INTRODUCTION

NS Minivans

This manual has been prepared for use by all body technicians involved in the repair of the Dodge Caravan and Grand Caravan, Plymouth Voyager and Grand Voyager, and Chrysler Town and Country minivans.

This manual shows:

- **Typical unibody panels contained in these vehicles**
- **The weld locations for these panels**
- **The types of welds for the panel**
- **Proper sealer types and correct locations**

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Welded Panel Replacement 15

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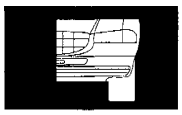
Exterior Lighting 69



Structural Adhesives 73

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Chrysler Corporation reserves the right to make improvements in design or to change specifications to these vehicles without incurring any obligation upon itself.

DODGE CARAVAN

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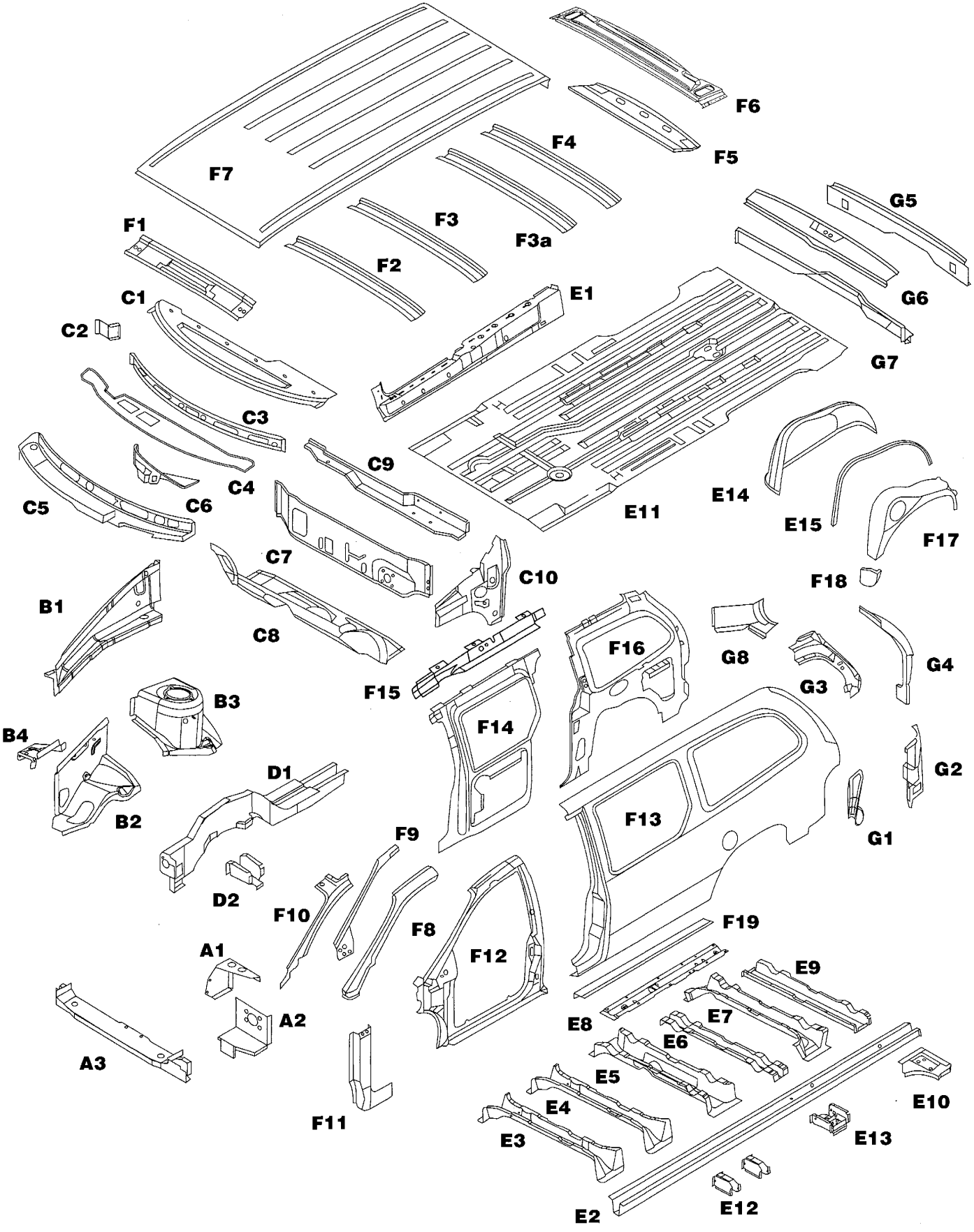
BODY COMPONENTS — NS MINIVANS



Radiator and Headlamp Support Components

1. Grille bracket
2. Headlamp mounting/radiator closure
3. Lower radiator crossmember

A

Upper Rail Components

1. Upper load path beam
2. Side shield panel
3. Strut mounting tower
4. Fender to side shield reinforcement

B

Dash Components

1. Upper cowl plenum panel
2. Cowl plenum side gusset
3. Upper cowl plenum reinforcement
4. Upper cowl plenum support
5. Cowl panel wiper tub (plastic)
6. Lower cowl plenum panel
7. Upper dash panel
8. Lower dash panel
9. Dash panel reinforcement
10. Cowl side panel

C

Front Side Rail Components

1. Front side rail
2. Front side rail to inner sill reinforcement

D

Floor Pan and Ladder Assembly Components

1. Inner body side sill panel
2. Rear side rail
3. Floor pan front seat crossmember
4. Floor pan front seat crossmember
5. Floor pan front support crossmember
6. Floor pan rear support crossmember
7. Floor pan fuel tank support crossmember
8. Floor pan seat striker reinforcement
9. Floor pan tire stowage support crossmember
10. Rear suspension rear hanger bracket
11. Floor pan
12. Rear side rail to inner sill reinforcement
13. Rear suspension front hanger bracket
14. Rear wheelhouse inner panel
15. Rear wheelhouse inner panel extension

F

Roof and Body Side Aperture Components

1. Windshield opening upper frame
2. Roof bow #1
3. Roof bow #2 (F3) and #3 (F3a)
4. Roof bow #4 (long wheelbase models)
5. Liftgate opening upper frame
6. Liftgate opening upper frame reinforcement
7. Roof panel
8. Windshield opening outer panel
9. Windshield opening outer frame
10. Windshield opening inner frame
11. Front hinge pillar reinforcement
12. Front body side aperture
13. Rear body side aperture
14. Inner center quarter panel (on vehicles not equipped with a left-side sliding door)
15. Side inner roof reinforcement (on vehicles not equipped with a left-side sliding door)
16. Inner rear quarter panel
17. Rear wheelhouse outer panel
18. Rear wheelhouse front extension
19. Body side aperture rear lower panel extension

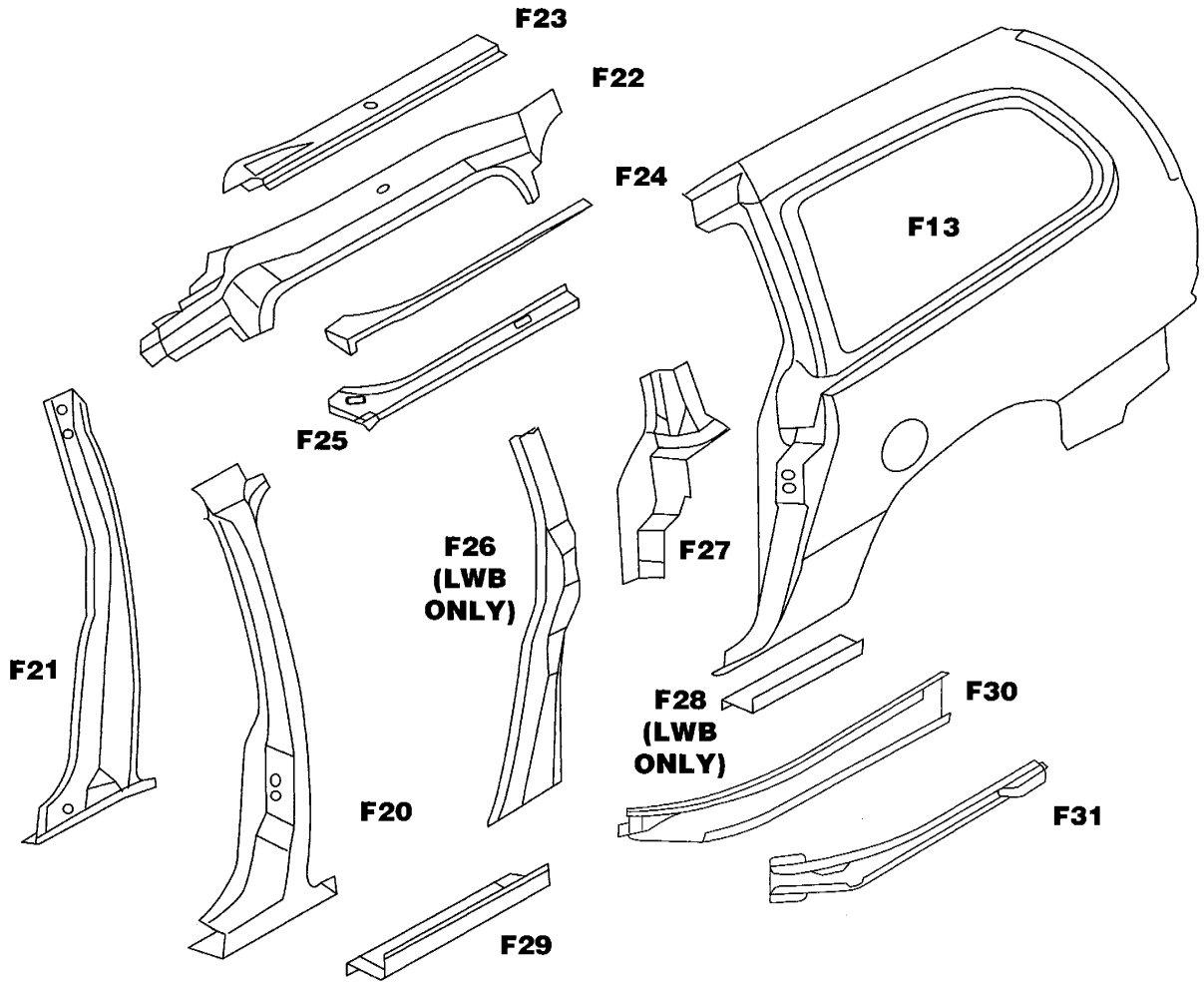
E

Liftgate Opening Components

1. Taillamp opening side extension
2. Liftgate opening lower side reinforcement
3. Liftgate opening upper side reinforcement
4. Liftgate opening drain trough
5. Liftgate opening lower panel
6. Liftgate opening lower panel reinforcement
7. Liftgate opening lower panel front reinforcement
8. Liftgate opening panel extension

G

BODY COMPONENTS — SLIDING DOOR



Unique Roof And Body Side Aperture Components Required to Accommodate Sliding Side Doors

20. B-pillar outer panel
21. B-pillar inner panel
22. Inner side roof rail
23. Outer side roof rail panel
*24. Roof rail sliding door upper reinforcement
*25. Roof rail sliding door lower reinforcement
26. C-Pillar inner reinforcement
27. Sliding door striker reinforcement
28. Body side aperture rear lower panel extension
29. Outer body side sill panel
30. Sliding door lower track support
31. Sliding door lower track reinforcement

*Serviced as an assembly.

CORROSION PROTECTION

The following measures have been implemented in order to provide maximum corrosion prevention and protection.

1. The use of galvannealed coatings throughout the body structure.
2. Cationic electrodeposition undercoating is used on the complete body in all instances.
3. Body sealing.
4. Stone-chipping resistant primer application.
5. Underbody corrosion protection.

Definitions of Steels used in NS Minivans:

MS 66 — Represents an uncoated cold-rolled structural steel used mainly for interior braces and reinforcements.

MS 67 — Represents an uncoated structural steel used in areas where structural integrity is critical.

MS 264-050-SK — Represents an uncoated high strength steel used in applications where structural integrity is critical.

Two-Sided Galvannealed MS 6000-44A — Represents a two-sided zinc coated steel in which the coating is fully alloyed with the sheet or strip surface.

Two-Sided Galvannealed MS 6000-44VA — Represents a two-sided zinc-iron coated high strength steel in which the coating is fully alloyed with the sheet or strip surface.

GALVANNEALED STEELS

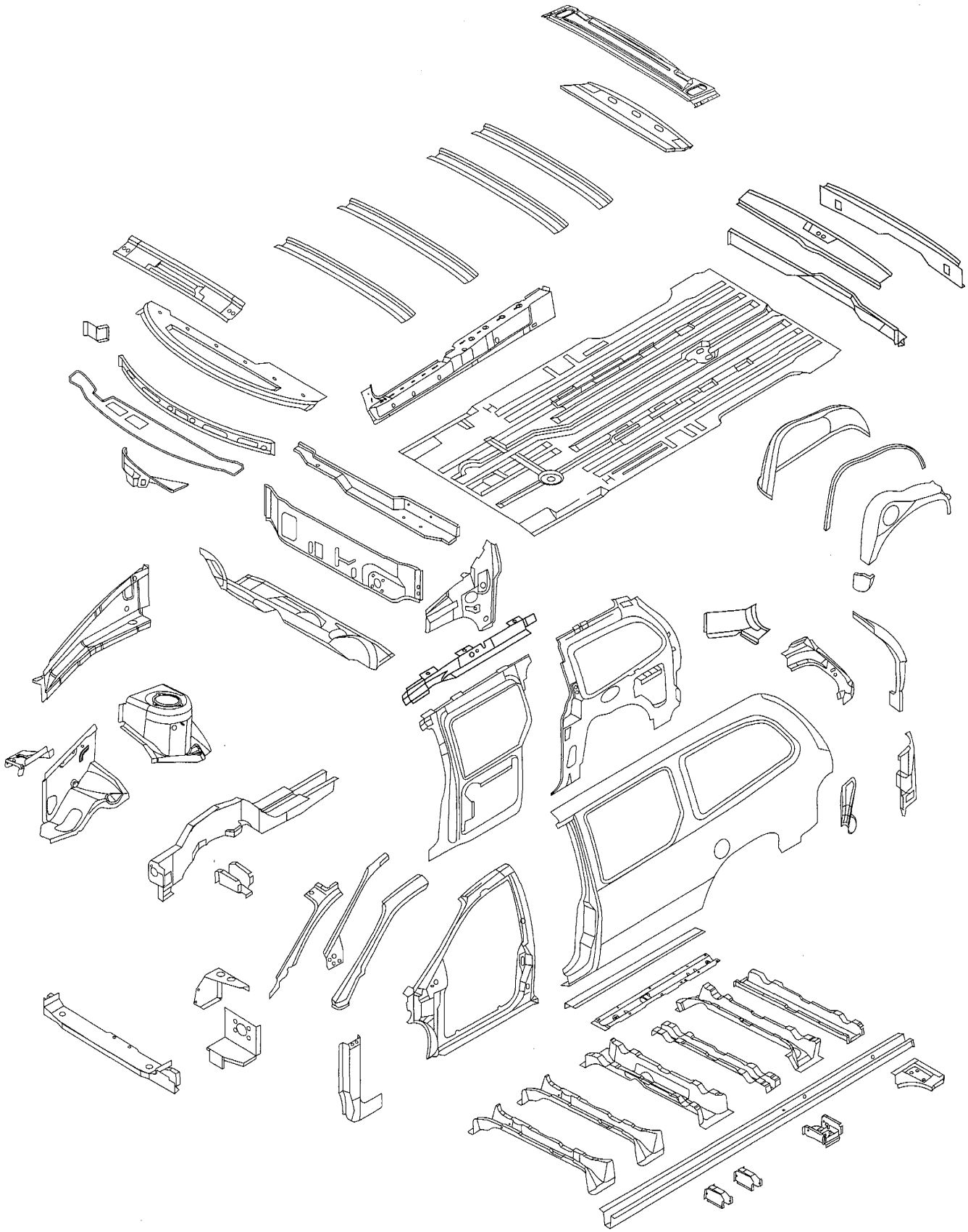
Galvannealed steels are used in the parts listed below. These parts are resistive to corrosion and are used throughout the vehicle.

GALVANNEALED STEEL APPLICATIONS

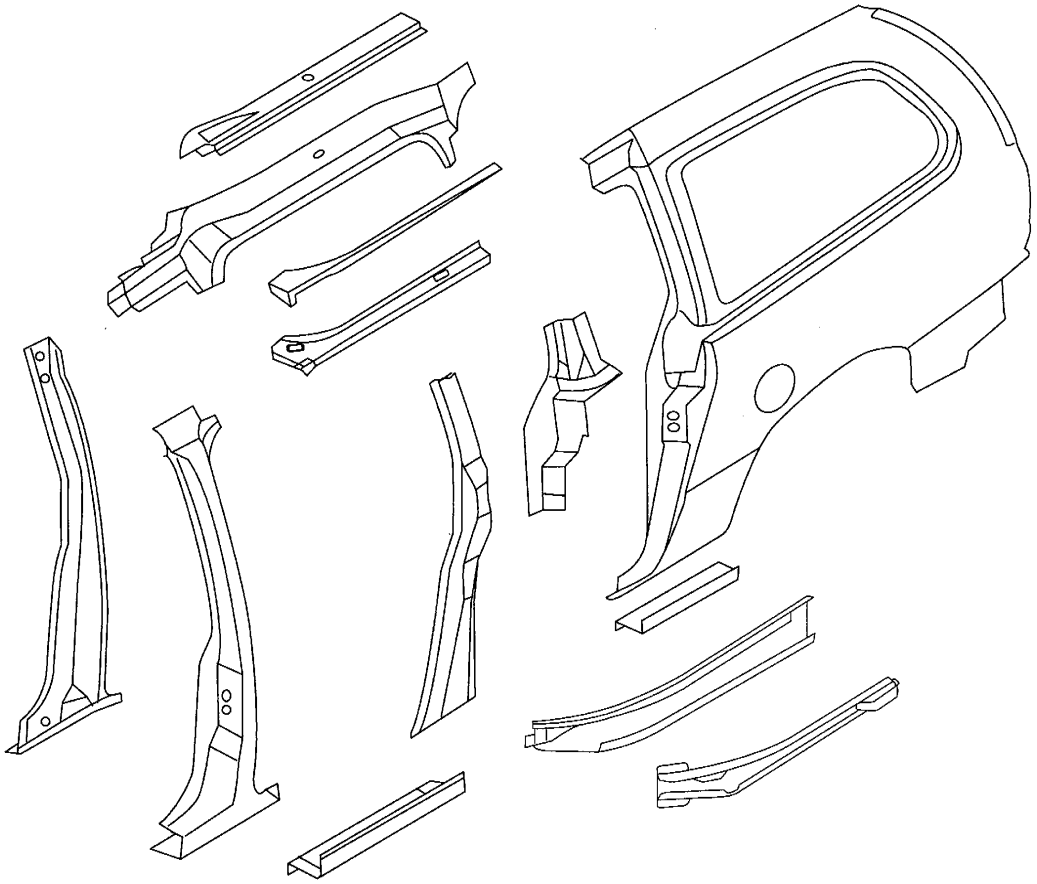
Part Description (Partial List)

Body Side Aperture Rear Lower Extension
Body Side Aperture Rear Lower Panel Extension
B-Pillar Inner Panel
Floor Pan Front Seat Crossmember
Floor Pan Front Support Crossmember
Floor Pan Fuel Tank Support Crossmember
Floor Pan Rear Support Crossmember
Front Body Side Aperture
Front Side Rail to Inner Sill Reinforcement
Headlight Mounting Closure
Inner Body Side Sill Panel
Inner Center Quarter Panel
Inner Rear Quarter Panel
Liftgate Opening Lower Panel
Liftgate Opening Lower Panel Front Reinforcement
Liftgate Opening Lower Panel Reinforcement
Liftgate Opening Lower Side Reinforcement
Lower Cowl Plenum Panel
Lower Dash Panel
Lower Radiator Crossmember
Rear Side Rail
Rear Side Rail to Inner Sill Reinforcement
Rear Wheelhouse Front Extension
Rear Wheelhouse Inner Panel
Rear Wheelhouse Inner Panel Extension
Rear Wheelhouse Outer Panel
Side Shield Panel
Strut Mounting Tower
Upper Cowl Plenum Panel
Upper Cowl Plenum Reinforcement
Upper Cowl Plenum Support
Upper Dash Panel
Upper Load Path Beam
Windshield Opening Outer Panel

CORROSION PROTECTION — NS MINIVANS



CORROSION PROTECTION — SLIDING DOOR



HIGH STRENGTH STEELS (HSS)

High tensile steel strengthened by solid solution has been used for the parts listed below.

The tensile strength of these high strength steel panels is much greater than the tensile strength of mild steel, nevertheless body work (sheet metal work, painting, etc.) can be performed by using the same procedures as those for mild steels.

DO NOT HEAT ANY OF THESE STEELS OVER 700°F.

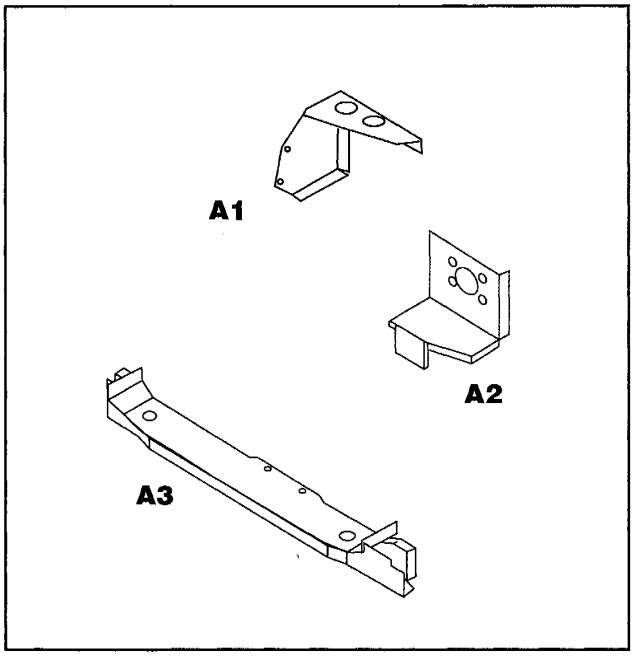
NS MINIVAN HIGH STRENGTH STEEL APPLICATIONS

Part Description	Materials Specification
Upper Load Path Beam	MS6000-44VA
Front Side Rail Assembly	MS-6000-44VA
Sliding Door Lower Track Reinforcement Assembly	MS-6000-44VA
Sliding Door Lower Track Support Assembly	MS-6000-44VA
Windshield Opening Inner Frame	MS-264-050-SK
Windshield Opening Outer Frame	MS-264-050-SK
Rear Suspension Rear Hanger Bracket	MS6000-44VA

RADIATOR AND HEADLAMP SUPPORT COMPONENTS

The Grille Bracket, Lower Radiator Crossmember Support, and Headlamp Mounting Panels are all serviced as sub-assembies.

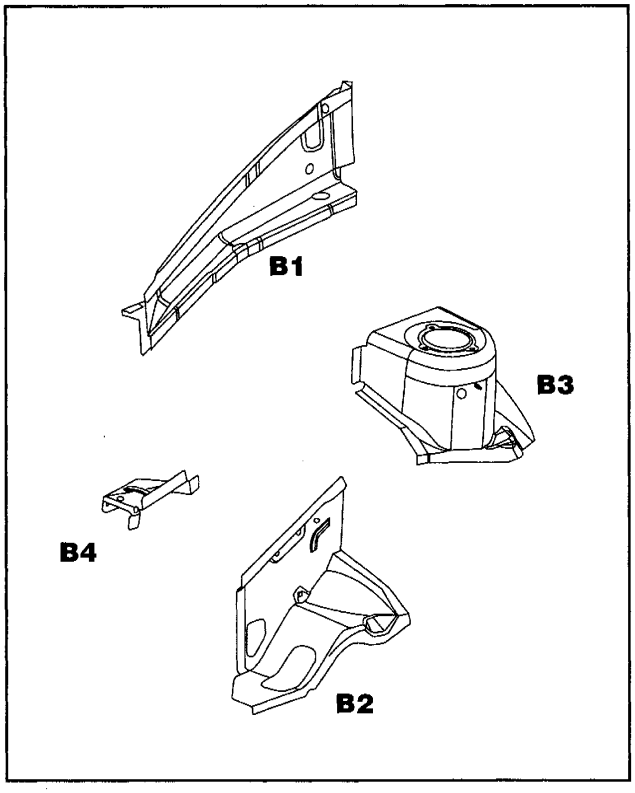
1. Grille Bracket
2. Headlamp Mounting/Radiator Closure
3. Lower Radiator Crossmember Support



UPPER RAIL COMPONENTS

The Strut Mounting Tower is serviced as a sub-assembly. All other components of the upper rail are serviced as individual components.

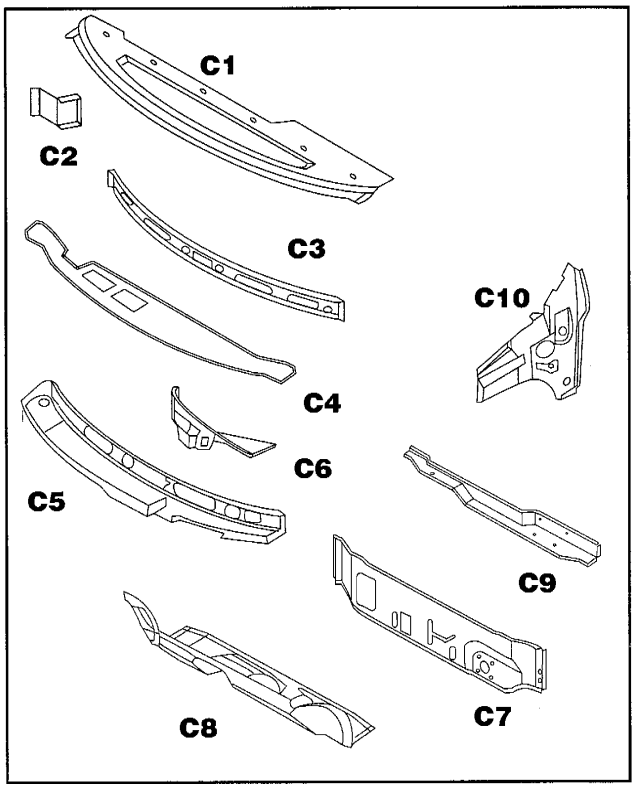
1. Upper Load Path Beam
2. Side Shield Panel
2. Strut Mounting Tower
4. Fender to Side Shield Reinforcement



DASH COMPONENTS

All Dash Components are serviced as individual components.

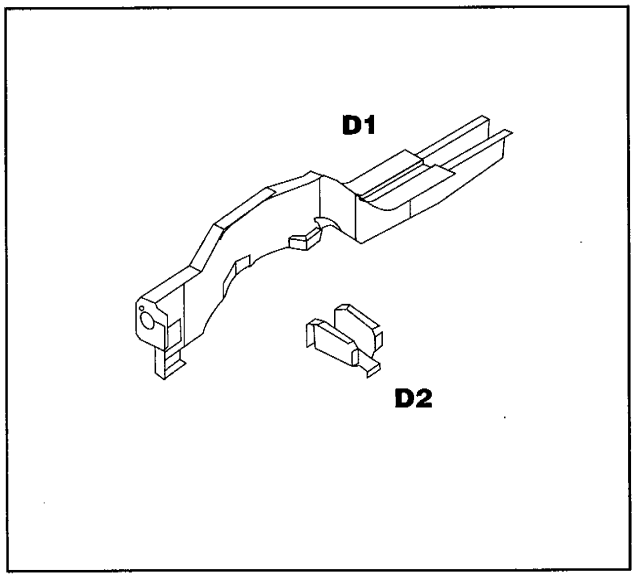
1. Upper Cowl Plenum Panel
2. Cowl Plenum Side Gusset
3. Upper Cowl Plenum Reinforcement
4. Upper Cowl Plenum Support
5. Cowl Panel Wiper Tub (Plastic)
6. Lower Cowl Plenum Panel
7. Upper Dash Panel
8. Lower Dash Panel
9. Dash Panel Reinforcement
10. Cowl Side Panel



FRONT SIDE RAIL COMPONENTS

All Front Side Rail Components are serviced as an assembly.

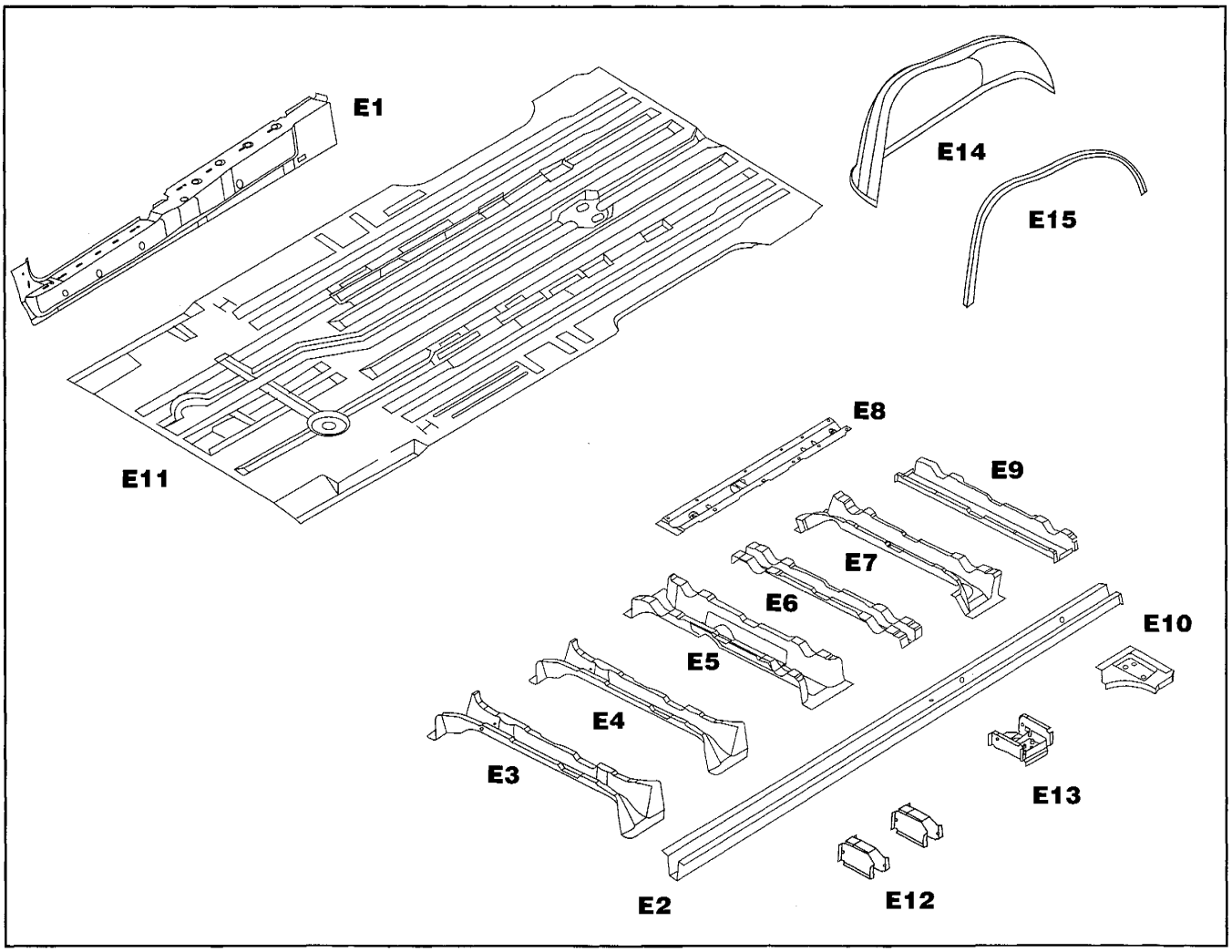
1. Front Side Rail
2. Front Side Rail to Inner Sill Reinforcement



FLOOR PAN AND LADDER ASSEMBLY COMPONENTS

All Floor Pan Side and Ladder Assembly Components are serviced as individual components.

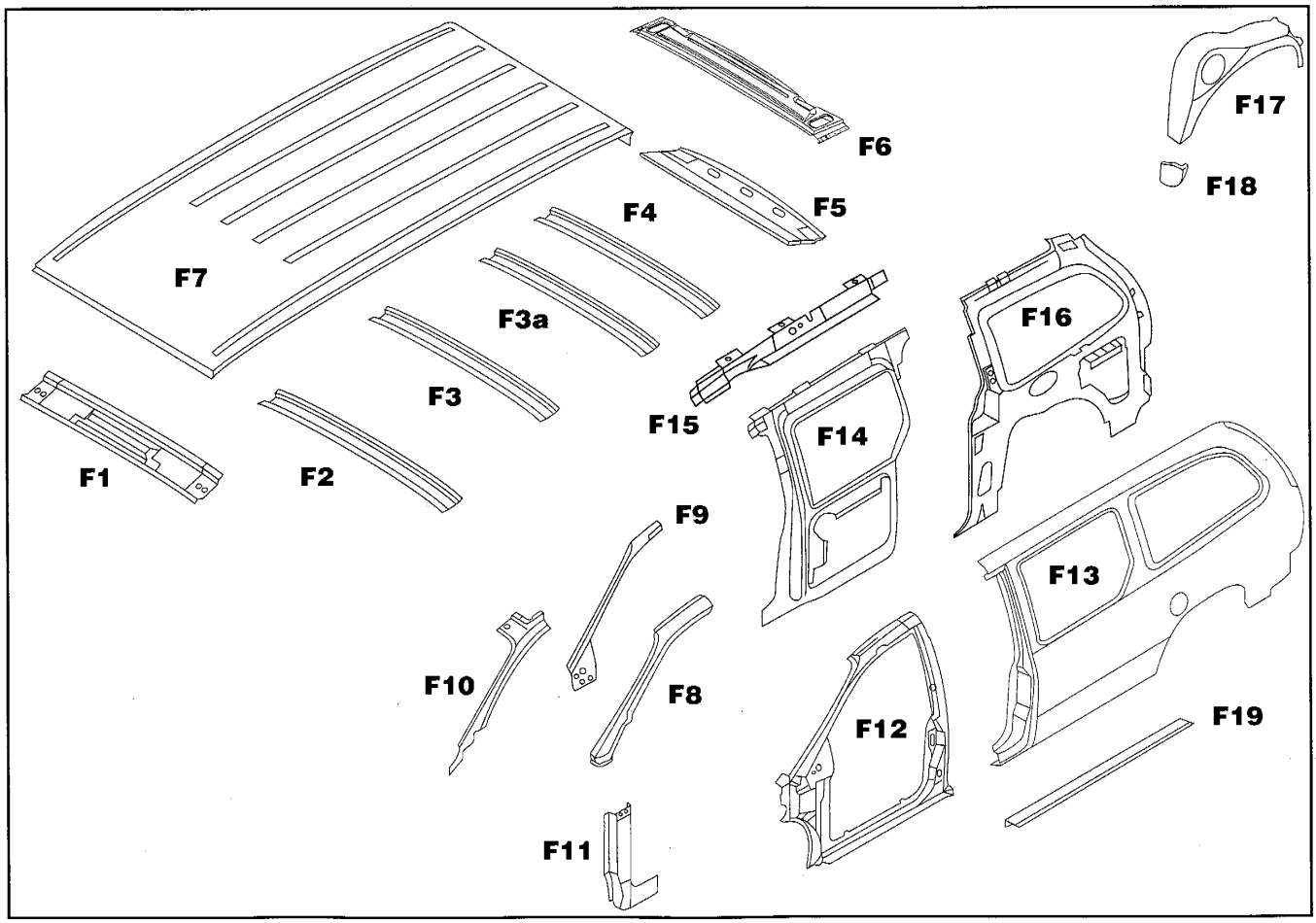
1. Inner Body Side Sill Panel
2. Rear Side Rail
3. Floor Pan Front Seat Crossmember
4. Floor Pan Front Seat Crossmember
5. Floor Pan Front Support Crossmember
6. Rear Floor Pan Rear Support Crossmember
7. Floor Pan Fuel Tank Support Crossmember
8. Floor Pan Seat Striker Reinforcement
9. Floor Pan Tire Stowage Support Crossmember
10. Rear Suspension Rear Hanger Bracket
11. Floor Pan
12. Rear Side Rail to Inner Sill Reinforcement
13. Rear Suspension Front Hanger Bracket
14. Rear Wheelhouse Inner Panel
15. Rear Wheelhouse Inner Panel Extension



ROOF AND BODY SIDE APERTURE

All Roof and Body Side Aperture components are serviced as individual components.

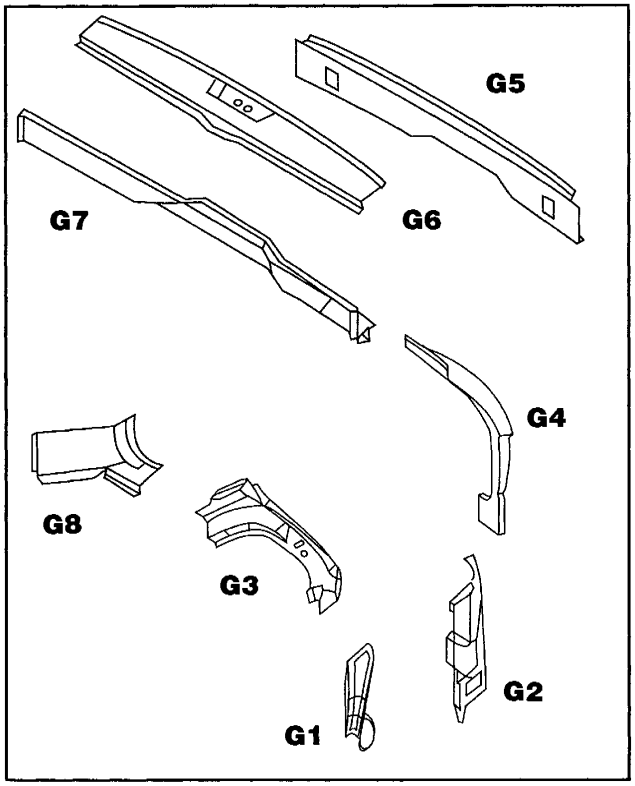
1. Windshield Opening Upper Frame
2. Roof Bow #1
3. Roof Bow #2 (F3) and #3 (F3a)
4. Roof Bow #4 (long wheelbase models)
5. Liftgate Opening Upper Frame
6. Liftgate Opening Upper Frame Reinforcement
7. Roof Panel
8. Windshield Opening Outer Panel
9. Windshield Opening Outer Frame
10. Windshield Opening Inner Frame
11. Front Hinge Pillar Reinforcement
12. Front Body Side Aperture
13. Rear Body Side Aperture
14. Inner Center Quarter Panel (on vehicles not equipped with a left-side sliding door)
15. Side Inner Roof Reinforcement (on vehicles not equipped with a left-side sliding door)
16. Inner Rear Quarter Panel
17. Rear Wheelhouse Outer Panel
18. Rear Wheelhouse Front Extension
19. Body Side Aperture Rear Lower Panel Extension



LIFTGATE OPENING COMPONENTS

All Liftgate Opening Components are serviced as individual components.

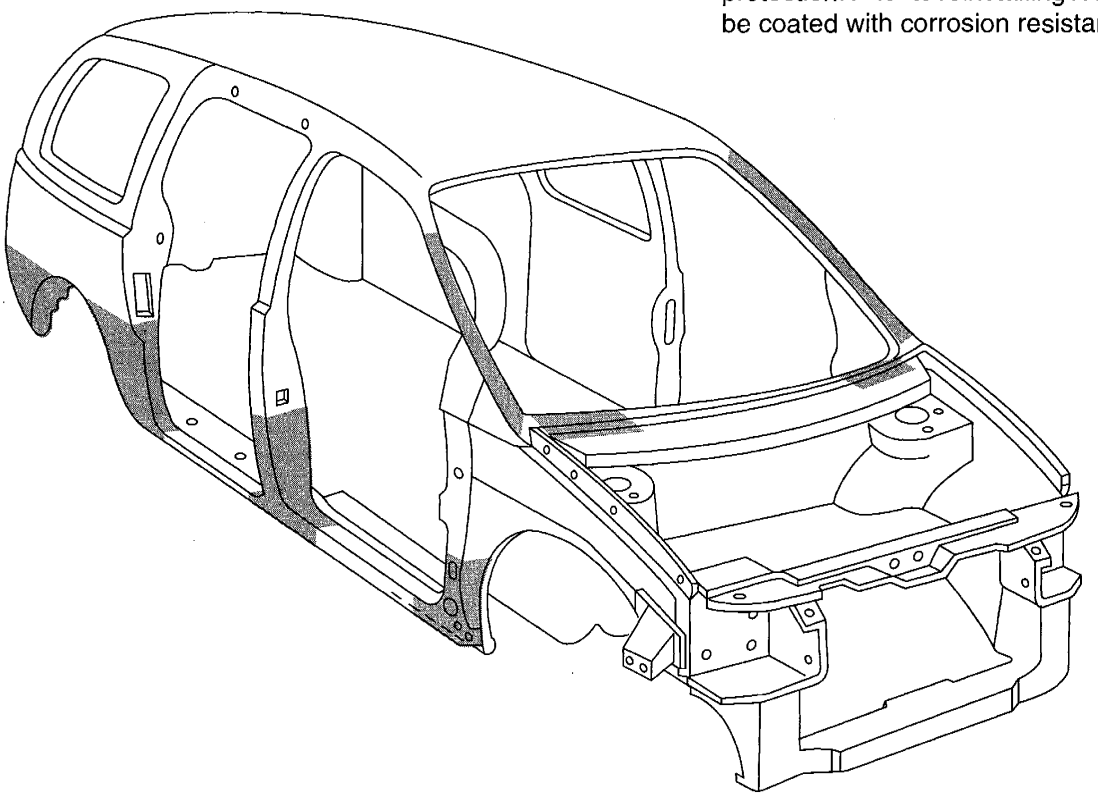
1. Taillamp Opening Side Extension
2. Liftgate Opening Lower Side Reinforcement
3. Liftgate Opening Upper Side Reinforcement
4. Liftgate Opening Drain Trough
5. Liftgate Opening Lower Panel
6. Liftgate Opening Lower Panel Reinforcement
7. Liftgate Opening Lower Panel Front Reinforcement
8. Liftgate Opening Panel Extension

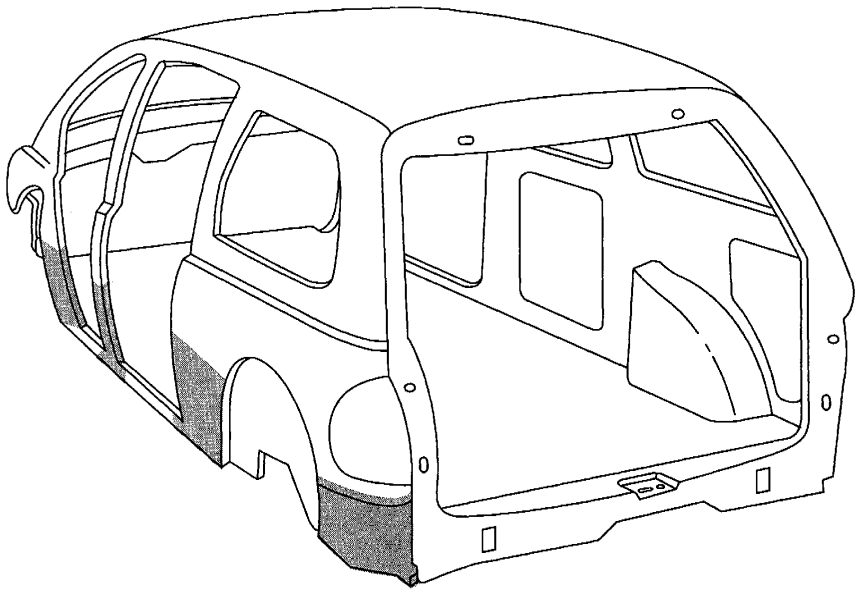


Notes

NOTES WITH REGARD TO REPAIR WORK

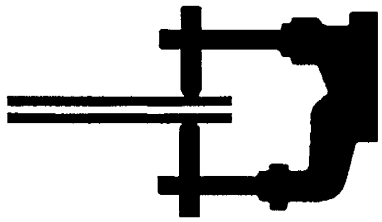
- Care should be taken when welding in the shaded areas indicated below. Foam should be removed completely prior to welding. Care must be taken to remove foam without damage to E-coat corrosion protection. Prior to reinstalling foam, welds should be coated with corrosion resistant primer.





WELDED PANEL REPLACEMENT

NS Minivans



The basic parts of the body structure are the welded panels. This section contains a brief description of the placement of some of these panels and their weld locations.

NOTE: To ensure the strongest, most durable and cleanest welds possible, perform testing before and during all weld procedures. Always follow American Weld Society specifications and procedures.

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Inner Wheelhouse 58

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EXPLANATION OF MANUAL CONTENTS

The major construction of a unibody vehicle consists of welded panels that create the supporting structure for all components and assemblies of the vehicle. Here are some examples for replacement of these parts.

Symbols

Some of the operations for panel replacement are designated by the following symbols.

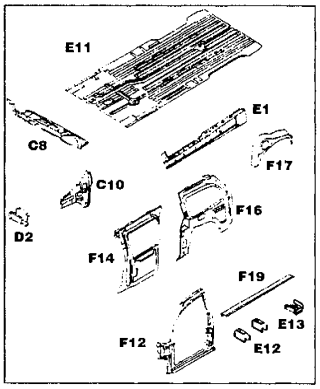
Rough cutting of panel to be replaced	MIG Plug Weld	MIG Arc Welding

1 3 2 4 — Continuous Stitch MIG Weld

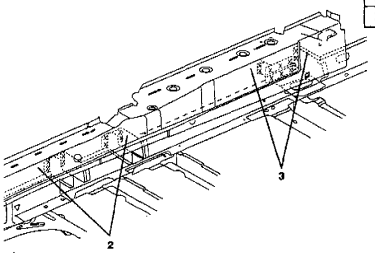
Alternate stitch welds until you have a continous MIG weld.

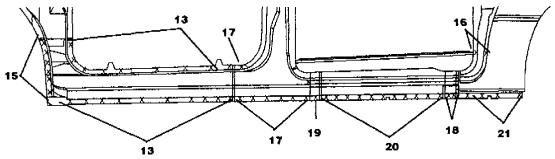
NOTE: Although spot welds are the nuts and bolts of the unibody vehicle, they will not be used as a repair symbol because of the lack of proper spot weld equipment in most shops.

Inner Side Sill



No.	Welded parts	F	R
1	E1 + E11 (LWB)	36	P36
1	E1 + E11 (SWB)	30	P30
2	E1 + E12	8	P8
3	E1 + E13	10	P10
4	E1 + E14	3	P3
5	E1 + F14	11	P11
6	E1 + F16 + Jacking Support	2	P2
7	E1 + F19 (Without door)	10	P10
8	E1 + C10	1	P1
9	E1 + C8	6	P6
10	E1 + F16 + F14	1	P1
11	E1 + D2	6	P6
12	E1 + C8 + C10	1	P1
13	E1 + F12	18	P18
14	E1 + C8 + E11	1	P1
15	E1 + F12 + F11	6	P6
16	E1 + F16 + F27	2	P2
17	E1 + F13 + F12	7	P7
18	E1 + F28 + F29	2	P2
19	E1 + F12 + F29	1	P1
20	E1 + F29	11	P11
21	E1 + F28 (LWB)	3	P3
21	E1 + F28 (SWB)	2	P2





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"F" indicates the number of factory welds to be separated. **"R"** indicates the number of welds to be made and the method to be used when making repairs.

If only a number is listed under "F," it indicates that the method used at the factory was a spot weld; for all other methods, both the welding method and the number of welds are indicated. For example, "F1, RP1" indicates that the 1 spot weld made at the factory should be replaced by 1 plug weld if repairs are made.

The welded components are indicated by using the designations given in the illustration below. For example, "E1 + C8" indicates that component "E1" and component "C8," which are shown in the top left corner illustration on the page, are welded together.

NOTE: Before beginning repair procedures, perform test welds to verify your equipment and to ensure your welds are the best quality. All welds should conform to the American Welding Society standards.

For weld specifications contact:

American Welding Society

550 Northwest Le Jeune Road

P.O. Box 351040

Miami, Florida 33135

Phone: (305) 443-9353

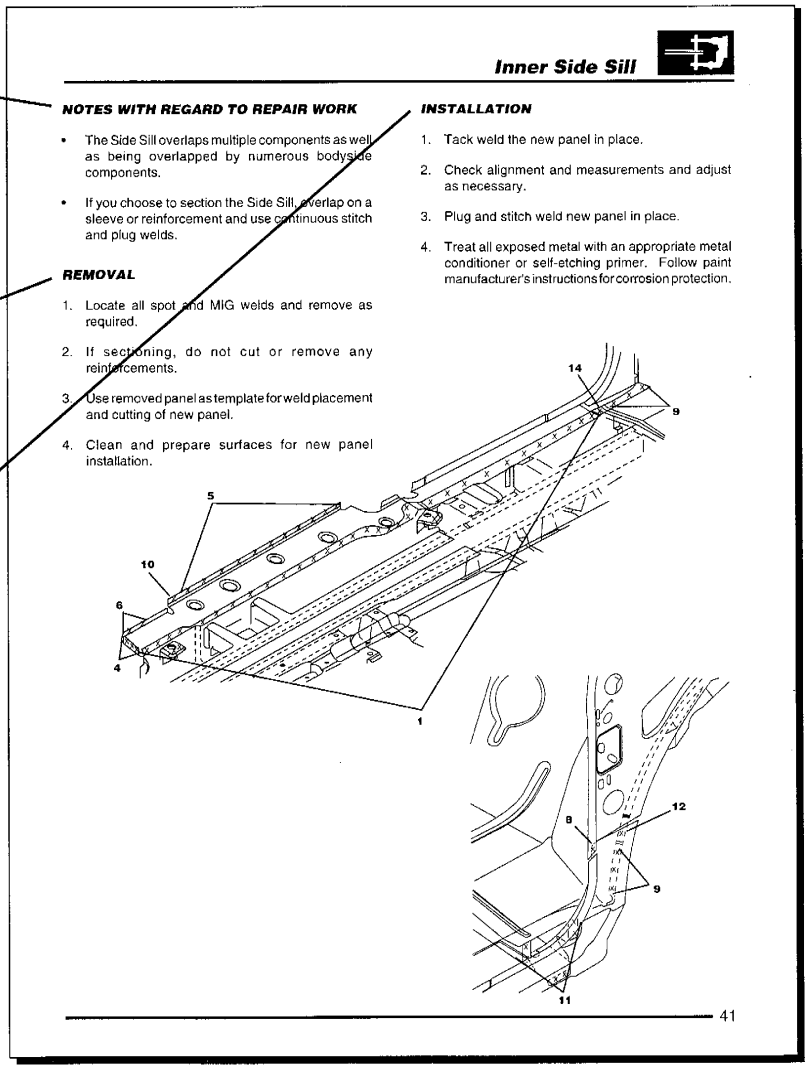
Certain body components must use sealers to ensure proper assembly. Be sure to check the **Body Sealing Locations** and **Structural Adhesives Sections** for location and sealer type.

When dealing with panels that contact both the right and left sides of the vehicle (eg., roof panel) the artwork may depict only one-half of the panel being welded. In these cases, the referenced panel will be split on the vehicle centerline, and the number of welds shown will be half of the true amount. The corresponding chart will show the true number of welds. Remember, even though the artwork may show 12 welds, the chart may call for 24 welds total.

Points that require particular attention during welded panel replacement work.

Removal instructions and accompanying illustration are given in the order in which the work is to be performed.

Installation instructions and accompanying illustrations are given in the order in which the work is to be performed. In order to keep the instructions brief and simple, obvious work procedures (such as removal of a panel after it has been cut) have been omitted, where possible.



Inner Side Sill

NOTES WITH REGARD TO REPAIR WORK

- The Side Sill overlaps multiple components as well as being overlapped by numerous bodyside components.
- If you choose to section the Side Sill, overlap on a sleeve or reinforcement and use continuous stitch and plug welds.

REMOVAL

1. Locate all spot and MIG welds and remove as required.
2. If sectioning, do not cut or remove any reinforcements.
3. Use removed panel as template for weld placement and cutting of new panel.
4. Clean and prepare surfaces for new panel installation.

INSTALLATION

1. Tack weld the new panel in place.
2. Check alignment and measurements and adjust as necessary.
3. Plug and stitch weld new panel in place.
4. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.

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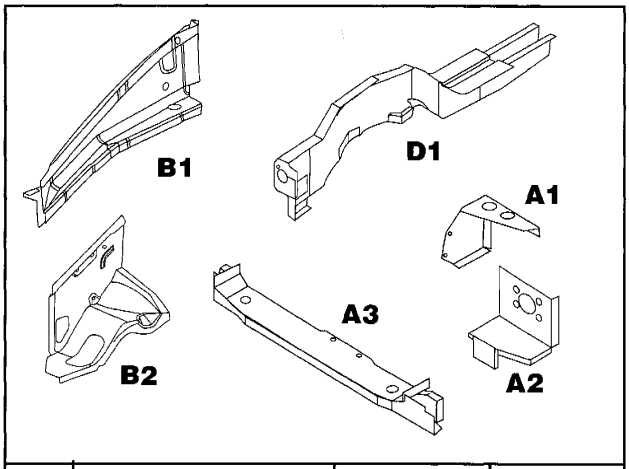
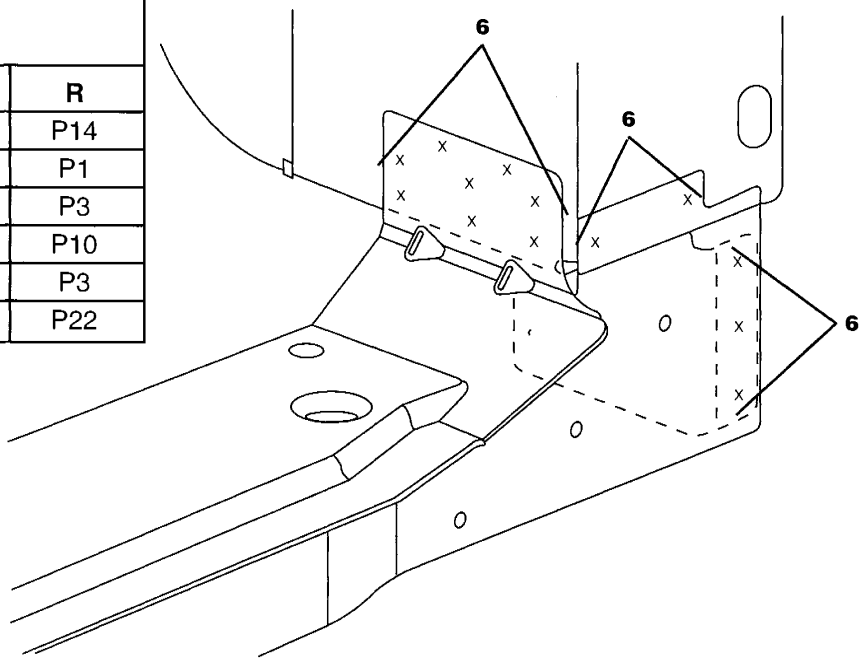
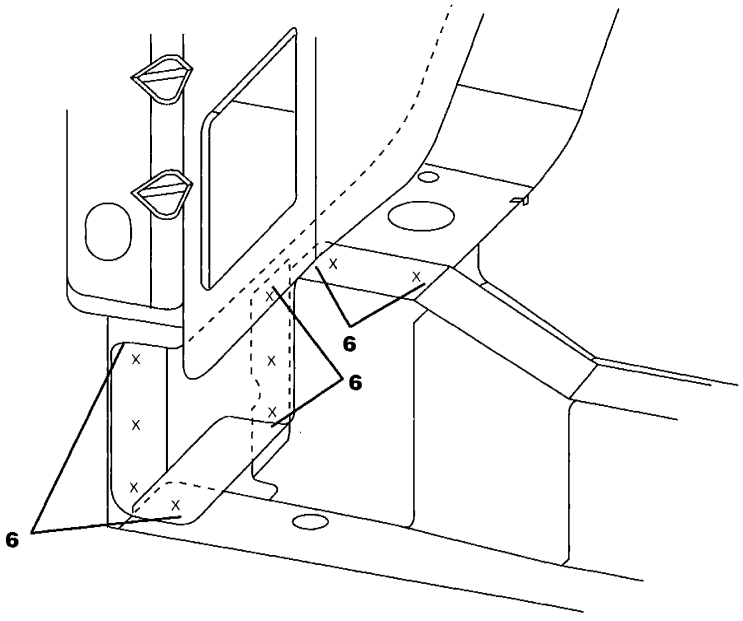


No.	Welded parts	F	R
1	A1 + A2	14	P14
2	A1 + B1	1	P1
3	A2 + B1	3	P3
4	A2 + B2	10	P10
5	A2 + D1	3	P3
6	A3 + D1	22	P22





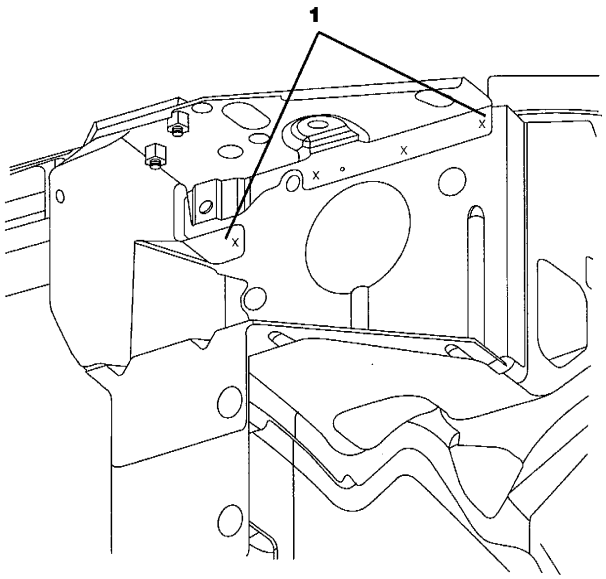
NOTES WITH REGARD TO REPAIR WORK

- Because the Headlamp and Radiator Support components create the mounting points for many critical front body components, be sure to make careful measurements and maintain the correct dimensions when doing the repairs.
- The Upper Radiator Closure Panel is serviced as an assembly bolted to the Headlamp Support Panels. The Headlamp Support Panels are both welded and bolted to the upper and lower rails. The Lower Radiator Crossmember Supports are welded to the lower rails.
- The left and right sides are serviced in the same manner.

REMOVAL

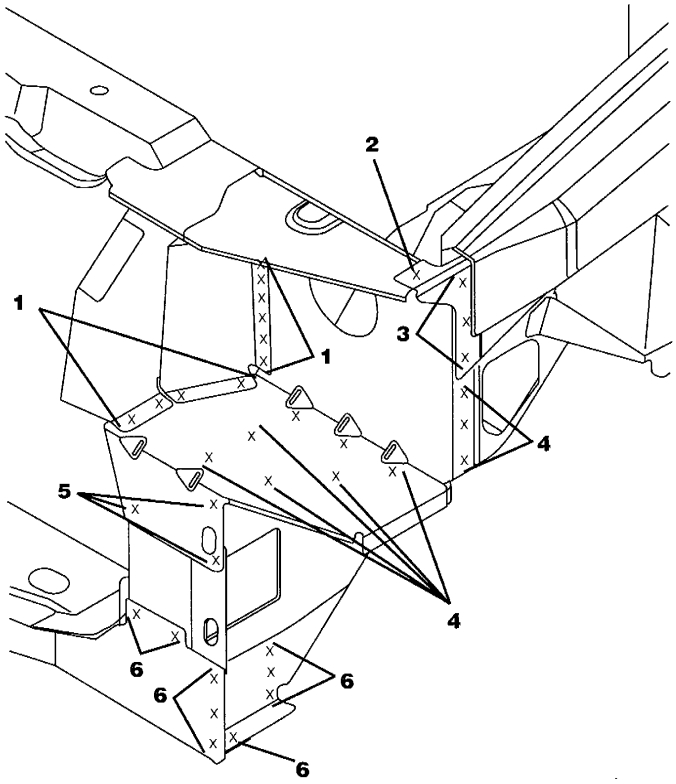
1. Cut all spot welds on the section being removed. Use care not to damage any other panels.
2. Separate all welds.
3. Remove the old panel and prepare mating surfaces of existing panels.

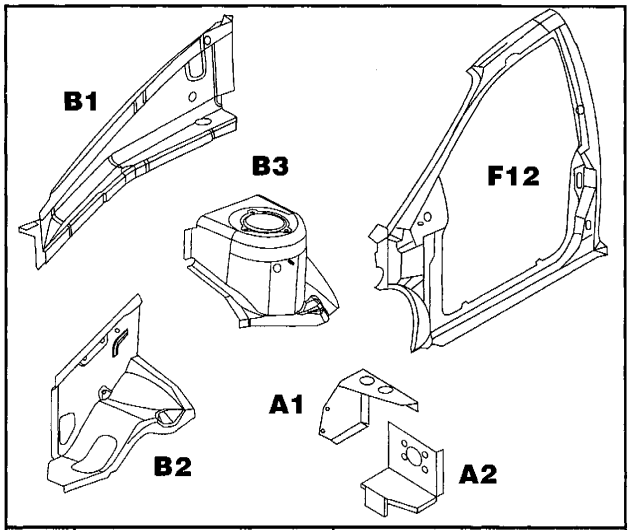
CAUTION: **Do not cut at a location where there is a weld bead or welded nut.**



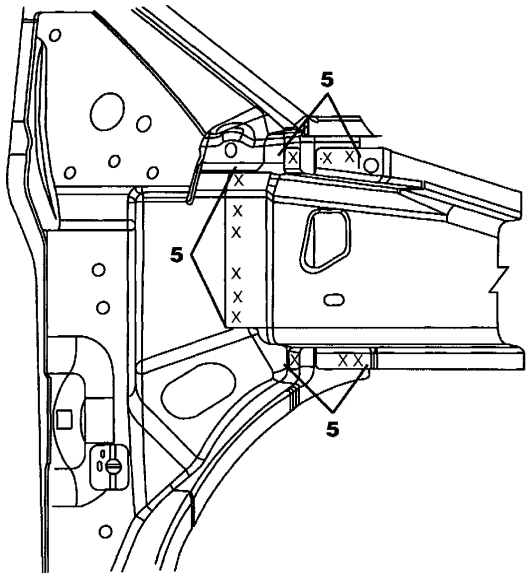
INSTALLATION

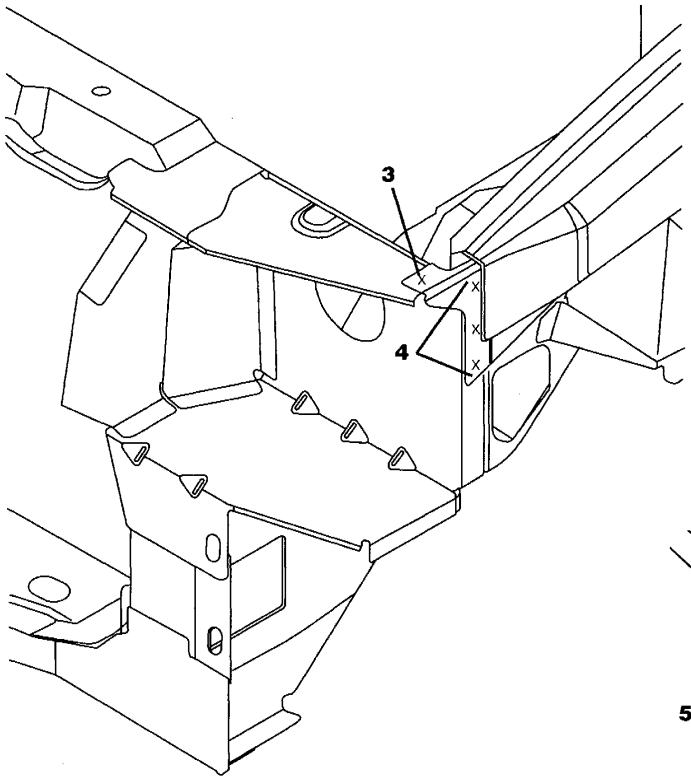
1. Temporarily mount the new panel.
2. Measure each part and make any necessary corrections to match the proper body dimensions.
3. Apply anti-corrosion agent to the repair area (inside and out).
4. Plug weld the new panel in place.
5. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.

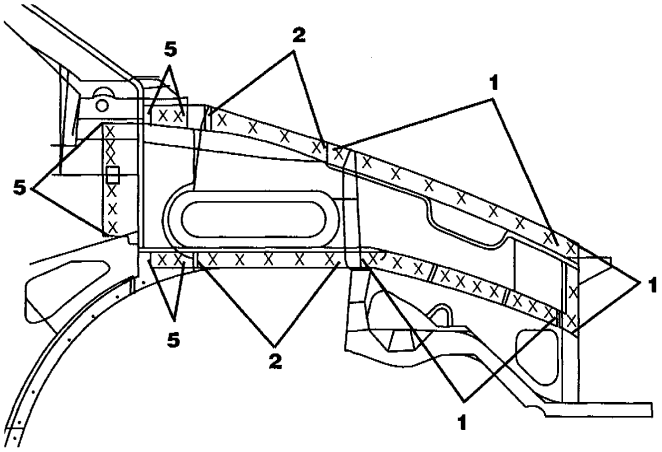




No.	Welded parts	F	R
1	B1 + B2	21	P21
2	B1 + B3	9	P9
3	B1 + A1	1	P1
4	B1 + A2	3	P3
5	B1 + F12	12	P12







NOTES WITH REGARD TO REPAIR WORK

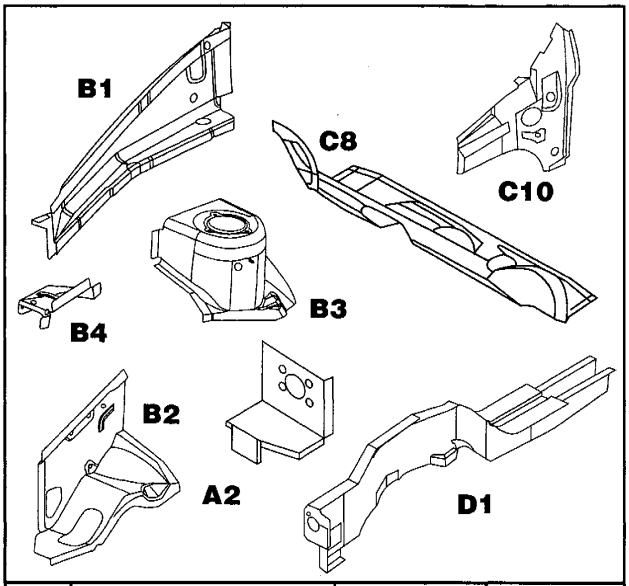
- The Upper Load Path Beam is the final "tie-in" for the Headlamp Support to the rest of the unibody. This panel also provides mounting points for the fender, which makes beam alignment crucial.
- The Upper Load Path Beam can be replaced without removing any other panels.
- Use care when cutting near cowl area.
- For additional information, refer to the Fender Side Shield and Cowl Side Panel sections.

REMOVAL

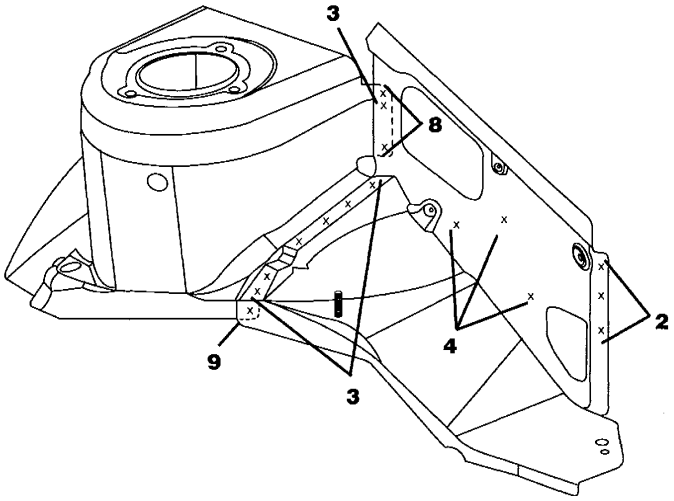
1. Cut and separate all spot welds. Use care not to damage any other panels.
2. Remove the old panel and prepare mating surfaces of existing panels.
3. Use removed panel as a template for weld placement on the new panel.

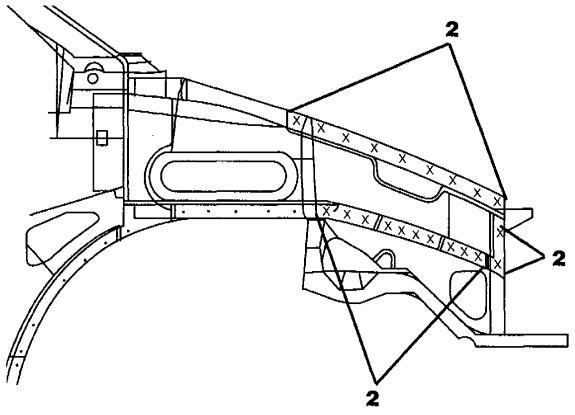
INSTALLATION

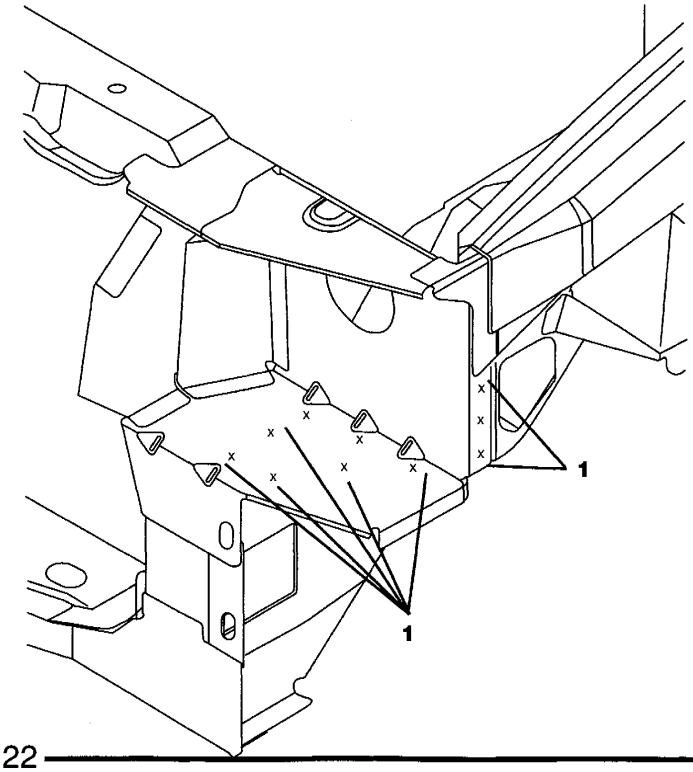
1. Transfer marks to new panel from old for weld locations.
2. Clamp new panel in place and check alignment and measurements.
3. Plug weld the new panel.
4. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.



No.	Welded parts	F	R
1	B2 + A2	10	P10
2	B2 + B1	21	P21
3	B2 + B3	7	P7
4	B2 + B4	3	P3
5	B2 + D1	7	P7
6	B3 + D1	4	P4
7	B3 + C8	7	P7
8	B2 + B3 + C10	2	P2
9	B2 + B3 + D1	1	P1
10	B3 + C10	8	P8
11	B2 + C10	1	P1







NOTES WITH REGARD TO REPAIR WORK

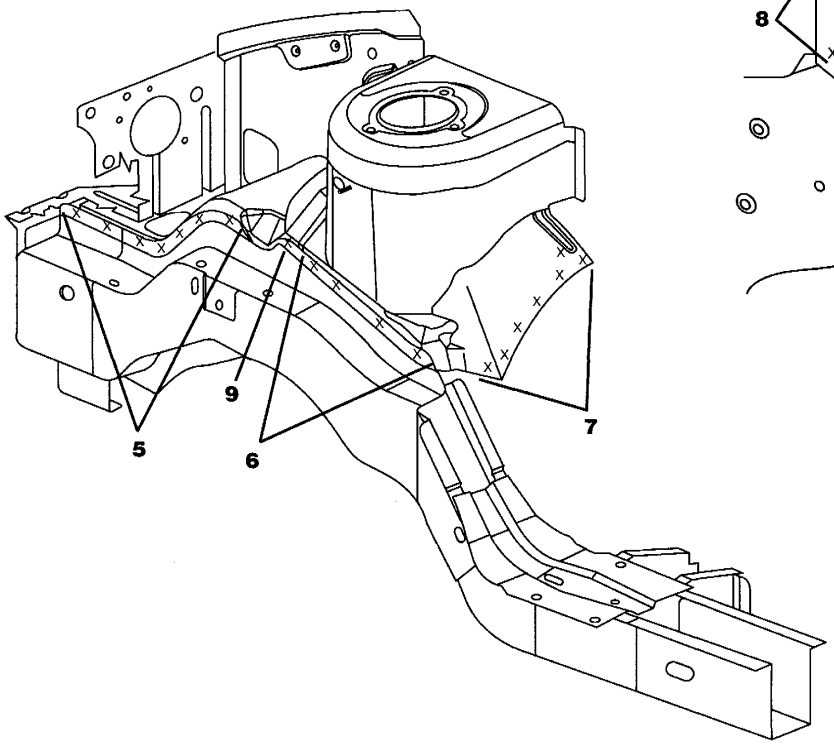
- The Strut Tower is serviced as a sub-assembly.
- Because the Fender Side Shield and Strut Tower touch so many of the front structure parts and determine accuracy of the alignment, they have to be perfectly aligned when mounted.
- Refer to the Upper Load Path Beam and Lower Rail sections for additional information.
- Access to Strut Tower can be difficult. Specialty tools such as tight corner drill motors with the appropriate hole saw will help. A die grinder and any other tool designed to get into tight places and cut accurately will also be useful.

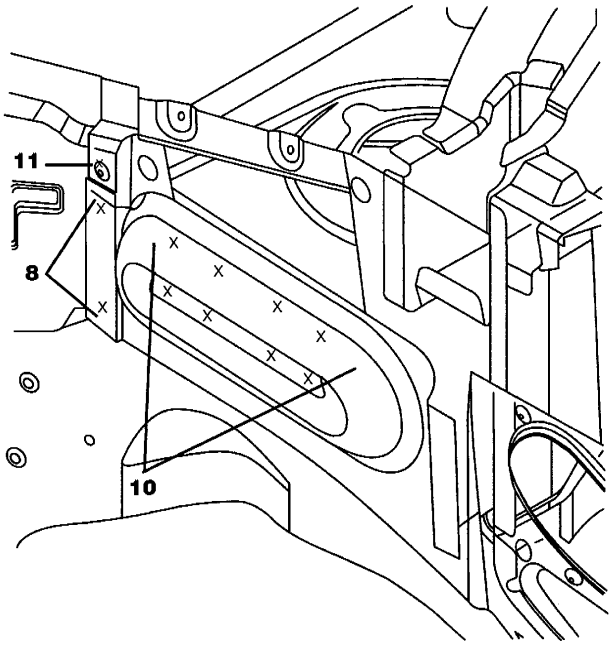
REMOVAL

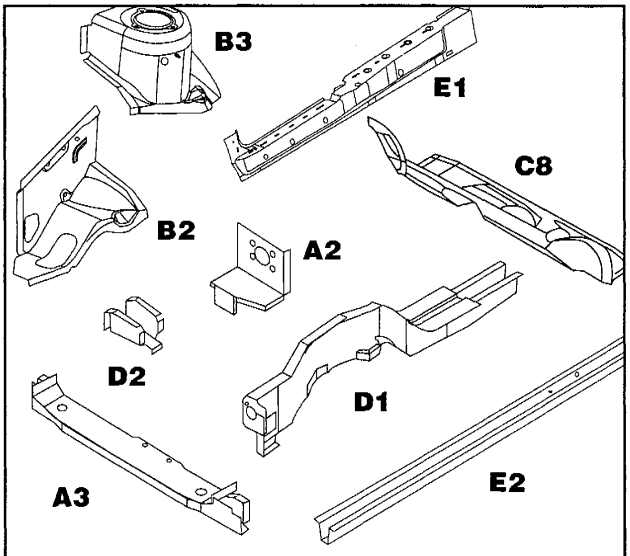
1. Cut and separate all spot welds. Use care not to damage any other panels.
2. Remove the old panels.

INSTALLATION

1. Clean all attaching surfaces and prep for new panel installation.
2. Temporarily mount all panels in place and check for proper alignment. Correct as necessary.
3. Pre-punch holes for plug welds on new components.
4. Make sure alignment is correct to the point of perfection.
5. Use weld-thru primer where necessary.
6. Plug weld the new panels in place.
7. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.

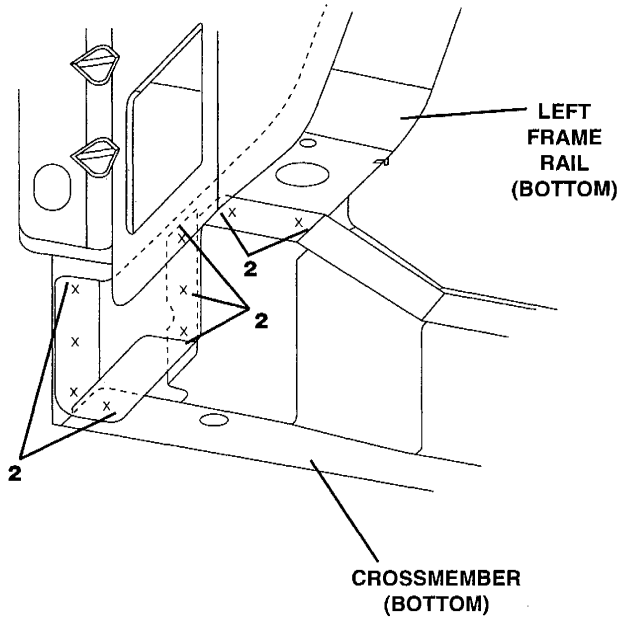


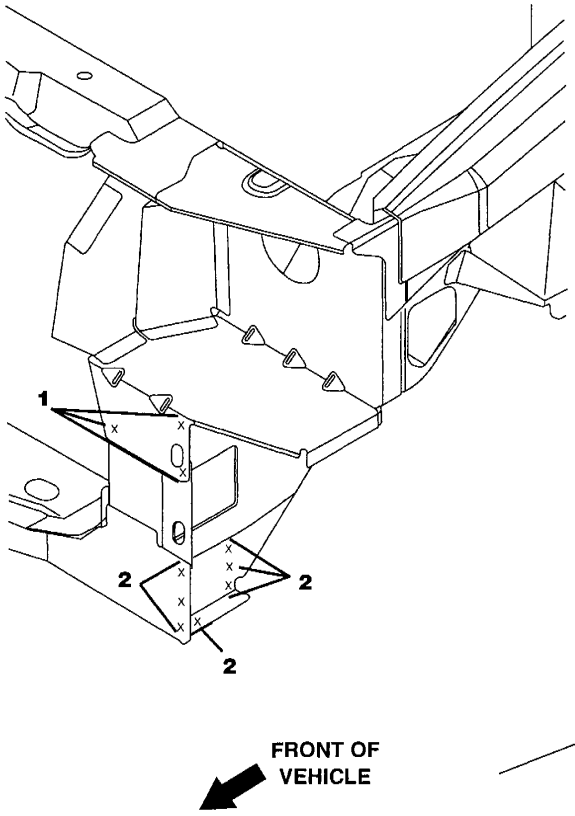


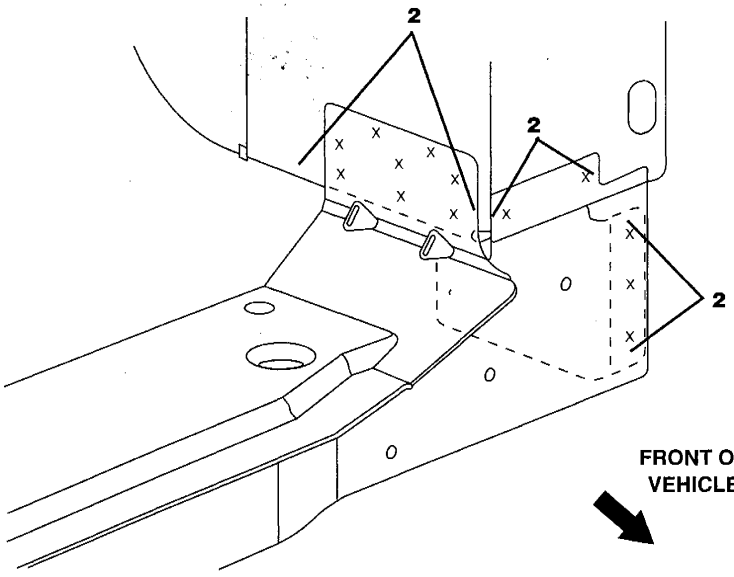


No.	Welded parts	F	R
1	D1 + A2	3	P3
2	D1 + A3	22	P22
3	D1 + C8	17	P17
4	D1 + D2	8	P8
5	D1 + E2	17	P17

No.	Welded parts	F	R
6	D1 + B2	7	P7
7	D1 + B3	4	P4
8	D2 + C8	6	P6
9	D2 + E1	6	P6
10	D1 + B2 + B3	1	P1







NOTES WITH REGARD TO REPAIR WORK

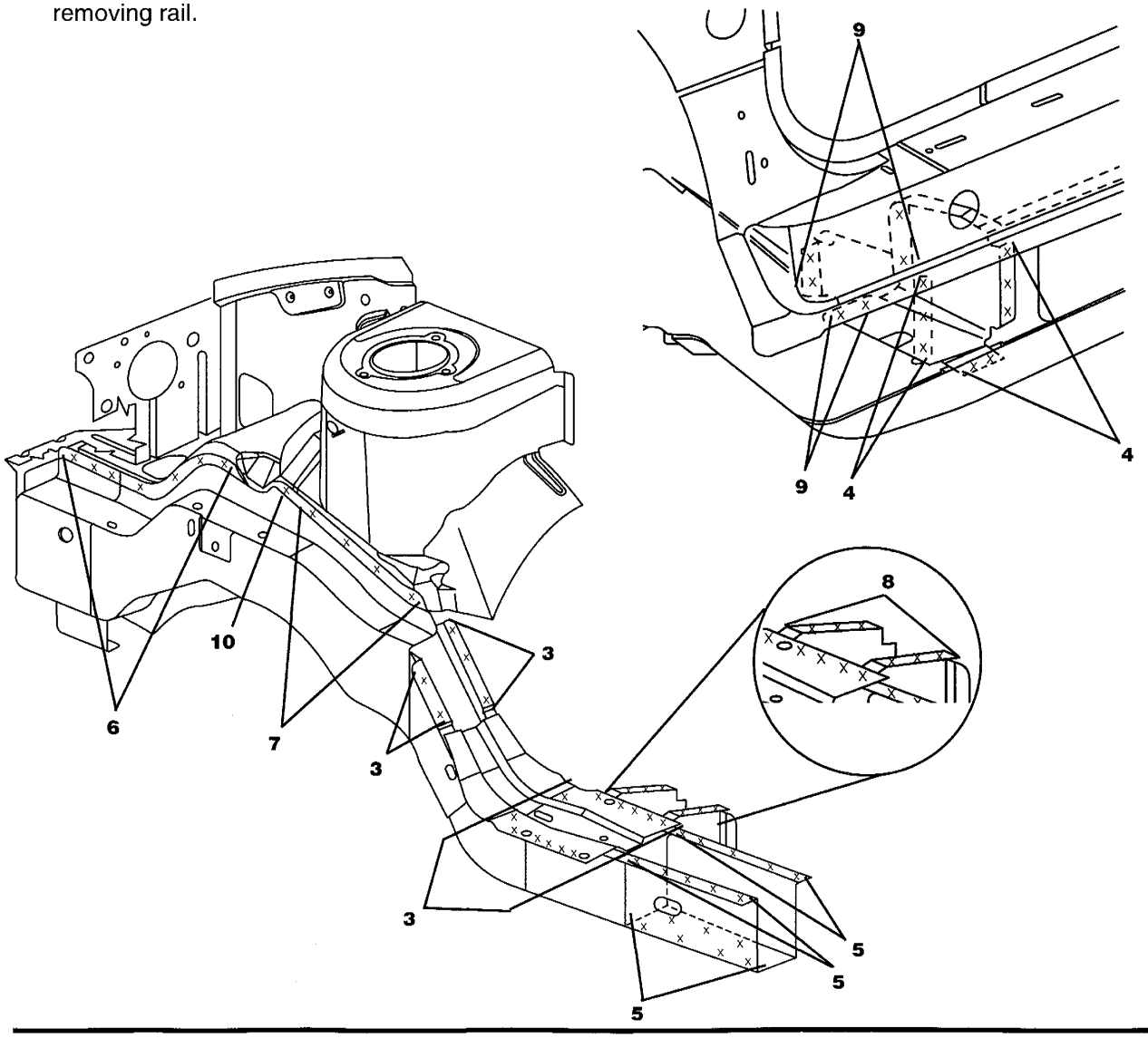
- Because the engine and some front suspension components mount to the Front Rails, it is extremely important that the alignment and workmanship are perfect when doing repair work in this area.
- There are many reinforcemens and brackets that are encased by the Inner and Outer Rails.
- Avoid cutting any welded nuts, reinforcements or brackets during your repair.

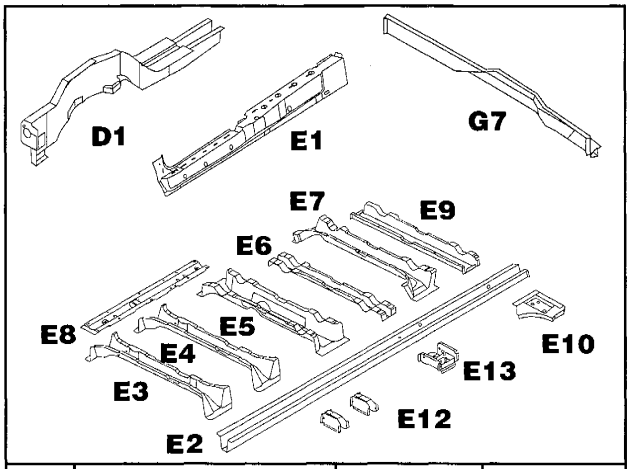
REMOVAL

1. Use a drill bit or hole saw designed to cut spot welds to remove welds on the damaged rail.
2. Use old components as a template for weld locations on new pieces wherever necessary.
3. Note location of brackets and reinforcements when removing rail.

INSTALLATION

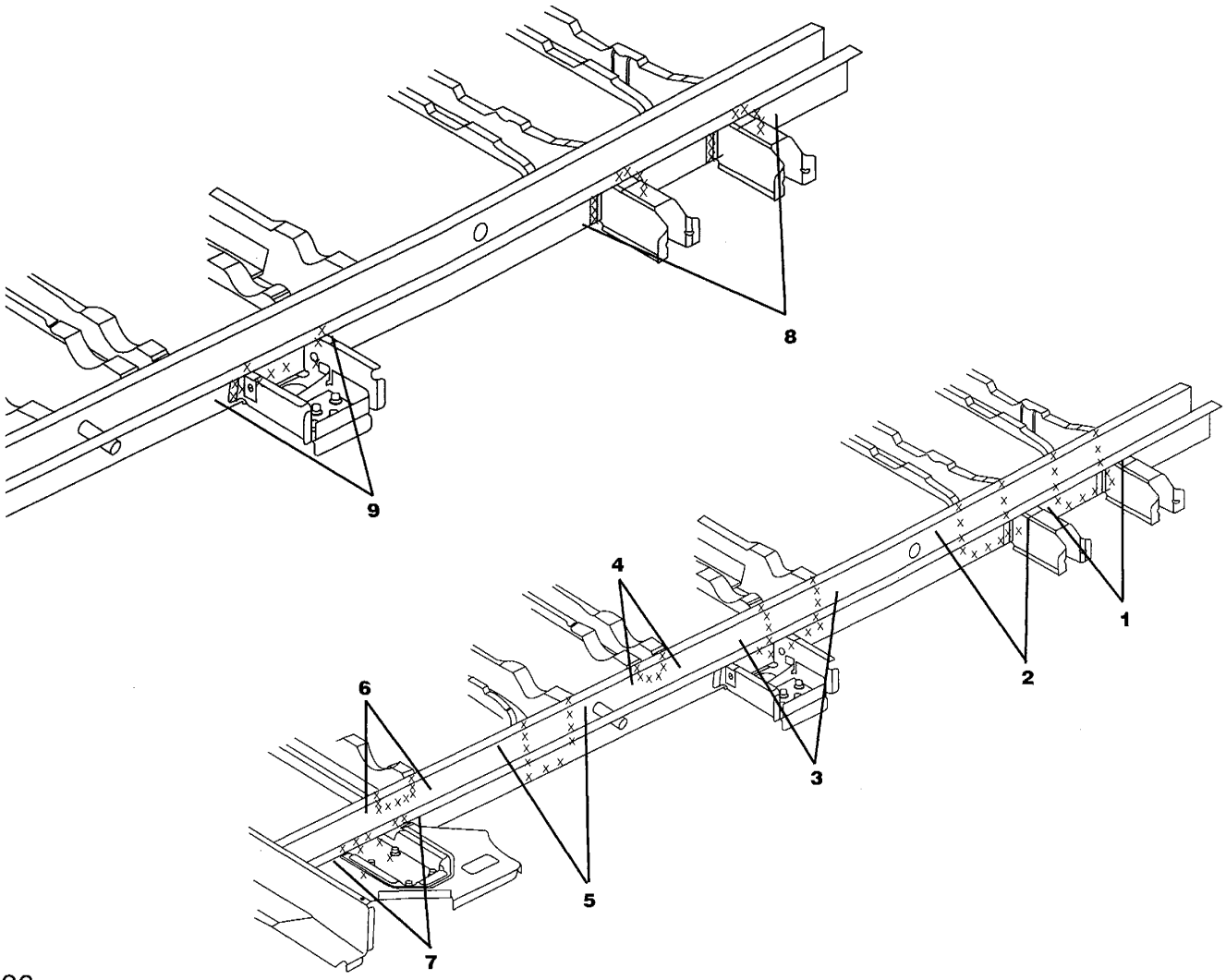
1. Clean all attaching surfaces and prep for new panel installation.
2. Temporarily mount new panel and check fit and alignment.
3. Check all reference measurements. Measure each part and make corrections necessary to obtain perfect agreement with the other parts involved.
4. Use weld-thru primer to promote corrosion protection.
5. Plug weld new panel in place.
6. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.





No.	Welded parts	F	R
1	E2 + E3	12	P12
2	E2 + E4	12	P12
3	E2 + E5	12	P12
4	E2 + E6	6	P6
5	E2 + E7	12	P12
6	E2 + E9	9	P9

No.	Welded parts	F	R
7	E2 + E10	9	P9
8	E2 + E12	16	P16
9	E2 + E13	10	P10
10	E2 + D1	17	P17
11	F2 + G7	9	P9
12	E2 + G7 + E11	1	P1
13	E5 + E8	2	P2
14	E6 + E8	4	P4
15	E7 + E8	4	P4
16	E9 + E8	4	P4
17	E10 + E14	3	P3
18	E10 + F16	3	P3
19	E10 + F16 + F13	1	P1
20	E12 + E1	8	P8
21	E13 + E1	10	P10



NOTES WITH REGARD TO REPAIR WORK

- Don't forget to protect the vehicle from fire or other unecessary damge.
- Because of the difficulty in the removal of these parts, take special care not to damage any adjacent parts.
- Avoid cutting any welded nuts, reinforcements or brackets during your repair.
- List areas where the frame rails are welded to other panels.

REMOVAL

1. Use an appropriate spot weld cutter to cut out all spot welds.
2. An air chisel may be required to remove the side rail.

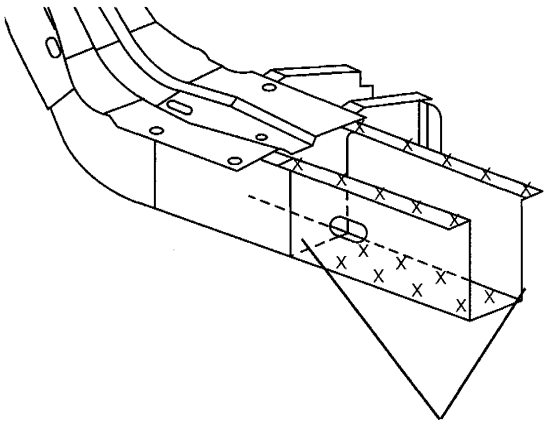
CAUTION: **Do not damage any other panels during the removal process.**

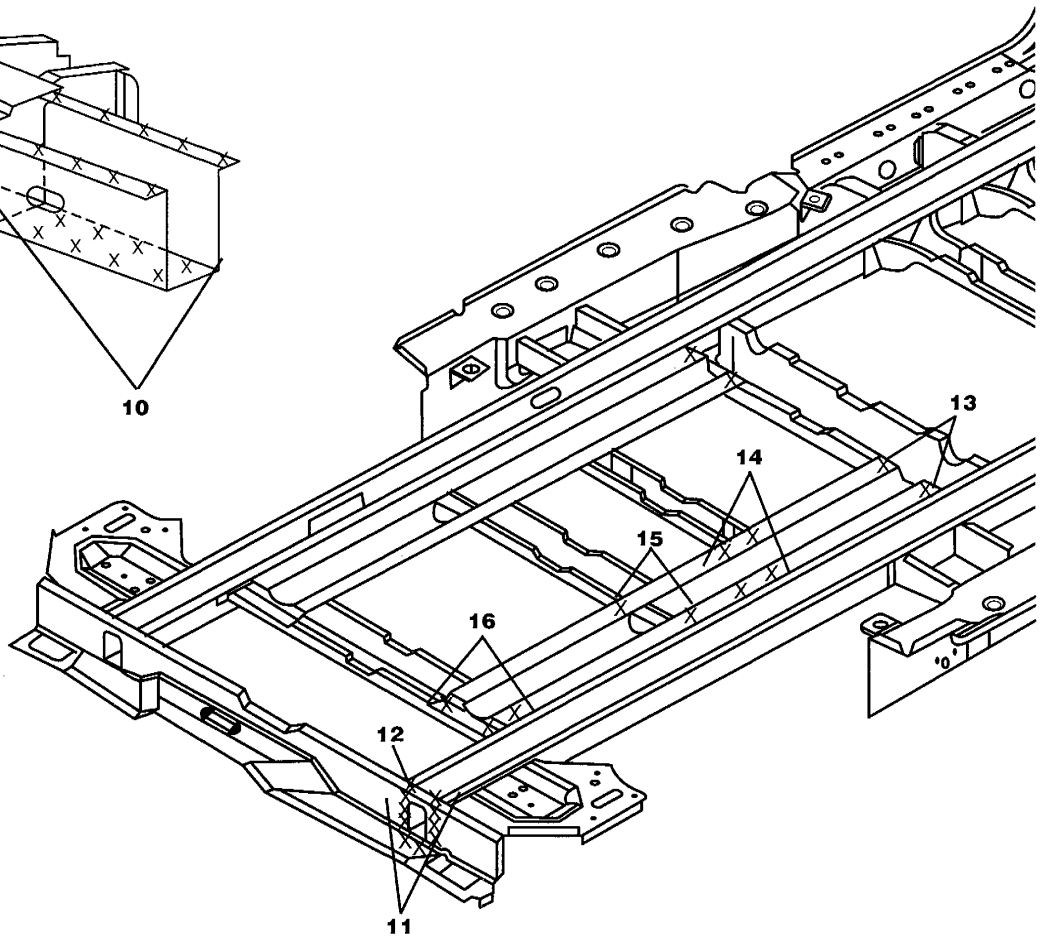
PREPARATION

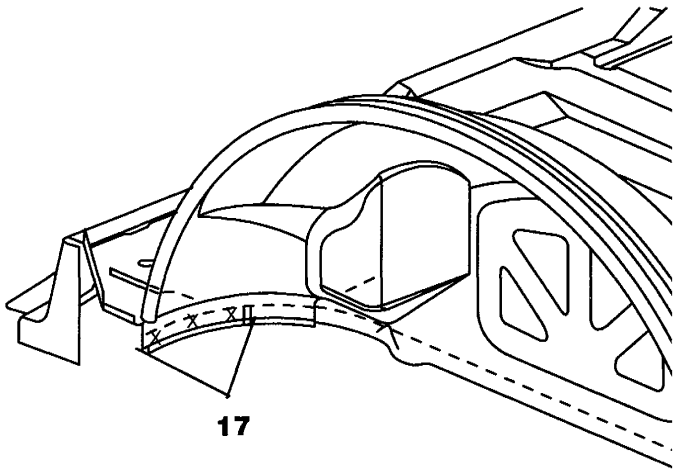
1. Repair any damage that may have been caused by removal of the side rail.
2. Use the old side rail as a guide for plug weld placement.
3. Clean all attaching surfaces and prep for new side rail installation.

INSTALLATION

1. Temporarily mount new side rail and check fit and alignment.
2. Measure each part and make corrections necessary to obtain perfect agreement with the other parts involved.
3. Plug weld new side rail in place, making sure it is at least as strong as the original.
4. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.



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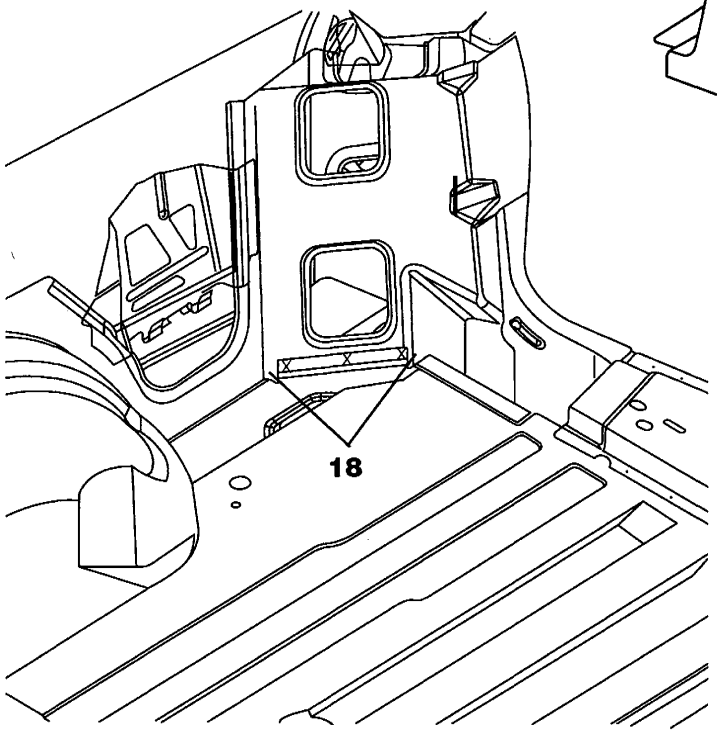
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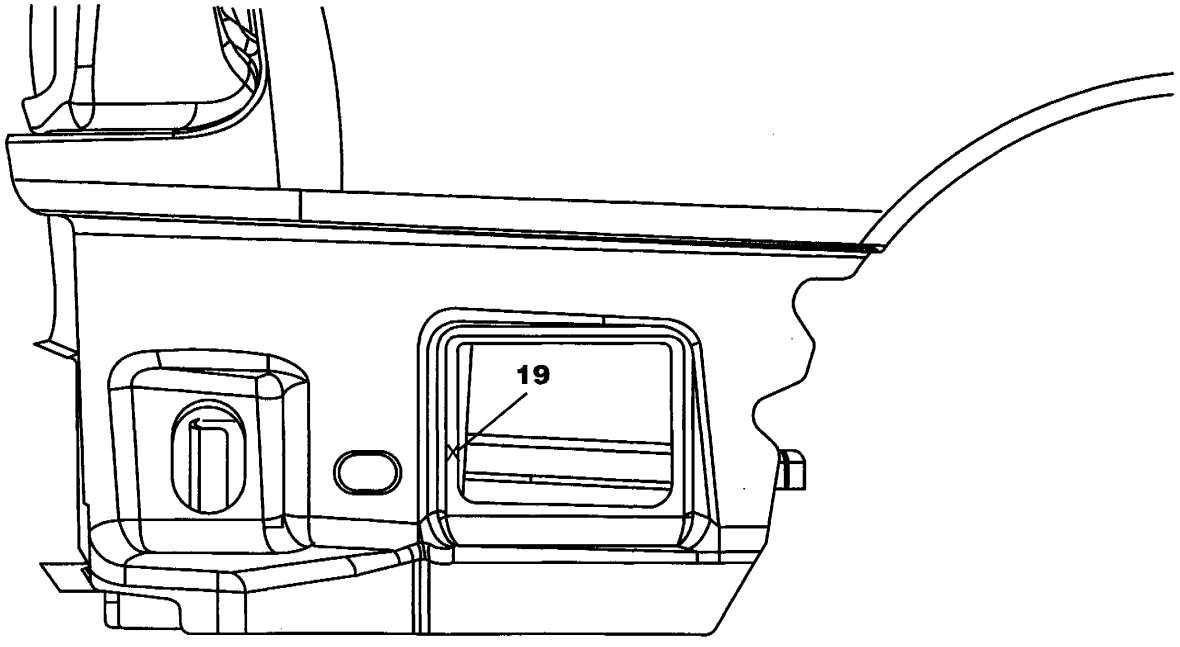
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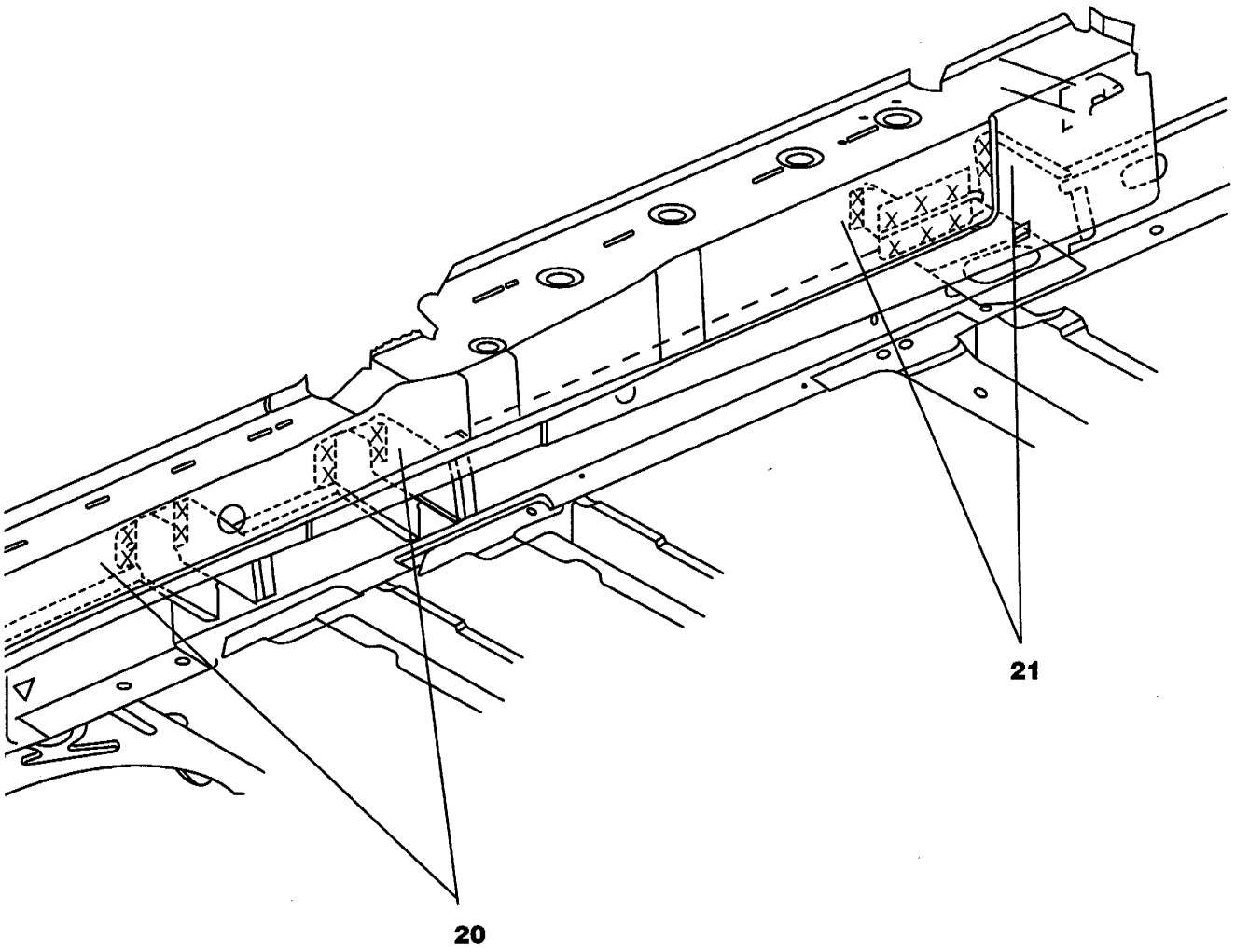
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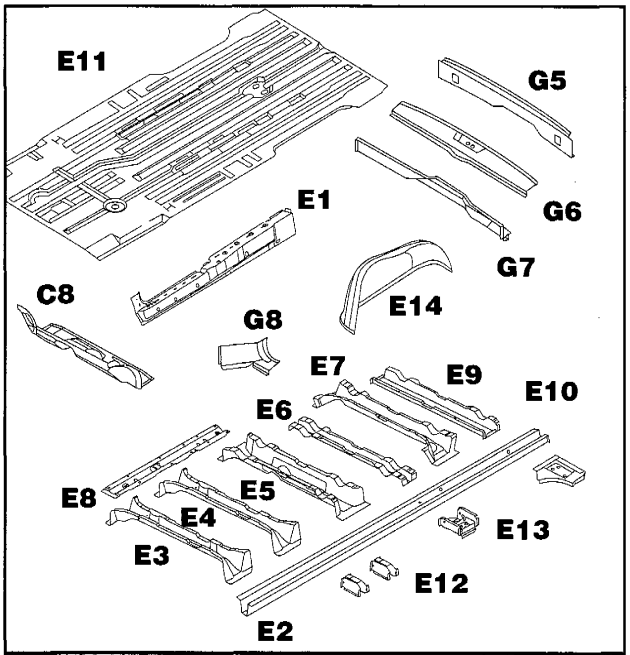
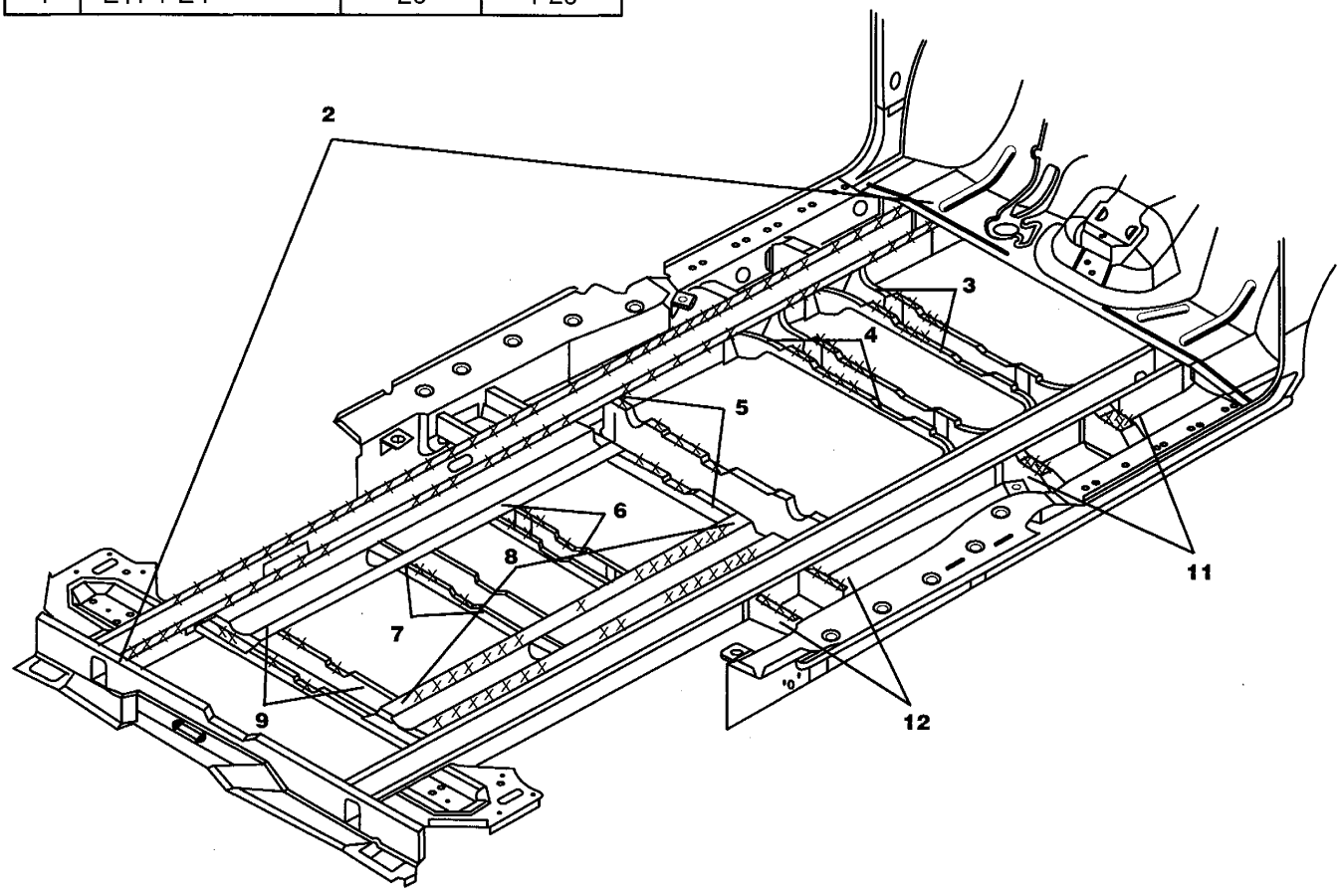


No.	Welded parts	F	R
1	E11 + E1 (LWB)	36	P36
1	E11 + E1 (SWB)	30	P30
2	E11 + E2 (LWB)	65	P65
2	E11 + E2 (SWB)	58	P58
3	E11 + E3	20	P20
4	E11 + E4	20	P20

No.	Welded parts	F	R
5	E11 + E5	16	P16
6	E11 + E6	10	P10
7	E11 + E7	6	P6
8	E11 + E8	31	P31
9	E11 + E9	10	P10
10	E11 + E10	14	P14
11	E11 + E12	8	P8
12	E11 + E13	6	P6
13	E11 + C8	14	P14
14	E11 + C8 + E1	1	P1
15	E11 + G6 + G7	12	P12
16	E11 + E14 + E10 (LWB)	1	P1
16	E11 + E14 + E10 (SWB)	2	P2
17	E11 + E14 (LWB)	18	P18
17	E11 + E14 (SWB)	16	P16



NOTES WITH REGARD TO REPAIR WORK

- The fuel tank must be removed to make this repair.
- The repair procedures are the same for all models.

REMOVAL

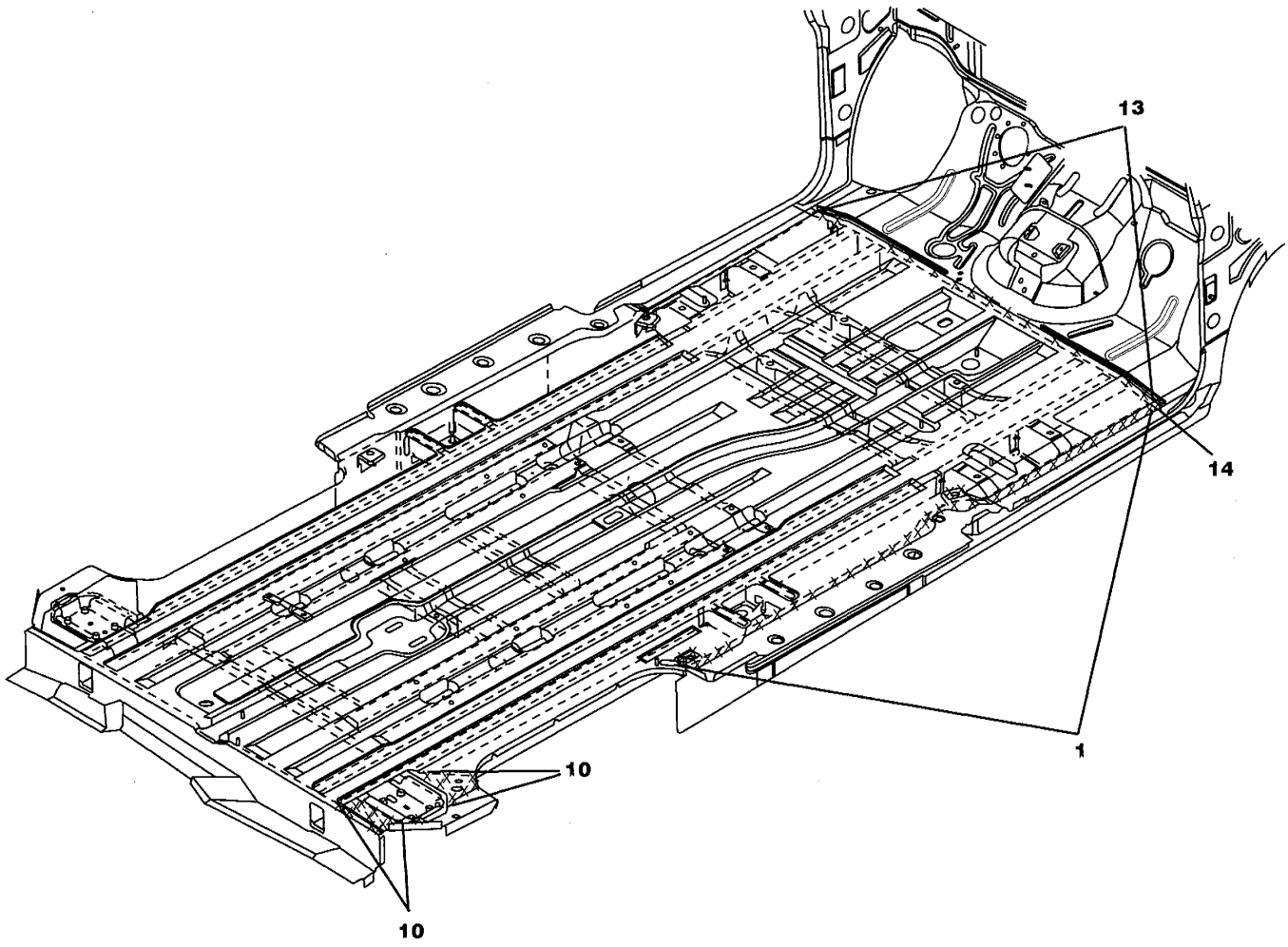
1. A rough cut of the floor pan can be done for easier removal.
2. Cut and separate the spot welds using an appropriate spot weld cutter. This can also provide a template with which to mark spot-weld locations on the new panel.

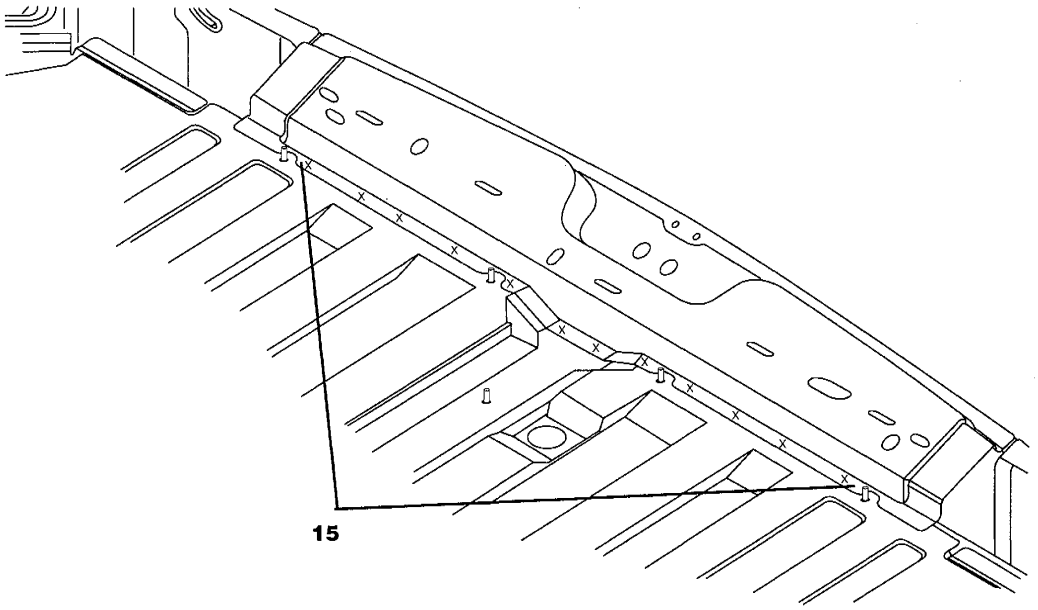
PREPARATION

1. If possible, use the old floor pan as a guide to prepare the new pan for installation.
2. Clean and prepare all adjacent panels so the new floor pan will fall into place.

INSTALLATION

1. Place the new floor pan in position and fit to adjacent panels.
2. Measure and make corrections necessary to obtain perfect agreement with the other parts involved.
3. Tack weld the floor pan to adjacent panels.
4. Fit the tail panel to the floor and frame rails and tack weld in place.
5. Verify alignment and all measurements.
6. Plug weld all panels to original factory weld locations.
7. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.

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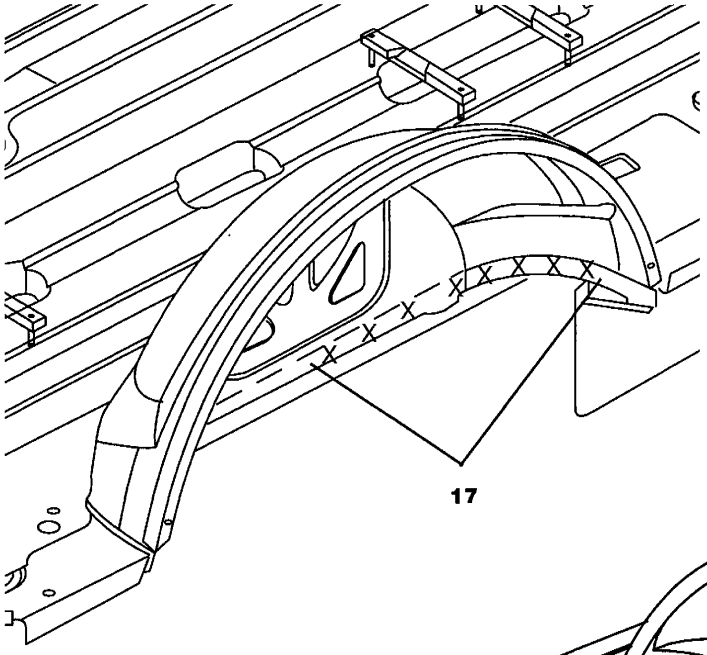
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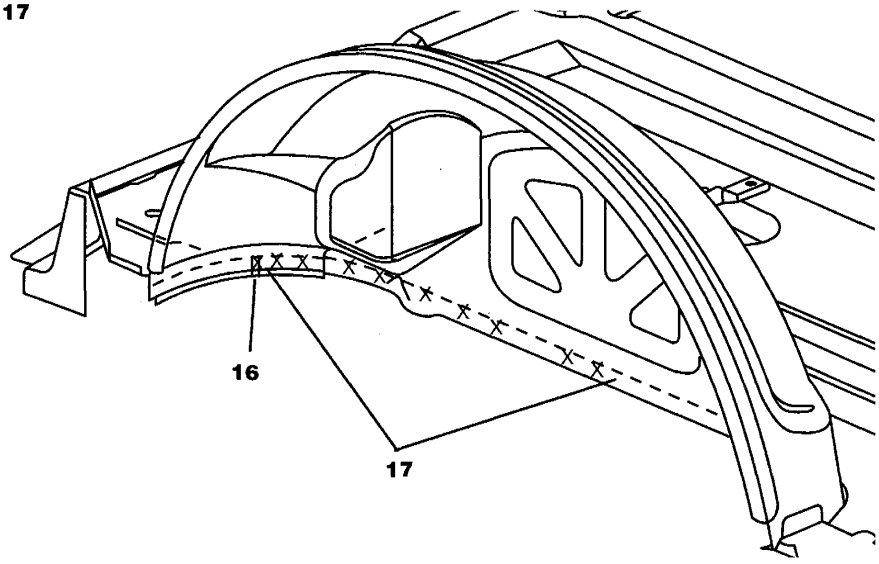
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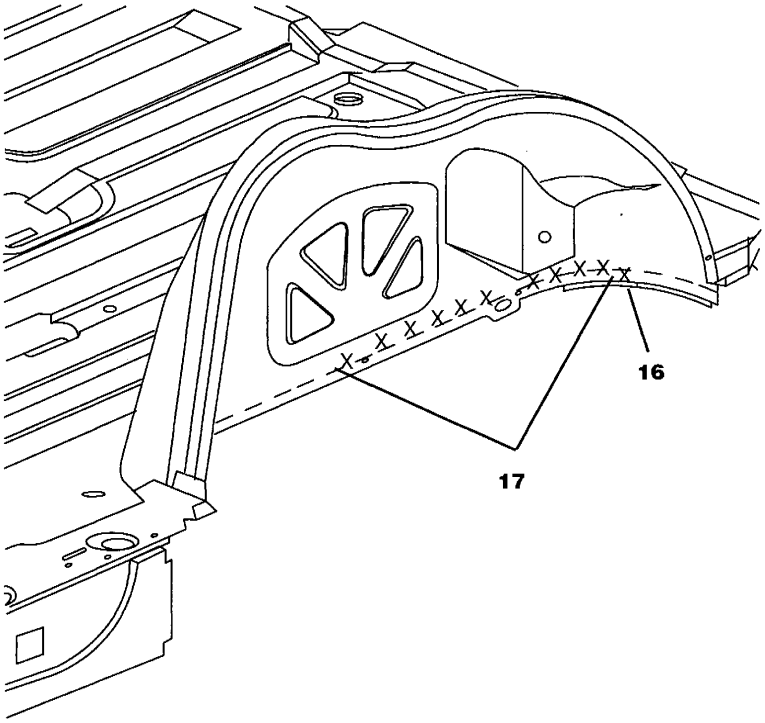
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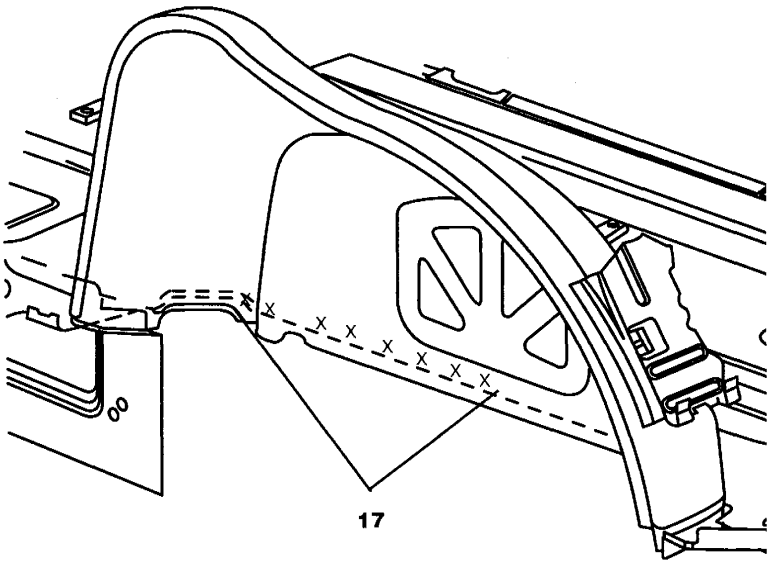
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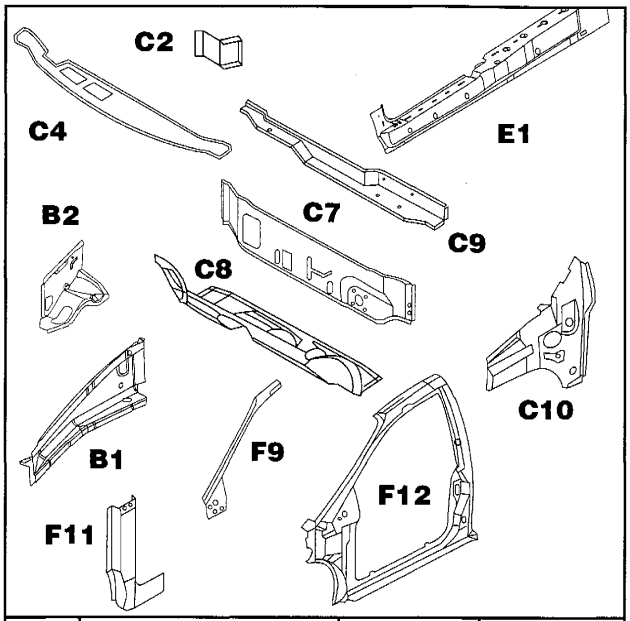
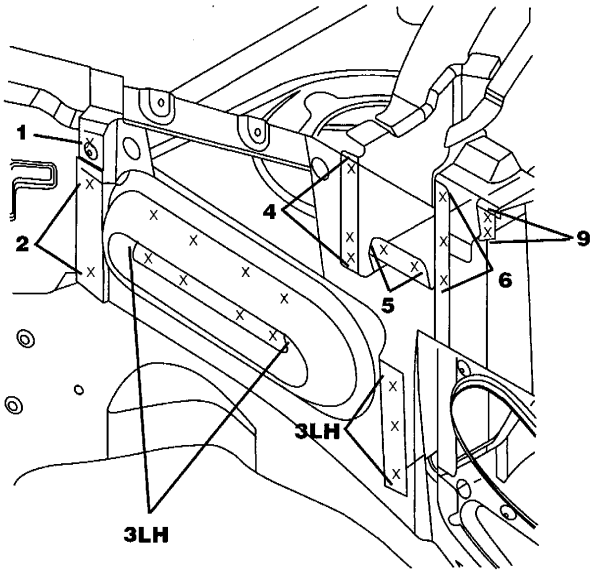
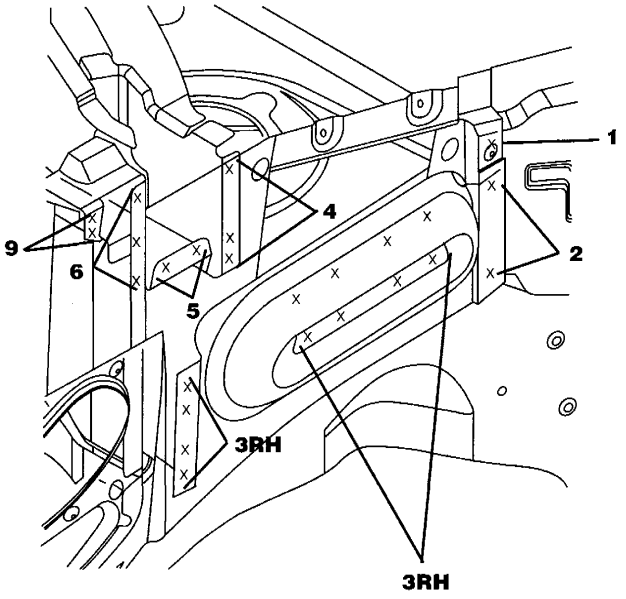
Cowl Side Panel



No.	Welded parts	F	R
1	C10 + B2	1	P1
2	C10 + B2 + B3	2	P2
3LH	C10 + B3	11	P11
3RH	C10 + B3	12	P12
4	C10 + C2	3	P3
5	C10 + C4	2	P2
6	C10 + C7	3	P3
7	C10 + C8	7	P7
8	C10 + C8 + E1	1	P1
9	C10 + C9	2	P2
10	C10 + E1	1	P1
11	C10 + F9	3	P3
12	C10 + F11	3	P3
13	C10 + F11 + F12	9	P9
14	C10 + F12	4	P4





NOTES WITH REGARD TO REPAIR WORK

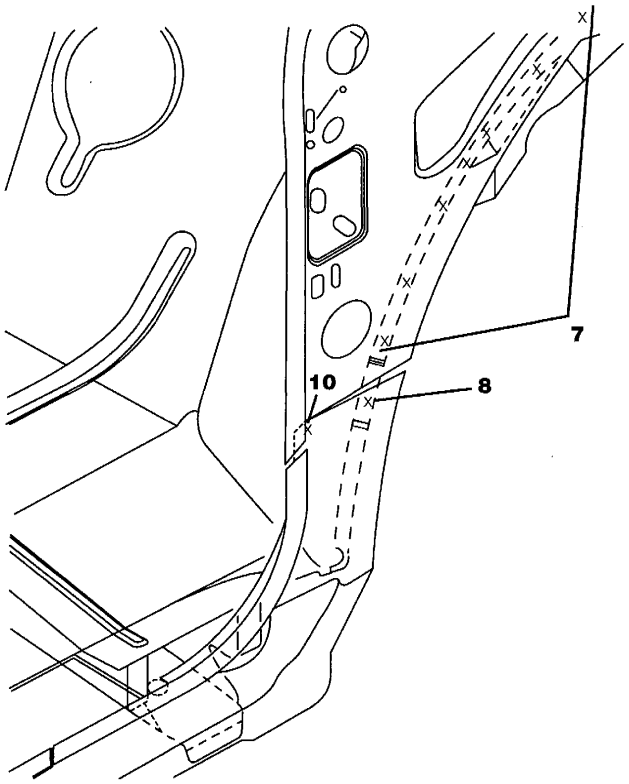
- The Side Aperature, Hinge Pillar and outer A-Pillar panels must be removed to repair the Cowl Side Panel.
- The Cowl Side Panel is the connecting point for the Upper Load Path Beam and the rest of the unibody. Correct mounting location and weld integrity are critical to replacement of this panel.

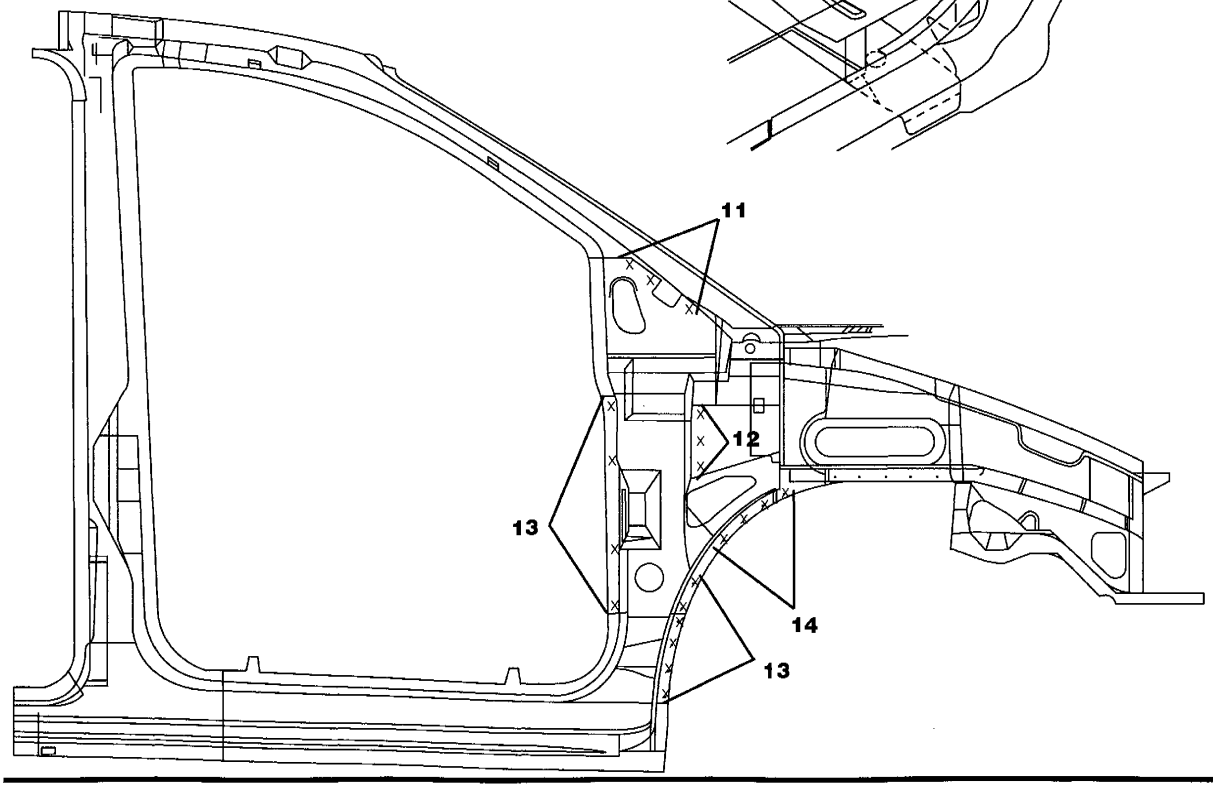
REMOVAL

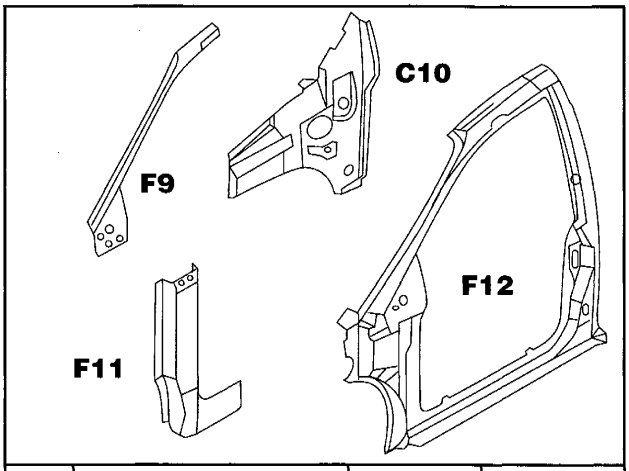
1. Use a spot weld cutter to remove spot welds.
2. Clean attaching area on remaining panels.
3. Use removed panel as template for weld placement on new panel.

INSTALLATION

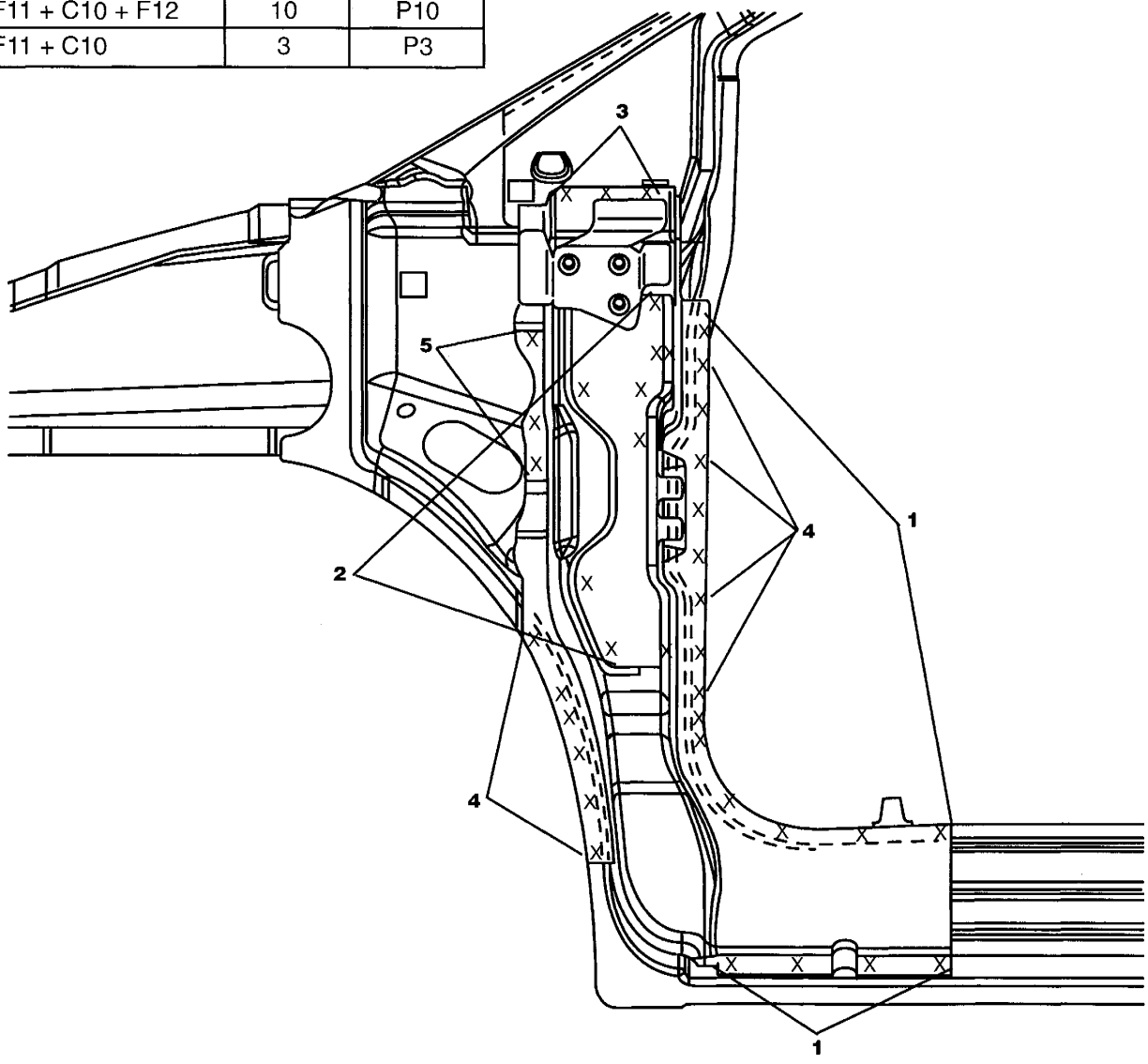
1. Transfer markings to new panel from old for weld locations.
2. Clamp new panel in place and check alignment and measurements.
3. Plug weld new panel.
4. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.







No.	Welded parts	F	R
1	F11 + F12	15	P15
2	F11 + F12 + Hinge Tap Plate Retainer	9	P9
3	F11 + F12 + Hinge Tap Plate Retainer	3	P3
4	F11 + C10 + F12	10	P10
5	F11 + C10	3	P3



NOTES WITH REGARD TO REPAIR WORK

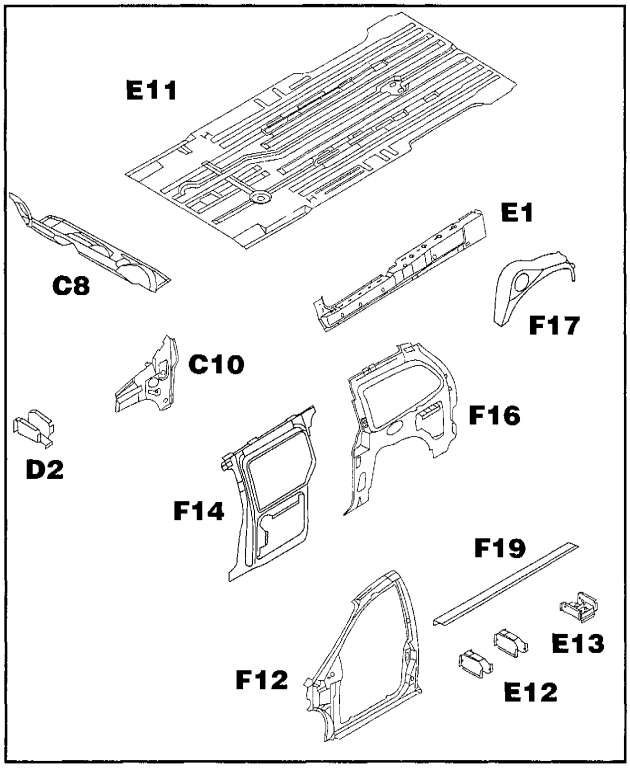
- Because the support given by the hinge pillar extension is so great, it is one of the most important structure pieces.
- The Hinge Pillar is composed of multiple components layered to create the pillar.
- The Hinge Pillar is a sub-assembly fo the Front Side Aperture. If damaged, the Hinge Pillar may be sectioned-in or, depending on the extent of the damage, the entire aperture assembly may have to be replaced.
- The Side Aperature must be removed to gain access to the Hinge Pillar

REMOVAL

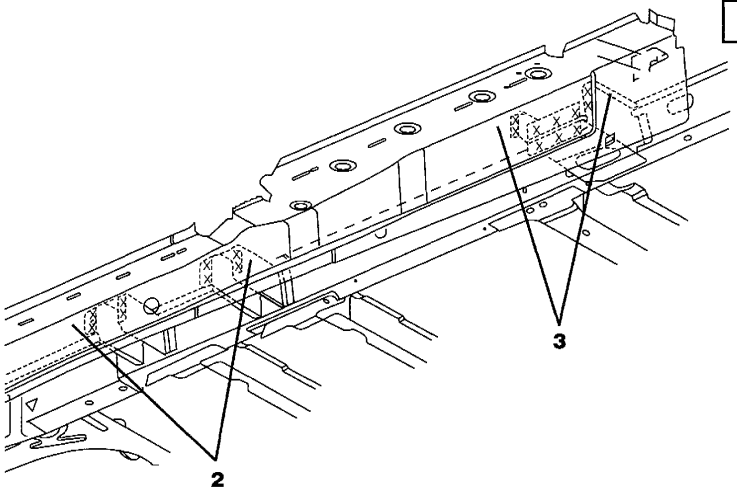
1. The way you intend to replace this panel will determine whether you remove it as a single component or as a sub-assembly.
2. Use a spot weld cutter to remove old welds. Be sure to cut the welds as cleanly as possible. This will make your cleanup work much easier.
3. Clean attaching area on remaining panels.
4. Use removed panel as template for weld placement and cutting of new panel.

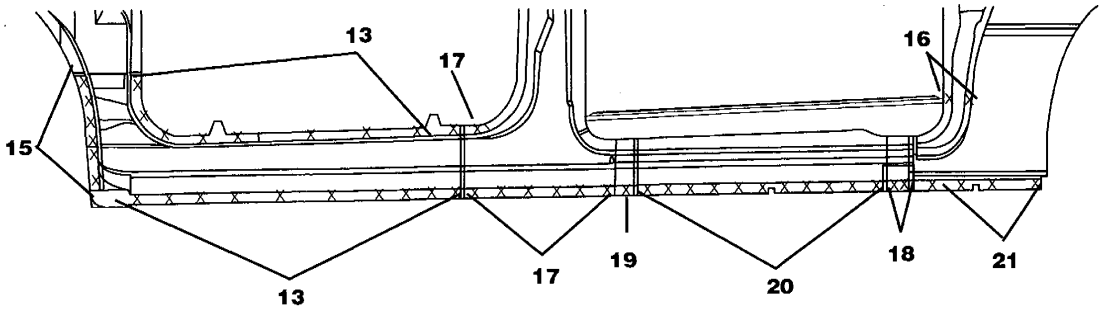
INSTALLATION

1. If replacing as a sub-assembly, always overlap in areas where you cannot weld at OEM welds. In addition to plug welds, use stitch welds to make a continuous mig weld where overlapping occurs.
2. Clamp new panel in place and check alignment and measurements.
3. Plug and stitch weld new panel in place.
4. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.



No.	Welded parts	F	R
1	E1 + E11 (LWB)	36	P36
1	E1 + E11 (SWB)	30	P30
2	E1 + E12	8	P8
3	E1 + E13	10	P10
4	E1 + E14	3	P3
5	E1 + F14	11	P11
6	E1 + F16 + Jacking Support	2	P2
7	E1 + F19 (Without door)	10	P10
8	E1 + C10	1	P1
9	E1 + C8	6	P6
10	E1 + F16 + F14	1	P1
11	E1 + D2	6	P6
12	E1 + C8 + C10	1	P1
13	E1 + F12	18	P18
14	E1 + C8 + E11	1	P1
15	E1 + F12 + F11	6	P6
16	E1 + F16 + F27	2	P2
17	E1 + F13 + F12	7	P7
18	E1 + F28 + F29	2	P2
19	E1 + F12 + F29	1	P1
20	E1 + F29	11	P11
21	E1 + F28 (LWB)	3	P3
21	E1 + F28 (SWB)	2	P2





NOTES WITH REGARD TO REPAIR WORK

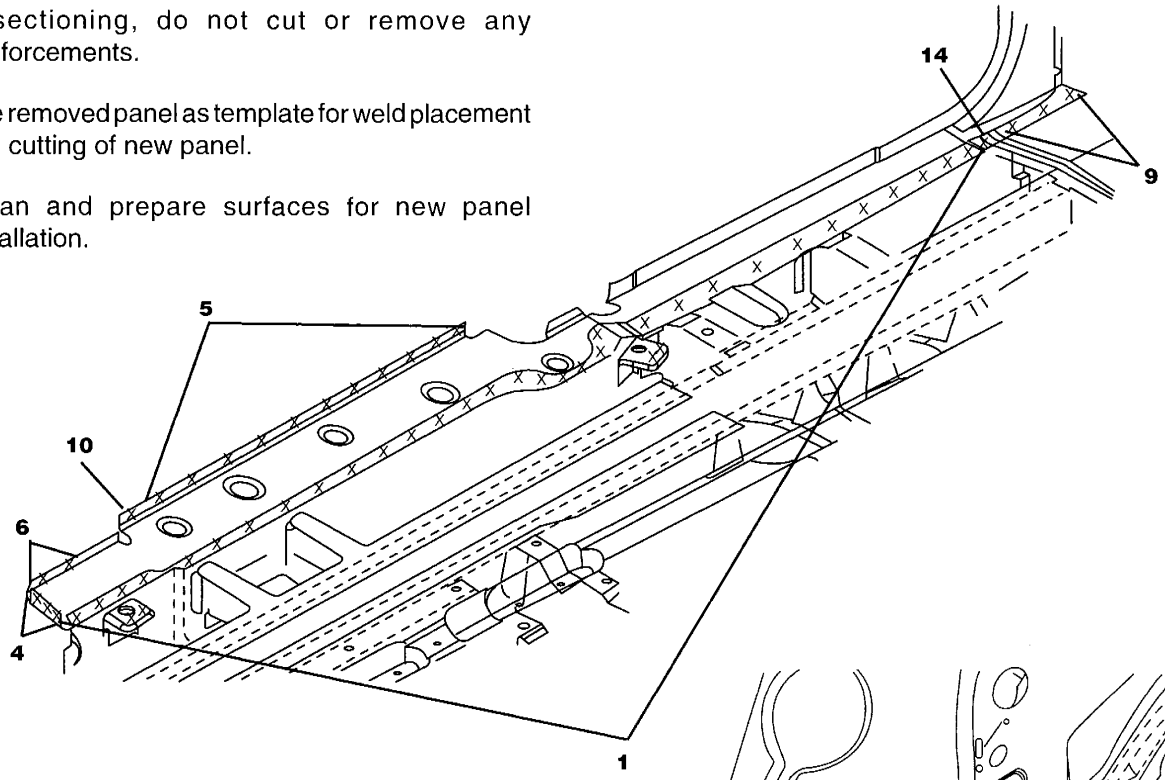
- The Side Sill overlaps multiple components as well as being overlapped by numerous bodyside components.
- If you choose to section the Side Sill, overlap on a sleeve or reinforcement and use continuous stitch and plug welds.

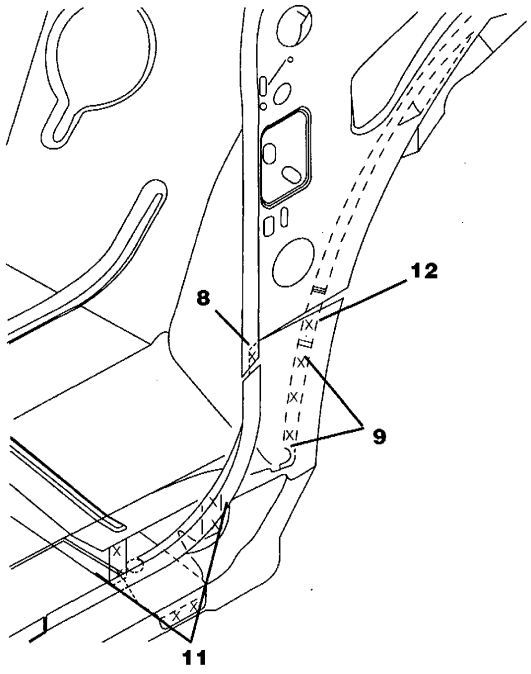
REMOVAL

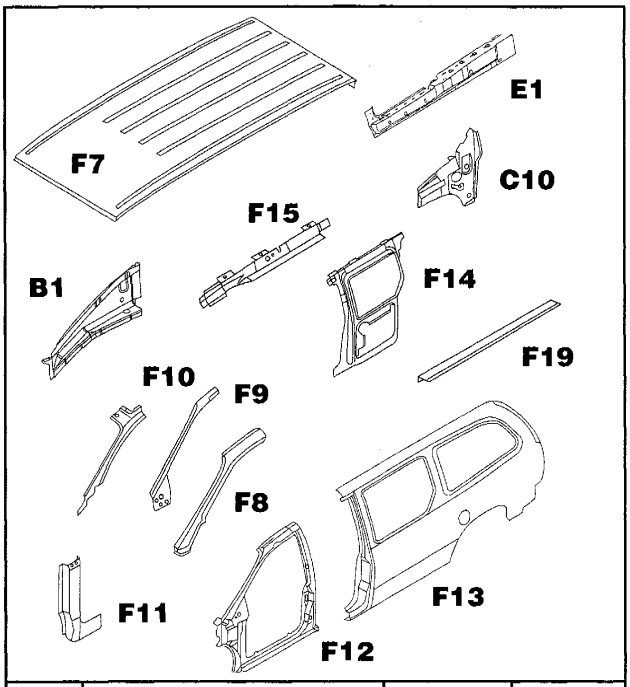
1. Locate all spot and MIG welds and remove as required.
2. If sectioning, do not cut or remove any reinforcements.
3. Use removed panel as template for weld placement and cutting of new panel.
4. Clean and prepare surfaces for new panel installation.

INSTALLATION

1. Tack weld the new panel in place.
2. Check alignment and measurements and adjust as necessary.
3. Plug and stitch weld new panel in place.
4. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.

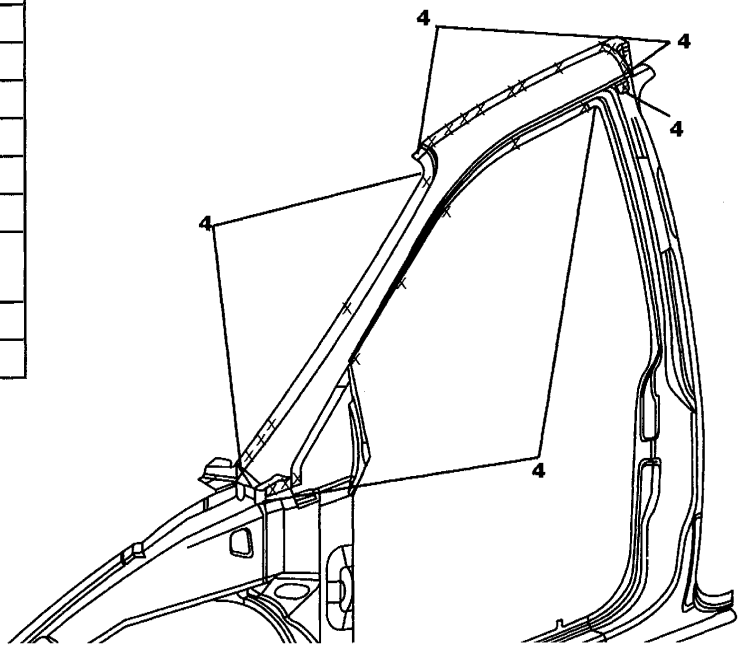


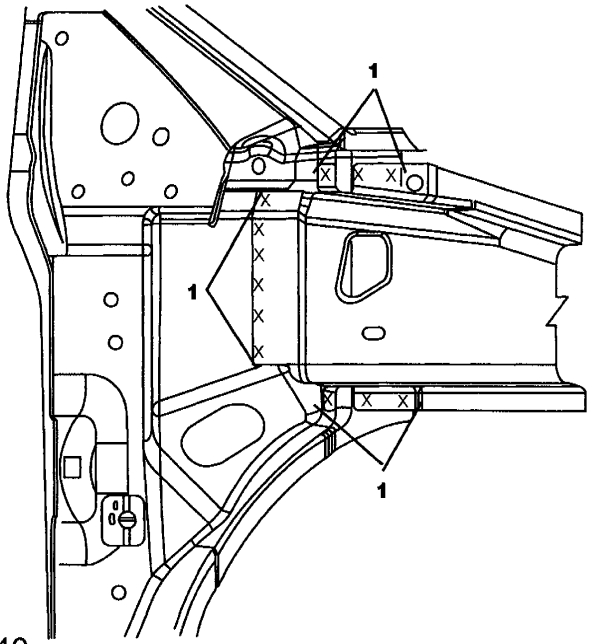




No.	Welded parts	F	R
1	F12 + B1	12	P12
2	F12 + C10	12	P12
3	F12 + E1	18	P18
4	F12 + F8	26	P26
5	F12 + F8 + F7	2	P2
6	F12 + F9	45	P45
7	F12 + Stiker Plate Retainer	6	P6
8R	F12 + F10 + F8	22	P22
9	F12 + F10 + F7	1	P1

No.	Welded parts	F	R
10	F12 + F11	27	P27
11	F12 + F11 + Hinge Tap Plate Retainer	12	P12
12	F12 + F19 + Hinge Tap Plate Retainer	3	P3
13	F12 + F11 + C10	9	P9
14	F12 + F14 (Without door)	15	P15
15	F12 + F19 (Without door)	6	P6
16	F12 + F13 + F14 (Without door)	4	P4
17	F12 + E1 + F11	6	P6
18	F12 + E1 + F13	7	P7
19	F12 + B1 + C10	1	P1
20	F12 + F21 + F20	15	P15
21	F12 + F22 + F8	4	P4
22	F12 + F29	8	P8
23	F12 + E1 + F29	1	P1
24	F12 + Striker plate	6	P6





NOTES WITH REGARD TO REPAIR WORK

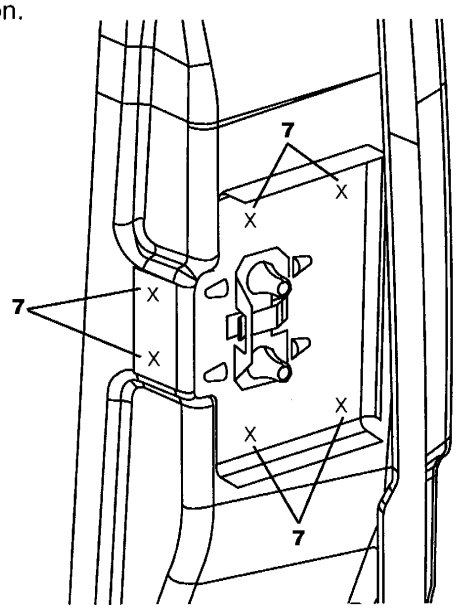
- Because the Side Aperture is a complete assembly, the front must be replaced by sectioning.
- Overlap on a sleeve or reinforcement and use continuous stitch and plug welds.

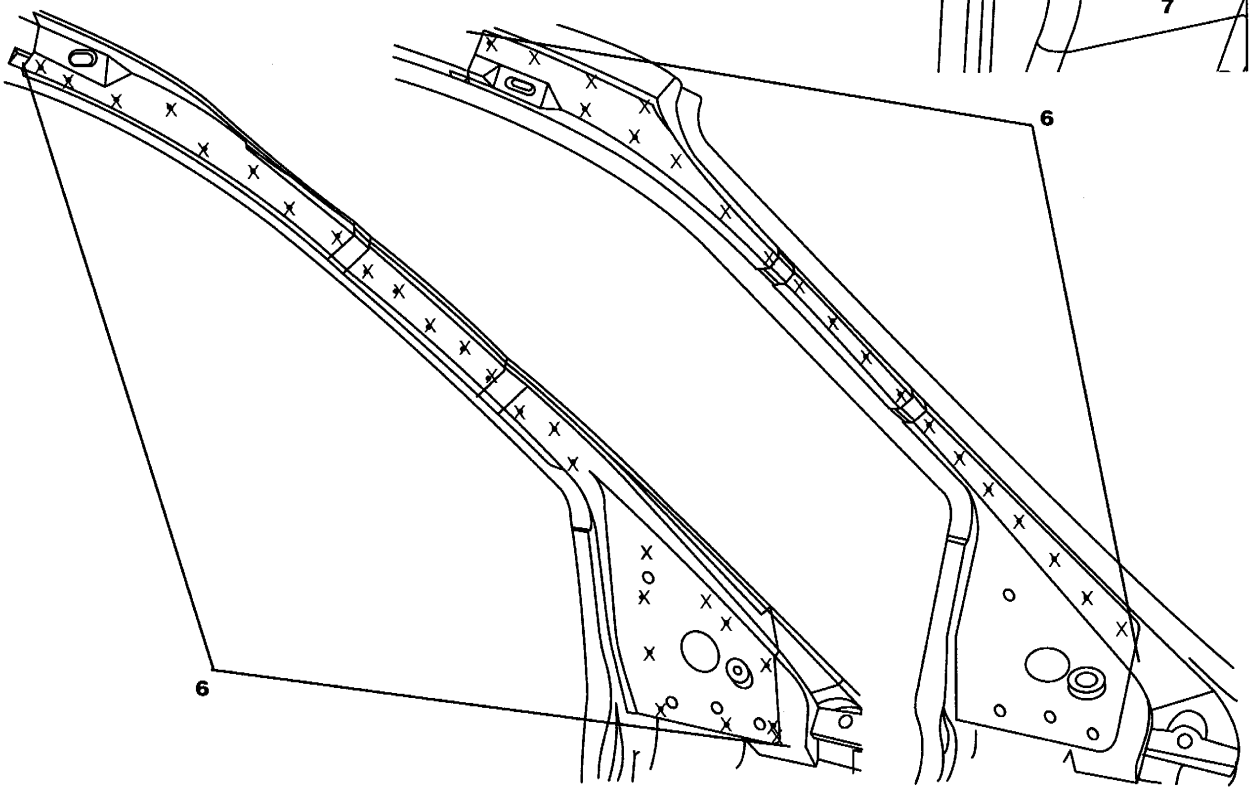
REMOVAL

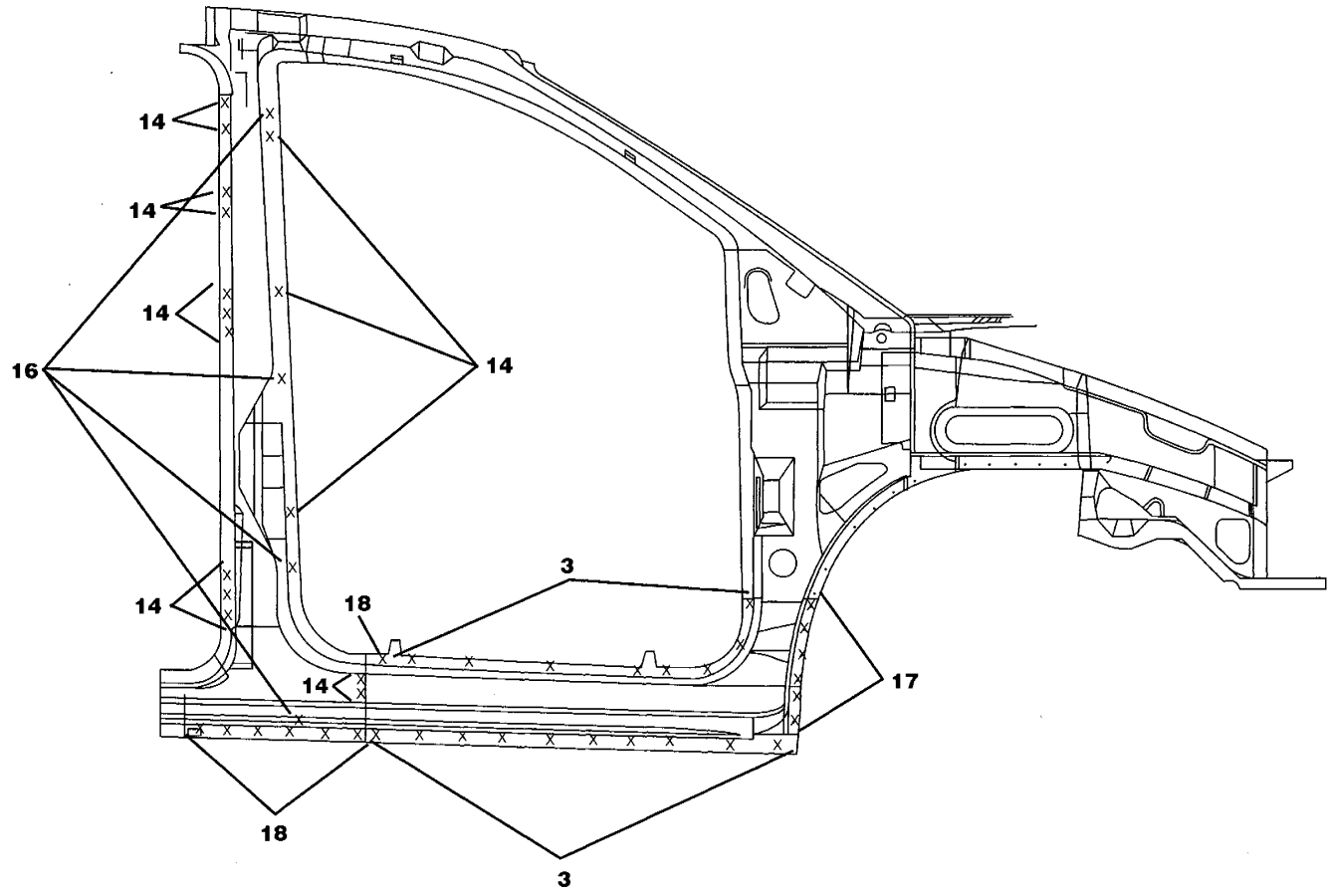
1. First you have to decide where would be the best place to section the panel, then find a spot on both panels that you can use for measurement.
2. Remember to stagger your overlap for added strength.
3. Make a rough cut on the old panel, cut all spot welds and remove the old panel.
4. Make a second measurement and trim the panel as necessary.
5. Use old panel as a template for weld placement and cutting of new panel.
6. Clean and prepare surfaces for new panel installation.

INSTALLATION

1. Place the new Front Side Aperture in place, making sure the alignment is correct before welding.
2. Spray anti-corrosion agent onto the back side of the surface to be welded.
3. Plug weld the new panel in place and MIG stitch weld the seams where the old panel and the new panel overlap. Then finish your plug welding.
4. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.



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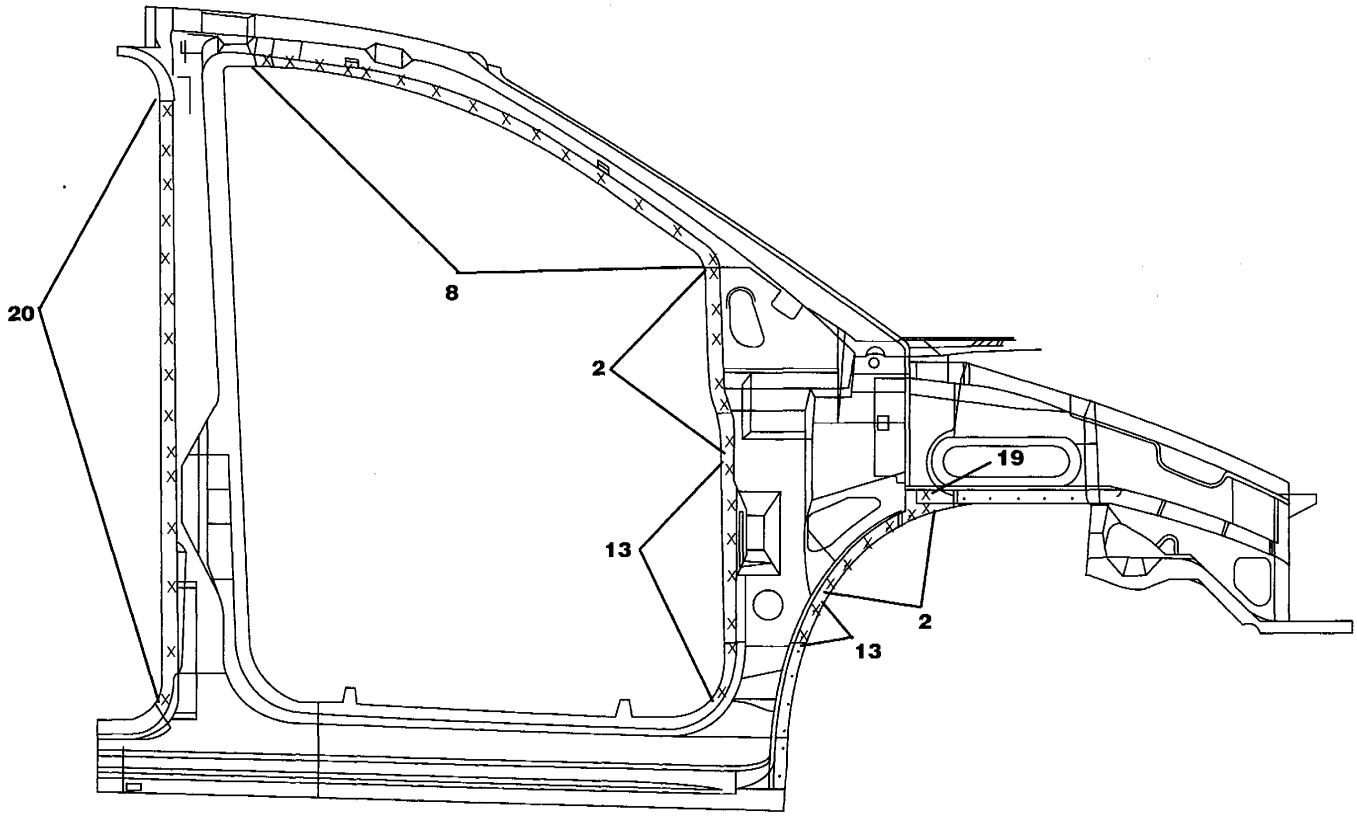
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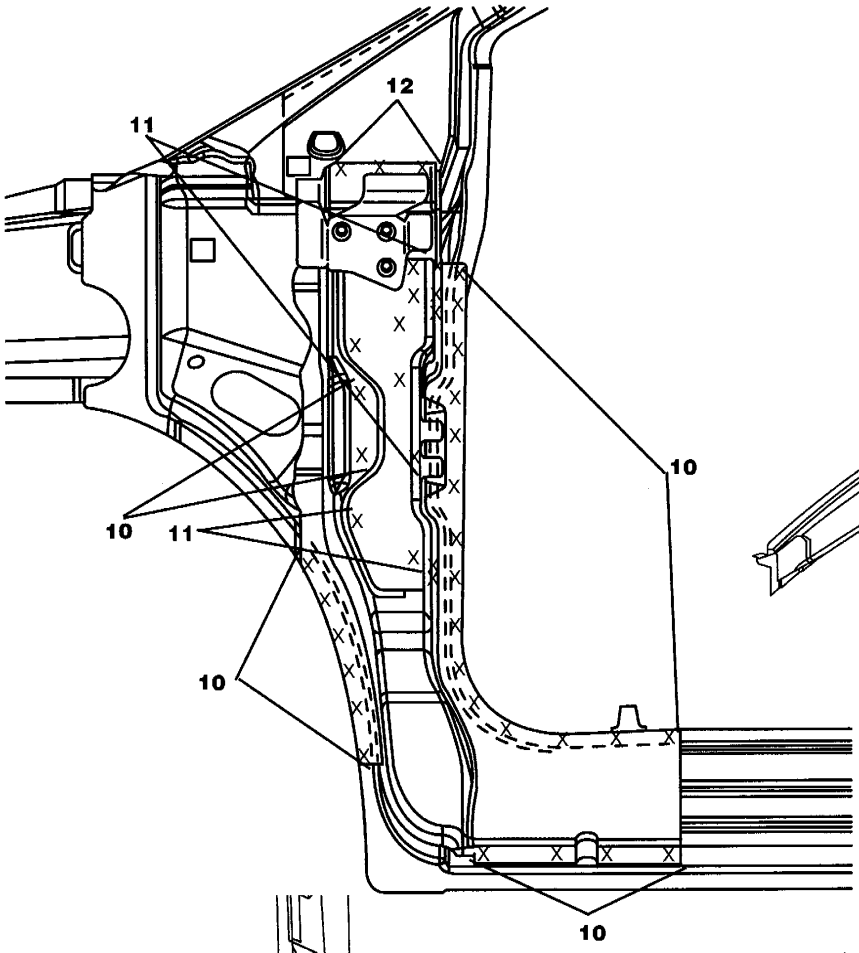
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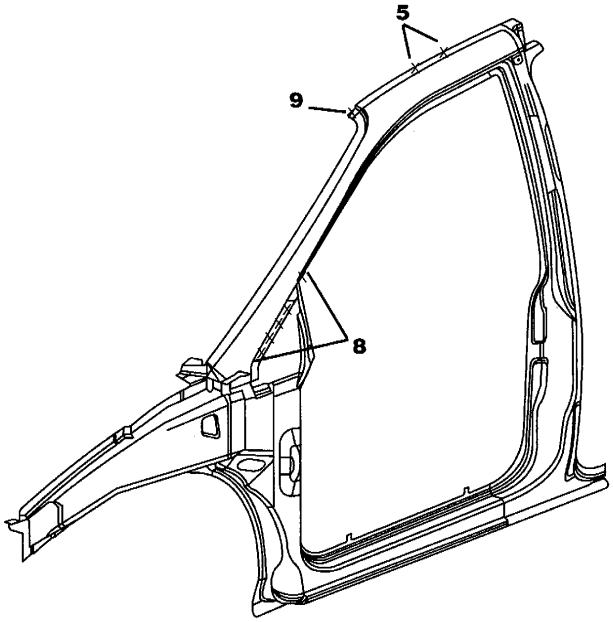
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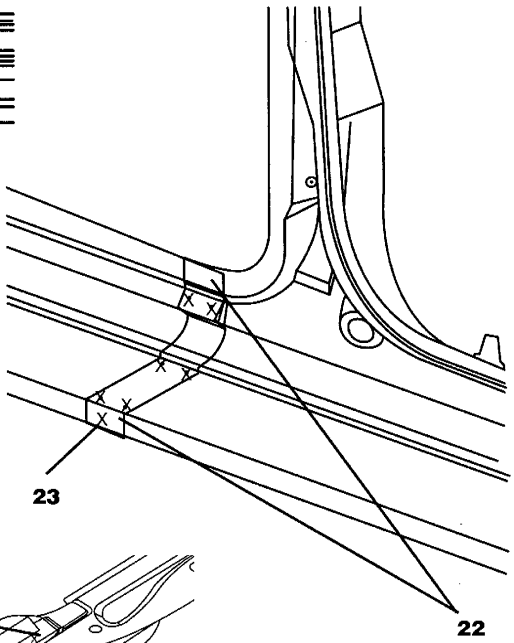
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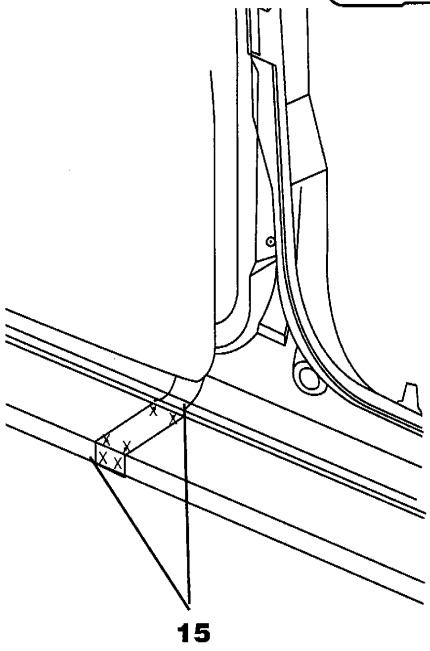
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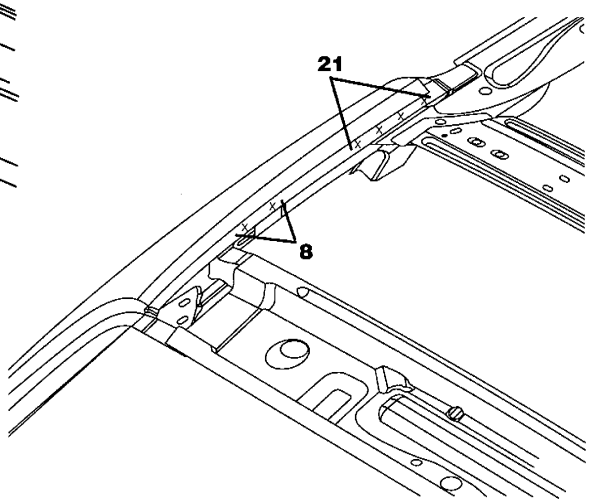
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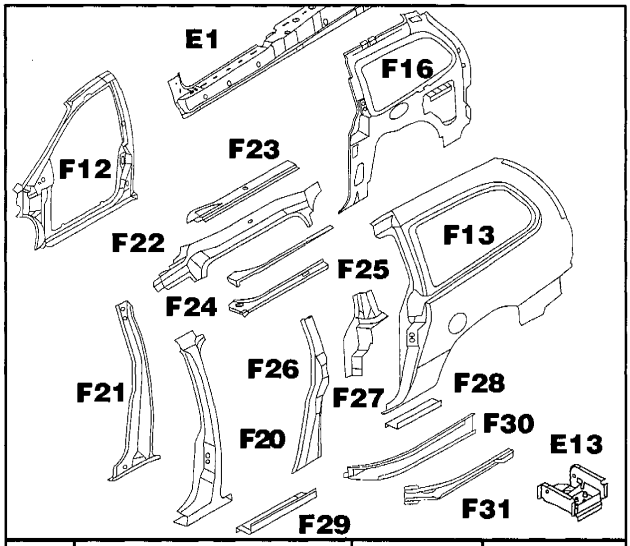
Quarter Panel With Sliding Door (Left and Right)



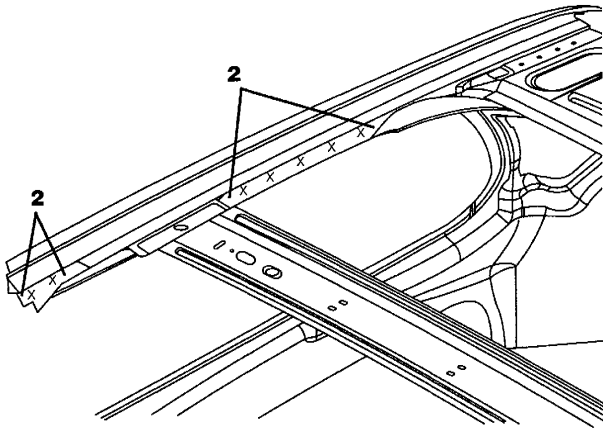
No.	Welded parts	F	R
1	F13 + F28 + F29	2	P2
2	F13 + F16	26	P26
3	F16 + E1 + Jacking Reinforcement (LWB)	2	P2
4	F16 + E1 (SWB)	3	P3
5	F20 + F12	18	P18
6	F20 + F21		
7	F20 + F22		
8	F20 + F12 + E1	6	P6
9	F21 + F12	28	P28
10	F21 + F12 + F20	22	P22
11	F21 + F22	13	P13
12	F21 + F31	2	P2
13	F21 + F22 + Reinforcement	1	P1
14	F22 + F2	3	P3
15	F22 + F3	3	P3
16	F22 + F3a	3	P3
17	F22 + F10	3	P3
18	F23 + F12	1	P1
19L	F23 + F13	4	P4
19R	F23 + F13	3	P3
20	F22 + F16	9	P9
21	F22 + F25	5 fasteners	5 fasteners
22	F22 + F3 + F23	3	P3
23	F22 + F3a + F23	3	P3
24L	F22 + F8 + F12	4	P4
24R	F22 + F8 + F12	2	P2
25L	F22 + F16 + F13	1	P1
25R	F22 + F16 + F13	2	P2
26	F22 + F16 + F21	1	P1
27	F22 + F16 + F23	1	P1

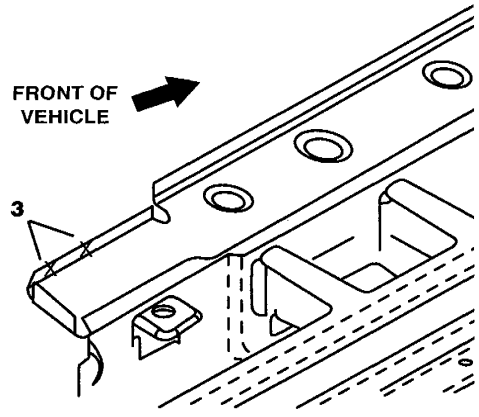
No.	Welded parts	F	R
28	F22 + F16 + Reinforcement	11	P11
29	F22 + F16 + F25	1	P1
30	F23 + F3	3	P3
31	F23 + F7	8	P8
32	F23 + F13	4	P4
33	F23 + F25	15	P15
34	F23 + F24	5 fasteners	5 fasteners
35L	F25 + F24 + F13	2	P2
35R	F25 + F24 + F13	4	P4
36	F26 + E1	M	PM
37L	F25 + F13	7	P7
37R	F25 + F13	5	P5
38	F26 + F16	23	P23
39	F26 + F16 + Jacking Reinforcement	6	P6
40	F26 + F27		
41	F27 + F13	26	P26
42	F27 + E1 + F16	2	P2
43	F27 + F13 + F16	17	P17
44	F28 + E1 (LWB)	4	P4
44	F28 + E1 (SWB)	3	P3
45	F28 + F13 (LWB)	7	P7
45	F28 + F13 (SWB)	4	P4
46	F28 + F13 + Jacking Reinforcement	2	P2
47	F28 + F29	6	P6
48	F28 + F29 + F30	2	P2
49	F29 + F12	8	P8
50	F29 + F20 + E1	1	P1
51	F29 + F20 + E1		
52	F29 + F30	8	P8
53	F29 + F13 + F30 (LWB)	2	P2
53	F29 + F13 + F30 (SWB)	3	P3
54	F29 + E1	9	P9
55	F29 + E1 + F13	2	P2
56	F29 + F20 + F31	2	P2
57L	F29 + F31	7	P7
57R	F29 + F31	8	P8
58	F29 + F21 + F12	4	P4
59	F30 + F13	1	P1
60	F30 + F31	21	P21
61	F30 + Jacking Reinforcement	3	P3
62	F31 + F16 + F13	2	P2
63	F31 + F30 + E1	2	P2

No.	Welded parts	F	R
64	F30 + E1	15	P15
65	F23 + 3a	3	P3
66	F28 + F29 + F31	2	P2
67	F16 + F22 + Reinforcement	3	P3
68	F30 + F18	3	P3
69	F29 + F18	2	P2
70	F29 + F31 + F20	2	P2
71	F20 + F21 + F12	3	P3
72	F25 + F20	1	P1

NOTES WITH REGARD TO REPAIR WORK

- For safety reasons, remove the fuel tank before performing work.
- Remove all flammable materials from areas where working before welding.
- Protect all glass from sparks during cutting and welding.



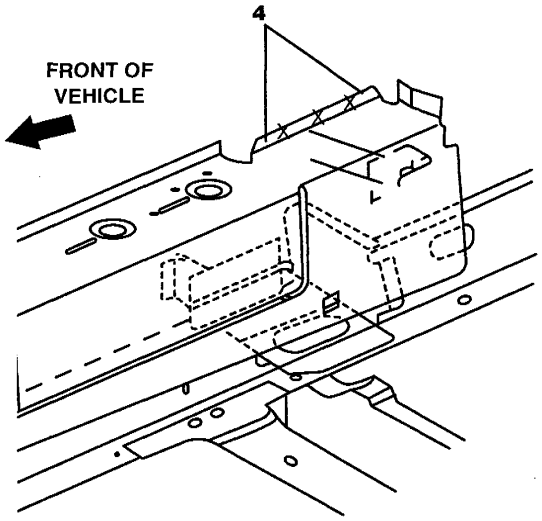


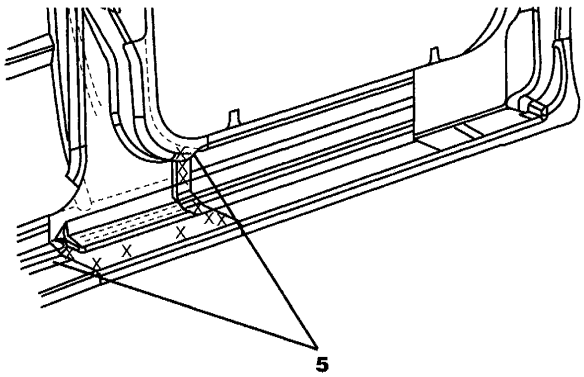
REMOVAL

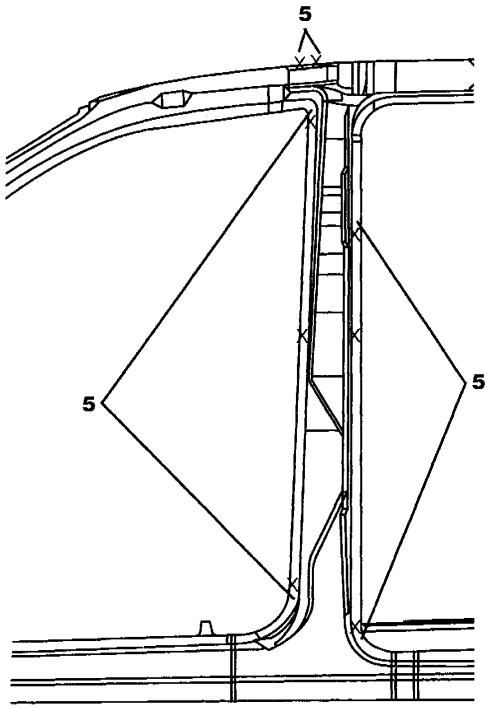
1. After removal of all spot welds, you may have to use an air chisel to cut the old Quarter Panel away from the Inner Panels.
2. Clean all adjoining panels and prep them for placement of the new Quarter Panel.

INSTALLATION

1. Position the new Quarter Panel and check fit with the Wheelhouse and other mating surfacess.
2. Check alignment and measurements and adjust as necessary.
3. Spray anti-corrosion weld-thru primer on weld surfaces prior to welding.
4. Weld the Quarter Panel into place.
5. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.



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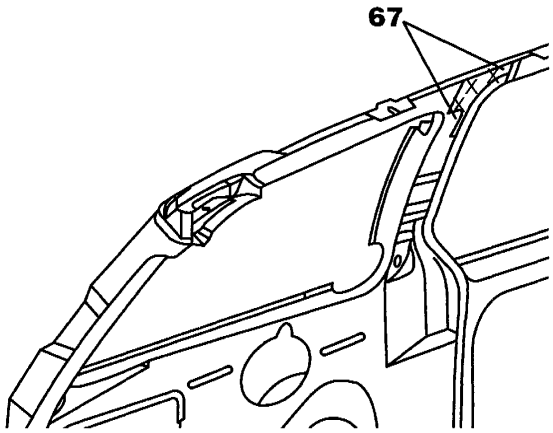
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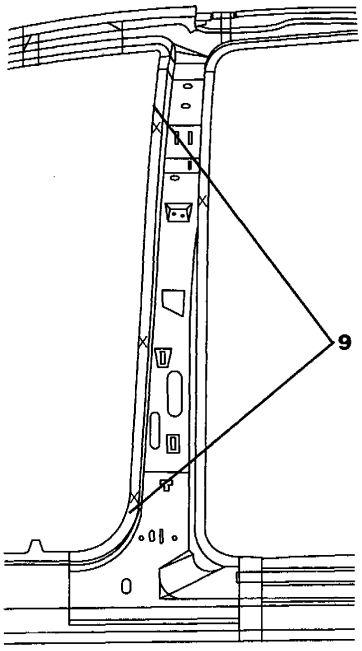
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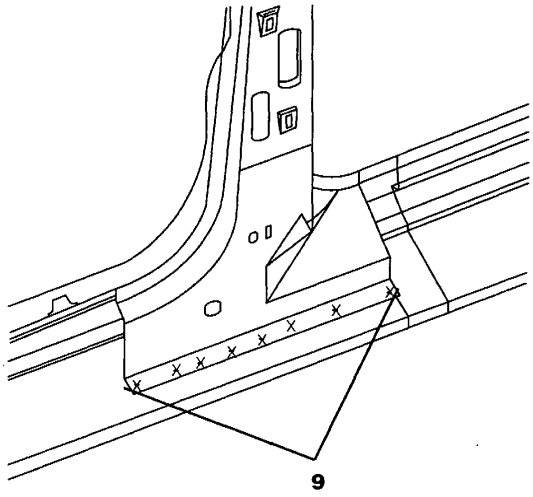
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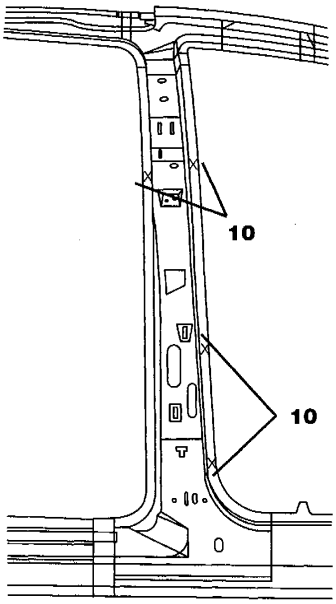
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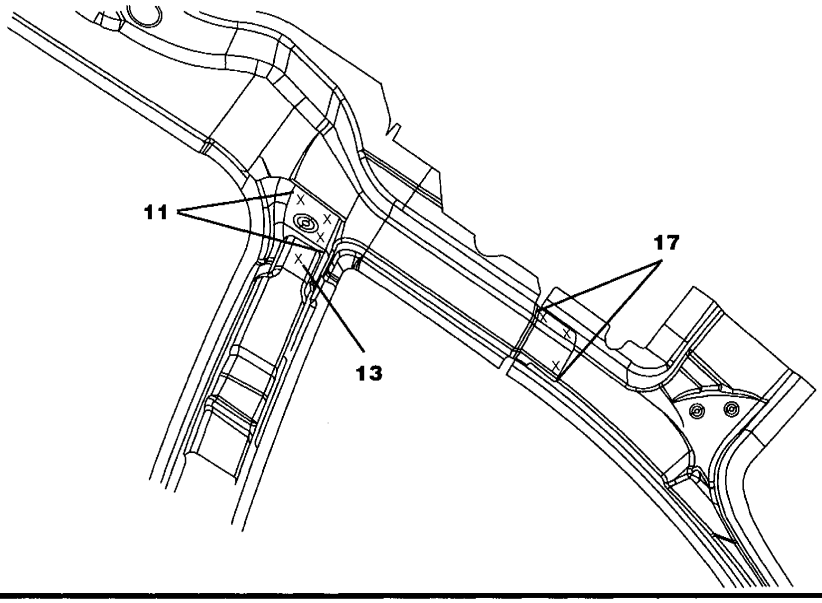
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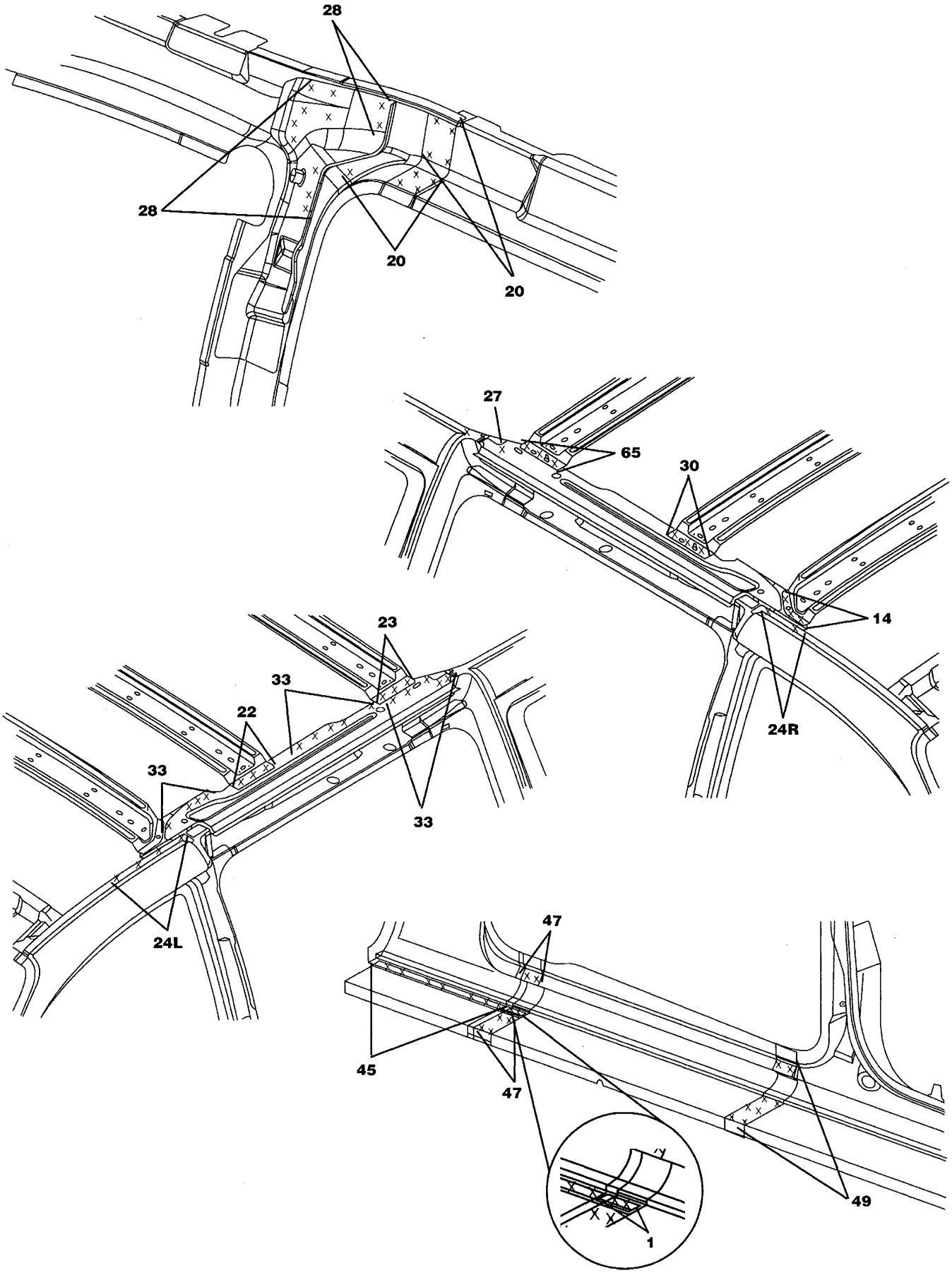
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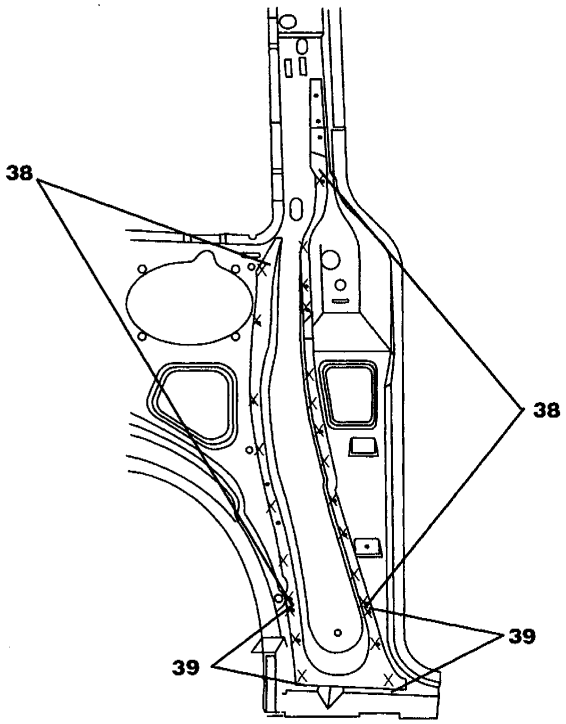
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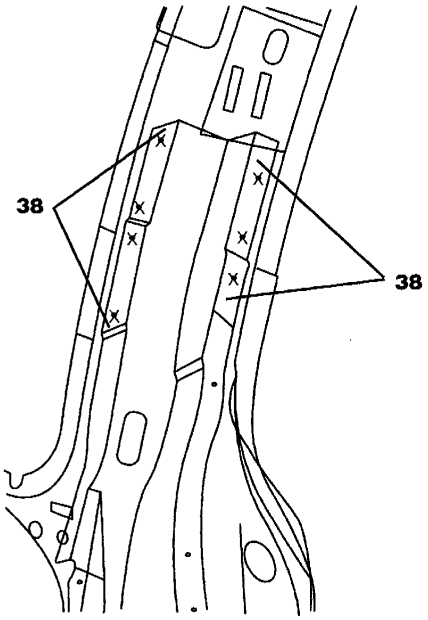
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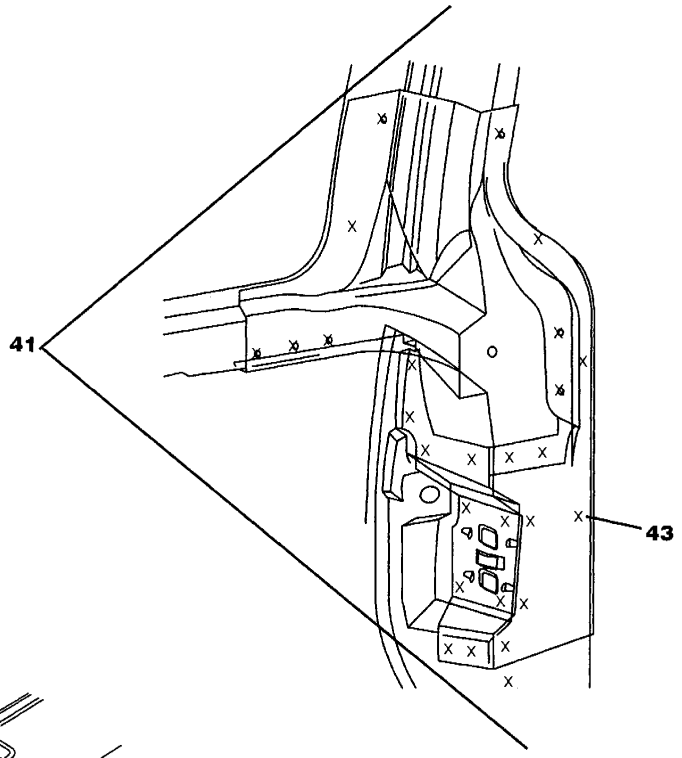
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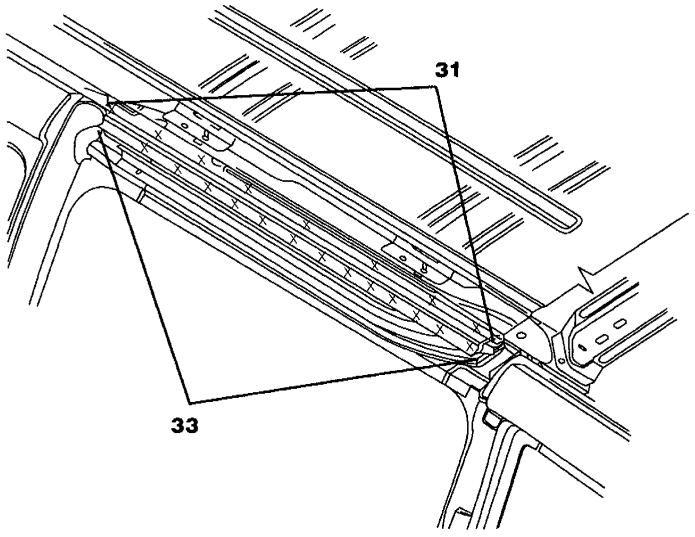
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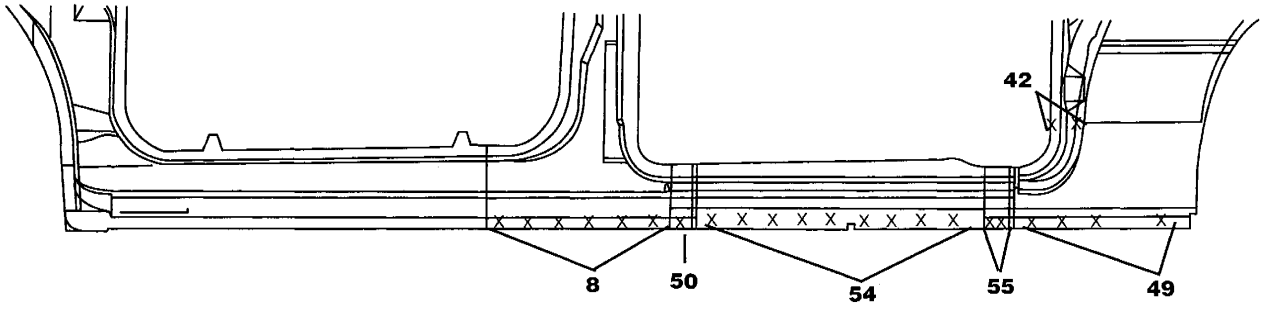
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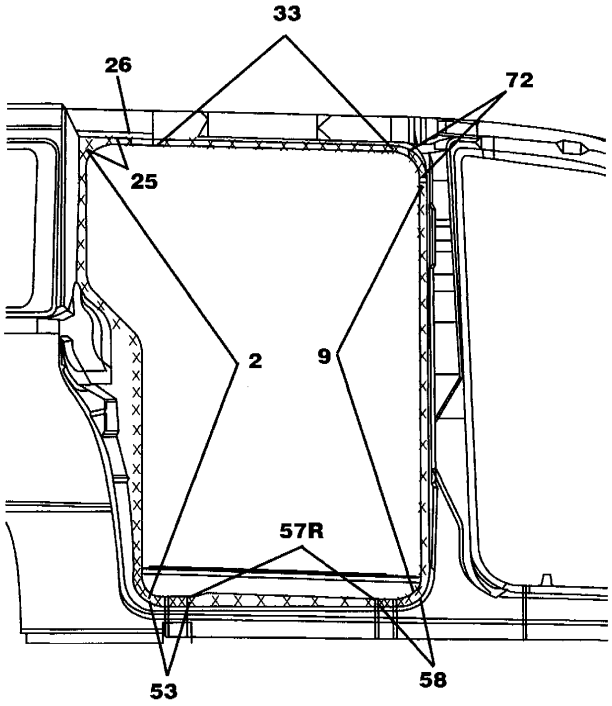
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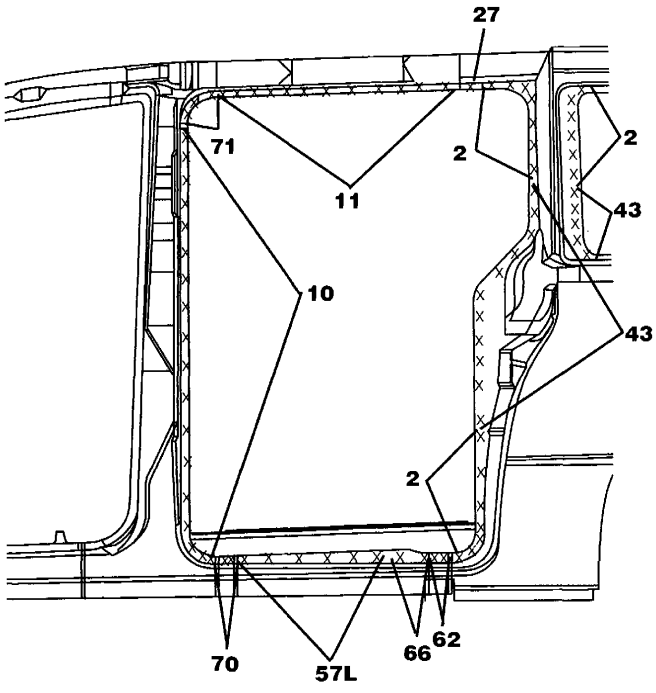
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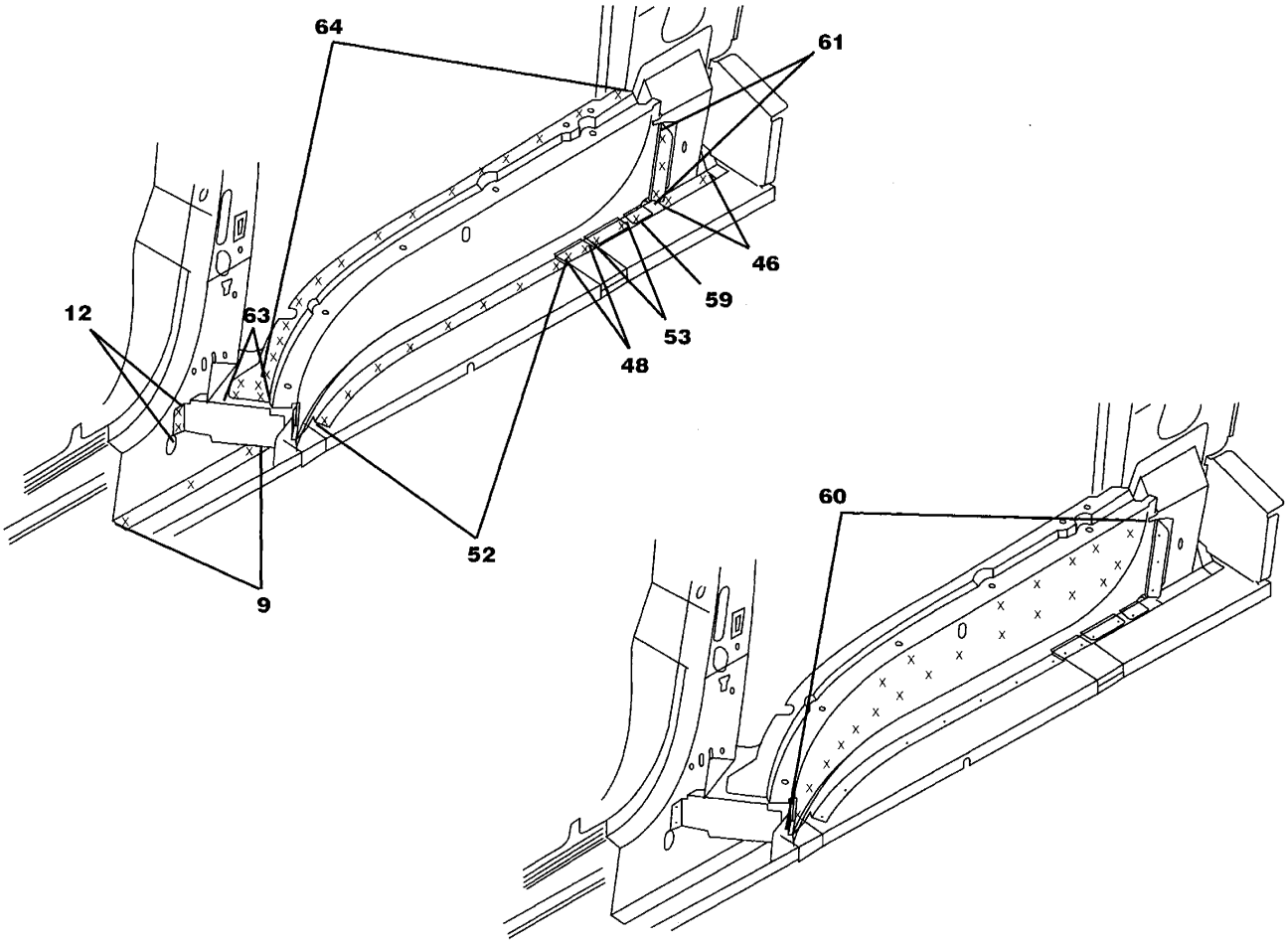
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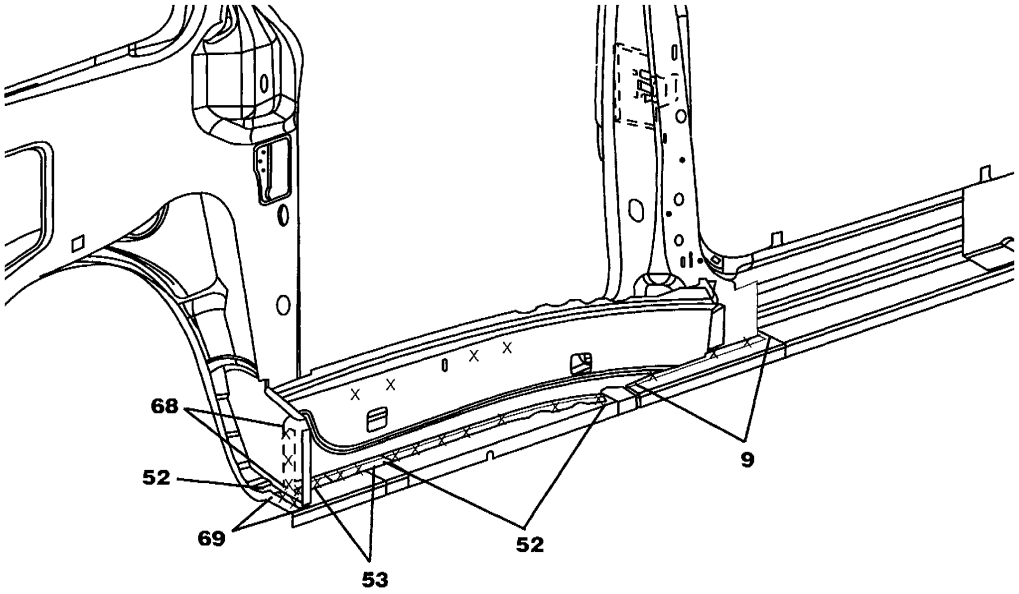
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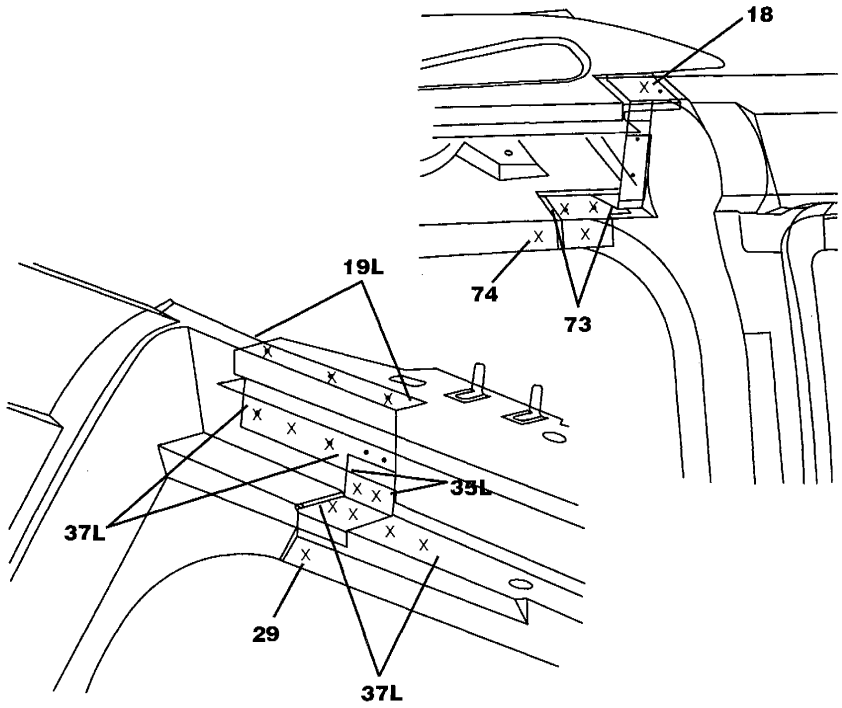
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35L
37L
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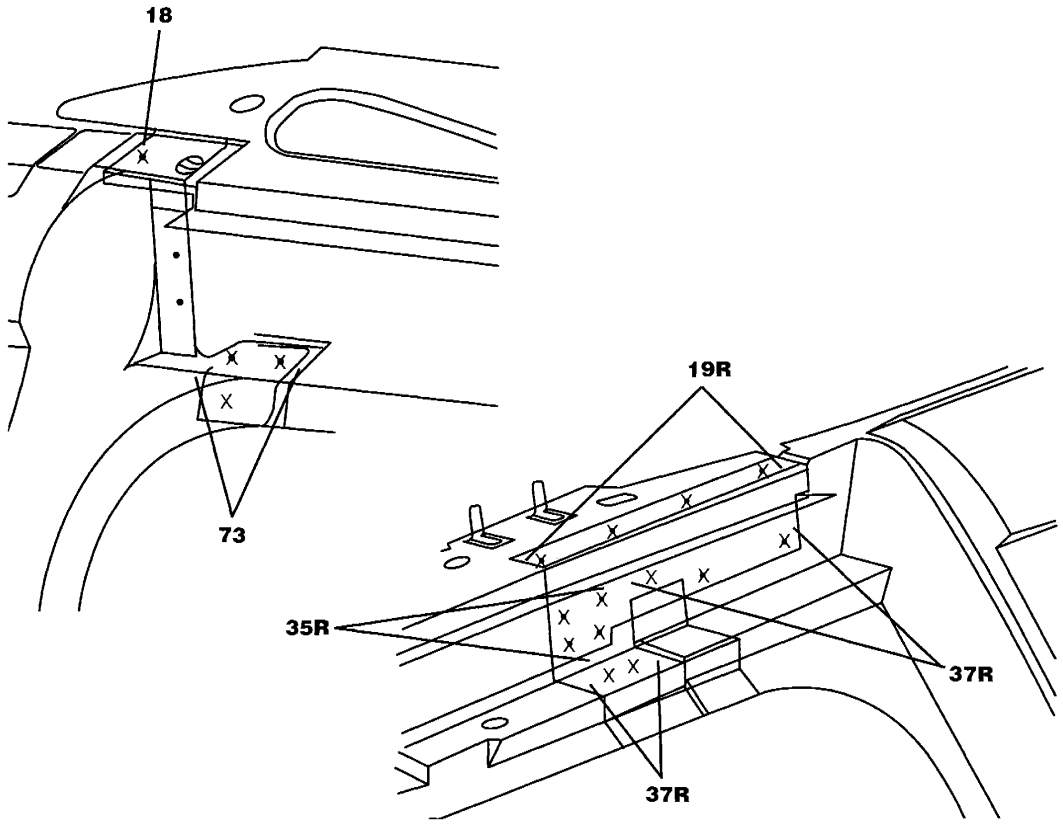
37L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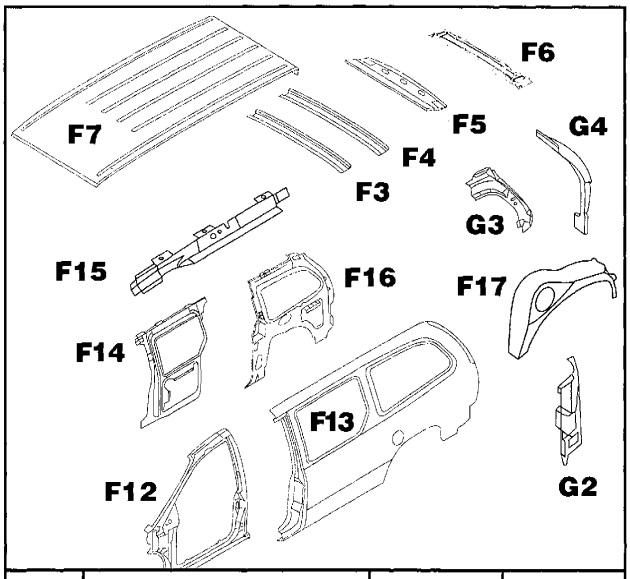
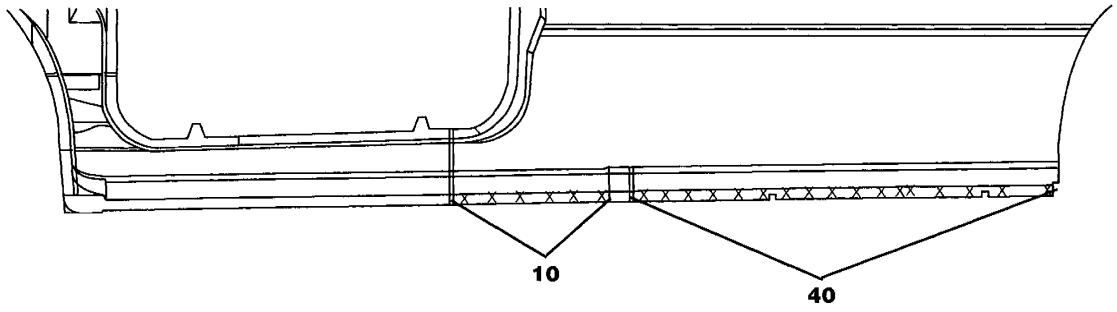
19R
35R
37R
37R

Quarter Panel Without Door (Left)



No.	Welded parts	F	R
1	F13 + F8	5	P5
2	F13 + F12	5	P5
3	F13 + F14	37	P37
4	F13 + F14 + F7	5	P5
5	F13 + F16	22	P22
6	F13 + F16 + F7	5	P5
7	F13 + F16 + G2	2	P2
8	F13 + F16 + G3	12	P12
9	F13 + F12 + F14	9	P9
10	F13 + F12 + E1	6	P6
11	F13 + F17	9	P9
12	F13 + F19	17	P17
13	F13 + G1	10	P10
14	F13 + G4	17	P17
15	F14 + F12	10	P10
16	F14 + Jacking Reinforcement (SWB)	6	P6
17	F14 + F16	28	P28
18	F14 + E1	11	P11
19	F14 + E1 + F16	1	P1

No.	Welded parts	F	R
20	F15 + F2	3	P3
21	F15 + 3	3	P3
22	F15 + 3a	3	P3
23	F14 + F12 + F8	8	P8
24	F16 + G2	10	P10
25	F16 + G2 + G4	6	P6
26	F16 + G2 + G7	2	P2
27	F16 + G3 + G4	7	P7
28	F16 + G8	8M	P8M
29	F16 + Jacking Reinforcement (LWB)	14	P14
29	F16 + Jacking Reinforcement (SWB)	7	P7
30	F16 + E1 + Jacking Reinforcement (LWB)	2	P2
31	F16 + E10	3	P3
32L	F16 + E15	10	P10
32R	F16 + E15	6	P6
33	F16 + F4 + Bracket	3	P3
34	F16 + F5	6	P6
35L	F16 + F17	20	P20
35R	F16 + F17	12	P12
36	F16 + F18 (LWB)	5	P5
36	F16 + F18 (SWB)	4	P4
37L	F17 + F18	4	P4
37R	F17 + F18	3	P3
38	F18 + E1	3	P3
39	F18 + F19	3	P3
40	F19 + E1		
41	F19 + F14	10	P10
42	F19 + Jacking Reinforcement	5	P5
43	F16 + Roof Reinforcement	3	P3
44	F16 + F14 + Jacking Reinforcement	3	P3
45	F13 + F14 + F15	8	P8
46	F13 + F14 + F16	2	P2



NOTES WITH REGARD TO REPAIR WORK

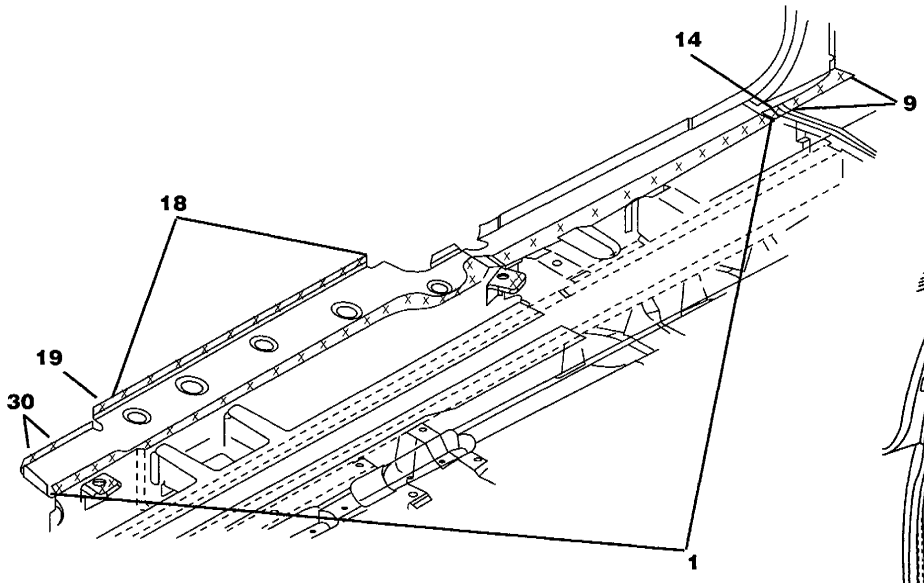
- For safety reasons, remove the fuel tank before performing work.
- Remove all flammable materials from areas where working before welding.
- Protect all glass from sparks during cutting and welding.

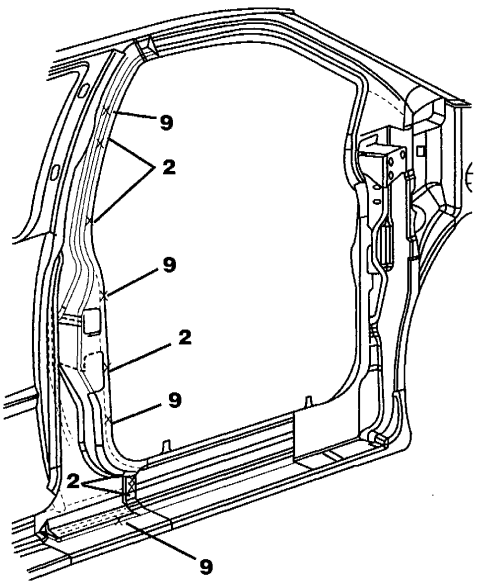
REMOVAL

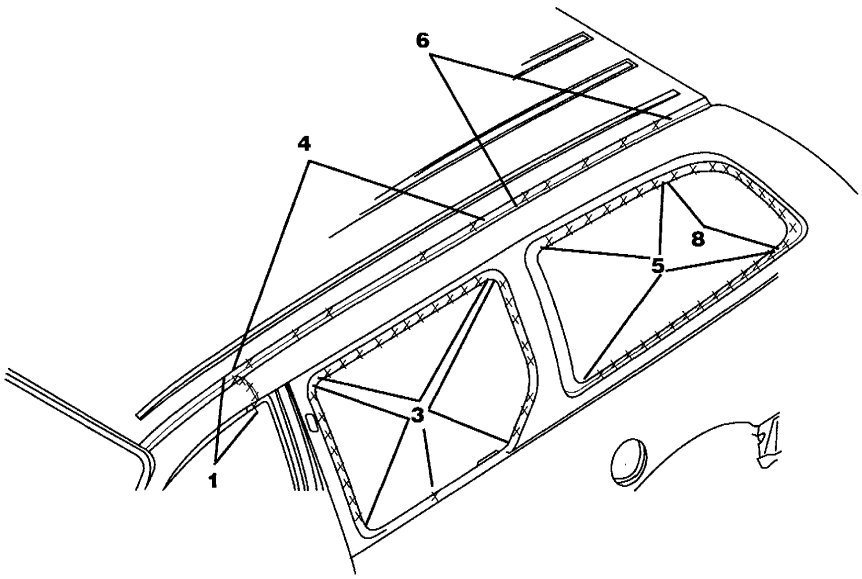
1. After removal of all spot welds, you may have to use an air chisel to cut the old Quarter Panel away from the Inner Panels.
2. Clean all adjoining panels and prep them for placement of the new Quarter Panel.

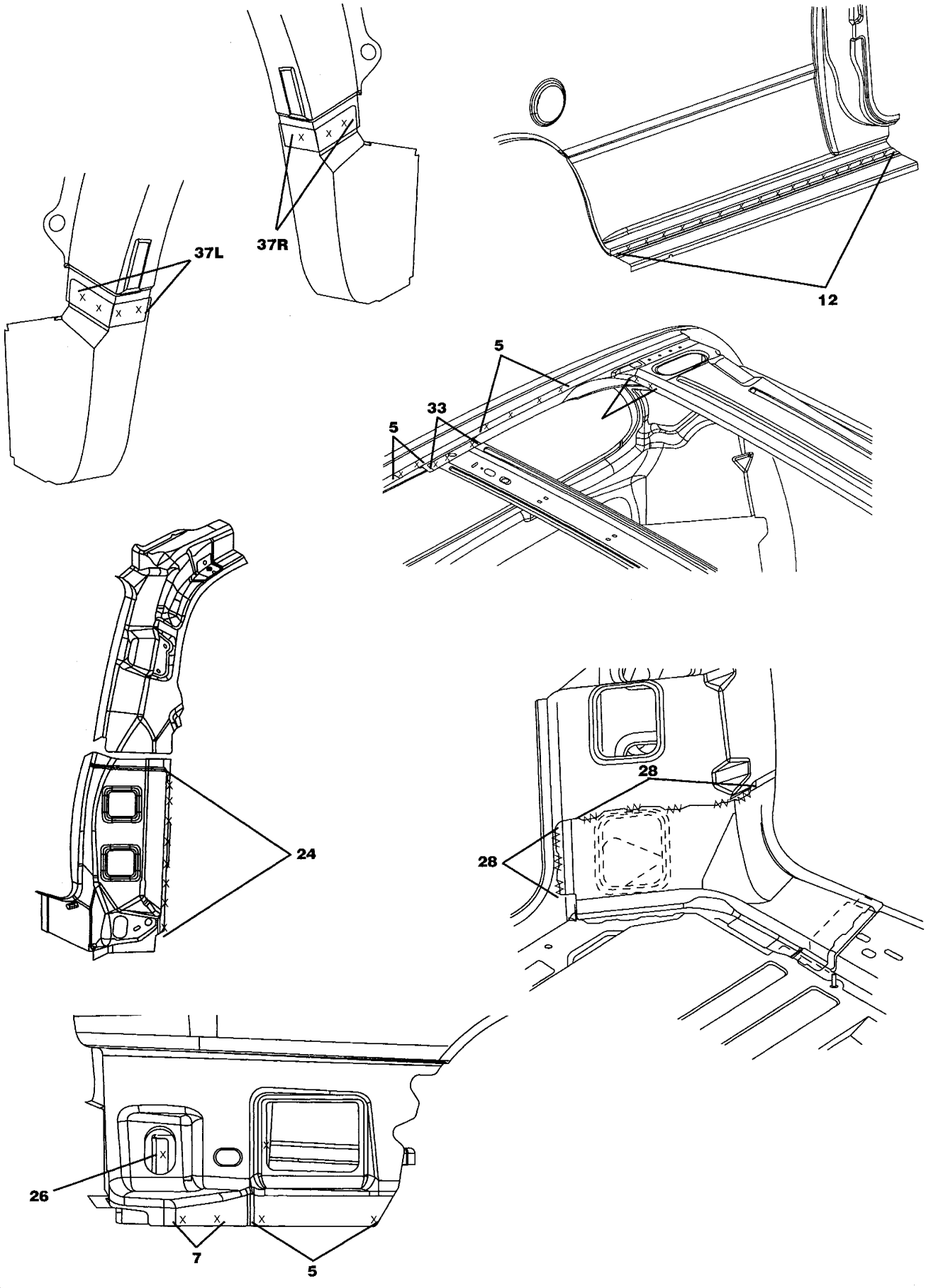
INSTALLATION

1. Position the new Quarter Panel and check fit with the Wheelhouse and other mating surfaces.
2. Tack weld the new Quarter Panel into place.
3. Check alignment and measurements and adjust as necessary.
4. Spray anti-corrosion weld-thru primer on weld surfaces prior to welding.
5. Weld the Quarter Panel into place.
6. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.





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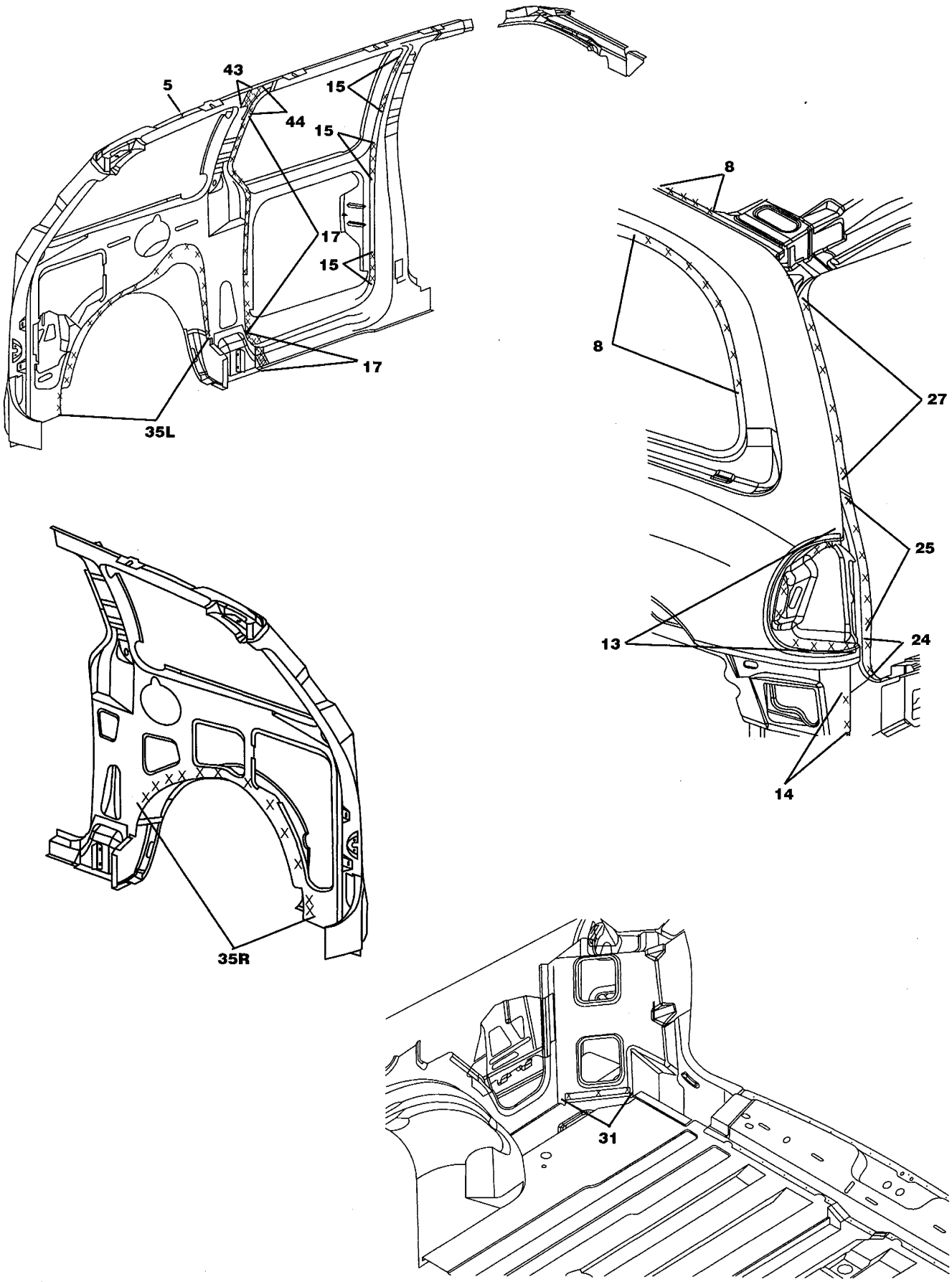
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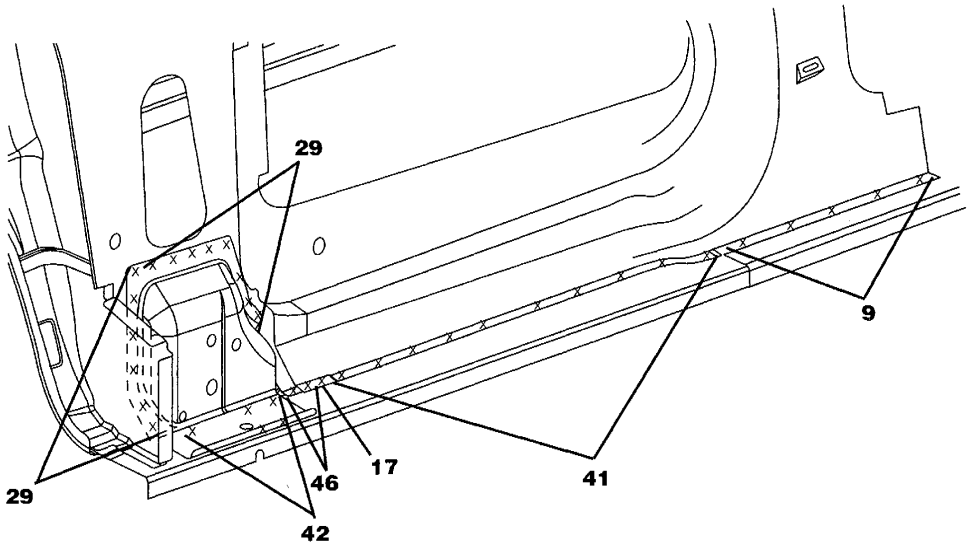
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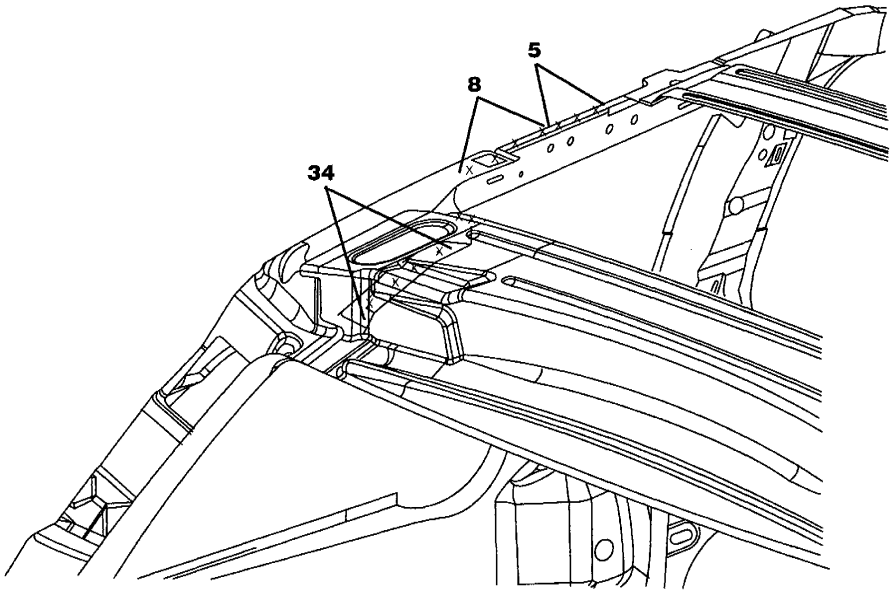
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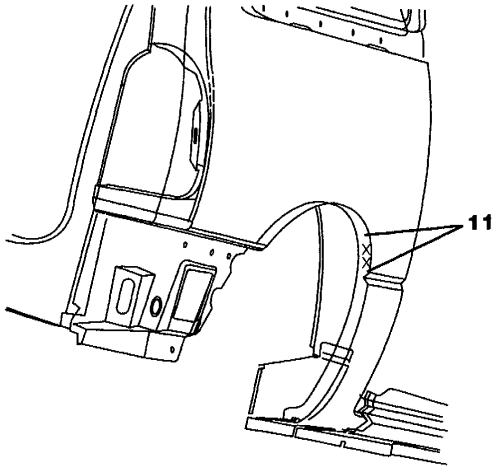
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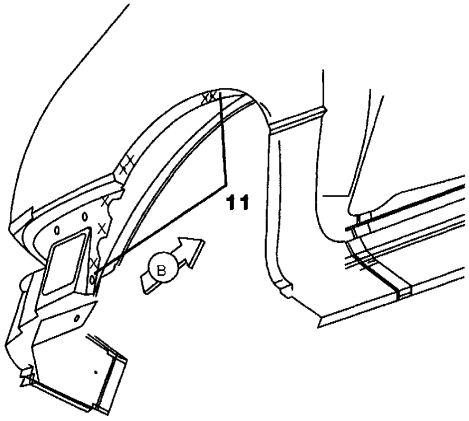
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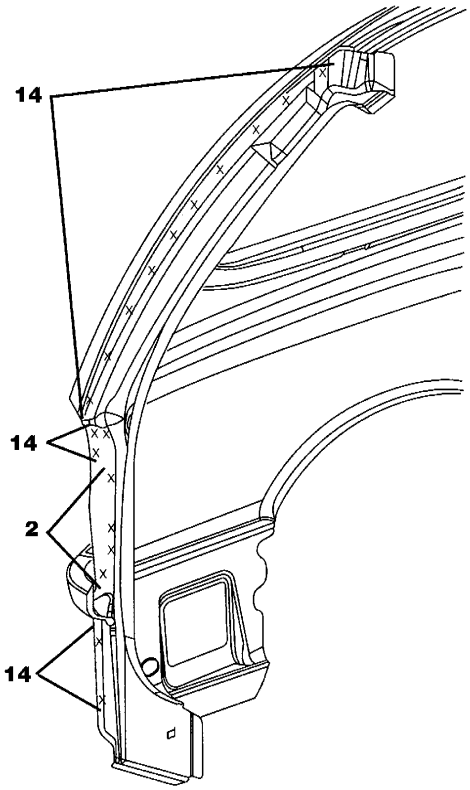
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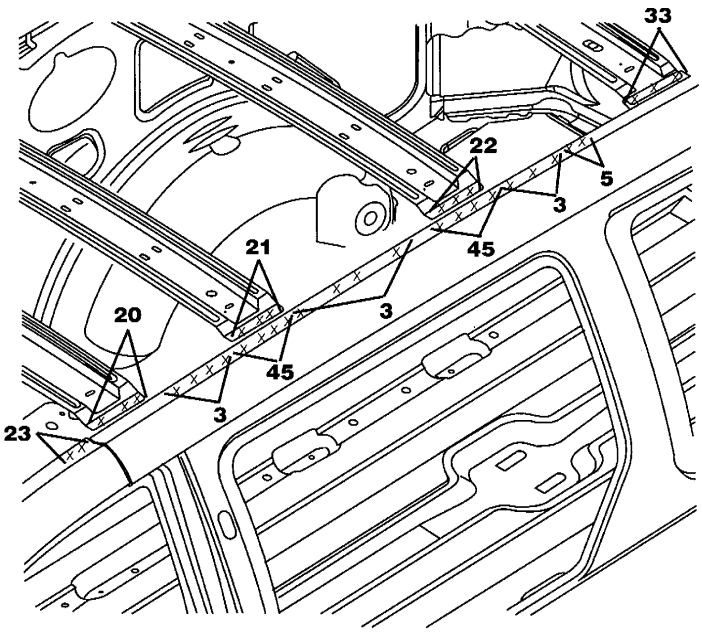
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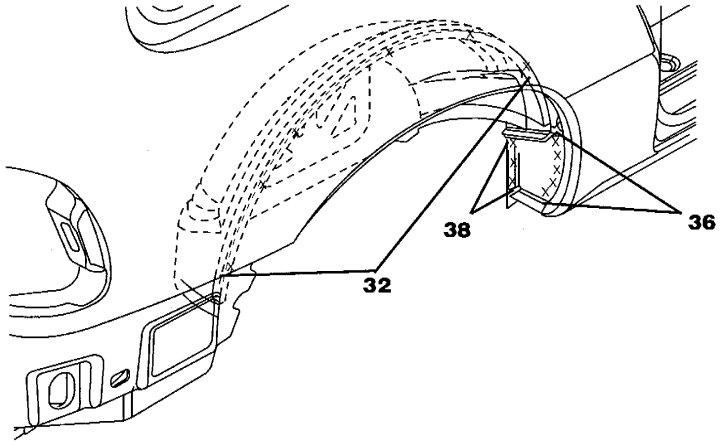
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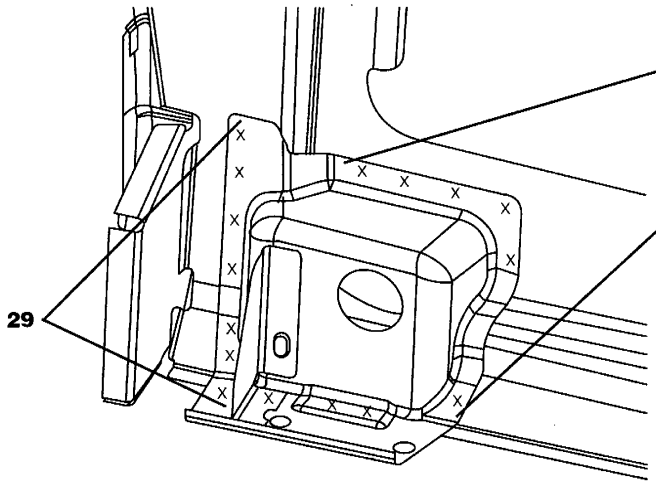
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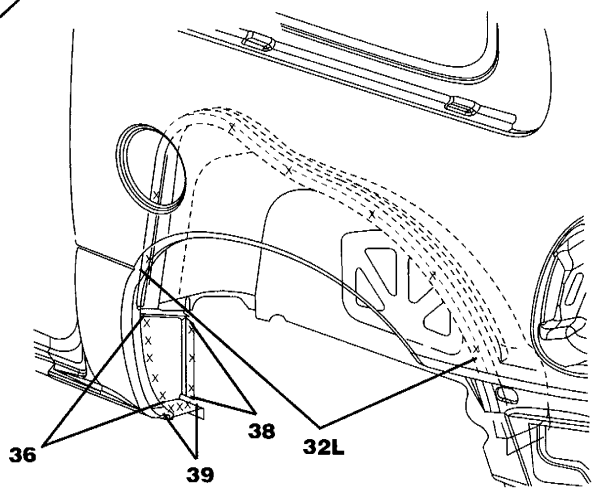
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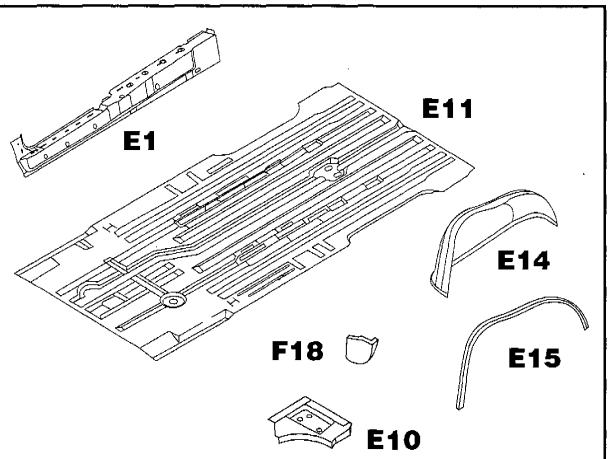
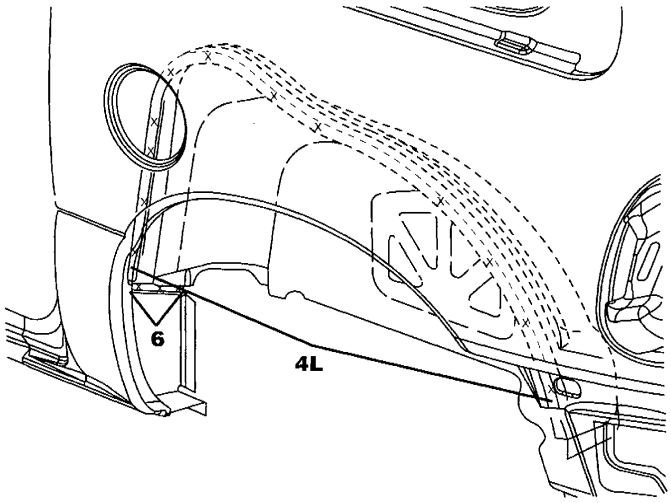
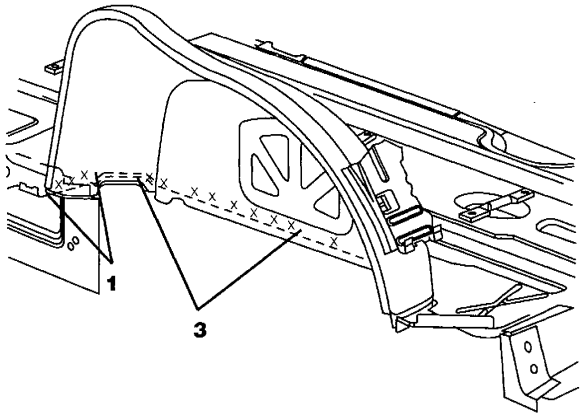
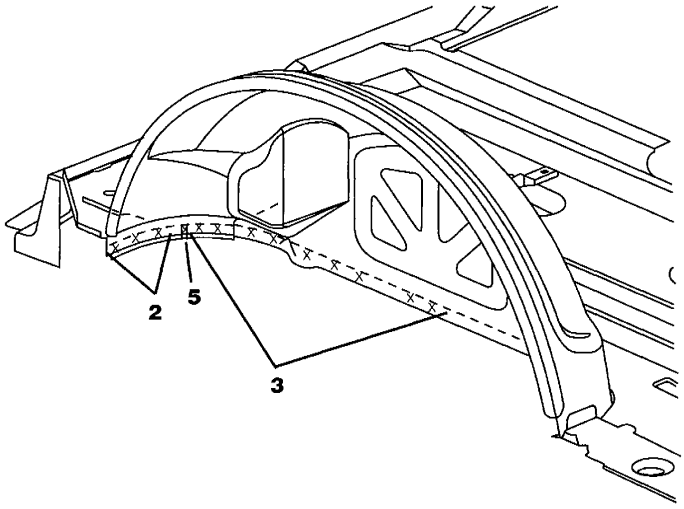


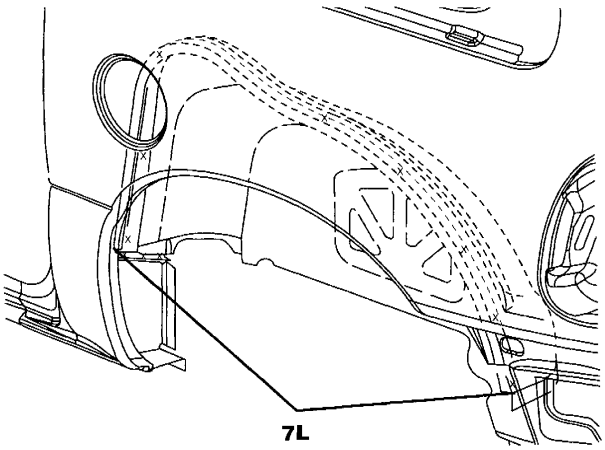
No.	Welded parts	F	R
1	E14 + E1	3	P3
2	E14 + E10	3	P3
3	E14 + E11 (LWB)	18	P18
3	E14 + E11 (SWB)	16	P16
4R	E14 + E15	7	P7
4L	E14 + E15	8	P8
5	E14 + E10 + E1 (LWB)	1	P1
5	E14 + E10 + E11 (SWB)	2	P2

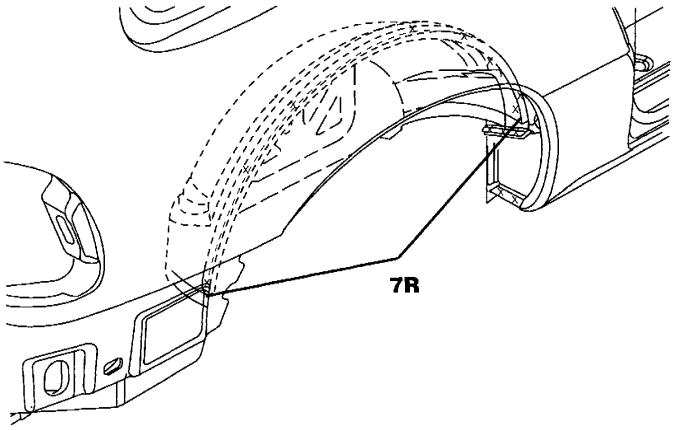
No.	Welded parts	F	R
6	E14 + F18	3	P3
7R	E15 + F16	13	P13
7L	E15 + F16	9	P9









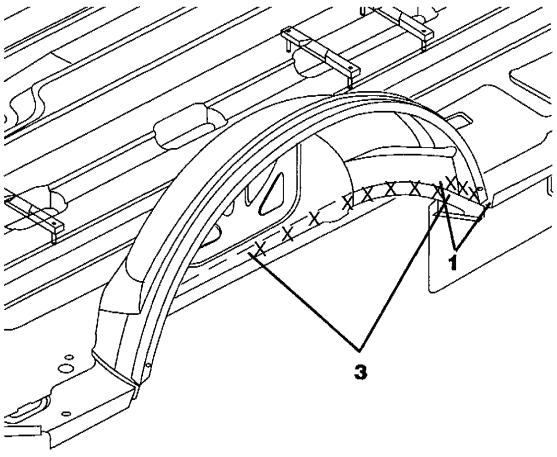


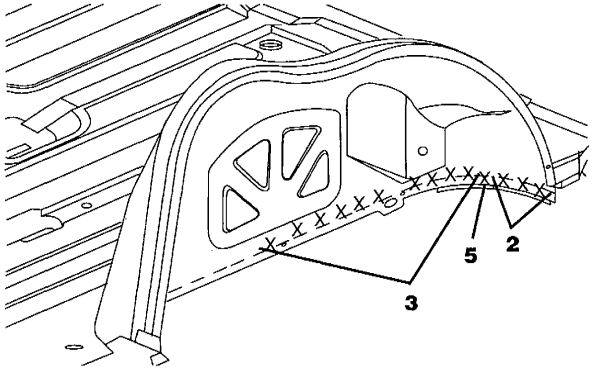
NOTES WITH REGARD TO REPAIR WORK

- The Inner Wheelhouse is welded at the seam where it mounts to the Inner Quarter Panel and along the Floor Pan.
- Remove all flammable materials from areas to be worked on before welding.
- Take plenty of time to cut the wheelhouse away from other panels to avoid causing additional damage.

REMOVAL

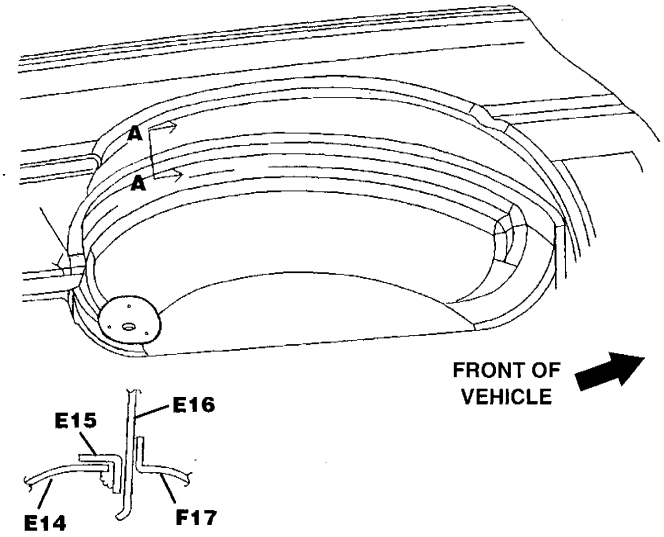
1. Because there is limited access to the Inner Wheelhouse, you may consider first rough cutting the panel for removal.
2. After gaining better access, remove spot welds using a spot weld cutter and remove the remainder of the panel. Use a die grinder, air chisel, hole saw or other appropriate tools to create a clean and straight surface to mount the new panel .
3. Clean and prepare all mating surfaces. Be sure to remove any old sealer from the remaining panels.

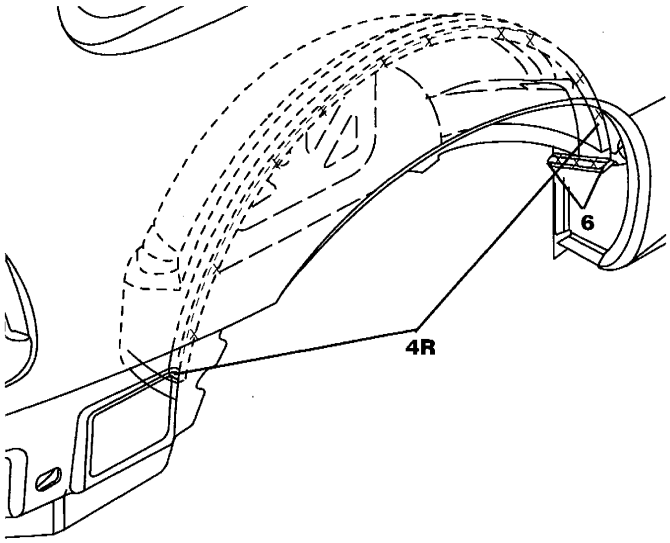


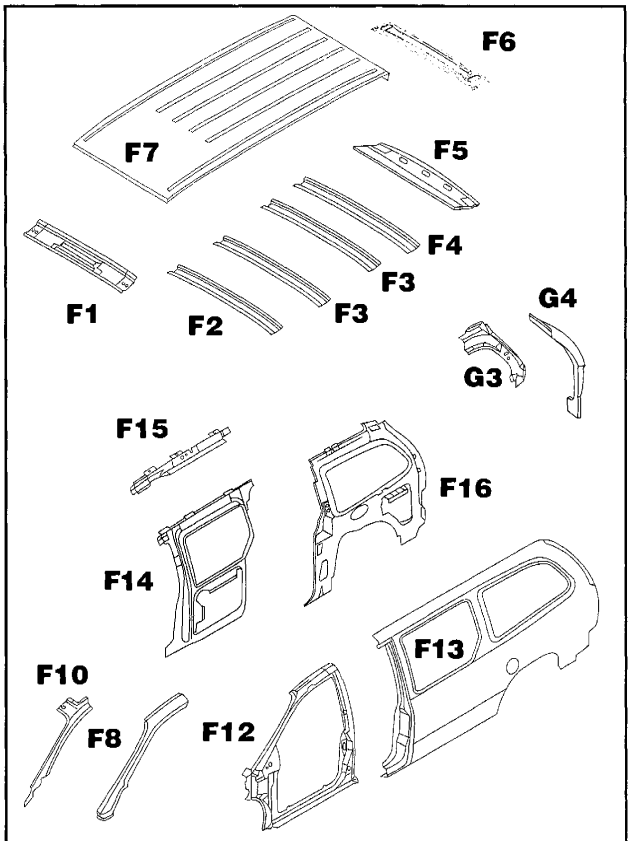


INSTALLATION

1. Using old panel as a guide, mark and punch weld holes in the new Inner Wheelhouse.
2. Temporarily mount the new Inner Wheelhouse in place.
3. Check alignment and measurements and adjust as necessary.
4. Spray anti-corrosion weld-thru primer on weld surfaces prior to welding.
5. Plug weld the new panel in place.
6. Apply an appropriate sealer along all seams.
7. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.

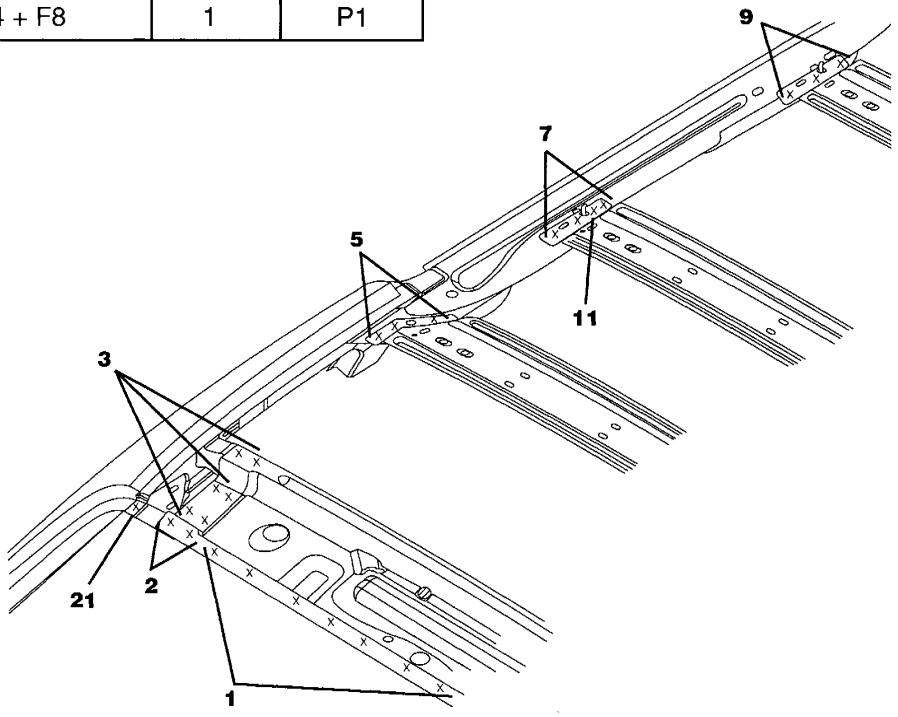






No.	Welded parts	F	R
1	F1 + F7	14	P14
2	F1 + F7 + F10	4	P4
3	F1 + F10	6	P6
4	F2 + F15 (Without door)	3	P3
5	F2 + F22 (With door)	3	P3
6	F2 + F14 + F8	1	P1

No.	Welded parts	F	R
7	F3 + F22 + F23 (With door)	3	P3
8	F3 + F14 + F15 (Without door)	3	P3
9	F3a +F22 + F23 (With door)	3	P3
10	F3a + F14 + F15 (Without door)	3	P3
11	F3 +F22	1	P1
12	F4 + F16 + Bracket	3	P3
13	F5 + F6 + F7	16	P16
14	F5 + F6 + G4	2	P2
15	F5 + F16	4	P4
16	F5 + G3	4	P4
17	F6 + G3	4	P4
18	F6 + F16	2	P2
19	F6 + G4	4	P4
20	F7 + F12 + F8	2	P2
21	F7 + F23	8	P8
22	F7 + F10 + F12	1	P1
23	F7 + F13 + F16(LWB)	5	P5
23	F7 + F13 + F16(SWB)	3	P3
24	F7 + F13 + F14 (Without door)	5	P5
25	F7 + G4	4	P4
26	F7 +G4 + G3	1	P1
27	F6 + G4 + G3	2	P2



NOTES WITH REGARD TO REPAIR WORK

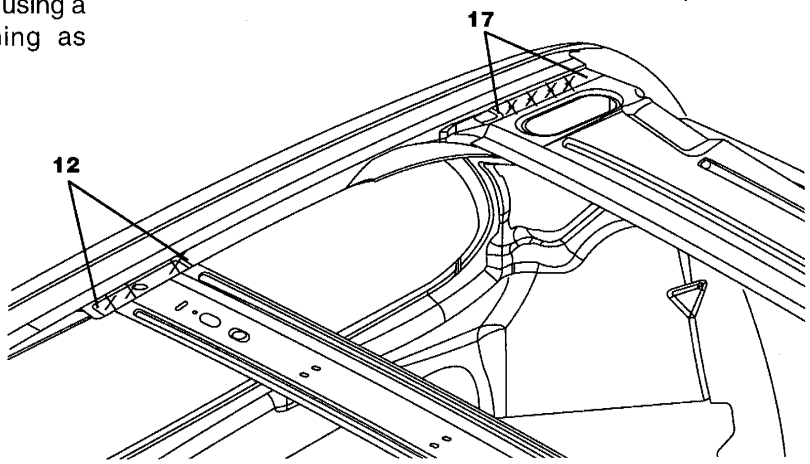
- Before heating the Roof Panel to soften old adhesive, make sure all flammable materials are removed from roof inner and outer areas.
- Take care when handling the Roof Panel. The panel can be easily damaged by mishandling.
- Make sure to use a good structural adhesive for the roof bows.

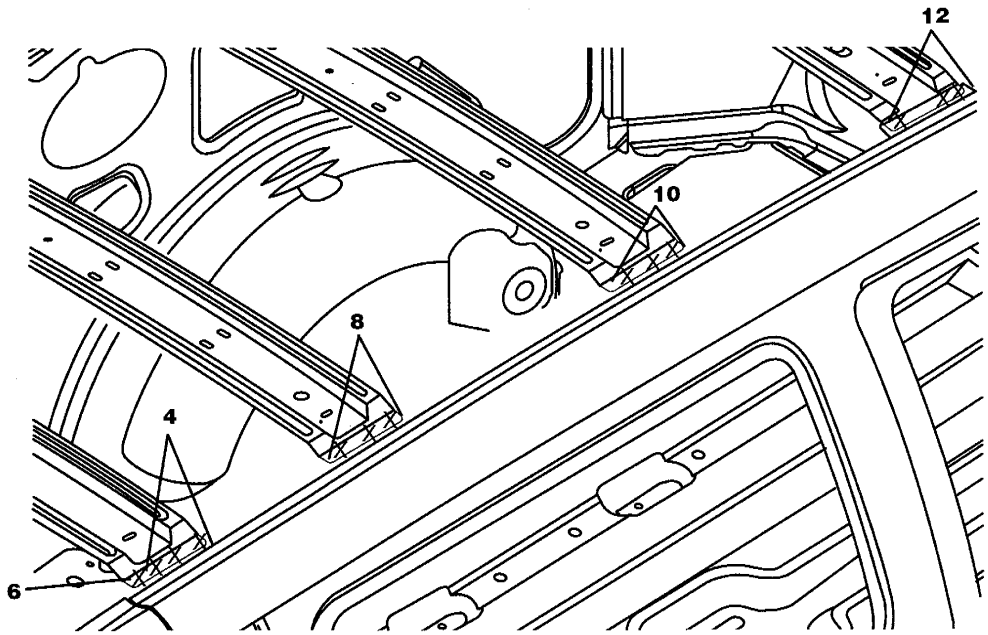
REMOVAL

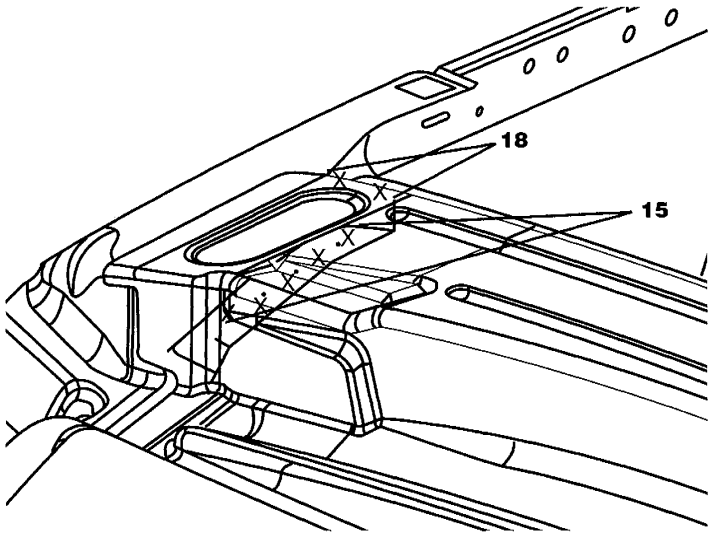
1. Cut and separate the spot welded locations, being careful not to damage any panels.
2. Heat the top of the Roof Panel where adhesives are applied. It will make it easier to remove.
3. Remove the Roof Panel.
4. Remove any old adhesive on roof braces, using a mule skinner's wire brush or something as aggressive.

INSTALLATION

1. Temporarily align and mount the new Roof Panel onto the body. Make corresponding reference marks on the Roof Panel and body structure.
2. Use the old Roof Panel as a template to mark locations for plug welds on the Roof Panel.
3. Apply the adhesive to the Roof Bows and other mating surfaces and place the Roof Panel into position as marked previously.
4. After checking alignment and adjusting as necessary, clamp the panel down.
5. Plug weld the roof panel in place.
6. Finish seams and apply sealers as required.
7. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.



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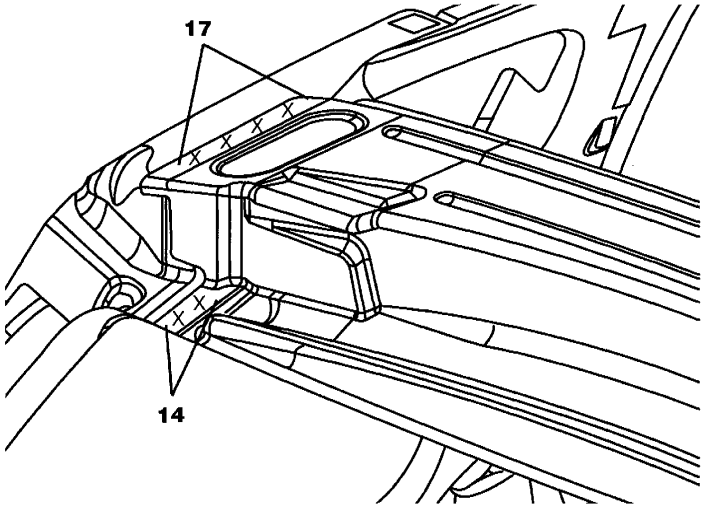
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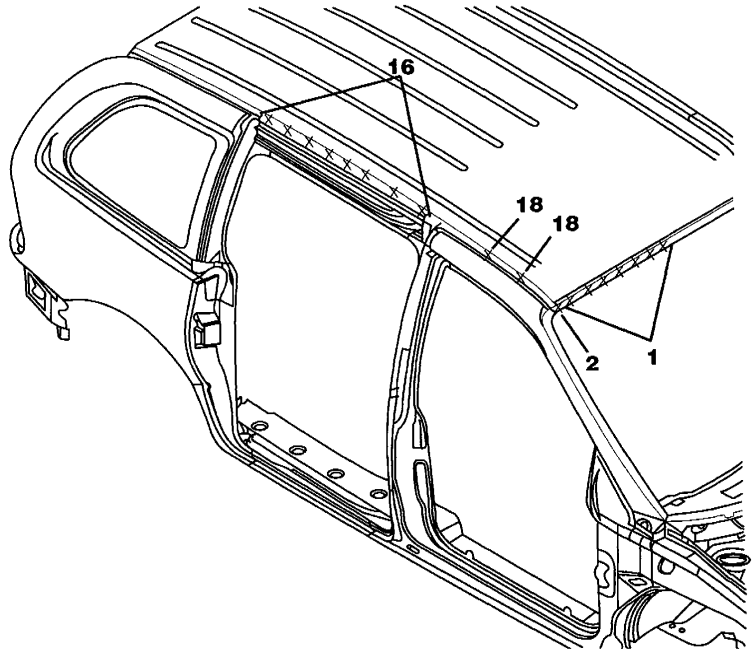
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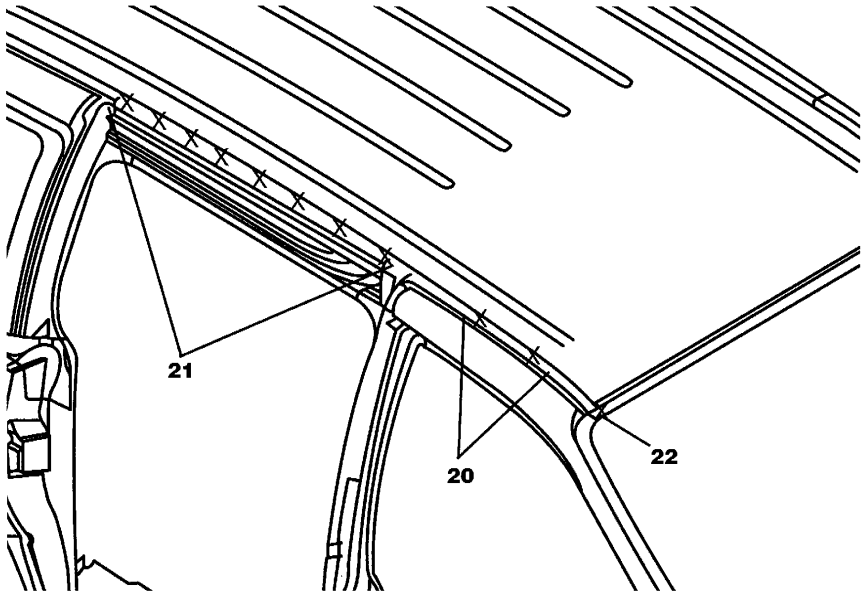
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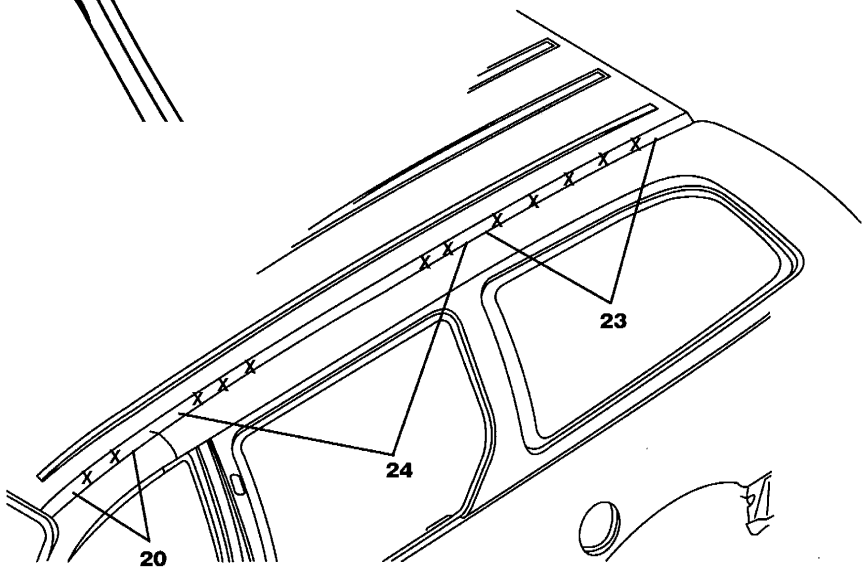
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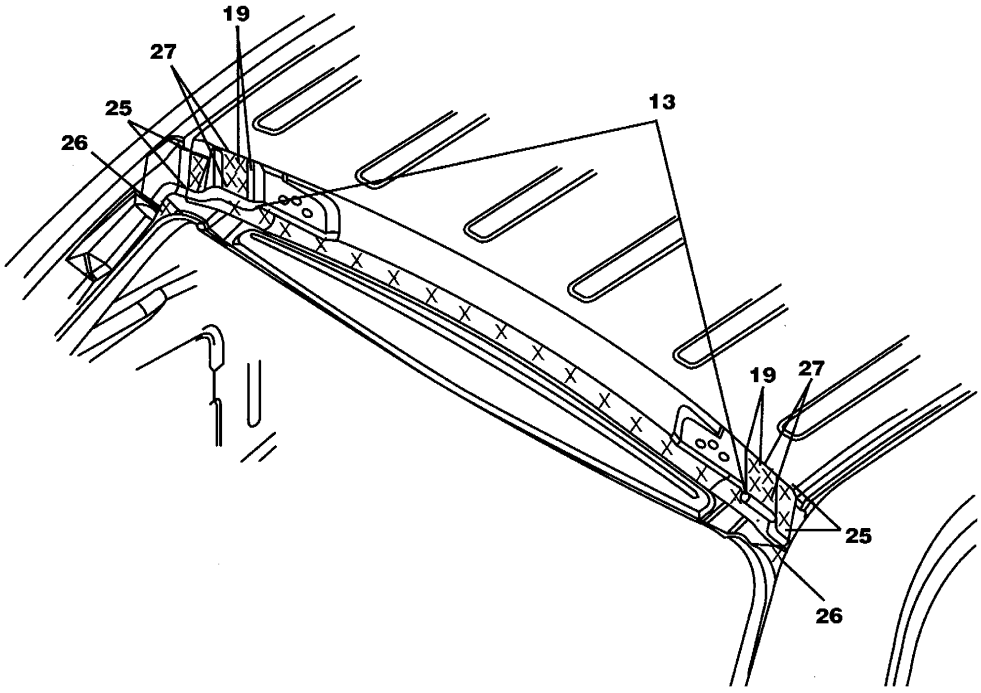
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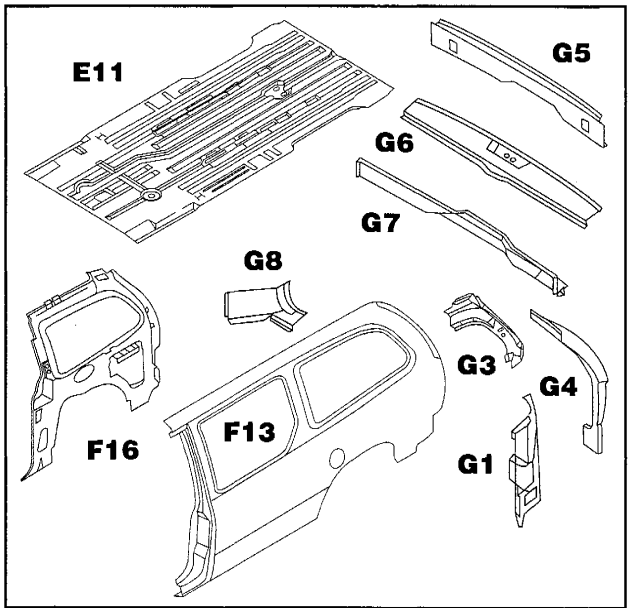
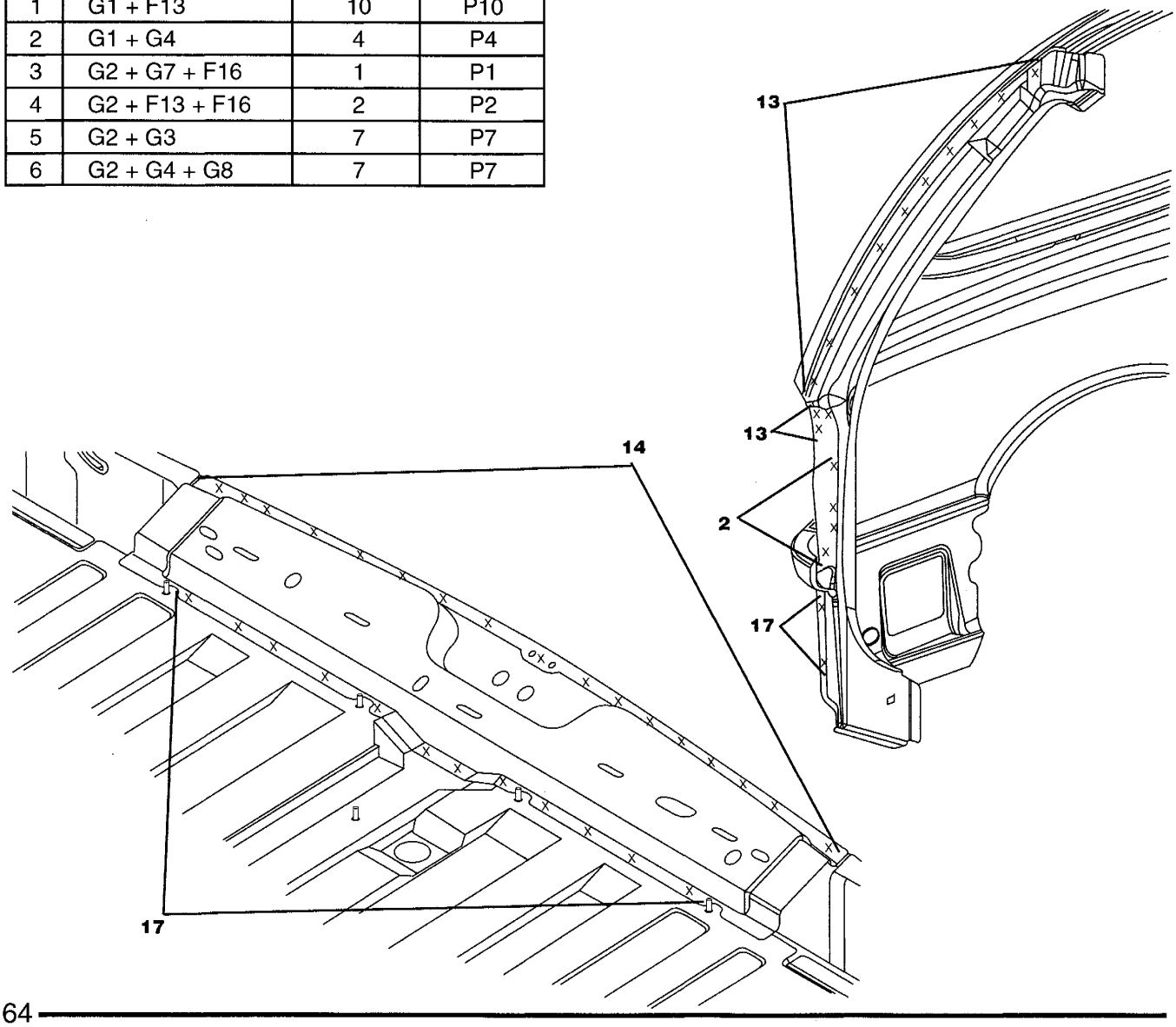


No.	Welded parts	F	R
1	G1 + F13	10	P10
2	G1 + G4	4	P4
3	G2 + G7 + F16	1	P1
4	G2 + F13 + F16	2	P2
5	G2 + G3	7	P7
6	G2 + G4 + G8	7	P7

No.	Welded parts	F	R
7	G2 + G4 + F16	6	P6
8	G2 + G4 + G5	8	P8
9	G2 + F16	2	P2
10	G2 + G5 + G8	1	P1
11	G3 + G4 + F16	7	P7
12	G3 + F13 + F16	10	P10
13	G4 + F13	17	P17
14	G5 + G6	17	P17
15	G5 + G7	20	P20
16	G5 + G6 + G8	2	P2
17	G6 + G7 + E11	17	P17
18	G5 + G7	12	P12
19	G7 + E10 + G8	2	P2
20	G8 + F16	8M	P8M
21	G8 + E10	5	P5
22	G8 + G6 + G5	1	P1



NOTES WITH REGARD TO REPAIR WORK

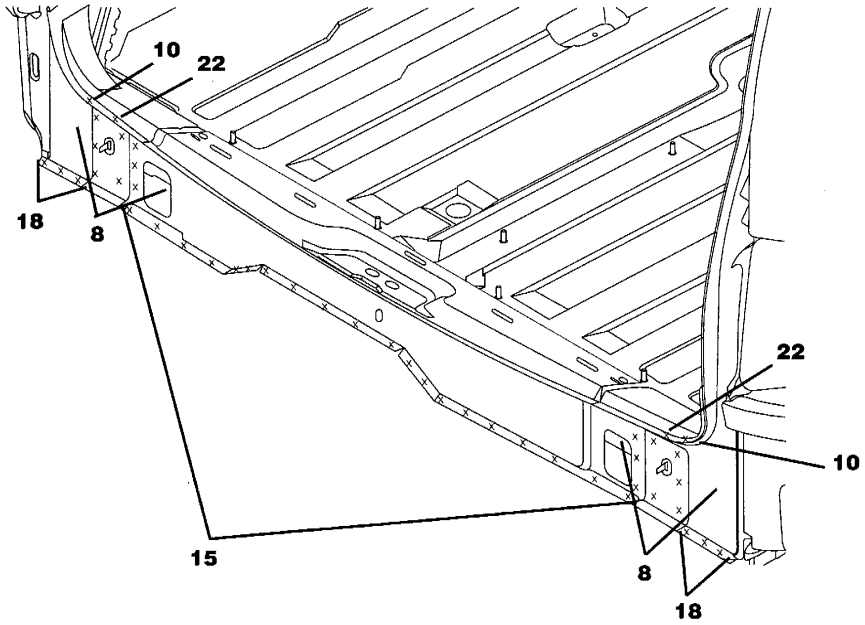
- For safety reasons, remove the fuel tank before performing work. Remove all flammable materials from interior area before welding.
- Liftgate Opening panels provide mounting points for many exterior components. It is critical to check for precise alignment when mounting these panels.
- When the rear end panel is being mounted on the vehicle it has to be fitted into one side and then worked into the other.
- Refer to Quarter Panel section for additional information.

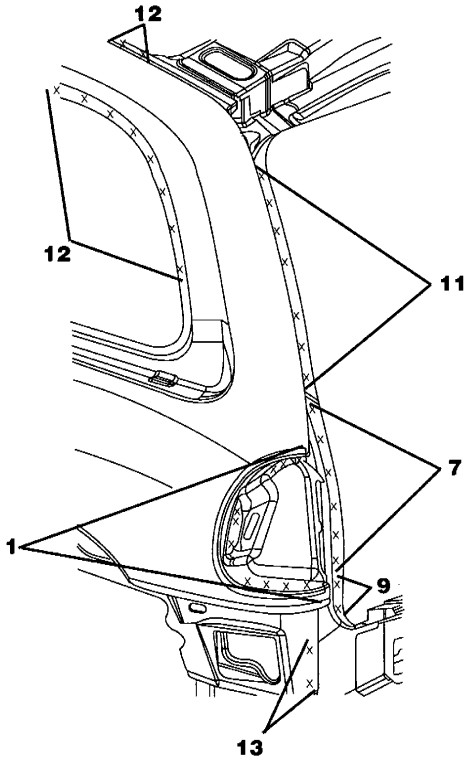
REMOVAL

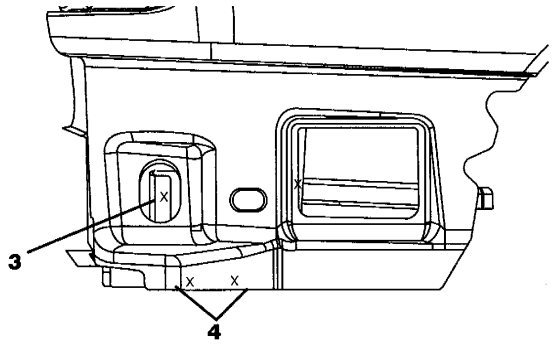
1. Cut the spot welds with a hole saw or equivalent. You may want to cut the tail panel in two pieces to make removal easier.
2. Clean and prepare all the panels to which you will be fitting the new Liftgate Opening components.

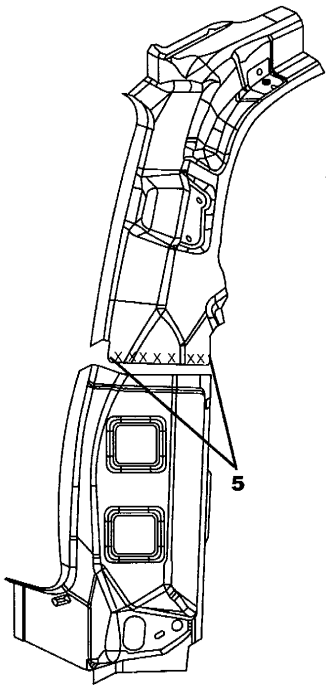
INSTALLATION

1. It may take a little extra time to fit the new panels for proper alignment.
2. Tack weld the new panels into place.
3. Plug weld the panels for a permanent repair.
4. Treat all exposed metal with an appropriate metal conditioner or self-etching primer. Follow paint manufacturer's instructions for corrosion protection.



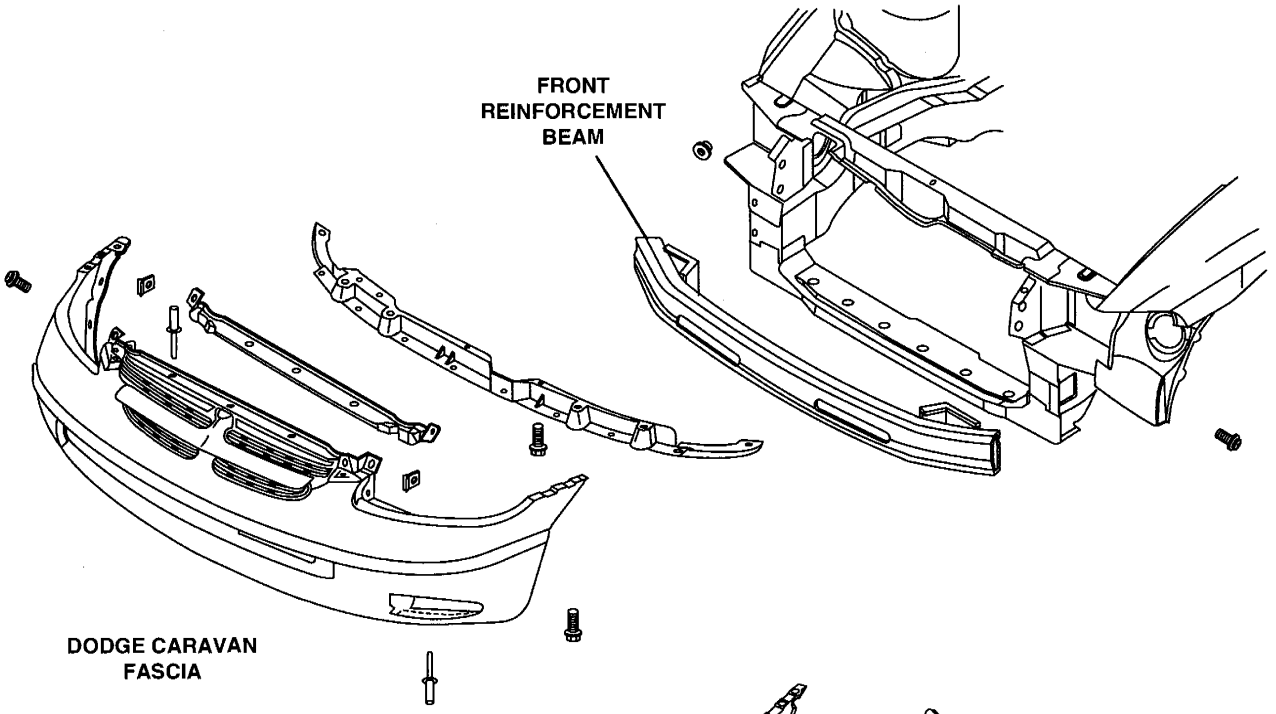




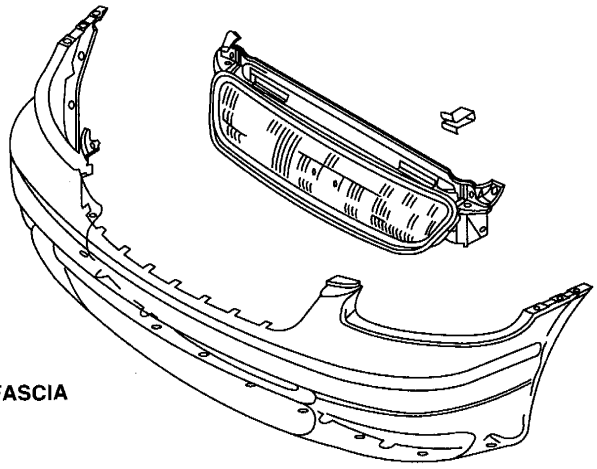


BUMPER SYSTEMS

NS Minivans

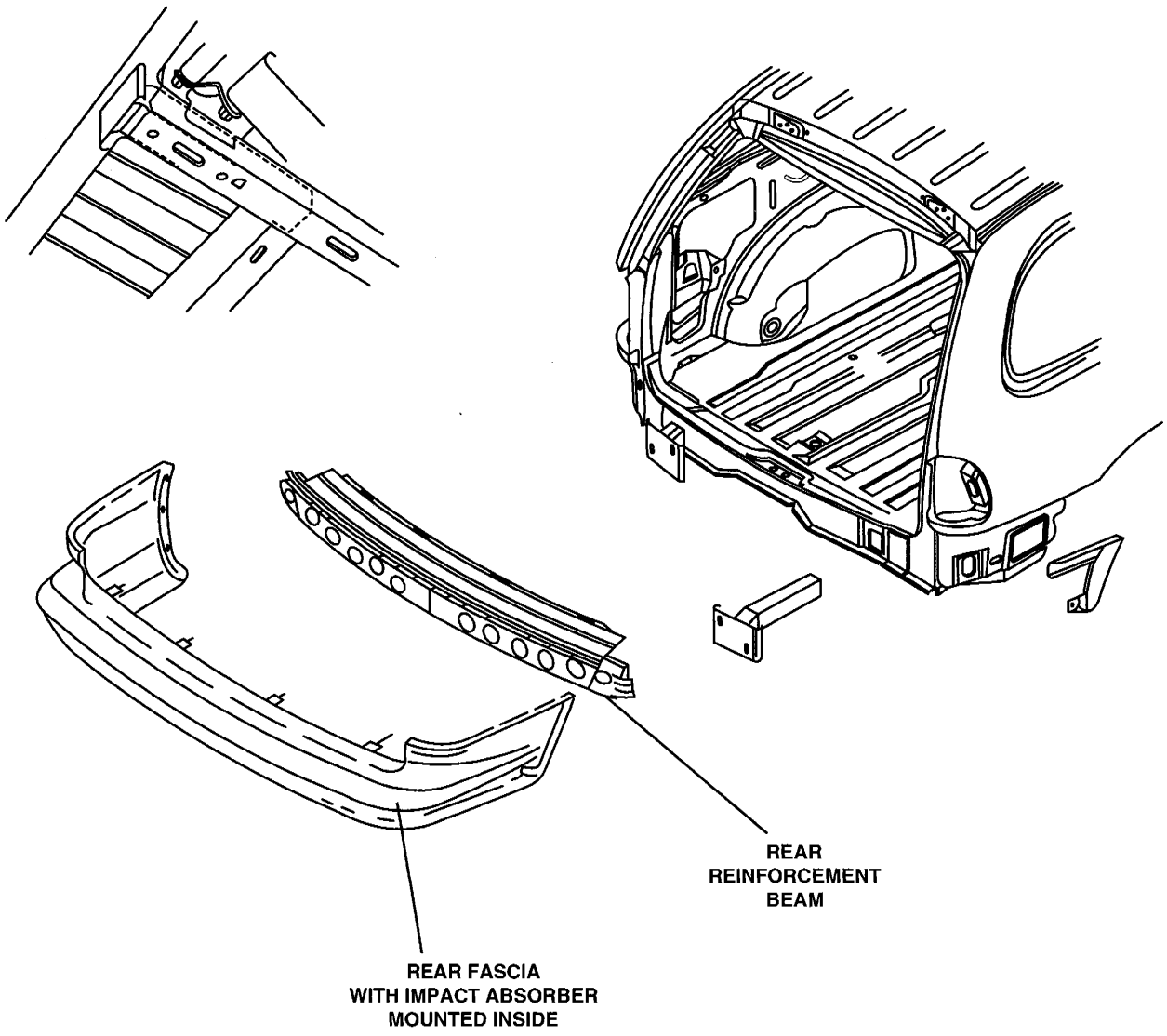


DODGE CARAVAN
FASCIA



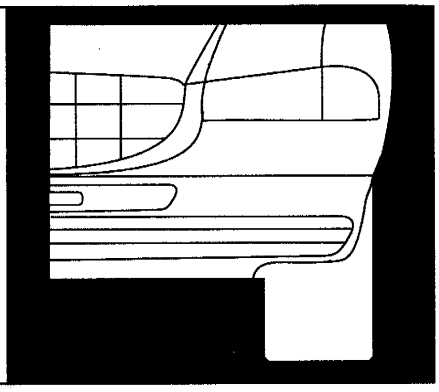
CHRYSLER TOWN & COUNTRY FASCIA

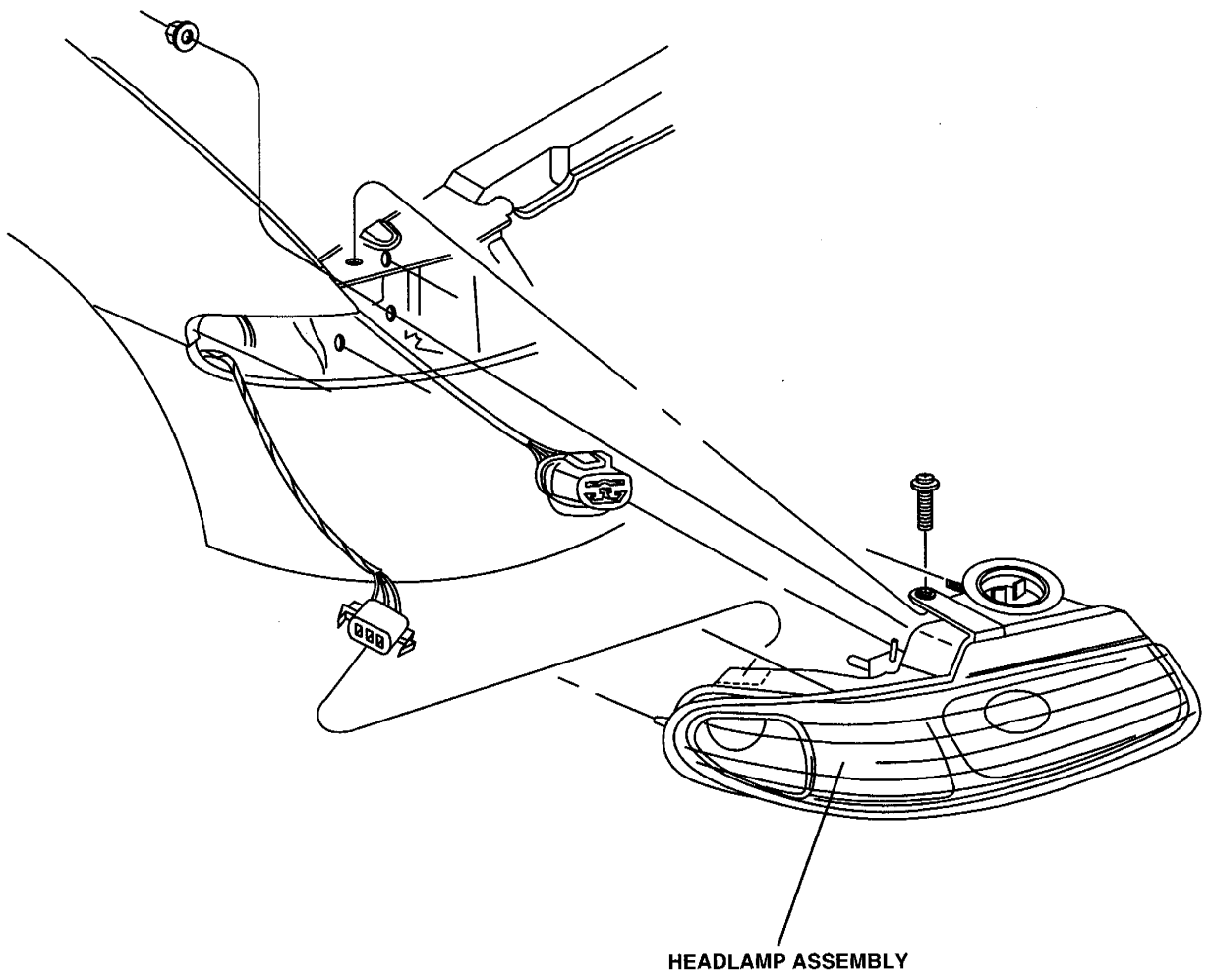
NOTE: AN IMPACT ABSORBER IS MOUNTED INSIDE THE FASCIA.

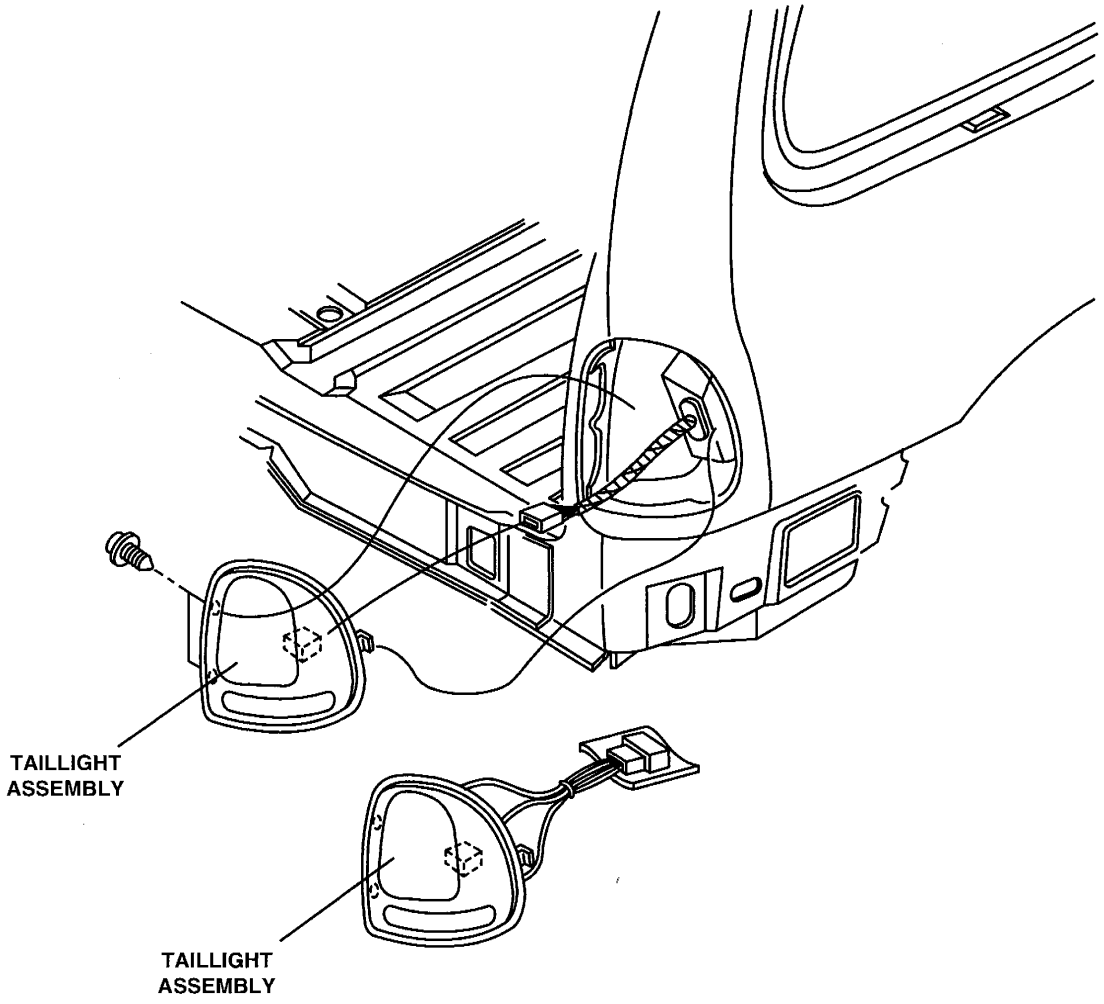

REAR
REINFORCEMENT
BEAM
REAR FASCIA
WITH IMPACT ABSORBER
MOUNTED INSIDE

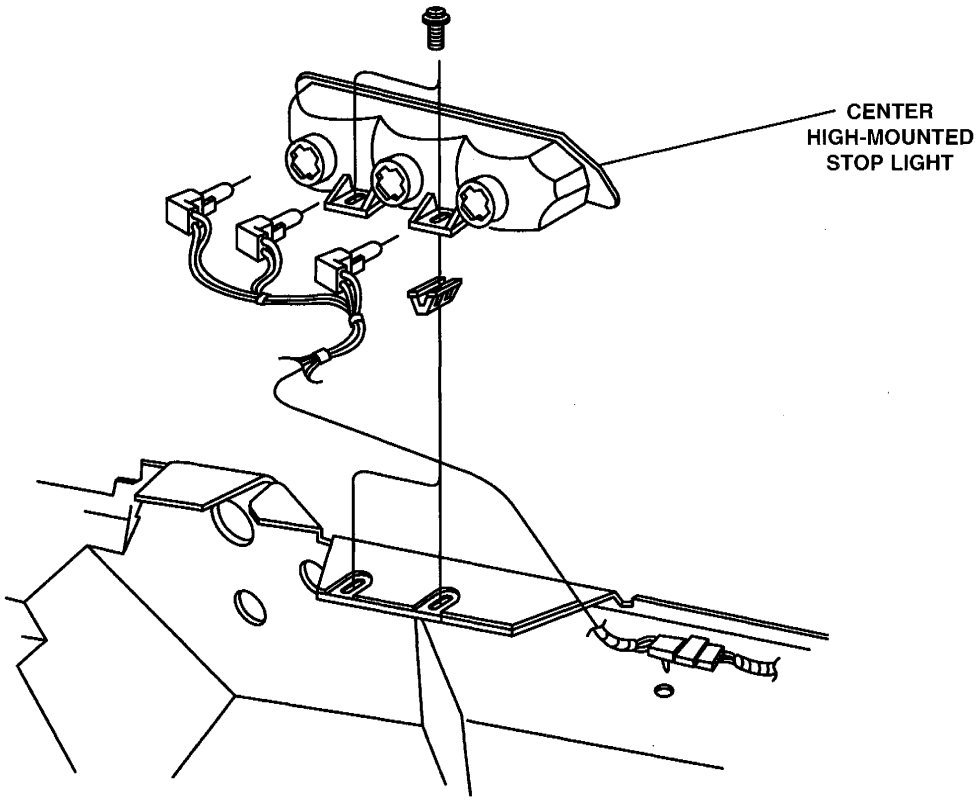
EXTERIOR LIGHTING

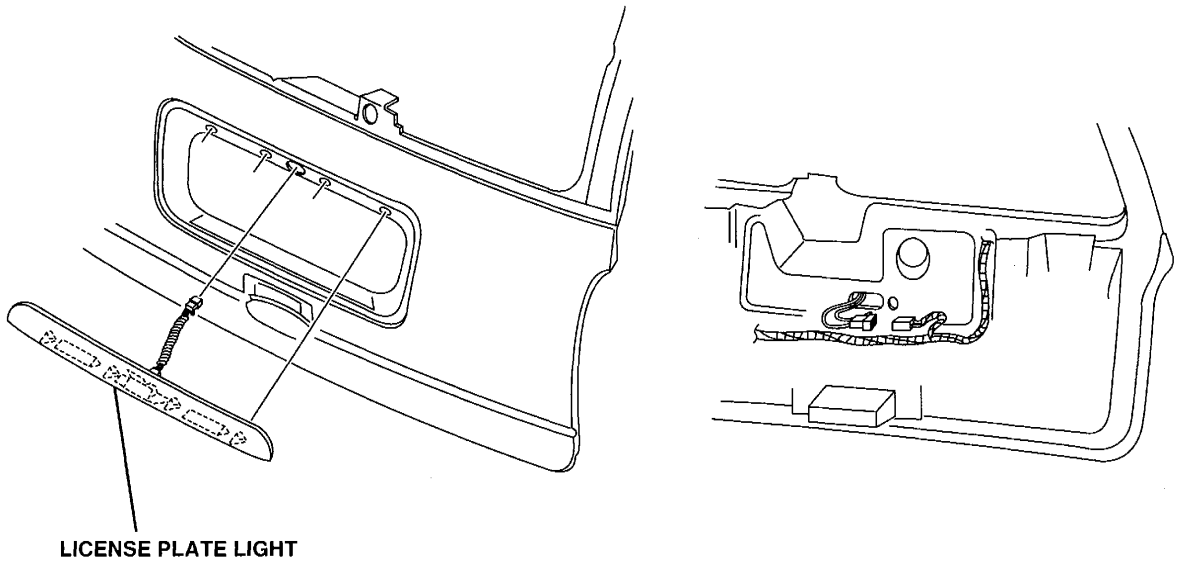
NS Minivans






TAILLIGHT
ASSEMBLY
TAILLIGHT
ASSEMBLY

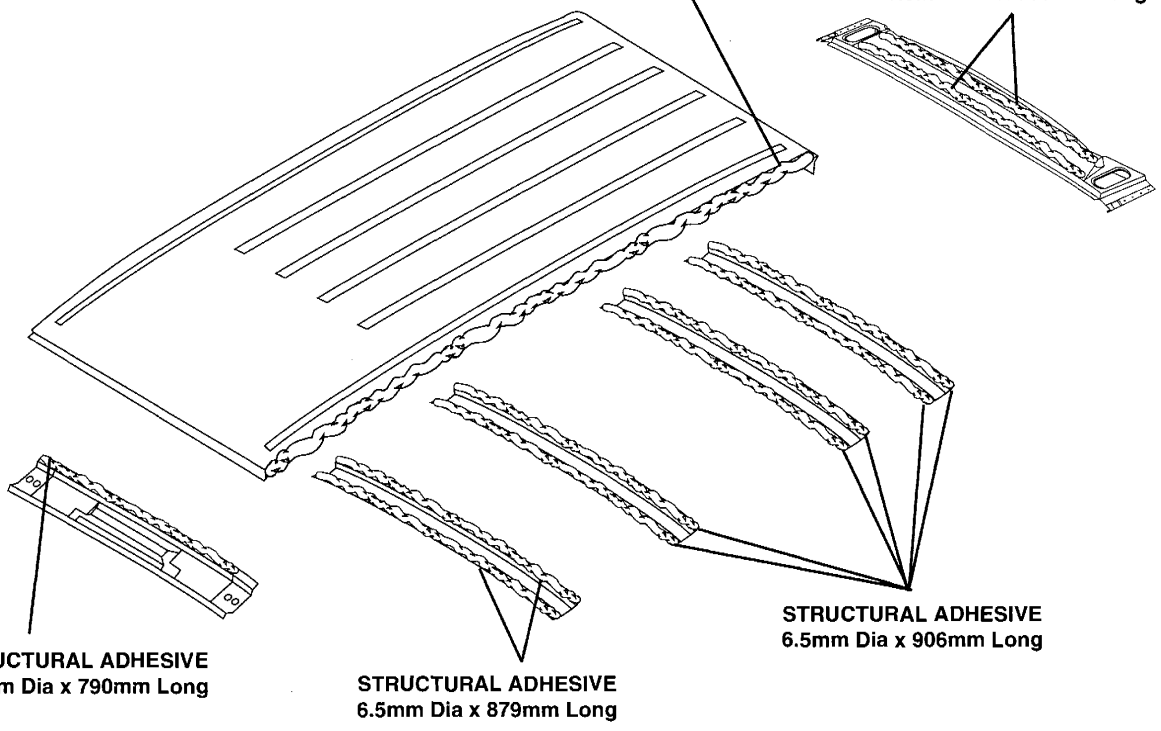

CENTER
HIGH-MOUNTED
STOP LIGHT


LICENSE PLATE LIGHT

STRUCTURAL ADHESIVES

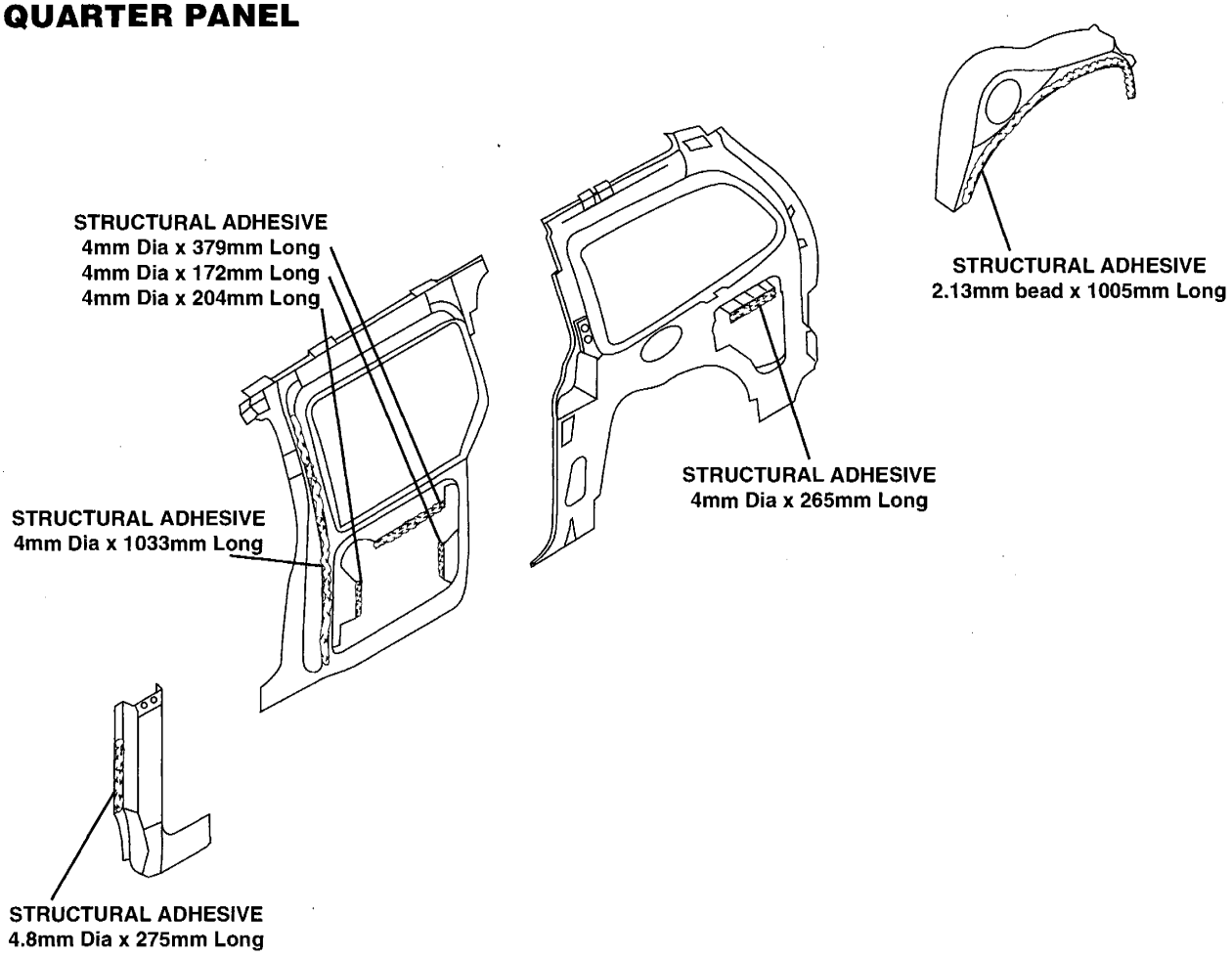
NS Minivans

ROOF AND BOWS

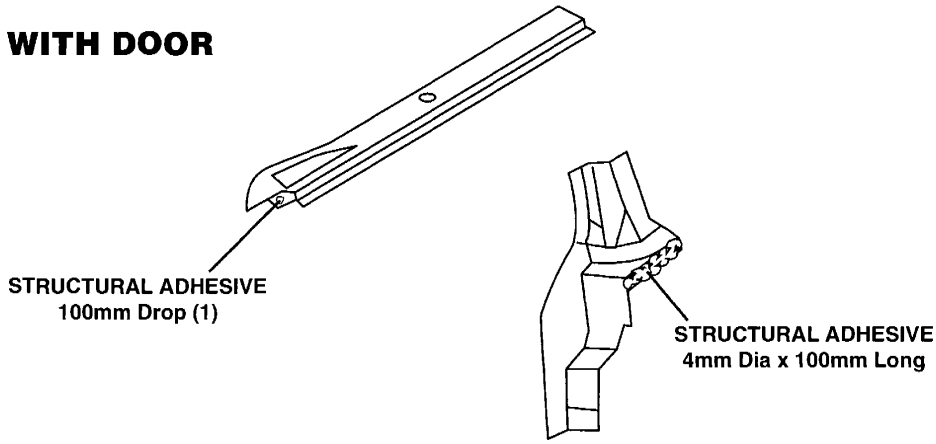


NOTE: ADHESIVE BEADS RUN LENGTH OF ROOF BOWS.

QUARTER PANEL



QUARTER PANEL WITH DOOR



BODY SEALING LOCATIONS

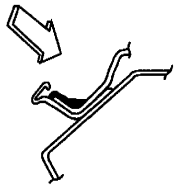
NS Minivans

All repairs where panels were replaced have voids that must be filled with sealant. Sealant should be applied to all skips, pin holes in sealers and weld burn through holes on the interior and exterior of the vehicle that would permit leakage of water, air or exhaust fumes.

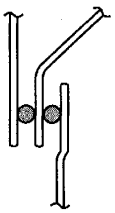
Typical areas of the exterior that must be sealed are listed in this section. Areas of the interior that must be sealed are floor pans, wheelhouses, dash panel and cowl sides.

METHODS OF APPLYING AUTO BODY SEALANT

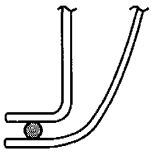
Hold gun nozzle in direction of arrow in order to effectively seal metal joints.



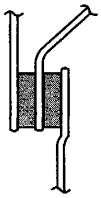
Do not hold gun nozzle in direction of arrow. Sealer applied as shown is ineffective.



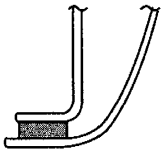
3 metal thickness



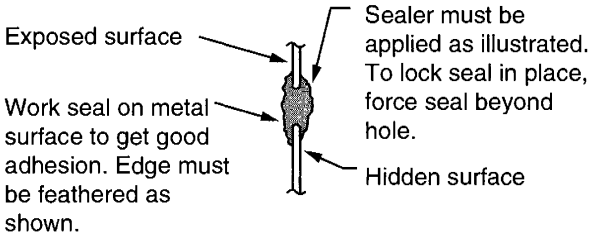
2 metal thickness

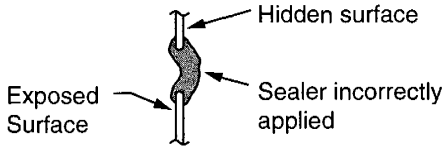


3 metal thickness



2 metal thickness





SYMBOLS

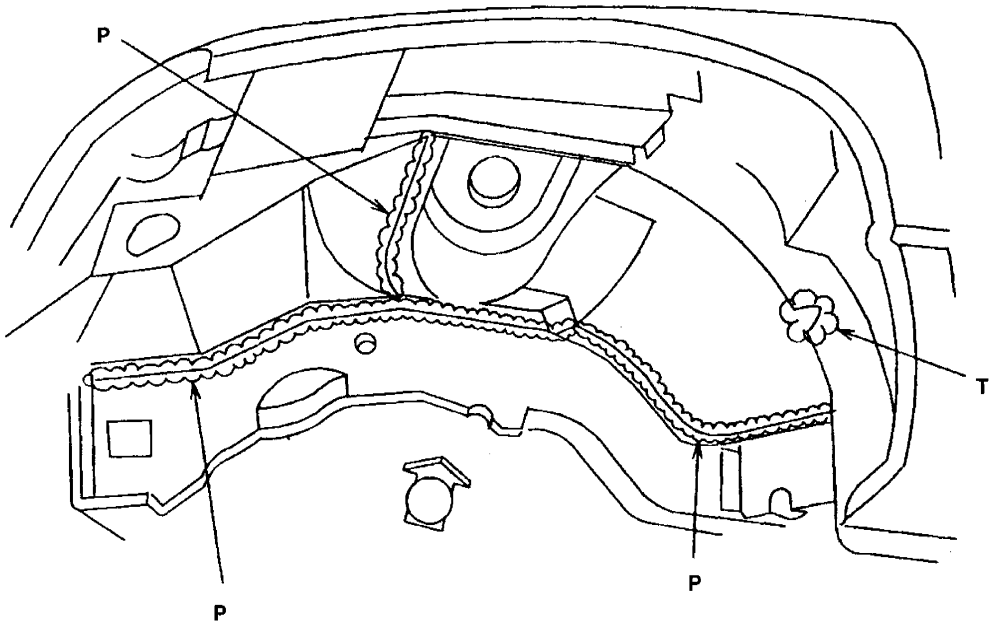
Extrudable thermoplastic

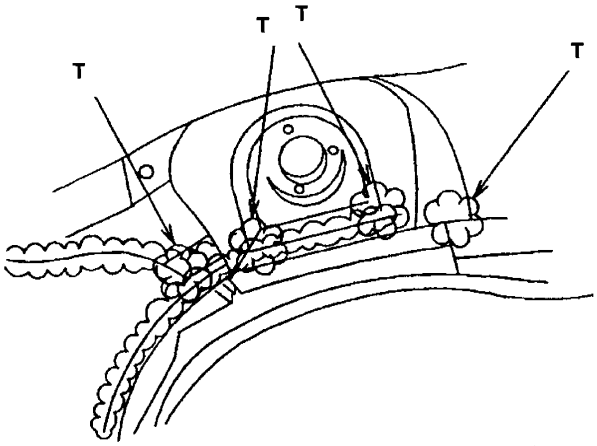
Exposed sealant

z z z z z z z z Hidden sealant

STRUT TOWER AND COWL AREA

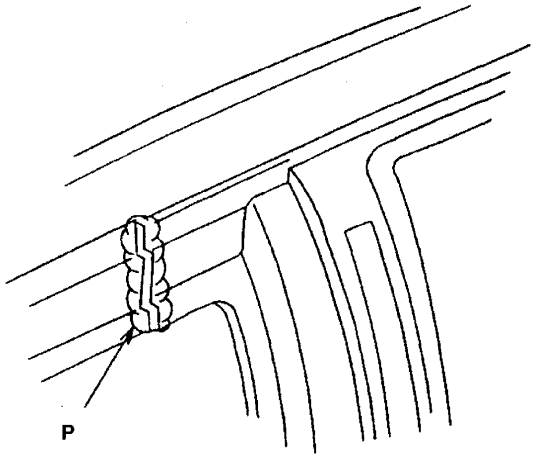
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH



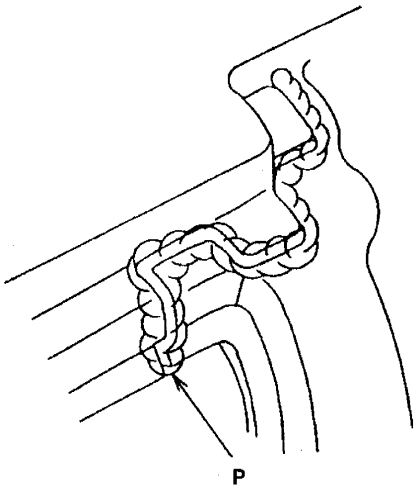


DRIVER'S DOOR AREA

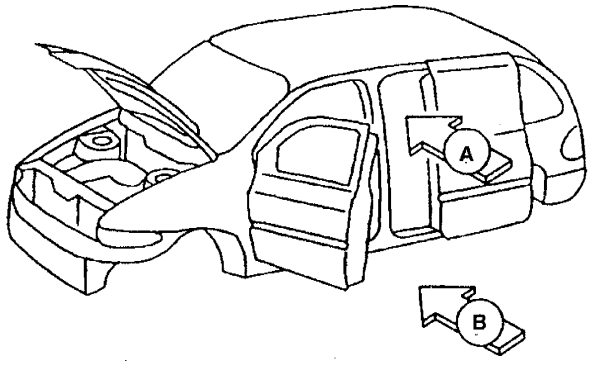
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH

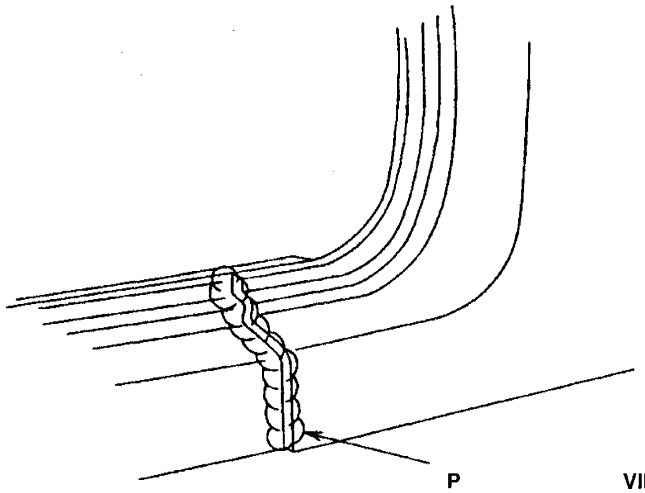


VIEW A
3-DOOR



VIEW A
4-DOOR

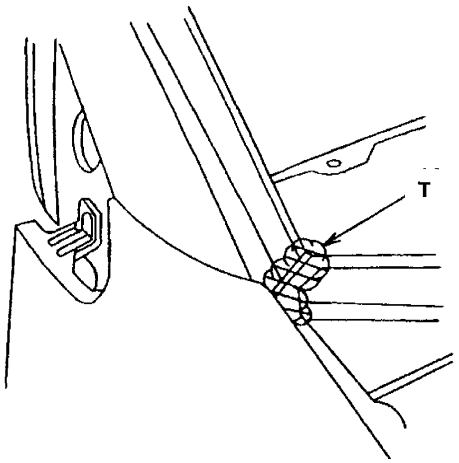




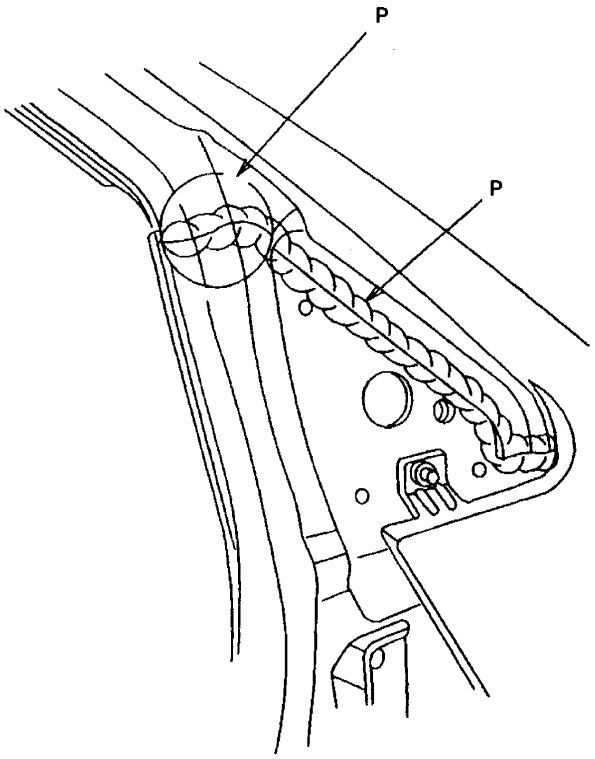
VIEW B

A-PILLAR AREA

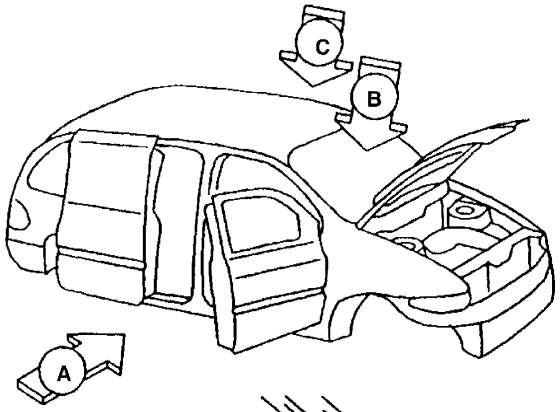
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH

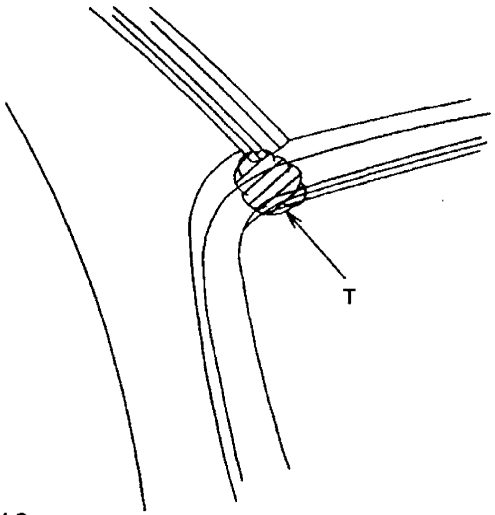


VIEW B



VIEW A



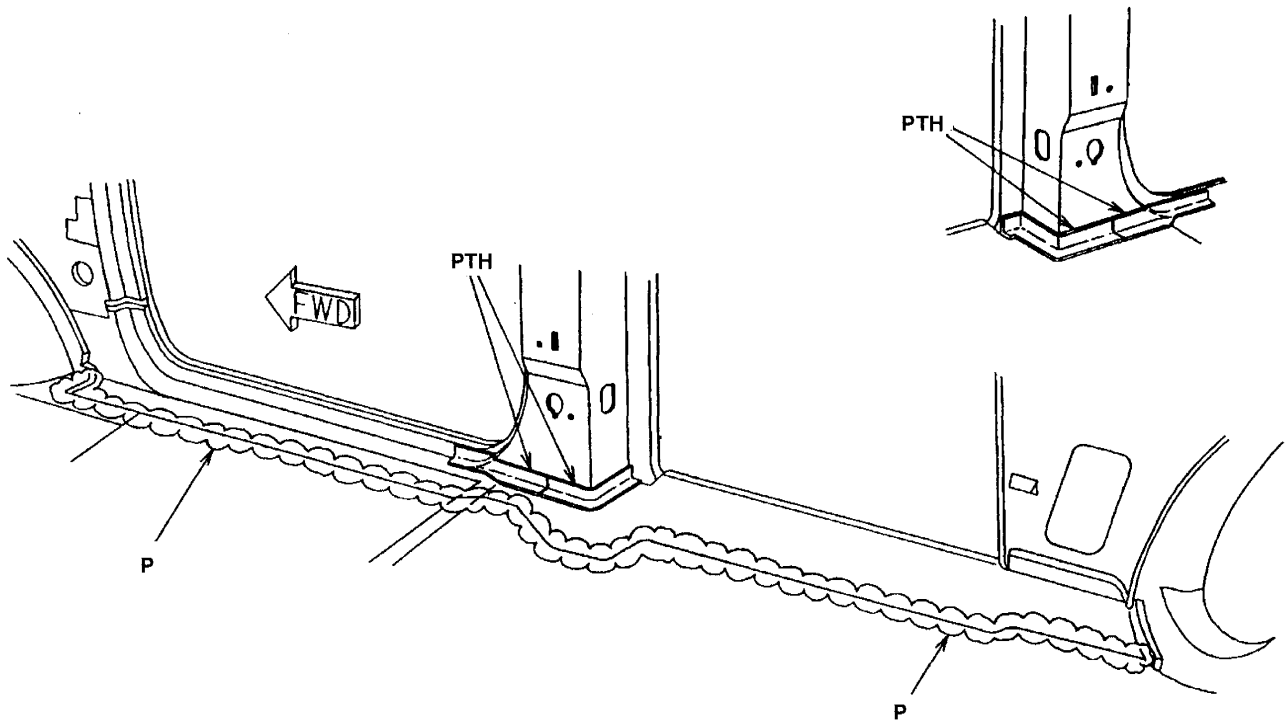


VIEW C

KEEP SEALER OFF WINDSHIELD SEALING SURFACE. SEALER MUST PROVIDE A SMOOTH TRANSITION TO WINDSHIELD SEALING SURFACE.

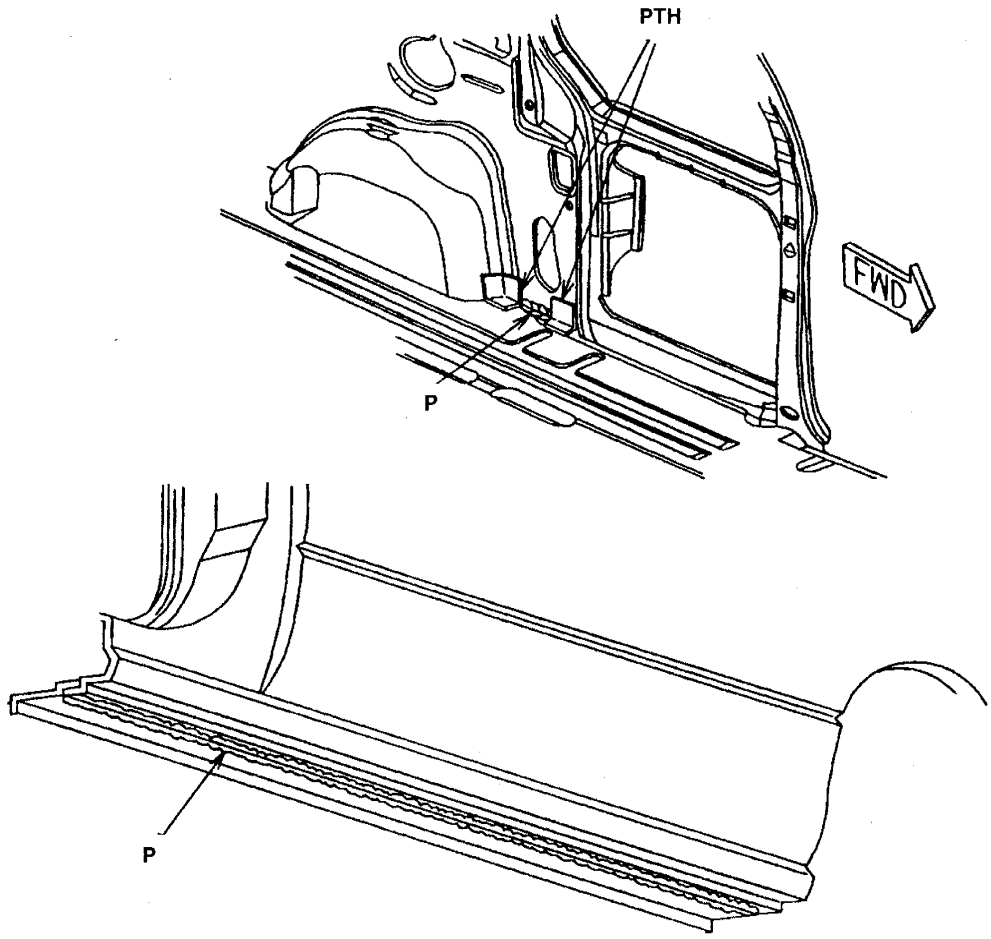
B-PILLAR AND FLOOR AREA

T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH



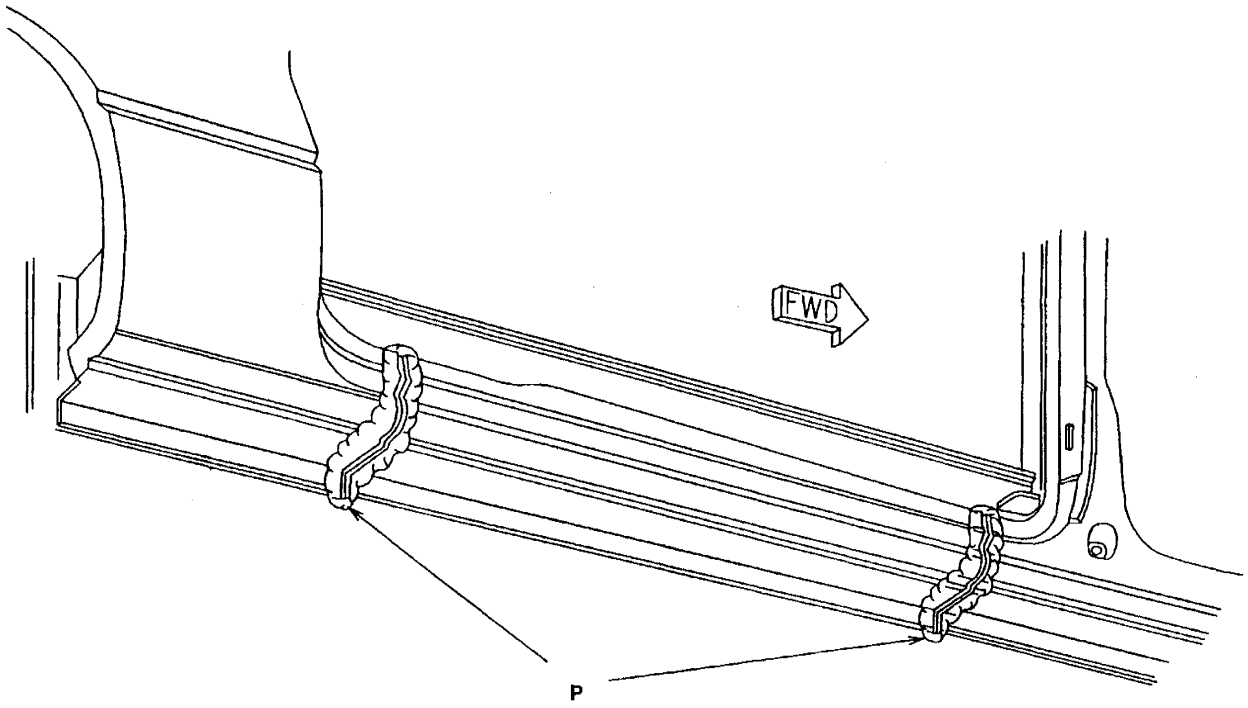
QUARTER PANEL AREA (WITHOUT DOOR)

T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH



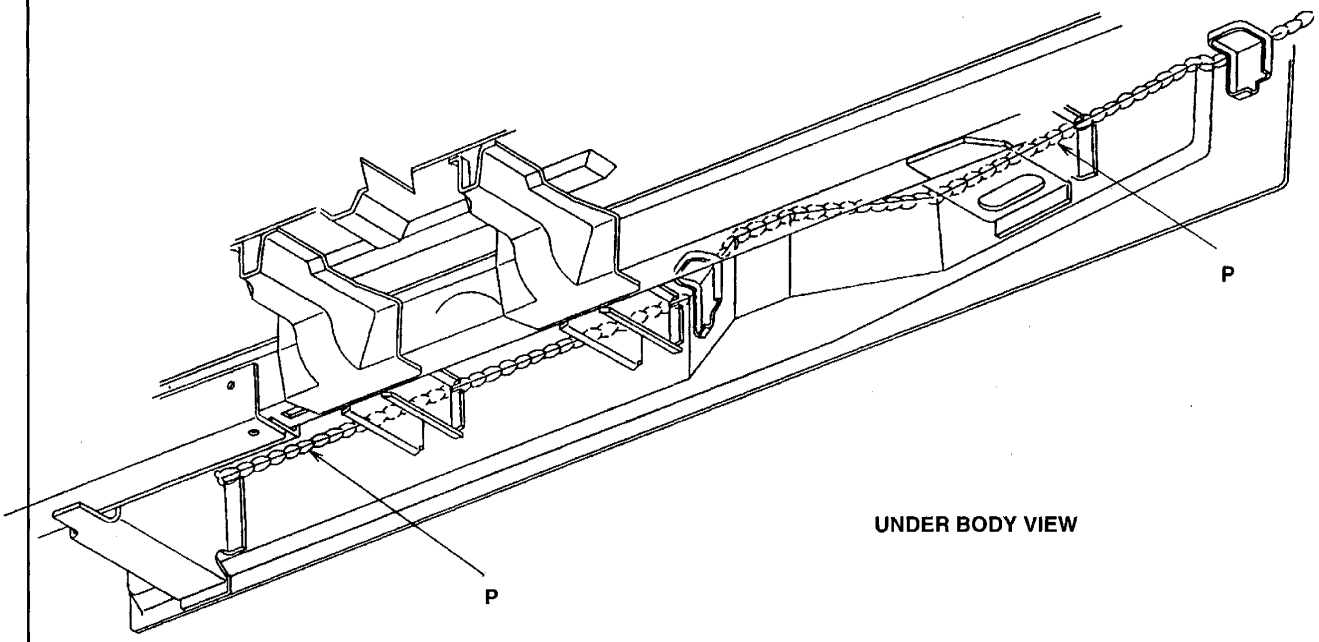
LOWER SIDE DOOR AREA

T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH



INNER SIDE SILL AREA

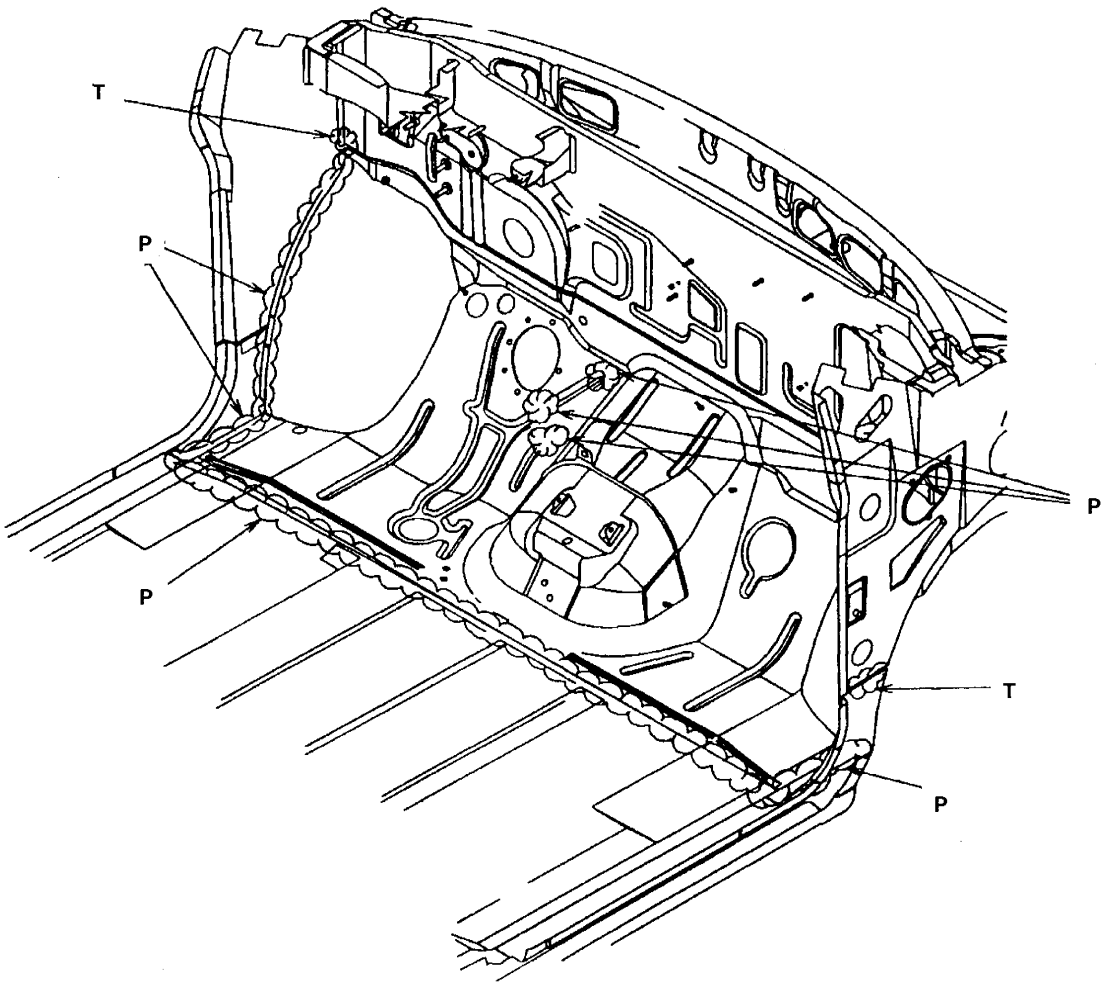
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH



UNDER BODY VIEW

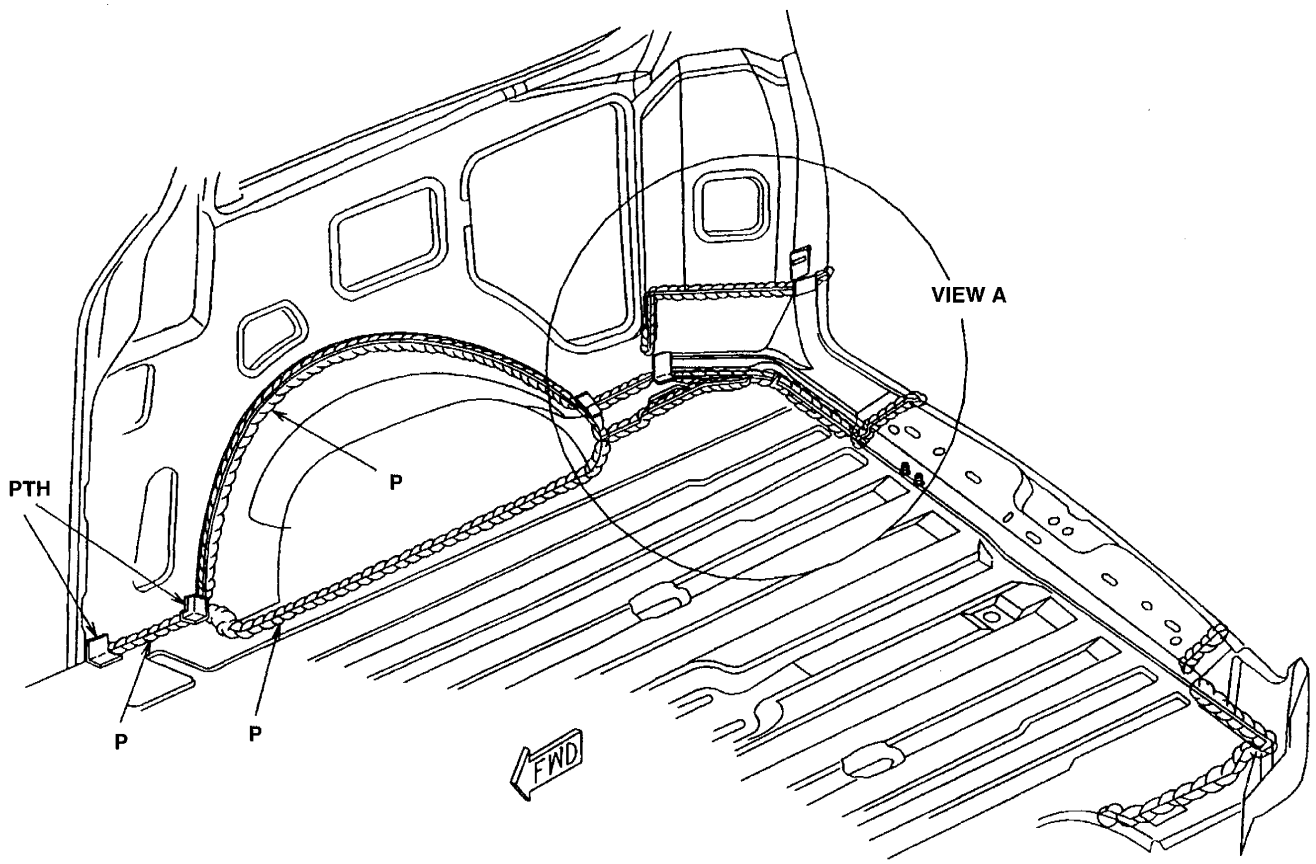
FLOOR PAN AND COWL AREA

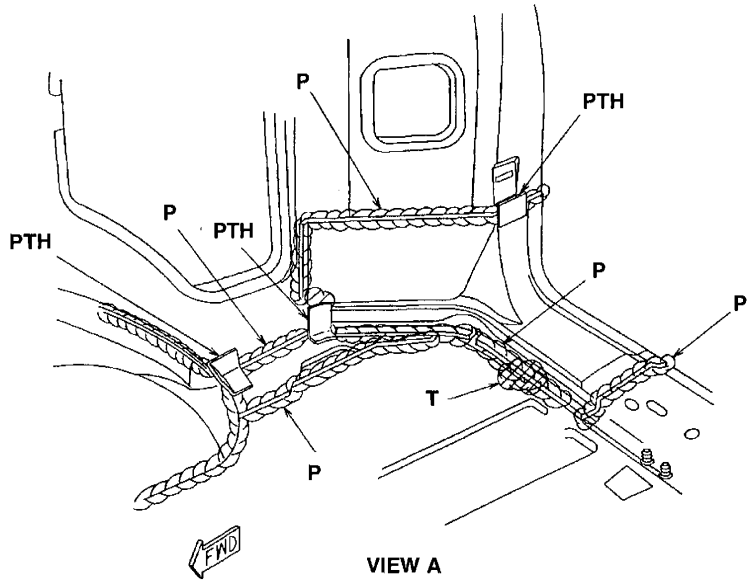
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH



FLOOR AND INNER QUARTER AREA

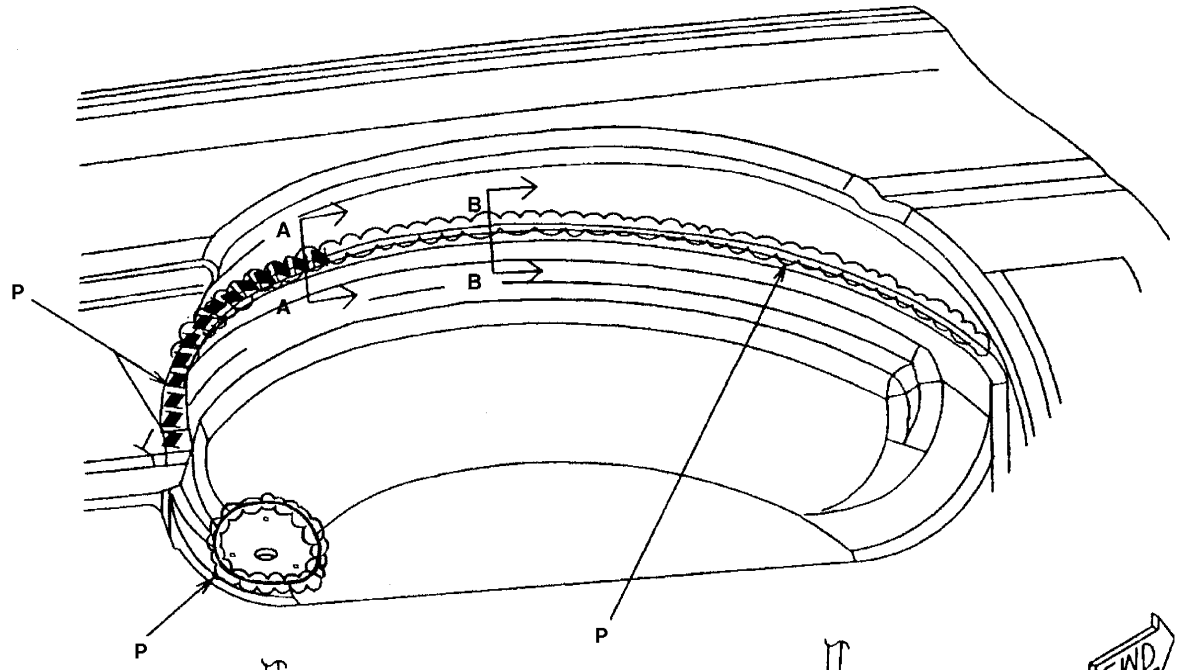
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH

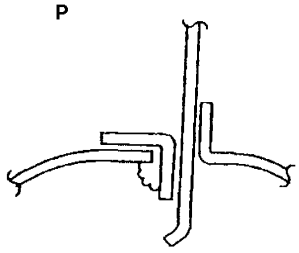




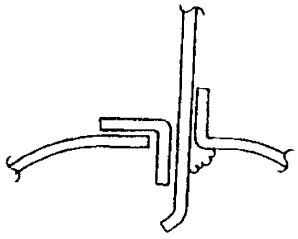
REAR FENDERWELL AREA

T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH





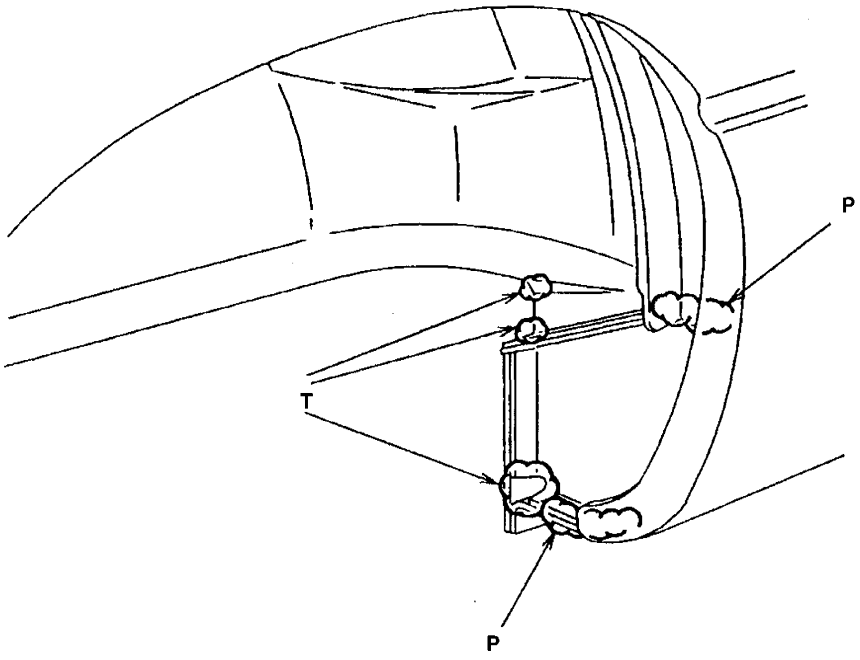
SECTION A - A

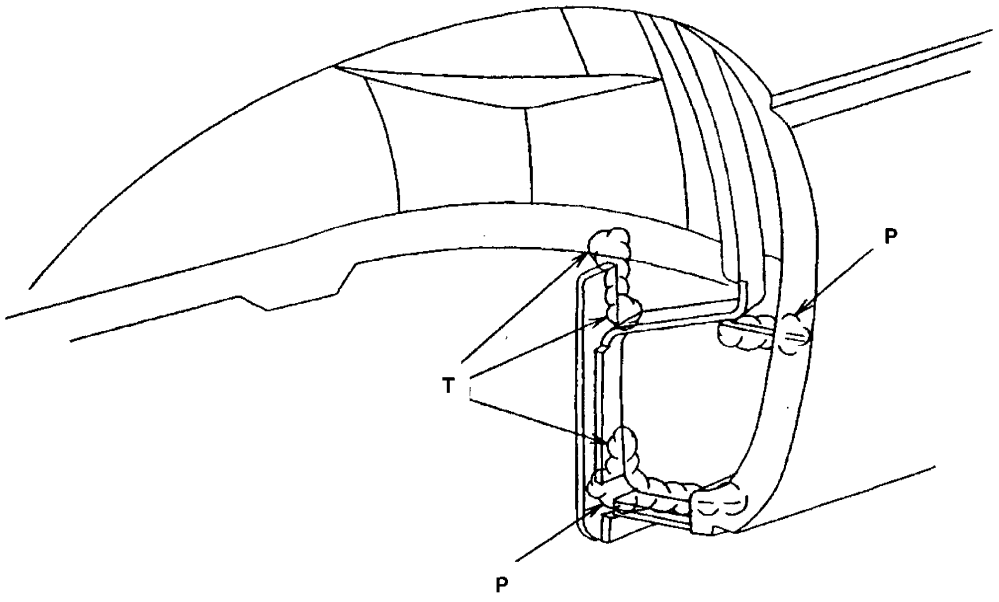


SECTION B - B

REAR FENDERWELL AREA

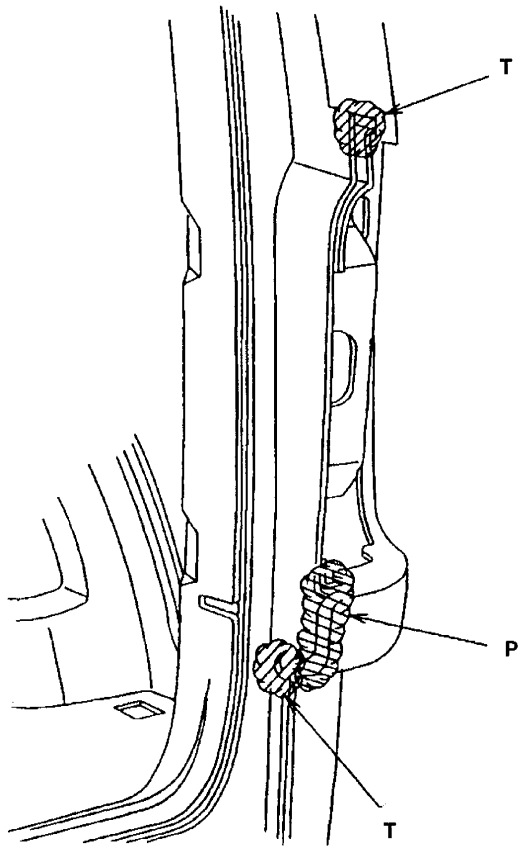
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH

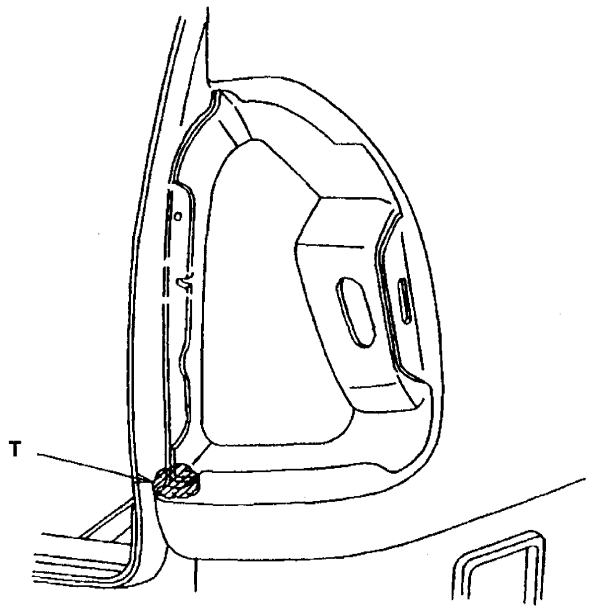


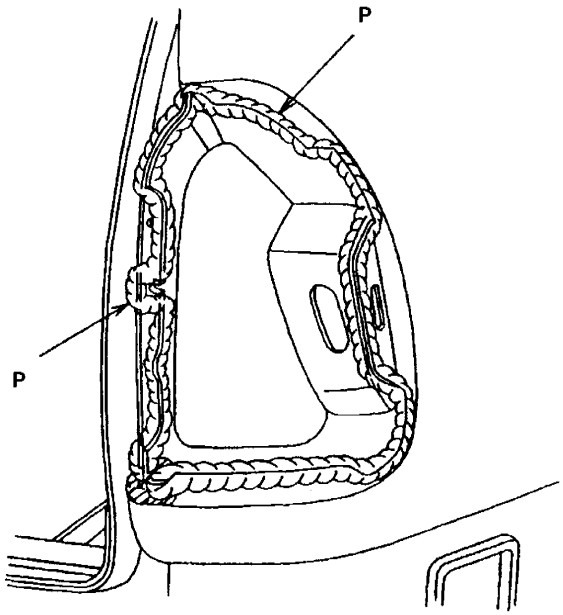


TAIL LAMP AREA

T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH

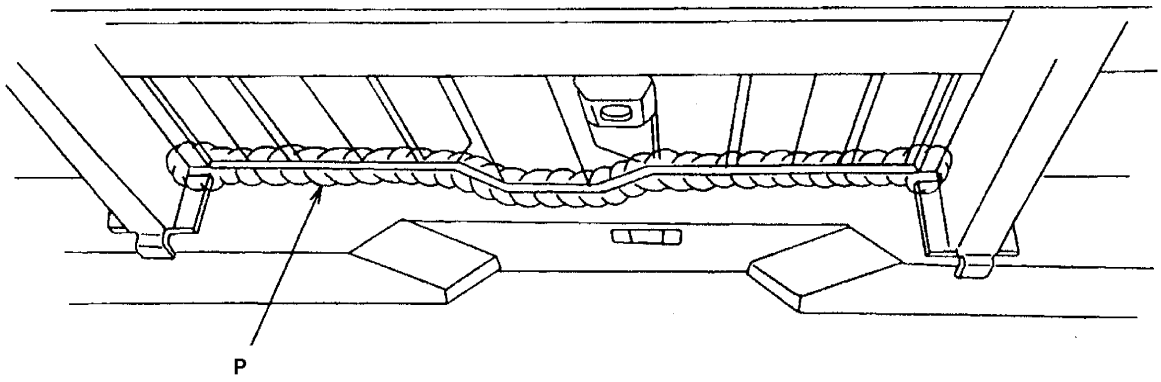


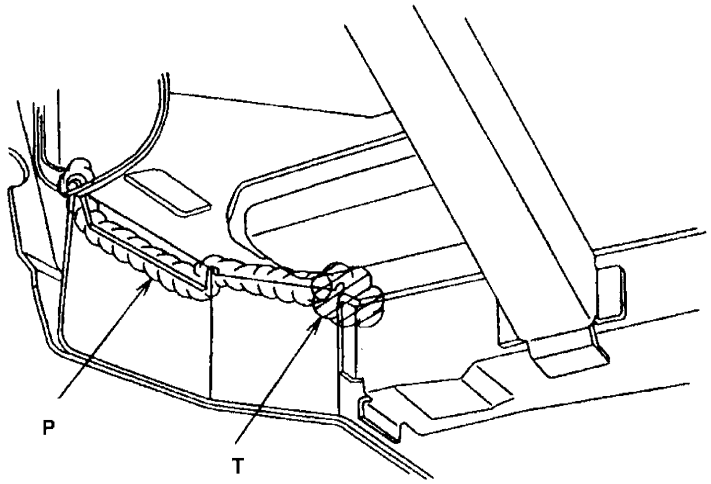


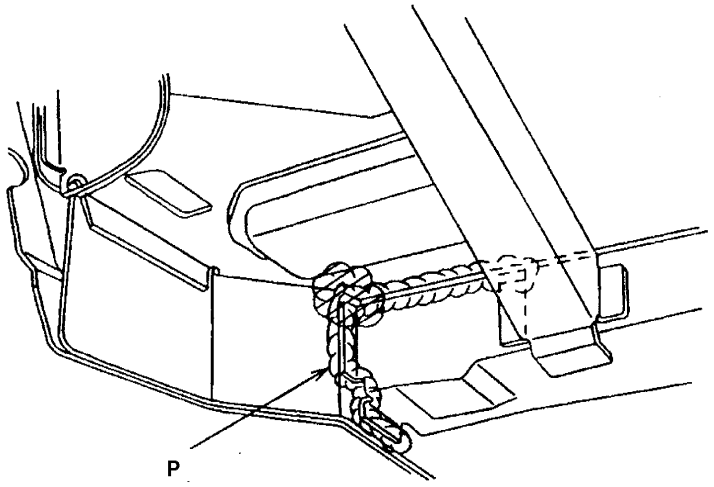


REAR UNDERBODY AREA

T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH

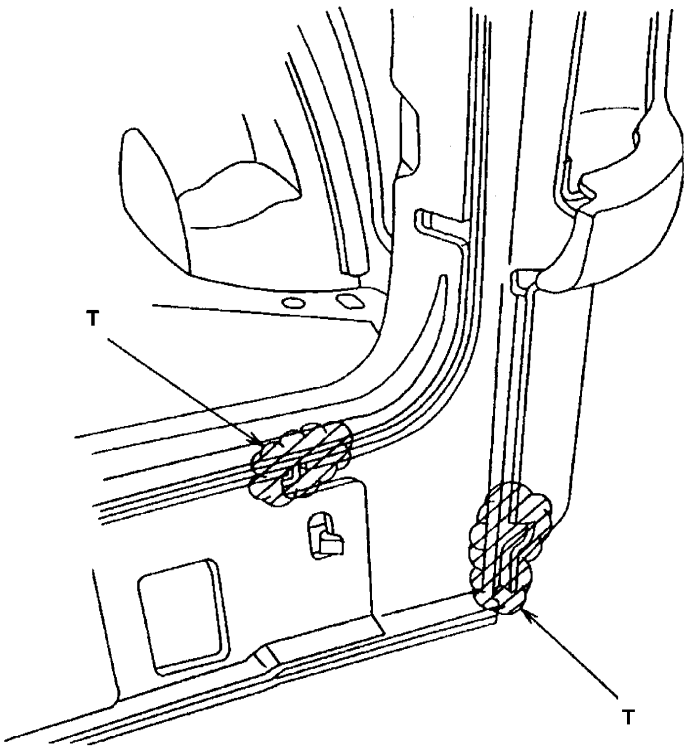


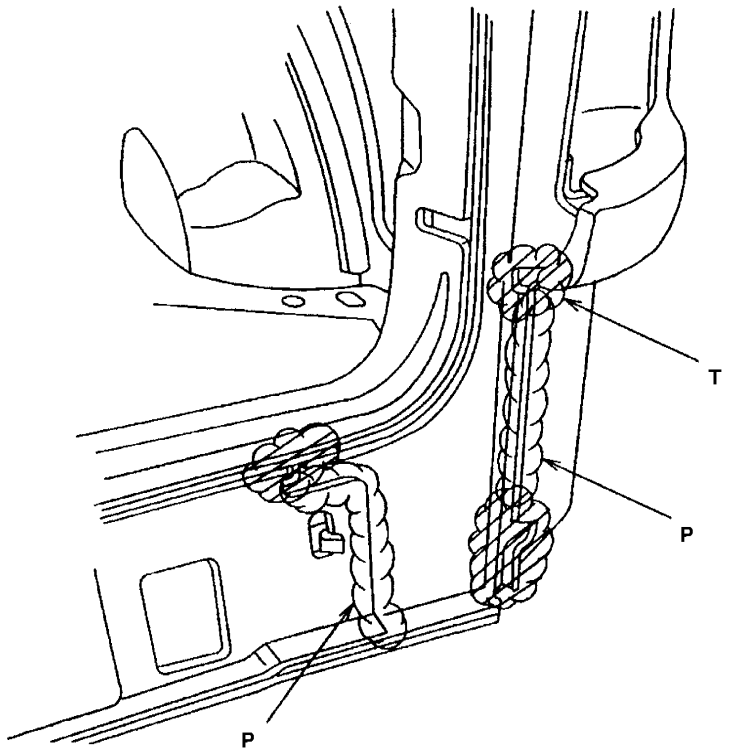




REAR DOOR OPENING AREA

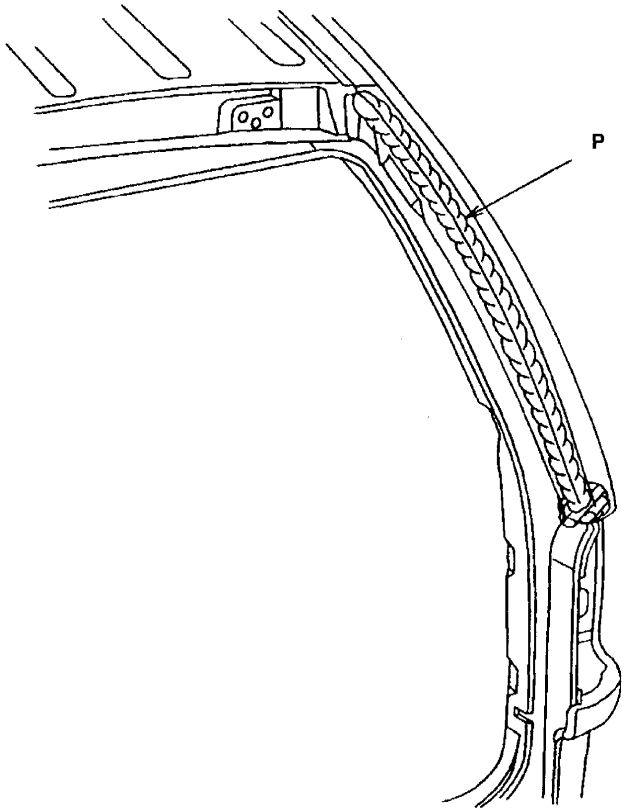
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH

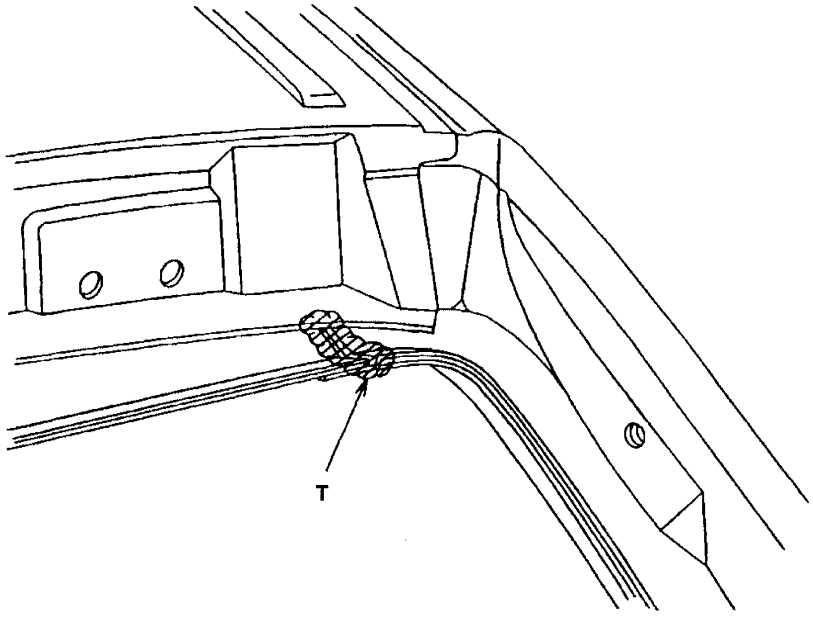




REAR DOOR OPENING AREA

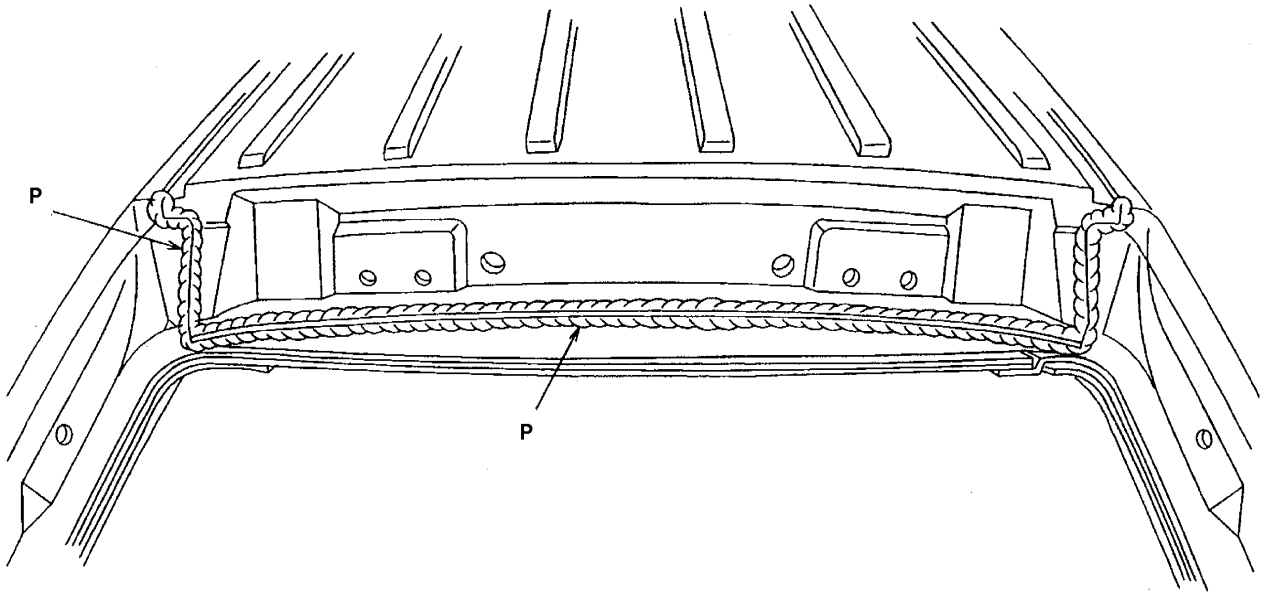
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH





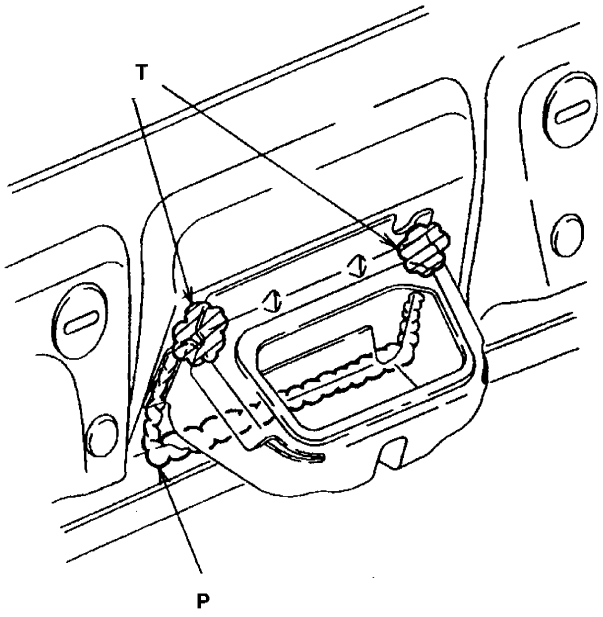
REAR DOOR OPENING AREA

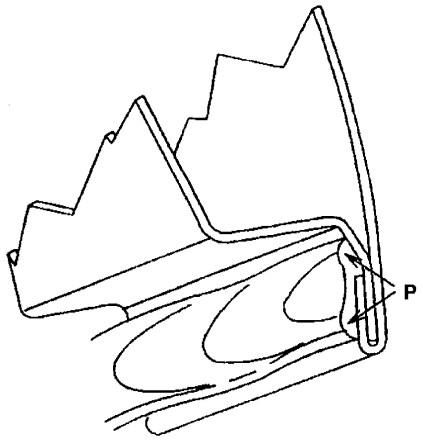
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH



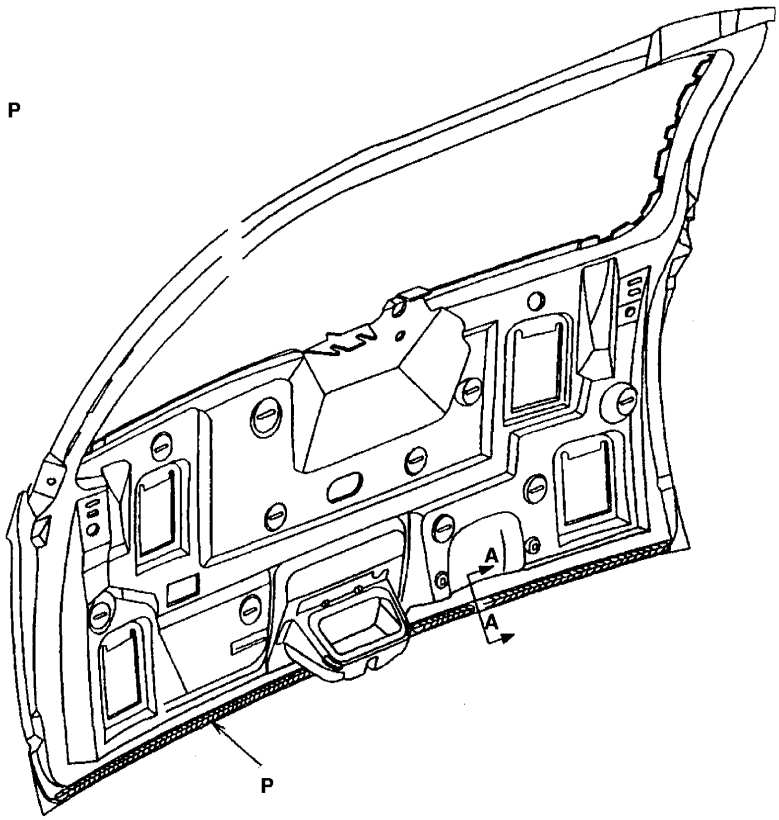
REAR DOOR AREA

T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH



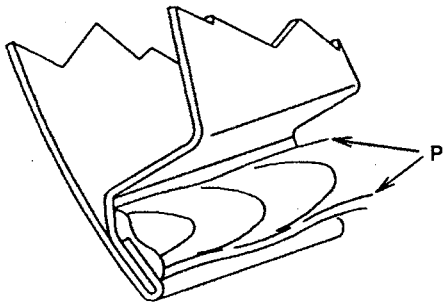


SECTION A - A

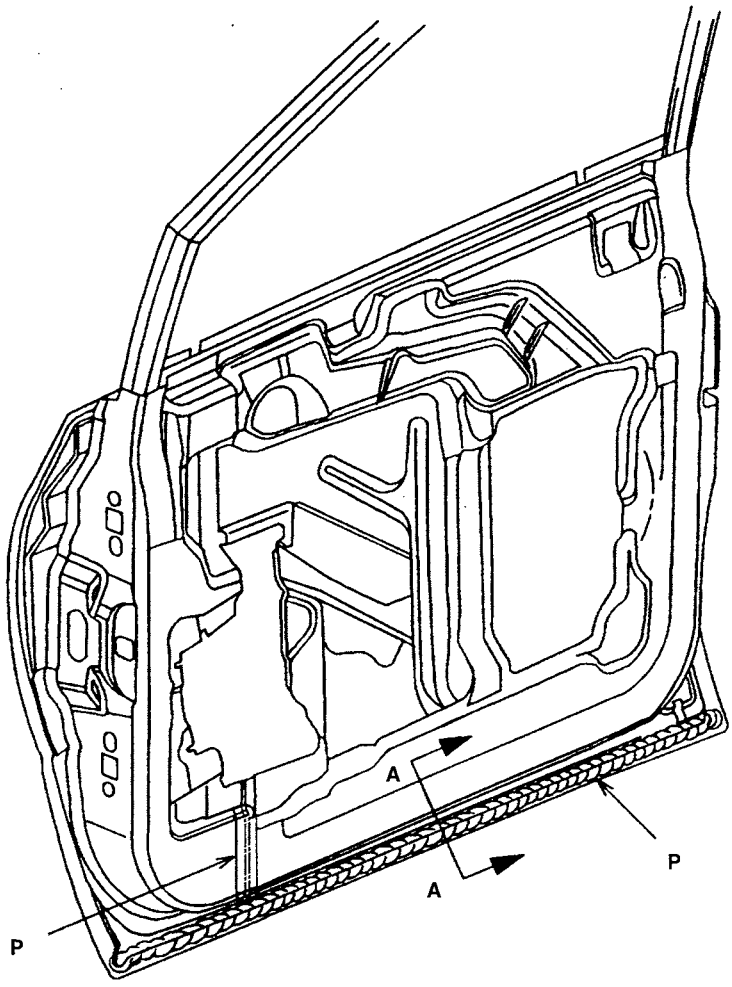


FRONT DOOR LOWER AREA

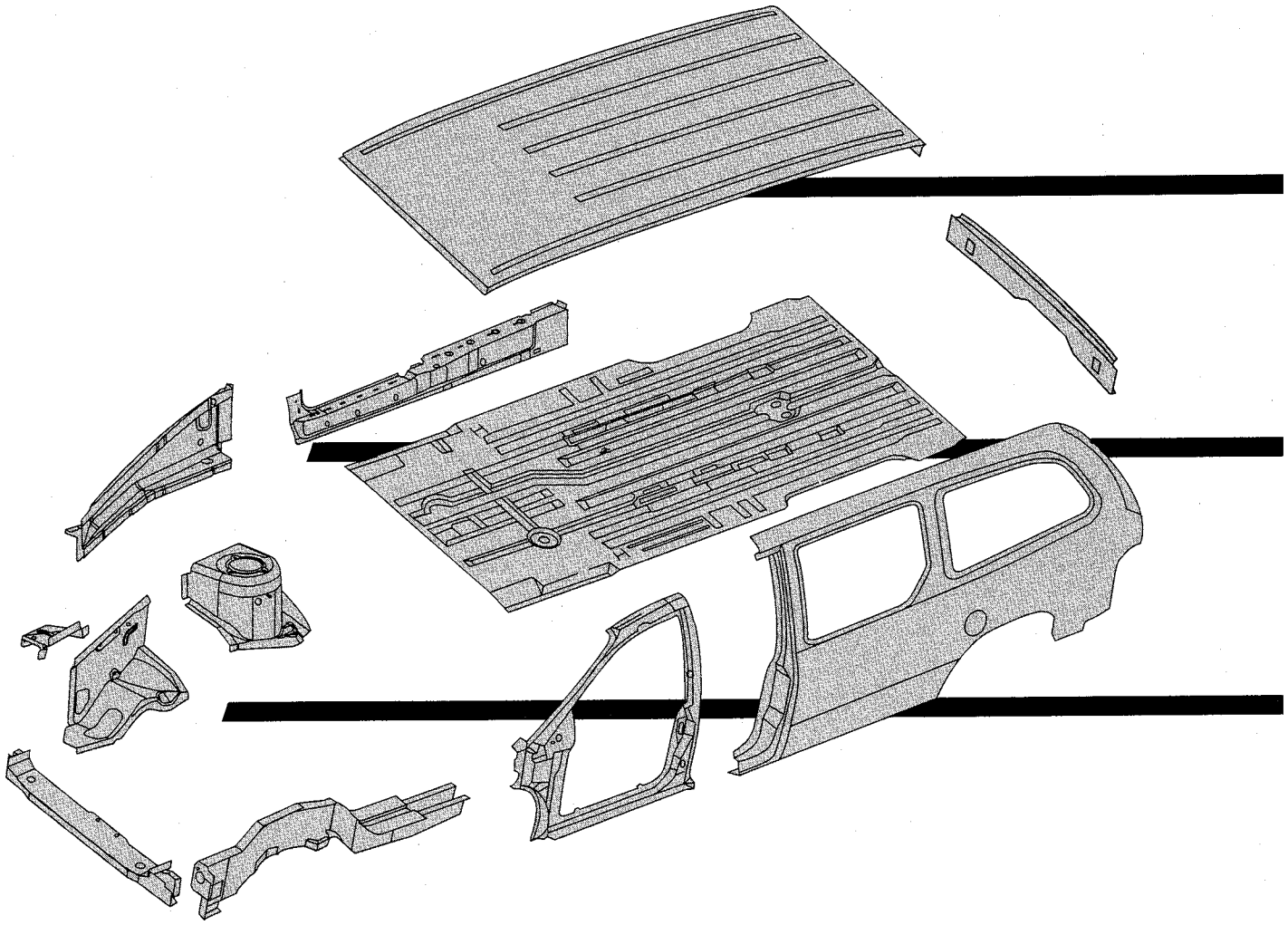
T = THUMBGRADABLE
P = PUMPABLE
PTH = PATCH



SECTION A - A



Unibody Dimensions, Joints and Seams



Dodge Caravan / Plymouth Voyager
Chrysler Town & Country

TECHNICAL TRAINING

CHRYSLER CORPORATION
CUSTOMER SATISFACTION & VEHICLE QUALITY

SAFETY NOTICE

This publications purpose is to provide Technical training information to individuals in the automotive trade. All test and repair procedures must be performed in accordance with manufacturers service and diagnostic manuals. All ***warnings, cautions,*** and ***notes*** must be observed for safety reasons. The following is a list of general guidelines:

- Proper service and repair is critical to the safe, reliable operation of all motor vehicles.
- The information in this publication has been developed for service personnel, and can help when diagnosing and performing vehicle repairs.
- Some service procedures require the use of special tools. These special tools must be used as recommended throughout this Technical Training Publication, the diagnostic Manual, and the Service Manual.
- Special attention should be exercised when working with spring-or tension-loaded fasteners and devices such as E-Clips, Cir-clips, Snap rings, etc., careless removal may cause personal injury.
- Always wear safety goggles when working on vehicles or vehicle components.
- Improper service methods may damage the vehicle or render it unsafe.
- Observe all ***warnings*** to avoid the risk of personal injury.
- Observe all ***cautions*** to avoid damage to equipment and vehicle.
- ***Notes*** are intended to add clarity and should help make your job easier.

Cautions and ***Warnings*** cover only the situations and procedures Chrysler Corporation has encountered and recommended. Chrysler Corporation cannot know, evaluate, and advise the service trade of all conceivable ways in which service may be performed, or of the possible hazards or each. Consequently, Chrysler Corporation has not undertaken any such broad service review. Accordingly, anyone who used a service procedure or tool that is not recommended in this publication, must be certain that neither personal safety, nor vehicle safety, is jeopardized by the service methods they select.

TECHNICAL TRAINING

CustomerOne™

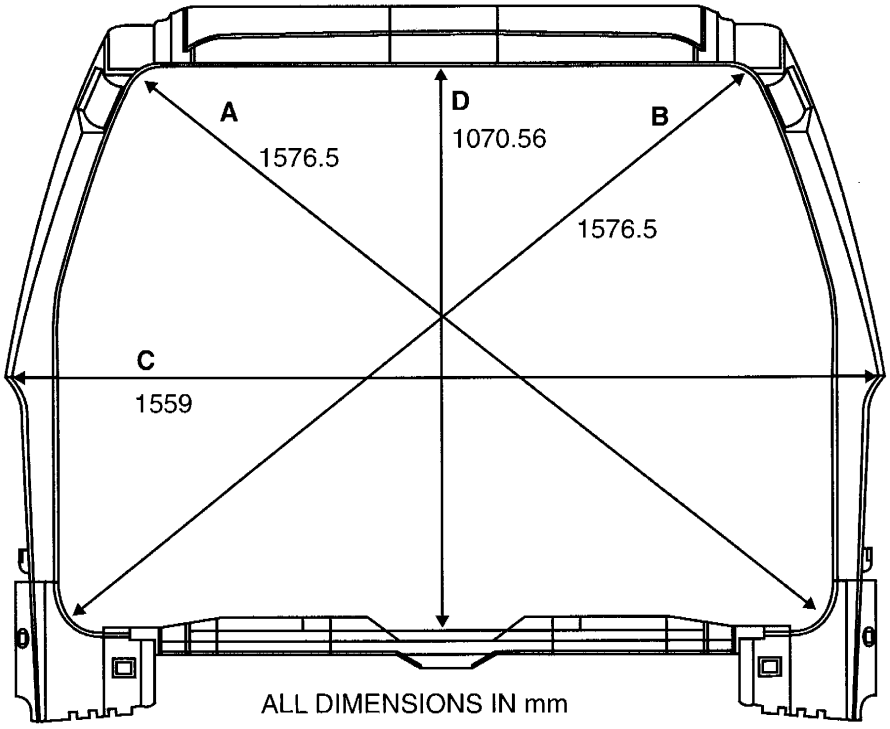
MASTER TECH

Dodge Caravan

BODY DIMENSIONS & SPECIFICATIONS

NS Minivans

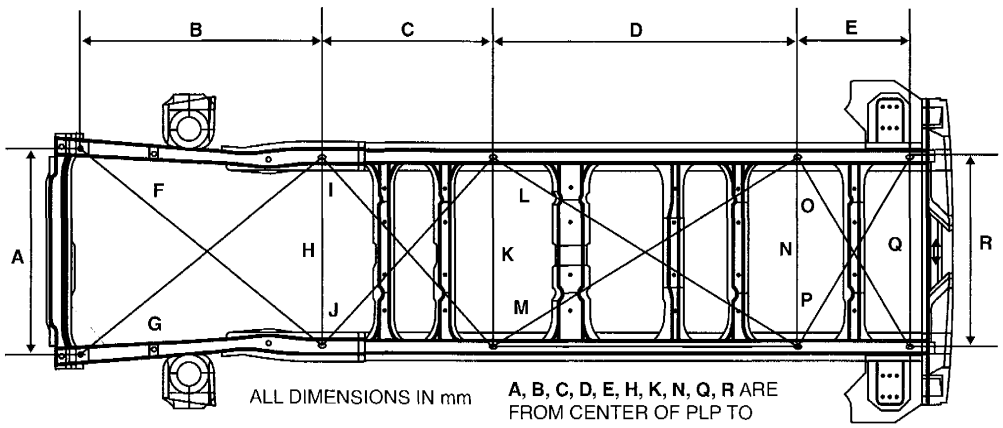
CENTER BODY



A-B CENTER OF RADIUS TO CENTER OF RADIUS
C TIP OF QUARTER PANEL TO TIP OF QUARTER PANEL
D UPPER PINCH WELD TO LEFT SIDE STRIKER BOLT

Note: All measurements are in mm. Dimensions referenced from PLP holes are from centerline of hole.

FRAME TOP



ALL DIMENSIONS IN mm

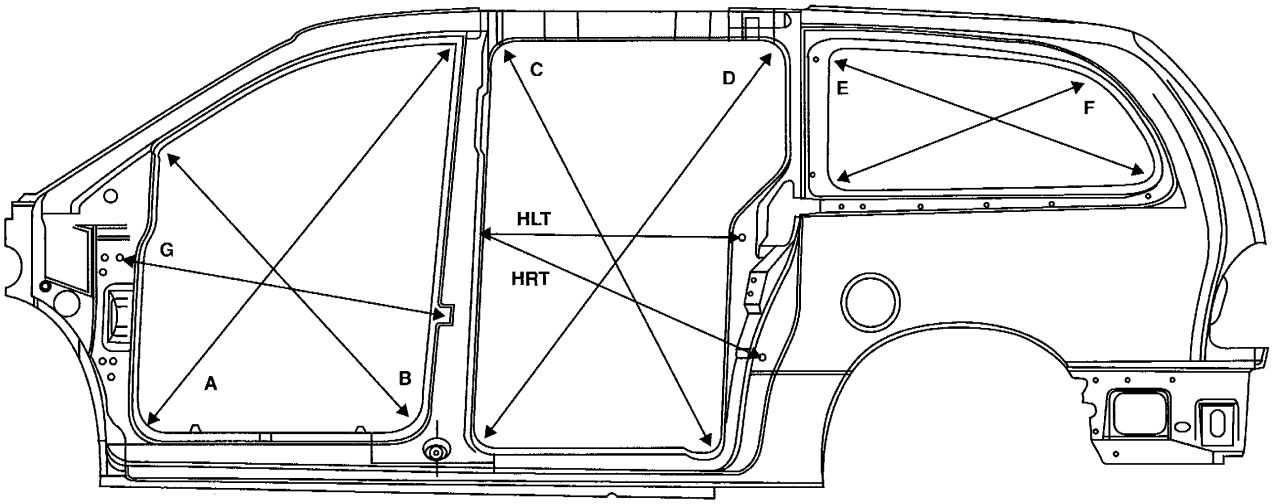
A, B, C, D, E, H, K, N, Q, R ARE FROM CENTER OF PLP TO CENTER OF PLP OR CONSTANT HOLE CENTER

F, G, J, I, L, M, O, P ARE ALL CROSS MEASUREMENTS

	UNDER BODY	
	LONG WHEELBASE	SHORT WHEELBASE
A.	1040.0	1040.0
B.	1251.1	1251.1
C.	889.72	890.0
D.	1559.7	1407.5
E.	563.9	377.7
F.	1599.31	1599.31
G.	1599.31	1599.31
H.	944.0	944.0
I.	1298.2	1298.30
J.	1298.2	1298.30
K.	944.0	944.0
L.	1824.85	1696.52
M.	1824.85	1696.52
N.	944.0	944.0
O.	1099.98	1016.96
P.	1099.98	1016.96
Q.	944.0	944.00
R.	944.0	944.00

Note: All measurements are in mm. Dimensions referenced from PLP holes are from centerline of hole.

SIDE BODY



BODY SIDE OPENINGS

A-B-C-D-E-F CENTER OF RADIUS TO CENTER OF RADIUS AT EDGE OF PINCH WELD.

G INNER UPPER HINGE BOLT CENTER TO UPPER EDGE OF UPPER STRIKER BOLT.

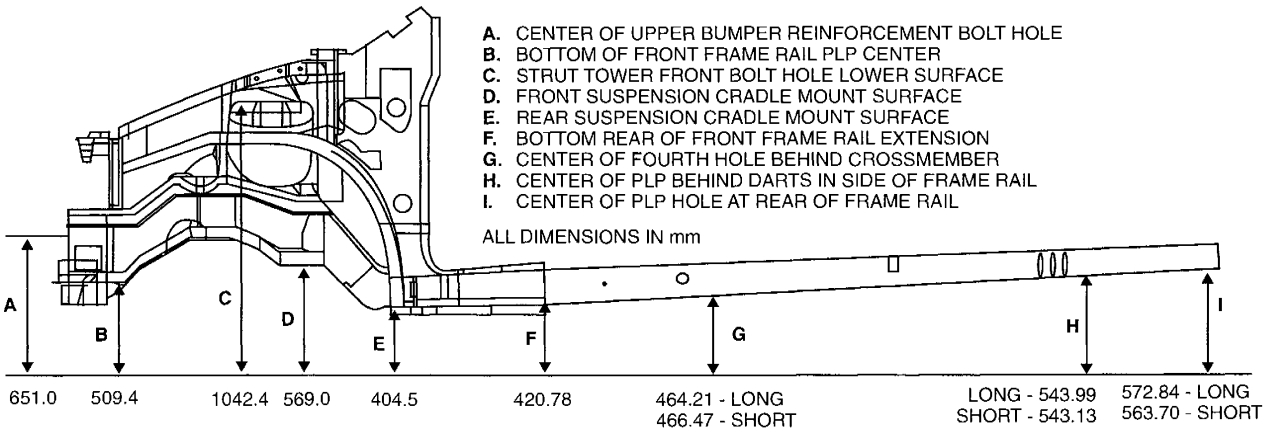
H CENTER OF LARGE LATCH HOLE TO QUARTER PANEL PLP
NOTE: LEFT SIDE IS HIGHER THAN RIGHT.

A. 1457.33
B. 1111.00
C. 1405.79 RIGHT - 1332.85 LEFT
D. 1488.52
E. 1038.20 LONG WHEELBASE - 745.69 SHORT WHEELBASE
F. 875.80 LONG WHEELBASE - 566.09 SHORT WHEELBASE
G. 1028.03
H. 852.69 LEFT LONG WHEELBASE
891.85 RIGHT SHORT AND LONG WHEELBASE

ALL DIMENSIONS IN mm

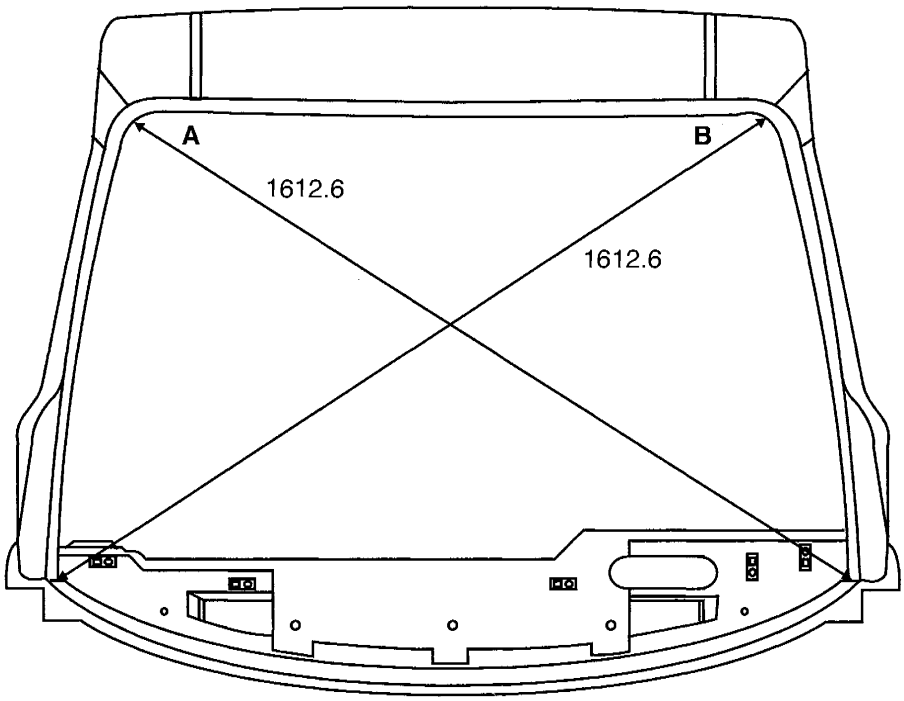
Note: All measurements are in mm. Dimensions referenced from PLP holes are from centerline of hole.

SIDE FRAME



Note: All measurements are in mm. Dimensions referenced from PLP holes are from centerline of hole.

WINDSHIELD

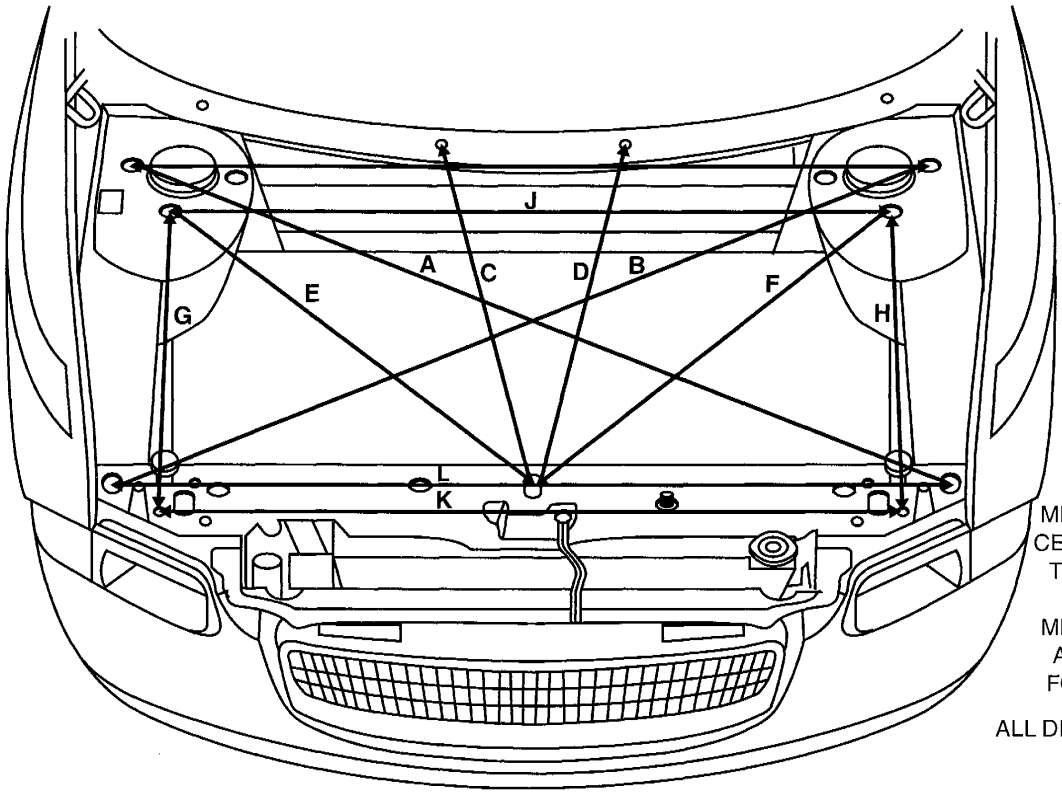


A-B CENTER OF RADIUS TO CENTER OF RADIUS, EDGE OF PINES WELD TO LOWER WINDSHIELD CORNER

ALL DIMENSIONS IN mm

Note: All measurements are in mm. Dimensions referenced from PLP holes are from centerline of hole.

ENGINE COMPARTMENT



ENGINE BOX

A. 1497.95
B. 1497.95
C. 586.07
D. 580.38
E. 781.31
F. 781.31
G. 560.71
H. 560.71
I. 1362.51
J. 1217.18
K. 1093.54
L. 1400.52

NOTE:
ALL MEASUREMENTS CENTER OF HOLE TO CENTER OF HOLE. MEASUREMENTS ARE THE SAME FOR LWB & SWB

ALL DIMENSIONS IN mm

Note: All measurements are in mm. Dimensions referenced from PLP holes are from centerline of hole.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A														
B														
C														
D														
E														
F														
G														
H														
I														
J														
K														
L														
M														
N														
O														
P														
Q														
R														
S														
T														
U														
V														
W														

This is a very easy way to write up your measurement information. You can tell at a glance when a dimension changes, and you can do what is necessary to stay in specification before you proceed.

Here's how to use this sheet or a similar one since each vehicle manufacturer supplies critical measuring point information.

Each time a correction is made to restore the body to its proper dimension, all readings should be taken again, in addition to the dimension you have just corrected.

The A-B-C, etc. are the measuring point dimensions. The 1-2-3, etc. are the readings taken at measurement step 1 — measurement step 2, etc.

This sheet tells you at a glance how you stand in restoring the body to its proper state.

When using the tram and centering gage system, *always* compile a list of dimensions each time you measure. This provides the information for measurement comparison, especially during the pulling and straightening phase of body collision repair.

The manufacturer of the equipment supplies information, so be sure you constantly review it and bulletins so you will be up to date on repair techniques.