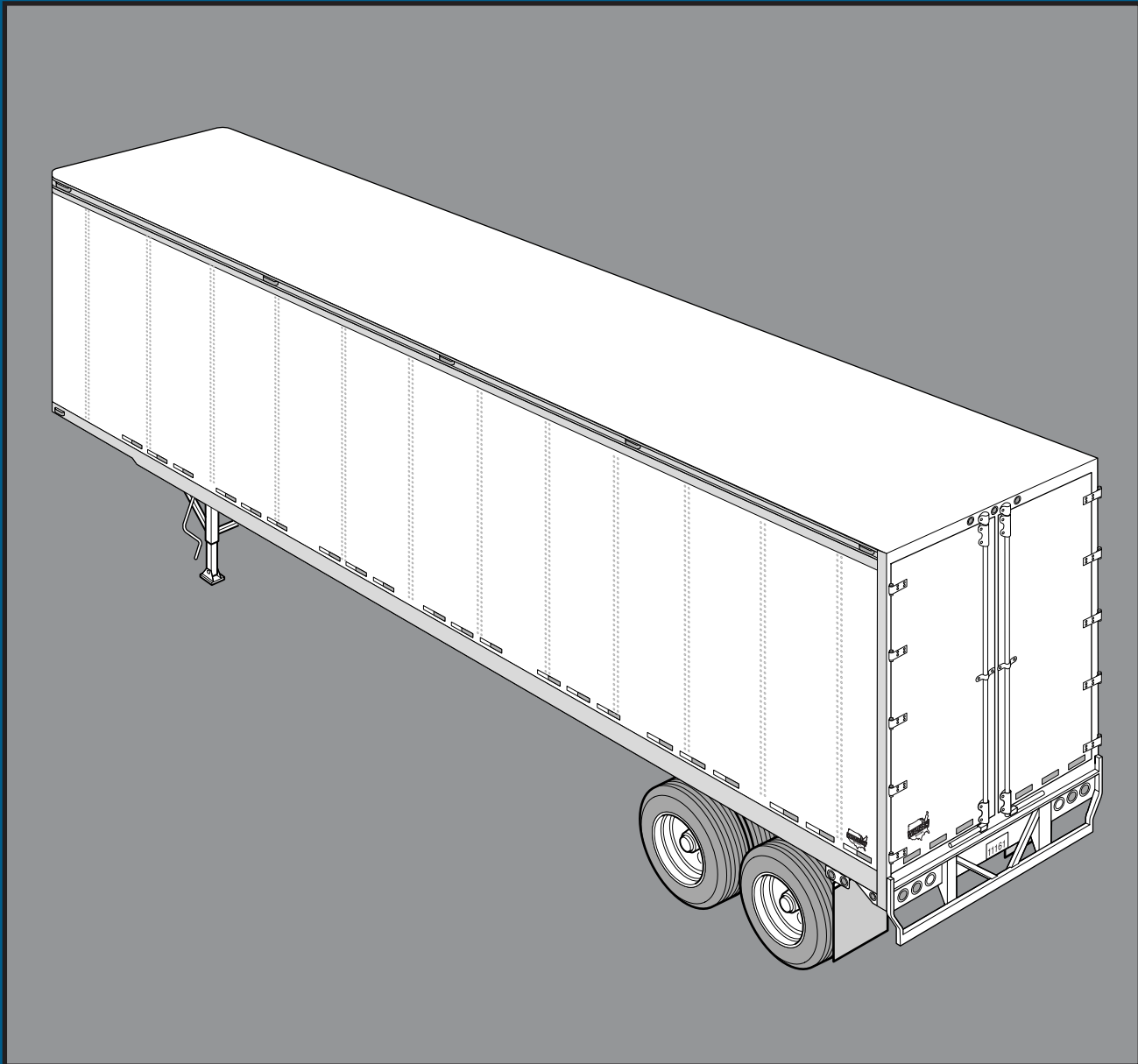


# DuraPlate<sup>®</sup>



## Repair Manual

2004



**Trailer Repair Manual  
by Wabash National<sup>®</sup>**

## Notes, Cautions, and Warnings



This manual contains Notes, Cautions, and Warnings in addition to the assembly instructions.

**Notes:** Provide additional comments to help with installation and set up.

**Cautions:** Provide notification of situations that can cause damage to machinery and tools.

**Warnings:** Provide alerts to situations that can cause personal injury or death.

Please take the time to read and understand this manual before beginning.

**CAREFULLY FOLLOW THE SAFETY AND OPERATING INSTRUCTIONS IN THIS MANUAL.**

Due to a policy of continuous product improvement, we reserve the right to make changes at any time, without notice, in prices, materials, colors, specifications, equipment, models, and availability. Some photos and drawings in this manual contain optional equipment. Since some information may have been updated since the time of printing, please check with your Wabash dealer for complete details.

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## General Safety Guidelines

During all repair activities, use proper personal protective equipment:

- ANSI-approved safety eyewear with side shields
- ANSI-approved steel-toed shoes
- ANSI-approved face shields (during cutting operations or where a hazard exists from flying objects)
- Appropriate cut-resistant gloves
- Appropriate hearing protection (ear plugs or ear muffs)
- Appropriate knee pads where the risk of foreign bodies (drill shavings, metal slivers, and rivet bodies) is present

Always maintain good housekeeping by keeping tripping hazards such as air lines, waste materials, parts, and tools away from the walking and working areas.

NEVER use damaged or defective hand tools and/or power tools.

Use only sharp and properly dressed drill bits, chisels, and knives.

When using knives, always cut away from the body.

To prevent inadvertent hazardous contact, verify the location of others before attempting to drill, saw, or otherwise penetrate a panel or panel components.

Panel edges are extremely sharp and can cause serious injury. Always treat them with respect and wear appropriate protective gloves.

To prevent eye injury, NEVER use compressed air to clean the trailer floor.

NEVER stand on the top or the next-to-top rung of a ladder. NEVER attempt to “walk” a ladder instead of getting down and properly repositioning it.

To prevent overexertion injuries to the back, shoulders, hands, and arms, GET HELP to move, place, or reposition panels and panel components.

**IF IT CANNOT BE DONE SAFELY, DO NOT DO IT!**



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# **SECTION 1**

## **SHIPLAP DURAPLATE PANEL CHANGE**

### **Introduction**

This procedure addresses replacing DuraPlate Shiplap side panels on Wabash National Dry Freight Vans. It provides a step-by-step repair procedure with detailed drawings, descriptive photographs, a recommended list of materials, and tool requirements.

### **Labor Requirements**

Replacing a DuraPlate side panel requires three qualified mechanics using the proper tools and equipment, as outlined in this procedure. This procedure is written based on a proven shop practice for replacing a single DuraPlate Shiplap side panel. With these instructions, potential areas of concern, such as how to safely remove a panel without damaging adjacent panel seams, can be addressed safely and efficiently.



**CAUTION: People who work with DuraPlate side panels are advised to always use proper ANSI safety equipment, including: safety glasses, hearing protection, cut-resistant gloves, steel-toed shoes, knee pads, face shields, etc.**

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## **List of Materials**

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**NOTE: Due to the many variations in models and sizes, customers can order the correct replacement material to specification by trailer serial number.**

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- Order replacement panels by color and thickness to original customer specifications. All panels will have to be cut on-site.
- PN 21000120—sealing caulk, Sika #227 urethane sealant (both white and gray)
- 1/4" Structural buck rivets (2114-T4), various lengths, 5/8" vertical seams, 3/4" both rails and 7/8"
- Replacement decals as required or supplied by the customer
- PN 25000781—Conspicuity tape (partial roll)
- Drawings





### Tools and Equipment Required

- Two hand-held  $\frac{3}{8}$ " air drills with plenty of sharp F .257 bits
- Circular saw equipped with a combination 40-tooth, carbide-tipped blade
  - Alternative method: Saber saw equipped with a Fast-Cut™ Bi-Metal blade
- Two pneumatic impact guns, with proper rivet sets and flat chisel tips
- Two quick release Vise-Grip® modified deep c-clamps (reference Figure 1-11)
- Caulking gun, with Sika #227 or a urethane caulk
- Rivet sets and bucking tools
- 8 ft. ladder for inside and 12 ft. ladder or scaffold for outside
- 12-lb. sledge hammer
- Two wood or plastic wedges (a flat chisel tip works)
- Tape measure
- Chalk line and/or a long straight edge
- 36" crowbar and large plastic mallet
- Interior lighting for a safe working environment inside the trailer, plus an electrical extension cord
- Safety equipment: ANSI-certified face shields, cut-resistant gloves, knee pads, and hearing protection, etc.
- Two jack stands for shoring the base rail when required
- Four suction cup handles for maneuvering panels
- Two 8 ft. 2 x 4 boards cut to a wedge on one end

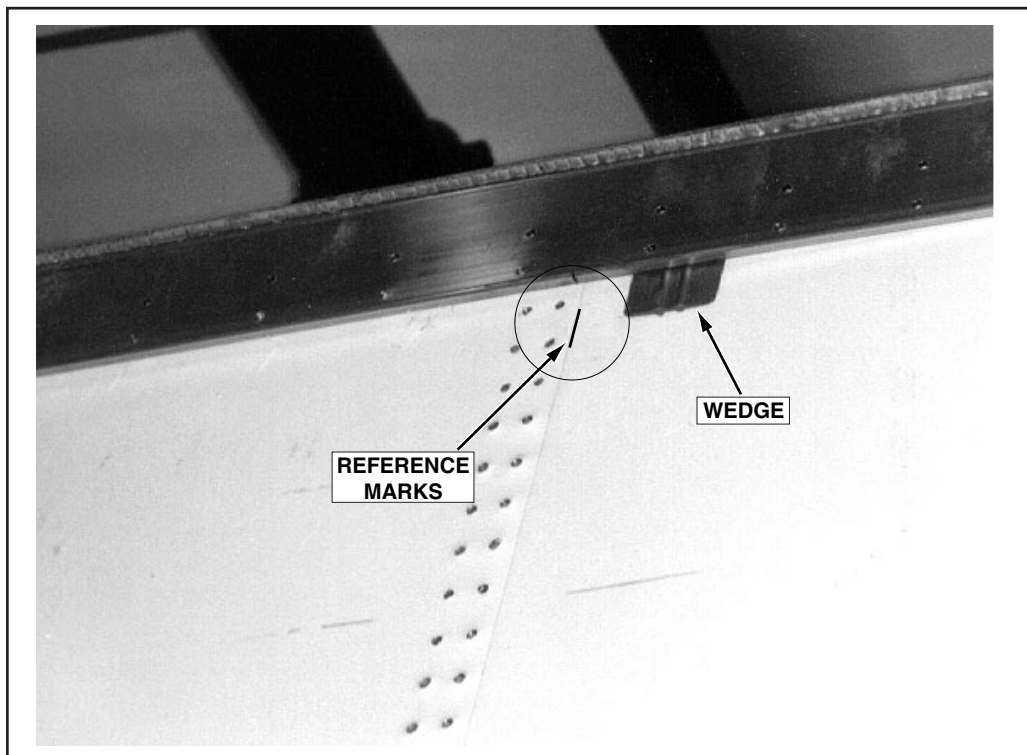


## **Trailer Setup**

Completely unload the trailer and park on a level shop floor. If more than two panels are removed at the same time, support the base rail with jack stands. String should be tightly stretched along the base rail for alignment, and as a reference point for ensuring the base rail remains level.

## **Reference Marks**

1. Make reference marks at the top rail, along the base rail, and 4 ft. up on the vertical seams to show exactly where the old panel was installed. To eliminate confusion, make the same reference marks on the inside of the trailer. When the new panel is installed, both mechanics will have reference marks.
2. Use an "X" to mark the damaged panel that will be removed.



**Figure 1-1, Marking Panel**

## **Separating the Scuff Liner**

1. Equipped with an air impact gun and flat chisel tip, cut the rivet heads along the top of the galvanized scuff line across the panel to be changed. Later, the rivet bodies in any adjacent panels will have to be hand-drilled out separately, prior to reassembly (see Figure 1-2).
2. While a mechanic is cutting the scuff liner rivets, a second mechanic can shear the rivet heads attaching the panel to the base rail.
3. Separate the scuff liner from the base rail by placing a flat chisel tip between the scuff liner and inner wall.
4. Block the galvanized scuff liner back at least 6 ft. (on each side) beyond the work area.

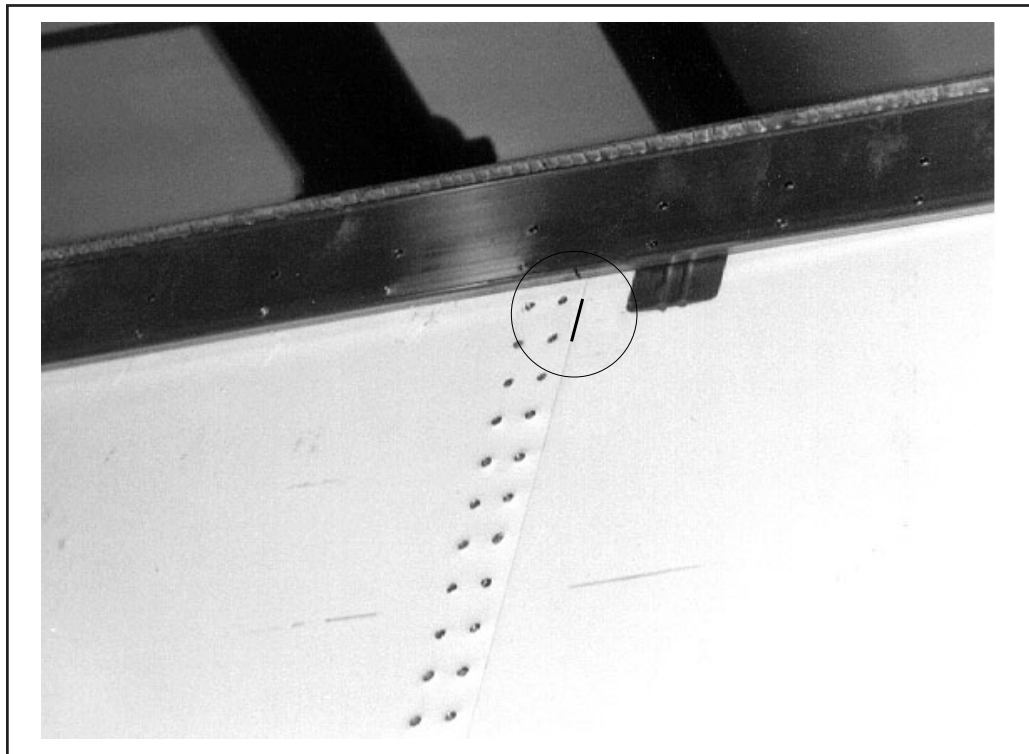


**Figure 1-2, Removing Scuff Liner**

## **Removing Shiplap Seam Rivets**

**CAUTION:** Never attempt to chisel off the rivet portions from the exterior seams. This method of removing the seam rivets will elongate the seam holes and cause damage to adjacent side panel seams.

1. The preferred method is for the mechanic to work from the inside, equipped with a chisel-tipped impact gun, and cut off all seam rivet button heads first, then drill out the remaining rivet portions from the inside. The exposed area of a headless rivet provides a better target of soft aluminum for centering the drill bit and reduces elongation of the outer skin holes.



**Figure 1-3, Close-up of Elongated Holes**



2. Two mechanics can work side-by-side on the inside of the trailer, without conflict, removing rows of seam rivets. One person can chisel off the button heads. The other person, equipped with an air drill, can back drill out the remaining rivet portions from the first vertical seam to the front.
3. The second vertical row of rivets will also have to be drilled out to release the outer lap seam.
4. Counting from the front of the trailer, the third vertical seam of rivets will only need to have the button heads removed. No drilling is required.
5. The second mechanic can drill out and remove the final row of rivets, which will free the panel for removal.
6. Working outside from a ladder or scaffold platform, use an impact gun and chisel tip to remove bucked nubs across the top rail. Remove an additional 12" of rivets fore and aft from the adjacent neighboring side panels. These last rivets will also have to be drilled out prior to reassembly.
7. To provide room to maneuver the old side panel out of the opening, extra rivets attaching the neighboring panels to the base rail also have to be removed. This will provide space to install wedges, which force the neighboring panel away from the top and bottom rails. Once wedges are installed, the space should be sufficient to slide the panel forward in the opening so the lap seam will come out.

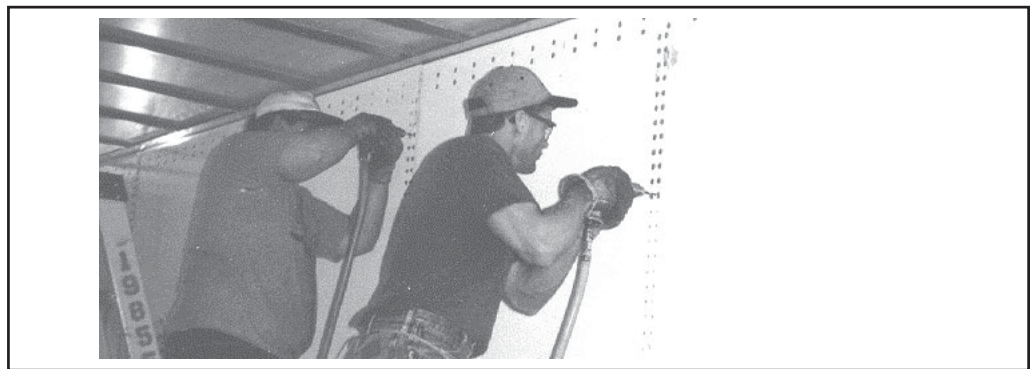


Figure 1-4, Removing Seam Rivets

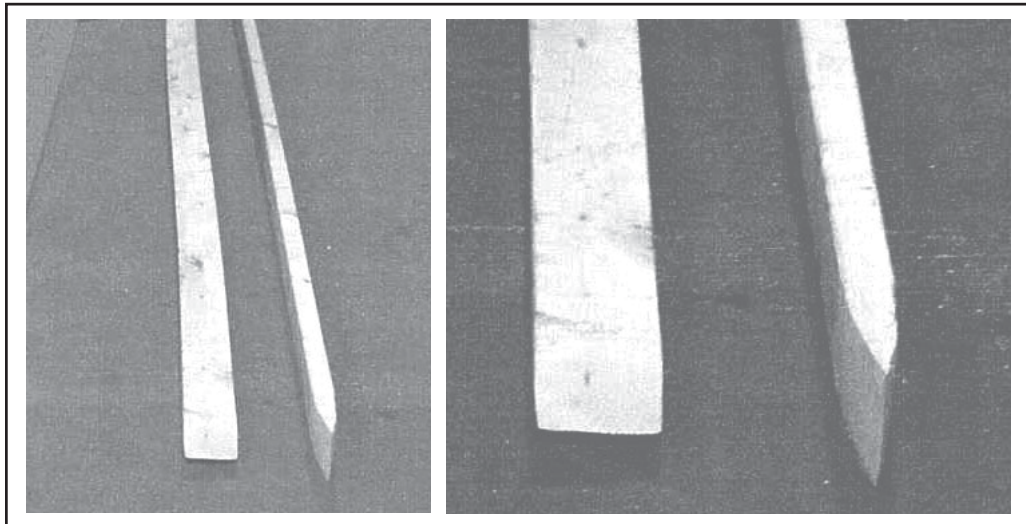


## **Breaking the Panel Sealant Bonds**

All DuraPlate side panels have double stick foam tape and caulk adhesives between outer lap joints and seams. These adhesive bonds will have to be broken before a panel can be removed. The design of the lap joint seam requires a twisting motion to loosen the adhesive and remove the panel from the opening.

At the same time the bottom rearmost portion is being pried away, someone needs to work on a ladder outside and force the leading corner of the panel inward.

1. To break the riveted connection loose along the base rail, use a large 12-lb. sledge hammer. Working inside the trailer, strike the lower portion of the panel, just above the aluminum base rail.
2. Equipped with a long, wood 2 x 4, a second mechanic can cut across the wide end of the board, shaping it into a wedge. Standing on the shop floor with the board (flat non-beveled side resting against the panel near the forward upper corner), forcefully drive the wedged end of the 2 x 4 between the top rail and the outer panel surface. Doing this a number times in succession will drive the wedge under the top rail, breaking the adhesive and rivet connection.



**Figure 1-5, Modified 2 x 4 for Breaking Panel Loose from Top Rail**



3. Pry any remaining portion of the panel loose with a crowbar. Be sure to have at least two people with gloves and suction cup handles available outside to remove and lower the panel to the floor. Another person inside the trailer can guide the panel away from the opening.

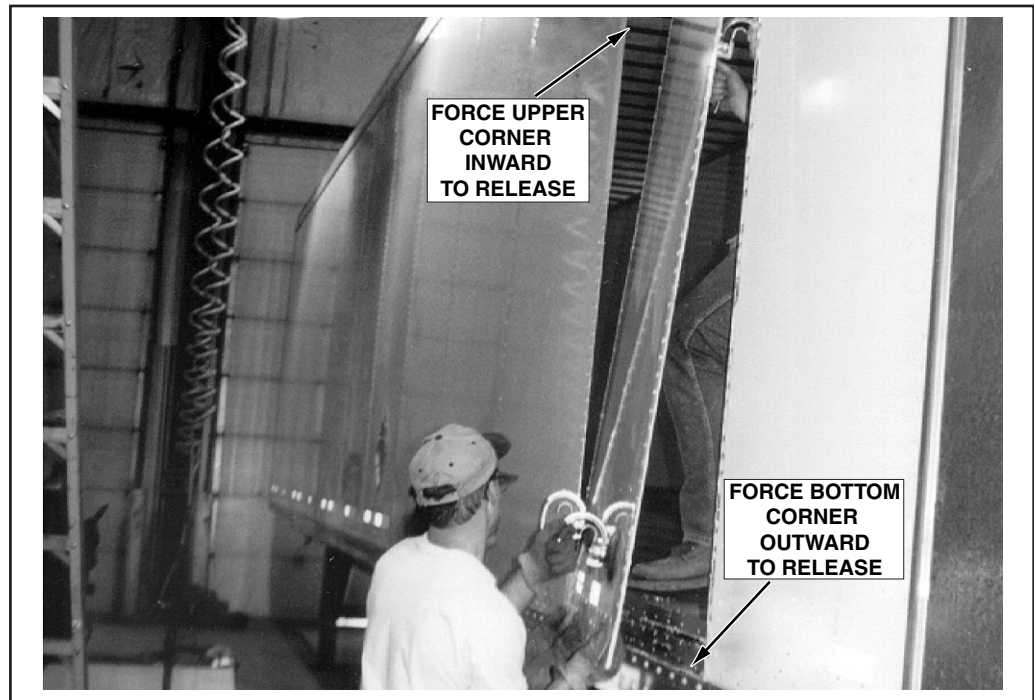


Figure 1-6, Use at Least Three People When Removing Panels



## **Cleaning and Preparing the Panel Opening**

1. The area behind the top rail and along the outside surface of the base rail has foam tape residue which will have to be scraped from the surface. Also, wipe away all metal drill shavings and debris with a cloth rag.

## **Preparing the New Panel**

1. Carefully measure the old panel for length and width to ensure the new panel will fit the opening.
2. For maneuverability when fitting a new panel in the opening, ensure the new panel is narrower in width and  $\frac{1}{2}$ " less in length than the original panel.
3. When cutting a new panel to width, only the inner steel skin and core are to be trimmed. Use care when making vertical cuts, since only the inner steel skin and core need to be trimmed. **The outer steel skin must never be cut away.** Make a test cut on the old damaged panel before actually cutting the new panel to width. To ensure the panel fits the desired opening, a utility knife can be used to trim any excess core material left behind.

---

**NOTE: New panels from the factory have an offset seam to allow for the shiplap to be recessed smooth and prevent freight snags on the inside wall. When installing a new panel, the offset always goes to the inside rear seam. This must be taken into consideration before cutting the new panel to length.**

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**NOTE: Another important point is to place the sheared factory edge down against the base rail, and place the hand-sawn end at the top, away from road debris.**

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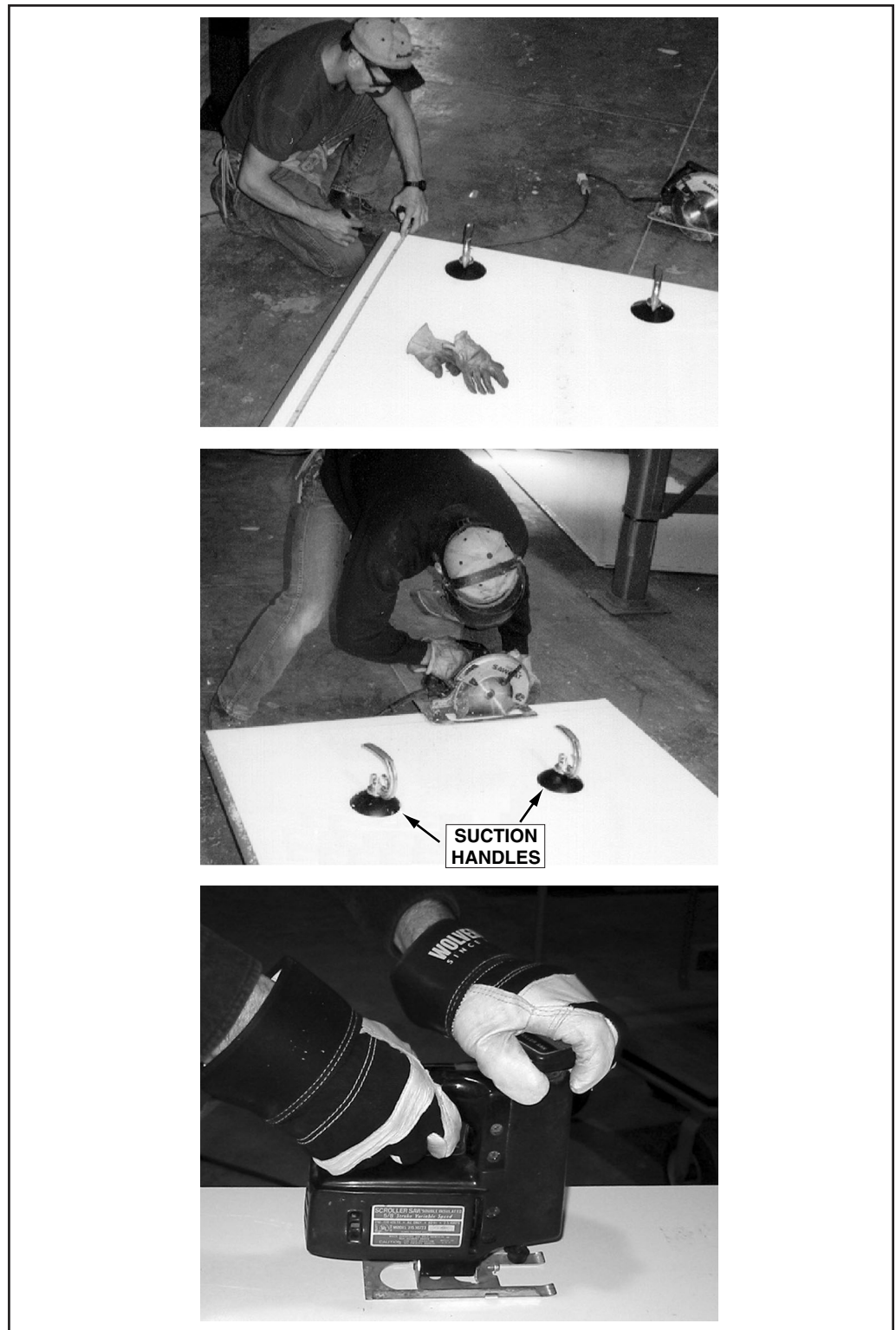


Figure 1-7, Cutting the New Panel to Length



## Installing the New Panel

When installing a new panel, be sure to leave room for some maneuvering.

1. Prior to installation, always measure the opening and replacement panel twice before lifting it into the opening.
2. Apply a good bead of Sika Flex® 227 sealant, or a polyurethane caulk, around the perimeter of the opening and along both vertical seams of the panel being installed. Refer to Figure 1-8.
3. It will take at least two people to lift the new panel up and set it in the opening above the base rail shoulder. Have another person inside with a step ladder to help guide and walk the panel into position behind the top rail. Use a heavy duty putty knife under the bottom end of the new panel to lift it onto the base rail ledge.

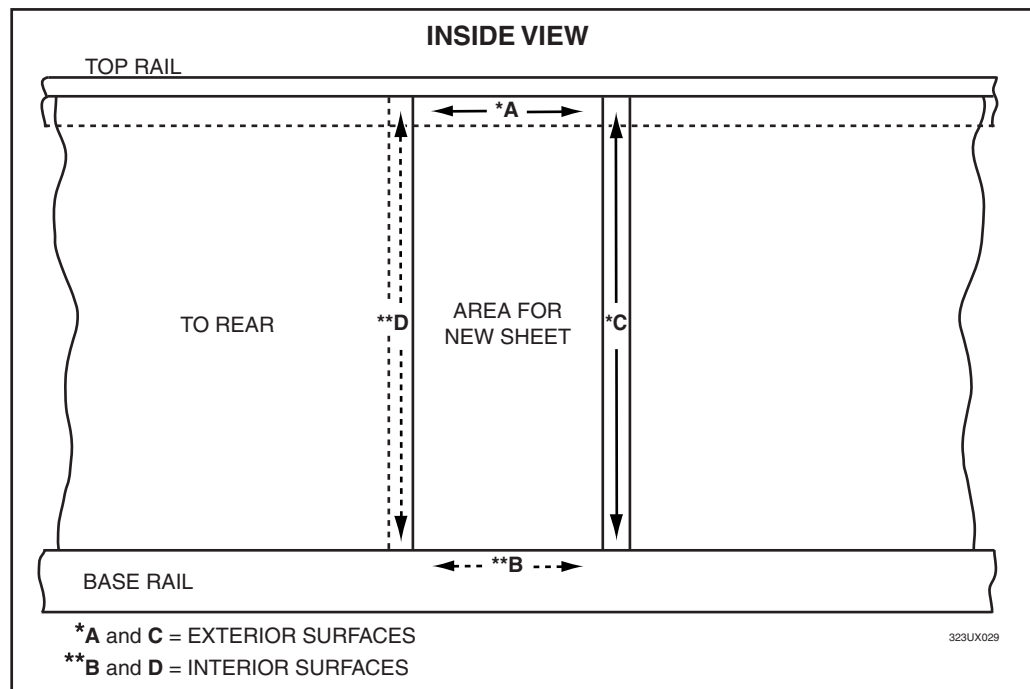


Figure 1-8, Caulk the Opening



## Shiplap DuraPlate Panel Change

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4. Do not start drilling or tacking anything into place until the panel is properly fitted.
5. Pay close attention to the vertical side seams. They must fit flush and tight together. If these seams are not closed tightly together, drill shavings will lodge in the sealant and obstruct the riveting fit-up process.
6. When proper panel placement is achieved, remove the shims from between the adjacent panels at the top rail and tack the new panel in place.



**CAUTION: Ear protection (ear muffs/ear plugs) must be worn while riveting is in progress.**

---



## Temporarily Tacking the New Panel

1. Using an air drill/F bit and riveting tools for a  $\frac{1}{4}$ " Brazier head rivet, rivet one location at a time. First, add two tacks at the top rail on the left and right-hand sides. At the same time, a second mechanic can drill out all remaining top rail holes.
2. Next, tack the panel to the base rail, drilling from the inside. Tack both corners secure using  $\frac{3}{4}$ "-long rivets. This should hold the panel while checking the fit of the vertical seams.
3. Use the preexisting holes in adjacent seams as a drill template and apply rivets at 12" intervals, closing the gaps evenly to prevent any outer-skin puckers. Install seam rivets in pairs to prevent drill shavings from accumulating in the sealant between the seams.

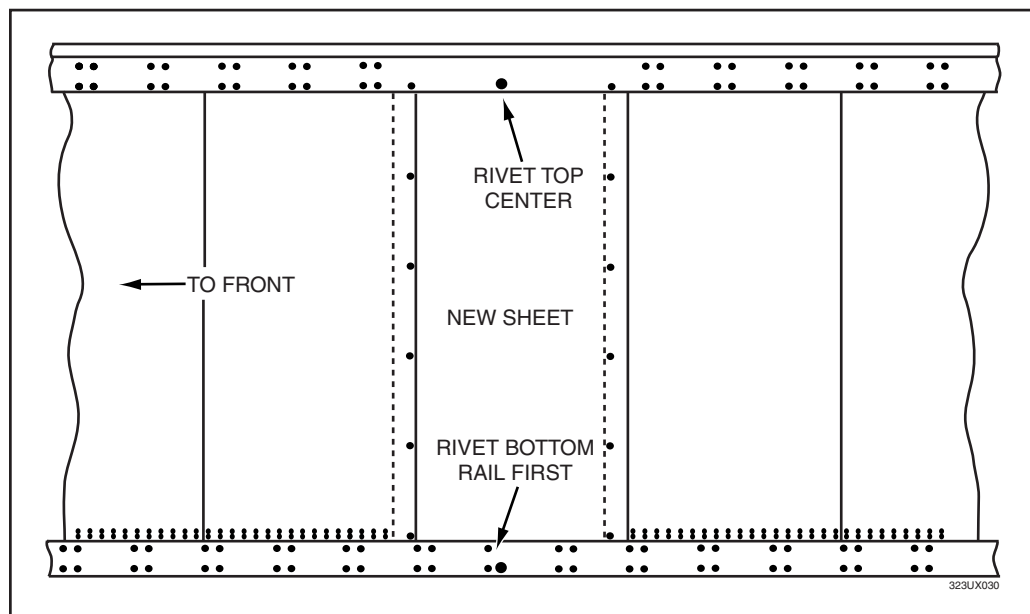


Figure 1-9, Temporary Tacking Instruction



## **Completing the New Panel Installation**

1. Assign two people to drill out all remaining holes from the inside. For smooth clean holes, always use a sharp F bit. Saw the drill in and out at least two or three times.
2. Next, all rivets must be installed in the lap seams, beginning at the top and working down, to secure the seams between the temporary tacks.
3. After both seams are completed, install the top rail rivets, including any removed for placing the wedges between the adjacent panels.



**CAUTION: To protect against injury from the debris, wear knee pads when drilling the base rail rivets closest to the floor.**

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4. Back drill and install the lower three rows of rivets, securing the panel at the base rail.

## **Reinstalling the Scuff Liner**

1. Depending upon location, three people can work the liner into place. With two people inside, one can hold the scuff upright and the other can use a large mallet to drive the lower portion down between the base rail and DuraPlate outer steel surface. It may be necessary to place a cargo jack at the front and rear corners to secure the scuff until rivets can be applied.
2. Use one person outside to buck rivets and another inside to back drill scuff top-mount holes. The third person is needed to hold the scuff liner tight against the wall until rivets can be installed. Have two air lines: one with an air drill and the other with an impact gun, allowing efficient installation.
3. The adjacent panel scuff liner holes should still be available. Secure the liner back into place and realign the holes so rivets can be installed.
4. Back drill the holes in the new panel from the inside outward. Change from  $\frac{3}{16}$ " to  $\frac{1}{4}$ " rivets, installing 12 rivets per panel width.



**Figure 1-10, Reinstalling the Scuff Liner**



## **Final Requirements to Complete the Repair**

1. Install conspicuity tape along the lower side panel above the base rail as required by the Department of Transportation (DOT).
2. Caulk the exterior base rail ledge along the side panel lower connection.
3. Reinstall any logistic tie ring plates and outer ring caps to original specifications.
4. Sweep out the interior and clean up all debris.

## **General Information on Buck Rivets**

1. The hole size in adjoining material must not be greater than the recommended drill size for each fastener. Refer to the chart on page 1-18.
2. Seat rivet heads tightly against the material by means of a block or rivet set prior to setting the rivet.
3. With DuraPlate side panels, good riveting practice would be to clamp adjoining materials tightly together using small bolts at intervals along the seams.
4. To ensure proper rivet set, the rivet stem must protrude through the adjoining materials  $\frac{1}{8}$ " to  $\frac{3}{16}$ ".
5. Do not use a rivet set tool unless equal pressure is applied to the rivet from the opposite side of the plate.



## **Drill Bit Guide–DuraPlate Buck Rivets**

The hole size for solid rivets allows for a clearance of .003" to .008" over the maximum shank diameter of the rivet. The clearance can be increased to .015" when necessary for rivets 1/4" in size.

Examples:

3/16"D (BRV00011)	Hole size: .188" – .191"	Drill bit size: 11
1/4"D (BRV00001)	Hole size: .250" – .257"	Drill bit size: F

### **Wabash National Corporation Buck Rivet Nomenclature**

<b>Part Number</b>		<b>Description</b>
BRV00001	1/4"D x 1/2"L	Brazier Aluminum 2114-T4
BRV00024	1/4"D x 5/8"L	Modified Brazier Aluminum 2117-T4
BRV00025	1/4"D x 3/4"L	Brazier Aluminum 2117-T4
BRV00026	1/4"D x 1/8"L	Brazier Aluminum 2117-T4
BRV00069	3/16"D x 9/16"L	Modified Brazier Aluminum 2117-T4
BRV00111	1/4"D x 3/4"L	Modified Brazier Aluminum 2117-T4
BRV00160	1/4"D x 13/16"L	Modified Brazier Aluminum 2117-T4
BRV00162	1/4"D x 9/16"L	Universal Stainless Steel
BRV00170	1/4"D x 5/8"L	Universal Stainless Steel



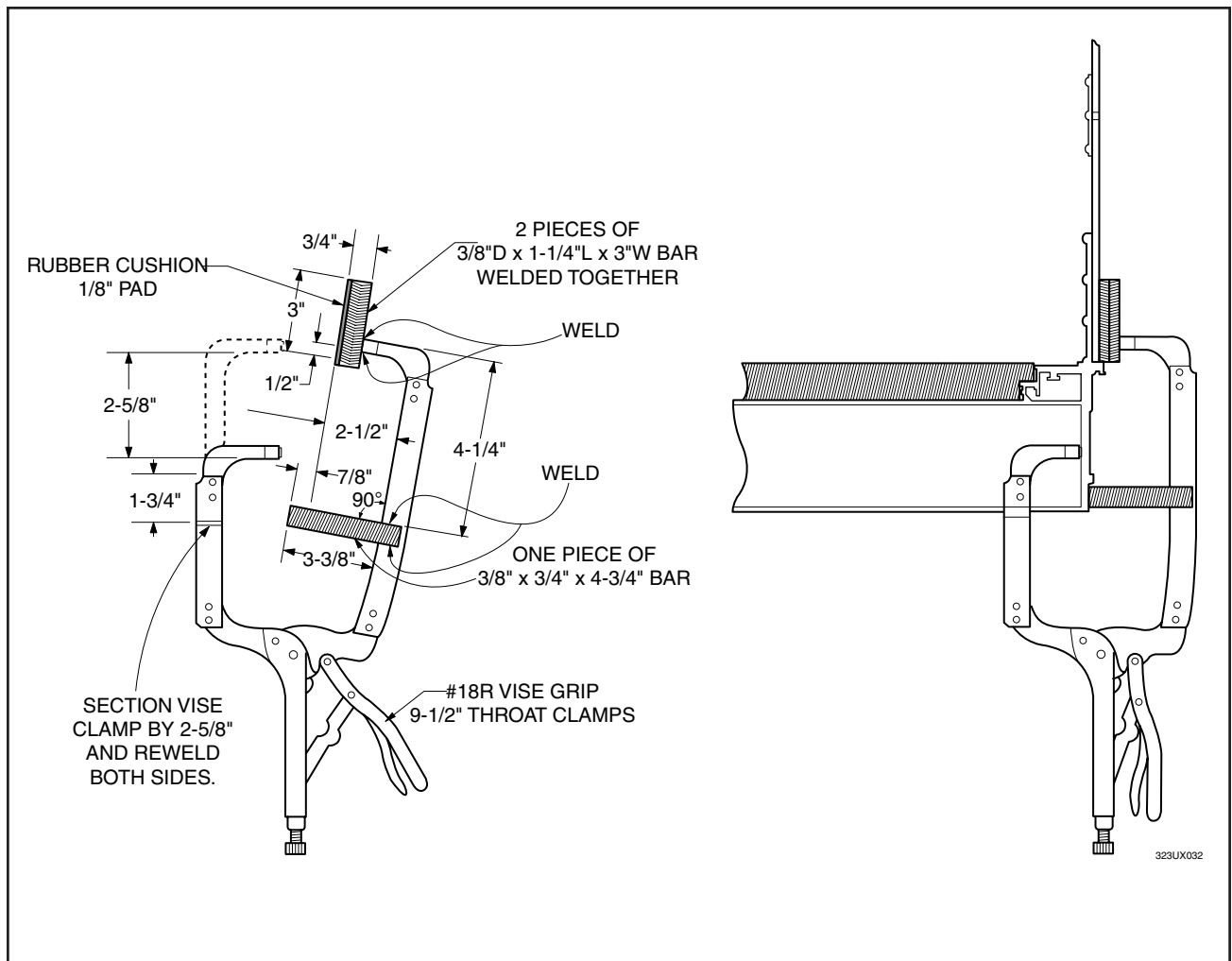


Figure 1-11, Modified Deep Throat Vise Clamp

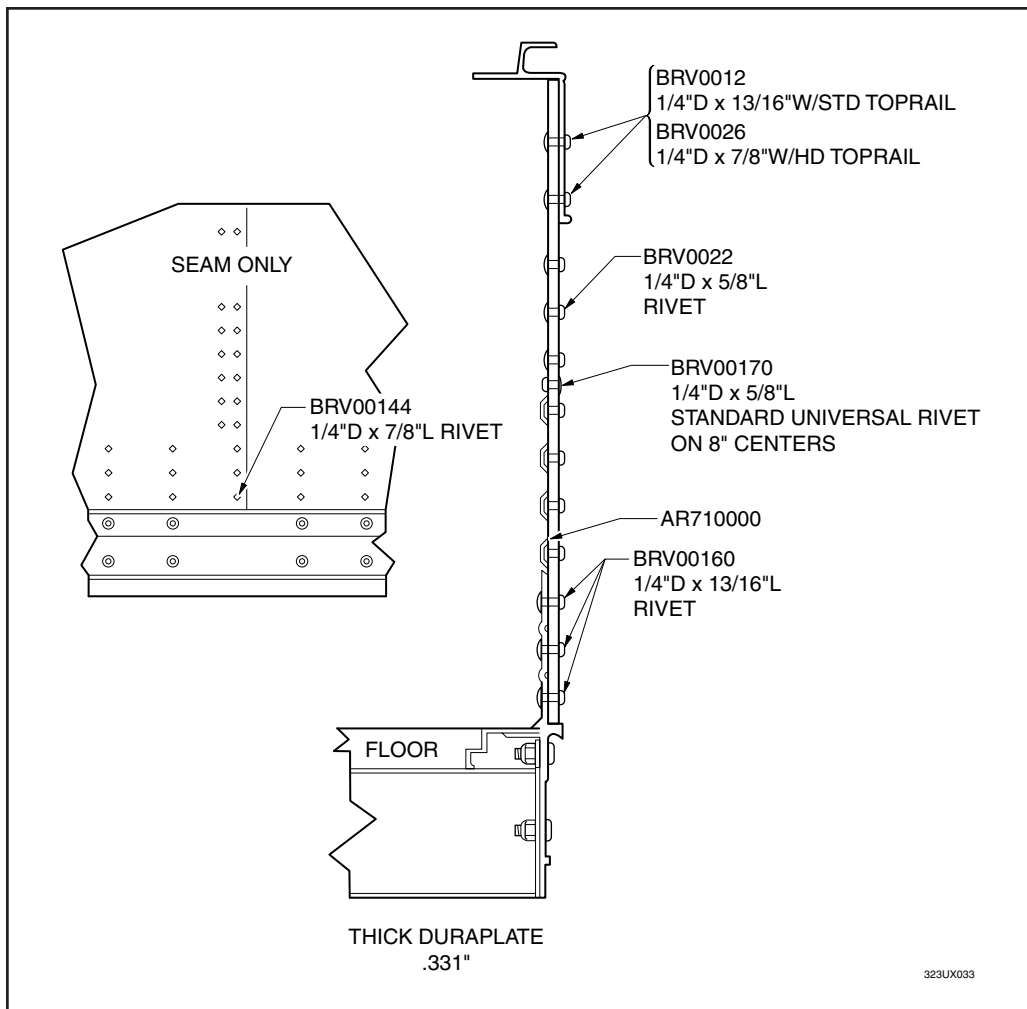


Figure 1-12, Fasteners and Locations for Thick (.331) DuraPlate with Scuff Plate

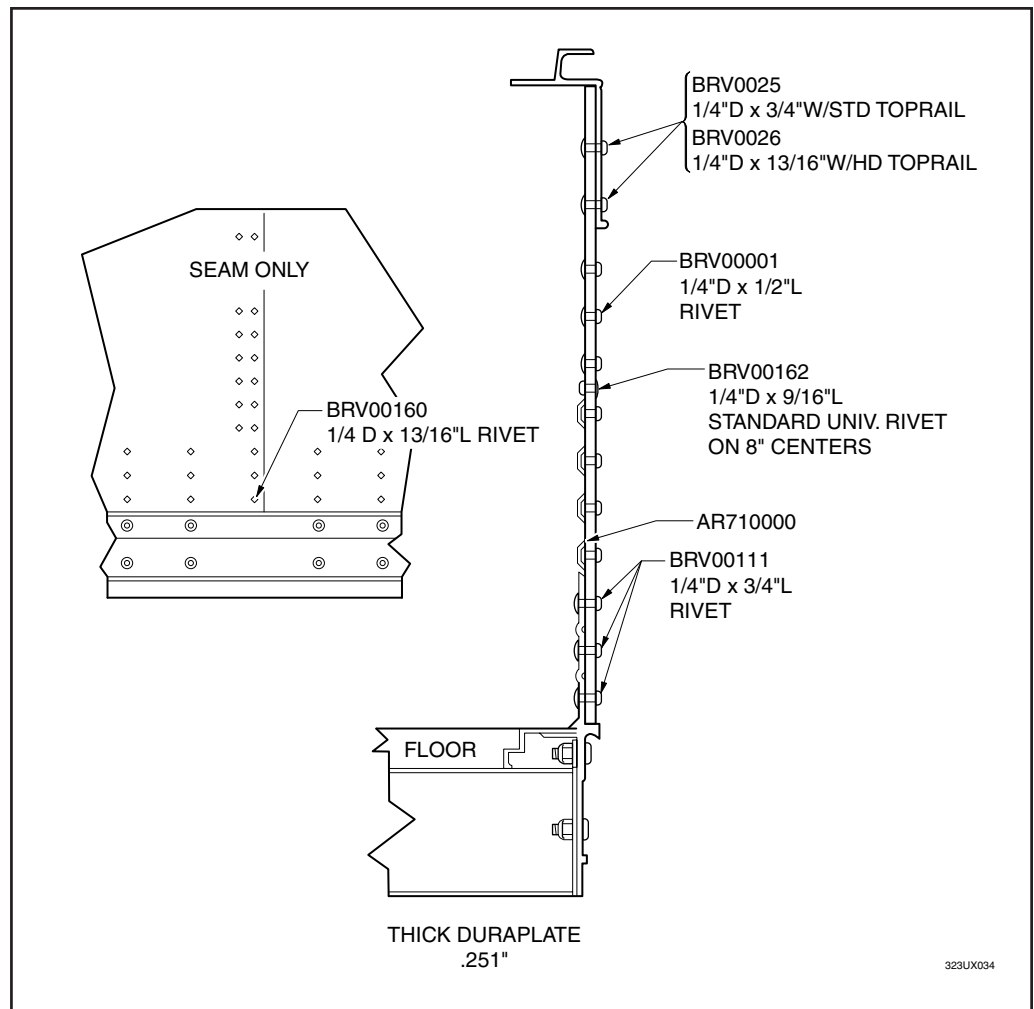


Figure 1-13, Fasteners and Locations for Thin (.251) DuraPlate



**Notes**

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## **SECTION 2**

# **LOGISTIC DURAPLATE PANEL CHANGE**

### **Introduction**


This rework procedure addresses the replacement of a Logistic Seam DuraPlate side panel on DuraPlate dry freight van trailers manufactured by Wabash National Corporation.

Our objective is to show a safe and efficient method for removing and replacing a side panel.

### **Labor Requirements**

Replacing a DuraPlate side panel requires three qualified mechanics using the proper tools and equipment, as outlined in this procedure. The standard repair time per panel is four hours. Changing adjacent panels in the same row takes less time per panel. This procedure is written based on a proven shop practice for replacing a single DuraPlate logistic side panel. It identifies critical areas of concern. If read and followed, it will increase safety and efficiency and will prevent further damage to the trailer.

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 **CAUTION: People who work with DuraPlate side panels are advised to always use proper ANSI safety equipment, including: safety glasses, hearing protection, cut-resistant gloves, steel-toed shoes, knee pads, and face shields, etc.**

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## **List of Materials**

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**NOTE: Due to the many variations in models and sizes, customers can order the correct replacement material to specification by trailer serial number from WNC Parts.**

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- Replacement Logistic DuraPlate side panel
- WNC 01A01848–Outer Logistic Strip, .05"-formed aluminum (quantity = 2 per panel)
- WNC 21100083–PVC Foam Tape, 1/16" thick x 3/4" wide (quantity = 26 ft. per panel )
- BRV00002–Long Brazier Head Buck Rivet, 1/4"D x 9/16"L 2114-T4 (quantity 260 per panel)
- BRV00112–Long Brazier Head Buck Rivet, 1/4"D x 13/16"L 2114-T4 (quantity = 50 per panel)
- BRV00144–Long Modified Brazier Head Buck Rivet, 1/4"D x 7/8"L 2114-T4 (quantity = 12 per panel)
- BRV00160–Long Modified Brazier Head Buck Rivet, 1/4"D x 13/16"L 2114-T4 (quantity = 36 per panel)
- BRV00170–Long Universal Stainless Steel Rivet, 1/4" D x 5/8" L (quantity = varies)
- White and gray sealant caulk
- WNC 25000781–Conspicuity Tape (4 ft. section)
- WNC 01S00643–Logistic Inside Strip, galvanized 14-gauge steel 111-3/4" long (intended to be reused)



## **Tools and Equipment Required**

- Two hand-held  $\frac{3}{8}$ " air drills with plenty of sharp F (.257) bits.
- Saber saw with a Fast Cut™ Bi-Metal blade
- Two pneumatic hammer guns, with proper rivet sets, plus flat chisel, and  $\frac{1}{8}$ "D tapered punch, tips
- Two quick release Vise-Grip® deep c-clamps (refer to Figure 2-14)
- Two Vise-Grip® quick release screw clamps
- Claw hammer and nail set
- Extendable load bar (i.e. of 9 ft. trailer width)
- Caulking gun, with Sika #227 or a urethane caulk
- Rivet sets and bucking tools for  $\frac{1}{4}$ " Brazier and modified Brazier heads
- 8 ft. ladder for inside and a 12 ft. ladder or scaffold for outside
- 12-lb. sledge hammer
- Two wood or plastic wedges (a flat chisel tip works)
- Tape measure and grease pencil for marking
- Chalk line and or a long straight edge
- 36" crowbar and large plastic mallet for working on the scuff liner
- Interior lighting for safe work inside the trailer, plus an electrical extension cord
- Two wood scrapers for removing self-sticking foam tape
- Safety equipment: safety glasses, hearing protection, cut-resistant gloves, steel-toed shoes, knee pads, and face shields, etc.
- Four suction cup handles for maneuvering panels
- Two jack stands for shoring the base rail, when required



## **Trailer Setup**

Completely unload the trailer and park on a level shop floor. If more than two panels are removed at the same time, support the base rail with jack stands. String should be tightly stretched along the base rail for alignment, and as a reference point for ensuring the base rail remains level.

## **Separating the Scuff Liner**

1. Using an air hammer with a flat chisel tip, shear off the rivet heads along the top of the galvanized scuff liner, across the panel that is to be changed, and any adjacent panels that need to be removed. The rivet bodies in any adjacent panels will have to be hand-drilled out separately, prior to reassembly.
2. While a mechanic is shearing the scuff liner rivets, a second mechanic can shear the rivet heads along the three lower rows of base rail attaching rivets.
3. Next, place the flat chisel tip between the scuff and inner wall surface and separate the scuff liner by peeling it back from between the base rail and inner wall.
4. Block the galvanized scuff liner back at least 6 ft. (on each side) beyond the immediate work area.

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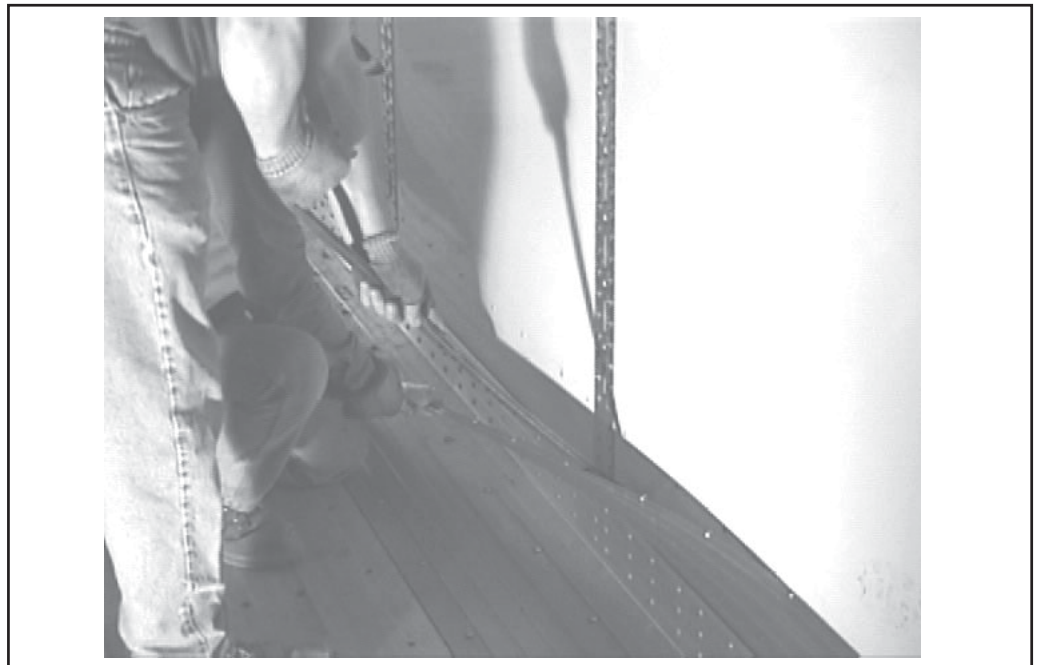
**NOTE: Wabash National Engineering has recently changed the aluminum rivets attaching the top of the scuff liner to a universal stainless steel rivet (BRV00170). The rivets are not to be removed using an impact chisel. Any steel rivets are to be drilled out.**

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**Figure 2-1, Removing the Scuff Liner**



**Figure 2-2, Prying Out the Scuff Liner**



## **Removing the Damaged DuraPlate Logistics Panel**

Logistic side panels have two vertical columns of rivets that secure galvanized strips between the panels. To remove a adjacent panel, both inner logistic steel strips must be completely removed and saved for reuse. Any remaining rivet portions attaching the outer strips to adjacent panels have to be punched outward forcing the strips loose from the seams.

On the inside logistic strips, only the clinched nub ends need to be removed to allow removal of the logistic strips for reuse.

1. Equipped with an air hammer/chisel tip, two mechanics can cut off the rivet button heads across the lower three rows of rivets that secure the panel to the base rail. Keep the chisel tip angled so as not to cut or gouge the aluminum rail surface.
2. Then, switch to an air drill (with a sharp F bit) and remove the clinched rivet nubs which are recessed in the full length of both inner galvanized strips (Figure 2-3). Shiplap DuraPlate panels have rivets that swell between the outer steel skins, whereas logistic panel seam rivets swell in the holes of the 14-gauge steel inner strip. These will be saved for reuse.
3. Using an air hammer equipped with tapered punch  $\frac{1}{8}$ " tip, punch out all rivet bodies from the vertical seams that secure the outer aluminum strips in place. This will force the outer strips away from the panels, allowing them to be removed by pulling them free from behind the top rail (Figure 2-4).



**Figure 2-3, Removing the Vertical Seam Rivets**



**Figure 2-4, Punching Out Rivet Stem Bodies**



## Reference Marks

1. After the two outside batten strips have been removed, and before removing the old panel, use a grease pencil to mark exactly where the old panel is installed, marking both the base rail and top rail. These guide marks will ensure the placement of the new panel in its correct location and help align the holes of both inner and outer batten strips.

## Breaking the Panel Sealant Bonds

1. Complete work on both vertical seams first. Move down to the trailer floor and shear off the rivet button heads. Punch out the 36 rivet stems securing the panel at the base rail. If both vertical seams are properly freed, the lower portion of the panel will break away from the base rail. If not, cut away the adhesive with a utility knife and carefully strike the lower portion of the panel with a sledge hammer.



**CAUTION: For safety, remove base rail rivets first and then install two quick release c-clamps. This secures the side panel at the base rail until the top rail connection is freed from its bonds.**

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2. Before cutting loose any other top rail rivets, have a person inside the trailer apply pressure against the panel. This keeps it in place behind the top rail. This safety practice will prevent the panel from falling and causing an injury.

3. Remove the final top rail rivets from the outside by working on a ladder or scaffold stand. Have a mechanic, equipped with an air impact hammer and chisel tip, cut off the outer rivet clinched nubs across the full panel width on the outer rail face. Then, use the impact chisel between the aluminum rail and pane surface to force the two apart.



**CAUTION:** Before releasing the base rail clamps, have at least two extra people with gloves help to safely lower the panel down.



**Figure 2-5, Three People to Safely Remove the Old Panel**



## Cleaning and Preparing the Panel Opening

1. Scrape all residue and sticky tape off the adjacent panel seams. Scrape any sealant behind the top rail and along the outside surface of the base rail. Brush or wipe down all surfaces that will come in contact with the new panel. Sticky residue will attract and hold drill shavings, plus obstruct maneuvering the new panel into place.
2. Apply PVC Foam Tape (21100083) along the full length of both outside edges of the new panel and along the adjacent side panel outside the vertical edges of the opening. Add two rows of PVC tape across the horizontal width of the outer base rail open surface.

## Cutting and Preparing the New Panel

1. Carefully measure the old panel for exact length by checking three locations: left, right, and middle. Some trailers have slight wedges and a side panel can vary in length.
2. Set up the new panel on a flat, sturdy surface. Two saw horses work well for measuring and sawing to length. Prior to cutting, always verify that the side with 5" to the first hole determines the bottom, and the two offset seam indentations go to the inside for recessing the 14-gauge steel inner logistic strips.

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**NOTE: Ensure the DuraPlate panel offset indented seams face inside to recess the thick 14-gauge logistic strips. Align the hole pattern with adjacent side panel seams. Place the sheared end down against the base rail. Install the hand-sawn end behind the top rail.**

---



3. Most new panels require cutting to the correct length. Rough sawing must always be done from the top of the panel using a saber saw with a Bi-Metal blade for safe, easy cutting. Most new panels should come from the factory at the correct width and have vertical seam holes re-punched. To save time and repair hours, request DuraPlate Logistics side panels be pre-punched at the factory. This will eliminate the need to drill 140 straight and true 1/4" holes in every panel.



**CAUTION: Always wear good ear protection ( earmuffs/ear plugs) while working in and around riveting impact noise.**



Figure 2-6, Cutting the New Panel to Length





## **Installing the New Panel**

1. Use at least three people to lift and insert the new panel into the opening. Have one person inside the trailer with a step ladder and rivet bucking bar. The other two people must use quick release clamps outside to lift the panel into place and maneuver it along the base rail ledge.
2. Align the panel to the old marks so the batten strips cover both seams equally. Apply the modified quick release c-clamps to hold the panel tight against the base rail.
3. Position a ladder so a mechanic equipped with both an air drill and impact gun can quickly add temporary tacks to secure the panel at the top rail.
4. Before drilling or riveting, verify the new panel is properly aligned in relation to the opening and the holes align with adjacent panel seams. Refer to the old panel location marks.
5. Have available two outer batten strips with foam tape installed on the inner surface.



**Figure 2-7, Installing the New Panel in the Opening**



## Temporarily Tacking the New Panel

**NOTE: Refer to Figure 2-15.**

1. Starting at the top of one vertical seam, install an outer batten strip (01A01848) between the top rail and panels until the top set of holes aligns with the holes in the adjacent panel. Drop down 12" from the top rail and install two 1/4"-20 x 1"L bolts as temporary tacks to draw the three thicknesses together. Put one 1/4" x 9/16" rivet in a hole from the outside to hold the panel snug while a person inside aligns the inner galvanized strip. It is easiest to use 1/4" bolts for temporary tacks when drawing the three layers together.
2. Move down the column 24" and install a second pair of bolts to hold the strips vertically in line with the holes in the adjacent panel.
3. Proceed to drill and install temporary tack bolts, evenly spaced in pairs at 12" intervals, down the seam to the base rail.



Figure 2-8, Installing Temporary Tack Bolts in the Vertical Seams



4. Moving back up to the top rail, transfer drill out the double row of holes across the top rail. Install  $\frac{1}{4}$ " x  $\frac{13}{16}$ " rivets in all holes within safe reach.
5. Move both inside and outside ladders to the next vertical seam. Install the second outer batten strip under the top rail until the first set of holes aligns with the hole in the adjacent panel. Insert a  $\frac{1}{4}$ "-20 x 1"L bolt in the hole to hold the alignment. This gives the mechanic inside the opportunity to put the inner galvanized strip into place. Nut and secure the one bolt, drawing both strips tightly together in place.
6. Move down the column seam approximately 24" and install a second pair of bolts to hold the strips vertically in line with the holes in the adjacent panel.
7. Go back to the first bolt location, drill, and add a second  $\frac{1}{4}$ "-20 x 1"L bolt and continue to install evenly spaced temporary tacks in pairs at 12" intervals down the vertical seam.
8. While working near the top rail, again transfer drill out all holes across the top rail face. Then install  $\frac{1}{4}$ " x  $\frac{13}{16}$ " rivets, including the four missing rivets from the adjacent panel.

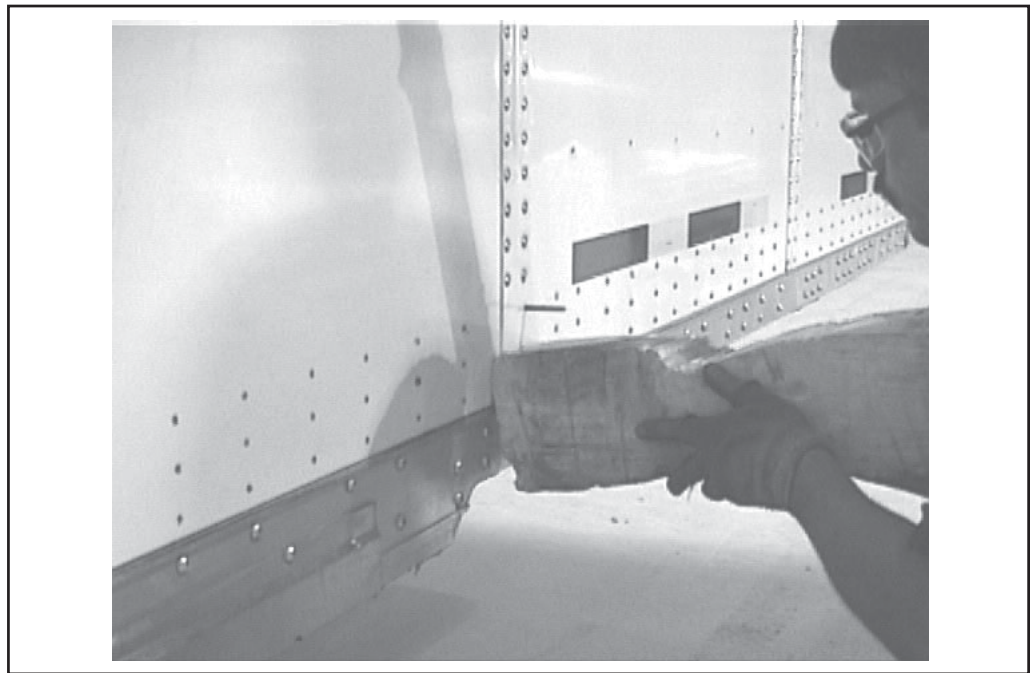


Figure 2-9, Riveting the New Vertical Seam Between Tacks

## Completing the Riveting Process

1. Use two mechanics to drill holes and install rivets simultaneously from both inside and outside the trailer. Use an air drill/F bit, a bucking bar, and an impact gun for modified Braziers.
2. Working simultaneously, two mechanics can drill vertical seam holes in groups of 10 from the inside outward. Then, go back and install  $\frac{1}{4}$ " x  $\frac{9}{16}$ " rivets (BRV00002) from the outside inward. Working in intervals of 10 to 12 rivets between each set of tacks prevents puckering of the outer aluminum strip.
3. Work on one vertical seam, then move over to the other side. Try to stay consistent by working from the top downward.

**NOTE: Refer to Figure 2-15.**



**Figure 2-10, Using a Wood Block for Safety When Back Drilling**



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 **WARNING:** To prevent personal injury, use a wood block buffer when back-drilling the lower portion of each batten strip. The strip tends to bend away from the panel surface during the drilling. Refer to Figure 2-10.

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4. When the vertical seams are completed, proceed to inside the trailer and transfer drill through the lower 36 holes along the base rail. Change over to an air impact gun and install rivets ( $1/4'' \times 13/16''$ ) only in the lower two rows of 24 holes. Leave the last 12 holes along the top row until after the scuff liner is reinstalled between the panel and base rail upper lip.

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 **CAUTION:** To protect against injury from debris, wear knee pads when working on the base rail rivets on the floor.

---

## **Reinstalling the Scuff Liner**

1. Three people should work the liner down into place. Use two people inside, one holding the scuff upright and the other using a large mallet, drive the lower portion down between the base rail and DuraPlate outer steel surface. It may be necessary to place a cargo jack at the front and rear corners to secure the scuff until rivets can be applied.
2. One person outside bucks rivets, while another person inside back-drills the scuff top mount holes. A third person holds the liner tight against the wall until rivets can be installed. It is best to have two air lines: one with an air drill and the other with an impact gun, so the two can be switched rapidly.



**Figure 2-11, Reinstalling the Scuff Liner**

3. The adjacent panel scuff liner holes should still be available. Secure the liner back into place and realign the holes so rivets can be installed.
4. Back drill the holes in the new panel from the inside outward. Change from  $\frac{3}{16}$ " to  $\frac{1}{4}$ " rivets, installing 12 rivets per panel width.
5. Then, install the final 12  $\frac{1}{4}$ " x  $\frac{13}{16}$ " rivets (BRV00160 modified Brazier) along the upper lip of the base rail.



**Figure 2-12, Riveting the Scuff Liner to the Side Panel**



## **Final Requirements to Complete the Repair**

1. Sweep out the interior and clean up all debris.
2. Install conspicuity tape along the lower side panel above the base rail as prescribed by DOT.
3. To prevent moisture from entering, caulk the base rail ledge where the new panel rests.



**Figure 2-13, Caulking the Base Rail**



## **General Information on Buck Rivets**

1. The hole size in adjoining material must not be greater than the recommended drill size for each fastener. Refer to the chart on page 2-21.
2. Rivet heads must be seated tightly against the material by means of a block or rivet head prior to setting the rivet.
3. Good riveting practice includes clamping adjoining materials tightly together before rivet installation. With DuraPlate side panels, install either temporary rivets or small bolts spaced along the seams.
4. To ensure proper rivet set, the rivet stem must protrude through the adjoining materials  $\frac{1}{8}$ " to  $\frac{3}{16}$ ".
5. Rivet set must not be used unless equal pressure is applied to the rivet on the opposite side.





## Drill Bit Guide–DuraPlate Buck Rivets

A general rule determining the hole size for solid rivets is to provide a clearance of .003" to .008" over the maximum shank diameter of the rivet. The clearance can be increased to .015", when necessary, for rivets 1/4" in size.

Examples:

3/16"D	Hole size: .188" - .191"	Drill bit size: 11
1/4"D	Hole size: .250" - .257"	Drill bit size: F

### Wabash National Corporation Buck Rivet Nomenclature

Part Number		Description
BRV00002	1/4"D x 9/16"L	Brazier Aluminum 2114-T4
BRV00024	1/4"D x 5/8"L	Modified Brazier Aluminum 2117-T4
BRV00025	1/4"D x 3/4"L	Brazier Aluminum 2117-T4
BRV00026	1/4"D x 1/8"L	Brazier Aluminum 2117-T4
BRV00069	3/16"D x 9/16"L	Modified Brazier Aluminum 2117-T4
BRV00111	1/4"D x 3/4"L	Modified Brazier Aluminum 2117-T4
BRV00112	1/4"D x 13/16"L	Brazier Aluminum 2114-T4
BRV00144	1/4"D x 7/8"L	Modified Brazier
BRV00160	1/4"D x 13/16"L	Modified Brazier Aluminum 2117-T4
BRV00170	1/4"D x 5/8"L	Universal Stainless Steel

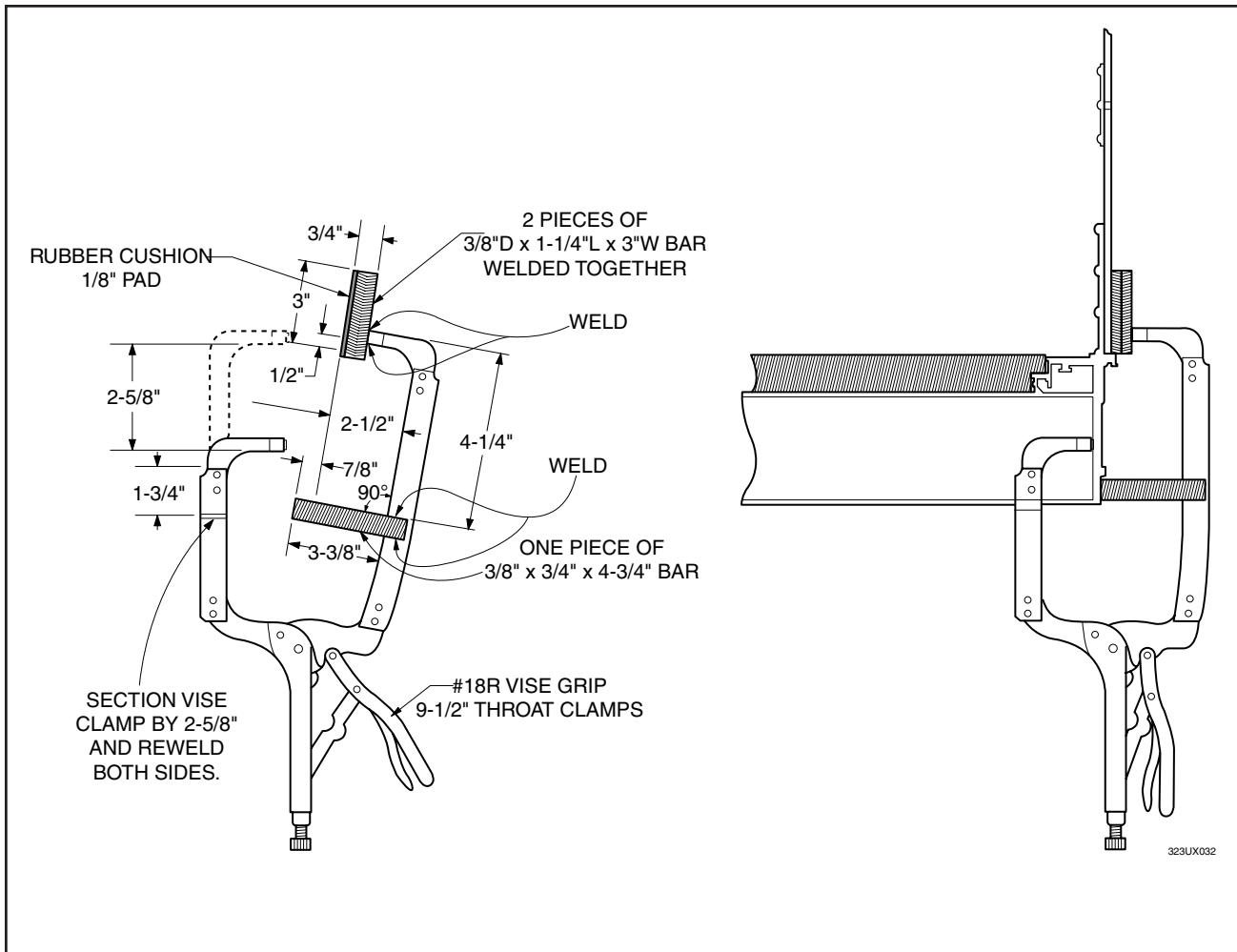


Figure 2-14, Modified Deep Throat Vise Clamp

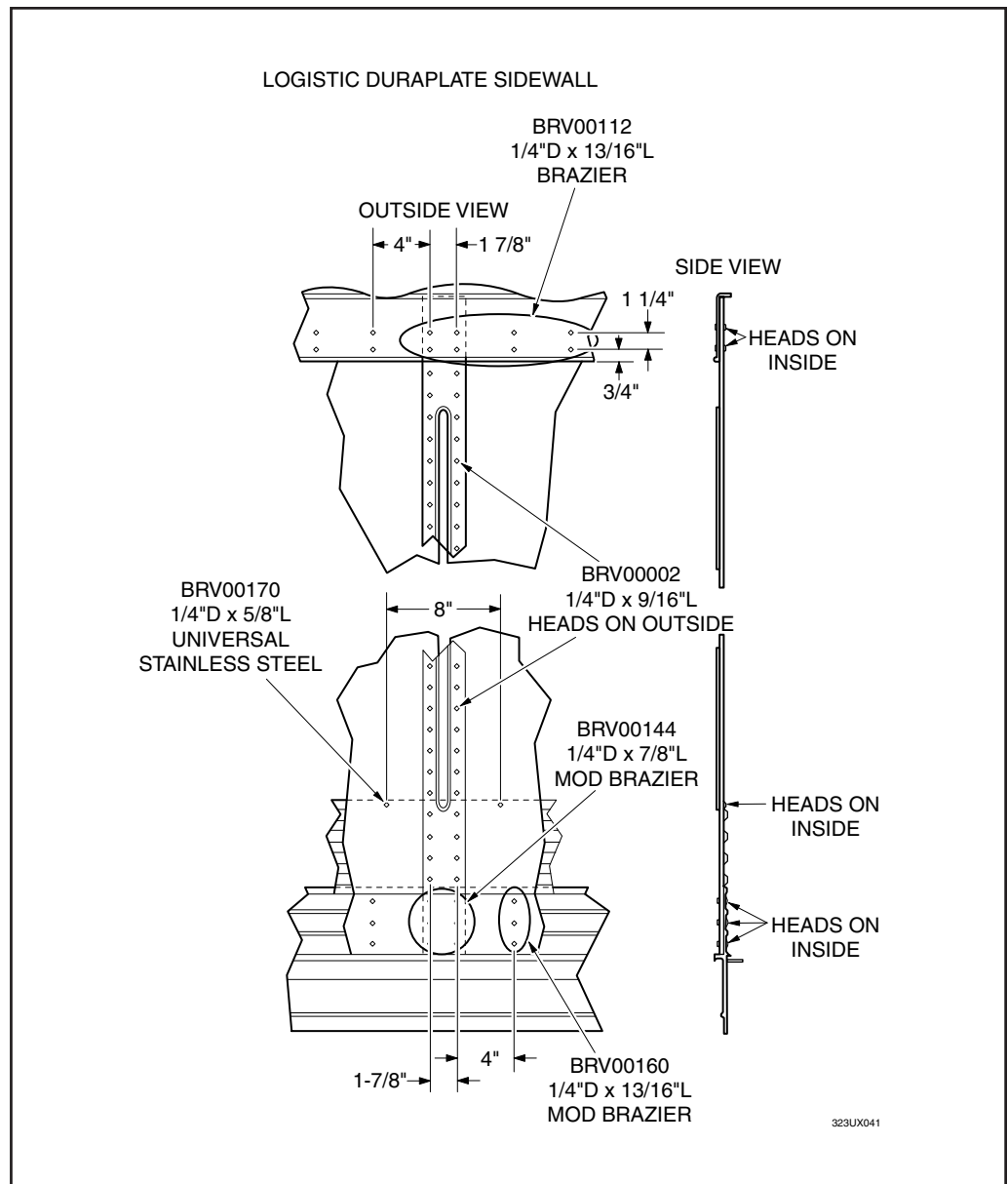


Figure 2-15, Logistic DuraPlate Fastener Locations





## **SECTION 3**

# **LOGISTIC DURAPLATE HD DRY FREIGHT PANEL REPAIR**

### **Introduction**

This rework procedure is intended to provide proven methods for replacing a Logistic DuraPlate side panel on a Wabash National Corporation HD dry freight van trailer. Individuals using these repair guidelines must first ensure neither personal nor product safety will be jeopardized.

Our objective is to show a safe and efficient method for removing and replacing a side panel.

### **Labor Requirements**

Replacing a DuraPlate side panel requires three qualified mechanics using the proper tools and equipment, as outlined in this procedure. Standard repair time per panel is three hours. Changing adjacent panels in the same row should require less time per panel. This procedure is written based on proven shop practices for replacing a single DuraPlate Logistic side panel. It identifies critical areas of concern. If read and followed, it will increase safety and efficiency, and will prevent further damage to the trailer.



**CAUTION: People working with DuraPlate side panels are advised to always use proper ANSI safety equipment, including: safety glasses, hearing protection, cut-resistant gloves, steel-toed shoes, knee pads, face shields, etc.**

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## **List of Materials**

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**NOTE: Due to the many variations in models and sizes, customers can order the correct replacement material to specification by trailer serial number from WNC Parts.**

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- Replacement Logistic DuraPlate side panel
- WNC 01A01798—Outer Batten Strip, formed aluminum .05" (quantity = two per panel, color to match specifications)
- WNC 21100083—PVC foam tape, 1/16" thick x 3/4" wide (quantity = 26 ft. per panel)
- BRV00002—Long Brazier Head Buck Rivet, 1/4"D x 9/16"L 2114-T4 (quantity 250)
- BRV00022—Long Brazier Head Buck Rivet, 1/4"D x 5/8"L 2114-T4 (18 per panel change)
- BRV00026—Long Brazier Head Buck Rivet, 1/4"D x 7/8"L 2114-T4
- BRV00092—Long Brazier Head Buck Rivet, 1/4"D x 1"L 2114-T4 (40 per panel change)
- BRV00112—Long Brazier Head Buck Rivet, 1/4"D x 13/16"L 2114-T4 (40 per panel change)
- BRV00246—Long Brazier Head Buck Rivet, 1/4"D x 1-1/16"L 2114-T4 (four in each lower seam)
- Gray sealing caulk
- WNC 01S00631—Logistic Inside Strip, galvanized 14-gauge, 96" long (intended to be reused)



### Tools and Equipment Required

- Two hand-held  $\frac{3}{8}$ " air drills with several sharp F (0.257) bits.
- Saber saw with a Fast Cut™ Bi-Metal blade
- Two pneumatic hammer impact guns, with proper rivet sets, plus flat chisel, and  $\frac{1}{8}$ " diameter taper punch
- Small hammer, screwdriver and  $\frac{7}{16}$ " open-end wrench
- Caulking gun, with Sika #227 or urethane caulk
- Rivet sets and bucking tools
- 8 ft. stepladder for inside and 12-ft. stepladder or scaffold for outside.
- Two plier-action c-clamps, 11" or 11- $\frac{1}{2}$ " quick release
- Two wood or plastic wedges, flat chisel impact tips.
- 12-ft. measure tape rule
- Chalk line and/or a long straight edge
- Large plastic mallet and 36" crowbar
- Interior lighting for a safe work environment inside the trailer, plus an electrical extension cord
- Grease pen
- Wood scraper for removing self-sticking foam tape
- Safety equipment: safety glasses, hearing protection, cut-resistant gloves, steel-toed shoes, knee pads, and face shields.
- Two  $\frac{1}{4}$ "D x 2"L bolts, and at least twenty-four  $\frac{1}{4}$ "-20 x 1"L bolts and nuts for tacking
- Four suction cups/handles to assist in moving and handling DuraPlate panels
- Two jack stands for shoring the base rail, when required



## **Trailer Setup**

The trailer should be completely unloaded and parked on a level shop floor. If more than two panels are removed at the same time, the base rail must be supported with jack stands. String should be tightly stretched along the base rail for reference. Figure 3-1 shows installation of the base rail supports and inside roof support load locks used under the roof assembly.



**Figure 3-1, Supporting the Base Rail**





### Removing the Damaged Logistics DuraPlate Panel

Logistic side panels have two vertical columns of rivets that secure galvanized strips between the contiguous panels. To remove a panel, both adjacent inner galvanized logistic strips have to be completely removed and saved for reuse. When removing rivets by drilling out the centers, work carefully to keep the air drill level and straight when drilling into each rivet.

1. Starting with a mechanic inside the trailer, equipped with an air hammer and rivet cutting chisel tip, remove all the rivet button heads that connect the lower aluminum sheet and upper DuraPlate panel splice extrusion. Keep the chisel tip angled so as not to cut or gouge the inner aluminum surface. To accommodate removing the DuraPlate panel from the opening, remove at least nine extra rivets along the high rail splice on the adjacent panels. The extra space will allow the top of the panel to lay back when being lifting out of the groove during removal.
2. Change the chisel tip to an  $\frac{1}{8}$ " tapered punch and force out rivet stems to free the whole outer rub rail splice connection between the lower panel and the inner .190 aluminum plate.
3. To prevent the panel from accidentally sliding through, insert two  $\frac{1}{4}$ "-20 x 2" bolts with nuts through the existing holes of the extrusion lower flange and inner aluminum sheet, spaced about 2 ft. apart as a safety measure.
4. Set up one person to work outside the trailer on a ladder. Equipped with an air hammer and chisel tip, remove rivet button heads from the vertical seams. Start at the bottom of one outside vertical column and chisel off the rivet heads that attach the outer batten strips to adjacent panels. Keep the chisel tip angled so as not to cut or gouge into the aluminum surface. Continue cutting off the rivets until both exterior batten strips have been completely removed.
5. After the two outside batten strips have been removed and before removing the old panel, use a grease pencil to mark exactly where the old panel is situated. These simple guide marks will expedite placing the new panel into the exact location and aligning the holes of both inner and outer batten strips.



6. The mechanic working inside the trailer must switch to an air drill with a 1/4" bit and start drilling out complete rivet bodies that hold the galvanized strips in place. It will be necessary to remove most of each rivet that secures the strips to the adjacent panels. The soft rivets will have expanded in the DuraPlate plastic core. If the rivets are punched directly out, the bodies will expand the holes or the outer steel skin. This only applies to the rivets that attach the inner strips to adjacent panels. The two inside columns of rivets that attach the galvanized strips to the damaged panel do not have to be removed. Only the clinched nub ends of the rivets have to be drilled off to free the galvanized strips for reuse. The person inside can apply pressure against the panel to keep it from falling away at the top.

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**⚠ CAUTION: Follow the above safety practice to prevent the panel from falling loose and causing bodily harm. Notify the person inside the trailer to watch that the top of the panel may break free.**

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7. Remove the top rail rivets from the outside while working on a ladder or scaffold. Have a mechanic, equipped with an air impact hammer and chisel tip, cut off the outer rivet nubs across the full panel width at the outer top rail face. Use the impact hammer/chisel tip between the top rail and outer panel surface to force the two surfaces apart.



**Figure 3-2, Drilling Out the Seam Rivets**



**Figure 3-3, Punching Out the Rivet Bodies from Inside**



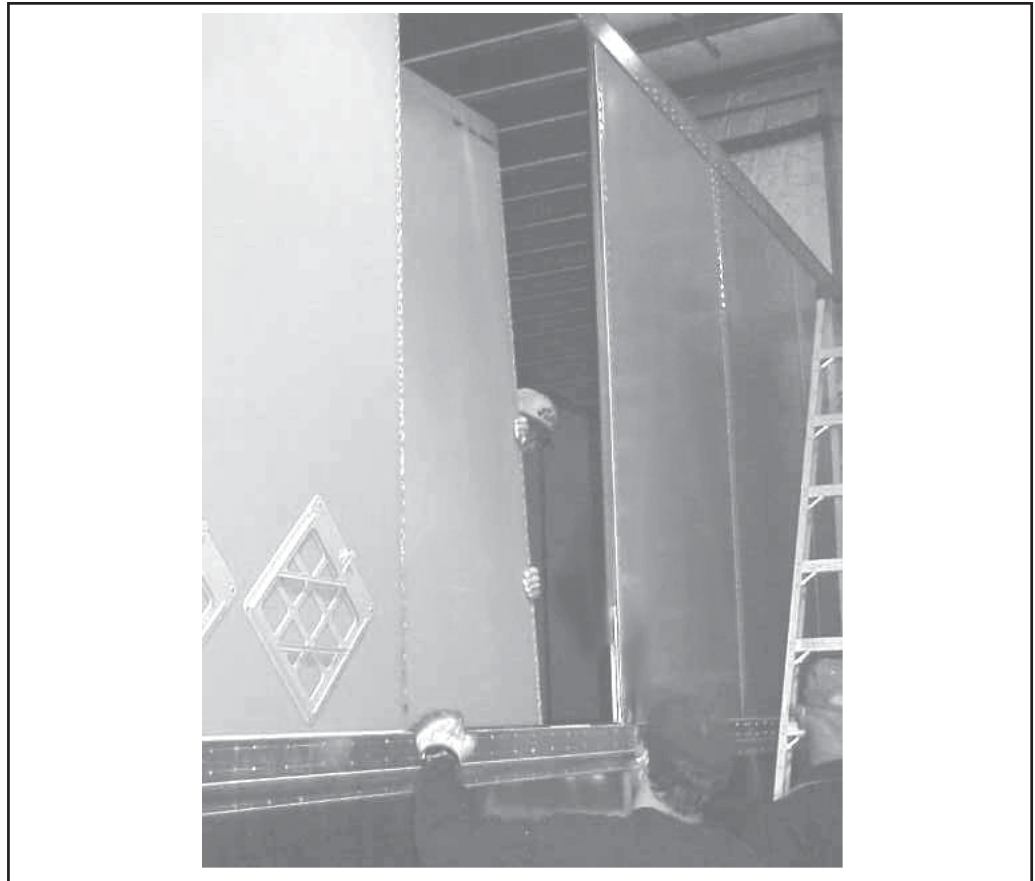
## **Breaking the Panel Sealant Bonds**

All DuraPlate side panels have rivets, foam tape, and sealant connections that must be broken loose before a panel can be removed. The design of the logistic seam allows a panel to be removed from the opening without exposing adjacent side panels to damage.

1. To break the aluminum plate connection, use a utility knife to cut the caulking along the bottom of the panel.
2. Have at least two people with gloves and suction cup handles available inside to lift the panel out of the groove and away from the opening. Then, safely move the panel out of the way to be measured for length. Refer to Figure 3-5.



**Figure 3-4, Punching Out the Base Rail Rivets**



**Figure 3-5, Removing the Old Panel**



## **Cleaning and Preparing the Opening**

1. Clean all the residue and sticky tape off the adjacent panel seams. Remove any sealant behind the top rail and along the inner surface of the base rail extrusion. Wipe all surfaces that will come in contact with the new panel. Sticky residue will attract and hold drill shavings, as well as complicate maneuvering the new panel into place.
2. If possible, clean any drill shavings from between the aluminum plate and outer extrusion.

## **Cutting and Preparing the New Panel**

1. Starting from the bottom, carefully measure the old panel for length and verify hole patterns. It will be necessary to cut the new panel to the correct length. New DuraPlate Logistic panels must be the correct width and come with vertical seam holes pre-punched from your parts center.
2. Set the new panel on a flat sturdy surface for cutting. Two saw horses will work for measuring and sawing to length. Prior to cutting, always verify 5-1/4" to the first hole pattern to determine which is the bottom of the panel. Locate the two seam indentations which go inside for recessing the inner 14-gauge steel logistic strips. Mark the inside of the panel with big letters for easy identification.

---

**NOTE: Specify new replacement side panels with pre-punched holes directly from the manufacturer.**

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**Figure 3-6, Saw Cutting the New Panel to Length—Vertical seam offset must be placed facing the trailer interior to ensure flush surface, preventing freight damage.**



## Installing the New Panel

1. Apply PVC Foam Tape (21100083) along the full length of both edges of the new outer batten strips (01A01798). Also, apply foam tape to the inside center portion of the lower 3" of the galvanized inner strips.
2. Caulk the inside lip or shoulder of the splice extrusion. This will seal the bottom edge of the DuraPlate panel from wicking or drawing water between the layers. Apply a continuous bead of caulk that comes into contact with the existing ledge sealant of the adjacent panels. Attach a plastic hose extension to the nozzle of the caulk tube to reach 3" or 4" down between the layers. Apply caulk sealant exactly where it is required.

**CAUTION:** Without proper safety precautions during panel removal, a new panel could slip through the opening onto the shop floor causing bodily harm. We highly recommend using two safety bolts to prevent panel drop.

3. When the new panel is set into place, the exterior aluminum extrusion is no longer riveted to the inner aluminum plate. To prevent the side panel from slipping down past the aluminum plate, install two 1/4"-20 x 2" bolts with nuts spaced 2 ft. apart. Insert the bolts through the exterior aluminum rail and lower plate 6" inboard from each vertical seam. The lower portion of the panel is set down into an opening on a narrow ledge. If the panel weight is released or the top portion is pushed vertical in the opening without someone outside holding the extrusion tight against the panel surface, the panel could fall to the shop floor.

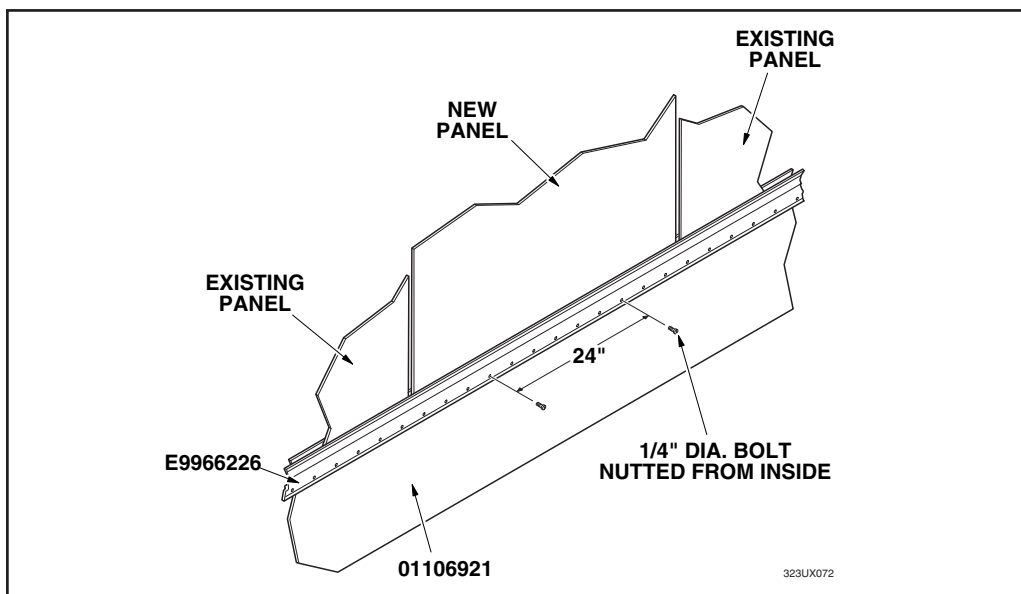
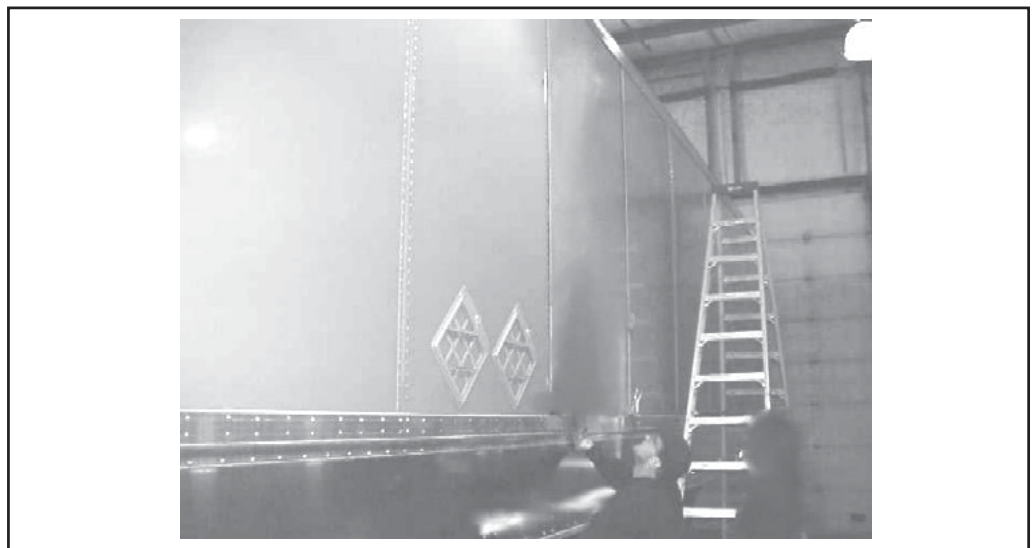


Figure 3-7, Safety Bolt Placement





**Figure 3-8, Lifting and Setting the New Panel Behind the HD**



**Figure 3-9, Lifting and Setting the New Panel Behind the HD**

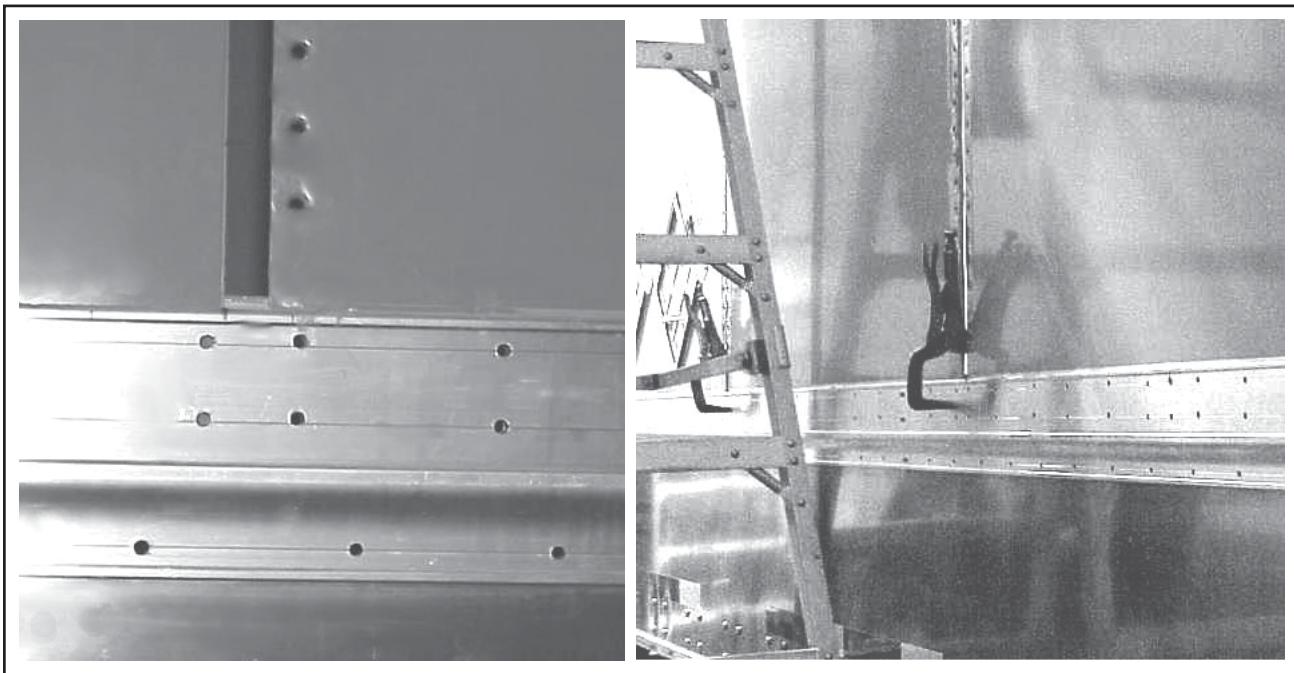


4. With heavy leather gloves and vacuum suction handles, three people are required to maneuver the new panel into the old opening from inside the trailer. Ensure the two safety bolts are in the outer extrusion.

The new panel should be oriented to the opening outside surface, facing out as determined by the offset indentations on the inside. Rest the lower, factory cut end on the floor. Lay the top back, beveled away from the wall, and lift the whole panel up, high enough to guide the bottom into the opening between the inner aluminum sheet and outer extrusion. Slowly lower the panel until it rests on the lower ledge of the extrusion.

Keep one person inside holding the panel vertical and tight against the top rail until tack rivets can be added. Or, insert two quick release c-clamps on one side.

5. Balanced evenly, align the panel in the opening against the old reference marks, so the batten strip holes will align and cover both sides.



**Figure 3-10, Align Panel to Old Reference Mark and Secure with Two Quick Release C-Clamps**



## Logistic DuraPlate HD Dry Freight Panel Repair

6. Apply two quick release c-clamps in the  $\frac{7}{8}$ " open slot, at the bottom and top, **only on one side**, to hold the panel secure while working the batten strips over the slot on the opposite side.
7. On a ladder, and using an air drill/F bit and rivet impact gun, a mechanic can transfer drill holes from the top rail through the new DuraPlate panel using a F bit. Install the rivets in the top rail with heads on the inside of the trailer. Then, install two  $\frac{1}{4}$ " rivet tacks (BRV00112) near the center to hold the panel secure at the top.
8. Before drilling or riveting further, verify the position of the new panel in relation to the opening and hole edge distance alignment for the inner galvanized logistic strip.

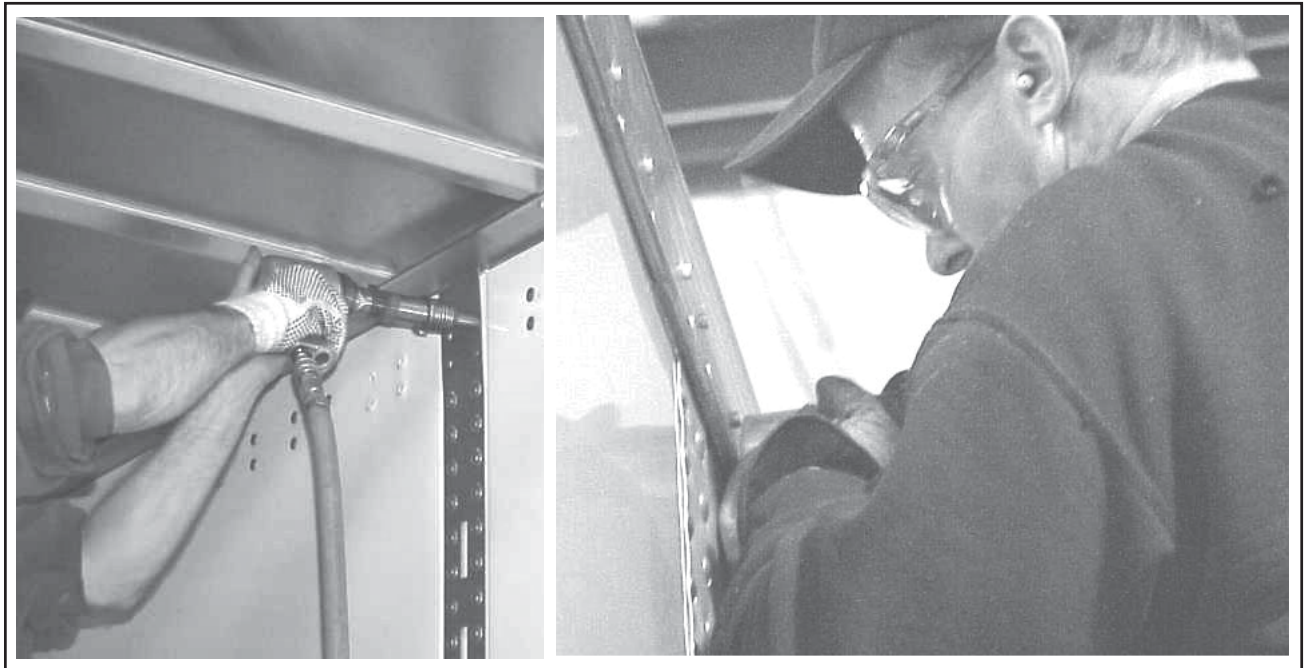


Figure 3-11, Installing Rivets Heads from Inside and Bucking the Top Rail Rivets Outside

## **Temporarily Tacking Up the New Panel**

1. Starting at the top of one vertical seam, install one outer batten strip (01A01798) under the top rail until the top set of holes aligns with the holes in the adjacent panel. Install two  $\frac{1}{4}$ "-20 x 2" bolts as temporary tacks to draw the three thicknesses together. It is easiest to use  $\frac{1}{4}$ " bolts for temporary tacks when drawing the three to five layers together. Adjust the batten panel before riveting.



**Figure 3-12, Installing Bolts as Temporary Tacks in Vertical Seams**



2. Move down the ladder and tuck the lower end of the outer batten behind the aluminum extrusion. Align the batten strip holes with the adjacent panel.
3. Work from the top and continue drilling and installing pairs of temporary bolts down the seam, evenly spaced at 12" intervals. Installing bolts will draw the three layers tightly together for better riveting, but still allow the opportunity to make panel adjustments before rivets are applied.
4. Install one pair of tack bolts ( $\frac{1}{4}$ "-20 x 2") at the bottom where the five layers of material come together. These lower holes will first have to be drilled. Bolts will be added to both clamps. Hold the stack securely in place before removing the c-clamps from the opposite side.
5. Move both inside and outside ladders over to the next vertical seam. Release and remove both top and bottom quick release c-clamps. Then, install the second outer batten strip under the top rail until the first set of holes align with holes in the adjacent panel. Insert one  $\frac{1}{4}$ "-20 x 2" bolt in the hole to hold alignment and give the person inside the opportunity to put the inner galvanized strip in place. Nut only the one bolt until the bottom end of the outer batten is tucked behind the base rail and rivet holes are aligned with holes in the adjacent panel.
6. Go back to the top connection and proceed to drill and install pairs of bolts down the column seam, evenly spaced at 12" intervals, drawing the three layer tightly together for riveting later.
7. Drill and install the last pair of bolts ( $\frac{1}{4}$ "-20 x 2") at the bottom where the five layers of material have to be pulled tightly together before installing the longer rivets.
8. Before moving the ladders away from this location, go back to the top rail and transfer drill F bit holes across the top rail face and install  $\frac{1}{4}$ " x  $\frac{13}{16}$ " rivets in all holes within reach.



## Completing the Riveting Process

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**NOTE:** Refer to Figure 3-13 for fastener locations.

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The cross-sectional drawing shows which rivets are required for the various assembly locations. The drawing can also be viewed in the Wabash National Parts Manual: DuraPlate Logistic Side.



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**CAUTION:** Be sure that you always know the location of the other person who is working with you inside or outside the trailer.

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1. Two mechanics drill holes and install rivets simultaneously from both inside and outside the trailer. Use an air drill/F bit, bucking bar, and impact gun for modified Braziers.



# Logistic DuraPlate HD Dry Freight Panel Repair

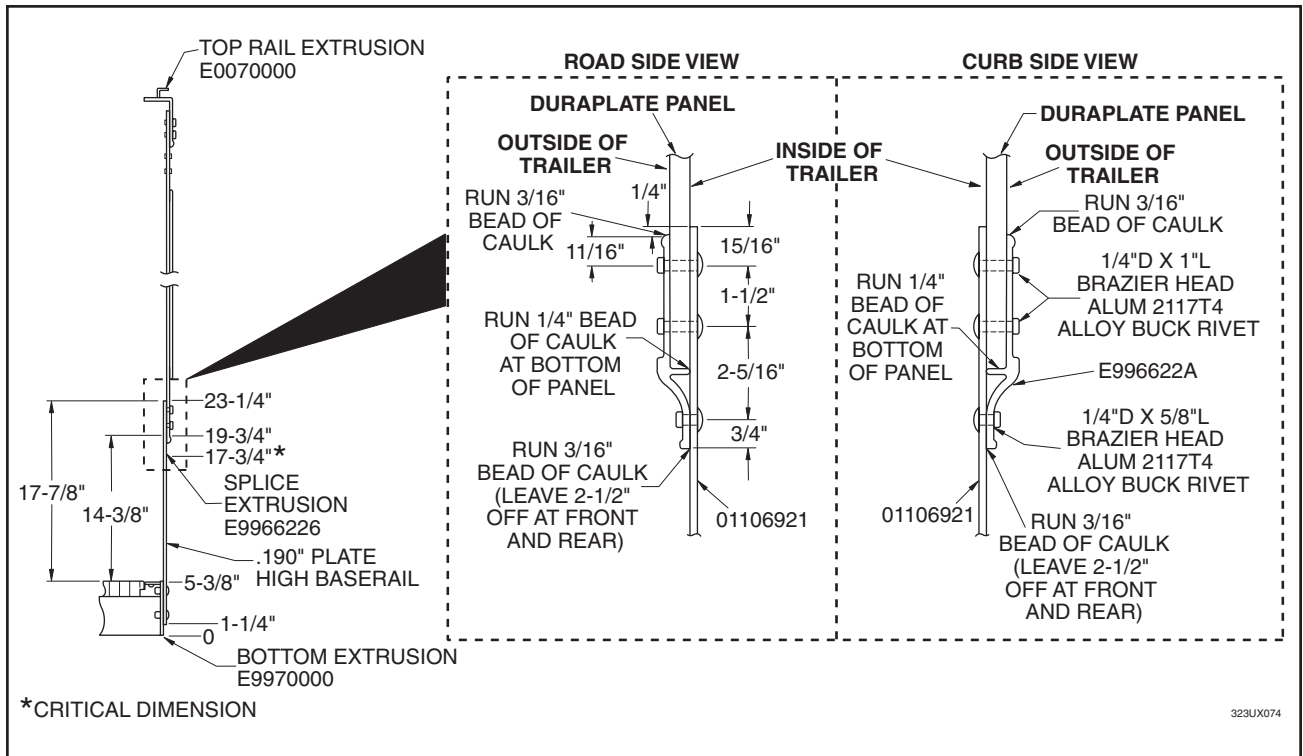


Figure 3-13, Side Wall Section View and Fastener Locations



**CAUTION: Be sure that you always know the location of the other person who is working with you inside or outside the trailer.**

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2. Two people working simultaneously can also drill vertical seam holes in groups of 10 from the inside outward. Install  $\frac{1}{4}$ " x  $\frac{9}{16}$ " rivets (BRV00002) from the outside inward. Working in intervals of 10 to 12 rivets between each pair of bolts prevents puckering of the outer aluminum strips.
3. Work on one vertical seam then move over to the other side. Try to stay consistent by working from the top downward.

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**NOTE: The lower four rivets of each vertical seam, where five material thicknesses come together, require a longer  $\frac{1}{4}$ " x  $1\text{-}\frac{1}{16}$ " rivet (BRV00246).**

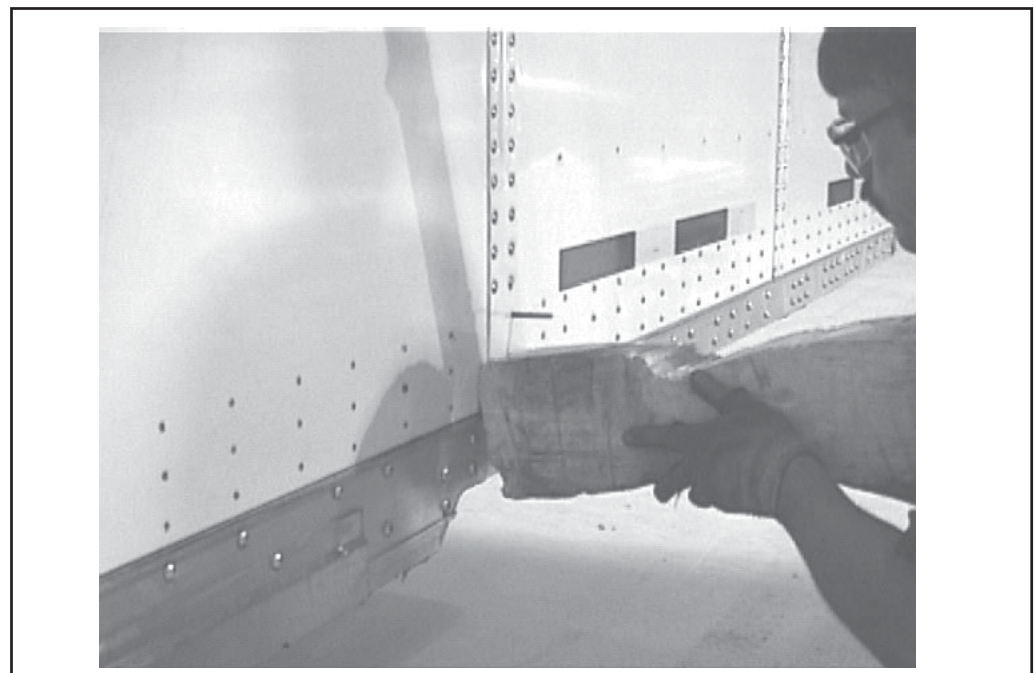
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**⚠ WARNING:** To prevent personal injury, use a wood block buffer when back-drilling the lower portion of each batten strip. The strip tends to bend away from the panel surface during the drilling.



**Figure 3-14, Installing Permanent Rivets Between the Tack Bolts from the Top Down**



**Figure 3-15, Using a Wood Block for Safety, the Lower Four Holes Require Longer Rivets**



4. When the vertical seams are completed, move down and transfer drill from the outside inward through the 36 lower holes along the high-rail extrusion. When transfer drilling along the high-rail extrusion (HD), take extra precautions not to enlarge the holes in the HD extrusion or damage the inner .190 aluminum plate. Some considerations would be to use a shorter drill bit, or a drill-stop that restricts the bit to pass through the lower aluminum plate material.
5. Change to an air impact gun and install  $\frac{1}{4}$ "D x 1"L rivets (BRV00092) in the two rows across the top portion of the aluminum plate (24 holes). Rivet button heads should be on the inside of the trailer.
6. Leave the 12 lower holes for last, remove the two  $\frac{1}{4}$ " bolts, and install rivet heads (BRV00022) inside facing outward. Install  $\frac{1}{4}$ "D x  $\frac{5}{8}$ "L Brazier aluminum (2117-T4) along the bottom row.

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 **CAUTION: To protect against debris, wear knee pads when working on the base rail rivets on the floor.**

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**Figure 3-16, Drilling Through Replacement Panel**



**Figure 3-17, Bucking Rivets in Exterior Extrusion**



## **Final Requirements to Complete the Repair**

1. Sweep the interior of the trailer and clean up all debris.
2. Caulk the exposed seams by running a  $\frac{3}{16}$ " diameter bead of gray caulk under the top rail at the logistic posts from 6" in front of the vertical seam post to 6" behind it. Run another  $\frac{3}{16}$ " diameter bead of gray caulk on top of the splice extrusion in the high base-rail joint. Connect the existing beads of caulk to eliminate any voids, holes, etc.

## **General Information on Buck Rivets**

1. The hole sizes in adjoining material must not be greater than the recommended drill size for each fastener.
2. Prior to setting the rivet, rivet heads must also be seated tightly against the material by means of a block or rivet head.
3. Good riveting practice is to clamp adjoining materials tightly together before rivet installation. With DuraPlate side panels, install either temporary rivet tacks or small  $\frac{1}{4}$ " bolts spaced out along the seams.
4. To ensure proper rivet set, the rivet stem must protrude through the adjoining materials  $\frac{1}{8}$ " to  $\frac{3}{16}$ ".
5. Rivet set must not be used unless equal pressure is applied to the rivet at opposite side.



## Drill Bit Guide–DuraPlate Buck Rivets

A general rule for determining the hole size for solid rivets is to provide a clearance of .003" to .008" over the maximum shank diameter of the rivet. The clearance can be increased to .015" when necessary for rivets 1/4" in size.

Examples:

3/16"D	Hole size: .188" – .191"	Drill bit size: 11
1/4"D	Hole size: .250" – .257"	Drill bit size: F
5/16"D	Hole size: .313" – .316"	Drill bit size: O

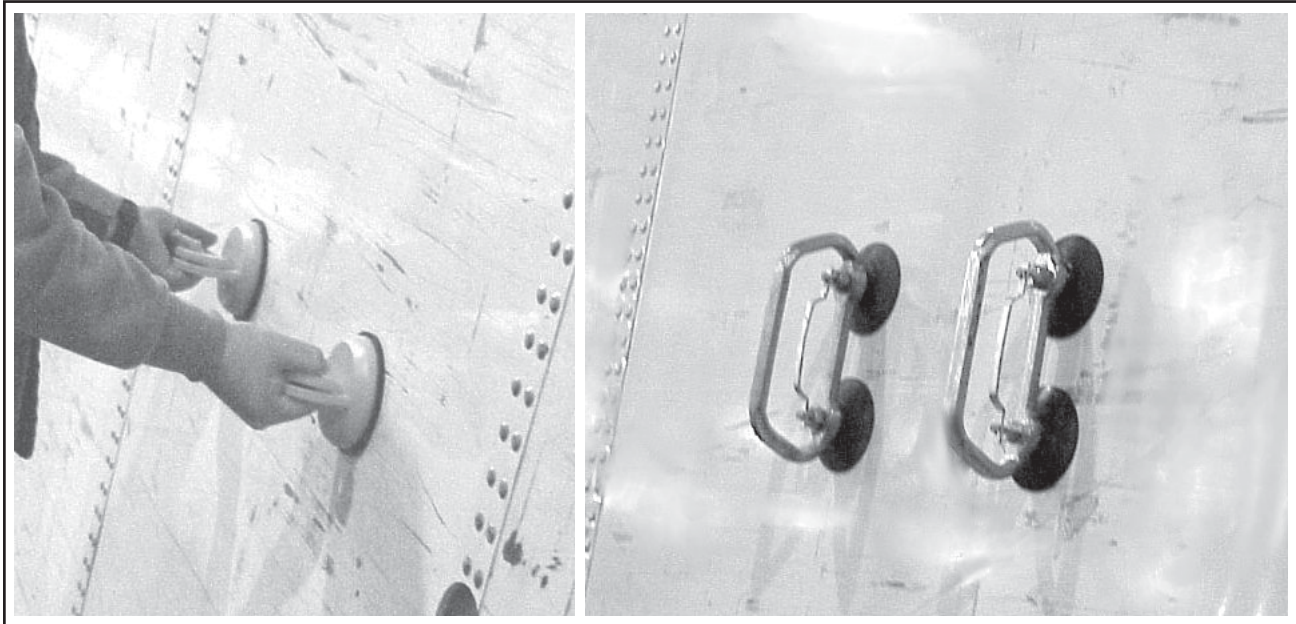


Figure 3-18, Examples of Suction Cup Handles for Maneuvering Side Panels





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