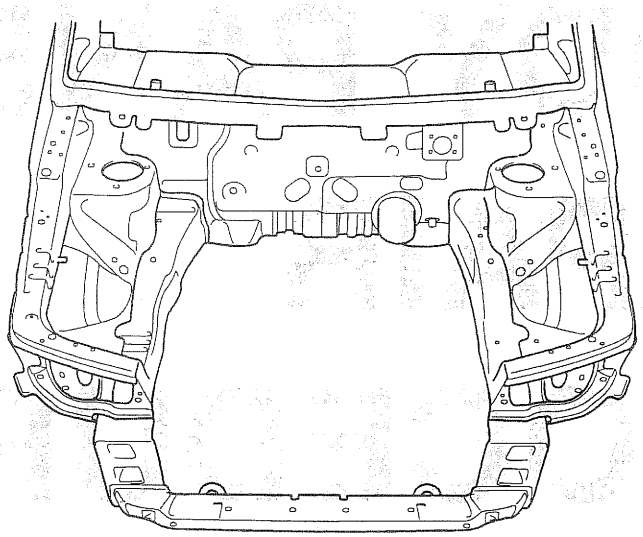
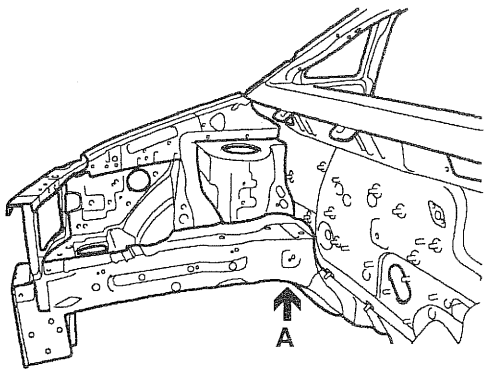
# BODY PANEL REPAIR PROCEDURE

BF

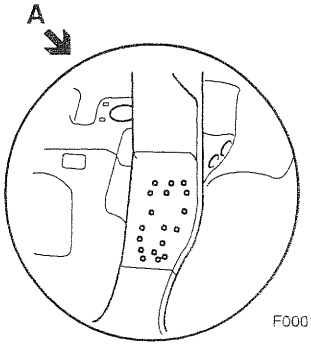
# FENDER APRON AND FRONT SIDE MEMBER (ASSEMBLY)



FF0000

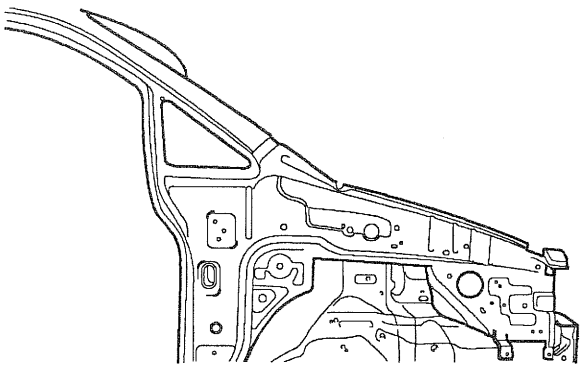



F0013




F00013-1

● MIG plug welding



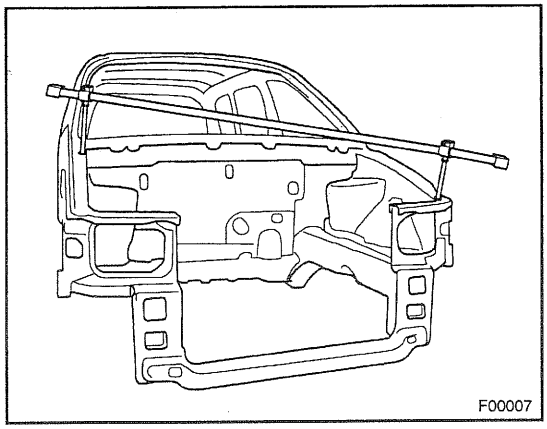
F00010

● MIG plug welding
⤫⤫ MIG lap welding

## REMOVAL

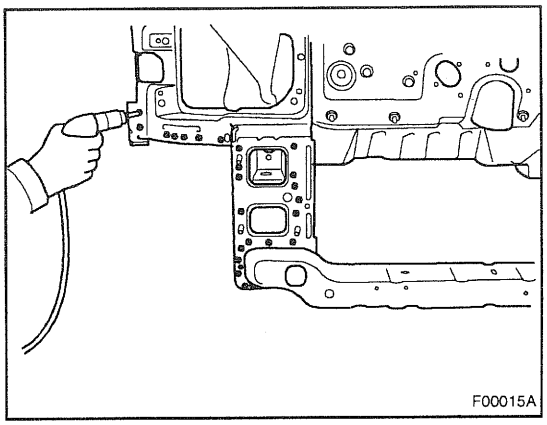
1. Remove engine and suspension components. Refer to the body dimension charts and measure the vehicle to determine straightening and alignment requirements. The body must be returned to its original dimensions before you begin the repair procedure.

   **NOTE**
   **The following procedure illustrates a repair for the right side member. The procedure may also be applied to the left side member.**



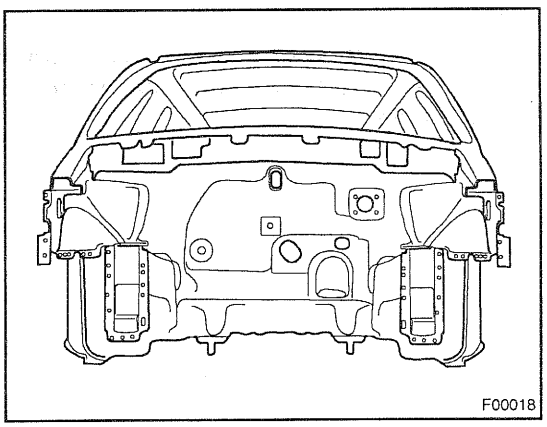

2. Drill out all the spotwelds to separate radiator support panel from Front Side member.

   **NOTE**
   **When spotwelded portions are not apparent, remove paint with a rotary wire brush.**



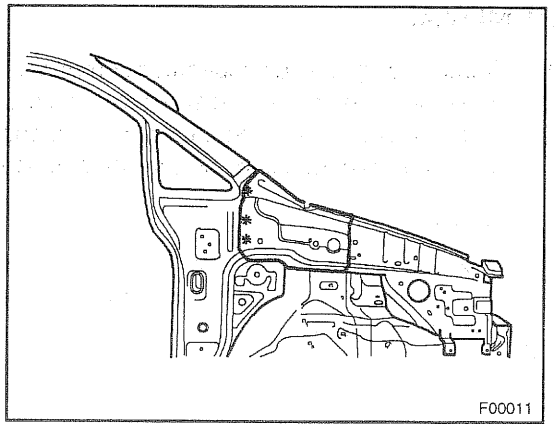

3. Drill out all the spotwelds attaching the fender apron to the radiator support panel and remove the radiator support panel.

   **NOTE**
   **In order to peform cutting and separation of spotwelded points, use a spot weld cutter which is larger than the size of the nugget to make a hole only in the panels to be replaced.**

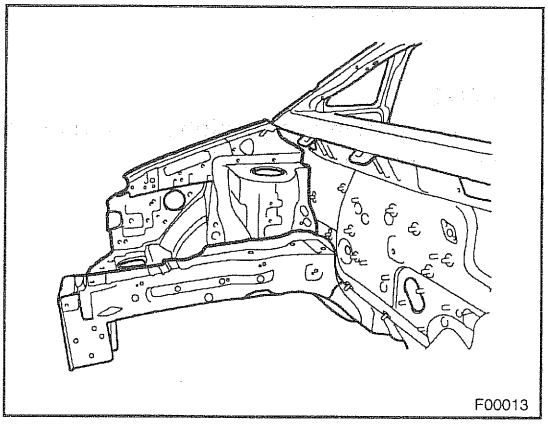


4. Drill out all the spotwelds attaching the cowl side upper outer panel.

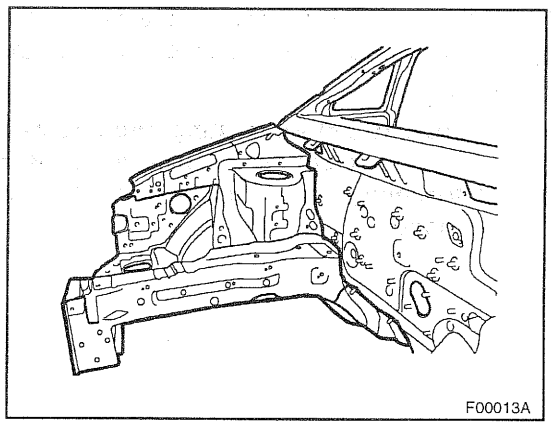
**NOTE**
**If it is possible that the cowl side upper outer panel is reusable, be careful not to damage it while removing.**


F00011

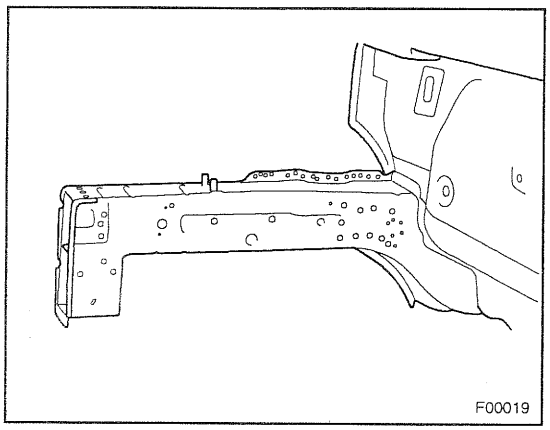
5. Using a spotweld cutter, drill out all the spotwelds attaching the fender apron to the dash panel and front side member.
6. Remove the fender apron panel.


F00013

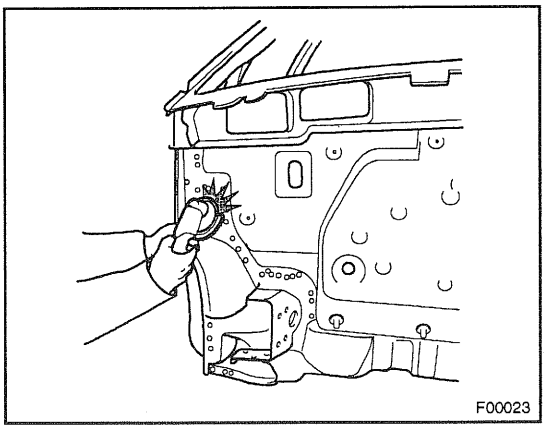
**NOTE**
**If collision damage requires replacement of fender apron and front side member together, remove both of them at the same time.**


F00013A

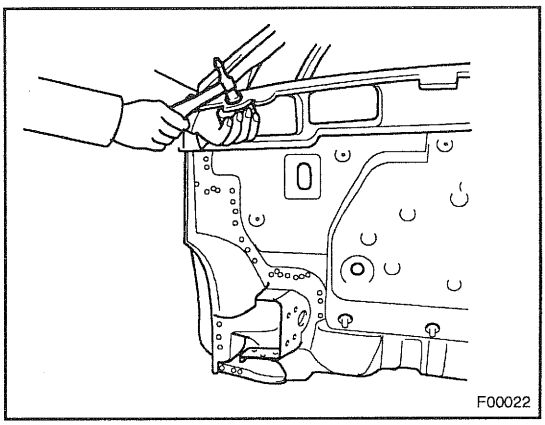
7. Using a spotweld cutter, remove the front side member by drilling out the spotwelds.


F00019

8. Grind and smooth any weld traces which might be left on the body surface by using an air grinder or similar tool, being careful not to damage any of the panels which is not to be replaced.

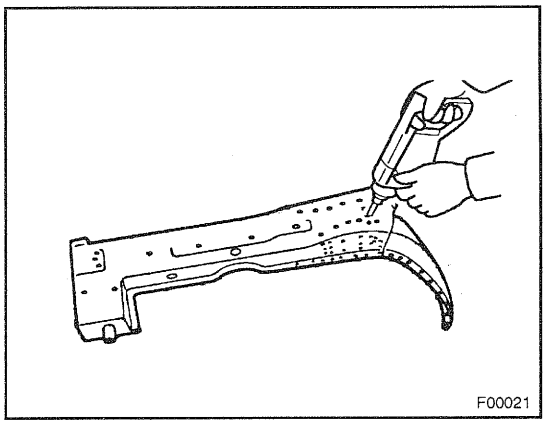


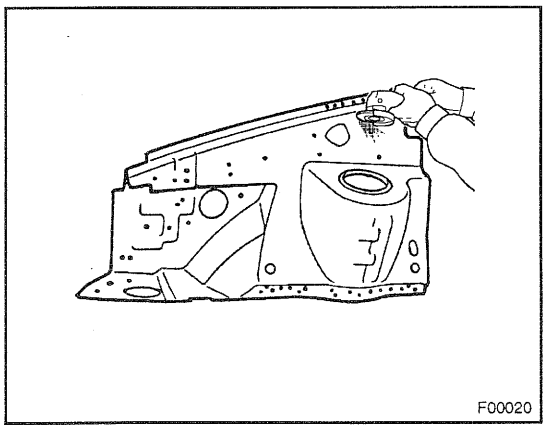

9. Using a hammer and dolly, correct any flanges that become bent or deformed when spotwelds are broken.



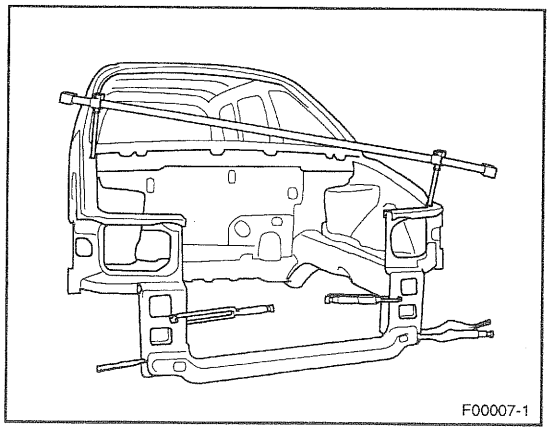

## INSTALLATION

1. Drill 8 mm holes in the new fender apron panel and front side member for MIG plug welding.
2. Remove paint from both sides of all portions that are to be welded such as peripheries of MIG plug weld holes.



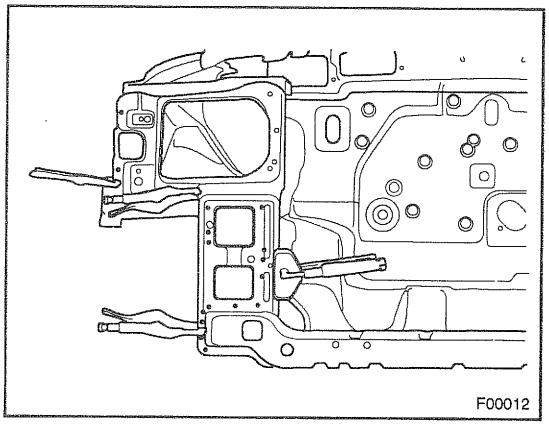



3. Temporarily install new parts in place.
4. Measure each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.

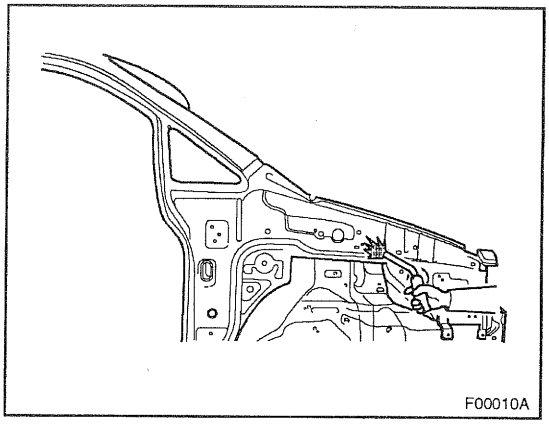



5. Fit and clamp the new parts, and temporarily fix with bolt so as not to twist.

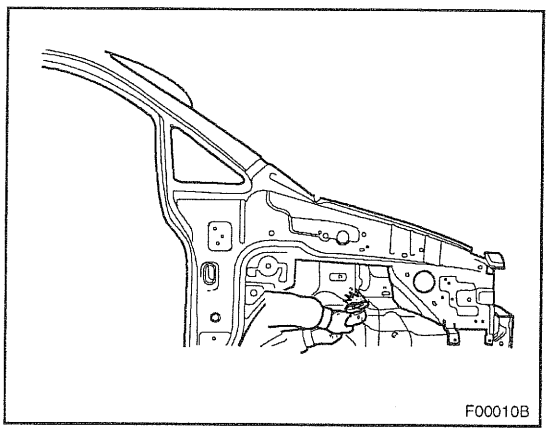
NOTE
1. **The position of the front strut mounting hole is very important.**
2. **If necessary, make temporary welds before welding the new parts.**



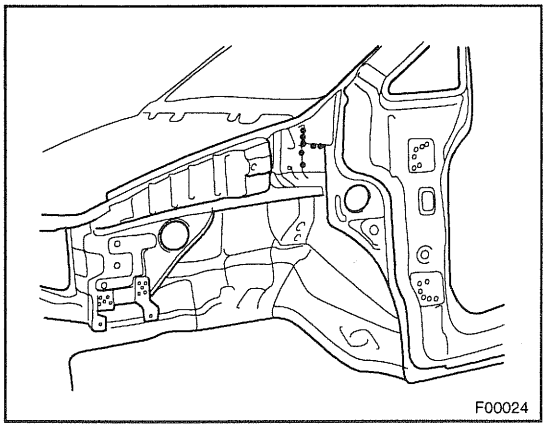

6. MIG plug weld all holes



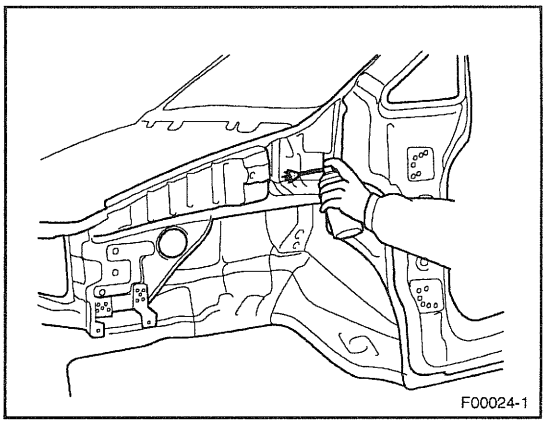

7. Clean MIG welds with a disc grinder.



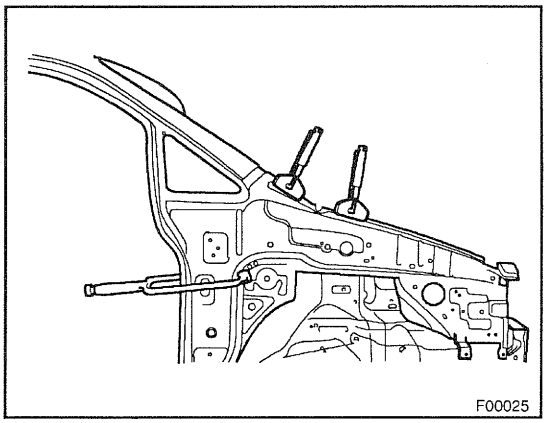
NOTE
1. **Be careful not to grind welded portions too much.**
2. **The internal parts will be stronger if the weld traces are not ground.**


F00024

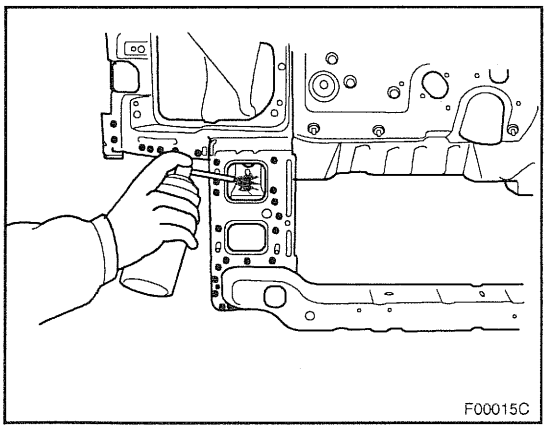
8. Before welding the cowl side upper outer panel, apply the two part epoxy primer and anti-corrosion agent to the interior of the fender apron panel.


F00024-1

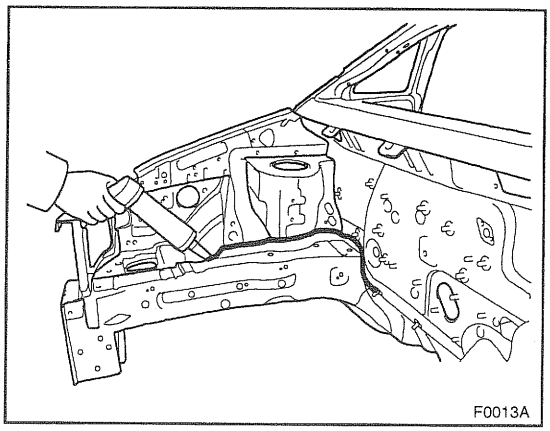
9. Install the cowl side upper outer panel in place.
10. MIG plug weld all holes.
11. Clean and prepare all welds, remove all residue.
12. Apply the two part epoxy primer to the interior of the each panel.


F00025

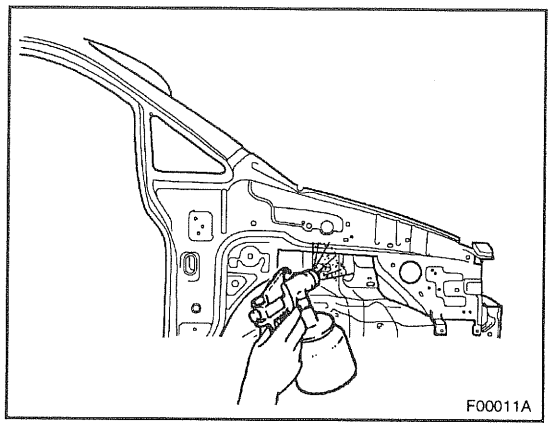
13. Apply an anti-corrosion agent as required (Refer to the CORROSION PROTECTION).
14. Prepare the exterior surfaces for priming using wax and grease remover.
15. Apply metal conditioner and water rinse.
16. Apply conversion coating and water rinse.
17. Apply the two-part epoxy primer.


F00015C

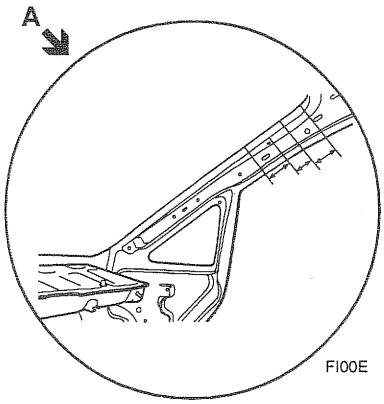
18. Apply the correct seam sealer to all joints carefully (Refer to the BODY SEALING LOCATION).
19. Reprime over the seam sealer to complete the repair.




20. After completing body repairs, carefully apply under coating to the front side member and fender apron (Refer to the CORROSION PROTECTION).
21. In order to improve corrosion resistance, if necessary, apply an under body anti-corrosion agent to the panel which is repaired or replaced (Refer to the CORROSION PROTECTION).



# FRONT PILLAR

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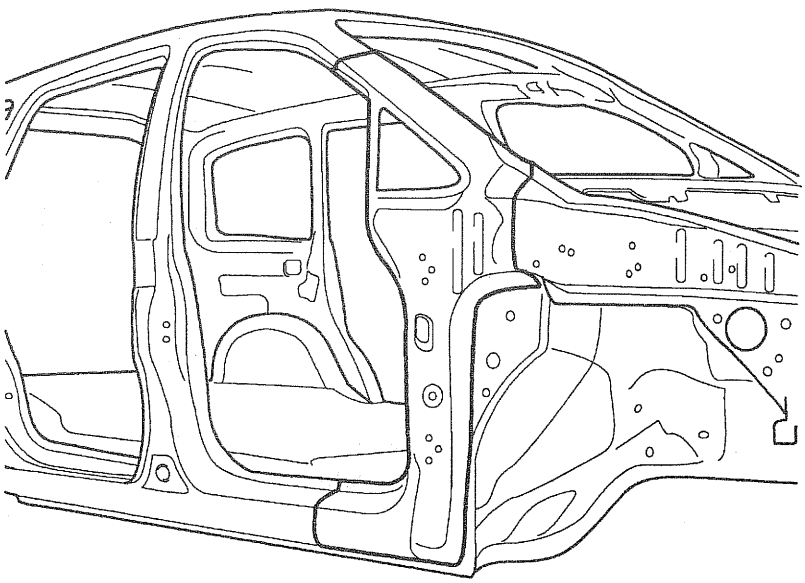
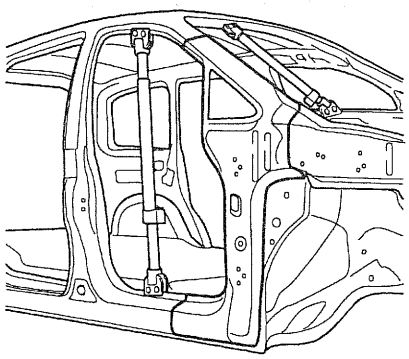


F00002A

● MIG plug welding
⫼ MIG butt welding
⤫ MIG lap welding

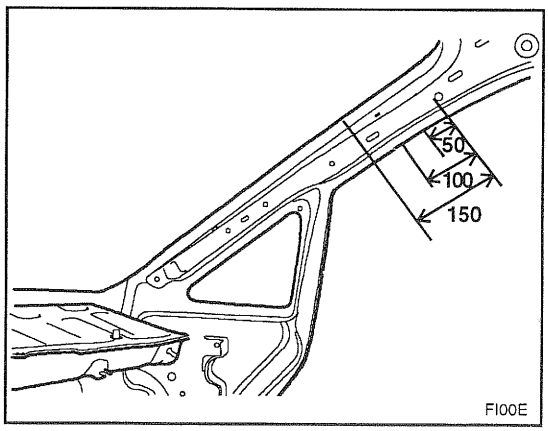
## REMOVAL

1. Before cutting front pillar, be sure to support roof panel.

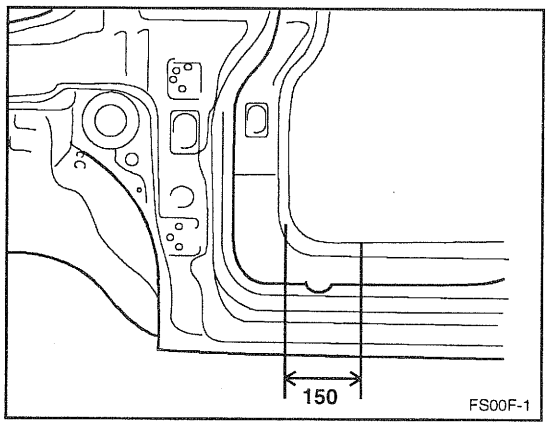


F00002

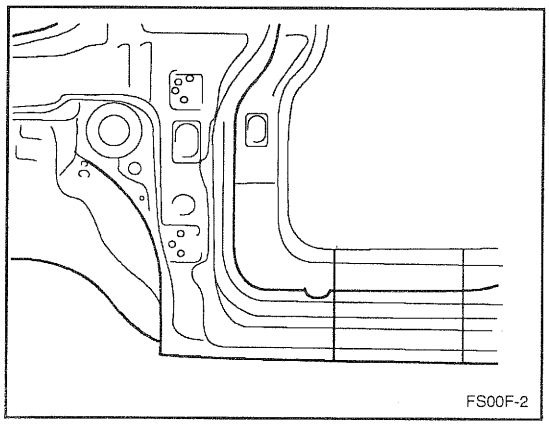
2. Measure and mark the each cutline on the front inner upper pillar, front outer upper pillar and side outer panel from the center of tooling hole indicated in the illustration.



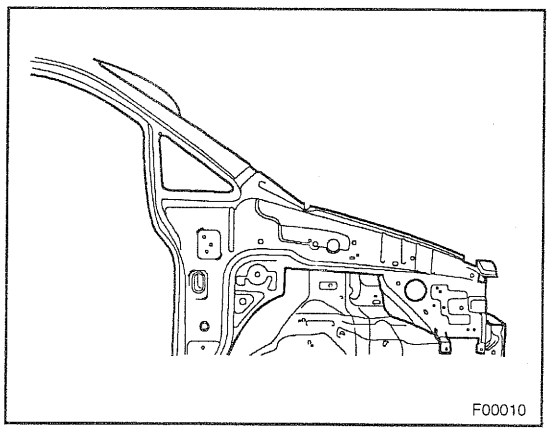

3. Measure and mark the cutline on front side sill outer panel 150mm from the front lower pillar flange center as shown in the illustration.



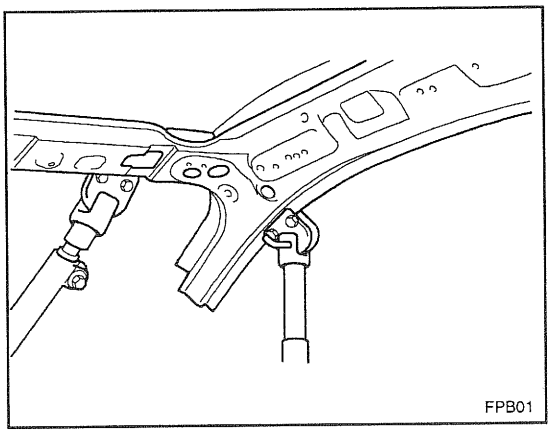

**NOTE**
**Depending on the extend of damaged area, it may be possible to determine the cutting range within indicated in the illustration.**



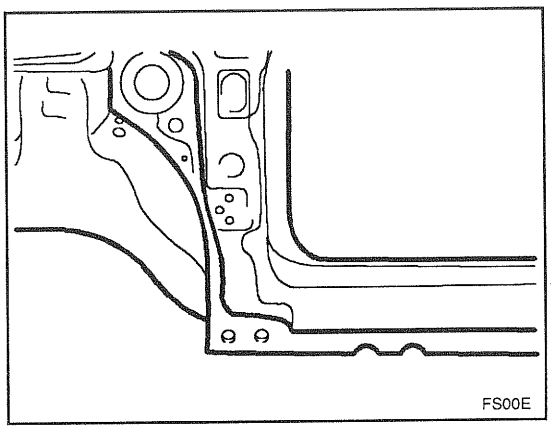

4. To remove the front pillar, grind away and drill out all welds attaching the cowl side upper outer panel as illustration.



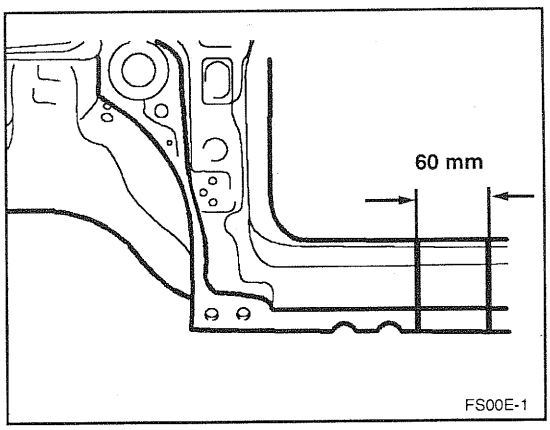
5. Drill out all spotwelds attaching the front pillar to dash panel and cowl side panel.
6. Cut the front pillar through each cutline and take care not to damage the other panel as illustration.



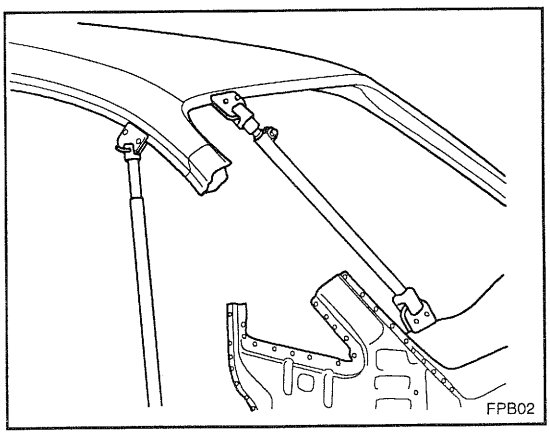

7. Before cutting the side outer panel, rough cut the side sill outer panel only. Be careful not to cut side sill outer reinforcement panel.




8. Cut the side sill reinforcement panel as illustration if necessary.
9. Cut the side sill outer panel vertical cutline and remove the front pillar.

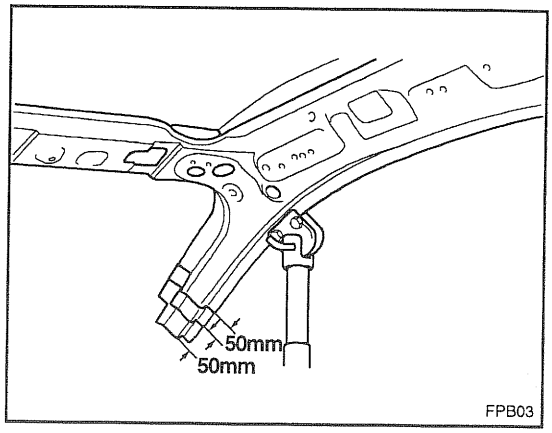



10. Straighten all flanges as necessary, prepare all surface to be welded.

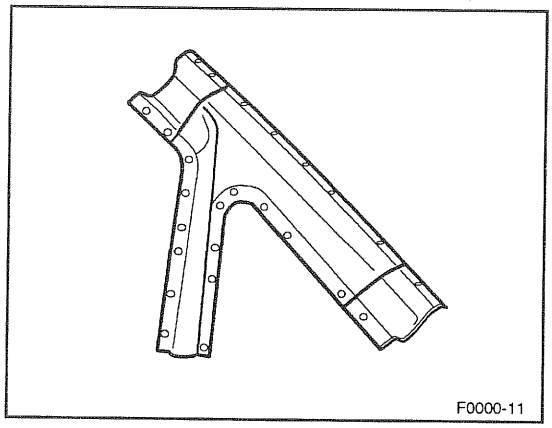


## INSTALLATION

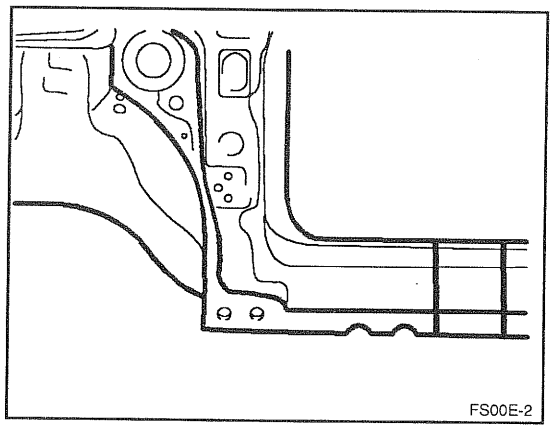
1. Measure 15mm from front inner upper pillar and side outer panel cutlines.
2. Drill 8mm holes in insert overlap area.
3. Make 60mm wide inserts from unused portion of the new panel.
4. Fit and clamp the insert in place for welding.
5. MIG plug weld the insert.



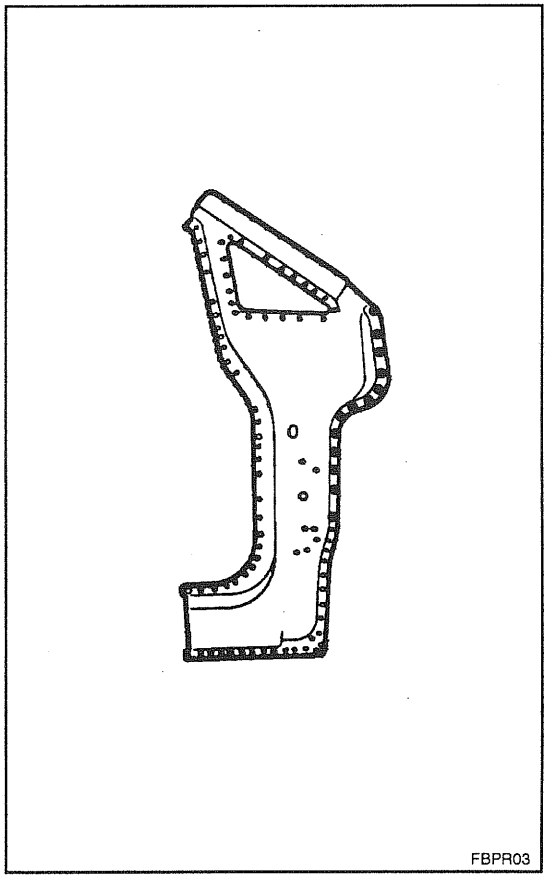

6. Transcribe the cutline to the new front inner upper pillar (in case of partial), cut to length and chamfer butt end to improve weld surface.




7. Transcribe the cutline to the new side sill outer front reinforcement panel, adding 30mm overlap to end and cut to length.
8. Drill 8mm holes in the side sill outer front reinforcement for MIG plug welding, where it attaches to the front pillar outer reinforcement, and where it attaches to the overlap area.
9. Fit and clamp the new side sill outer front reinforcement panel in place for welding.
10. MIG plug weld all holes and MIG butt weld the seams.

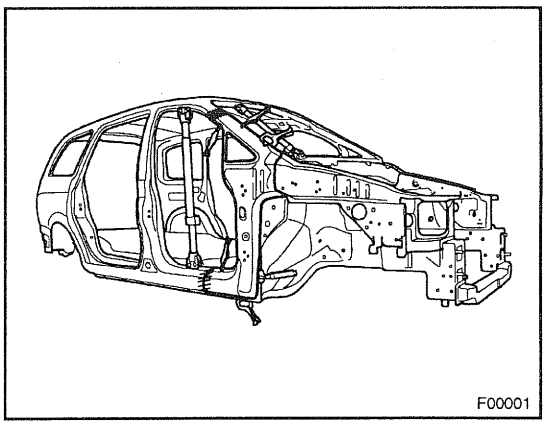


11. Transcribe the cutline to the new side sill outer front reinforcement panel, adding 25mm overlap to end and cut to length.
12. Drill 8mm holes along outer panel flanges in production location for attachment.
13. If necessary, make temporary welds, and then check to confirm that the closing and fit for windshield glass, door and fender are correct.

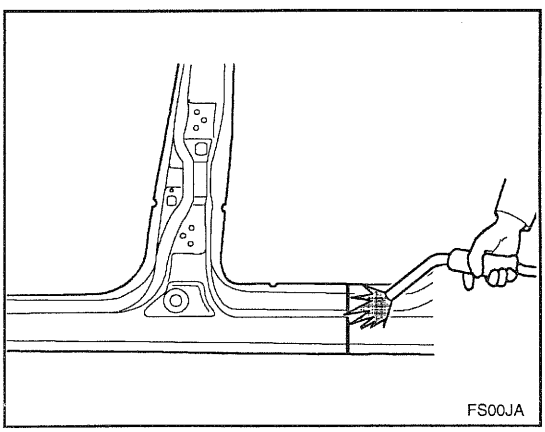



14. MIG butt weld front outer pillar and front side outer panel seams.
15. Reattach the cut away front inner pillar section, then MIG butt weld.

16. Temporarily install front inner pillar and front side outer panel in place.
17. Measure each measurement point(Refer to the BODY DIMENSION) and correct the installation position.
18. If necessary, make temporary welds, and then check to confirm that the closing and fit windshield glass, door and fender are correct.

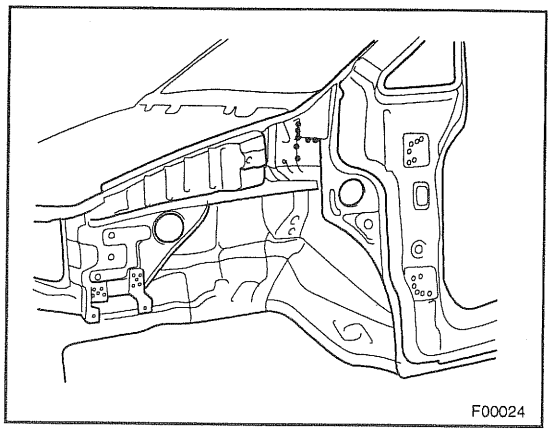



19. MIG plug weld all holes and MIG butt weld all seams.

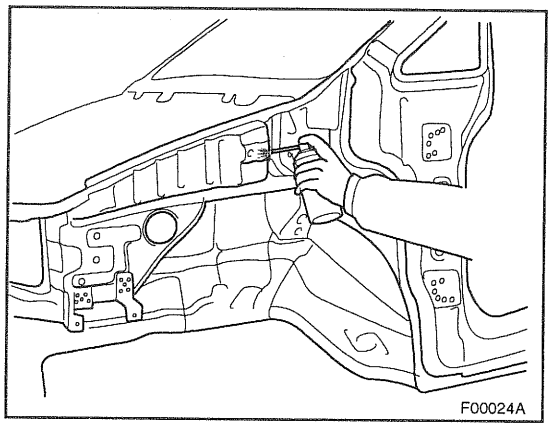


20. Clean all welds with a disc grinder.

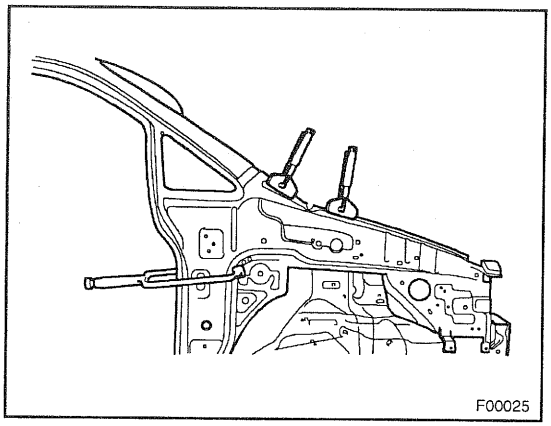
    **NOTE**
    1. **Be careful not to grind welded portions too much.**
    2. **The internal parts will be stronger if the weld traces are not ground.**


F00024

21. Before welding the cowl side upper outer panel, apply the two part epoxy primer and anti-corrosion agent to the interior of the fender apron panel.

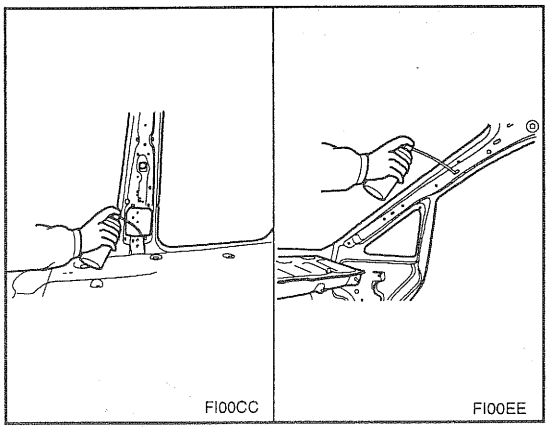

F00024A

22. Install the cowl side upper outer panel in place.
23 MIG plug weld all holes.
24. Clean and prepare all welds, removing all residue.

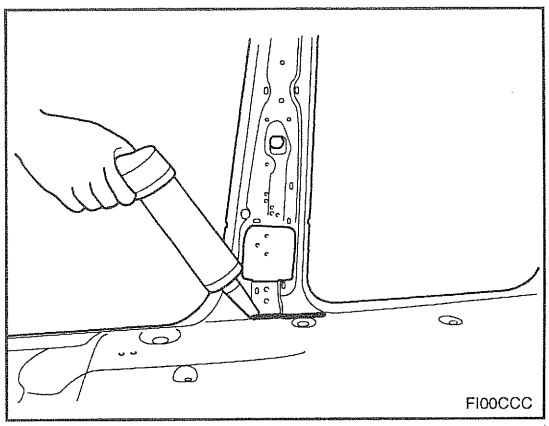

F00025

25. Apply body filler to joints and sand as needed.
26. Apply the two-part epoxy primer to the interior of the front pillar.

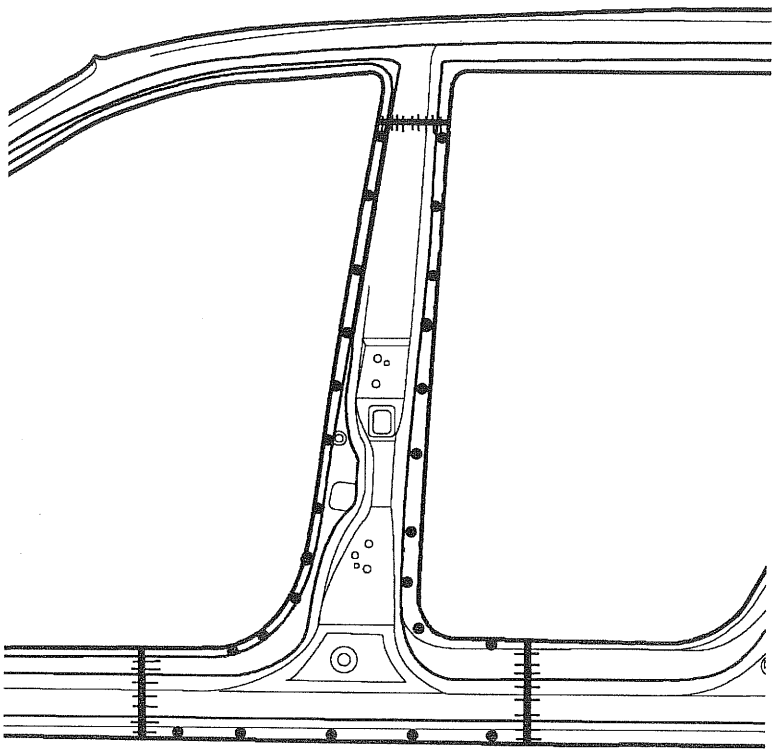
27. Apply an anti-corrosion agent to the welded parts and inside of front pillar(Refer to the CORROSION PROTECTION).
28. Prepare exterior surfaces for priming, using wax and grease remover.
29. Apply metal conditioner and water rinse.
30. Apply conversion coating and water rinse.
31. Apply the two-part epoxy primer.




32. Apply the correct seam sealer to all joints carefully(Refer to the BODY SEALING LOCATION).
33. Reprime over the seam sealer to complete the repair.



# CENTER PILLAR

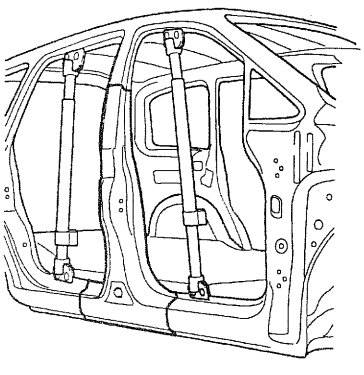


● MIG plug welding
⫲ MIG butt welding

SOP1100A

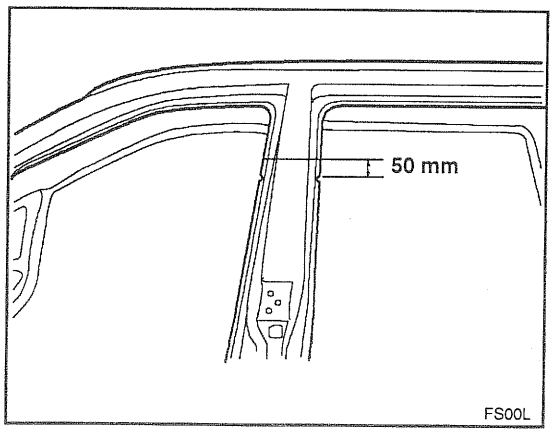
## REMOVAL

1. Before cutting front pillar, be sure to support roof panel.

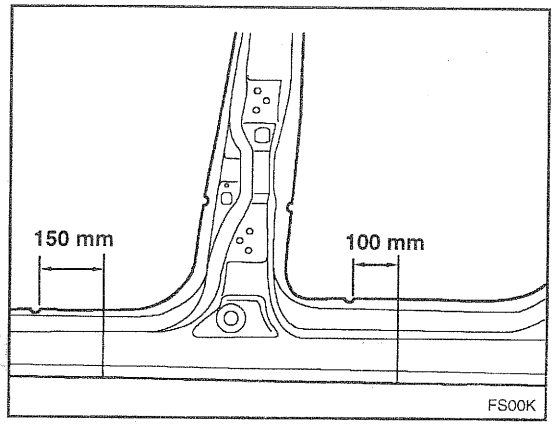


F00004

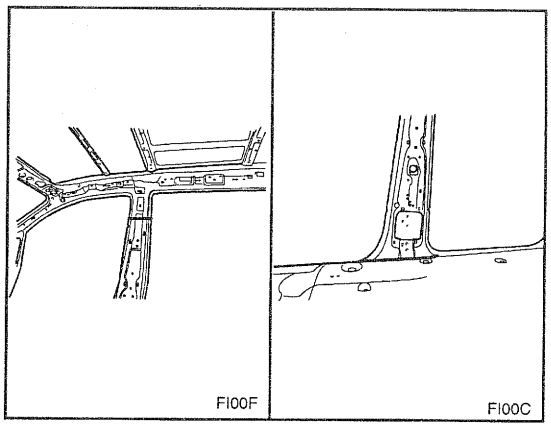
2. Measure and mark the horizontal cutline on center outer pillar as illustration.



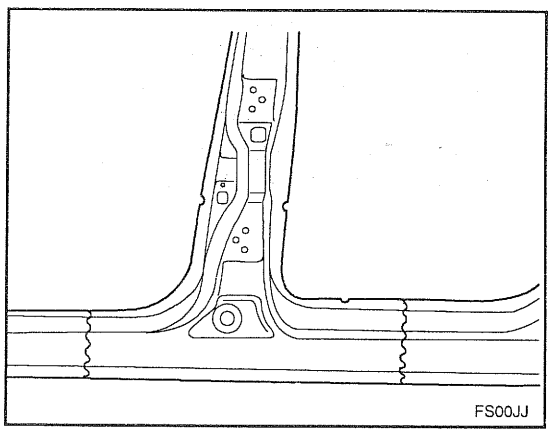

3. Measure and mark the vertical cutlines to side sill outer panel as illustration.



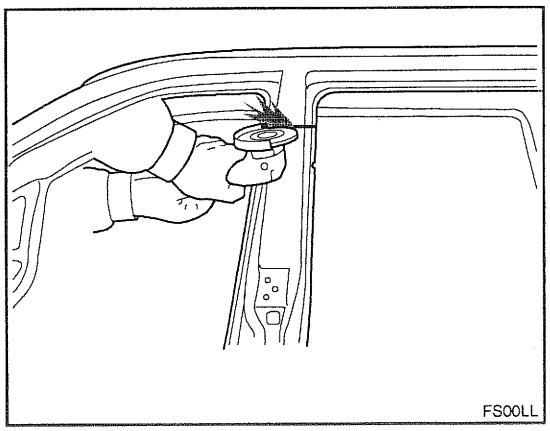

4. Drill out all spotwelds attaching the center inner pillar to the body to remove center pillar panel.



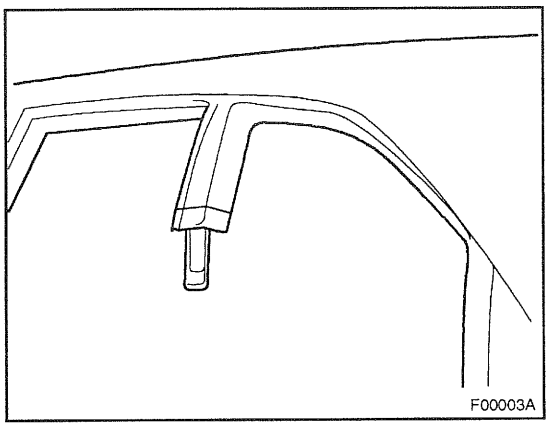

5. Rough cut side sill outer panel and remove spotwelds attaching center pillar outer reinforcement to side sill outer reinforcement to remove center pillar.



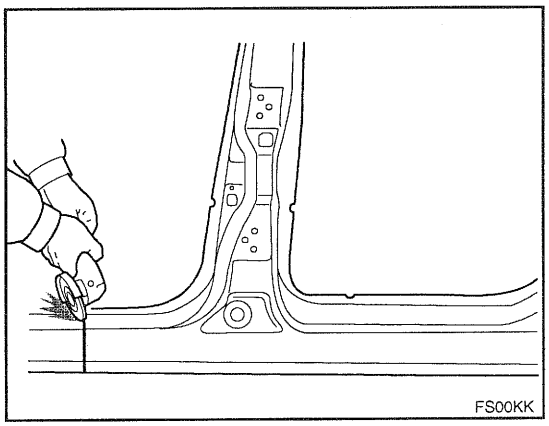
6. Drill out all spotwelds attaching the center outer pillar to the center inner pillar above the cutline.
7. Cut through center outer pillar at cutline.



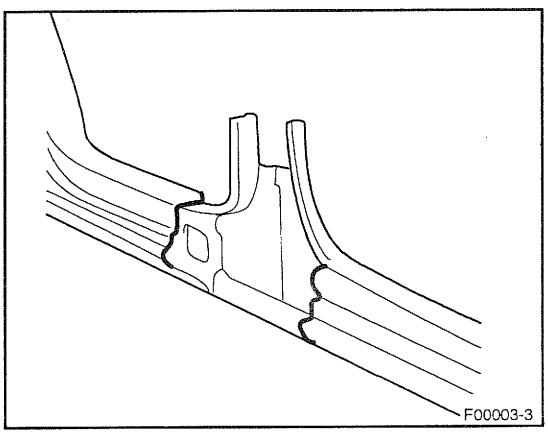

**NOTE**
**When cutting center inner pillar, be careful not to cut front seat belt mounting upper bracket.**




8. Cut side sill outer panel along vertical cutlines.
   Be careful not to cut mating flanges or side sill reinforcement.
9. Remove spot welds using spotweld cutter along side sill outer panel upper and lower flanges and side sill outer reinforcement.
10. Remove center pillar.

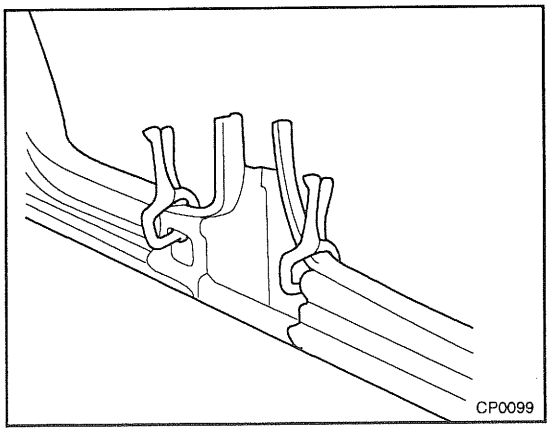



11. Determine if the side sill outer reinforcement is damaged and needs to be replaced. If replacing is necessary, mark out the damaged portion of the reinforcement. Cut at cutlines and remove damaged potion.
12. Straighten all flanges as necessary.
13. Prepare all surfaces to be welded.



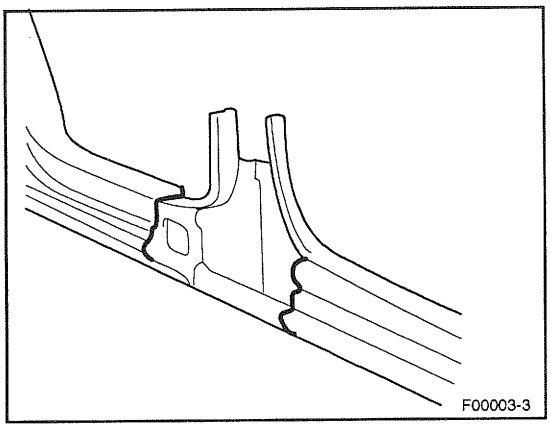
## INSTALLATION

1. Transfer the cutline dimensions to the new side sill outer reinforcement, adding 25mm overlap to each end and cut to length.
2. Drill 8mm holes in overlap areas on each end of new reinforcement and clamp the new reinforcement in place.

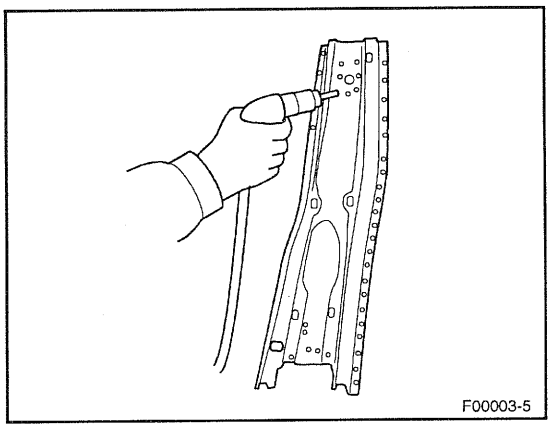



3. MIG plug weld all holes MIG butt weld seams.

**NOTE**
**The reinforcement will be stronger if the weld traces are not ground.**

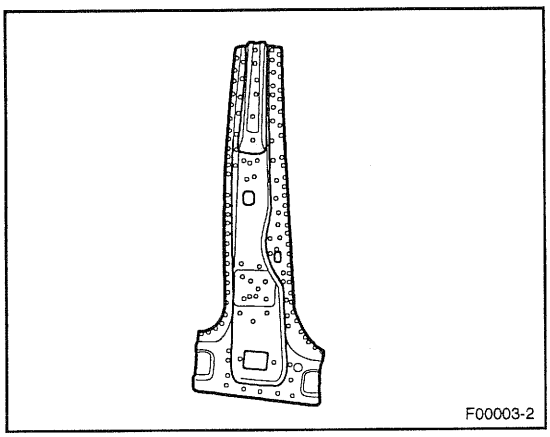



4. In order to install center inner pillar, drill out spotwelds attaching the roof side inner rail to center inner pillar to separate them.

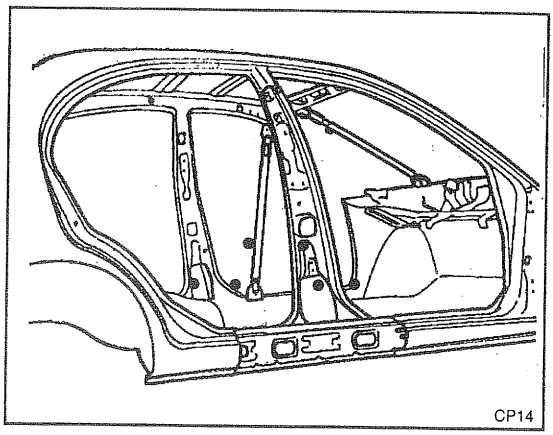



5. Transcribe the center outer pillar cutlines to new center outer pillar, adding 30mm overlap at both ends of side sill outer panel. Cut and chamfer butt end to improve weld surface.
6. Drill 8mm holes in center outer pillar in production location and overlap area for MIG plug welding.

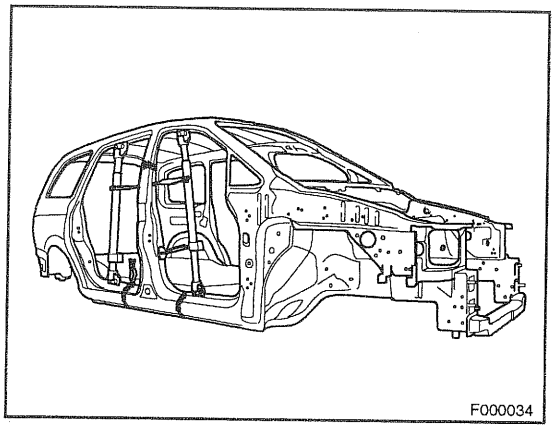
**NOTE**
**Before installing center outer pillar, the center pillar outer reinforcement must be removed by drilling at production location for attachment to side sill outer reinforcement.**



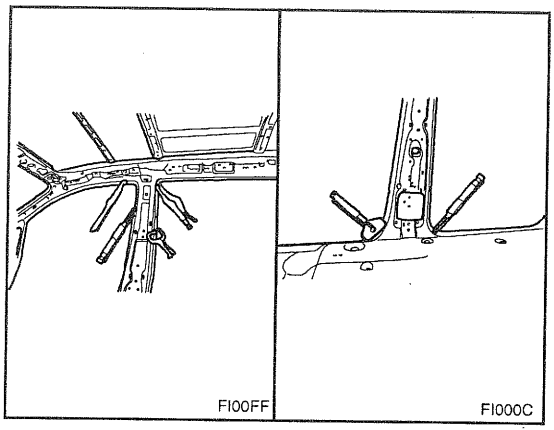
7. Drill 8mm holes in center pillar outer reinforcement for attachment to side sill outer reinforcement.
8. Fit and clamp center inner pillar in place.


CP14

9. Temporarily install new center pillar reinforcement and center outer panel in place.
10. Screw center pillar in place.
11. Measure each measurement point(Refer to the BODY DIMENSIONS) and correct the installation position.
12. Check the fit of the front and rear doors.


F000034

13. Remove door, center pillar reinforcement and center outer pillar.
14. MIG plug weld center inner pillar above cutline and to floor side inner panel.

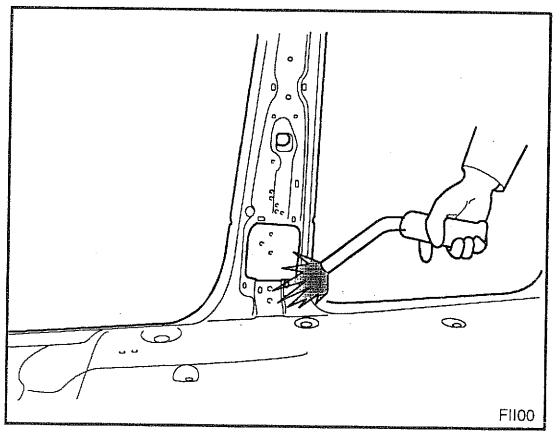

FI00FF


FI000C

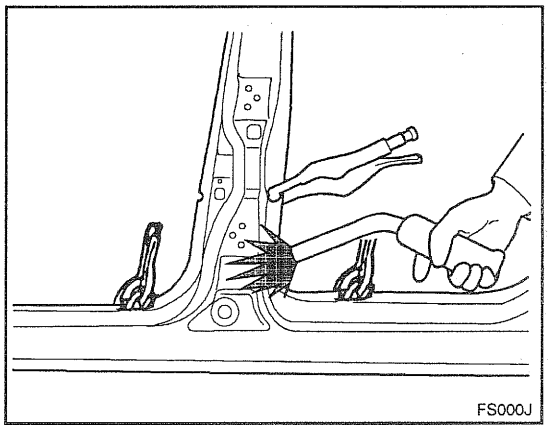
15. Realign center pillar outer reinforcement in place.
16. MIG plug weld holes.

**NOTE**
**The internal parts will be stronger if the weld traces are not ground.**

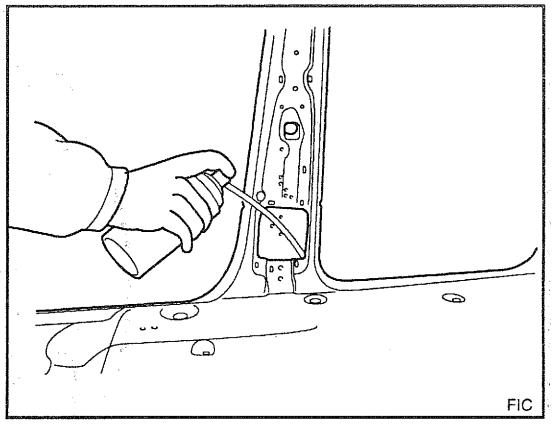
17. Before welding the center outer pillar, apply the two part epoxy primer and anti-corrosion agent to the welded parts.


FII00

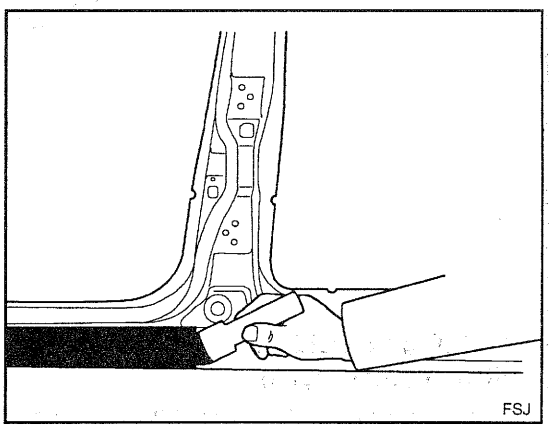
18. Reinstall center outer pillar and screw in place.
19. MIG plug weld all holes and MIG butt weld all seams.
20. Clean and prepare all welds, and remove all residue.
21. Apply body filler to the outer center pillar seam. Sand and finish.
22. Apply the two-part epoxy primer to the interior of the center pillar.



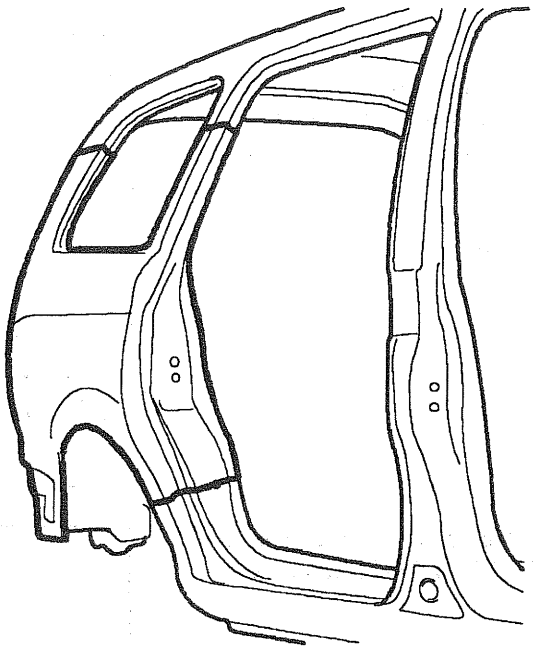

23. Apply an anti-corrosion agent to the welded parts and interior of the center pillar(Refer to the CORROSION PROTECTION).
24. Prepare exterior surfaces for priming, using wax and grease remover.
25. Apply metal conditioner and water rinse.
26. Apply conversion coating and water rinse.
27. Apply the two-part epoxy primer.




28. Apply the anti-corrosion primer to the side outer panel to complete the repair (Refer to the CORROSION PROTECTION).



# QUARTER PANEL

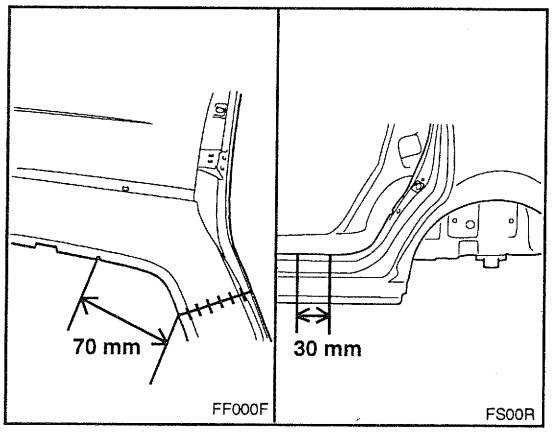


● MIG plug welding
MIG butt welding

F00005

## REMOVAL

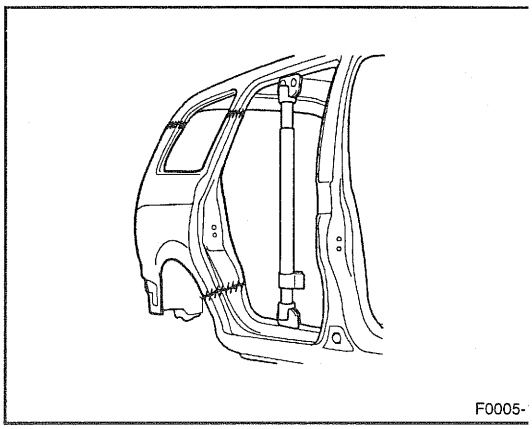
1. Depending on the extent of damage, measure and mark cutlines on the quarter outer panel as illustration.



2. Drill out all attaching spotwelds on the quarter outer panel, including the seam around the door lip opening.
3. Cut the quarter outer panel at cutlines and remove the quarter outer panel as illustration.

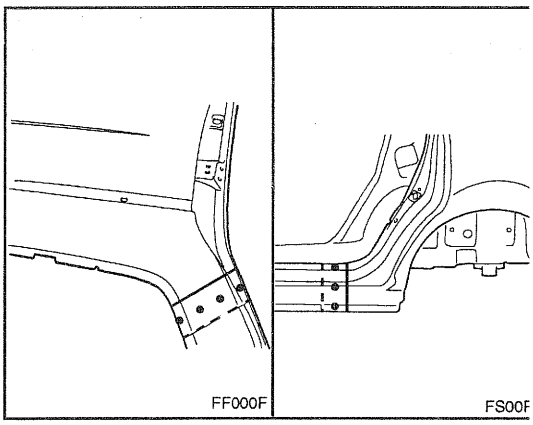
   **NOTE**
   **Be careful not to cut quarter inner panel.**

4. Crimp the cutline of the upper quarter panel with a crimping tool for overlap.
5. Prepare all surfaces to be welded.

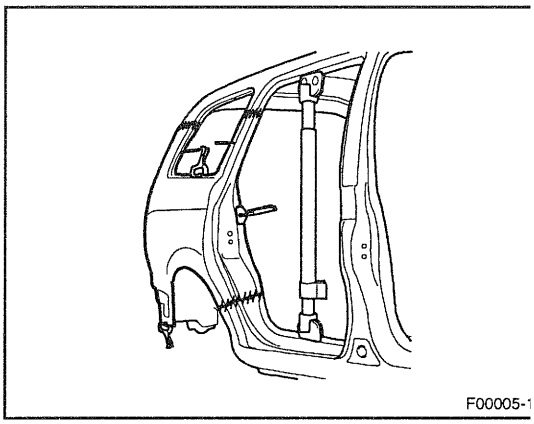



## INSTALLATION

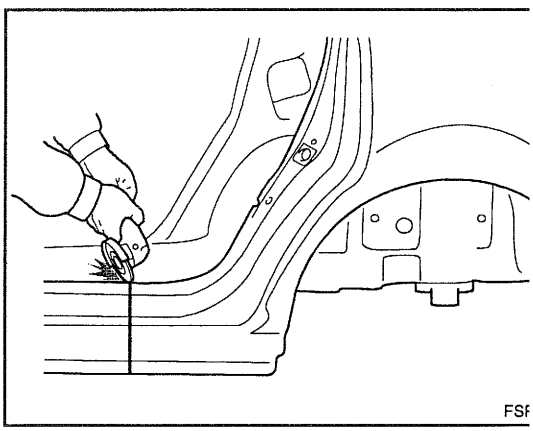
1. Transcribe the cutline to the new quarter outer panel, adding 30 mm for overlap at the old joint.
2. Drill 8 mm holes in overlap areas and along upper and lower flanges of the new quarter outer panel for MIG plug welding.



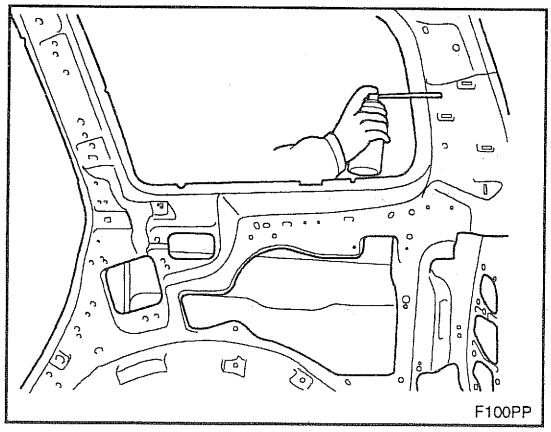

3. Fit and clamp the quarter outer panel in place.
4. MIG plug weld all holes and MIG butt weld seams. At the wheel well the edge must be crimped over the wheel housing.
   This joint may be welded after crimping or may be made by applying a bead of adhesive which may be applied to the joint before or after crimping.
5. Clean and prepare all welds, and remove all residue.



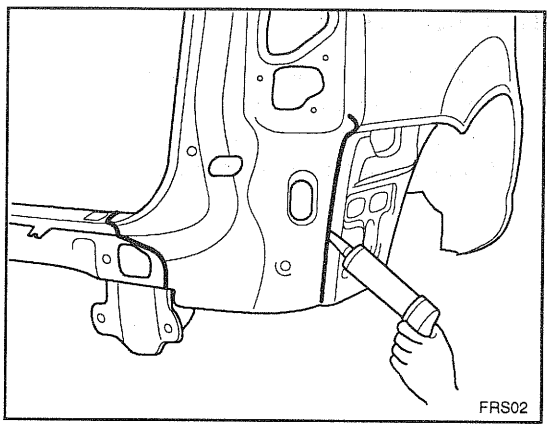

6. Apply body filler to the welded seam. Sand and finish.
   Apply the two-part epoxy primer to the interior of the quarter outer panel.



7. Apply an anti-corrosion agent to the welded parts and interior of the quarter outer panel (Refer to the CORROSION PROTECTION).
8. Prepare exterior surfaces for priming, using wax and grease remover.
9. Apply metal conditioner and water rinse.
10. Apply conversion coating and water rinse.
11. Apply the two-part epoxy primer.

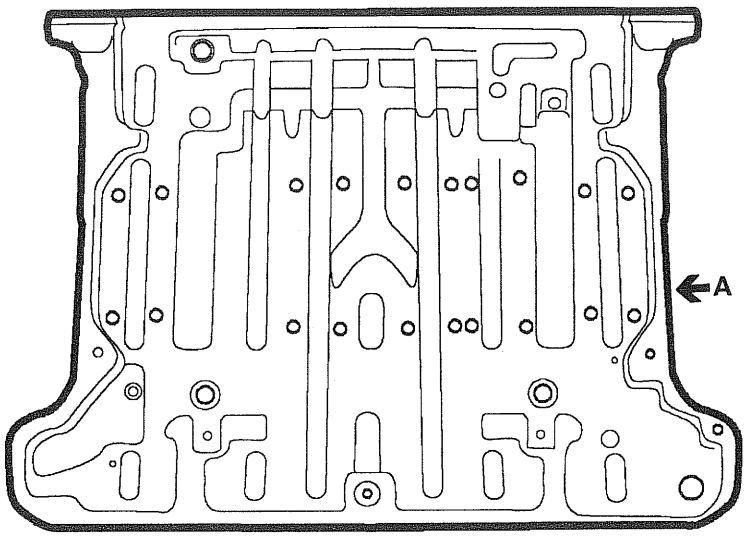

F100PP

12. Apply the correct seam sealers to all joints.
13. Reprime over the seam sealer to complete the repair.

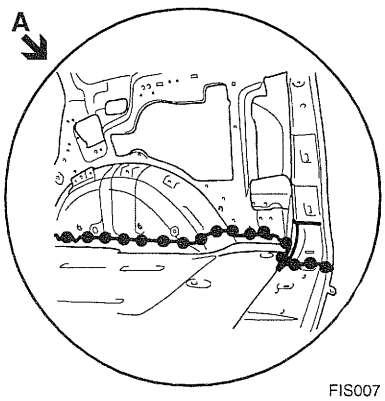

FRS02

# REAR FLOOR

## WELDLING POINTS




FORF001




FIS007

● MIG plug welding
MIG butt welding

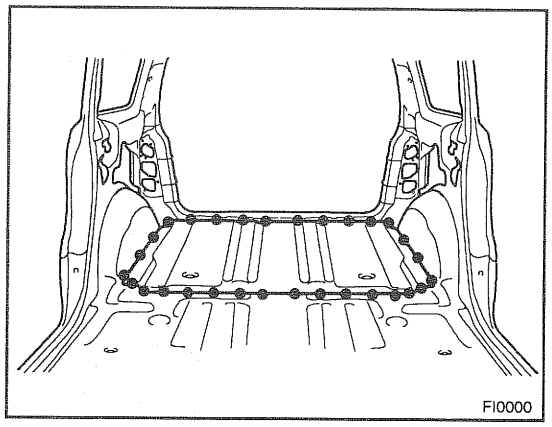
## REMOVAL

Refer to the body dimension chart and measure the vehicle to determine straightening and alignment requirements.

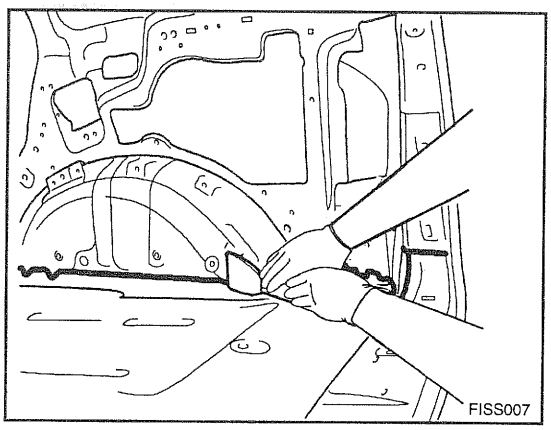
**NOTE**
**The body must be returned to its original dimension before beginning the repair procedure.**

1. Measure and mark the cutline on the floor from the rear edge of rear floor as shown in the figure.

   **NOTE**
   **The cutline in the illustration is provided for rear floor panel replacement in case it has been damaged from rearside inpacts. In case it has been damaged from side impact, it may be easy to replace it if you are working on the front of the cutline.**

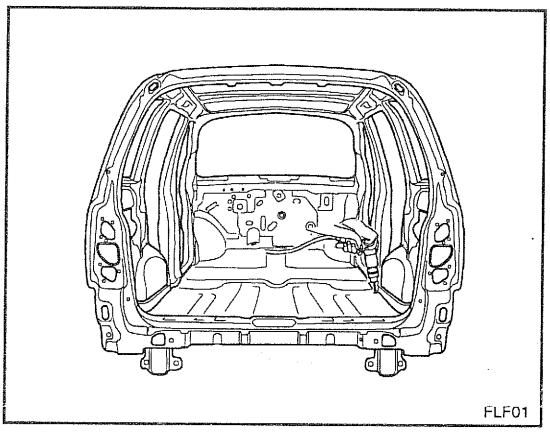



2. Before drilling out spotwelds, remove floor corner panel body sealant.

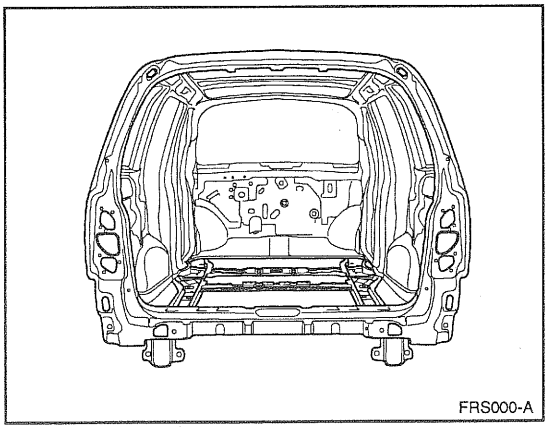



3. Drill out all spotwelds attaching the rear floor panel to the body.

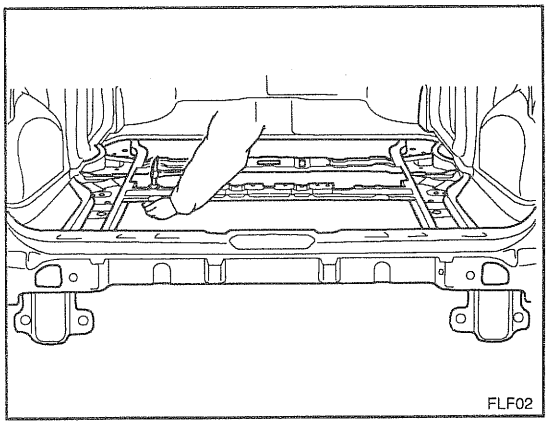
   **NOTE**
   **Drill the outer panel with a spot cutter so as not to damage the members.**



4. Cut the rear floor panel between end crossmember welding points. In that case, be careful not to damage rear sidemember and mating flangers.
5. Remove the rear floor panel.

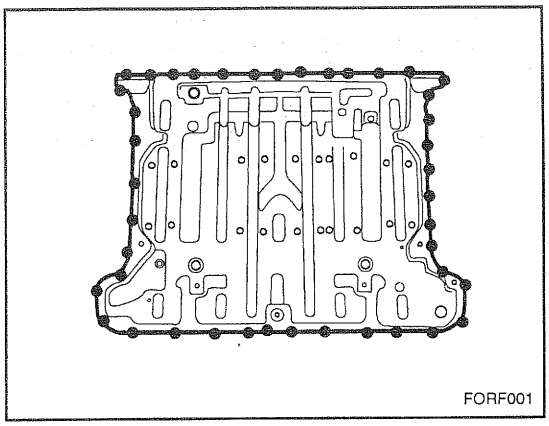

FRS000-A

6. Prepare all surfaces to be welded.

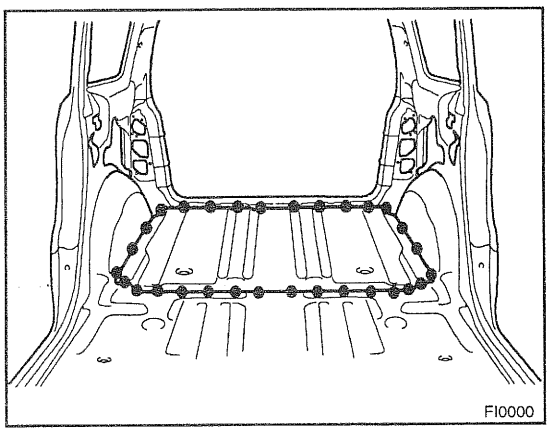

FLF02

## INSTALLATION

1. Drill 8 mm holes in overlap area and production locations of the new rear floor panel for MIG plug welding.


FORF001

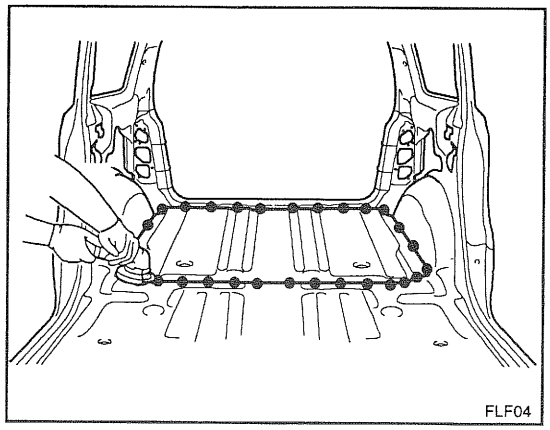
2. Fit and clamp the rear floor panel and attach the rear floor panel to the rear sidemembers and other panels.
3. MIG plug weld all holes.

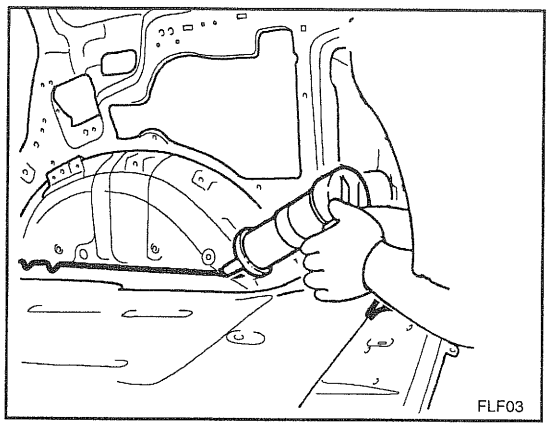

FI0000

4. Clean and prepare all welds, removing all residue.

**NOTE**
**In order to prevent distortion caused by the welding heat, make the welds alternately at regular intervals.**

5. Apply the two-part epoxy primer to the interior of the welded parts.
6. Apply an anti-corrosion to the interior of the welded parts(Refer to the CORROSION PROTECTION).
7. Prepare exterior surfaces for priming, using wax and grease remover.
8. Apply metal conditioner and water rinse.
9. Apply the two-part epoxy primer.
10. Apply the correct seam sealer to all joints(Refer to the BODY SEALING LOCATIONS).
11. Reprime over the seam sealer to complete the repair.

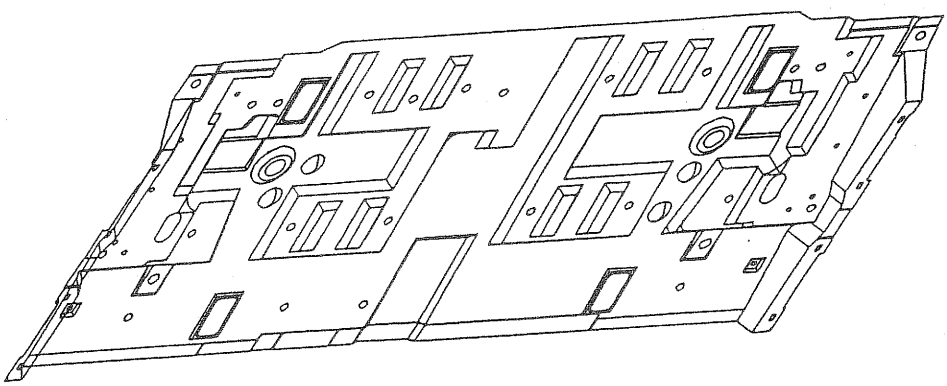

FLF04


FLF03

12. After completing body repairs, carefully apply under coating to the under body(Refer to the CORROSION PROTECTION).
13. In order to improve corrsion resistance, if necessary, apply an under body anti-corrosion agent to the panel which is repaired or replaced(Refer to the CORROSION PROTECTION).

# GAS INTERM FLOOR

## WELDLING POINTS



IFC-01A

● MIG plug welding
MIG butt welding

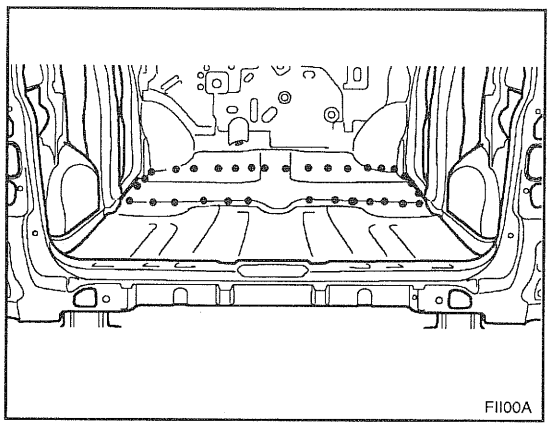
## REMOVAL

Refer to the body dimension chart and measure the vehicle to determine straightening and alignment requirements.

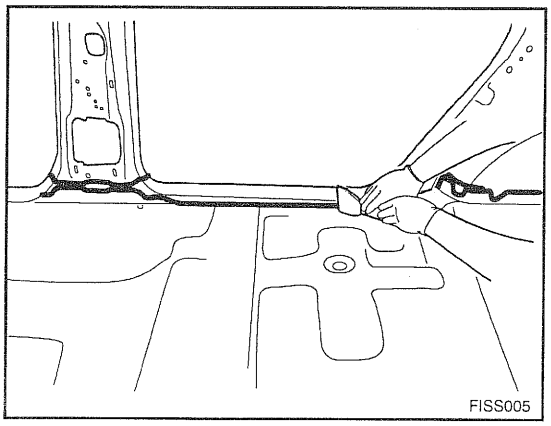
NOTE
**The body must be returned to its original dimension before beginning the repair procedure.**

1. Measure and mark the cutline on the floor from the rear edge of gas interm floor as shown in the figure.

   NOTE
   **The cutline in the illustration is provided for rear floor panel replacement in case it has been damaged from rearside inpacts. In case it has been damaged from side impact, it may be easy to replace it if you are working on the front of the cutline.**

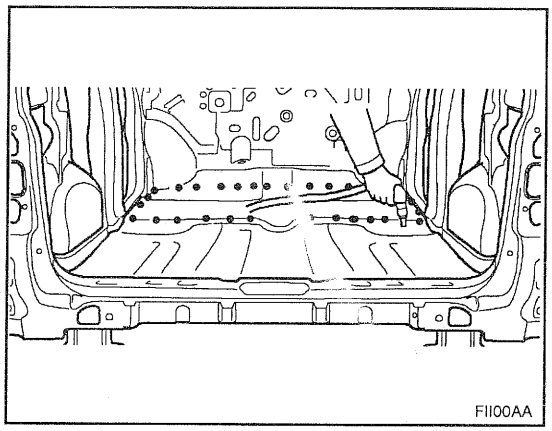



2. Before drilling out spotwelds, remove floor corner panel body sealant.

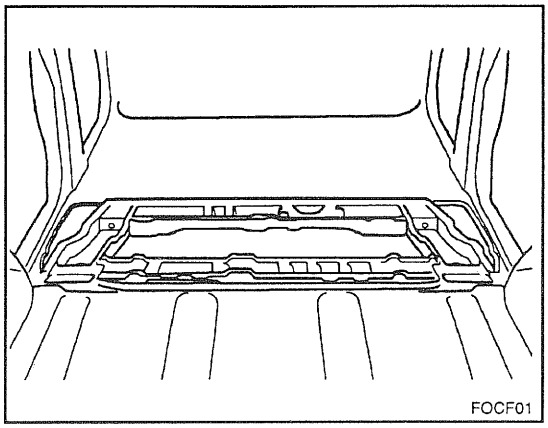



3. Drill out all spotwelds attaching the gas interm floor panel to the body.

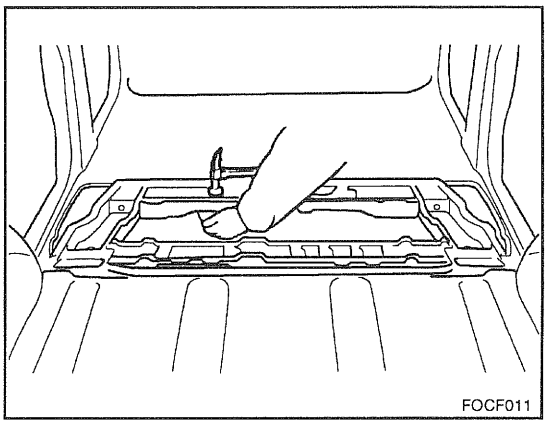
   NOTE
   **Drill the outer panel with a spot cutter so as not to damage the members.**



4. Cut the gas interm floor panel between end crossmember welding points. In that case, be careful not to damage rear sidemember and mating flangers.
5. Remove the gas interm floor panel.

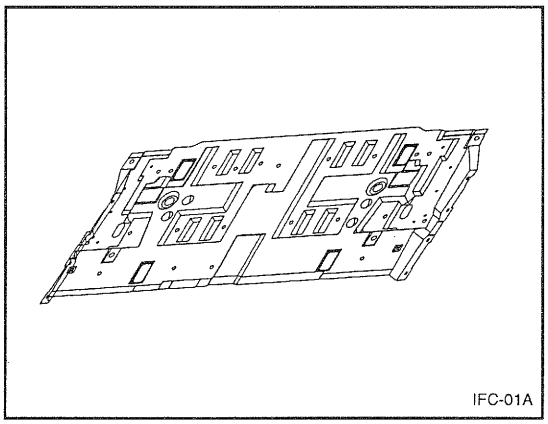

FOCF01

6. Prepare all surfaces to be welded.

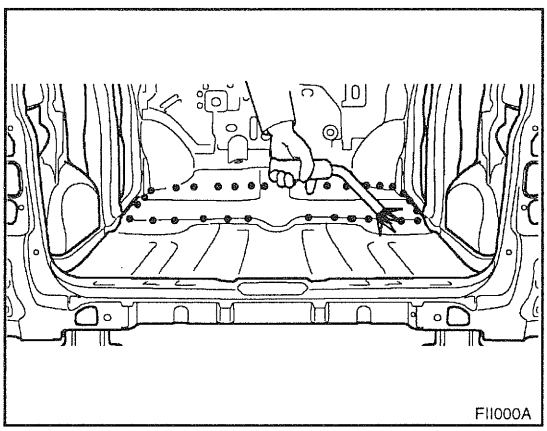

FOCF011

## INSTALLATION

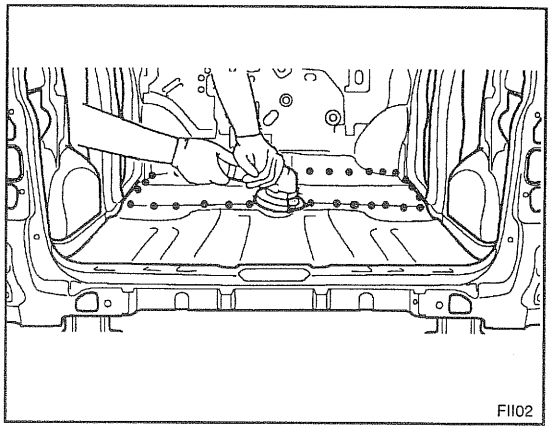
1. Drill 8 mm holes in overlap area and production locations of the new gas interm floor panel for MIG plug welding.


IFC-01A

2. Fit and clamp the gas interm floor panel and attach the gas interm floor panel to the rear sidemembers and other panels.
3. MIG plug weld all holes.

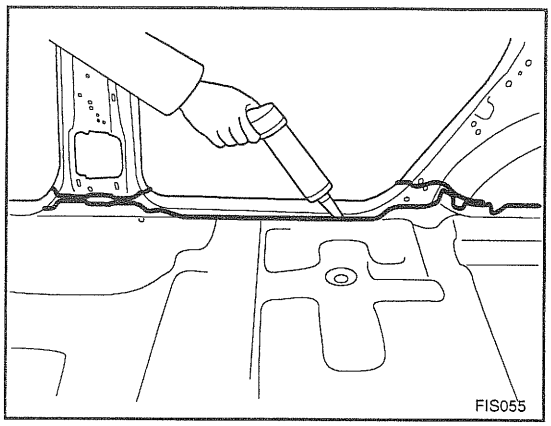

FII000A

4. Clean and prepare all welds, removing all residue.




**NOTE**
**In order to prevent distortion caused by the welding heat, make the welds alternately at regular intervals.**

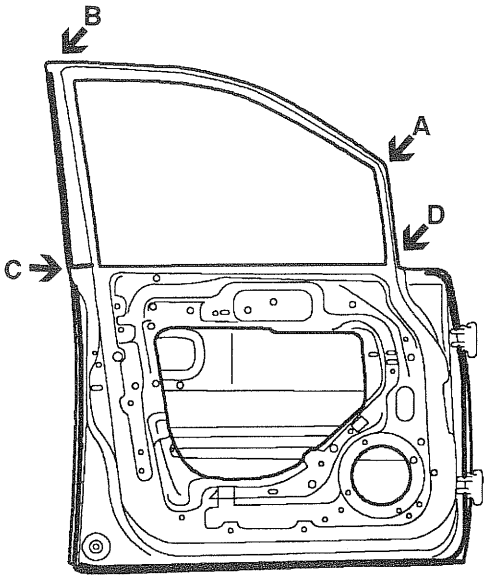
5. Apply the two-part epoxy primer to the interior of the welded parts.
6. Apply an anti-corrosion to the interior of the welded parts(Refer to the CORROSION PROTECTION).
7. Prepare exterior surfaces for priming, using wax and grease remover.
8. Apply metal conditioner and water rinse.
9. Apply the two-part epoxy primer.
10. Apply the correct seam sealer to all joints(Refer to the BODY SEALING LOCATIONS).
11. Reprime over the seam sealer to complete the repair.



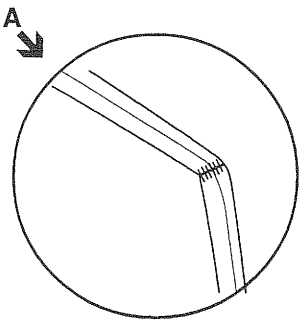

12. After completing body repairs, carefully apply under coating to the under body(Refer to the CORROSION PROTECTION).
13. In order to improve corrsion resistance, if necessary, apply an under body anti-corrosion agent to the panel which is repaired or replaced(Refer to the CORROSION PROTECTION).

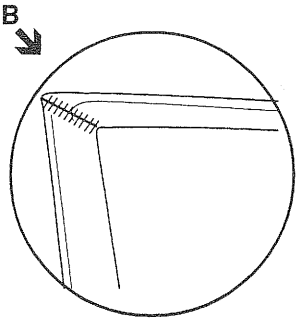
# FRONT AND REAR DOOR OUTER PANELS

## FRONT DOOR

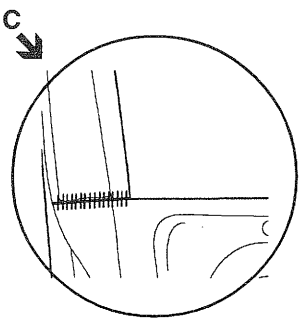


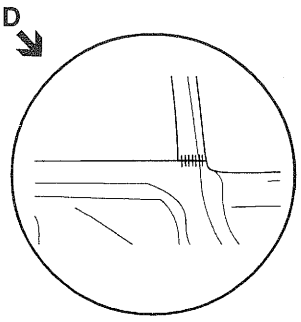

FDS001



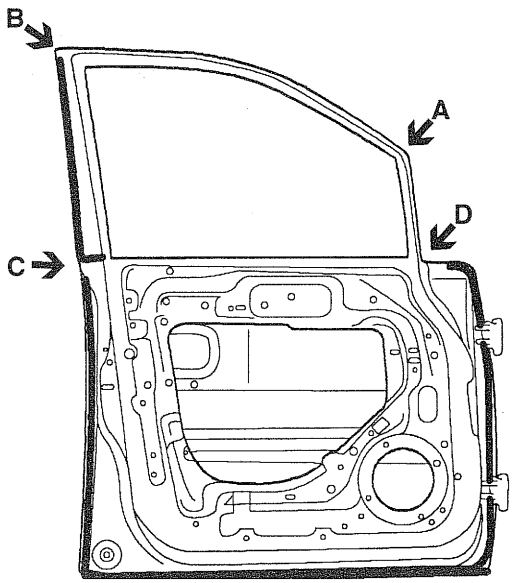

FDS001A/
FDS001B



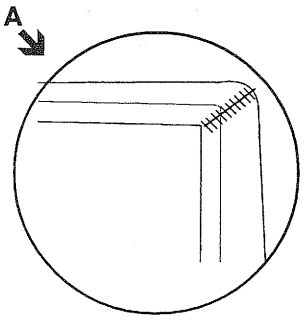



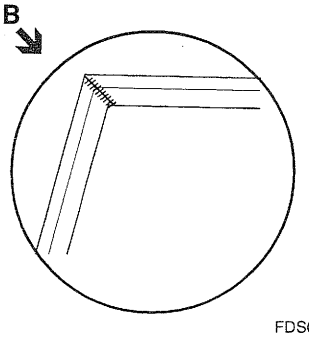

FDS001C/
FDS001D

## REAR DOOR

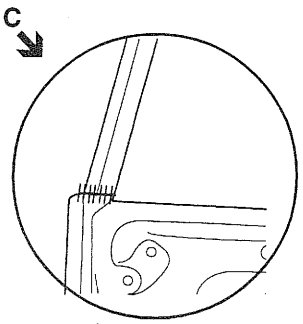


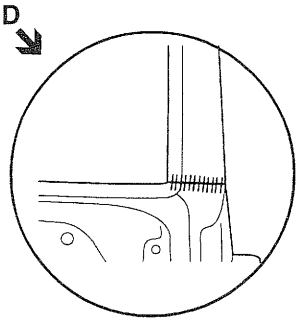

FDS002




FDS002A/
FDS002B



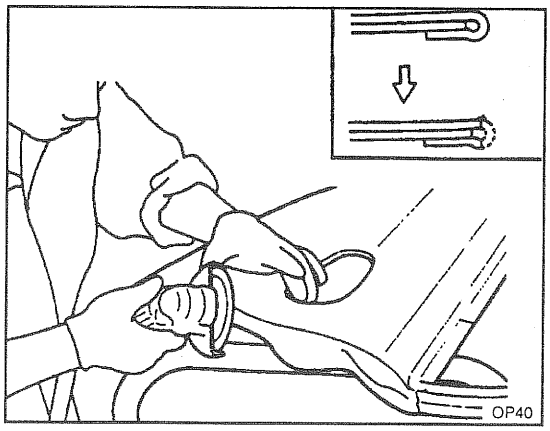




FDS002C/
FDS002D

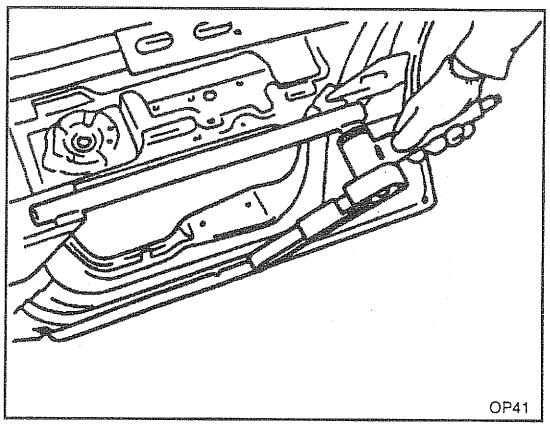
● MIG plug welding
MIG butt welding

## REMOVAL

1. Cut door outer panel hem with a sander.
2. After grinding off the hemming location, remove the outer panel.

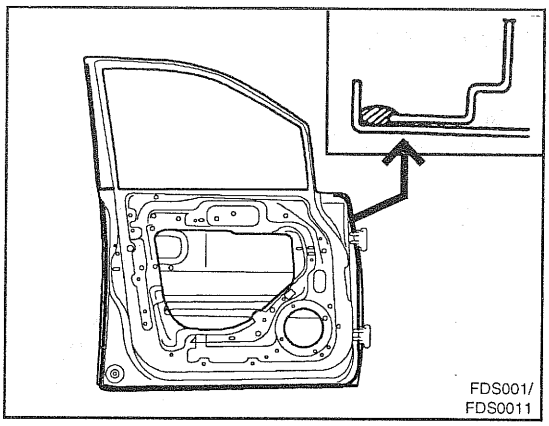


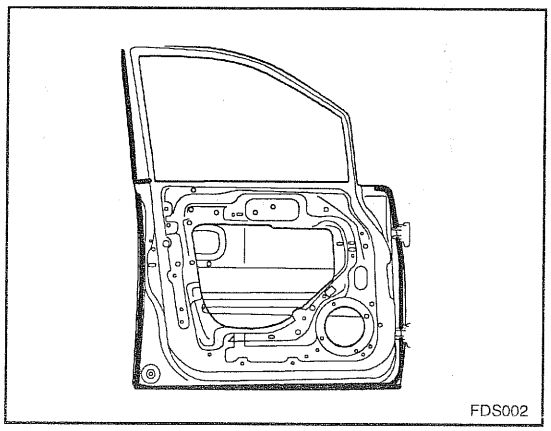

3. Dress rusty part with a sander and prepare surface to be hemmed.




## INSTALLATION

1. Apply adhesive(3M 08531) or equivalent to outer panel hem.
2. Apply mastic sealer(3M 08105) or equivalent to the door upper member and door reinforcement beam as shown in the figure.

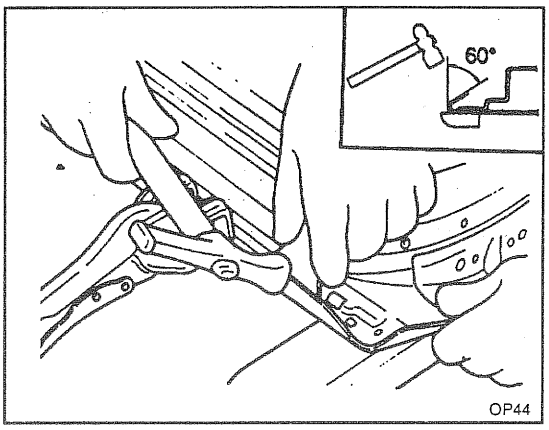


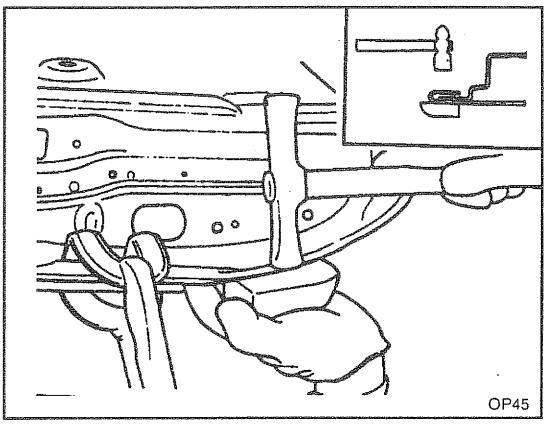
3. Bend the flange hem with a hammer and dolly, then fasten tightly with a hemming tool.

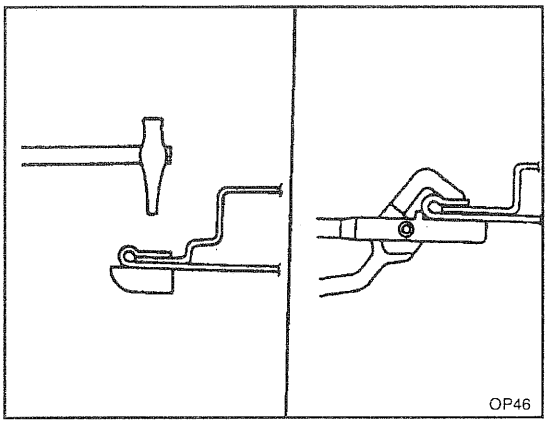
**NOTE**

1. **Hemming work should be done in three steps as illustration.**
2. **If a hemming tool cannot be used, hem with a hammer and dolly.**

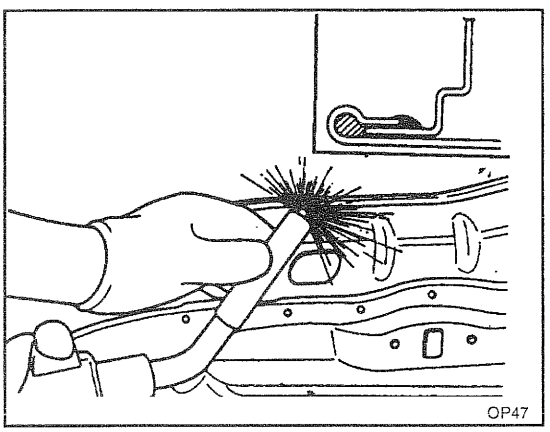


OP44

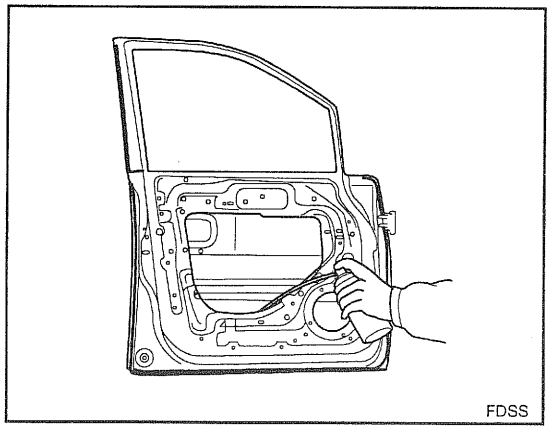

OP45


OP46

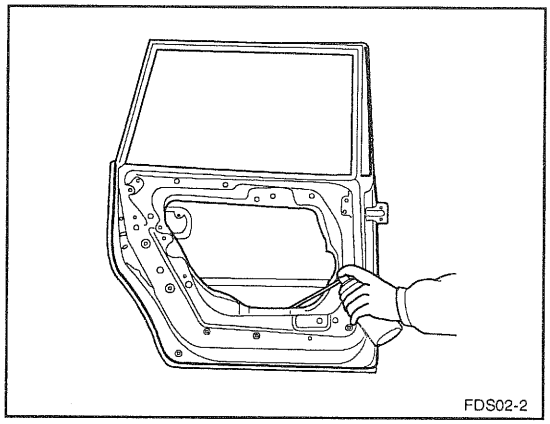
4. After completing the hemming work, make MIG spot welds at 50 mm intervals on the inside.
5. Clean and prepare all welds and remove all residue.
6. Apply the two-part epoxy primer to the interior of the door panel.


OP47

7. Apply an anti-corrosion agent to the welded parts and lower inside of the door panel (Refer to the CORROSION PROTECTION).
8. Prepare exterior surfaces for priming, using wax and grease remover.
9. Apply metal conditioner and water rinse.
10. Apply conversion coating and water rinse.
11. Apply the two-part epoxy primer.


FDSS

12. Apply the correct seam sealer to whole panel edge.
13. Reprime over the seam sealer to complete the repair.


FDS02-2