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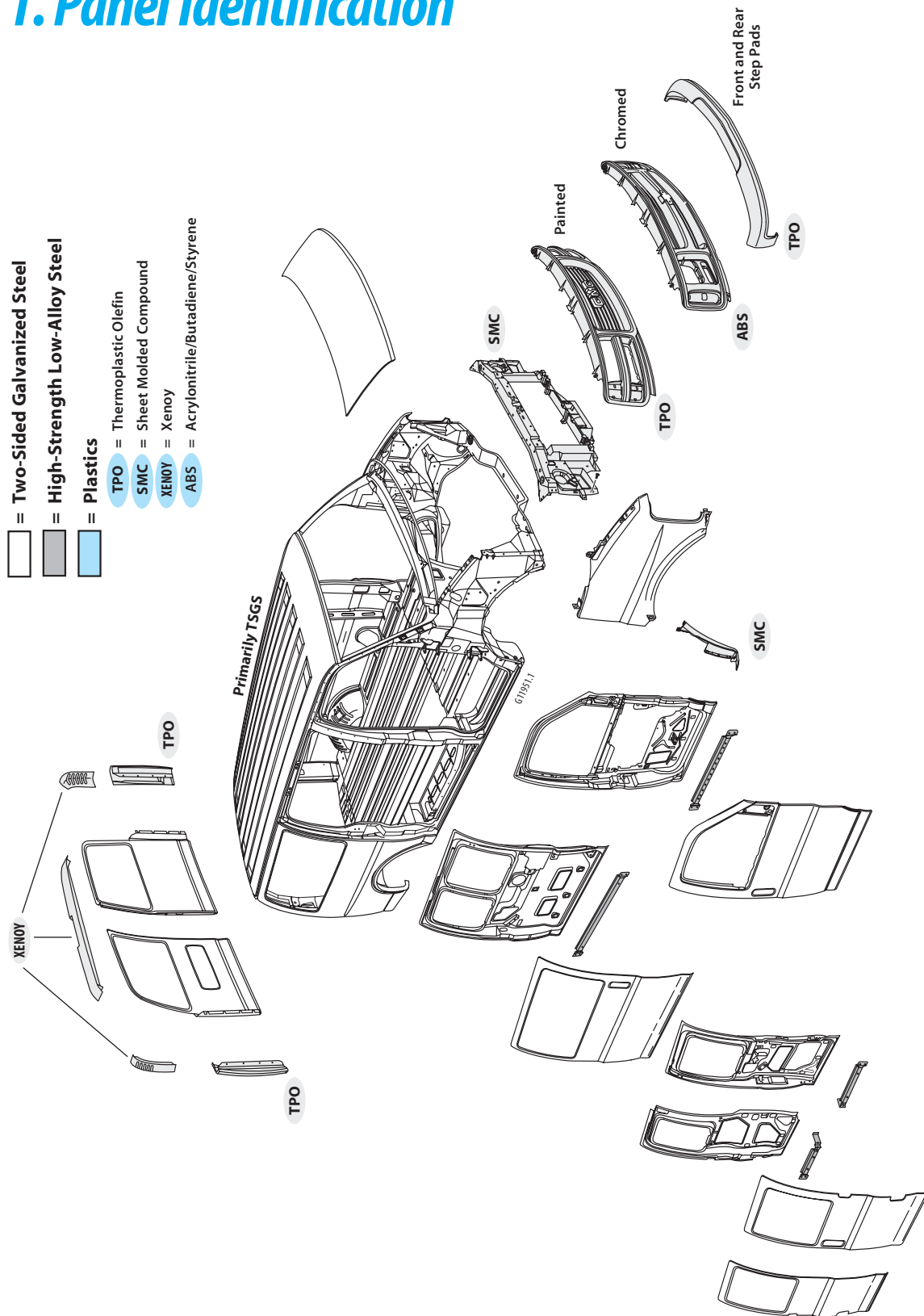
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Appendix: Specifications

32



1. Panel Identification



2. Radiator Support Assembly

The radiator support assembly is made of a composite material (SMC) to reduce weight and simplify installation procedures. The radiator support bolts on and is positioned by tabs which are located into holes in the front-end lower tie bar (figure 2-1). A steel reinforcement extends across the upper portion. This reinforcement is part of the assembly or available separately (figure 2-2). It is attached to the radiator support by 14 rivets. Replacement rivets are available as GM Part #10263118.

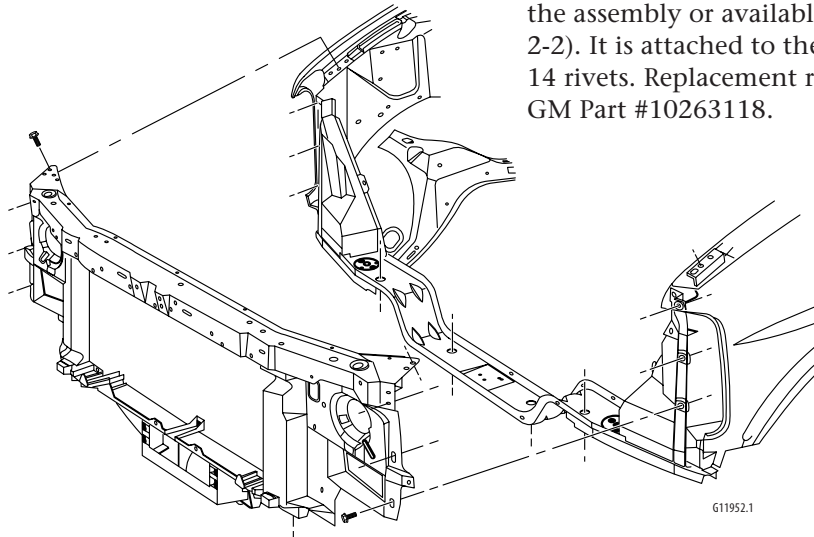


Figure 2-1:
Bolt-On Radiator Support Assembly

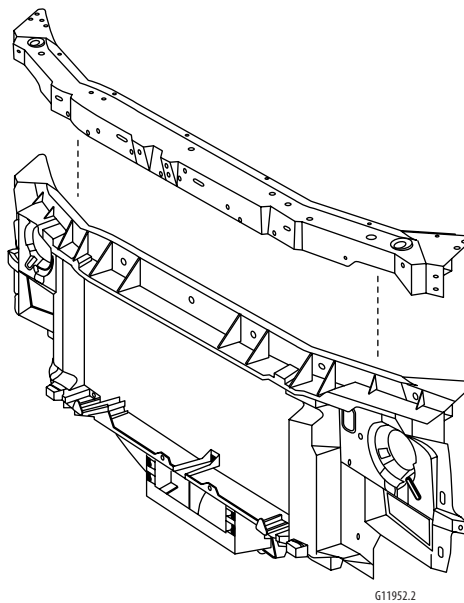


Figure 2-2

Lower Tie-Bar

The lower tie bar is serviced as a separate assembly and includes the radiator support body mount reinforcements. It is replaced at the factory seams and is plug welded to the front fender braces. The lower tie-bar is bolted through the body mounts and onto the frame (figure 2-3). The body mount bolts are torqued to 85 N·m (63 ft-lbs).

Lower Tie-Bar Fender Brace

The fender braces are available for the left and right sides, and serviced as separate components. The fender braces attach the front inner fender panel to the lower radiator support tie-bar with factory spot welds (figure 2-3).

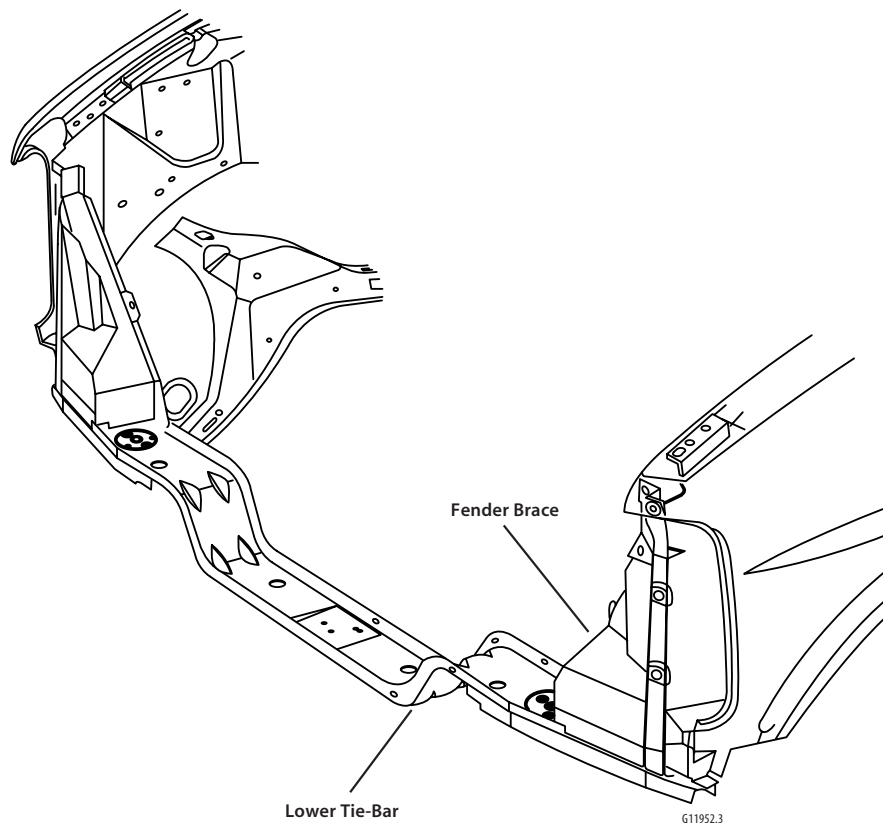


Figure 2-3

3. Front Inner Fender

The front inner fender may be serviced as a complete component (figure 3-1).

However, replacement at the factory seams requires the removal of the outer door frame panel. If the damage is limited to the front portion of the inner fender, sectioning is recommended.

Front Inner Fender Sectioning Procedure

Remove or Disconnect

1. Remove all related panels and components.
2. Visually inspect and restore as much of the damage as possible to factory specifications.
3. Remove sealers and anti-corrosion materials as necessary.
4. The sectioning procedure is to be performed at the door frame opening forward attachment seam (figure 3-2). Cut the original inner fender at the front edge of the seam (figure 3-3).
5. Locate, mark, and drill out factory spot-welds attaching the inner fender to the wheelhouse and radiator support brace. Note the number and location of the welds for installation of the service panel.
6. Remove the damaged section of the front inner fender.

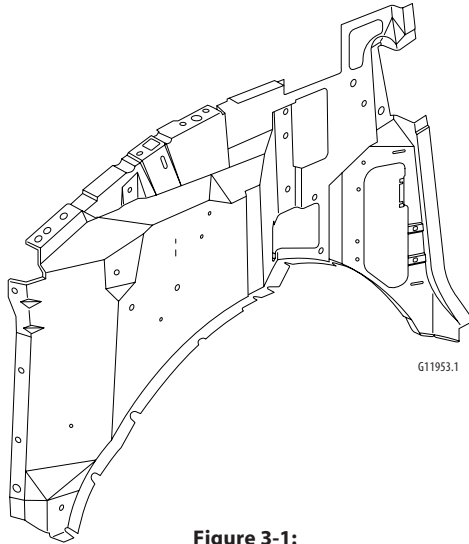


Figure 3-1:
Front Inner Fender

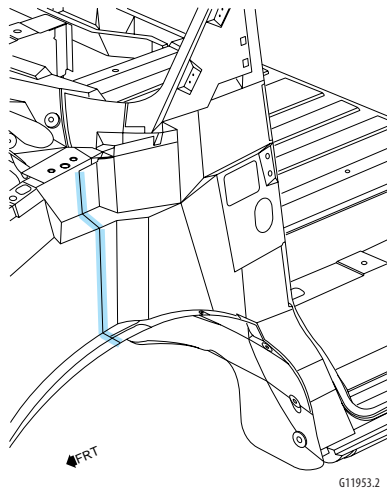


Figure 3-2:
Front Inner Fender/Door Frame Overlap

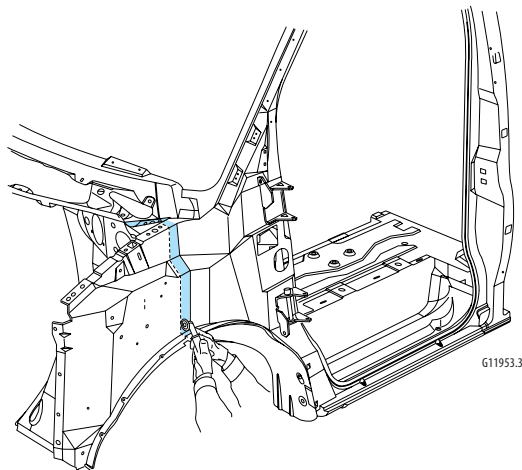


Figure 3-3:
Remove Damaged Section

FRONT INNER FENDER

Install or connect

1. Align the template provided with the service part, mark and cut it according to instructions, which are also provided with the part. The service inner fender must be cut to overlap the door frame opening 25mm (1 inch) (figure 3-4).
2. Temporarily position the service part over the door frame weld flange. At the hood hinge mounting area, the service part must be installed under the upper cowl panel and over the door frame opening weld flange (figure 3-5). Check for proper fit and alignment, also make sure there is a flush fit at the door frame weld flange.

— Notice —

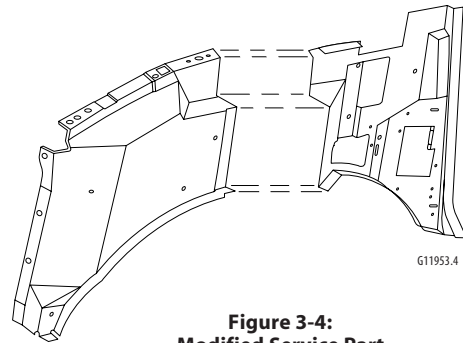
The sectioned service part must be modified slightly to fit flush at the sectioning seam, and at the upper cowl panel and door frame opening weld flange.

3. Remove service part and drill 8mm ($\frac{5}{16}$ inch) holes for plug welding as noted from the original panel and along the sectioning joint 13mm ($\frac{1}{2}$ inch) from the cut edge.
4. Install and position the modified service part according to body dimensions using three-dimensional measuring equipment. Plug weld accordingly, using frequent measurements to ensure accurate fit and alignment to adjacent panels.
5. Clean and prepare all surfaces. Prime with two-part catalyzed primer. Apply sealers and anti-corrosion protection materials as necessary. Do not combine paint systems. Refer to paint manufacturer's recommendations.

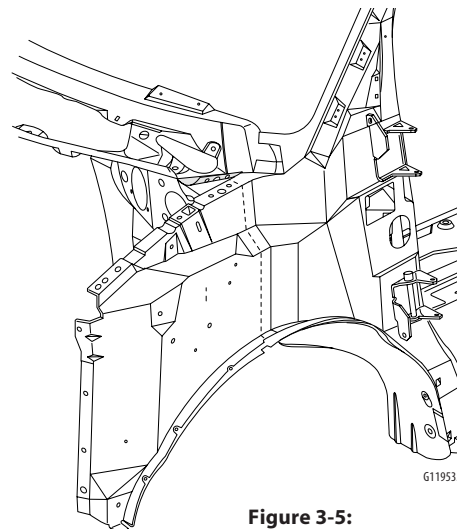
— Notice —

Be sure to apply seam sealer to both sides of the sectioning joint (figure 3-6).

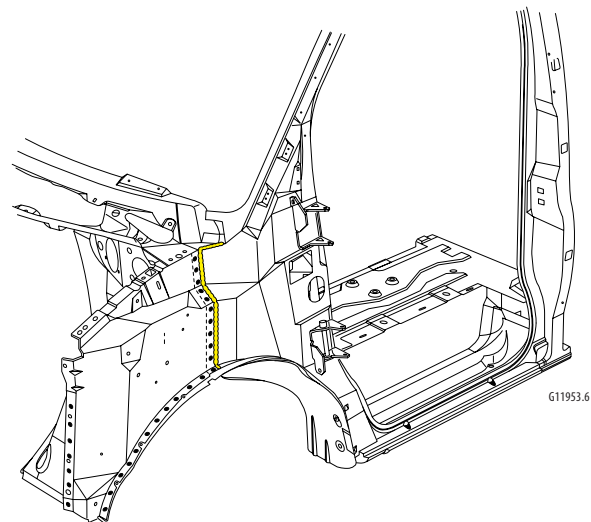
6. Install all related panels and components.



**Figure 3-4:
Modified Service Part**



**Figure 3-5:
Check for Proper Fit**



**Figure 3-6:
Seam Sealer**

4. Door Service

The doors are serviced as complete assemblies, or the outer door panels may be serviced separately. Use conventional service procedures when repairing the doors. The sliding side door features bolt-on hinges, while the front doors, the 60/40 side doors, and the rear doors all feature weld on hinges. All side doors have HSLA door beams (figure 4-1).

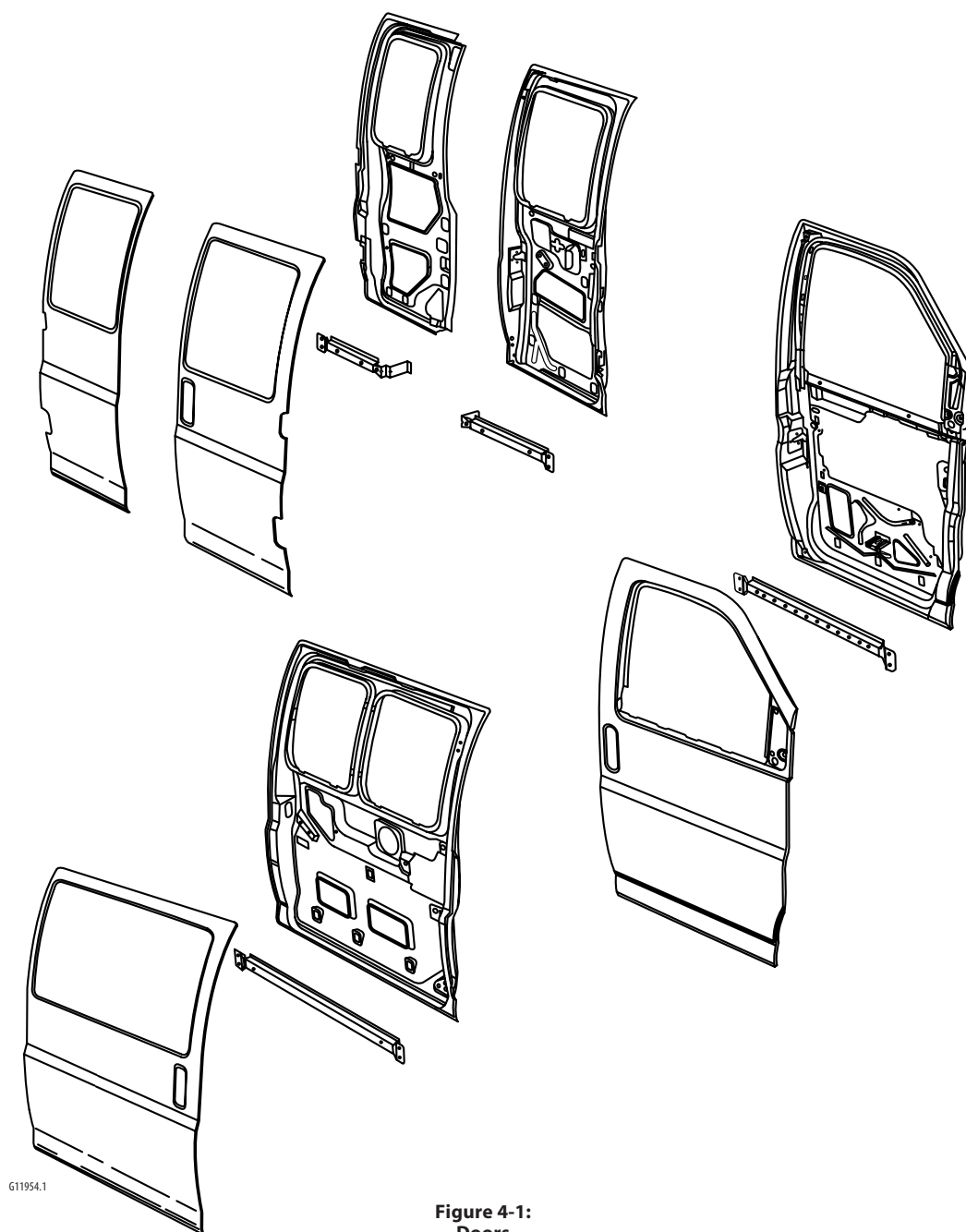


Figure 4-1:
Doors

5. Door Frame Opening

Door Frame Opening General Sectioning Procedure

When sectioning the door frame opening in areas where there is no inner reinforcement, a 100mm (4 inch) backing plate must be used behind the joint to ensure a solid and secure weld. Backing plates can be cut from the unused portion of the door frame opening service part. The specific areas to be sectioned are determined by the extent of damage to the vehicle.

— Notice —

Sectioning should take place only in recommended areas (figure 5-1). Failure to do so may compromise the structural integrity of the vehicle.

— Important —

This procedure does not apply to the front hinge pillar; see front hinge pillar sectioning procedures.

Remove or Disconnect

1. Remove all related panels and components.
2. Visually inspect and restore as much of the damage as possible to factory specifications.
3. Note location of the sealers, sound deadeners, and anti-corrosion materials and remove as necessary.
4. After pulling and straightening operations have been completed, and before the damaged panel is removed, check, measure, and compare the service part with the damaged part to choose the areas where sectioning can best be performed.
5. Cut the door frame opening where sectioning is to be performed (see figure 5-1). Do not damage the inner panels or reinforcements.
6. Locate, mark, and drill out all factory welds. Note the number and location of welds for installation of the service part.
7. Remove the damaged area of the door frame opening.

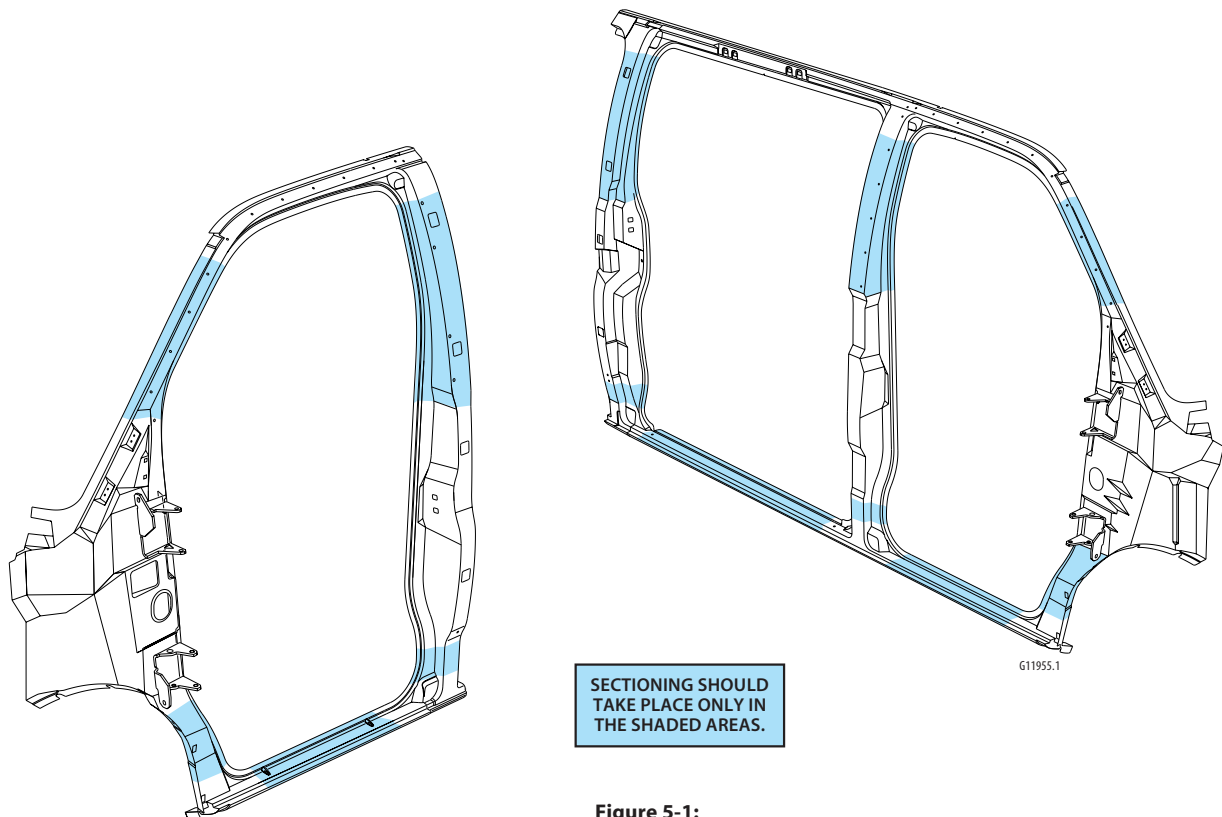


Figure 5-1:
Driver and Passenger Door Frames

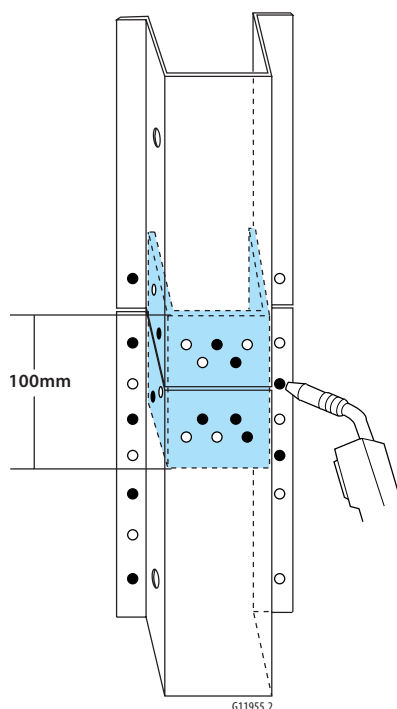


Figure 5-2:
Align Panels and Weld Accordingly

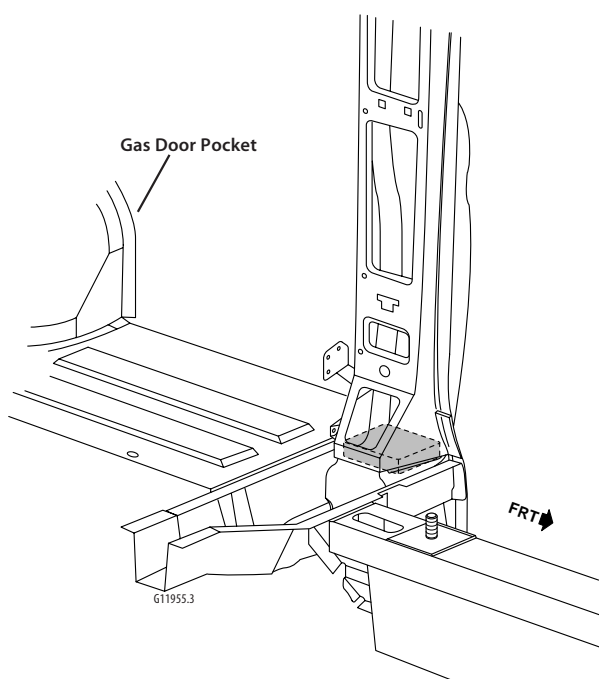


Figure 5-3:
Lock Pillar Foam Baffle

Door Frame Opening General Sectioning Procedures (con't)

Install or Connect

1. On the service part, mark a horizontal line to leave a gap of one and one-half times the thickness of the metal at the sectioning joint. Cut the outer door frame opening service part along this line.
2. Cut a 100mm (4 inch) piece from the unused portion of the service part for a backing plate. Remove the flange on each side of the backing plate so that it will fit behind the sectioning joint.
3. Drill 8mm ($\frac{5}{16}$ inch) holes for plug welding in the service part in locations noted from the original panel. Also, drill holes for plug welding along the sectioning cuts on both the service part and the original panel. Locate these holes approximately 25mm (1 inch) from the edge of the sectioning cuts.
4. Prepare mating surfaces and position the backing plates with 50mm (2 inches) of the backing plate exposed, and plug weld. Position the service part to overlap the exposed 50mm (2 inches) of the backing plate, check fit using three-dimensional measuring equipment, and plug weld accordingly (figure 5-2).
5. Stitch weld along the sectioning joint. Make 25mm (1 inch) welds along the seam with 25mm (1 inch) gaps between. Then go back and complete the stitch weld. This will create a solid joint with minimal heat distortion.
6. Clean and prepare welded surfaces. Prime with two-part catalyzed primer.
7. Install sealers, sound deadeners, and foam baffles in the service door frame opening as noted from the removal procedures (figure 5-3). Apply anti-corrosion protection materials, as necessary. Do not combine paint systems. Refer to paint manufacturer's recommendations.
8. Install all related panels and components.

Outer Front Lower Hinge Pillar Sectioning Procedure

The hinge pillar inner reinforcement can be used as a backing plate when sectioning the outer door frame at the front hinge pillar (figure 5-4).

Remove or Disconnect

1. Remove all related panels and components.
2. Visually inspect and restore as much of the damage as possible to factory specifications.
3. Remove sealers and anti-corrosion materials as necessary.
4. Align template provided with the service part, mark and cut the hinge pillar for sectioning. NOTE: When attaching the templates to the hinge pillar, use 3M's Repositionable Adhesive (part #06091), or an equivalent non-permanent spray adhesive.

— Caution —

Use care not to cut the inner panels and reinforcements when cutting the outer panels.

5. Perform all other sectioning procedures as necessary.
6. Locate, mark, and drill out all factory welds attaching the lower front door hinge pillar. Note the number and location of welds for installation of the service part.
7. Remove damaged front lower hinge pillar, remove foam from the lower portion of the hinge pillar (figure 5-5).

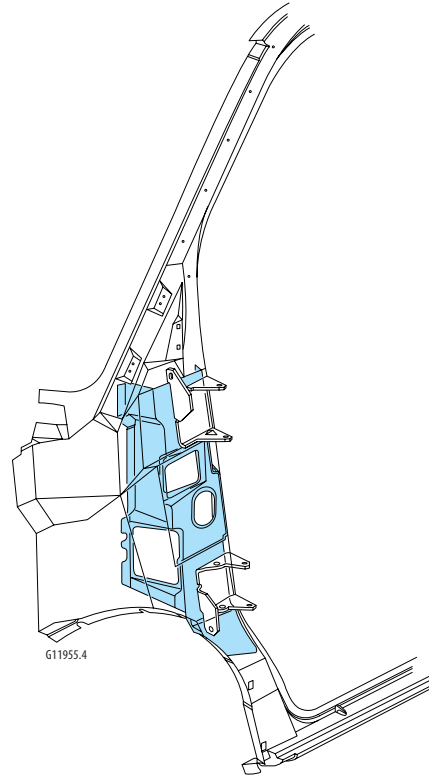


Figure 5-4:
Use Reinforcement as Backing Plate

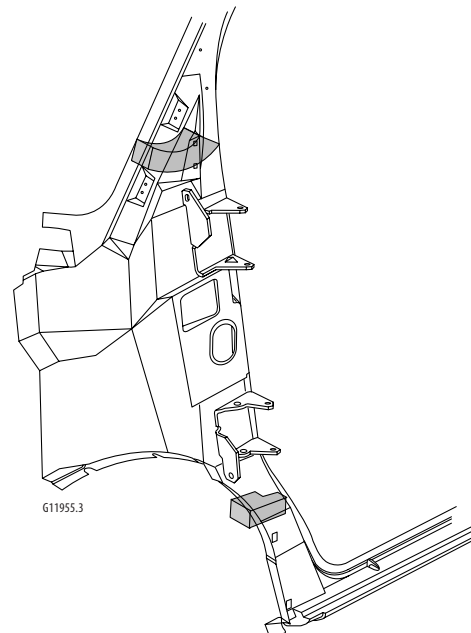
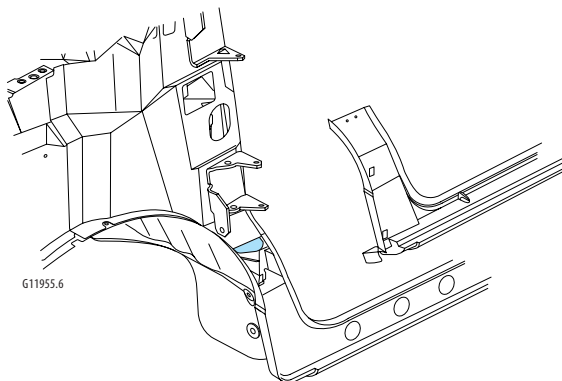


Figure 5-5:
Foam Baffles

Outer Front Lower Hinge Pillar Sectioning Procedures (con't)

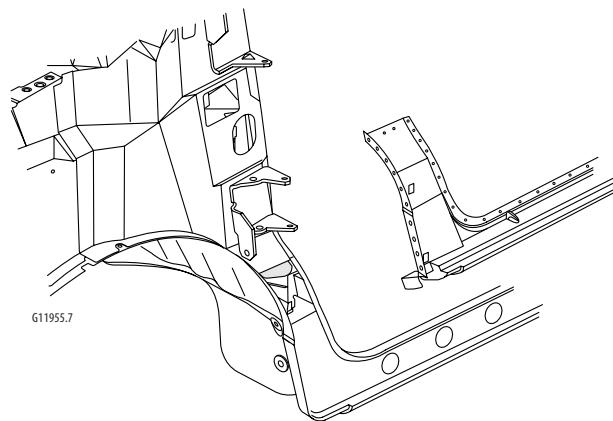
Install or Connect

1. Rough cut the service part to match the damaged section of the door frame opening and discard the unused portion of the service part.
2. The modified service panel should be trimmed to allow a gap of $1\frac{1}{2}$ times the metal thickness at the joint between the service part and the factory part (figure 5-6).



**Figure 5-6:
Trim for Proper Fit**

3. Drill 8mm ($\frac{5}{16}$ inch) holes for plug welding in the service part 13mm ($\frac{1}{2}$ inch) from the sectioning joint edge (figure 5-7). Drill 8mm ($\frac{5}{16}$ inch) holes for plug welding in the service panel as necessary in the locations noted from the original panel.
4. Prepare mating surfaces as necessary. Align the service part to the vehicle, check fit using three-dimensional measuring equipment and plug weld accordingly.
5. Complete the sectioning by welding the joint gap closed with 25mm (1 inch) welds along the seam with 25mm (1 inch) gaps alternately. Then go back and complete the stitch weld. This will create a solid joint with minimal heat distortion.
6. Install closed cell two-part expandable foam in the service door frame opening hinge pillar as necessary to replace the original foam air baffle (see figure 5-5).
7. Clean and prepare welded surfaces. Prime with two-part catalyzed primer. Apply sealers and corrosion protection materials as necessary. Do not combine paint systems. Refer to paint manufacturer's recommendations.
8. Install all related panels and components.



**Figure 5-7:
Install Modified Panel**

6. Roof Panel

The roof panel consists of a single layer outer panel. The original panel is removed by cutting the panel to leave the side weld flanges attached at the “drip rail.” The service panel is not modified for installation other than drilling holes for plug welding. These procedures have been developed to simplify roof panel replacement (figure 6-1).

Remove or Disconnect

1. Remove all related panels and components.
2. Visually inspect and restore as much of the damage as possible to factory specifications.
3. Remove sealers and anti-corrosion materials as necessary. To remove the seam sealer along the “drip rails” use 3M Scotch Brite Clean and Strip Discs (part # 7460) or equivalent.

4. Using a panel cutter, cut the sides of the original roof panel at the floor of the “drip rail” leaving the weld flange attached to the roof rail reinforcement (figure 6-2).
5. From inside the vehicle, and with the headliner removed, cut the roof panel from the support bows using a windshield adhesive cutting tool, such as wire cutting tool, or equivalent.

— Notice —

Use care when cutting roof panel not to cut the panels and reinforcements under the original panel.

6. Locate, mark, and drill out the factory spot welds attaching the roof panel at the front windshield pinch-weld flange and rear door frame opening pinch-weld flange.
7. Remove damaged roof panel.

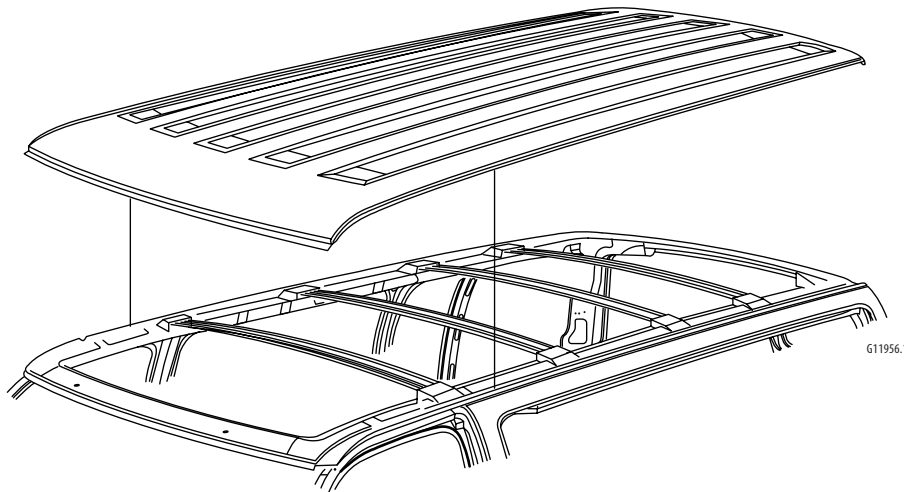


Figure 6-1:
Roof Panel

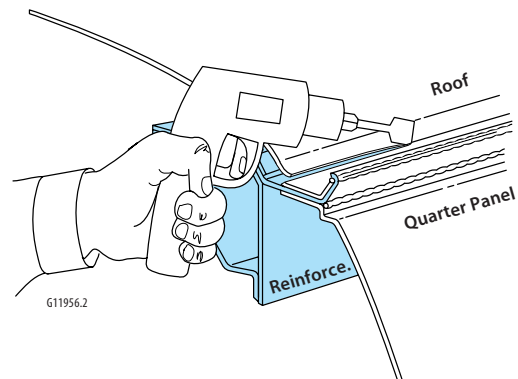


Figure 6-2:
Cutting Roof Panel in Floor of Drip Rail

Install or Connect

1. Prepare mating surfaces and check for proper fit and alignment. It may be necessary to grind the lip remaining at the weld flange for a proper fit of the service roof panel (figure 6-3).

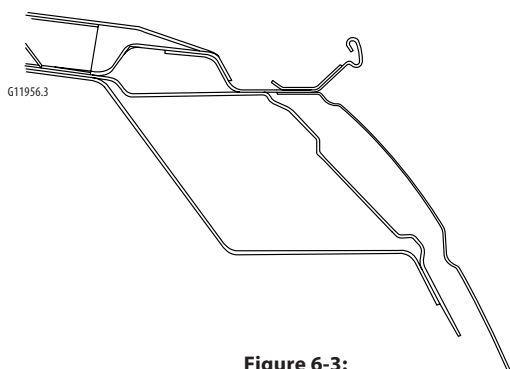


Figure 6-3:
Cross-Section of Roof Structure

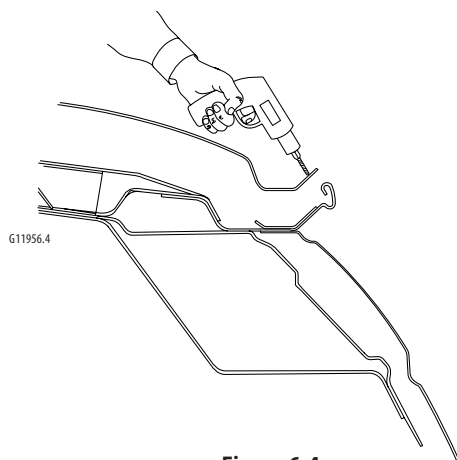


Figure 6-4:
Drill 13mm (1/2 inch) From Outer Edge

2. Drill 8mm ($\frac{5}{16}$ inch) holes for plug welding in the service panel along the side-rail weld flanges (figure 6-4), the front windshield pinch-weld flanges, and the rear door frame opening pinch-weld flanges 62mm (2½ inches) apart.
3. Apply anti-corrosion materials to bare metal weld flanges as necessary. Apply anti-flutter material to roof support bows.

— Important —

The type of anti-flutter material used on the bows will determine whether it is to be applied before or after the roof panel is installed.

4. Position the service panel, check for proper fit and plug weld as necessary.
5. Clean and prepare all surfaces. The bonding area should be a primer surface ONLY, and NOT an aftermarket top coated (paint, or color coated) surface. Materials such as BASF DE17, Dupont 2610, or PPG DP40, or equivalent, are appropriate for this application (figure 6-5).

— Notice —

Refer to Service Bulletin #43-10-48 for more detailed information.

6. Apply sealers and anti-corrosion materials as necessary. Do not combine paint systems. Refer to manufacturer's recommendations.
7. Install all related panels and components.

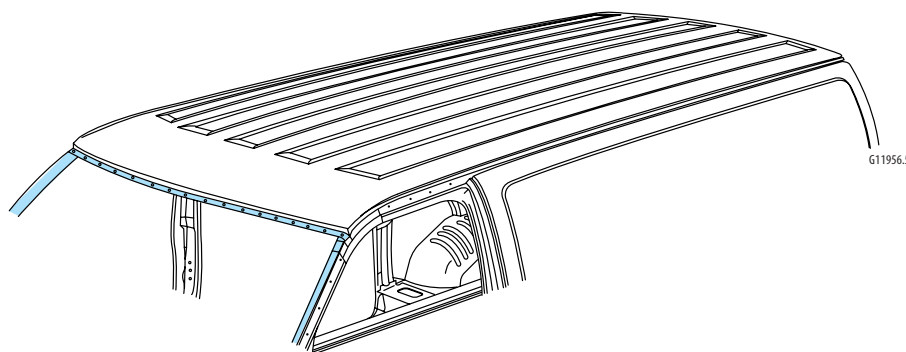


Figure 6-5:
Tape Off Windshield-Pinch Weld Flange Before Top Coating

7. Quarter Panel

Quarter Panel Sectioning Procedure

Cargo Van

The quarter panel service part is supplied as a complete panel and should be replaced as a complete panel only in the event the roof panel and upper side rail are to be replaced. Sectioning procedures have been developed to allow the replacement of the quarter panel without the removal of the roof panel (figure 7-1).

Remove or Disconnect

1. Remove all related panels and components.
2. Visually inspect and restore as much of the damage as possible to factory specifications.
3. Remove sealers, sound deadeners, and anti-corrosion materials as necessary.
4. Apply 50mm (2 inch) wide tape along the upper edge of the quarter panel at the roof line (figure 7-2).
5. Using a panel cutter, cut the quarter panel at the lower edge of the tape to leave a 50mm (2 inch) wide flange of the original quarter panel attached to the side reinforcement rail (figure 7-3).

— Notice —

Use care when cutting quarter panel not to cut the panels and reinforcements under the original panel (figure 7-4).

6. Locate, mark, and drill out all factory welds around the perimeter of the quarter panel as necessary to remove damaged panel. Note number and location of welds for installation of the service panel.
7. Remove damaged quarter panel.

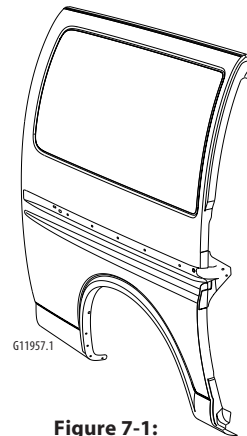


Figure 7-1:
Cargo Van Service Panel

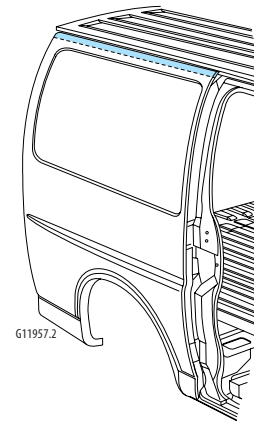


Figure 7-2:
Section in the Shaded Area

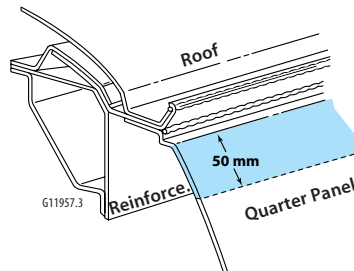


Figure 7-3:
Locate Area for Sectioning

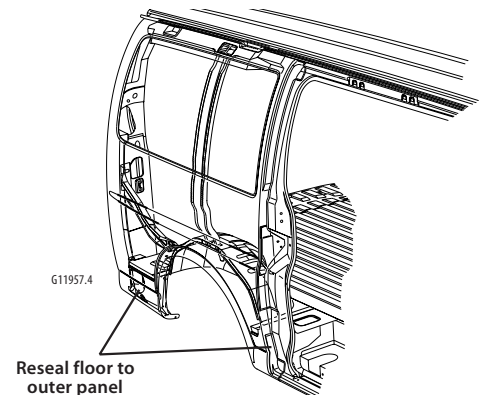


Figure 7-4:
Reinforcement and Sealer Locations

Quarter Panel Sectioning Procedure — Cargo Van (con't)

Install or Connect

1. Trim and discard the upper mounting flange on the service panel so that it can fit over the 50mm (2 inch) tab left from the original panel (figure 7-5)
2. Drill 8mm ($\frac{5}{16}$ inch) holes for plug welding along top of the quarter panel 25mm (1 inch) from top edge, 40mm (1½ inches) apart (figure 7-6).
3. Apply anti-corrosion materials to bare metal weld flanges as necessary.
4. Prepare mating surfaces and check for proper fit and alignment, and plug weld accordingly.
5. Apply 3M's Ultra Pro Seam Sealer (part #08361) or equivalent to the sectioning joint. The quarter panel must be sealed at the floor seam also.

— Caution —

The quarter panel must be sealed at the floor to prevent exhaust gas intrusion into the vehicle (see figure 7-4).

6. Apply sealer materials and air baffles as necessary. Clean and prepare all surfaces. Prime with two-part catalyzed primer. Do not combine paint systems. Refer to manufacturer's recommendations.
7. Install all related panels and components.

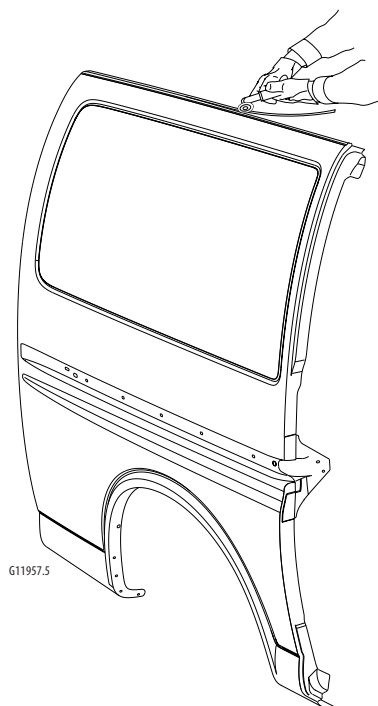


Figure 7-5:
Modify Service Panel

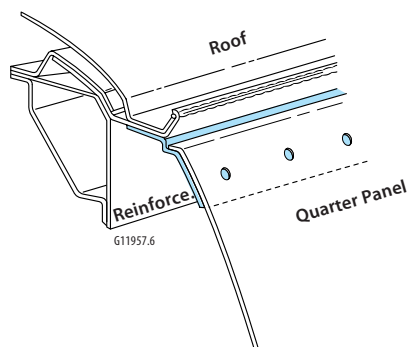


Figure 7-6:
Plug Weld Service Panel Every 40mm (1½ inches)

QUARTER PANEL

Passenger Van

The quarter panel may be serviced as a complete panel only in the event the roof panel and the side rail are to be replaced. Sectioning procedures have been developed to simplify the repair. The service part can be replaced by making sectioning cuts at the window pillars (figure 7-7).

Remove or Disconnect

1. Remove all related panels and components, including the side glass.
2. Visually inspect and restore as much of the damage as possible to factory specifications.
3. Remove sealers, sound deadeners, and anti-corrosion protection materials as necessary.
4. Measure within the shaded areas on the pillars and mark the location to cut the original panel. Cut the pillars and window dividers, taking care not to damage the inner reinforcement panels (figure 7-8).
5. Locate, mark, and drill out all factory welds around the perimeter of the quarter panel as necessary to remove the damaged panel. Note the number and location of welds for installation of the service panel.
6. Remove damaged quarter panel.

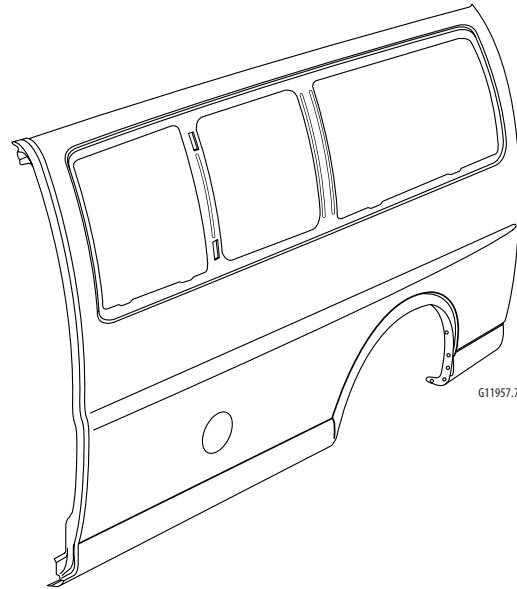


Figure 7-7:
Passenger Van Service Panel

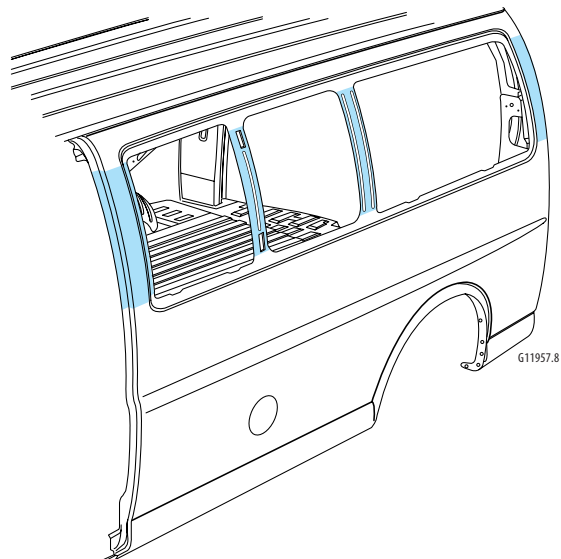


Figure 7-8:
Measure Within the Shaded Areas

Quarter Panel Sectioning Procedure — Passenger Van (con't)

Install or Connect

1. Fit and align the replacement quarter panel with adjacent body panels. The sectioning joint should be trimmed to allow a gap of one to 1½ times the metal thickness at the joint between the service part and the original part.
2. Cut a 100mm (4 inch) backing plate from the unused portion of the service part. Trim the backing plate as necessary to fit behind the sectioning joint. Drill 8mm (5/16 inch) plug weld holes in the original part 25mm (1 inch) from the cut edge. Fit the backing plate halfway into the sectioning joint, clamp and plug weld to vehicle.
3. Drill 8mm (5/16 inch) plug weld holes in the service quarter panel as necessary in locations noted from the original panel. Also drill four plug weld holes in the fuel filler neck pocket of the service panel for attachment to the inner reinforcement panel.
4. Prepare all attachment surfaces as necessary.
5. Align the quarter panel to adjacent panels and plug weld accordingly (figure 7-9).
6. Complete the sectioning by welding the joint gap closed with 25mm (1 inch) welds along the seam with 25mm (1 inch) gaps alternately. Then go back and complete the stitch weld. This should create a solid weld with minimum heat distortion.
7. Clean and prepare all surfaces. The glass bonding area should be a primer surface ONLY, and NOT an aftermarket top coated (paint, or color coated) surface. Materials such as BASF DE17, Dupont 2610, or PPG DP40, or equivalent, are appropriate for this application (figure 7-10).

— Notice —

Refer to Service Bulletin #43-10-48 for more detailed information.

— Caution —

The quarter panel must be sealed at the floor to prevent exhaust gas intrusion into the vehicle (see figure 7-4).

8. Apply sealers and anti-corrosion materials as necessary. Do not combine paint systems. Refer to manufacturer's recommendations.
9. Install all related panels and components.

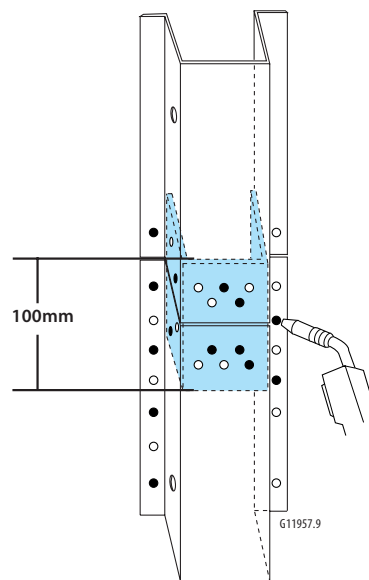


Figure 7-9:
100mm (4 inch) Backing Plate

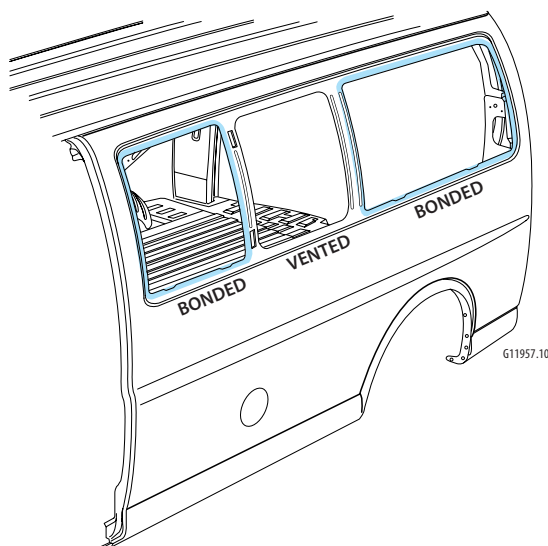


Figure 7-10:
Stationary Glass Bonding

8. Rear Outer Wheelhouse

Rear outer wheelhouse sectioning procedures have been developed to simplify repair when damage is limited to the outer wheelhouse. In the event the inner wheelhouse is to be replaced, install outer wheelhouse service panel at factory seams (figure 8-1).

Remove or Disconnect

1. Remove all related panels and components, including the quarter panel.
2. Visually inspect and restore as much of the damage as possible.
3. Remove sealers, sound deadeners, and anti-corrosion materials as necessary.
4. Apply a strip of 25mm (1 inch) masking tape along the flange of the outer wheelhouse (figure 8-2).
5. Locate, mark, and drill out all factory spot welds attaching the front and rear lower sections of the outer wheelhouse to the vehicle.
6. Cut along the outboard side of the masking tape to leave a 25mm (1 inch) tab attached to the inner wheelhouse (figure 8-3).
7. Remove the damaged outer wheelhouse.

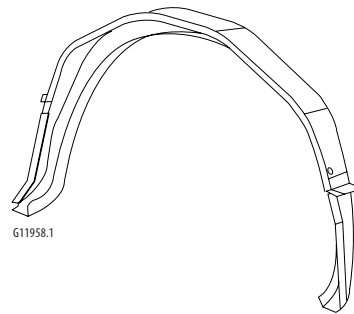


Figure 8-1:
Rear Outer Wheelhouse

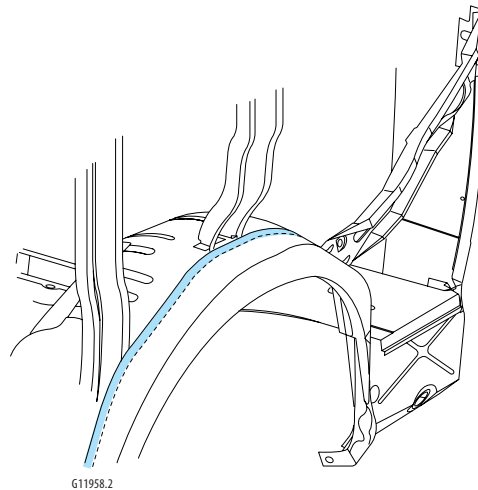


Figure 8-2:
Apply 25mm (1 inch) Tape

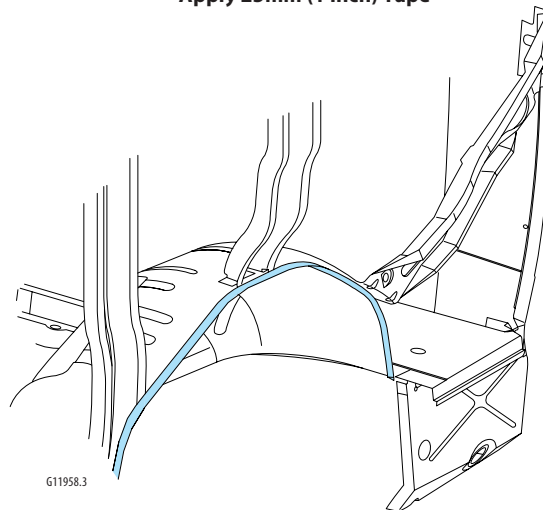
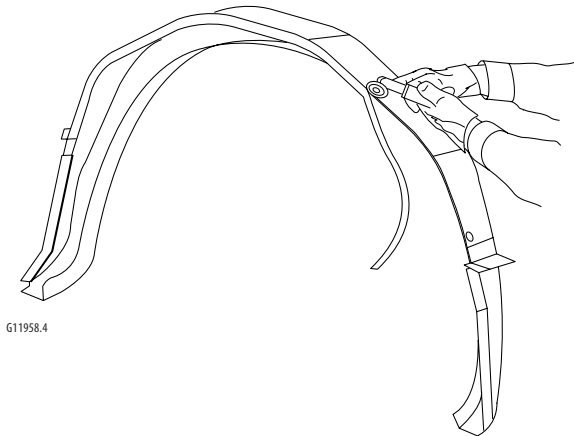


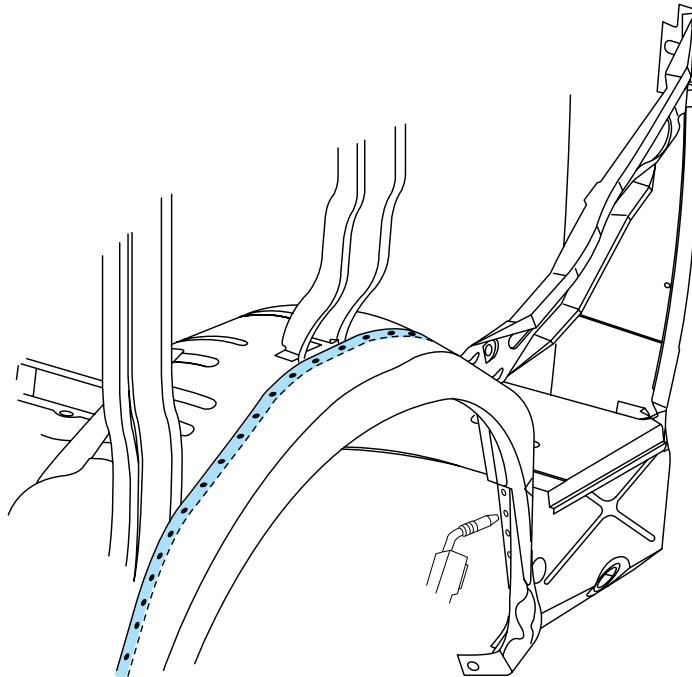
Figure 8-3:
25mm (1 inch) Weld Flange

Install or Connect

1. Cut the wheelhouse service part along the corner of the bend to remove the down-turned weld flange (figure 8-4).
2. On the service part drill 8mm ($\frac{5}{16}$ inch) holes for plug welding every 40mm (1½ inches) along the cut edge.
3. Prepare mating surfaces as necessary. Position the service part, checking for proper fit, and plug weld accordingly (figure 8-5).
4. Clean and prepare the welded surfaces. Prime with two-part catalyzed primer. Apply sealers and anti-corrosion materials as necessary. Do not combine paint systems. Refer to paint manufacturer's recommendations.
5. Install all related panels and components.



**Figure 8-4:
Modify Service Part**



**Figure 8-5:
Plug Weld Every 40 mm (1½ inches)**

9. Rear Door Hinge Pillar

The rear door hinge pillar service part is serviced as an assembly (figure 9-1), which consists of the door hinge pillar outer panel and the inner anchor plate reinforcement. The reinforcement includes weld nuts for attaching the rear door bolt-on hinges.

Remove or Disconnect

1. Remove all related trim panels and components.
2. Visually inspect and restore as much of the damage as possible to factory specifications.
3. Remove sealers, sound deadeners, and anti-corrosion materials as necessary.
4. The rear door hinge pillar is to be sectioned in the area of the pressure relief valve opening (figure 9-2). Measure within the shaded area on the rear pillar. Mark and cut the original panel, use care not to damage inner panels (figure 9-3).
5. Locate, mark, and drill out all factory spot welds around the perimeter of the rear door hinge pillar below the sectioning joint.
6. Remove the damaged rear hinge pillar.

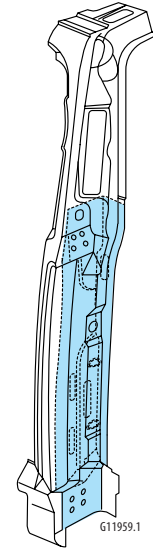


Figure 9-1:
Service Assembly

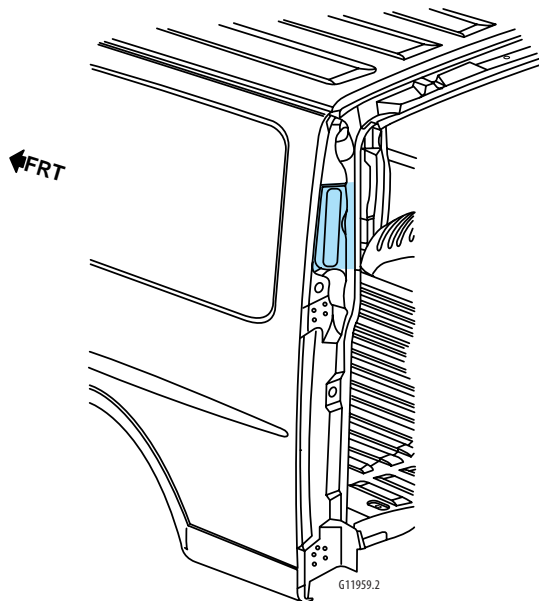


Figure 9-2:
Section Pillar Within Shaded Area

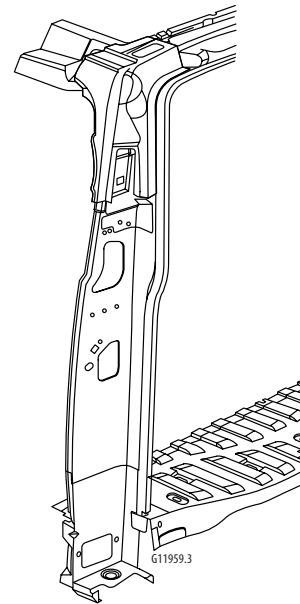


Figure 9-3:
Use Care Not to Damage Inner Panels

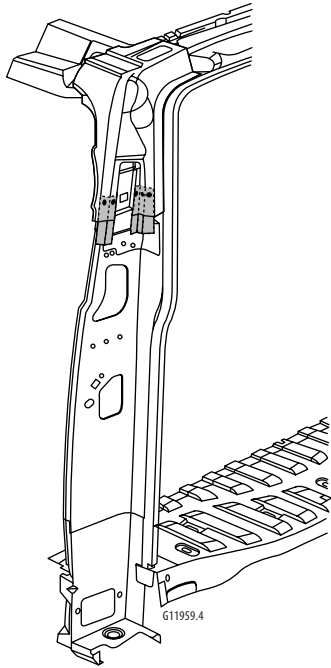


Figure 9-4:
Install Backing Plates

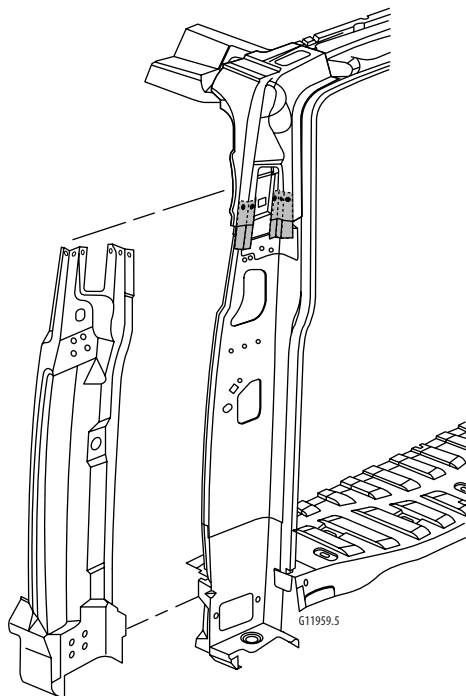


Figure 9-5:
Install Service Part

Install or Connect

1. Cut a 100mm (4 inch) backing plate from the unused portion of the service part. Trim the backing plate as necessary to fit behind the sectioning joint. Drill 8mm ($\frac{5}{16}$ inch) plug weld holes in the original part 25mm (1 inch) from the cut edge. Fit the backing plate halfway into the sectioning joint, clamp and plug weld to the vehicle (figure 9-4).
2. Fit and align service hinge pillar with adjacent body panels. The sectioning joint should be trimmed to allow a gap of $1\frac{1}{2}$ times the metal thickness at the joint between the service part and the original part. Take care to ensure proper alignment of service panels.
3. Drill 8mm ($\frac{5}{16}$ inch) plug weld holes in the service hinge pillar as necessary in locations noted from the original panel.
4. Prepare all attachment surfaces as necessary.
5. Align the service part to the vehicle (figure 9-5), check fit using three-dimensional measuring equipment and plug weld accordingly.
6. Complete sectioning by welding the joint gap closed with 25mm (1 inch) welds along the seam with 25mm (1 inch) gaps alternately. Then go back and complete the stitch weld. This will create a solid joint with minimal heat distortion.
7. Clean and prepare the welded surfaces. Prime with two-part catalyzed primer. Apply fillers, sealers, and corrosion protection materials as necessary. Do not combine paint systems. Refer to paint manufacturer's recommendations.
8. Install all related panels and components.

10. Floor Rear Extension

The floor rear extension panel is serviced as a single component. The reinforcement structure for the floor panel is a separate part and can only be serviced separately. In most cases, this reinforcement will need to be replaced in the event the floor panel extension is to be replaced (figure 10-1).

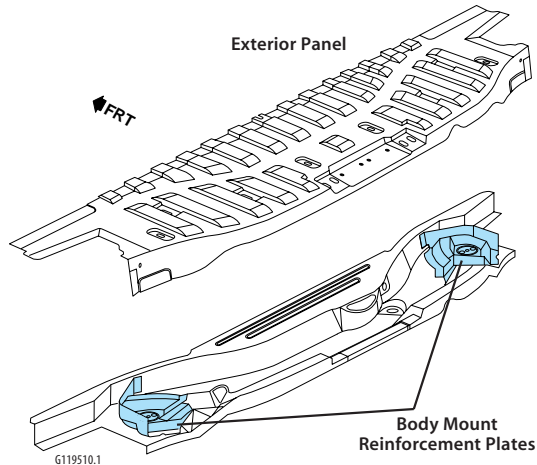


Figure 10-1:
Service Panels

Remove or Disconnect

1. Remove all related panels and components, including jack stowaway mount in right rear corner of vehicle.
2. Visually inspect and restore as much of the damage as possible to factory specifications.
3. Remove sealers, sound deadeners, and anti-corrosion materials as necessary.
4. Locate, mark, and drill out factory welds necessary to remove the extension panel.
NOTE: The rear corners of the original panel must be cut to remove the panel from the vehicle.

— Important —

If a rear door hinge pillar inner reinforcement is to be replaced it is not necessary (though it may be easier) to perform step #5.

5. Loosen all body to frame mount bolts, remove all but the two in the radiator core support and the two front body bolts. Lift body off the frame, place 4x4 wood blocks to support the body as in (figure 10-2).
6. Locate, mark, and drill out welds to remove the body mount anchor plates and the floor panel reinforcement. Remove the foam air baffles from the right and left floor extensions (figure 10-3), these need to be reinstalled during assembly.

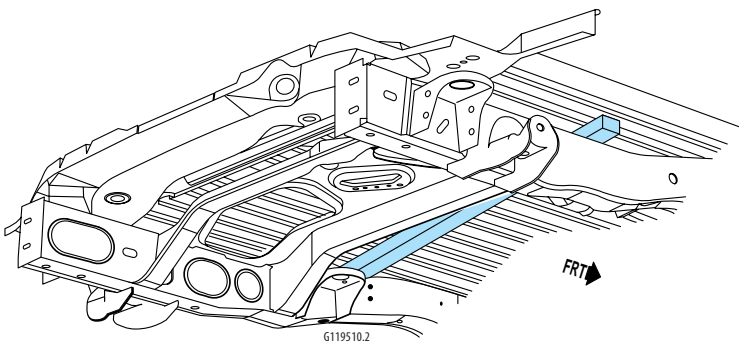


Figure 10-2:
Support Body for Service

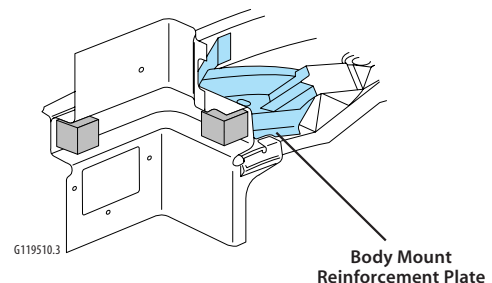


Figure 10-3:
Foam Location

Install or Connect

1. Drill holes for plug welding as necessary to install the service panels. Clean and prepare all mating surfaces as necessary.
2. Locate reinforcement and body anchor panels using three-dimensional measuring equipment and plug weld as necessary.
3. Cut and bend each side of the floor panel extension as shown in figure 10-4, place the front edge of the extension panel in position first, then bring the rear of the service part into place and straighten the bent tabs.
4. Check for proper fit and alignment and weld accordingly, including cuts made for installation.
5. Lower body to frame and reattach body to frame mounts, torque bolts to 85 N·m (63 ft-lbs).
6. Clean and prepare welded surfaces. Prime with two-part catalyzed primer. Drill appropriate size holes to install two-part expanding foam in the floor extension (figure 10-5). Be sure to seal the holes with a suitable plug.
7. Apply sealers and anti-corrosion materials as necessary. Do not combine paint systems. Refer to manufacturer's recommendations.
8. Install all related panels and components.

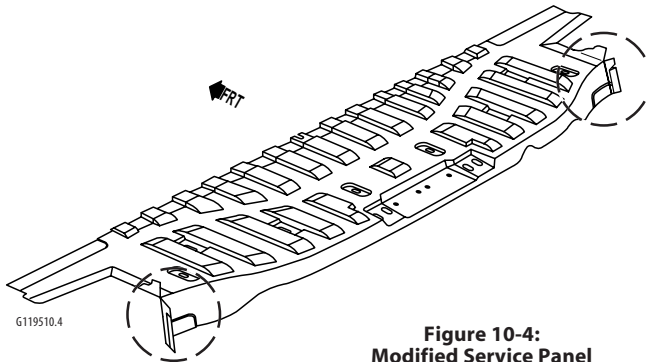


Figure 10-4:
Modified Service Panel

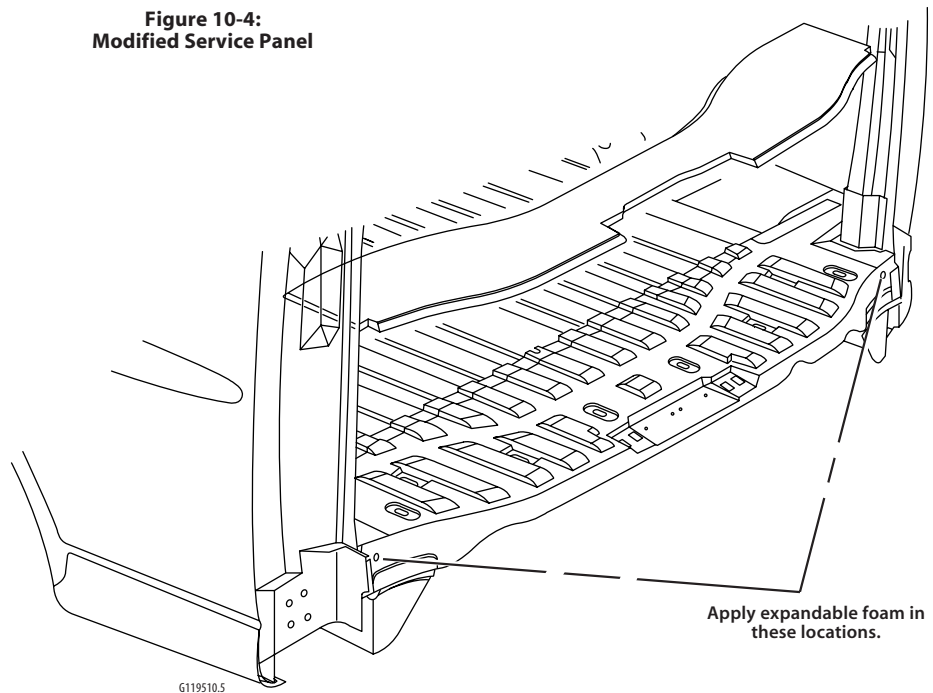


Figure 10-5:
Foam Application

11. Magnesium Instrument Panel Support

This component is a one-piece, die-cast magnesium instrument panel support. It functions as a structural cross-vehicle beam, air-bag support, instrument panel carrier, steering column mounting bracket, and consolidates as many as thirty different steel and plastic components (figure 11-1).

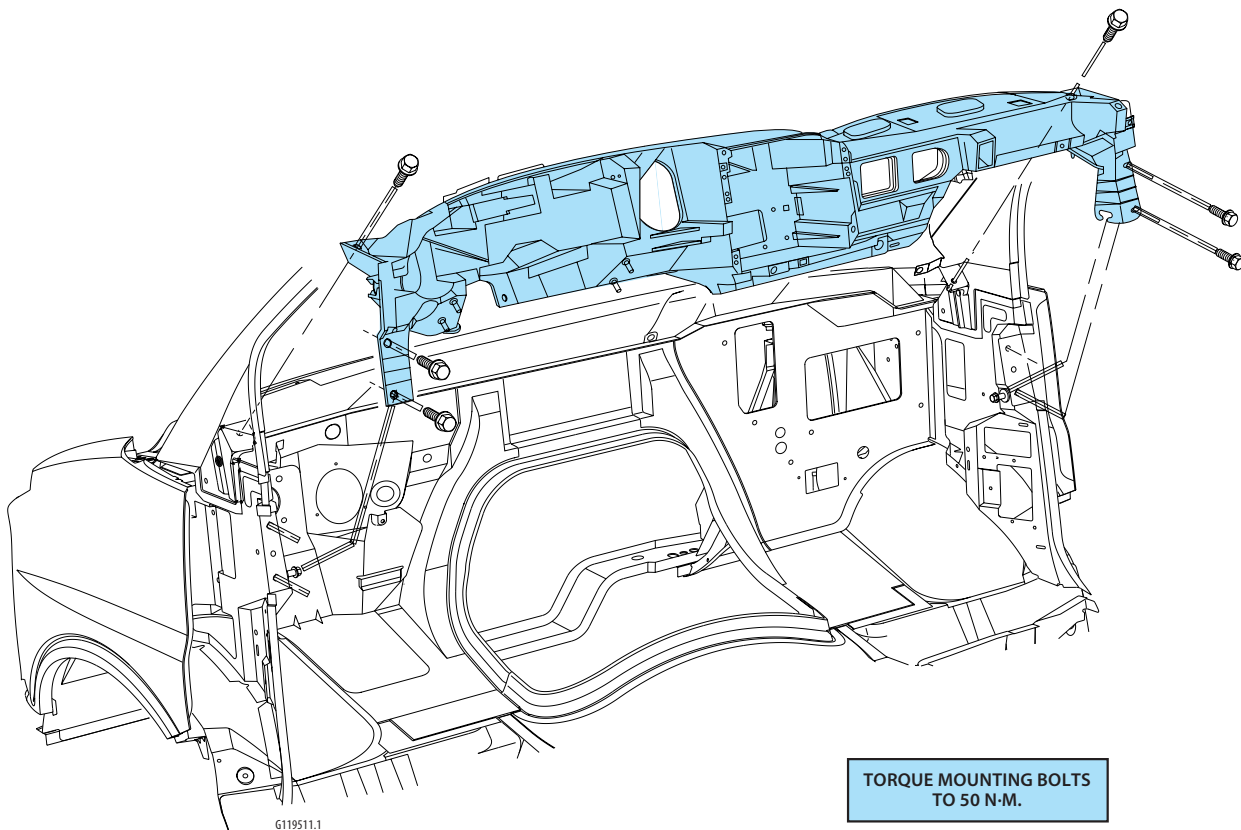
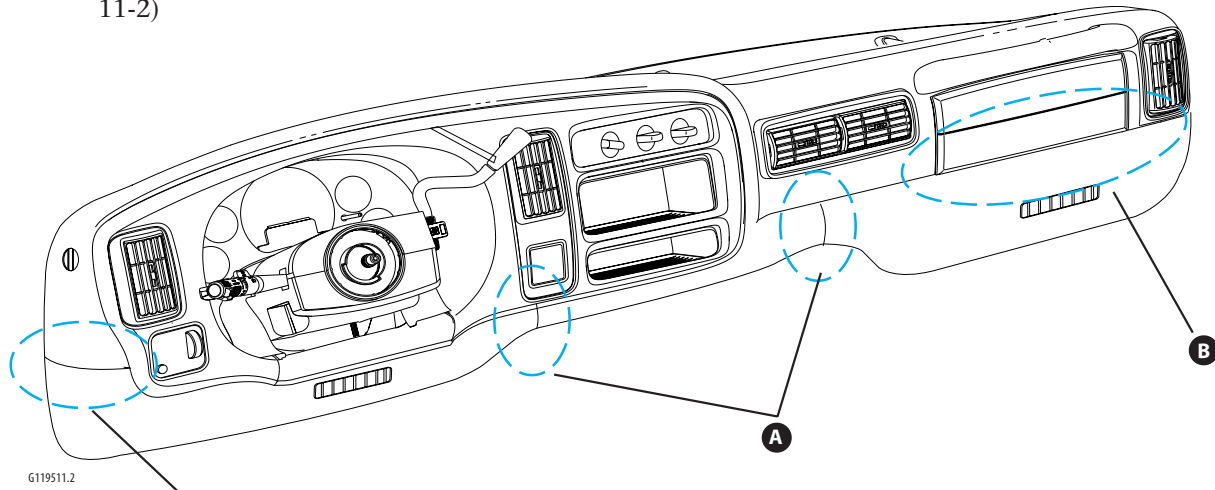


Figure 11-1

The magnesium beam is designed to deform and absorb energy generated by a severe impact. Under no circumstance is the magnesium beam to be repaired in any way. If any of the following conditions are present after a collision, the magnesium beam **must be replaced:**

- If gaps between the dash trim panels are greater than the build objectives (figure 11-2)

- If both air bags are deployed; 10 and 20 series
- If the steering column is collapsed, or the steering wheel requires replacement; 30 series
- If there is damage to the lower instrument panel, the knee bolster, or the knee bolster brackets



No gap between driver-side knee bolster and instrument panel trim pad.

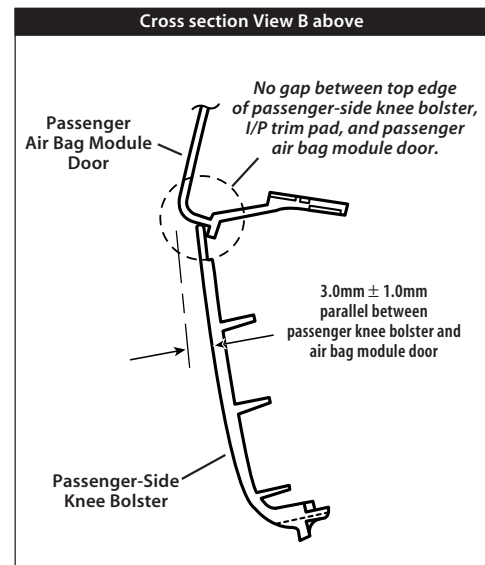
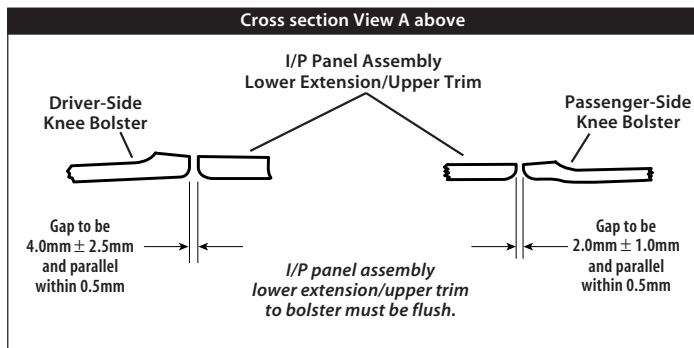
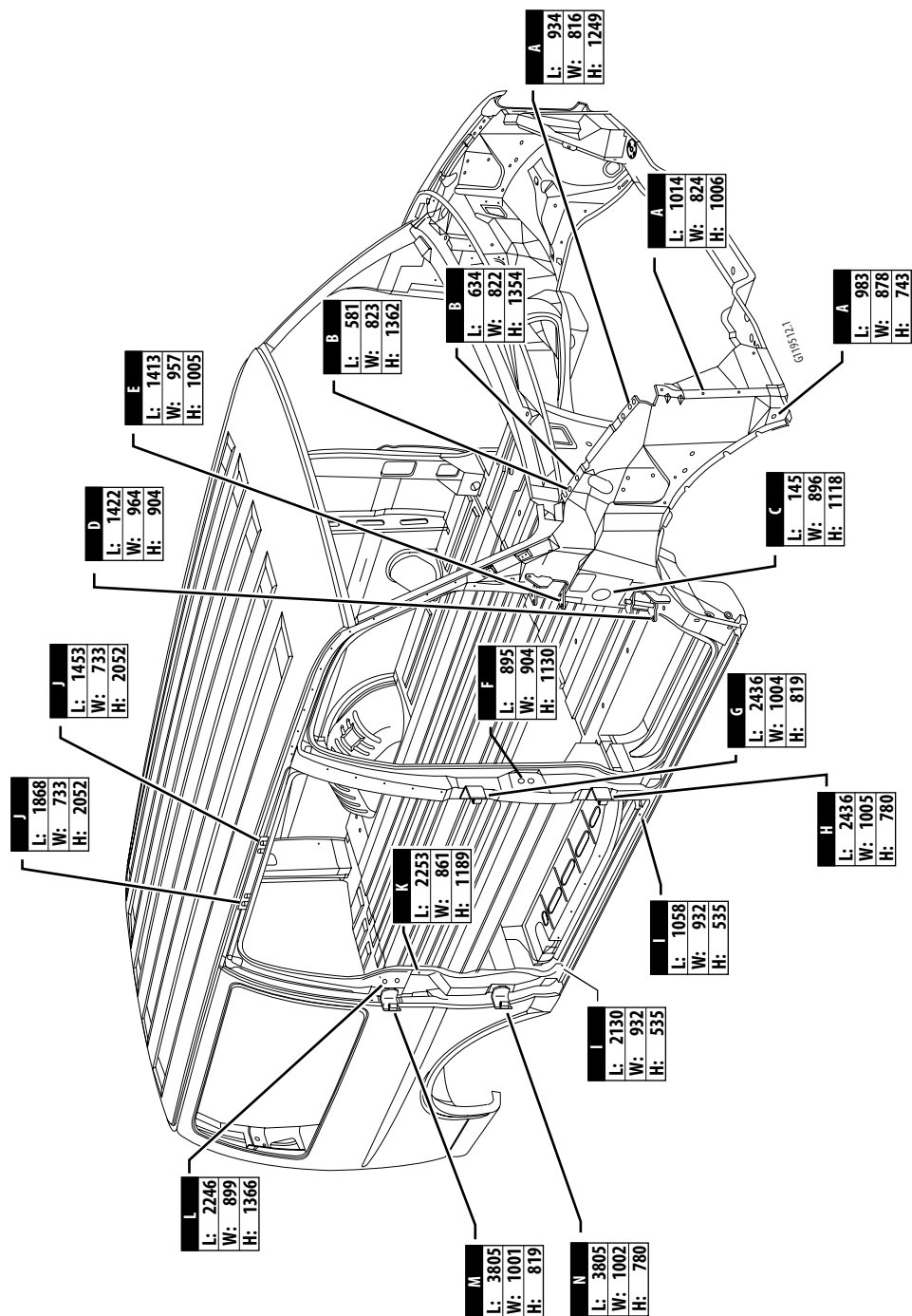


Figure 11-2:
Build Objectives – Instrument Panel Tolerances

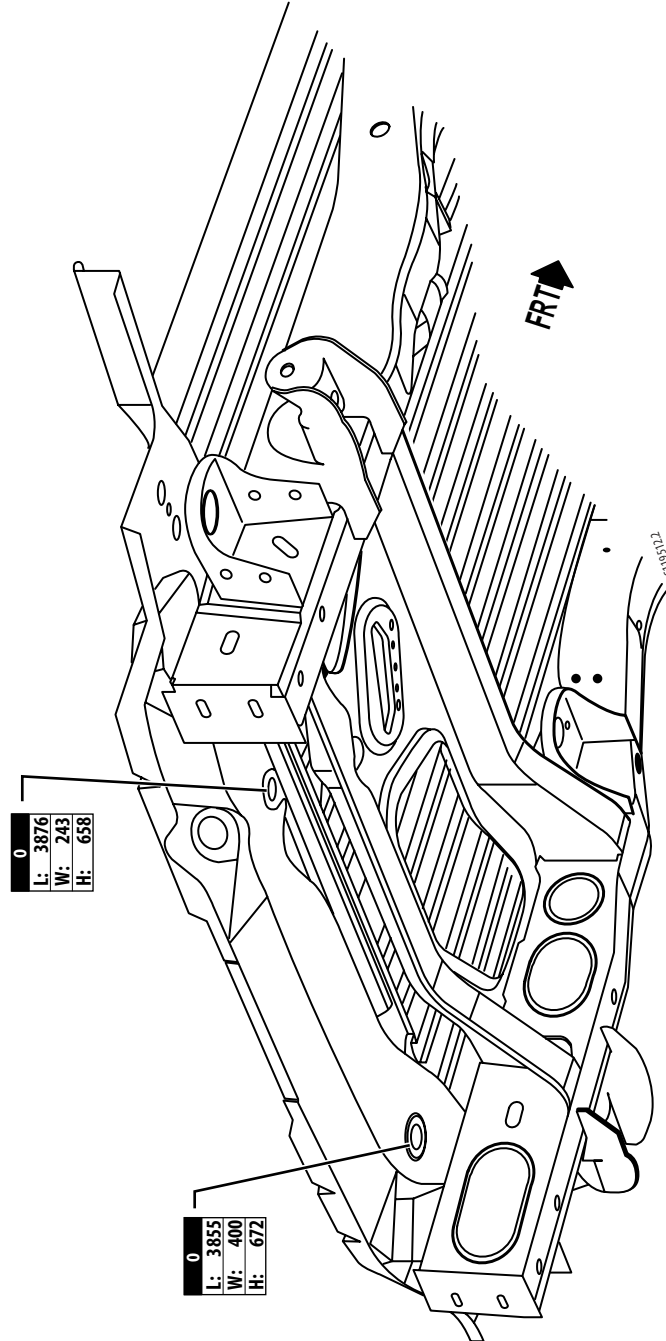
12. Body Dimensions

G VAN BODYSIDE



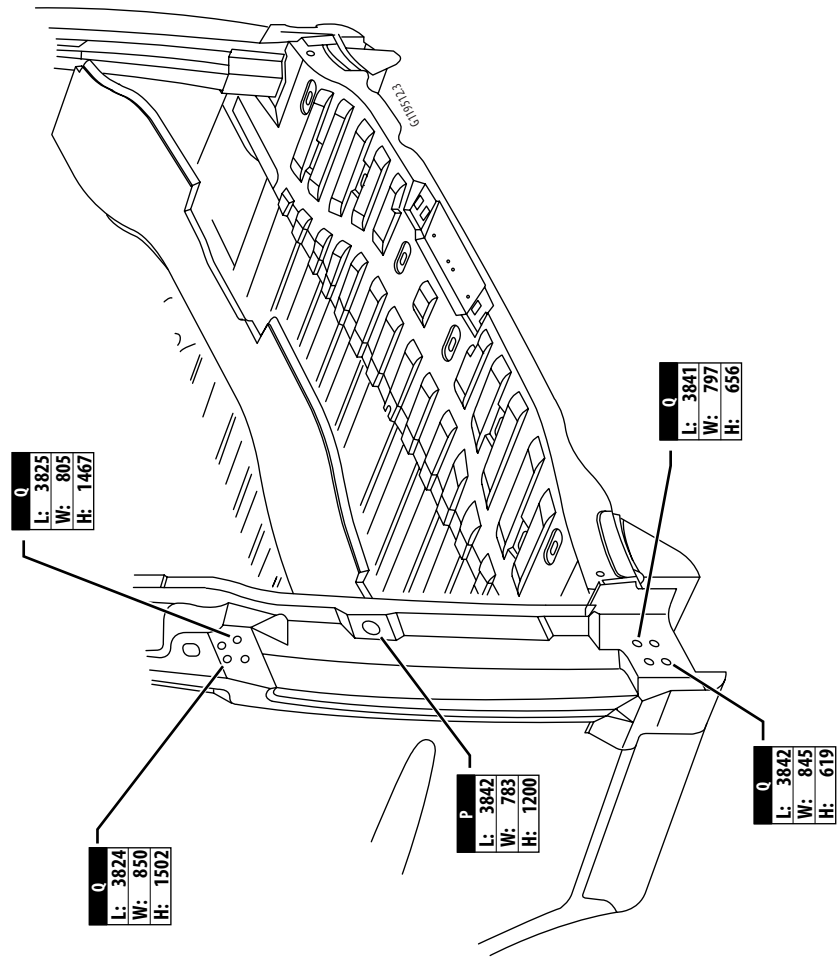
ALL DIMENSIONS ARE MEASURED FROM A ZERO LINE, CENTER LINE, AND A COMMON DATUM.
ALL DIMENSIONS ARE SYMMETRICAL UNLESS OTHERWISE SPECIFIED.
SEE PAGE 30 FOR HOLE IDENTIFICATION.

G VAN REAR FLOOR REINFORCEMENT



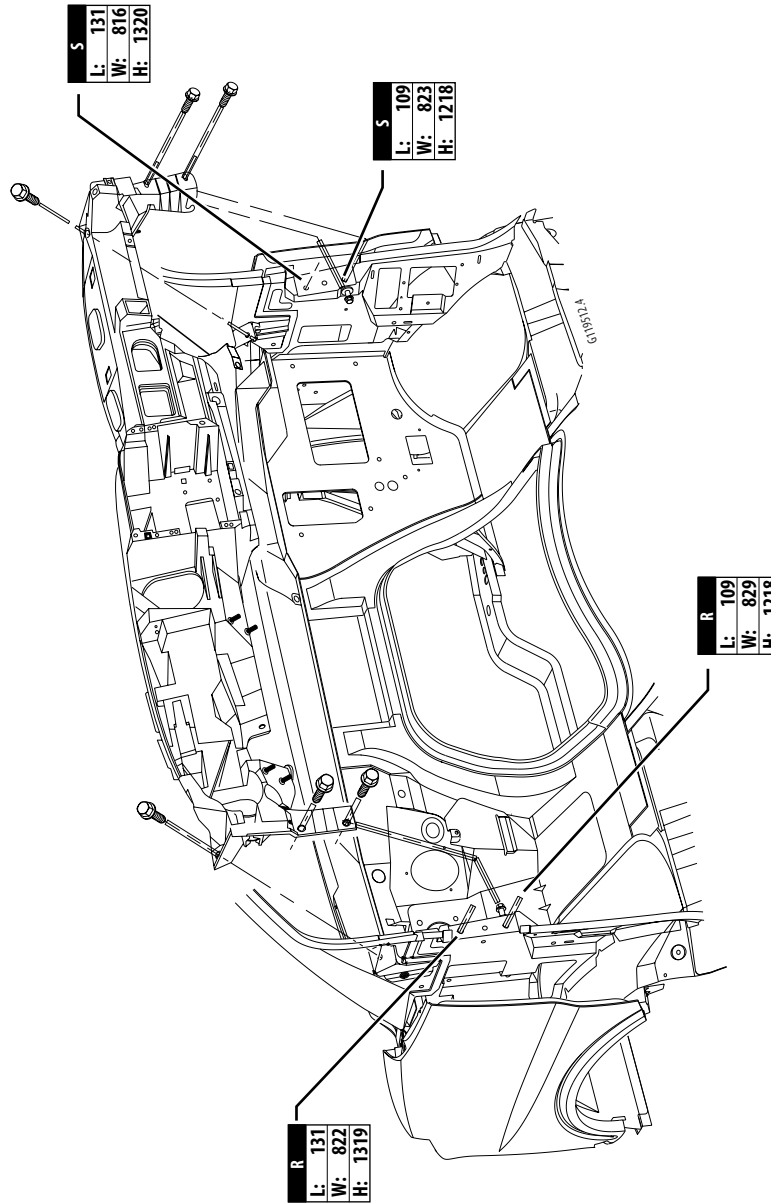
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G VAN REAR DOOR HINGE PILLAR



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G VAN I/P CARRIER MOUNTING HOLES



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SEE PAGE 30 FOR HOLE IDENTIFICATION.

1996 G Van Hole Identification Chart

Letter	Feature	Usage
A	Weld nut	Fender attachment
B	Weld nut	Fender hood hinge attachment
C	51mm x 61mm slot	Gage hole
D	Centerline of hinge pin	Front lower bodyside hinge, lower surface (figure 12-1)
E	Centerline of hinge pin	Front upper bodyside hinge, lower surface (figure 12-1)
F	9mm x 12 mm slot	Top striker attachment
G	Centerline of hinge pin	Front cargo door upper hinge, lower surface (figure 12-2)
H	Centerline of hinge pin	Front cargo door lower hinge, lower surface (figure 12-2)
I	6.5mm hole	Weather strip locator
J	12.5mm x 20mm slot	Door wedge attachment
K	8mm hole	Sliding door track attachment
L	16mm square hole	Top striker attachment
M	Centerline of hinge pin	Rear cargo door upper hinge, lower surface (figure 12-2)
N	Centerline of hinge pin	Rear cargo door lower hinge, lower surface (figure 12-2)
O	25mm hole	Rear floor reinforcement extension
P	32mm hole	Gage hole
Q	13mm hole	Rear door hinge attachment
R	14mm hole	Left side I/P carrier attachment
S	14mm hole	Right side I/P carrier attachment

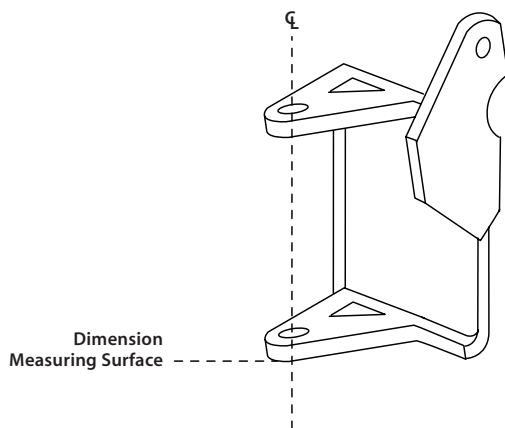


Figure 12-1

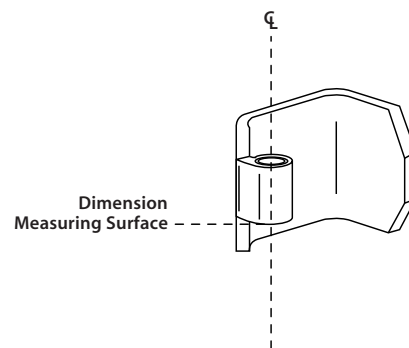
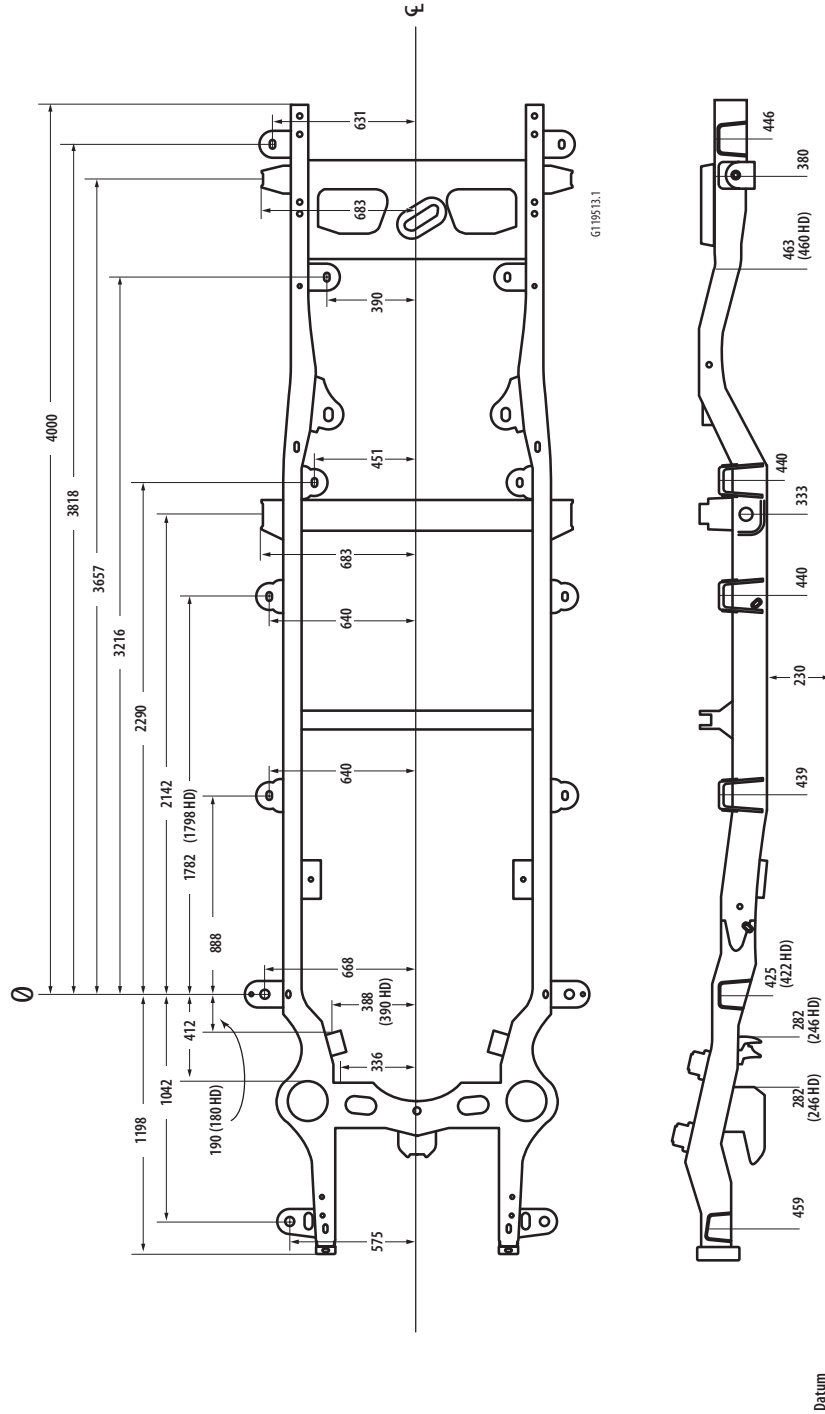


Figure 12-2

13. Frame Dimensions

The redesigned frame is fully boxed with welded joints which provide improved ride quality and greater stability. The body is attached to the frame with six body mounts which are designed to isolate powertrain noise and vibration from the passenger compartment.

**G V A N F R A M E D I M E N S I O N S :
P L A N V I E W A N D D R I V E R S I D E (1 3 5 " W H E E L B A S E)**



Dimensions shown are common to Light Duty/Heavy Duty unless otherwise indicated.

ALL DIMENSIONS ARE MEASURED FROM A ZERO LINE, CENTER LINE, AND A COMMON DATUM.
ALL DIMENSIONS ARE SYMMETRICAL UNLESS OTHERWISE SPECIFIED.

Appendix: Specifications

Caster, Camber, and Toe Specifications

Operation	Service Checking	Service Setting	Side-to-Side Tolerance
Caster	$3.75^{\circ} \pm 2.0^{\circ}$	$3.75^{\circ} \pm 1.0^{\circ}$	$.5^{\circ}$
Camber	$.5^{\circ} \pm 1.0^{\circ}$	$.5^{\circ} \pm .5^{\circ}$	$.5^{\circ}$
Toe	$.24^{\circ} \pm .2^{\circ}$	$.24^{\circ}$	Toe-in Equally

Fastener Tightening Specifications

Application	N-m	Lb Ft	Lb In.
Tie Rod Sleeve Retaining Nut	25	18	—
Upper Control Arm Bolt	190	140	—
Idler Arm to Frame Bolt	$100 + 40^{\circ}$	74	—
Inner Tie Rod to Relay Rod	47	35	—
Inner and Outer Tie Rod Adjuster Sleeve	25	18	—
Pitman Arm Retaining Nut	250	184	—
Pitman Arm to Frame Bolt	$100 + 40^{\circ}$	74	—
Relay Rod to Idler and Pitman Arm Nut	47	35	—
Hose Fittings to Steering Gear	27	20	—
Pinch Bolt to Intermediate Shaft	62	46	—
Steering Gear Retaining Bolts	135	98	—
Center Bearing Bracket to Hanger Bolts	58	43	—
Propeller Shaft to Companion Flange Bolts	102	75	—
Propeller Shaft Hanger to Frame Bolts (except 155" Wheelbase)	58	43	—
Propeller Shaft Hanger to Frame Bolts (155" Wheelbase)	38	28	—
U-Joint Retaining Bolts	20	15	—
Leaf Spring to Front Frame Hanger	$110 + 200^{\circ}$	80	—
Upper and Lower Shackle Retaining Bolts	90	67	—
Lower Shock Absorber Nut and Bolt	80	60	—
U-Bolt Nuts Below 7300 GVW	95	70	—
U-Bolt Nuts Above 7300 GVW	135	100	—
Upper Shock Absorber Bolts	25	20	—
Body Mount to Frame Bolts	85	63	—
Transmission Support to Frame Nuts and Bolts	68	50	—
Transmission Mount to Transmission Support Nut	47	35	—
Front Bumper Impact Bar to Bumper Bolts	25	18	—
Front Bumper Bracket to Bumper Bolts	25	18	—
Front Bumper Bracket to Frame Bolts	50	37	—
Rear Bumper Inner Bracket to Bumper Bolts	25	18	—
Rear Bumper Inner Bracket to Frame Nuts	25	18	—
Rear Bumper Outer Bracket to Frame Nuts	25	18	—
Rear Bumper Outer Bracket to Bumper Nuts and Bolts	25	18	—
Weight Distribution Hitch to Frame Nuts and Bolts	88	65	—
Seat Riser to Floor Stud Nuts	58	43	—
Seat Adjuster to Riser Nuts	45	33	—
Seat Adjuster to Seat Bolts	25	18	—
Recliner/Hinge to Seat Back/Cushion Bolts	35	26	—
Rear Seat Risers to Seat Frame Nuts and Bolts	55	41	—
Rear Seat Track to Floor Nuts	43	32	—
Shoulder/Seat Belt Retractor Bolt	52	38	—
Seat Belt Buckle Bolt	52	38	—
Seat Belt Guide Loop Bolt	52	38	—
Seat Belt Guide Adjuster Bolt	52	38	—