Chapter Ⅴ

Body and Accessories

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Section 1 Removal and Installation of Accessories

Ⅰ Door and Door Lock

1. Specification

Specifications of Tightening Torque

Specification	Description
36±4	Connection between upper hinge of left/right front door and body
36±4	Connection between upper hinge of left/right front door and door
36±4	Connection between lower hinge of left/right front door and body
36±4	Connection between lower hinge of left/right front door and door
36±4	Connection between upper hinge of left/right rear door and body
36±4	Connection between upper hinge of left/right rear door and door
36±4	Connection between lower hinge of left/right rear door and body
36±4	Connection between lower hinge of left/right rear door and door
36±4	Connection between upper hinge of back door and body
50±5	Connection between upper hinge of back door and door
35±3	Connection between lower hinge of back door and body
50±5	Connection between lower hinge of back door and door
23±2	Connection between left hinge of engine hood and body
23±2	Connection between left hinge of engine hood and engine hood
23±2	Connection between right hinge of engine hood and body
23±2	Connection between right hinge of engine hood and engine hood
l0±l	Connection between rear mounting bracket of front fender and body
l0±l	Connection between left/right front fender and body
l0±l	Connection between water tank crossmember assy. and body

2. Engine Hood

Removal and Installation of Engine Hood

1) Loosen 4 fixing bolts for the hinge, and lift the engine hood.
2) Remove the engine hood.
3) Install in the reversed sequence.

Tightening Torque for cconnection between engine hood and its hinge: 23±2Nm

Part No.: Ql400820 (2 pcs)

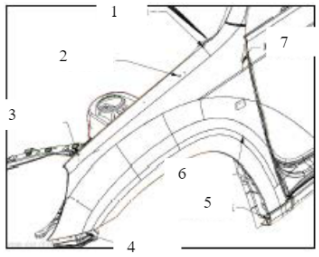


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3. Removal and Installation of Hinge

1) Removal of fender

The fender is fixed by 7 bolts in tightening torque of 10Nm at the mounting places as shown in the figure.



2) Loosen 2 fixing bolts and remove the hinge.



3) The gap between engine hood and the body can be adjusted by the rubber pad at both sides of the engine hood.

4) Install in the reversed sequence.

Tightening Torque for connection between engine hood and the body: 23±2

Part No.: Q1400820 (2 pcs)



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4. Removal and Installation of Doors

Right Front Door

1) Dismantle the fixing bolts for the hinge of front door.
2) Dismantle the fixing bolts of door stopper.
3) Remove the front door.

   Please refer to the removal procedure of right front door for the disassembly of the other doors except the back door.
4) Install in the reversed sequence.

   Tightening torque for connection between left/right front door hinge and body: 36±4

   Part No: T11-6101001 (4 pcs)

   Tightening torque for connection between left/right front door hinge and door: 36±4

   Part No.: T11-6101001 (4 pcs)

   Tightening torque for connection between left/right door stopper and body: 11Nm

   Part No: Q1840616 (2 pcs)



5. Removal and Installation of Back Door

1) Dismantle two fixing bolts connecting back door and hinge.



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2) Unplug the wiring harness of back door from the wiring harness of the body.

3) Dismantle two fixing bolts of rear door stopper on body.

4) Remove the wiring harness of back door together with back door.

5) Install in the reversed sequence.

Tightening torque for connection between hinge and body: 36±4Nm

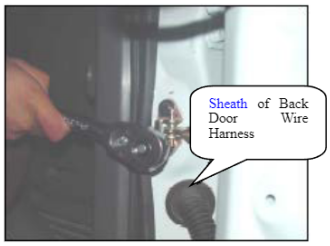
Part No.: T11-6301013 (4 pcs)

Tightening torque for connection between hinge and door: 50±5Nm

Part No.: T11-6301011 (4 pcs)

Tightening torque for connection between back door stopper bracket and the body: 27Nm

Part No.: Q1840816 (2 pcs)



6. Removal and Installation of Lock

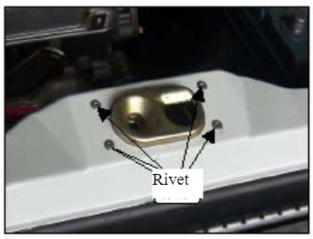
Lock of Engine Hood

1) Dismantle the upper part of the lock of engine hood.



2) Dismantle the lower part of the lock.

Note: The lower part of the lock is riveted, and normally no need to be dismantled. Rivet may be damaged during dismantling.

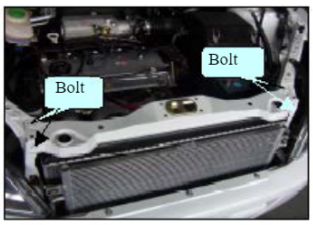


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3) Remove the cable for the lock of engine hood.

   a. Dismantle the beam assembly above the water tank firstly.

   b. Loosen the pull lock of engine hood.



4) Install in the reversed sequence.



Tightening torque for connection between upper part of the lock for engine hood and the body: 11Nm

Part No.: Q1420616 (4 pcs)

Tightening torque for connection between beam assembly above water tank links and the body: 10 Nm

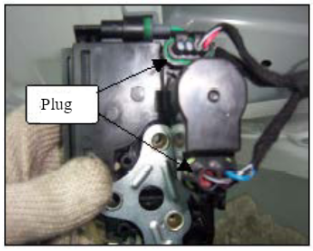
Part No.: Q1420616 (4 pcs)

Lock of back door

1) Dismantle the lock body.

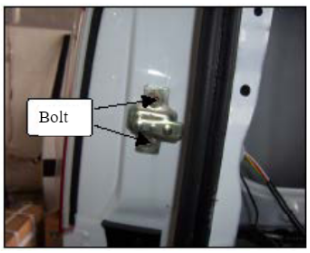


2) Pull out the plug for wiring harness.



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3) Dismantle the lock buckle.



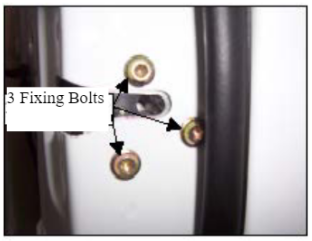
4) Install in the reversed sequence.

Tightening torque for connection between rear door lock and the body: 15Nm
B11-6105011 (3 pcs)

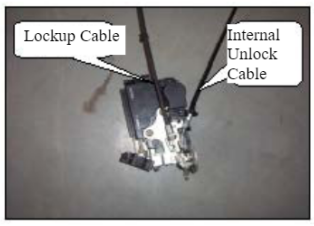
Tightening torque for connection between the lock buckle of rear door and the body: 12±2Nm
B11-6105011 (3 pcs)

Lock of 4 doors

1) Dismantle the lock for the right front door.



2) Remove the internal unlock cable and lock up the lockup cable.



3) Dismantle the lock buckle with screwdriver.

4) Install in the reversed sequence.



Tightening torque for connection between lock assembly and the door: 9±1Nm
B11-6105011 (3 pcs)

Tightening torque for connection between lock buckle and the body: 12±2Nm
Q2580830 (3 pcs)

Note: Please refer to the removal procedure of right front door for the disassembly of the rest three doors.

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7. Door Adjustment

Left/Right Back Door

Have the door gap well adjusted with spacer gauge (adjust the gap between back door and triangle window to be 8±1. 5mm, 6±1mm at side fender, and 6±1mm at doorsill, levelness 0-0.5mm as shown by the arrow) and leveled with magnet, then place the nut (Q32008, 2 pcs both upper and down) into the socket of pneumatic wrench and tighten up, torque: 35±3Nm.

Check-up:

(1) Any scratch from the assembly; whether the bolts and nuts are well assembled, and any slip in the thread and so on.

(2) Whether the gap between back door and side fender and the levelness are within the specification, and the edge of back door shall be 0~0.5mm higher than the side fender.

Left/Right Front Door

Have the door gap well adjusted with spacer gauge (the gap of upper section between front door and back door shall be 5.5±0.7mm; 5.5±0.7mm at outside board, 6.5±1mm between front door and pole A, and 6±1mm between front/back door and doorsill, levelness 0-0.5mm as shown by the arrow) and leveled with magnet, then screw the bolt (PART NO:: T11-6101103, 2 pcs both upper and down) into the body for 2~3 turns, finally tighten up with pneumatic wrench, torque: 35±3Nm.

Check-up:

(1) Any scratch from the assembly; whether the bolts and nuts are well assembled,any slip in the thread and so on.

(2) Whether the gap between front door and back door and levelness are within the specification, and the edge height shall be 0~0.5mm.

Rear door

Assemble the rear door and have the levelness and gap between the rear fender and side fender well adjusted to the specification of levelness 0~0.5mm, 5.8±1mm between rear door and the upper part of side fender, 6.4±1mm at the middle part of side fender, and 6.2±1mm at the tail lamp (as shown by the arrow) have the levelness and gap between rear and head cover well adjusted to the specification of 9. 3±1. 5mm; Check the gap between rear door and side fender as well as head cover with the same specification of above, then tighten up the bolts (PART NO:: T11-6301011, 2 pcs both upper and down) by pneumatic gun (the torque between rear cover and hinge, body shall be 50 Nm±3Nm).

Check-up:

Torque check-up: Check the torque at the rear door by torque wrench to be 50+3Nm.

Engine hood

Assemble the engine hood: Have the levelness and gap between engine hood and the fender well adjusted to the specification of 5±0.5mm, levelness 0~0.5mm; Tighten up the bolts (Q1400820, 2 pcs both left and right) by pneumatic bent wrench to fix the engine hood to the hinge (torque 30±4Nm).

Check-up:

(1) Check the matching between engine hood and the fender, and the horizontal aligness with the front end of the fender (0~0.5mm).

(2) Check the matching of 4 doors, front fender and rear door with specification, whether there is any slip thread in the nut and bolt.

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Ⅱ Interior

1. Dismantle CD Assembly

1) Lift one end of the decorative cover of cover panel by flat screwdriver, and remove the decorative cover.



2) Dismantle the fixing nut from the CD player by socket wrench.
3) Unplug the plug for wiring harness.
4) Install in the reversed sequence.

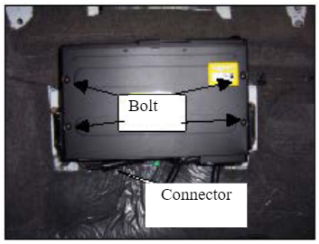
Tightening toqure for CD Player fixing nut: 9±3Nm

Part No.: Q17480612 (4 pcs)



2. Dismantle 6-disc Storage Device

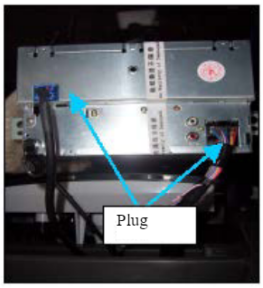
1) Dismantle the 4 fixing bolts on the mounting bracket of front passenger.



2) Unplug the plug for wiring harness.
3) Remove the strorage device..

Tightening torque for the stroage device bolt: 9±3Nm

Part No.: Q1460616 (4 pcs)



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3. Dismantle Control Panel of Air Conditioner

1) Lift one end of the decorative cover of control panel by flat screwdriver, and remove the decorative cover.



2) Unscrew the control panel fixing screws.



3) Remove the control panel of air conditioner.



4) Install in the reversed sequence.

Tightening torque for control panel fixing: 3.5±0.5

Part No.: Q2724813 (2 pcs)

4. Dismantle Steering Wheel

1) Remove the horn cover, and unplug the horn button plug.



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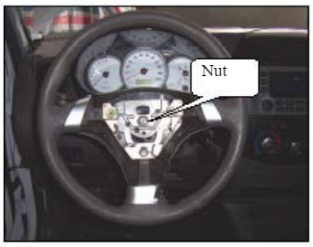
2) Dismantle the fixing nut of steering wheel.

3) Remove the steering wheel.

4) Install in the reversed sequence.

Tightening torque for steering wheel: 30±3Nm

Part No.: T11-3404207 (1 piece)



5. Dismantle Instrument Panel

1) Dismantle the steering wheel (Please refer to section *Dismantle Steering Wheel*).

2) Dismantle the CD player (Please refer to section *Dismantle CD Player*).

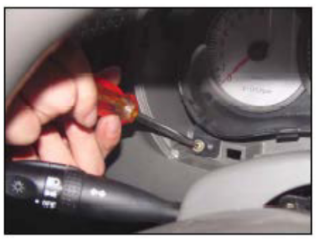
3) Dismantle the control panel of air conditional (Please refer to section *Dismantle Control Panel*)

4) Dismantle the instrument assembly.

a. Remove the external decorative cover of the instrument assembly.

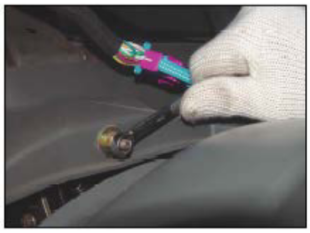


b. Dismantle the fixing screws of the instrument assembly



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c. Loosen the fixing nut of the instrument panel.



d. Dismantle the storage box.



e. Loosen the nut under the storage box.



f. Dismantle the lower fender at the left of the instrument panel.



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g. Loosen the tapping screw and fixing bolts of the lower fender at left.



h. Prize up the right end board of the instrument panel.



i. Loosen the fixing nut of the right end board.

j. Remove the fender of Pole A.

k. Remove the instrument panel



Note: Install in the reversed sequence.

Torque:

Fixing bolts 7±1Nm

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6. Dismantle the Regulator of Right Front Door

1) Dismantle the fender of right front door.



a. Prize up the protection cover of door handle

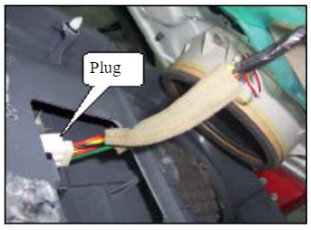


b. Loosen the fixing screws



c. Unplug the wiring harness

d. Remove the shield inside the door



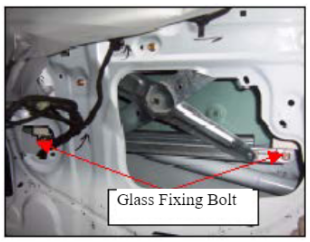
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2) Loosen the cable of inner handle, and remove the protection film.



3) Dismantle the glass of door.

Loosen the fixing bolt for glass by socket wrench.



4) Loosen the fixing bolts for regulator.

5) Remove the regulator.

6) Install in the reversed sequence.

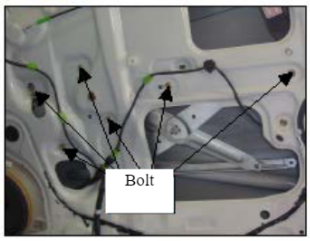
Torque:

Fixing of door glass 11Nm

B1460612 (2 pcs)

Fixing of regulator 11Nm

B1840610 (6 pcs)



Note: Please refer to the removal procedure of right front door for the disassembly of the rest three doors.

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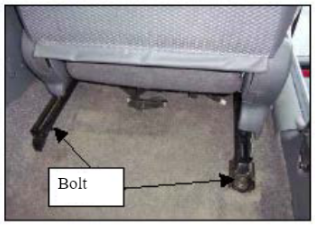
Ⅲ Seat

1. Left Front Seat

1) Move the seat to the furthest front end, and remove the protection cover of guide rail.



2) Loosen the fixing bolts at the back end of the guide rail.

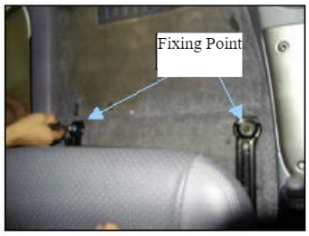


3) Move seat to the furthest back end, and remove the protection cover of guide rail.

4) Loosen the fixing bolts at the front end of the guide rail.

5) Unplug seat heating element, and remove the left front seat.

6) Install in the reversed sequence.



Torque:

Seat guide rail fixing 32Nm

PART NO: T11-68000 15(4 pcs)

Note: Please refer to the removal procedure of left front door for the disassembly of the right front seat.

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2. Dismantle Right Rear Seat

1) Open the back door.



2) Pull the switch upward to fold up the right rear seat.
3) Press the switch of back clip rod to separate the back end of the seat from the back clip rod.
4) Pull up the string behind the seat when it is folded up to open the lock in front of the seat.
5) Now it is possible to lift up the seat.
6) Install in the reversed sequence.



3. Dismantle Erection Base of Rear Seat

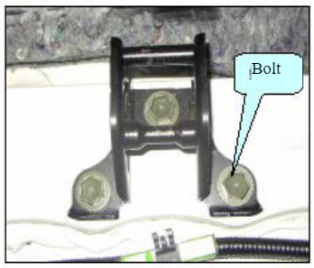
Just loosen the 3 fixing bolts.

Torque:

25±3Nm

Q146C1028F30 (3 pcs)

Note: Please refer to the removal procedure of right back seat for the disassembly of left back seat.



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4. Dismantle Safety Belt

1) Remove the protection cover of upper fixing bolts of safety belt.



2) Loosen the fixing bolts.



3) Remove the protection cover of lower fixing bolts of safety belt.



4) Loosen the fixing bolts.



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5) Remove the lower garnish of pillar C.
6) Loosen the fixing bolts of safety belt retractor.
7) Install in the reversed sequence.



Torque:

Fix the head plate of safety belt to the lower part of retractor

50±5Nm (1pcs)

Fix the adjusting mechanism to sliding rail

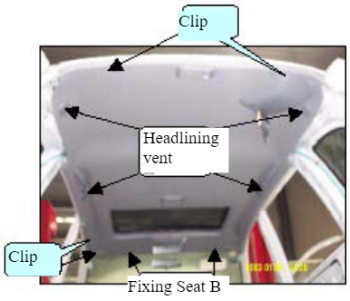
50+5Nm(1pcs)

4. Dismantle Roof Headlining

1) Dismantle the armrest of passenger.



2) Remove the front lamp indoor. (Please refer to section Disassembly of Lamps).
3) Remove the middle lamp indoor. (Please refer to section Disassembly of Lamps).
4) Remove the front lamp indoor. (Please refer to section Disassembly of Lamps).
5) Remove the air admission cover.
6) Remove the shields of Pillar A, B and C.
7) Prize up the fixing clip by flat screwdriver.
8) Remove the roof headlining.
9) Install in the reversed sequence.

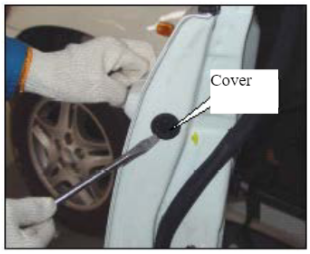


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Ⅳ Exterior

1. Removal and Installaiton of front door outside handle

1) Remove the left front door panel (please refer to Removal and Installaiton of Door Panel) and then the protection film.
2) Prize up the cover in the outside handle.



3) Dismantle the fixing bolts with hexagon spline wrench.



4) Detach the lock element from the link rod, remove the lock element and the cover of left front door.



5) Remove the outside handle.
6) Install in the reversed sequence.

Torque:

Lock element fixing 11Nm

T 11-6 105243 (1 piece)

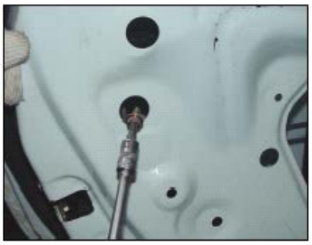
Note: Please refer to section Disassembly and Assembly of Left Front Door for the outer handle of right front door.



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2. Removal and Installation of Rear Door Outside Handle

1) Remove the left rear door panel (please refer to section Removal and Installation of Door Panel).
2) Peel off the protection film and loosen the fixing bolts of handle seat with hexagon spline wrench from one side of the shield.



3) Remove the handle seat.



4) Remove the outside handle.
5) Install in the reversed sequence.



Torque:

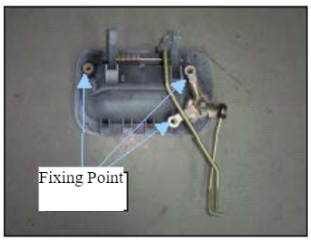
Handle seat fixing 11Nm

PART NO: T11-6105243(1 piece)

Note: Please refer to the Dismantle of left back door for the right back door.

3. Removal and Installation of Back Door Outside Handle

1) Open the back door.
2) Dismantle the back door panel, and peel off the protection film.
3) Loosen the bolt fixing the outside handle of back door from one side of the door panel.



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4) Detach the pushing rod of handle from the lock body, remove the outer handle of rear back door.



5) Install in the reversed sequence.

Note: The lock element is fixed to the handle with two fixing bolts at left back side, remove the handle to detach the pull rod from the lock elment, then remove the lock element.

Torque:

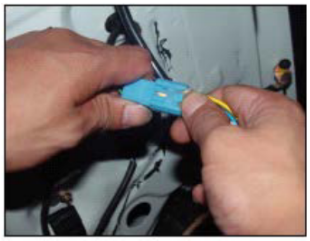
Outside handle of back door fixing 11Nm

PART No.: T11-6305231 (3 pcs)

4. Disassembly and Assembly of Outside Rearview Mirror

1) Remove the triangle block from Pillar A.

2) Dismantle the door panel and unplug the motor-driven outside rearview mirror.



3) Loosen the fixing screw of outside rearview mirror.

4) Remove the outside rearview mirror.



5) Install in the reversed sequence.

Torque:

Outside rearview mirror fixing 11Nm

PART No.: T11-8202011 (3 pcs)

5. Removal and Installation of Front Wiper

1) Remove the protection cap of the fixing nut from the wiper arm.



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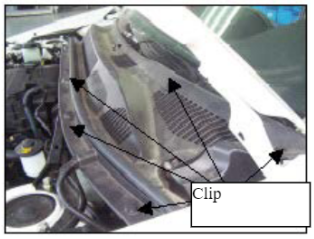
2) Loosen the fixing nut from the wiper arm.

3) Remove the wiper assy.



4) Dismantle the lower trim panel of front windscreen.

Just dismantle the clips to remove the lower trim panel.



5) Loosen the fixing bolt of linking mechanism.

6) Unplug the motor, remove the linking mechanism assembly.

7) Install in the reversed sequence.

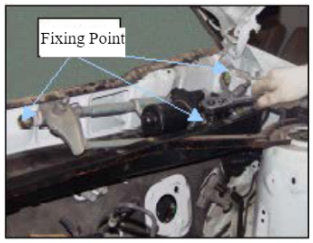
Torque:

Wiper fixing 55±3 Nm

Q3 2210 (1 piece)

Linking mechanism fixing 10±1Nm

B11-5205223 (3 pcs)



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6. Rear Wiper

1) Prize up the decorative cap of the fixing nut from the arm of rear wiper.



2) Loosen the fixing nut, and remove the wiper arm and the rubber ring.



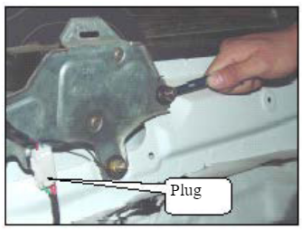
3) Open the back door.

4) Remove the back door panel.



5) Unplug the wiring harness of wiper, and loosen three fixing bolts.

6) Install in the reversed sequence.



Torque:

Fixing the wiper arm 20±3Nm

Q3 2208(1pcs)

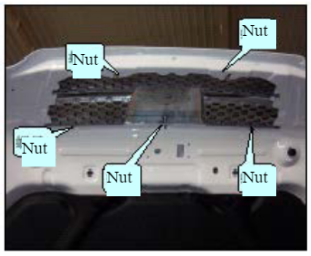
Fixing the wiper motor 10±1Nm

B11-5205223 (3 pcs)

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7. Radiator Grille

1) Open the engine hood.



2) Loosen the fixing bolt of radiator grille.
3) Remove the radiator grille.
4) Install in the reversed sequence.

Torque:

Radiator grille fixing 6±1Nm

Q32005 (5 pcs)



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Ⅴ Removal and Installation of All Lamps

1. Tightening Specification of Fasteners for All Lamps

Description	Specification
Headlamp fixing bolts	6±1Nm
Front fog lamp fixing bolts	2. 0±0. 2Nm
Taillamp fixing bolts	5±1Nm
Tapping screw of front ceiling lamp	2±0. 5Nm
Tapping screw of rear ceiling lamp	3±0. 5Nm
High-mounted stop lamp	3±0. 5Nm

2. Specification of Bulbs

Type	Specification
Headlamp	12V 55W
Turning lamp, rear foglamp, reverse lamp	12V 21W
License plate, side turning and high-mounted stop lamp	12V 5W
Stop lamp	12V 21W
Position lamp	12V 5W
Front foglamp	12V 55W
Front/rear ceiling lamp	12V 8W

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3. Removal and Installation of Headlamp

1) Open the engine hood.

2) Unplug the turning lamp.



3) Unplug the high/low beam headlamp.

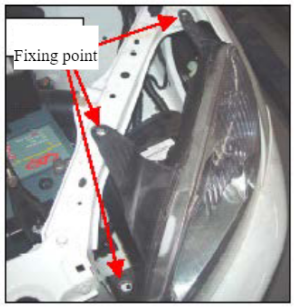


4) Remove the three fixing bolts of headlamp assembly.
5) Remove the headlamp assembly carefully.
6) Install in the reversed sequence.

Torque:

Headlamp fixing 6±1Nm

PART No.: T11-3772025 (3 pcs)



4. Replacement of Headlamp Bulbs

Replacing of bulbs for high beam and low beam headlamp.

1) Remove the back cover of headlamp.
2) Remove the bulb clip.



3) Remove the bulbs for high beam and dipped headlamp.
4) Remove the used bulbs, and replace them with new bulbs.



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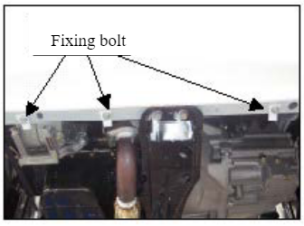
5. Replacing the bulb for front turning lamp

1) Turn the bulb for front turning lamp counterclockwisely to take it out from the bulb seat.
2) Remove the bulb seat.
3) Repalce it with a new bulb.
4) Install the bulb seat to its original place.



6. Removal and Installation of Front Foglamp

1) Dismantle the front bumper.
   a. Dismantle the fixing bolts under front bumper.



   b. Dismantle the side fixing bolts of front bumper.



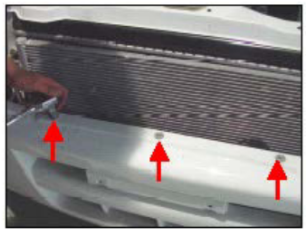
   c. Dismantle the connecting bolts of front wheel house at both sides.



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d. Dismantle the three fixing bolts at the top of front bumper.

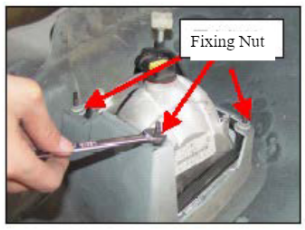
e. Remove the bumper with attention to the top clips at both sides. Unplug the wiring harness for the two foglamps in front.



Note: Please don't overexert while taking out the wiring harness as well as plug for the foglamp.

2) Dismantle front foglamp from the bumper.

Dismantle the three nuts as shown by the arrow by open wrench, and remove the foglamp assembly from the front of the bumper.



3) Install in the reversed sequence.

Torque:

Fixing of front foglamp 2.0±0.2 Nm

Q32006 (3 pcs)

7. Replacement of Fog Lamp Bulb

1) Hold the backseat of the bulb and spin it out in counterclockwise.

2) Install the new bulb in clockwise.

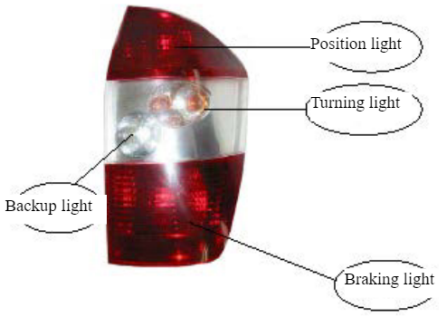
3) Install the new bulb of foglamp.



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8. Taillamp

1) Position of each bulb in the taillamp assembly.



2) Removal and Installation

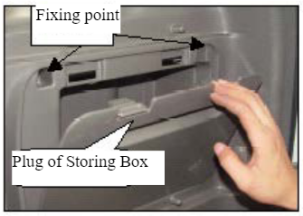
(1) Open the back door.

(2) Dismantle the lower garnish of Pillar C.

a. Dismantle the tapping screw under the shield.



b. Dismantle the tapping screw inside the plug of storing box.



c. Remove the cage plate of back door, and dismantle the screw underneath.

d. Remove the lower garnish of Pillar C.



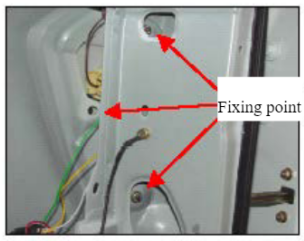
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(3) Dismantle the three fixing nut from the reserved hole on the body.

(4) Unplug the taillamp.

(5) Pull out the taillamp gently.

(6) Install in the reversed sequence.



Torque:

Fixing nut of taillamp 5±1Nm

Q3 2005(3 pcs)

3) Bulb Replacement

(1) Open the plug cover of storing box at rear luggage cabin.



(2) Prize up the internal protection cover by screwdriver. Screw out the bulbs for sidelamps, backup lamp, turning lamp and stop lamp counterclockwisely by hand through the hole.

(3) Replace them with new bulbs.



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9. License Plate Lamp

i Removal and installation of license plate lamp

1) The lamp for license plate is attached to the back bumper by its elastic clip seat at both ends.
2) For dismantle, press the clip seat by flat screwdriver, remove the lamp for license plate slowly, and unplug the pluged in.
3) For installation, insert the pluged in, then push the lamp for license plate in.



ii Replacement of license plate lamp bulb

1) Screw off the bulb counterclockwisely when the lamp for license plate is taken out.
2) Replace it with new bulb.



10. Removal and Intallation of Side Turning Lamp

1) Hold the side turning lamp by hand and pull back to remove the lamp slowly.
2) For installation, force it in reversed direction to the place.



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11. Removal and Installation of High-mounted Stop Lamp

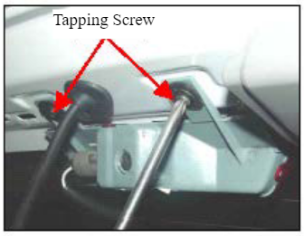
1) Dismantle the shield for high-mounted stop lamp.



2) Dismantle the fixing screw.
3) Remove the high-mounted stop lamp.
4) Install in the reversed sequence.

Torque:

Fixing of tapping screw 3±0.5Nm



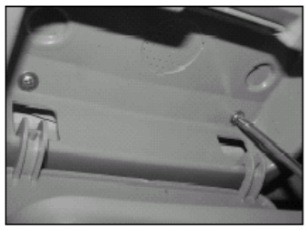
12. Front Ceiling Lamp

i Removal and Installation of Front Ceiling Lamp

1) Open the glasses box.



2) Loosen the tapping screw by cross screwdriver.

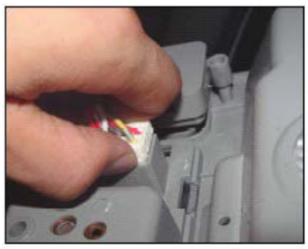


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3) Remove the front ceiling lamp gently, and unplug the wiring harness.

4) Install in the reversed sequence.

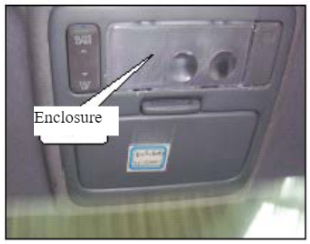
Torque: Fixing of tapping screw 3±0.5Nm



ii **Replacement of front ceiling lamp bulb**

1) Prize up the enclosure by flat screwdriver.

2) Remove the used bulb and replace it with a new bulb.



13. Removal and Installation of Middle Ceiling Lamp

1) Insert a flat screwdriver between the enclosure and lamp cover, and prize up the lamp cover with care.



2) Loosen the fixing screw.

3) Remove the ceiling lamp.

4) Install in the reversed sequence.

Torque:

Fixing of tapping screw 3±0.5Nm



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14. Rear Ceiling Lamp

Please refer to the dismantle and assembly procedure of middle ceiling lamp for the rear ceiling lamp .

Ⅵ Replacement of Windscreen

1. Replacement of Front Windscreen

Dismantle Procedure

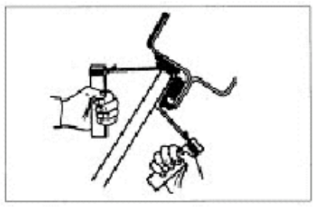
1) Remove the top fillet of windscreen, and cut the fillet as shown in the figure.

Note: Pay attention not to damage the body.

2) Remove the windscreen.

a. Lead a wire string toward outside between the body and the glass.

b. Bind both ends of the string with wooden block or similar stuff.

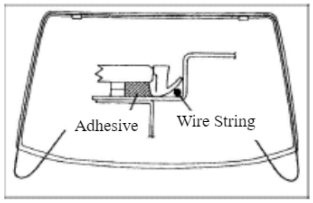


Hint: Apply an adhesive tape at the outside surface to prevent any scratch.

Note:

- ✶ When detach the glass, please pay attention not to damage the paint or any decorative part inside and outside.
- ✶ In order to prevent any scratch to the instrument panel during the disassembly, a piece of plastic can be placed in between the wire string and instrument panel.

c. Pull the string around the glass to cut off F adhesive, and to remove the glass.



Note: While cutting the bond of the glass, please leave as much as adhesive on the body.

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Installation Procedure

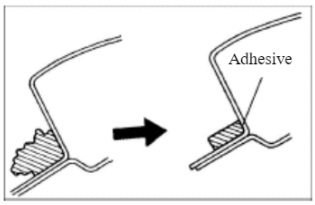
1) Preparations:

   a. Don't touch the surface after cleaning.

   b. Cut off any coarse on the body.

Hint: Leave as much as adhesive on the body.

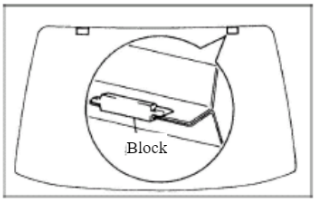
   c. Clean the cutting surface of adhesive with clean cloth soaked with detergent.



Hint: The vehicle surface shall be cleaned even all adhesives are removed.

2) Remove the block.

Remove the block by knife.

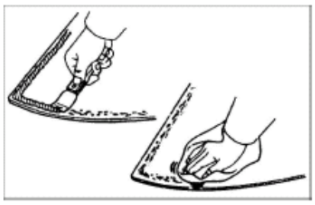


3) Clean the dismantled windscreen.

   a. Remove any adhesive on the glass by scraper.

   b. Clean the glass with detergent

Note: Please do not touch the glass after cleaning.

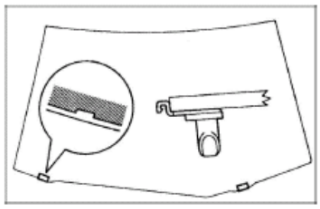


4) Replace the nip in case of necessary.

   a. Remove the block by knife.

   b. Remove the used nip.

   c. Replace it with a new one.

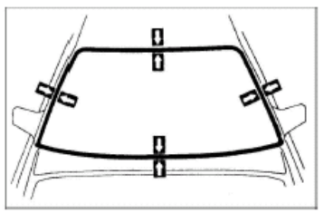


5) Positioning of the glass.

   a. Place the glass to the right position.

   b. Mark both the glass and the body.

   c. Remove the glass.

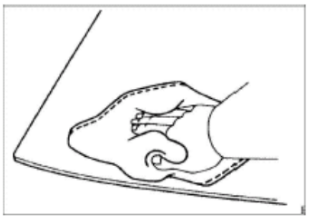


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6) Clean the contact of the glass.

Clean any dirt on the perimetric surface with detergent.

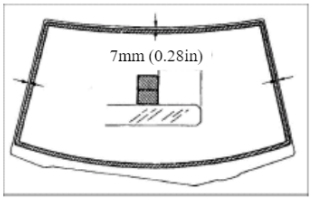
Note: Please do not touch the surface of glass after cleaning.



7) Install waterstop.

Install the waterstop by double sided adhesive tape as shown in the figure.

Note: Please do not touch the surface of glass after cleaning.



8) Paint a layer of primer M at the contact with body.

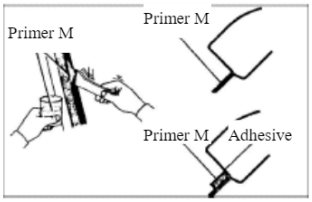
Paint a layer of primer M at the surface of body with brush.

Note:

Please wait for more than 3 minutes to allow the primer drying up.

Please do not paint on the adhesive.

Please do not keep unsealed primer M for future use.



9) Paint a layer of primer G at the contact with glass.

a. Paint a layer of primer G at the glass edge or contact with brush or sponge.

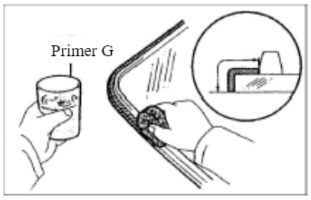
b. Wipe it out with clean cloth before the primer is drying up.

Note:

Please wait for at least 3 minutes to allow the primer drying up.

Please do not paint on the adhesive.

Please do not keep unsealed primer G for future use.

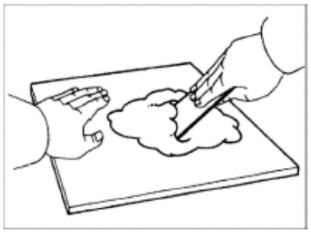


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10) Adhesive Mixing.

a. Clean the glass and scraper with solvent.

b. Mix 500g of main solvent with 75g of hardener by scraper on glass or similar stuff.



Note:

Make sure to complete the installation of fillet within the valid period of adhesive.

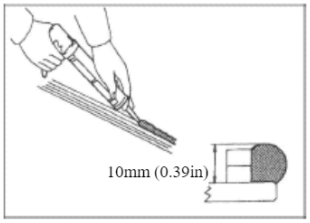
The adhesive shall be mixed within 5 minutes.

11) Adhesive Applying

a. Cut off the tip of the tube, and fill the adhesive into the tube.

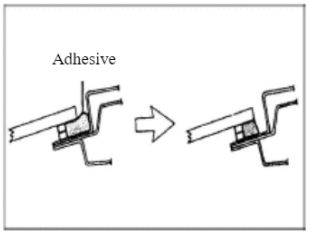
b. Install the tube into sealed glue gun.

c. Apply the adhesive to the glass as shown in the figure.



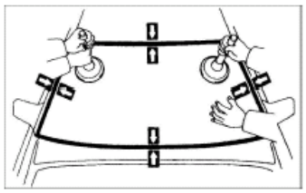
12) Glass Installation.

Hint: Make sure that the waterstop is well sticked to the body as shown in the figure.



a. Install the glass, and have the marks on the glass well aligned with the marks on the body, then press the edge to push the glass into its place gently.

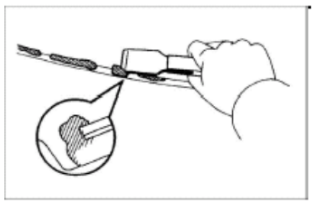
b. Apply some adhesive on the edge of the glass with scraper.



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c. Remove excessive or overflow adhesive by scraper.

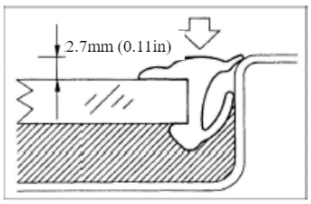
d. Clamp the glass till the adhesive is hardened.



13) Check for any leakage, and have it repaired.

a. Carry out leakage test after the period for hardening.

b. Block any leakage with glue.



14) Install the top fillet for windscreen.

Install the top fillet onto the body, bat it gently with hand to have it well installed.

15) Install the fillet outside.

Install the fillet outside as well as the bolt.

2. Replacement of Rear Windscreen

Dismantle Procedure

1) Remove the lower fillet

2) Cut off the adhesive at both sides of both ends of the fillet by scraper as shown in the figure.

Hint: The tip of the scraper shall be wrapped with tape before use.

Prize up the fillet at six nips by scraper, and remove the fillet.

3) Remove the glass of rear window.

Lead a wire string toward outside between the body and the glass.

Bind both ends of the string with wooden block or similar stuff.

Hint: Please do not damage the two blocks by the wire string.

Remove the glass

4) Remove the fillet of rear window.

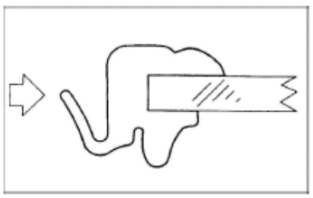
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Installation Procedure

1) Install the fillet for rear window

Place the fillet around the glass by hand.

Hint: The rear window glass must be removed for the installation of the fillet.



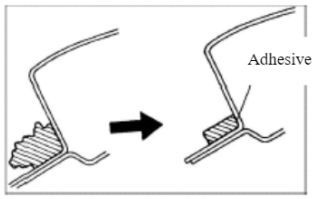
2) Clean and trim the contact with body

Cut off any coarse on the body.

Hint: Leave as much as adhesive on the body.

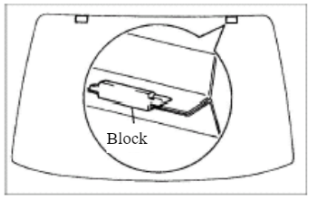
Clean the cutting surface of adhesive with clean cloth soaked with detergent.

Hint: The vehicle surface shall be cleaned even all adhesives are removed.



3) Remove the block.

Remove the block by knief.

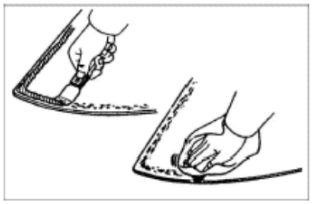


4) Clean the dismantled windscreen.

a. Remove any adhesive on the glass by scraper

b. Clean the glass with detergent

Note: Please do not touch the glass after cleaning.



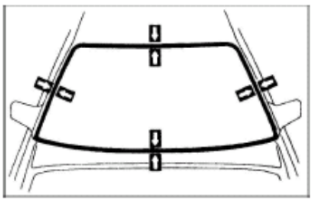
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5) Positioning of the glass.

Place the glass to the right position.

Mark both the glass and the body.

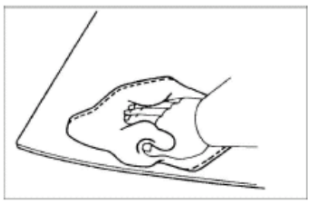
Remove the glass.



6) Clean the contact of the glass.

Clean any dirt on the perimeter surface with detergent.

Note: Please do not touch the surface of glass after cleaning.



7) Paint a layer of primer M at the contact with body.

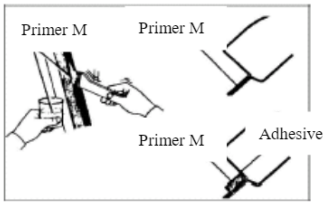
Paint a layer of primer M at the surface of body with brush.

Note:

Please wait for more than 3 minutes to allow the primer drying up.

Please do not paint on the adhesive.

Please do not keep unsealed primer M for future use.



8) Paint a layer of primer G at the contact with glass.

Paint a layer of primer G at the glass edge or contact with brush or sponge.

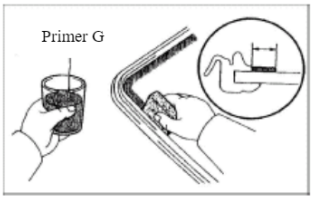
Wipe it out with clean cloth before the primer is drying up.

Note:

Please wait for at least 3 minutes to allow the primer drying up.

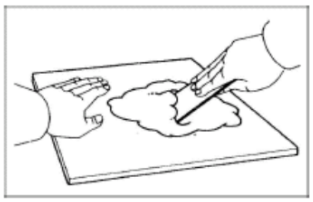
Please do not paint on the adhesive.

Please do not keep unsealed primer G for future use.



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9) Adhesive Mixing.



Note:

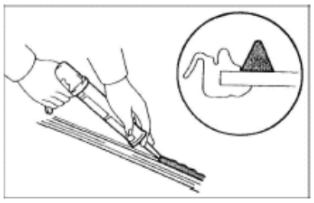
Make sure to complete the installation of fillet within the valid period of adhesive.

The adhesive shall be mixed within the specified time.

Clean the glass and scraper with solvent.

Mix 500g of main solvent with 75g of hardener by scraper on glass or similar stuff.

10) Adhesive Applying

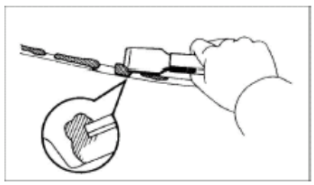


Cut off the tip of the tube, and fill the adhesive into the tube.

Install the tube into sealed glue gun.

Apply the adhesive to the glass as shown in the figure.

11) Glass Installation.



Install the glass, and have the marks on the glass well aligned with the marks on the body, then press the edge to push the glass into its place gently.

Apply some adhesive on the edge of the glass with scraper.

Remove excessive or overflow adhesive by scraper.

Clamp the glass till the adhesive is hardened.

12) Check for any leakage, and have it repaired.

Carry out leakage test after the period for hardening.

Block any leakage with glue.

13) Install the lower fillet outside the rear window.

Install the fillet onto the body and pat it gently with hand.

14) Connect the connector for defogger.

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Section 2 Service of Metal Works for Body-in-White

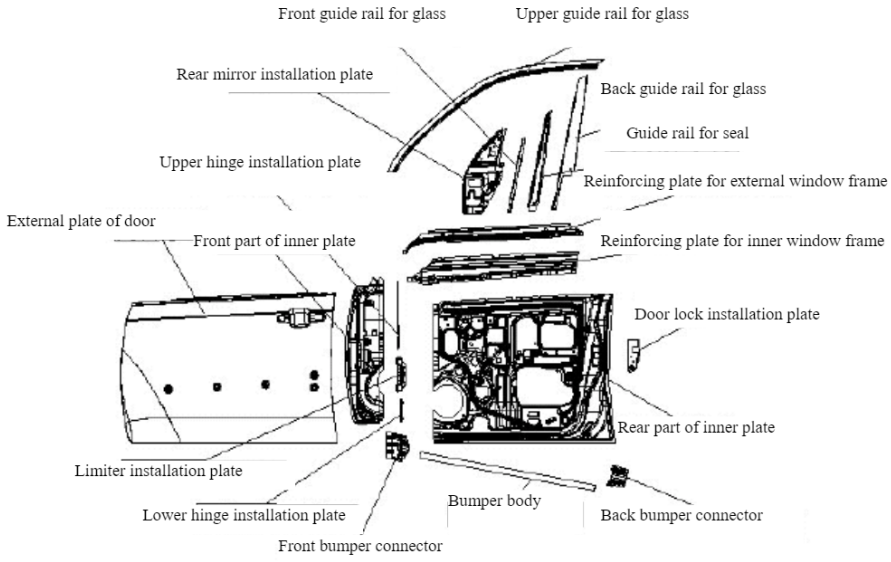
Ⅰ Summary of Service Works for Doors and Bonnets

The body of a sedan is comprised of various frameworks, plates and parts, where door is the most complicated part in technique, involving with these working procedures such as parts punching, welding, parts assembly and general assembly, and with strict requirements both on dimension and technique. Therefore, the service for door is quite difficult, and the requirement in quality is also quite high. Servicemen must have sufficient understanding on the structure of door in order to conduct the service work smoothly.

1. Structure of Door

Generally speaking, door is comprised of external plate, inner plate, window frame, glass slot, hinge, lock as well as accessories for door and window. Inner plate is furnished with accessories such as glass regulator and lock. For secured and reliable assembly, inner plate shall also be partially reinforced. For enhanced safety, the inner side of external plate is normally furnished with side beam. The inner plate and external plate is linked through flanging, adhesive, welding and so on. Aimed at different stress condition, the external plate shall be lamp and the inner plate shall be strong enough for higher wallop.

The door assembly of body-in-white is comprised of less parts, generally including external plate, inner plate, window frame, glass guide rail, window frame reinforcing plate, lock erection plate, hinge reinforcing plate, side beam assembly and so on. A typical door structure is shown in the following sketch.



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2. Technique process for the service of door and bonnet

Generally speaking, the basic method for the service of doors and bonnets is of the same for ordinal metal work, both including the following procedures:

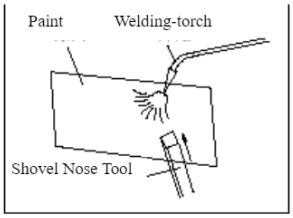
(1) Initial check. To measure the relative position, clearance of door and cover with other assemblies in body:



(2) Cleanout of door. Clean any dirt, grease on the door and cover with clean water or detergent, and drying up before check.

(3) Evaluation and Appraisal. Namely through check to evaluate the damage scope and degree on door and cover so as to define the method for service.

(4) Removing of former paint. The former paint shall be removed based on the actual situation after cleaning or before service, especially for these places with obvious rust, crack or sunken; There are manual, heating, mechanical and chemical ways to remove paint.



(5) Inspection after dismantle. This inspection generally includes geometric measurement between various metal works, check on detailed damage of each metal work, defining the type of damage, analyzing the reason and to decide the scheme for service.

3. Major contents in the service of doors and bonnets

Generally speaking, the reason for damage on doors and bonnets is related to the following four aspects: defect in structural design, defect in manufacture, chemical damage in use and physical damage in use. The most outstanding reason of damage is shown in the following types:

1) Abrasion. Abrasion is resulted from the surface friction which caused by the mutual contact and relative movement between metal works; For instance, the clearance wull be increased due to long term abrasion between the the bore and shaft of hinge, and cause to the drooping of door.

2) Erosion. It is often caused by oxidation of dirt or pollutant on the metal surface; or rust erosion for parts not treated against erosion after welding; or chemical erosion. The erosion is often occurred inside the interlayer of metal work, join or connector of spot welding members.

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3) Crack or rupture. Due to the repeated action of stress on metal plates, places with stress concentration and weak structural point tend to be fatigue, hence be resulted in crack, even rupture in the worst case.

4) Sunkin or folding. Sunkin damage is of elastic or plastic deformation resulted from collision or extruding between surfaces of door and cover.



5) Bend or distortion. The damage is mainly of plastic deformation to the door and cover due to overload in using or in case of collision.



Ⅱ Basic Method for the Service of Door and Cover

Aimed at the above types of damages, techniques used for the service of door and cover mainly include sunkin truing, flame correction, welding, mending, and fold removing.

1. Sunken Truing

For sunken and protruding damage on the external plate of door and cover, if it is of indirect damage due to the damage of structural parts or reinforced bar, structural parts shall be corrected firstly, then have the fold of external plate or sunken be corrected. If the rear side of metal plate can be contacted, hand hammer, sizing block or key block, tommy bar, flat punching can be used for the initial repair. For enclosed metal plate or places hardly can be contacted, it can be repaired by inertia hammer, pointed hammer and so on.

The following methods for sunken truing are often used:

(1) Sunken truing by sizing block or hand hammer. Sizing block together with hand harmmer to hammer the metal plate is a method often used. Both sides of the truing metal work shall be accessable by portable sizing block. Sizing block can be used as support for the hand hammer in 2 ways:

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① Hammering on sizing block by hand. This method is suitable for the truing of small, shallow sunken and fold. When hammering on sizing block by hand, the sizing block shall be placed on the back of the metal plate and held by hand tightly, and start to hammer from the protruding in front. Hammering on the protruding will cause the metal plate to shrink and gradually be levelled.





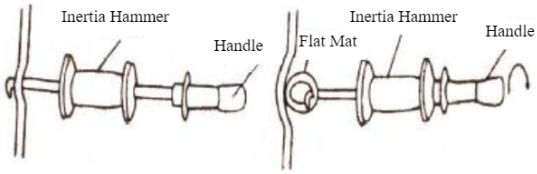
② Hammering on places outside the sizing block by hand. This method is to place the sizing block at the lowest point of sunken metal plate, and hammer on the adjacent high point by hand.

Normally when truing the sunken area by hammer and sizing block, the protruding side of metal plate will be hammered, and the other side is padded by sizing block. First hammered by wooden hammer for a rough shaping, then conduct truing by iron hammer (See Fig 7). For large area of sunken, sizing block shall be placed at the place with slamp sunken, and hammered on places protruding high. Wooden hammer and iron hammer shall be used in turn according to the actual situation.

(2) Repair the sunken by shaping key or tommy bar. Shaping key and tommy bar are manual tools often adopted for the repairing of door and cover too, which can be custom made according to the feature of body. These tools can be extended into limited space in the interlayer of door and cover to lift the sunken area. This method is suitable for sunken area inside a narrow interlayer of door and cover where sizing block and hammer are not accessable. Shaping key can also be used as sizing block to radiate the striking force in a large area.

(3) Eliminate sunken area by sunken puller. Sunken puller is applied to the inner side of the metal plate to repair shallow sunken area which hardly accessable by other tools. There are two operation methods often adopted by sunken puller:

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One is called hole-drilling method. Namely to drill a hole at the sunken place by portable drill, then insert a pull rod with thread or hook at the top into the borehole, to draw back the sunken area slowly by moving the inertia hammer on the metal pull rod and repeated bumping on the handle. More than one small hole can be drilled in case of necessary. When the sunken area is levelled, fill these holes by soldering, and have it polished.

Another way is of electrode welding. Namely to weld a pin or mat to sunken area by special spot welding machine, then install a puller on the pin or mat to pull the sunken plate outward till it is levelled. More than one pin or flat mat can be welded based on the actual situation to pull out the sunken area gradually. Finally, break the pin or mat and have the scar polished by grinder. Drilling on metal plate can be avoided in this method, potential erosion is eliminated, hence it is widely adopted.

2. Restoration of Stretched Part

The sunken area of stricken metal plate is often stretched out. Correct operation during the repairing sometime still can't ensure the complete restoration of stretched part, therefore, heating shrinkage is often needed to achieve perfect truing.

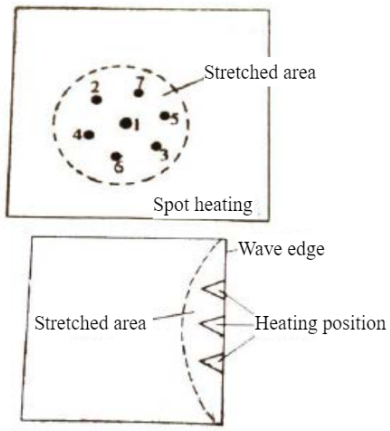
(1) Heating position and flame energy. The effect of flame correction is relied on the heating position and flame energy, different heating position will result in different effect for the correction. The heating position shall be at the place with the maximum deformation and the longest stretch, namely the outside of the bending deformation of material. Different flame energy will also result in different effect for the correction. Higher energy, faster heating, and concentrated heat will result in sdtronger shrinkage. For mild steel plate, heating up to cherry red (600C~ 800C) will be enough.

(2) Way of heating. Heating methods often used for flame correction in body service include:

① Spot heating, namely that the heating area is at a spot within a specific diameter, which normally at 1530mm. One or more spots can be heated during the correction according to the deformation of metal plate. Spots will be distributed in cinquefoil, which is often adopted to shrink protruding located in the middle of faceplate.

②Triangle heating, namely that the heating area is of a triangle, which is often adopted for strip material as well as the correction of edge deformation.

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Triangle heating

(3) Cold shrinkage method. When the metal plate is removed from flame, proper cooling method shall be adopted based on the stretching degree of metal plate as different cooling method has different shrinkage.

① Natural cooling. Namely to cool it down naturally in ambient environment. It is suitable for deformation with small shrinkage.

② Water cooling. To cool down rapidly by covering the heating area with wet cotton cloth, the shrinkage of steel plate is much higher than natural cooling, however the steel may be embrittled.

③ Natural cooling together with hammering. It is often used together with hammer and sizing block by swift hammering on the surrounding of heating area to enhance compressive stress and to increase the shrinkage till the place is levelled. Wooden hammer is perferred for the hammering. No excessive striking force is allowed so as to avoid that the metal plate is stretched again.

3. Mend by Replacing the Damaged Part

When the metal plate of door and cover is partially eroded or damaged to the extent which can't be repaired, it shall be mended by replacing the damaged part with updated part through welding.

The mend can be divided into sticking mend and replacing mend.

The technique procedure for replacing mend is as follow:

(1)Checkup the damage to define the scope of mend.

(2) Work out paper sample according to the defined scope of mend.

(3) Prepare the material from metal plate according to the paper sample with proper margin for machining.

(4) Select the right processing method to allow the replacing part have identical surface shape with the part to be cut off.

(5) Clamp the replacing part to original place, mark the outline of the part to be cut off, cut it off by gas cutting or ordinal cut according to the actual situation, and align the joint of repalcing part with the cut.

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(6) Weld the joint with gas welding or CO2 gas protection welding. Carry out spot welding in the span of 3050mm firstly, weld again when it is levelled by striking. For welding line with higher requirement on strength, it shall be welded on both sides.

(7) Hammer the completed welding line with flat hammer to eliminate welding stress, then have it shaped and polished by sand grinder.

4. Fold Repair

Based on the damage extent of metal work, fold can be divided into “live fold” and “dead fold”. “Live fold” is of lamp fold which can be eliminated by direct hammering on the most protruding ridge. “Dead fold” is of flod with serious damage. As the folded parts are squeezed together, direct hammering on the most protruding ridge may get the flod even worse. This is why it is called as “dead fold”. The principle to correct flod is to release “dead fold” firstly by gradually converting it into “live flod”, then convert the “live fold” into sunken or protruding, and have it repaired according to the method for sunken repairing. The steps for repairing are as follows:

(1) Adopte the method of support and pull to apply a corrective force in the opposite of striking force on the fold of metal work to spread or revive the fold.

(2) Dismantle the metal work with fold damage from the platform. Starting from the inner side of the fold area, prize up and heat the “dead fold” with proper tommy bar and torch gun at the same time. Revive the “dead fold”through repeated heating and prizing up. Finally convert all “dead folds” into “live folds”.

(3) Beat out “live fold” from the inner side of the fold area. The hammer shall be fallen the most protruding ridge. Meanwhile, please note that each beat must be supported by the platform. After one side of the fold is roughly levelled, turn to the other side till all folds are fully spreaded.

(4) Measure with the sample, heat and strike the sunkin and protruding places to restore the original shape roughly.

(5) After trial assembly onto the vehicle, check by sample again to make further fine correction, and finally to achieve the requriement.

(6) Fold with partial serious damage which can’t be repaired can be mended by replacing.

Ⅲ Welding of Doors and Bonnets

For welding on doors and bonnets, the following welding methods can be selected flexibly: gas weld (oxygen acetylene weld), CO2 gas protection weld, manual arc welding, resistence spot welding, brazing welding and so on. Moreover, in order to maintain the original strength and durability of the body, welding method used for the manufacture of the door and cover shall be adopted as far as possible, and the size and type of welding joint shall be similar with the one adopted in original manufacturer.

In the quality of appearance, the welding spot shall be free from any defect such as burn down, half welding, crack as well as large quantity of burrs, the surface shall be level and pretty without obvious distortion or deformation, and the depth of impress shall be less than 1/5 of the thickness of the plate; Whether the strength of the welding spot is enough or not, non-destructive test can be carried out by flat shovel and iron hammer, where flat shovel is used to check for any seal off between welding spots firstly, then strike by iron hammer to restore the original state; The welding joint shall be free from any splash, tidy and free from any defect such as undercut, overlap, weld penetration on the surface.

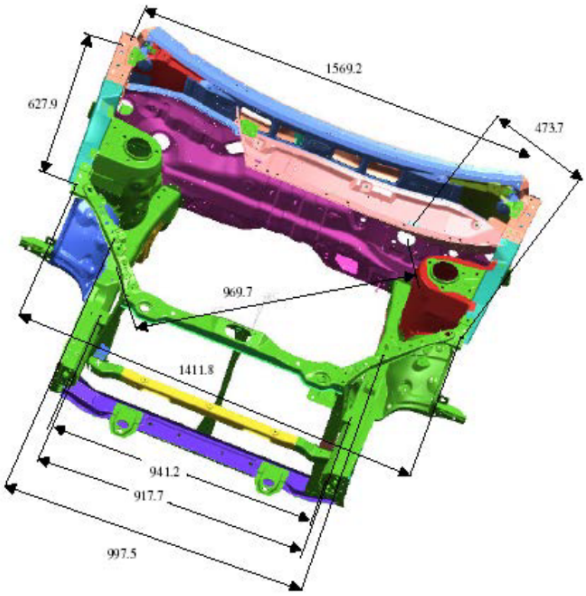
Ⅳ Dimension and Levelness Requirements for Openings on Various

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Parts of Body

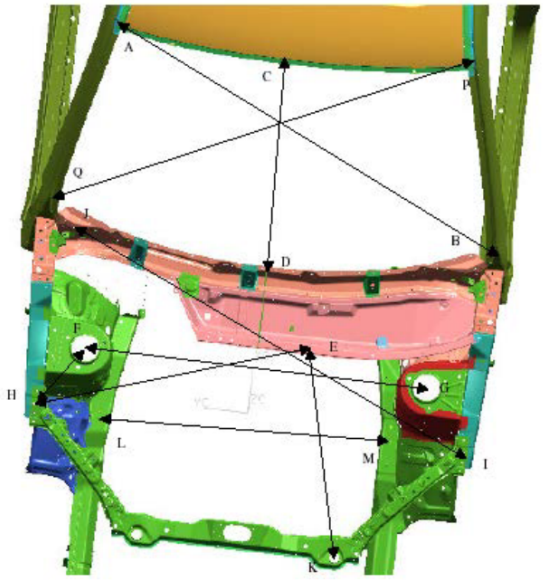
1. Front Structure Part

1) Dimension of Engine Compartment



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2) Dimension of Openings in Various Parts



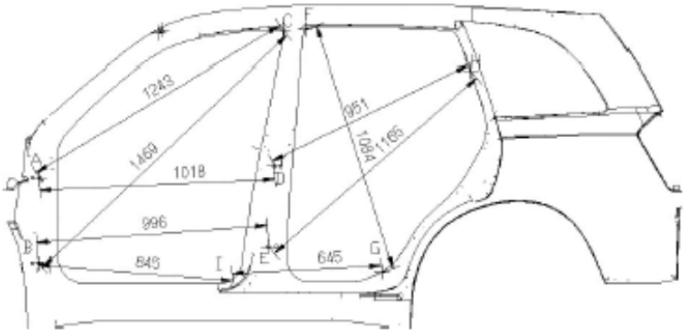
S/N	Control Dimension	Description
AB=PQ	1485.8	Diagonal distance of front windscreen
CD	733.2	Distance of front windscreen atY0
IJ	1491.6	Center distance between the right end of upper cover of the lower beam of front windscreen and the installation hole of front fender
EH	736.1	Center distance between the upper cover hole of the lower beam of front windscreen and the installation hole of front fender
FH	270.7	Center distance between the hole of front shock absorber and the installation hole of front fender
FG	1126.8	Center distance between the holes of left/right front shock absorber
LM	952.8	Center distance between the holes of left/right engine suspension
KE	690.5	Center distance between the upper cover hole of front windscreen beam and the installation hole of radiator

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Note: Sketch of Clearances in the Whole Vehicle, see Appendix: Sketch of PART NO: T11 Surface Clearances-Levelness

2. Side Fender Part

Dimension of Openings in Various Parts

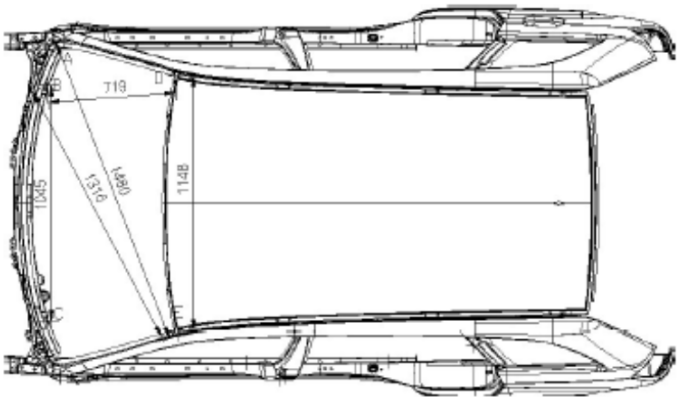


Dimension of body, Left-Right

Remark: Captial letter represents right side of the body, lowercase represents left side of the body (Rear view).

Symbol	Description	Diameter	Symbol	Description	Diameter
Aa	Installation hole of front door upper hinge	9	Ff	Front upper corner of back door guide rail at side fender	
Bb	Installation hole of front door lower hinge	9	Gg U	Support point of back door	
Cc	Upper corner of front door guide rail at side fender		Hh	Rear upper corner of back door guide rail at side fender	
Dd	Installation hole of back door upper hinge	13	Ii	Support point of front door	
Ee	Installation hole of back door lower hinge	15			

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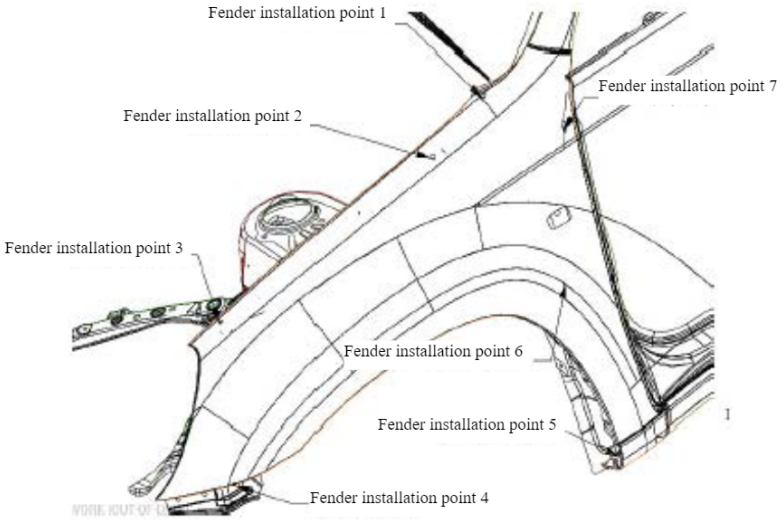


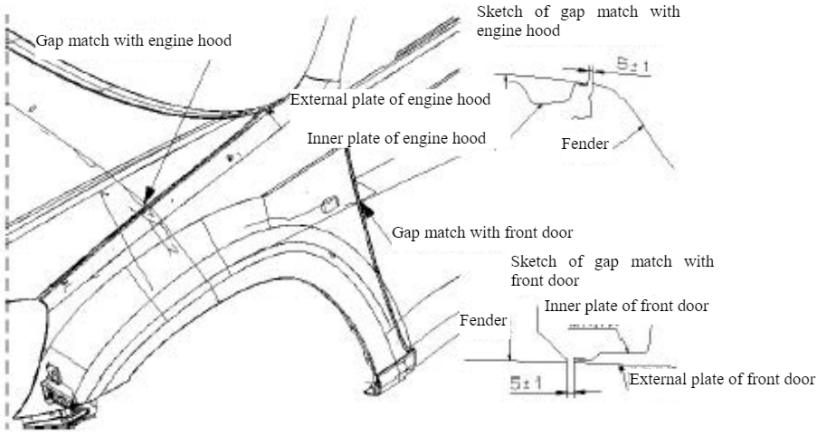
S/N	Description
AE	Diagonal distance of front windscreen
BC	Distance between feature point and upper beam of front windscreen
BE	Distance between feature point and left upper corner of front windscreen
BD	Distance between feature point and right upper corner of front windscreen
DE	Distance between right and left upper corner of front windscreen

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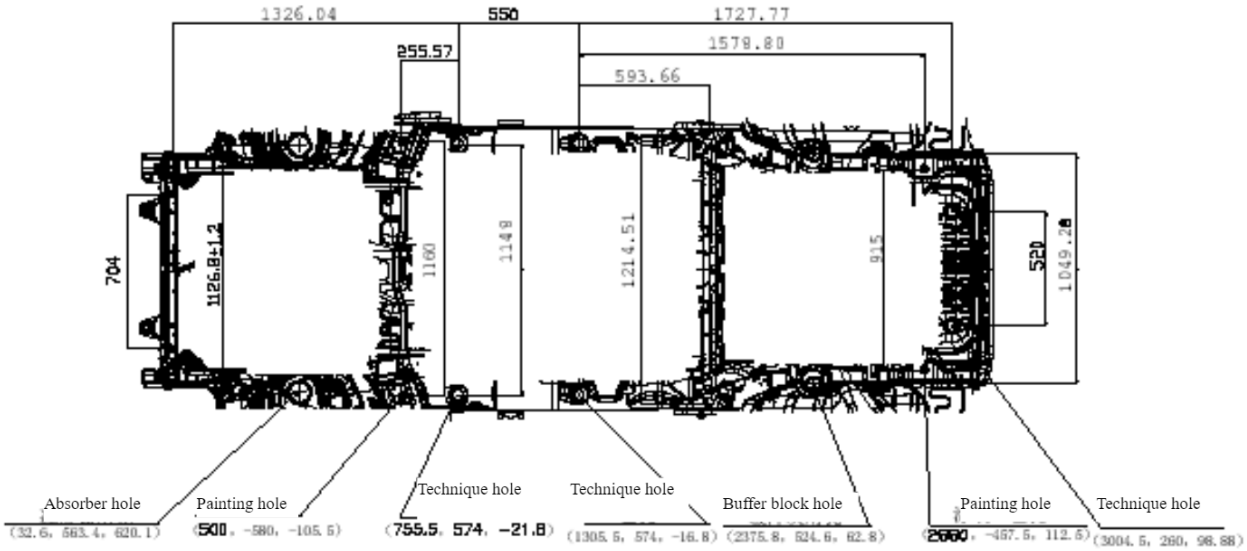
3. Service and Replacement of Fender

1) The fender is furnished with 7 fixing bolts tightened in the torque of l0Nm, and installed at the palce as shown in the figure below:





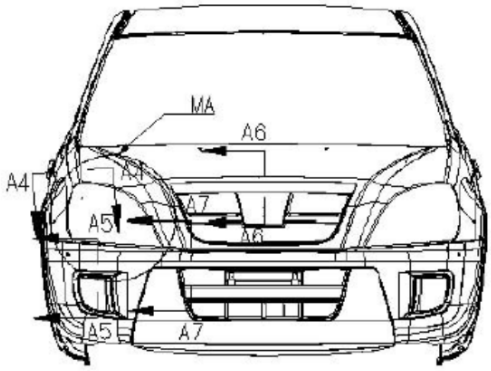
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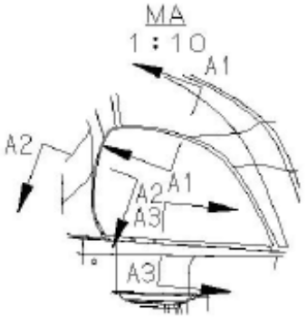
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4. Clearance and Levelness Requirements of Various Parts

Front View

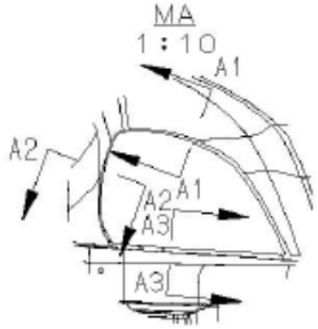


Crosssection A1-A1, requirements on clearance and levelness.

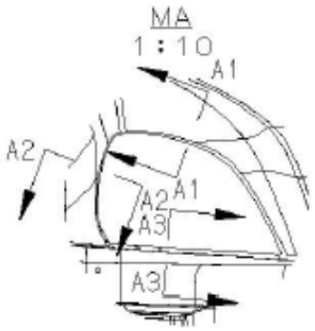


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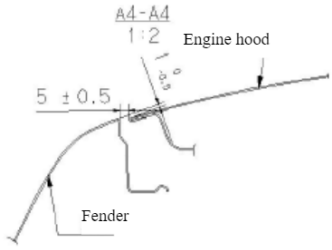
Crosssection A2-A2, requirements on clearance and levelness.



Crosssection A3-A3, requirements on clearance and levelness.

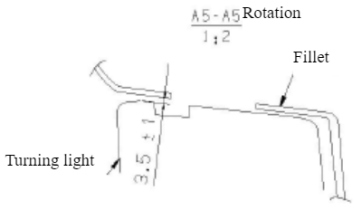


Crosssection A4-A4, requirements on clearance and levelness.

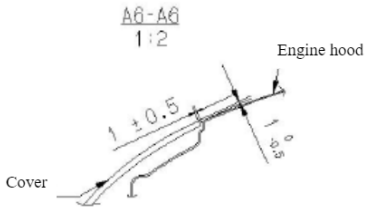


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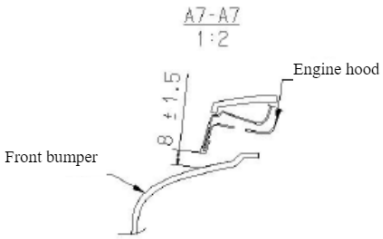
Crosssection A5-A5, requirements on clearance and levelness.



Crosssection A6-A6, requirements on clearance and levelness.



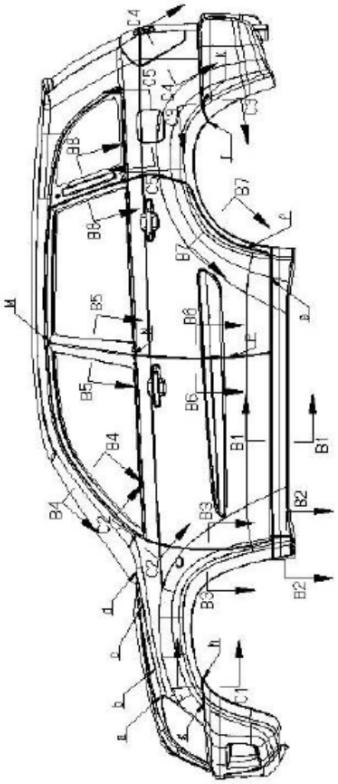
Crosssection A7-A7, requirements on clearance and levelness.



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5. Dimension of Body

Side View



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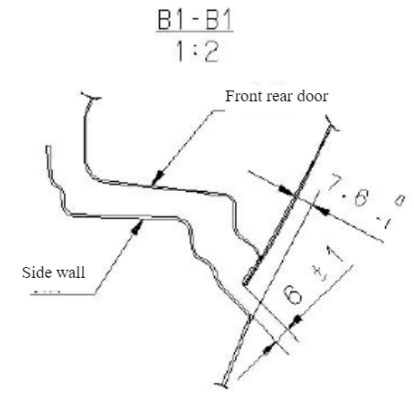
Where: The levelness from point a to b shall be evenly changed from 0 to 1, and the levelness from point c to b shall be evenly changed from 1 to 0.

The clearance from point f to c shall be evenly changed from 6 to 7, and the levelness from point g to h shall be evenly changed from 1 to 0.

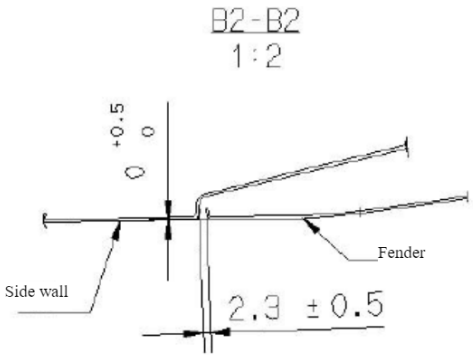
The levelness from point k to j shall be evenly changed from 0 to 1.

The tolerance of clearance between front and back doors at MN, NP sections shall be within 1.2mm.

Crosssection B1-B1, requirements on clearance and levelness.

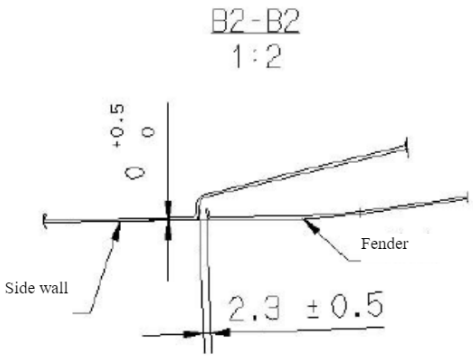


Crosssection B2-B2, requirements on clearance and levelness.

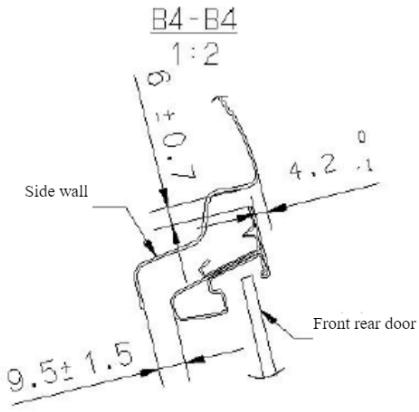


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Crosssection B3-B3, requirements on clearance and levelness.

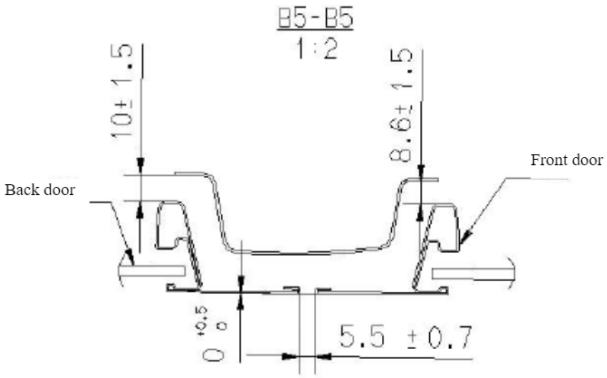


Crosssection B4-B4, requirements on clearance and levelness.

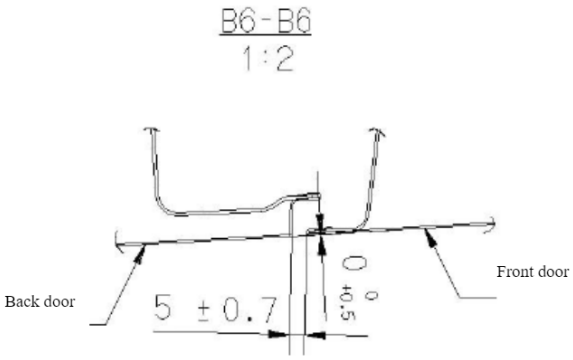


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Crosssection B5-B5, requirements on clearance and levelness.

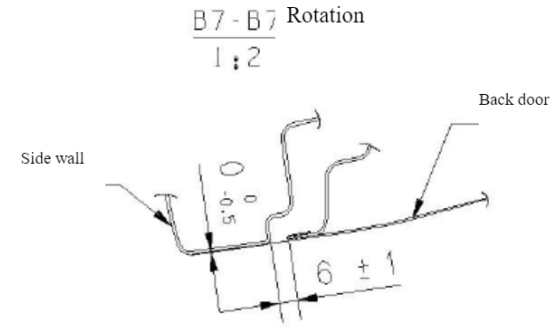


Crosssection B6-B6, requirements on clearance and levelness.

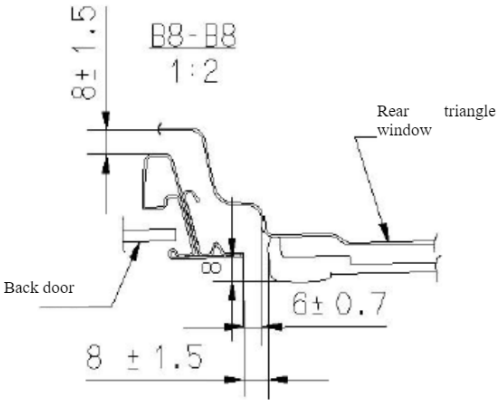


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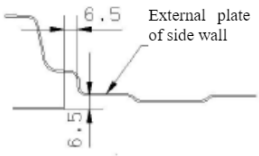
Crosssection B7-B7, requirements on clearance and levelness.



Crosssection B8-B8, requirements on clearance and levelness.

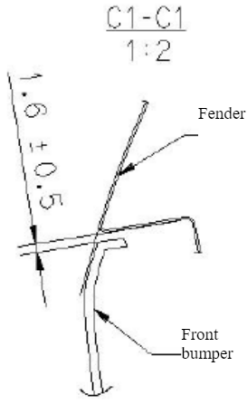


Crosssection B1-B1, requirements on clearance and levelness.

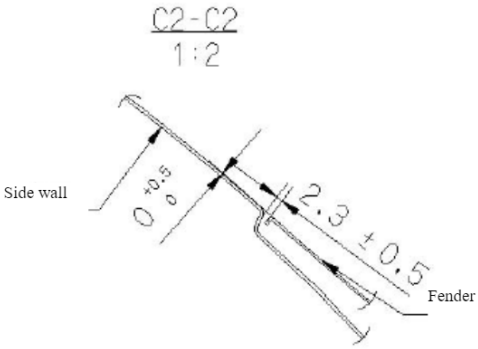


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Crosssection C1-C1, requirements on clearance and levelness.

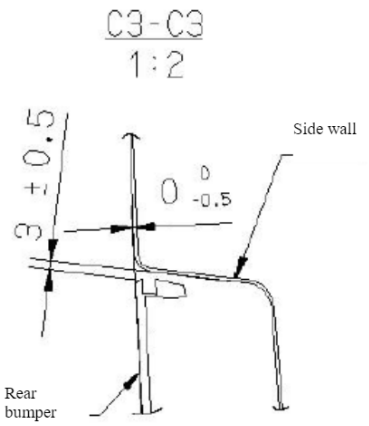


Crosssection C2-C2, requirements on clearance and levelness.

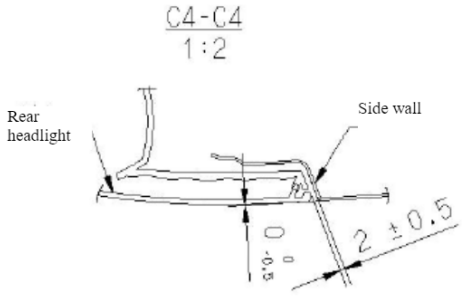


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Crosssection C3-C3, requirements on clearance and levelness.

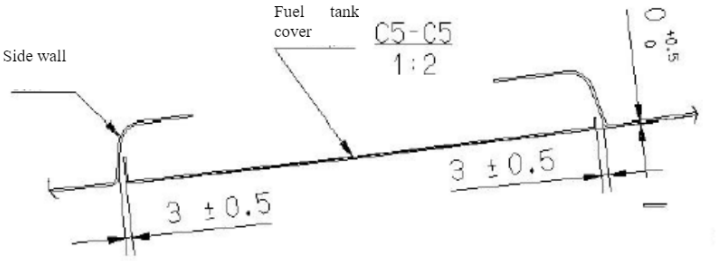


Crosssection C4-C4, requirements on clearance and levelness.



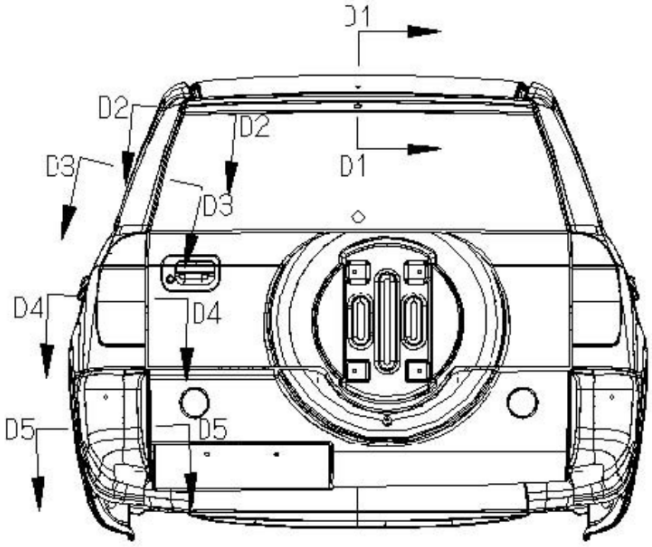
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Crosssection C5-C5, requirements on clearance and levelness.



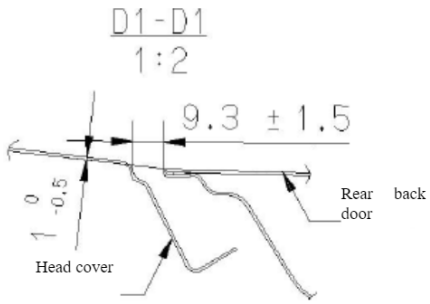
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Rear View

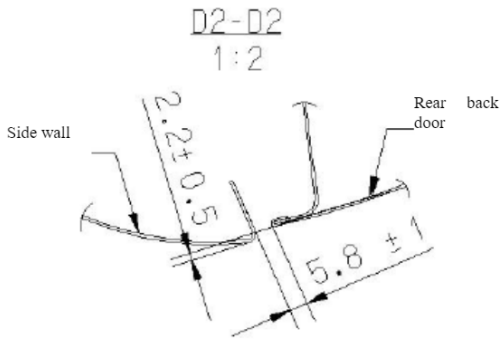


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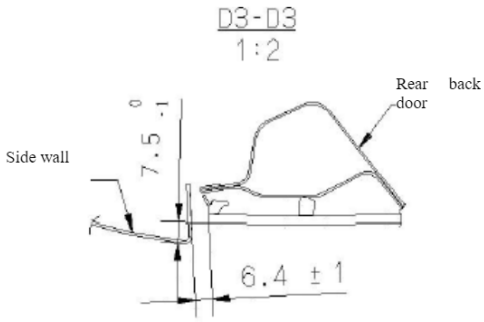
Crosssection C1-C1, requirements on clearance and levelness.



Crosssection C2-C2, requirements on clearance and levelness.

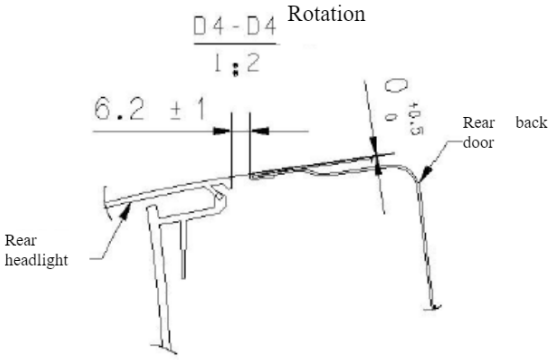


Crosssection C3-C3, requirements on clearance and levelness.

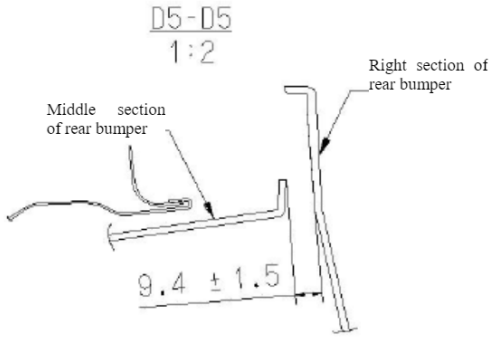


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Crosssection C4-C4, requirements on clearance and levelness.



Crosssection C5-C5, requirements on clearance and levelness.



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