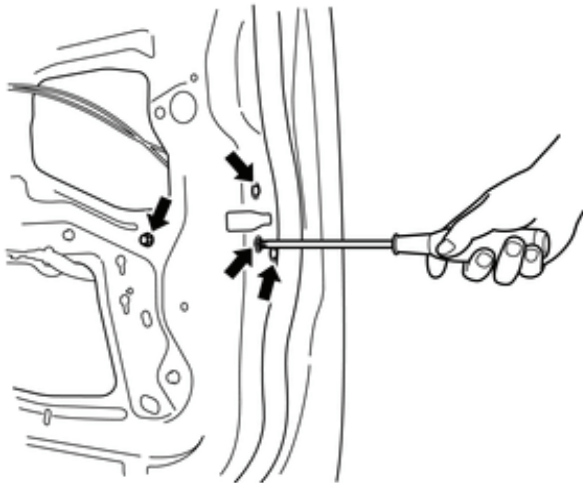
1. Bolt
2. Connector

Door lock assembly removal

Remove the 3 fixing screws and the bolt.

Disconnect the linkage between the outside handle and the key cylinder.

Disconnect the harness connector.



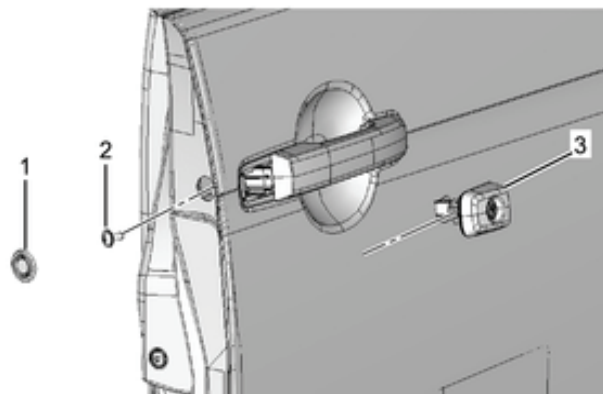
Remove outside handle shield from the outside handle.

Remove the fixing bolts.

Outside handle shield

Remove the key cylinder from the outside handle.

Remove the cover and remove the fixing screw.



1	Cover
2	Screw
3	Key cylinder

Supplementary Restraint System (SRS) precautions

Warning

- **When conducting maintenance of parts and harnesses including their peripherals, temporarily stop the SRS to prevent injury due to deployment of the SRS airbag or an unnecessary repair of the SRS airbag.**

Note

- SRS control unit
- Driver airbag and passenger airbag
- Side airbag and curtain airbag
- Seat belt with pretensioner
- Front airbag sensor
- Side airbag sensor
- Door side airbag sensor

First, set the ignition switch to the LOCK position. Next, disconnect the battery or remove the SRS fuse. Do not perform any operations for at least 15 seconds after that because of a possibility that the SRS airbag may be deployed. In the maintenance procedure, it is necessary to remove the SRS fuse and disconnect the SRS airbag from the deployment circuit in order to prevent SRS parts from unnecessarily deploying.

Warning

- **When performing maintenance of the SRS, do not use electrical testers.**

When an SRS system part is damaged, it must be replaced. If the installation location for SRS parts is damaged, it must be also replaced. Never use system parts of other vehicles. Any SRS system part should not be disassembled or repaired. Replace these parts with new ones.

Note

- **Confirm the part numbers for the SRS parts to be used as replacements to confirm they are legitimate products.**

Warning

- **Make sure to confirm the part numbers and use the SRS parts dedicated for the target vehicle in order to prevent use of the SRS parts for other vehicles or models.**

Caution

- After repairing or replacing parts damaged in the collision, it is necessary to inspect the SRS airbag and steering column in order for the SRS airbag to operate properly.
- If the SRS control unit mounting bracket is visibly damaged, replace it with a new one.
- It is necessary to inspect the dimensions of the steering column regardless of whether the SRS airbag has been deployed in the collision.

Replacement and inspection of parts after a collision accompanied by deployment:
It is necessary to replace the SRS airbag assembly, SRS control unit, and every sensor after a collision accompanied by airbag deployment. It is necessary to inspect the SRS coil assembly for damage. Inspect the SRS coil assembly harness and connector for burns, melting, or damage caused by excessive heat. If the SRS coil assembly is damaged, replace the SRS coil assembly.

Inspection of parts after a collision not accompanied by deployment:
After the collision, it is necessary to inspect this system and certain parts of the restraint system even if the SRS airbag has not been deployed. Parts that should be inspected include the steering column, steering support bracket, instrument panel bracket, seat belt installation locations and, every sensor. For each part, inspect for installation condition, distortion, bent, cracks, or other damages.

Replacement guideline for SRS control unit and airbag sensor:
After a collision accompanied by SRS airbag deployment, the SRS control unit and the airbag sensor must be replaced. Conduct Diagnostic system check SRS controls in case of SRS airbag warning light failure.

Note

- **If the SRS function is normal, the SRS airbag warning light flashes 7 times before turning OFF.**

Damaged harness:

If the SRS harness is damaged, it is necessary to replace the SRS harness.

Damaged lead wire of the SRS parts:

If the lead wires of parts, such as the combination switch assembly, seat belt with pretensioner, etc. including the SRS airbag and the SRS coil assembly are damaged, replace all parts.

Caution

- **Do not expose the SRS airbag to a temperature exceeding 85 °C.**
- **Do not use an SRS airbag, SRS control unit, or airbag sensor if it was dropped for some reason.**
- **When the connectors for parts related to the SRS airbag, SRS control unit, or airbag sensor have been removed for repair, etc., verify that they fully fit upon reassembly.**
- **When replacing the SRS control unit, make sure to check that there is no dust or other foreign materials on the installation surface of the SRS control unit, and install the SRS control unit onto the installation surface properly.**
- **When installing the SRS airbag parts, make sure to tighten them to the specified torque.**
- **If the system is accidentally energized, an unnecessary DTC will be set to the SRS control unit. Therefore, do not energize the system unless all system parts are connected or there is a request from the diagnosis chart.**
- **Never conduct a circuit diagnosis using an unspecified tester.**

Function, structure, operation of restraint system

SRS airbag system

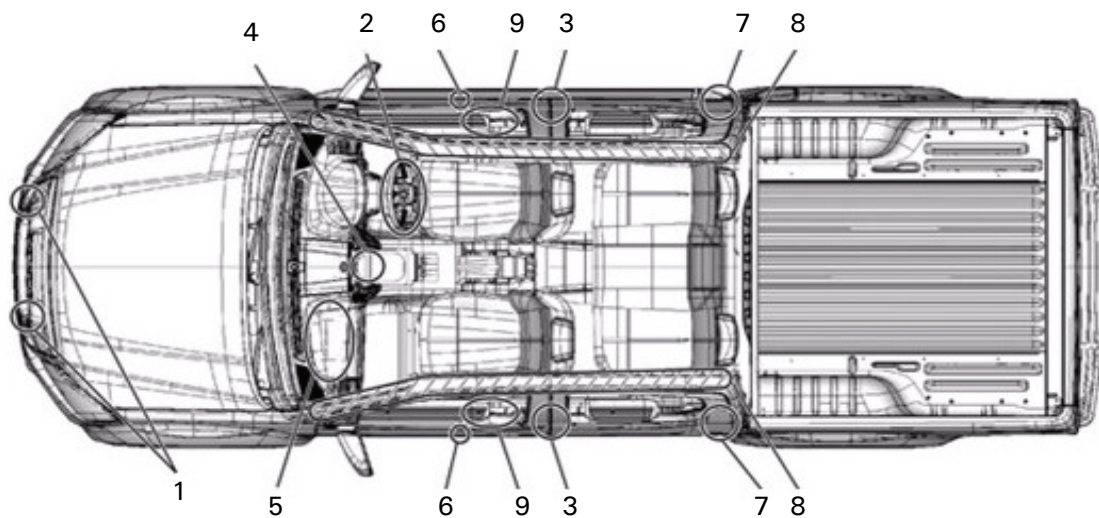
The SRS airbag system consists of the following parts to form a deployment circuit. Front airbag sensors are installed in the vehicle. Also, a G sensor is also built into the SRS control unit. When both the front airbag sensors and the G sensor in the ECU detect a frontal collision, the SRS airbag and the pretensioner are activated to protect the passenger. In vehicles that are equipped with a vehicle-speed-sensitive door lock, the SRS activation signal is sent to the BCM (body control module) to release all the door locks in a collision accompanied by airbag activation.

When the SRS control unit detects a malfunction in the SRS system, it illuminates the SRS airbag warning light in the instrument panel cluster.

Models with side airbags and curtain airbags in addition to the above system provide safety in side collisions.

Note

- The illustration shows a crew cab model. The component locations of standard cab and extend cab models have the same layout.
- Standard cab models are not equipped with side airbag sensors.



1	Front airbag sensor	6	Door side airbag sensor
2	Driver airbag	7	Side airbag sensor (Except standard cab model)
3	Seat belt with pretensioner		
4	SRS control unit	8	Curtain airbag
5	Passenger airbag	9	Side airbag

SRS airbag deployment

In case of a frontal collision, the driver airbag and the passenger airbag are deployed, and the driver side and passenger side seat belts with pretensioner are activated.

SRS airbag deployment (Model with side airbag and curtain airbag)

In the event of a side collision, the curtain airbag and side airbag of the collision side are deployed, and the driver side and passenger side seat belts with pretensioner are activated.

SRS control unit

The SRS control unit has the following features:

Energy backup

- The SRS control unit stores the energy required for deploying the airbag when the ignition voltage is lost by a collision.

Collision detection

- The SRS control unit monitors impacts and detects collisions that require deployment of the airbag.

SRS airbag deployment

- Upon detecting a collision greater than a certain level, the SRS control unit sends to the SRS airbag assembly the current enough to deploy the SRS airbag.

Functional failure detection

- The SRS control unit diagnoses electrical parts in this system and sets a DTC when it detects a functional failure.

Functional failure diagnosis

- The SRS control unit displays the DTC and system operation status using the scan tool.

Warning to the driver

- The SRS control unit warns the driver of the functional failure in this system by illuminating the SRS airbag warning light.

**SRS airbag warning light**

When the ignition switch is turned ON for the first time, the SRS airbag warning light flashes 7 times to verify the operation of the SRS airbag warning light and the SRS control unit.

The driver is warned of functional failures in the electrical system if the warning light stays on or does not come on at all. Such functional failures may cause undeployment of the airbag or unnecessary deployment of the airbag during a collision.

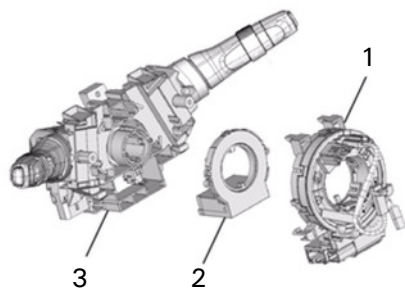


SRS coil assembly

The SRS coil assembly is installed to the steering column and allows the steering wheel to rotate while maintaining continuous conductivity between the activation circuit and SRS airbag.

There is a shorting clip located at the connection of the SRS harness connector for the combination switch.

When the yellow connector is removed, the shorting clip shorts the SRS airbag. Shorting the SRS airbag circuit prevents unnecessary activation of the SRS airbag when performing maintenance of the steering column or other SRS parts.



1	SRS coil assembly
2	Steering angle sensor
3	Combination switch

Note

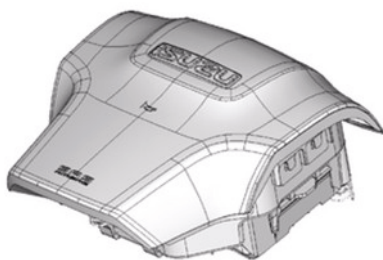
- The steering angle sensor is available only for vehicles with ESC.

SRS airbag assembly

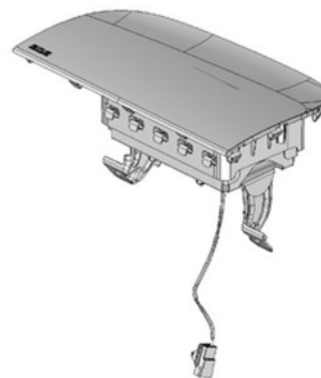
The SRS airbag assembly consists of an airbag and an inflator. The SRS control unit sends a current to the deployment circuit when a frontal collision with an impact larger than a certain level occurs. The current flowing in the inflator ignites the gas generating agent in the airbag.

The gas generated from this reaction rapidly expands the airbag. The airbag connector is equipped with a shorting clip. When the airbag connector is removed, the shorting clip shorts the airbag circuit.

The circuit to the airbag is shorted in such a way that unnecessary deployment of the airbag is prevented when conducting maintenance of the airbag assembly, steering column, or other system parts.



Airbag assembly (Driver side)

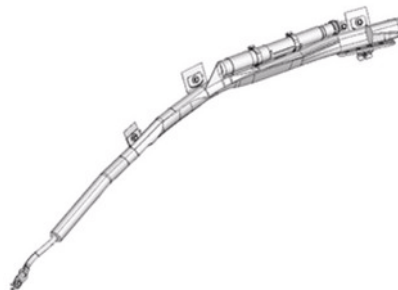


Airbag assembly (Passenger side)

Models with side airbags and curtain airbags in addition to the above provide safety in side collisions. The SRS control unit sends a current to the deployment circuit when a side collision with an impact larger than a certain level occurs.



Side airbag



Curtain airbag

Seat belt with pretensioner

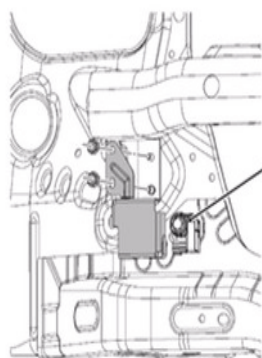
The seat belt with pretensioner consists of the seat belt and the gas generator section.

The SRS control unit drives the deployment circuit when it receives an impact larger than a certain level in a collision. The gas generator section of the seat belt with pretensioner is then ignited. Gas generated by this ignition retracts loose areas of the seat belt with pretensioner and firmly restrains the driver's upper body.



Front airbag sensor

The front airbag sensors are installed inside the front bumper. The sensors are installed in the positions indicated in the illustration, each one on the right and left sides. They detect frontal collisions and send signals to the SRS control unit.



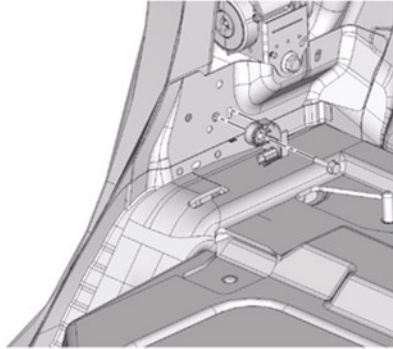
Front airbag sensor (right side)

Side airbag sensor

The side airbag sensors are installed inside the rear pillar trim. The sensors are installed in the positions indicated in the illustration, one each on the right and left sides. They detect side collisions and send signals to the SRS control unit.

Note

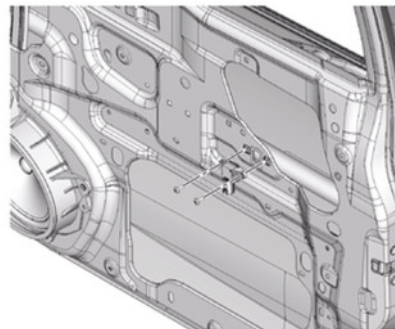
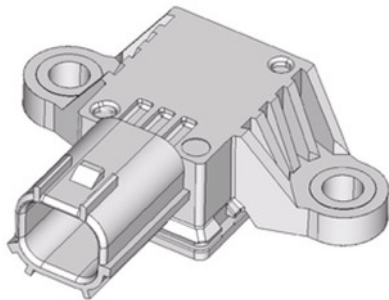
- Standard cab models are not equipped with side airbag sensors.



Side airbag sensor mounting position

Door side airbag sensor

The door side airbag sensors are installed inside the front doors. The sensors are installed in the positions indicated in the illustration, one each on the right and left sides. They detect side collisions near the door and send signals to the SRS control unit.



Door side airbag sensor mounting position

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