TIRES/RIMS

AAR JOB CODES

1100 - 1116
Safety Precautions:

When working with tires, several safety precautions should be followed. Listed below are items to be considered:

- Do not re-inflate a tire that has been run while flat without first inspecting the tire, rim, and wheel assembly. A tire that is 20% under-inflated is considered flat. Tire should be inspected for defects. Double-check the lock ring for damage; make sure it is secure in the gutter before inflation.
- Always exhaust all air from both tires of a dual assembly prior to removing any rim components or any wheel components, such as nuts and rim clamps. Make sure you remove the valve core and exhaust all air from the tires.
- Always stand to one side when you apply air pressure to the tire.
- Check rim components periodically for fatigue cracks. Replace all cracked, badly worn, damaged, severely rusted, or welded components. Three-piece rims are prohibited.
- Make sure that the correct parts of a tire/rim assembly are being assembled. Mixing parts of one manufacturer’s rims with those of another is prohibited.
- Double-check to make sure all components are properly seated prior to inflating a tire.
- Do not overload rims or overinflate tires. (Check with the rim manufacturer if special operating conditions are required.)
- Do not seat rings by hammering while the tire is inflated. Do not hammer on an inflated or partially inflated tire/rim assembly.
- Do not inflate any tire before all side and lock rings are in place. Check components for proper assembly again after inflating to approximately 5 psi.
- Never sit on or stand in front of a tire and rim assembly that is being inflated. Use a clip-on chuck, and make sure the air hose is long enough to permit the person inflating the tire to stand to the side of the tire (minimum 24 in.).
- All studs and lug nuts should be replaced according to DOT regulations.

CAUTION: Always inflate tires that have been removed from trailers and chassis in a safety cage. Tires may be inflated and deflated while on the trailer or chassis.
Tires - 1100

Defect Review

Description: Flat Tire

Job Code: 1100 - Flat Tire Repair

Condition Code: 7 – Labor Only

Why Made: 16 – Flat Tire

Action: When object penetrating tire tread area makes a hole less than ¼” diameter, tire/tube should be patched and placed back in service. **When puncture exceeds ¼” diameter, the tire should be replaced.**

Responsibility: Owner
Defect Review

Description: Weather checking should not exceed 1/32" deep. Photo on left shows circumferential sidewall split exceeding 2/32" deep.

Tire tread must be visible in one photo, and tire must be marked with equipment number, date of repair, Why Made Code, tire location, and tire tread depth.

Job Code: 1115 or 1116 – Bias or Radial tire
Condition Code: 1 or 3 – Replace with New or Recap
Why Made: 17 – Channel Crack/Weather Check

Action: Replace tire.

Responsibility: Owner

Possible Causes: Weathering/ozone cracking
Tires - 1115-1116

Defect Review

Description: Circumferential sidewall cracking under 2/32’ deep.

*Tire tread must be visible in one photo, and tire must be marked with equipment number, date of repair, Why Made Code, tire location, and tire tread depth.*

Action: When cracking is less than 2/32” deep, tire should remain in service – no action required.

Responsibility: Owner’s when over 2/32”
Tires - 1115-1116

Defect Review

Description: Sidewall cut through cord; impact break

Tire tread must be visible in one photo, and tire must be marked with equipment number, date of repair, Why Made Code, tire location, and tire tread depth.

Job Code: 1115 or 1116 – Bias or Radial Tire

Condition Code: 1 or 3 – Replace with New or Recap
Why Made: 14 – Cut

Action: When cut through the first ply-belt of sidewall, replace tire.

Responsibility: Handling Carrier

Note: The photo below is of a tire puncture, not a cut/torn tire. This type of damage should be coded as 1100 and patched only.
Defect Review

Description: Slick tread – 2/32” or less tread remaining

Tire tread must be visible in one photo, and tire must be marked with equipment number, date of repair, Why Made Code, tire location, and tire tread depth.

Job Code: 1115 or 1116 – Bias or Radial Tire
Condition Code: 1 or 3 – Replace with New Tire or Recap
Why Made: 09 – Slick Tread

Responsibility: Owner

Action: Replace Tire
Tires - 1115-1116

Defect Review

Description: Separated/peeled cap

*Tire tread must be visible in one photo, and tire must be marked with equipment number, date of repair, Why Made Code, tire location, and tire tread depth.*

Job Code: 1115 or 1116 – Bias or Radial Tire
Condition Code: 1 or 3 – Replace with New Tire or Recap
Why Made: 10 – Separated Cap

Action: Replace tire.

Responsibility: Owner
Tires - 1115-1116

Defect Review

Description: Slid flat

*Tire tread must be visible in one photo, and tire must be marked with equipment number, date of repair, Why Made Code, tire location, and tire tread depth.*

*Slid flat tires must have TWO SETS of tread depth marks – one for the damaged tread and one for the surrounding un-damaged tread.*

Job Code: 1115 or 1116 – Bias or Radial Tire
Condition Code: 1 or 3 – Replace with New Tire or Recap
Why Made: 34 – Slid Flat

Action: When tire tread depth exceeds 4/32” and at least 4/32” tread has been removed in the affected area, replace tire. If the tire tread depth measures less than 4/32”, it cannot be ruled a Slid Flat.

Responsibility: Handling Carrier
Tires - 1115-1116

Defect Review

Description: Blister

*Tire tread must be visible in one photo, and tire must be marked with equipment number, date of repair, Why Made Code, tire location, and tire tread depth.*

Job Code: 1115 or 1116 – Bias or Radial Tire
Condition Code: 1 or 3 – Replace with New Tire or Recap
Why Made: 11 - Blister

Action: Replace tire.

Responsibility: Owner
Tires - 1115-1116

Defect Review

Description: Run flat

*Tire tread must be visible in one photo, and tire must be marked with equipment number, date of repair, Why Made Code, tire location, and tire tread depth.*

Job Code: 1115 or 1116 – Bias or Radial Tire

Condition Code: 1 or 3 – Replace with New Tire or Recap

Why Made: 13 – Run Flat

Action: Replace tire when casing has been damaged. Often tires are misdiagnosed as run flat simply because the inner tube valve stem is sucked into the tire or the bead contact has been broken. A thorough inspection of the casing internally and externally must be made to determine if the tire has been structurally impaired. Significant discoloration of the tread or sidewall is an indication the tire was over-heated and should be considered compromised beyond use.

Responsibility: Handling Carrier
SUSPENSION AND TANDEMS

AAR JOB CODES

2112 - 2480
Wheel Hub - 2112

Post Repair

Description: New bearings installed in existing hub, but the worn ABS tone (exciter) ring was not noticed and should have been replaced along with the hub.

Job Code: 2112 – Wheel Hub
Condition Code: 1 – Replace W/New
Why Made Code: 15 – Worn Out Location: LF – Left Front

Action: Invoice submitted with these post photos will be declined.

Responsibility: Owner

Post Repair

Description: New bearings installed but worn/missing ABS tone ring was not noticed and should have been replaced.

Action: Invoice submitted with these post photos will be declined.
Wheel Hub - 2112

Post Repair

Description: New wheel hub replaced, but ABS tone ring missing off of the new assembly.


Action: Work Order/Invoice will be declined.

Responsibility: Owner

Post Repair

Description: Photo at left is of a new wheel hub and spacer with ABS tone ring installed.

Note: Tone ring or exciter - an exciter is a ring with notched teeth. The most commonly used exciter has 100 evenly spaced teeth, but the number of teeth can vary depending on the system design. The component is known by several names: sensor ring, tooth wheel, tone ring, and exciter.
A chassis will not pass an inspection if it has one of the following defects or deficiencies:

1. Brake System.
   a. Service brakes.
      (1) Absence of braking action on any axle required to have brakes upon application of the service brakes (such as missing brakes or brake shoe(s) failing to move upon application of a wedge, S-cam, cam, or disc brake).
      (2) Missing or broken mechanical components including: shoes, lining, pads, springs, anchor pins, spiders, cam rollers, push-rods, and air chamber mounting bolts.
      (3) Loose brake components including air chambers, spiders, and cam shaft support brackets.
      (4) Audible air leak at brake chamber (Example: ruptured diaphragm, loose chamber clamp, etc.).
      (5) Readjustment limits. The maximum stroke at which brakes should be readjusted is given below. Any brake 1/4 inch; or more past the readjustment limit or any two brakes less than 1/4 inch; beyond the readjustment limit shall be cause for rejection. Stroke shall be measured with engine off and reservoir pressure of 80 to 90 psi with brakes fully applied. (2 inch; for long stroke design). Wedge Brake Data — Movement of the scribe mark on the lining shall not exceed 1/16 inch.
      (6) Brake linings or pads.
         (a) Lining or pad is not firmly attached to the shoe;
         (b) Saturated with oil, grease, or brake fluid; or
         (c) Non-steering axles: Lining with a thickness less than 1/4 inch at the shoe center for air drum brakes, 1/16 inch or less at the shoe center for hydraulic and electric drum brakes, and less than 1/8 inch for air disc brakes.
         (d) Steering axles: Lining with a thickness less than 1/4 inch at the shoe center for drum brakes, less than 1/8 inch for air disc brakes and 1/16 inch or less for hydraulic disc and electric brakes.
      (7) Missing brake on any axle required to have brakes.
      (8) Mismatch across any power unit steering axle of:
         (a) Air chamber sizes
         (b) Slack adjuster length
   b. Parking Brake System. No brakes on the vehicle or combination are applied upon actuation of the parking brake control, including driveline hand controlled parking brakes.
   c. Brake Drums or Rotors.
      (1) With any external crack or cracks that open upon brake application (do not confuse short hairline heat check cracks with flexural cracks).
      (2) Any portion of the drum or rotor missing or in danger of falling away.
Brake Shoe - 2480

Pre Repair

Description: (AAR) acceptable; surface cracks in lining face can extend from hole to hole, as long as they don't extend through the lining edges.

Action: No action.

Note: cracking is due to poor prep of shoe prior to installing new linings.
Brake Shoe - 2480

Pre Repair

Description: Unacceptable; cracks across the lining face that extend through the lining edges.

Job Code: 2480 – Brake Shoe
Condition Code: 1 – Replace W/New
Why Made Code: 23 – Flex Cracked Location: RR – Right Rear

Action: Replace brake shoes.

Responsibility: Owner

Post Repair

Description: Photo at left is of replaced brake shoes. A better photo would be from an angle to show new brake kits.
Brake Shoe - 2480

Pre Repair

Description: Unacceptable; cracks across the lining face that extend through the lining edges.


Action: Replace brake shoes and hardware.

Responsibility: Owner

Post Repair

Description: Replaced brake shoe and brake kits.

Note: All new brake kits (roller, anchor pin and springs) are to be used; never re-use old parts.
LANDING LEGS

AAR JOB CODES

3162 - 3163
Landing Leg - 3162-3163

Landing Legs

Description: The landing leg system has been designed to provide a stable support for the trailer or chassis and is located from centerline of the kingpin. Manually operated landing gears must be of two speeds, and the legs must be equipped with heavy-duty wheels and/or pads and heavy-duty axles.

Defects: When a landing gear lower leg and/or upper leg assembly is bent, damaged, or deformed to a point that will not allow free vertical travel, the leg(s) should be replaced.

The normal defects associated with non-functional landing gear are:

- Broken welds
- Loose fasteners (missing, broken, defective, or improper materials)
- Legs improperly adjusted
- Defective components (bent or broken)
- Dry or insufficient lubricant

Repair Comparability Required:

If other than the original type legs are installed, the bolt patterns, gear ratio, and load rating must be compatible. Landing leg braces that have been bent or damaged should be straightened, if practical, or replaced, if necessary, with a new one of like kind or equal strength to the original.

Component Replacement vs. Leg Replacement:

When a landing leg is defective due to internal component failure without damage to the leg assembly, the components should be replaced, if necessary, in lieu of replacing the entire leg. Reassembly must include proper lubrication.

Replacement leg must match original and leg and all components must be painted to match chassis.
Landing Leg - 3162-3163

Landing Gear Mounting Bracket:

If damage to the landing gear mounting bracket is such that it is impractical to repair and it must be replaced, the replacement bracket must be of like kind as original equipment. The bolt-on type requires a direct one-for-one replacement utilizing identical fastener patterns and sizes as the original installation.

In replacing the weld-on bracket, care must be taken to remove the damaged bracket without distorting, bending, or cutting through mounting surfaces adjacent to the bracket. If this is not possible, cross members directly over the landing gear must also be replaced with the bracket.

Sand Shoes, Dolly Wheels, and Axles:

When it is necessary to replace sand shoes, dolly wheels, and/or axles, the replacement must be of like size, shape, and strength as the opposite position and must be properly secured.

Landing Gear Crank Handle:

When it is necessary to replace the landing gear crank handle, the replacement must be of sufficient size and shape to clear the side of trailer or container and must store in existing storage retainer.

Cross Shaft:

When it is necessary to replace the cross shaft, the replacement must be of the same size, shape, and strength as that of the original equipment. A removable fastener must be used in installation.
Landing Leg - Complete Set - With Braces – 3162

Pre Repair

Description: Both legs bent back and broken

Job Code: 3161 – Landing Leg Complete Set WO Braces
Condition Code: 1 – Replace W/New
Why Made Code: 03 – Broken
Location: U – Under

Action: Replace both legs; re-use handle.

Responsibility: Damage

Note: Further inspection of associated components (mounting brackets, brace) required.

Post Repair

Description: Replaced legs not painted; ear brackets welded to mounting bracket; mismatched sandshoes (high and low profile) used. Handle also replaced for no reason.

Action: Rework to correct improper repairs.

Ear brackets, retim legs, securing braces, remove and reinstall crank handle are all associated with replacement.

Paint new components with a color that matches the repaired unit.
Landing Leg - Gear Side – 3163

Pre Repair

Description: Landing leg - gear side

Job Code: 3163 – Landing Leg Gear Side
Condition Code: 1 – Replace W/New
Why Made Code: 02 – Bent
Location: LS – Left Side

Action: Replace left gear side leg.

Responsibility: Damage

*Note: Further inspection of associated components.*

Post Repair

Description: Replaced Landing Leg Gear Side, Left Side. Ear brackets, R&R handle associated with replacement.

Action: Replaced Landing Leg Gear Side.

*Ear brackets, retime legs, securing braces, removing and re-installing crank handle are all associated with replacement.*

*Paint new components a color that matches the repaired unit.*
DOT/MOT UNDER-RIDE GUARD

AAR JOB CODES

3350 – 3355
DOT Under-ride Guard - 3350 – 3355

DOT under-ride guards are assemblies required by DOT specifications that are fastened to rear sill assemblies and/or slider rails and designed to reduce damage in rear-end collisions. Two Federal Standards regarding under-ride guards are regulated by Federal Motor Vehicle Safety Standards FMVSS 223 and FMVSS 224. These standards establish the strength, location, dimensions, and energy absorption requirements for trailer rear bumpers.

The primary goal of any repair is to ensure the under-ride guard remains in the same condition and configuration it had when it was delivered from the manufacturer.

- A vertical bend in the horizontal member in excess of 3 or more inches should be repaired. Minor cuts, tears, dimples, bends, or other minor damage do not impact under-ride guard effectiveness and do not require repair.

- If the end of the horizontal member is bent upward, it can be bent down to its original position. If it is bent downward, it can be left alone or bent up to its original position. If it is bent forward less than 3 inches, no repair is needed.

- Use only cold bending methods. Repetitive bending should be avoided.

- Repaired horizontal bumper must be 22 inches above the ground and extend to within 4 inches (but not beyond) of the chassis side extremities.

- With guard damage, the rear cross members, rear sill, vertical members, and the last 6 feet of the floor also must be inspected for damage.

- A repaired or replaced under-ride guard must resist the force levels specified by Federal Motor Vehicle Safety Standard 571.223 - Standard No. 223; Rear impact guards.

- If the entire under-ride guard is missing, replace with an OEM assembly (Job Code 3350).

- Paint new components using color that matches unit. Conspicuity Tape must be replaced and is included in the cost of replacing the horizontal bumper.
DOT/MOT Bumper Upright - 4” Channel – 3354

Pre Repair

Description: DOT Bumper Upright - Bent

Job Code: 3354 – DOT/MOT Bumper Upright – 4” Channel
Condition Code: 8 – Straighten
Why Made Code: 02 – Bent
Location: LR, RR

Action: Straighten DOT/MOT Bumper Upright 4” Channels; weld DOT/MOT Bumper Upright 4” Channels.

Responsibility: Damage

Pre Repair

Description: DOT Bumper Upright - Broken

Job Code: 3354 – DOT/MOT Bumper Upright – 4” Channel
Condition Code: 1 – Replace with New – DO NOT WELD BREAK!

Why Made Code: 03 - Broken
Location: LR

Action: Replace DOT/MOT Bumper Upright 4” Channel. No conspicuity tape is needed on new upright bumpers.

Responsibility: Damage
DOT/MOT Bumper Upright - 4” Channel – 3354

Description: DOT Bumper Upright – Improper Repair. *Patches, braces, etc., cannot be used on upright or horizontal bumpers.*

Action: Replace upright bumper and code as 20-Improper Repair.

Description: DOT Bumper LR, RR Uprights – proper repair.

*Damaged upright bumpers were replaced with new, one-piece bumpers welded directly to the chassis.*

*Note: More care should have been taken when painting upright bumpers. Conspicuity tape should have been covered.*
DOT/MOT Bumper Upright - 4” Channel – 3354

Description: Cosmetic Damage -
DOT upright bumpers are not bent sufficiently to require repair.

Description: Improper Repair -
DOT bumper uprights were painted improperly after being welded – paint cannot cover conspicuity tape.

*Vendor should have covered conspicuity tape prior painting or replaced conspicuity tape, at their expense, after the weld was painted.*
DOT/MOT Horizontal Bumper - 4” Tubular – 3355

Pre Repair

Description: DOT Bumper Horizontal-4” Tubular

Job Code: 3355 – DOT/MOT Bumper Horizontal-4” Tubular

Condition Code: 1 – Straighten
Why Made Code: 02 – Bent
Location: R – Rear

Action: Since horizontal bumper is deflected by more than 3 inches, straighten DOT/MOT Bumper Horizontal 4” Tubular.

Responsibility: Damage

Pre Repair

Action: Since horizontal bumper is NOT deflected by more than 3 inches, no action should be taken.
DOT/Under-ride Guard Horizontal - 4” Tubular – 3355

Pre Repair

Description: DOT Bumper Horizontal-4” Tubular

Job Code: 3355 – DOT/MOT Bumper Horizontal-4” Tubular
Condition Code: 1 – Replace W/New
Why Made Code: 03 – Broken

Location: R – Rear

Action: Replace DOT/MOT Bumper Horizontal-4 Tubular Replace Conspicuity Tape.

Responsibility: Damage

Post Repair

Description: Replace DOT/MOT Bumper Horizontal-4” Tubular and Conspicuity Tape.

Action: Properly replaced DOT/MOT Bumper Horizontal-4” Tubular and Conspicuity Tape.

Conspicuity tape is included in the cost of horizontal bumper replacement.
DOT/Under-ride Guard Horizontal - 4” Tubular – 3355 - Improper Repair

Description: The use of heat to assist in the straightening of the bumper is prohibited. There is clear evidence in both photos to the left that heat was used due to the discoloration and burned areas of the horizontal tube at the upright attach point.
MUD FLAP

AAR JOB CODES

3403 - 3405
Mud Flaps

Check mud flaps for missing fasteners and torn or cut material. If flaps are located on an outrigger, note the rigidity and the attachment of the outrigger. Note any flaps with a logo or other marking that may be unacceptable to the owner.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut or torn</td>
<td>If 3 inches horizontally at the mount bracket, replace.</td>
</tr>
<tr>
<td>Holes</td>
<td>If hole is more than 2&quot; (50mm) in diameter, replace.</td>
</tr>
<tr>
<td>Loose or missing fasteners</td>
<td>If more than one fastener missing, repair/replace.</td>
</tr>
<tr>
<td>Improper length</td>
<td>Repair/replace.</td>
</tr>
</tbody>
</table>

*Note: use large head flat washers (Fender Washers) on the flap side to help prevent tearing of the flap.*
Mud Flap - 3403

Pre Repair

Description: Mud flap and bracket missing.

Job Code: 3403 – Mud flap  
Condition Code: 1 – Replace W/New  
Why Made Code: 08 – Missing  
Location: L – Left

Job Code: 3405 – Mud Flap Bracket  
Condition Code: 1 – Replace W/New  
Why Made Code: 08 – Missing  
Location: L – Left

Action: Replace Mud Flap and Bracket.

Post Repair

Description: Replaced mud flap and bracket.

Action: Replaced Mud Flap.

Responsibility: Owner

*Use large head flat washers (Fender Washers) on the flap side to help prevent tearing of the flap.*
Mud Flap – 3403

Pre Repair

Description: Mud flap bolt holes torn out at fasteners.

Job Code: 3403 – Mud flap
Condition Code: 1 – Replace W/New
Why Made Code: 14 – Torn
Location: RF – Right Front

Action: Replace mud flap

Post Repair

Description: Mud flap bolt holes torn out at fasteners.

Job Code: 3403 – Mud flap
Condition Code: 1 – Replace W/New
Why Made Code: 14 – Torn
Location: RF – Right Front

Action: Replace mud flap with solid black mud flap with no improper foreign markings.
Mud Flap – 3403 – Improper Repairs

Description: New mud flap replaced; however, corner should have been trimmed at a 45 degree angle as original.

Action: Invoice will be declined.

Description: New mud flap replaced with improper foreign markings.

Action: Invoice will be declined.
Mud Flap Bracket – 3405

Pre Repair

Description: Mud flap bracket is broken and requires replacement.

Job Code: 3405 – Mud Flap Bracket
Condition Code: 1 – Replace W/New
Why Made Code: 03 – Broken
Location: RR – Right Rear, LR Left Rear

Action: Replace mud flap bracket with one single bracket that extends the entire width of the chassis.

Post Repair

Description: Mud flap bracket has been properly replaced with single bracket painted to match chassis.
Mud Flap Bracket – 3405 - Improper Repairs

Post Repair

Description: The photos to the left show improper mud flap bracket repairs by either welding a new section of bracket to the broken portion or attempting to re-weld the broken-off section of bracket back into place.

Note: Both of these types of improper repairs will be declined.
LIGHTS AND ELECTRICAL

AAR JOB CODES

4146 - 4161
Lights and Electrical – 4146 - 4161

Electrical System

Lighting System:

Lighting systems shall be 12-volt design with conventional seven-conductor electrical connector socket wires and be installed. The lighting system on trailers consists of a light connection located on the nose of the trailer, four red marker lights, two amber marker lights, four amber reflectors, two red reflectors, two combination stop and tail lights, one R.H. directional signal, one L.H. directional signal, one license plate light, auxiliary lights, and all the necessary wiring, wiring clips, terminals, and connectors for the correct functioning of the system to meet required Federal Motor Vehicle Safety Standard 108. Lights are recessed for protection from trailer sides and ends, with no opening permitted that will allow water into the system.

Chassis lights consist of two combination stop and tail lights, one R.H. directional signal, one L.H. directional signal, and one license plate light. Lights are recessed for protection with no opening permitted that will allow water into the system.

Protective Coating:

It is recommended that dielectric grease be used as a protective coating on all electrical connectors to ensure longevity and performance of the electrical connection.

Welding:

Welding on trailers and chassis can be hazardous to sensitive electrical components such as lights. Before welding, check the following:

- All air lines are protected from heat and splatter.
- All anti-skid components are shielded and protected from heat and splatter.
- A ground clamp is placed as close to the weld as practical.
- Electrical trailer power cord must be disconnected from power unit.
Marker Light Assembly - Seal Beam - 4146

**Pre Repair**

**Description:** Marker Light missing R

**Job Code:** 4146  
**Condition Code:** 1 – Replace with New  
**Why Made Code:** 08 – Missing  
**Location:** R – Rear

**Action:** Replace Marker Light

**Responsibility:** Owner

**Post Repair**

**Description:** Marker Light replaced using new Seal Beam light with new Retainer. **DO NOT USE RUBBER GROMMET-TYPE RETAINER.**

**Action:** Installed new Marker Light with retainer ensuring that dielectric grease is used as a protective coating at the connection.

**WHEN IT IS NECESSARY TO REPLACE LIGHT ASSEMBLIES, INSTALL SEAL BEAM LIGHTS WITH PLASTIC RETAINERS USING DRIVE RIVETS.**
Marker Light Assembly - Seal Beam - 4146

Pre Repair

Description: Marker Light burned out LSR

Job Code: 4146
Condition Code: 1 – Replace with New
Why Made Code: 24 – Burned Out
Location: LSR – Left Side Rear

Action: Replace Marker Light

Responsibility: Owner

Note: Prior repair has only 2 of 3 fasteners replaced – improper repair.

Post Repair

Description: Marker Light replaced using new Seal Beam light with new Retainer. **DO NOT USE RUBBER GROMMET TYPE RETAINER.**

Action: Installed new Marker Light with Retainer using dielectric grease as a protective coating at the connection.

Replace all fasteners using drive rivets.
Tail Light Assembly - Seal Beam - 4161

Pre Repair

**Description:** Tail Lights missing RR

**Job Code:** 4161  
**Condition Code:** 1 – Replace with New  
**Why Made Code:** 08 – Missing  
**Quantity:** 2  
**Location:** LR – Left Rear  

**Action:** Replace Tail Lights

**Responsibility:** Owner

Post Repair

**Description:** Tail Lights replaced using new Seal Beam lights with new retainers.  
**DO NOT USE RUBBER GROMMET-TYPE RETAINER.**

**Action:** Installed new Tail Lights with new retainers using dielectric grease as a protective coating at the connection.

*Replace all fasteners with drive rivets.*
INTERIOR

AAR JOB CODES

4300 - 4342
Interior Plywood Lining - 4312

Pre Repair

Description: Interior plywood lining broken.

Job Code: 4312 – Interior plywood lining
Condition Code: 1 – Replace
Why Made Code: 03 – Broken
Location: RSC – Right Side Center

Action: Replace liner.

Responsibility: Owner (unless associated with panel or post damage)

Post Repair

Side Liners: Repair/replacement materials shall be the same quality, type, and thickness as the original liner material.

The installation of ply-liners should use the same type fasteners as used in the original installation.

If a ply-liner has a hole greater than 4 inches, the ply-liner should be replaced.

Scuff Liner: The scuff liner and fasteners must be of like material as the original installation. Sectioning is acceptable with end joints located at a side post.
Sidewall Load Retainer (E-Track) – 4320

Pre Repair

Description: E-track weld broken and does not require repair unless track is bent and deformed causing a snag point for cargo. As you can see by example at the left, this area has been welded repeatedly and has not stopped defect from happening repeatedly so to weld for sake of securing is not cost efficient.

Action: No repair required.

Post Repair

CARGO CONTROL TRACK - A vertical or horizontal structural member normally attached to sidewall posts or flooring with pierced slots for use with cargo tie-off straps or double-decking components or other restraining devices.
DOOR

AAR JOB CODES

4418 - 4419
Door – 4418-4419

Rear Doors and Rear Frame

General:

The rear doors are among the most damaged component on an intermodal trailer or container; therefore, certain repair procedures must be followed to maintain the overall structural integrity of the trailer or container.

The door of a trailer or container is designed so that when loaded beyond the design load, failure will take place in the door locking hardware and not in the connections between the end frame and the trailer or container body. The door and assembly are designed to withstand the maximum loads and fatigue forces imposed in rail operation. (Generally, the door end assembly consists of the door frame, doors, door hinges, door locking hardware, and the attachment of these items.)

Repair Procedures:

Rear Doors:

Plating of rear doors is not permitted and shall not be considered a proper repair (except as only a temporary repair). Self-sealing patches are allowable on cuts that do not extend more than 1/8 inch into the door plywood.

All door replacements shall be made with like materials (gaskets, door hardware, door dimensions).

When doors are mounted, they shall be mounted flush with the door frame and shall be constructed such that the curbside door must be opened before the roadside door can be opened.

All decals and signs shall be replaced on new doors.

The replacement of all tie-backs on new doors is required.

Customs -Trade Partnership Against Terrorism (C-TPAT) criteria for door hinge pins must be observed.
Door – 4418-4419

Security Hardware

- Lock rods and hinge plates shall meet AAR M-931 specifications.
- When doors are replaced, the security plate must be replaced.
- All door-seal locking devices, door securement hardware, and door attachment hardware must be affixed by fully welding or by the use of “tamper-proof” fasteners to preclude entry into the trailer or container by removal of any of the door hardware components. A minimum of one fastener on each of the top and bottom hinges and top and bottom lock-rod support bearings shall be “tamper-proof.” All door seal hasp fasteners also shall be “tamper-proof.”
  
  1) Fasteners may be considered “tamper-proof” by virtue of their original design or because of alteration to reusable fasteners, which requires their destruction by burning or cutting to effect removal. Reusable fasteners, such as nuts and bolts, are not recommended; if used, they must be secured by fully welding the nut to the bolt or the bolt to its mating hardware. (“Fully welding” means welding around the entire circumference of the bolt.) Prevailing-torque fasteners utilizing deformed threads or plastic inserts are not considered as “tamper proof” fasteners (except when they are inaccessible, such as on refrigerated trailer doors). Tack or spot welding is not permissible.

- All door hardware shall have a hot-dip galvanized finish or functional equivalent.
Door - 4419

Pre Repair
Description: The right door is broken. Even though no wood is exposed the deformed wrinkled interior skin indicates the plywood core is broken.

Job Code: 4419 – Door
Condition Code: 1 – Replace With New
Why Made Code: 3 – Broken
Location: RR – Right Rear

Action: Replace door.
Responsibility: Damage

Post Repair
Description: Door has been replaced. However, it cannot be determined if all decals, holdbacks, etc. have been replaced since they are not visible in the pre-repair photo.
Door – 4418-4419

When replacing doors, replace all decals including EMP Logo, unit number, warning, caution, tare weights, placard holders, etc., that were on original door panels.
Door Gasket - 4425

Pre Repair

Description: Door gasket needs to be replaced. *Where the end of the new gasket meet the old, corner tabs must be installed to seal the corners.*

Job Code: 4425 - Door Gasket  
Condition Code: 1 – Replace With New  
Why Made Code: 14 – Cut, Torn  
Location: RR – Right Rear

Action: Replace Door Gasket

Responsibility: Owner (unless associated with damage)

Post Repair

Description: The joint between the new and old piece of gasket was improperly sealed with caulk. A corner tab should have been used.

Action: This type of repair will be declined.
Door Gasket - 4425

Post Repair

Description: This right door's bottom gasket was replaced. Where the end of the new gasket meets the old, corner tabs are properly installed to seal the corners.

Responsibility: Owner (unless associated with damage).

Note: The top and bottom door gaskets CANNOT be sectioned.

Post Repair

Description: It is OK to section the side portion of the gasket. The side gaskets can be sectioned a minimum of 12”.

Note: Use corner tabs to seal the seams of the new and old gasket and at the door corners. Never use caulk in place of corner tabs.
Door Hold Back Clip/Hook - 4433

Pre Repair

Description: Door hold back clip/hook is broken and needs to be replaced.

Job Code: 4433 - Door Hold Back Clip/Hook
Condition Code: 1 – Replace With New
Why Made Code: 03 – Broken
Location: LR – Left Rear

Action: Replace Door Hold Back Clip/Hook
Responsibility: Owner

Post Repair

Description: New door hold back clip/hook has been welded onto bottom rail.
ROOF

AAR JOB CODES

4551 - 4453
Roof - Aluminum - 4551

Roof Repairs

General:

Roof repairs are equally, if not more, important than repairs to the nose or side walls of a trailer or container. Correct materials and good workmanship can determine if there will be load damage caused by weather. Roof panels that have a tear or hole should be repaired to prevent structural failure and water damage to cargo. Generally, repairs consist of a relatively simple patch or replacing a section of roof panel the full width of the trailer or container, extending to the nearest roof bows adjacent to the damaged area. Certain procedures must, therefore, be followed when roof repairs are made.

Patching Roof Sheet:

Care must be exercised to ensure that roof repairs are properly extended to the roof bows and given a good exterior seal to afford maximum long life to the repair and to avoid loosening of roof sheet by flexing. Patch is not to be riveted through the roof bow.

For small repairs, a patch shall be made to overlap the existing panel break of not less than 1 inch on all sides. On larger breaks, the damaged portion must be trimmed to produce a round or oblong opening (same as side panels). No patch shall be less than 4 inches on any one side.

Aluminum and steel patches shall be the same thickness and type as original roof sheet.

Clean and de-burr both panel and patch. Smooth any dented or creased area around damage.

Placing the patch over the break, drill holes for rivet securement around the patch perimeter spaced on 1½ inch centers. Rivet holes shall be located not less than ¼ inch from the edges of the patch.

Any roof bow damage shall be repaired prior to the application of the patch.

Apply a sealer between the patch and roof sheet and around the edge of patch, with additional sealer placed over the exterior rivet heads.
Roof patches must be secured with soft buck rivets to prevent flexing and rivet hole elongation. Where the underside of the roof is inaccessible (under load), repairs must be made with a self-sealing pop rivet patch. All roof bow repairs or replacements must be made with original type fasteners or two-piece rivets.

Holes must be drilled in the leading ends of any stress crack.

When the patch extends to the top rail, buck rivets must be used.

**Roof Sheet Breaks More Than 6 Inches:**

Sections on roof sheet breaks in excess of 6 inches shall extend to and be secured adjacent to roof bows. If the trailer or container is so constructed, the section applied must be bonded to roof bows.

If damage requires removal of original roofing from the top rail, the entire original roof sheet must be sectioned and replaced to the nearest end.

If the roof has been previously sectioned in the area of damage, the new section must be extended beyond the previous section.

*If the area to be sectioned exceeds 30% of the roof, the entire roof must be replaced.*

No more than three sections shall make up the entire roof. (The splice on a stretch trailer is counted as one section and would therefore be a two-sectioned roof.) The center of the roof sheet cannot be spliced.

**Roof patches cannot exceed 12 inches by 36 inches.**

**Roof Replacement—Aluminum (Dry Van or Container):**

A one-piece aluminum sheet must be used.
Roof - Aluminum - 4551 (Continued)

All damaged roof bows must be removed and replaced with new roof bows and secured at each end to the top rail by use of huck-type fasteners or manufacturer’s original-type fasteners.

After removal of the old roof sheet and subsequent to any roof bow replacement, all roof bows and rail gutters must be cleaned and de-burred.

Before installing new roof, apply a sealer on the roof rail or in the roof rail gutter around the entire trailer or container.

The roof sheet must be secured to the front rail, spaced as recommended by the manufacturer.

The trailer or container must be on a level ground surface when a new roof is applied. The new roof sheet must be stretched in place by using clamps or roof stretchers at the rear header of the trailer or container. (This phase is very important to reduce the possibility of roof sheet flapping, which could cause flex cracking.)

The sides of the new roof sheet must be affixed to the top rails and rear headers according to the manufacturer’s specification.

Roof Bows:

Roof bows that are broken or missing should be replaced. Due to the wide variety of designs, the original trailer or container manufacturer should be consulted for its recommendations on bow replacements.

*Note: Exterior pre-and post-repair photos are required for all 4551 and 4553 roof repairs.*
Roof - Aluminum - 4551

Pre Repair

**Description:** Approx. 6” hole in roof sheet near top rail. Patch should be extended to and attached to the top rail with soft buck rivets.

**Job Code:** 4551 - Roof Sheet – Aluminum  
**Condition Code:** E – Patch, Buck rivets  
**Why Made Code:** 14 - Cut, Torn  
**Location:** TC – Top Center

**Action:** Cut out damaged area and patch roof 12”x12”.

**Responsibility:** Damage

Post Repair

**Description:** The damaged portion of the roof should be cut out oval or round and patch extended to and attached to top rail.
Roof - Aluminum - 4551

Pre Repair

Description: Approximate 10” flex crack along top rail rivet line.

Job Code: 4551 - Roof Sheet – Aluminum
Condition Code: E – Patch, Buck rivets
Why Made Code: 23 – Flex Crack
Location: TR – Top Rear

Action: Cut out and patch roof 12”x12”.

Responsibility: Owner

Post Repair

Description: 12”x12 buck rivet patch applied to rear mod roof with appropriate roof sealant applied to repaired area.
Pre Repair

Description: Roof was flex cracking along front intermediate header requiring a section. The pre-existing patches are also a factor in the type of repair required.

Job Code: 4551 - Roof Sheet – Aluminum
Condition Code: G – Section, Buck rivets
Why Made Code: 23 – Flex Crack
Location: TC – Top Center

Action: Section past nearest roof bow approx. 3’.

Responsibility: Owner

Post Repair

Description: Pre-existing patches made it necessary to section the roof past the largest previous patch, beyond the closest roof bow. Care should be made to ensure original or new roof bows are bonded to new roof section. A jack placed inside propping bow up against roof, long enough to allow bonding agent to take hold. Container should be on level ground making sure container is as square as possible prior to sectioning.
Roof - Steel - 4553

Pre Repair

Description: Roof panel has a tear over 8” long and requires butt-welded insert.

Job Code: 4553 – Roof, Steel Roof Panel
Condition Code: I – Insert
Why Made Code: 14 – Cut/Torn
Location: TR

Action: Install Insert

Responsibility: Damage

Post Repair

Description: Roof panel was properly repairs using insert.

*Note: Exterior pre-and post-repair photos are required for all 4551 and 4553 roof repairs.*
SIDE VENT

AAR JOB CODE

4612
Side Vent - 4612

**Pre Repair**

**Description:** Side vents are missing.

**Job Code:** 4612 – Side Vent  
**Condition Code:** 1 – Replace w/ New  
**Why Made Code:** 08 – Missing

**Action:** Replace with new side vent(s)

**Responsibility:** Owner

**Post Repair**

**Description:** New vents and surrounding area on container were neatly painted.

*Note:* Side vent area must be taped prior to painting, and paint must not drip down container or plug vent holes. If this occurs, repair will be declined.

*Note:* Unpainted side vents are preferable to poorly painted side vents.
SIDE PANEL - ALUMINUM

AAR JOB CODE

4613
Side Panel – Aluminum - 4613

Body Repairs (Side Panels)

Mating of Panels:

Material selected for replacing side wall panels shall comply with the manufacturer’s recommendation, with corrugated or smooth panel construction mated under all circumstances, including patches. Pre-painted panels must likewise be mated.

Patching Body Panels of Sheet and Post Trailers and Containers:

A patch panel of like material shall be made to overlap the existing panel break of not less than 1 inch on all sides for small repairs. On larger breaks, the damaged portion must be trimmed to produce a round or oblong opening. No patch shall be less than 4 inches on any one side.

Aluminum and galvanized steel panel patches shall be the same thickness as the original.

Clean and de-burr both panel and patch. Smooth any dented or creased area around the damaged area.

Place the panel patch over the break to include any badly dented or creased areas; drill holes for rivet securement around the patch perimeter, spaced on 1 ½ inch centers. Rivet holes shall be located not less than ½ inch from the edges of the patch.

Apply a non-shrinking sealer between the patch and trailer body. One bead must be applied around the perimeter of the damaged area. The other bead must be adjacent to the rivet line, and applied in a manner that does not allow an excessive amount of sealant to seep to the outside perimeter of the patch.
For securement of panels to posts to the trailer or container structure, buck rivets and/or structural mono bolts must be used.

A patch cannot extend from one panel to another.

Cuts the full length of a single panel in the area of the top or bottom rail must be sectioned. Sections must be a minimum of 9 inches. All sections must be buck riveted.

**Panel Replacement of Sheet and Post Trailers and Containers:**

Sufficient panel lap is required to provide both a good seal and proper installation.

Place the panel over the opening and drill around the panel perimeter, placing the holes on 1½ inch centers. If an existing rivet hole is used, it must be reamed to provide a tight fit by use of a larger size rivet.

The placement area and existing adjacent panels must be cleaned and de-burred where they lap.

Use applicable aluminum alloy or high tensile cadmium-plated steel rivets.

For securement of panels to posts to the trailer or container structure, buck rivets and/or structural mono bolts must be used.

A side post should never be spliced. If badly bent or cut, the interior post should be replaced before the section or full panel is replaced.
**Side Panel - Aluminum - 4613**

**Pre Repair**

**Description:** 4” flex crack extending from under starter post.

**Job Code:** 4613 - Side Panel  
**Condition Code:** E – Patch, Buck Rivets  
**Why Made Code:** 23 – Flex Crack  
**Location:** RSC – Right Side Center  

**Action:** Cut out (round or oval) damaged area and buck rivet patch 12”x12”; R&R a portion of starter post; ply-liner is Associated.

**Responsibility:** Owner

**Post Repair**

**Description:** Pop rivets used; patch not extended under and attached to side post or to top rail and rivets facing in instead of out. Buck Rivets should be used throughout patch when defect is close to side post or rail.

**Determination:** Improper Repair
Side Panel - Aluminum - 4613

Pre Repair

Description: Caulked cut in side panel approx. 2”.

Job Code: 4613 -Side Panel
Condition Code: E – Patch, Buck Rivets
Why Made Code: 14 – Cut/Torn
Location: RSC – Right Side Center

Action: Caulk is an improper temporary repair and is considered to be Damage. Patches contacting side post should be buck-riveted to maintain structural integrity.

Responsibility: Damage

Note: Do not use caulk as a temporary repair; use tar only.

Post Repair

Description: Rivets are spaced approx. 1 1/2” apart, with rivet heads on inside (where warranted) and bucked when patch extended to and connects with structural corner post.

Note: Caulk is not required around perimeter of patch but should be applied underneath the patch around the perimeter of defect.
Side Panel – Aluminum – 4613

Pre Repair

Description: RSF mod panel bent and torn along corner post rivet line; #2 panel improper patch at bottom; side post bent.

Job Code: 4613 -Side Panel
Condition Code: 1 – Replace With New
Why Made Code: 14 – Cut/Torn
Location: RSF – Right Side Front

Job Code: 4613 -Side Panel
Condition Code: E – Patch Buck Rivets
Why Made Code: 14 – Cut/Torn
Location: RSF – Right Side Front

Job Code: 4622 -Side Post
Condition Code: 1 – Replace With New
Why Made Code: 02 – Bent
Location: RSF – Right Side Front

Action: Replace short panel (approx. 24” x 110”) patch #2 panel 24” x 12” at bottom, replace side post; straighten corner post, if required, to facilitate repair.

Responsibility: Damage (Prior improper repair could have contributed to panel failure).

Note: Reduction in time and material for associated panel section and side post replacement. R&R ply liner, scuff liner are associated with panel/post replacement.
Side Panel – Aluminum - 4613

Pre Repair

Description: Tar taped (approx. 2”) cut near side post.

Job Code: 4613 -Side Panel
Condition Code: E – Patch
Why Made Code: 14 -Cut, Torn
Location: LSC – Left Side Center

Action: Cut out (round or oval) damaged area and patch 6”x6” R&R a portion of post is associated.

Responsibility: Damage

Post Repair

Description: Self-adhesive patch is NO longer an approved means for repair. For existing inventory use material for buck rivet patches. For existing self-adhesive patches installing buck rivets may be done to correct.

Determination: If this repair was done by on-site vendor, re-work would be necessary.

Note: Sealant around perimeter of a patch is not permitted.
Side Panel – Aluminum - 4613 - Improper Repairs

Post Repair

Description: Buck rivets in side post and bottom rail but finished off with pop rivets. Buck rivets should be used throughout. Bead of caulk around perimeter of patch is not required.

Determination: Improper repair

Post Repair

Description: Buck rivets in side post, but finished off with pop rivets. Buck rivets should be used throughout. Bead of caulk around perimeter of patch is not required.

Determination: Improper repair
Side Panel – Aluminum - 4613 - Improper Repairs

Pre Repair

Description: Rivets are facing wrong direction; head of rivet should be inside. Damaged portion not cut out round or oval.

Job Code: 4613 - Side Panel
Condition Code: G – Section, Buck Rivets
Why Made Code: 14 - Cut, Torn
Location: RSF – Right Side Front

Determination: Improper repair due to patch being above ply-liner.

Post Repair

Description: Patch not attached to side post with no rivets in forward profile of patch. Fasteners facing wrong direction rivet heads - should be on inside. Caulk around perimeter of patch is not required.

Job Code: 4613 - Side Panel Condition Code: G – Section, Buck Rivets

Action: If onsite vendor is responsible for repair, redo patch attaching to side post using buck rivets, if not leave alone.

Determination: Improper Repair
Side Panel – Aluminum - 4613 - Improper Repairs

Post Repair

Description: Improper repair due to the fact the unit number decal not being replaced after the panel was patched. The patch should have also been extended to other side post and a little lower to facilitate application on number decal.

Location: RSF– Right Side Front

Action: Entire work order/invoice will be declined for improper repair.

Post Repair

Description: 2’x2’ panel patch top edge of patch should be slid under existing panel so weather can’t intrude into container.

Location: RSF– Right Side Center

Action: Line item will be declined due to improper repair.
SIDE PANEL - GALVANIZED

AAR JOB CODE

4616
Side Panel – Galvanized/Post - 4616

Pre Repair

Description: As with aluminum extruded side posts, this type of cut to galvanized post does not affect structural integrity and does not allow weather to intrude into container.

Action: No repair required.

Post Repair

Description: Cosmetic cuts to galvanized posts. This type of defect does not affect structural integrity and does not allow weather to intrude into container on this type of panel post configuration. Further inspection may be required on inside to see if panel behind post is affected.

Action: No repair required.
Side Panel - Galvanized/Post - 4616

Pre Repair

Description: Post is dented but not cut and damage is cosmetic as long as panel behind post is not affected.

Job Code: 4616 - Side Panel - Galvanized Steel
Condition Code: H – Overlay
Why Made Code: 14 - Cut, Torn
Location: LSC – Left Side Center

Action: No repair required.

Post Repair

Description: Proper repair to cut/torn galvanized panel post. A dented or locally crushed area of panel does not require attention for strength purposes nor does a cut in the lower 5” of the post section. An overlay may be indicated as a precaution for the safety of individuals that may come in contact with a sharp edge.
SIDE PANEL - STEEL

AAR JOB CODE

4618
Side Panel - Steel

Patching Body Panel of Steel Container (IICL)

Use of the correct type of steel, as well as proper surface preparation and painting methods, is critical.

Straightening:

Whenever possible, straighten dents and compression lines in panels by mechanical or hydraulic means without heating. It should not be necessary to use heat. Repairing a panel by straightening should return it to its original profile. If the damage has stretched the panel to such an extent that the original profile cannot be restored, repair by straightening should not be attempted.

Straightening and Welding:

To repair cracks, splits, cuts, tears, or pin holes when the original profile can be restored, straighten the damaged area: drill a stop hole at each end of any crack and weld the edges of the cut material to close the opening. Clean, mask, and prime the repaired area on both sides.

Inserting:

- If the damage cannot be repaired by straightening and welding, the tear is over 8" in length, and/or the separation cannot be closed to less than 3/8", a butt-welded insert should be installed. Inserts may straddle an existing panel weld seam if the damaged area is on or near such a seam. Inserts may not be suitable if the damage covers a large area adjacent to a rail or post or if nearby inserts are corroded or improperly installed and must be corrected.

- Remove any attachments (ventilators, marking plates, etc.) that are within the damaged area or near enough that they may be damaged during repair.
Mark and cut out the damaged area with a torch or cutting disc. Cut the replacement material to size. Inserts must be fitted flush with the existing panel and should be fabricated to allow no more than 2 mm (5/64 in.) clearance between adjoining surfaces. Panel insert material must have the same corrugation size, profile, and radii as the original panel.

Fit the insert into the cut-out area and tack-weld in position. Continuously weld the insert on the exterior side of the existing panels. Ensure that insert welds fully penetrate the panel to the interior side.

Clean, mask, and prime the repaired area on both exterior and interior sides. Apply top coat to the exterior side only.

Replace markings removed during repair that are required by regulation or as directed by the owner. Reattach any other components that were removed during the repair.

Panel Replacement of Steel Box Containers:

If an individual panel cannot be repaired by straightening or inserting, the damaged panel may be removed and replaced with a new panel. Replacement also may be indicated if inserting would leave nonconforming repairs nearby or if replacement is less expensive. Butt-welded joints between the replacement and existing panels are required.

Note: A MIG welder is the most appropriate machine to use for welding these newer steel panels most of which are only 5 mm or 5/64” thick. The down fall of MIG welding outdoors is the wind disperses the shielding gasses. SMAW (arc welding) can be used by an experienced welder using a small rod (6013) and low amperage to avoid blow through.
Side Panel - Steel – 4618

Pre Repair

Description: Aluminum tape should be removed before photos are taken; angle of photo is bad - it should be from eye level.

Job Code: 4618 - Side Panel, Steel
Condition Code: 8 – Straighten, D –Weld
Why Made Code: 14 -Cut, Torn
Location: LSC – Left Side Center

Action: If defect cannot be clearly viewed, invoice may be declined.

Responsibility: Damage

Note: Exterior pre- and post-repair photos are required for all side panel repairs.

Post Repair

Description: Straighten and weld if enough material is still intact – if material is not intact, insert may be required.

Note: Clean, mask, and prime the repaired area on both exterior and interior sides. Apply top coat to the exterior side only.
Side Panel - Steel – 4618

Pre Repair

**Description:** Pre-repair photo at left attempts to show 3 cuts but photo is too far away to see, and the taped area should have been removed prior to taking photo to show effected area.

**Job Code:** 4618 - Side Panel, Steel  
**Condition Code:** D – Weld  
**Why Made Code:** 14 - Cut, Torn  
**Location:** RSC – Right Side Center, RSR – Right Side Rear

**Action:** Straighten and Weld.

**Responsibility:** Damage

Post Repair

**Description:** The three areas repaired, 2 RSR and 1 RSC, show poor preparation of panel prior to painting; areas should have been taped off and primed taped off before painting.

**Action:** This type of repair will be declined.

**Note:** Photo was taken from too far away. Photo was cropped and blown up for depiction purposes. Care should be taken to provide good quality photos.
Side Panel - Steel – 4618

Pre Repair

Description: Five (5) corrugations cut approximately 4” each along top of LSC panels.

Job Code: 4618 - Side Panel, Steel
Condition Code: 8 – Straighten, D – Weld
Why Made Code: 14 - Cut, Torn
Location: LSC – Left Side Center

Action: If defect cannot be clearly viewed, invoice may be declined.

Responsibility: Damage

Post Repair

Description: Post repair photo showing proper preparation of panels prior to painting.

Note: Tape off area before painting.
**Side Panel - Steel – 4618**

**Pre Repair**

*Description:* Torn side panel that requires 2’ x 1’ insert.

*Job Code:* 4618 -Side Panel, Steel  
*Condition Code:* I –Insert  
*Why Made Code:* 14 -Cut, Torn  
*Location:* RSF – Right Side Front  

*Responsibility:* Damage

**Post Repair**

*Description:* Post-repair photo of 4’x1’ insert at top of side panel.

*Note:* If decal is affected, replacement is required.
Side Panel - Steel – 4618 - Improper Repairs

Post Repair

**Description:** Improper repair; 1’x1’ butt-welded insert was needed. Burnt paint and weld smoke should have been removed from surrounding area.
Side Panel - Steel – 4618 - Improper Repairs

Post Repair

Description: Improper material used to cover damaged panel. *Rust-oleum is not the preferred paint application. Hempel is the suggested application.*

Post Repair

Description: Poor prep and paint after cut panels are welded.

Action: The repaired area should have been cleaned, masked, and primed with a top coat applied to the exterior side.

*The area was not cleaned, and the paint only lightly covers the repaired steel panel which may cause premature panel fatigue.*
Side Panel - Steel – 4618

Proper Surface Preparation and Painting Methods

Clean, mask, and prime the repaired area on both outside and inside.

Care should be taken to apply a paint color that matches the original.

The post-repair photos below show improper repairs that will be declined due to failure to paint over burn marks from welding or use proper panel preparation and painting techniques.
Examples of decals affected but not replaced:

These photos are of steel panel repairs where the decal was affected by the repair and should have been replaced as associated to the panel insert.

*These post-repair photos would result in a decline of line item(s) or work order/invoice.*
SIDE POST

AAR JOB CODES

4621 - 4622
Starter Post – 4621

Pre Repair

Description: The starter post is cut through the hat requiring repair.

Job Code: 4621
Condition Code: 1 – Replace with new
Why Made: 14 – Cut/Torn
Location: LSC -Left Side Center

Action: Replace starter post.

Responsibility: Damage

Post Repair (Improper)

Description: Since the Starter Post cannot be properly overlaid (capped), the post should be replaced.

Action: Decline as improper repair.
**Description:** Where replacement of a damaged post is not required, the post may be repaired by the procedure described below. Note, however, that only one post overlay is permitted per post.

1. Cut a length of sidewall post overlay long enough to extend **12 inches above and below** the damaged area. 
   *Note: the overlay must be designed to fit properly over the original post following its same profile.*

2. Transfer drill .204 diameter holes from the sidewall to the post overlay. Attach the post overlay using 3/16 dia x 5/8 BR HD 2117–T4 rivets. Pop rivets or mono bolts are unacceptable. 
   *Note: the rivet head must be on the inside on exterior post design.*

3. Fill the gap at the damaged section with a butyl sealant caulk. 
   *Note: caulk around the perimeter of the overlay is unacceptable and will be considered improper.*

4. If 4 consecutive posts are in need of repair, it is permissible to overlay 3; the 4\textsuperscript{th} must be replaced.
Pre Repair

Description: Three side posts broken and torn away from panel at top; material is missing causing a structural issue.

Job Code: 4622  
Condition Code: 1 – Replace with new  
Why Made: 14 – Cut/Torn  
Location: LSC -Left Side Center

Action: Replace side post.

Responsibility: Damage

Post Repair (Improper)

Description: Because post material is missing, an overlay will not suitably strengthen the existing posts. Replace 3 consecutive side posts.
Pre Repair

Description: Side post cuts should always be viewed on a case-by-case basis and factor in issues like J2 coverage, but cuts to the bottom or top of the side post do not negatively affect the structural integrity of the side post. These photos show three types cosmetic cuts at bottom of side posts. The bottom photo below is of a post that was capped but really should not have been.

Action: No repair required. Repairs to these types of defects will result in a declination of repairs.
Side Post - 4622

Side Post – Improper Repair

**Description:** Side post capped at top using wrong style post that doesn’t fit snug against original post; insufficient fasteners along front side of post.

**Action:** Rework post cap.

Side Post – Proper Repair

**Description:** Both side posts capped at bottom using correct style post that fits snug against original post. **Caulk around perimeter of post overlay is not required.**

**Note:** Use the side post overlay with the correct profile.
DOOR POST

AAR JOB CODE

4629
Door Post - 4629

**Description:** The left side rear door post has been torn at the lower hinge. Unlike stack posts the door post can be sectioned. In this case the damaged portion, approx. 24” in length, can be cut out and a new piece butt welded in place.

**Job Code:** 4629  
**Condition Code:** C – Section  
**Why Made:** 14 – Torn  
**Location:** LSR Left Side Rear

**Action:** Section door post 24” at bottom replace hinge pin and butt.

**Responsibility:** Damage
Door Post - 4629

Pre Repair

Description: The right rear door post has previously improperly repaired at the lower hinge. Unlike stack posts, the door post can be sectioned. In this case, the damaged portion approx. 12” long can be cut out and a new piece butt welded in place.

Job Code: 4629
Condition Code: C – Section
Why Made: 20 – Correct Improper Repair
Location: RR -Right Rear

Action: If the post effects the operation of the door, section door post 12” at bottom.

Responsibility: Damage

Post Repair

Description: Door post was inserted 12” at bottom.

Action: This is a very good clean repair.
Door Post - 4629

Pre Repair

Description: The left rear door post is torn and temporarily covered by tape. The door post can be sectioned. In this case the damaged portion, approx. 12” in length, can be cut out and a new section butt-welded in place.

Job Code: 4629
Condition Code: C – Section
Why Made: 14 – Cut, Torn
Location: LR - Left Rear

Action: Section door post 12”.

Post Repair

Description: Door post was overlaid instead of a flush-welded section.

Action: Preferred method is to butt-weld a section flush with existing post.
J-BAR

AAR JOB CODE

4630
An extension of the outer sheet of the rear corner post, lies rearward of the edge of the cannel to encircle the door hinges; the extension is called a J-bar because its section resembles the letter “J”.

Inserting is permitted on the J-bar portion of the rear corner post, but not on any other portion of rear corner post. Sectioning is not permitted on any corner post.

**Straightening Rear Posts (including J-Bars):**

Whenever possible, straighten the J-bar by either hydraulic or mechanical means without heating. The use of a hydraulic jack is preferred over mechanical impact when straightening. If the bend is too severe to be straightened without heating, heat may be applied to assist in straightening the damaged area. When heat is used, the steel should be heated only in the damaged area and must not be heated beyond a dull cherry-red color, corresponding to approximately 650 degrees C (1200 degrees F).

**Inserting in J-Bar Portion of Rear Corner Posts:**

Damage on the J-bar portion of a rear corner post that cannot be repaired by straightening may be repaired by replacing the damaged area with an insert, provided it can be accomplished within the limitations below:

**Limitations on Inserts in J-Bar Portion of Rear Corner Post:**

Inserts must be fitted flush with the original material and butt-welded. The minimum height if an insert is 75mm (3”).

XPO Chassis / Container Repair Manual

**J-Bar – 4630**
J-Bar – 4630

Pre Repair

Description: Left J-bar bent; left bottom hinge pin missing.

Job Code: 4630 -J-Bar
Condition Code: 7 – Straighten
Why Made Code: 02 – Bent
Location: LR -Left Rear

Action: Straighten J-Bar and replace hinge pin.

Responsibility: Damage

Post Repair

Description: J-Bar straightened to original profile, hinge pin replaced. Clean, prime and paint according to manufacturer specifications.

Note: Bottom and top hinge pin heads are welded in place. All other hinges are free floating secured with cotter pins.
J-Bar - 4630

Pre Repair

**Description:** The photo on the left illustrates J-Bar damage that affects the operation of the door with the hinge missing. The key question when diagnosing a defect is “does the J-bar damage affect the operation of the door?”

**Job Code:** 4630 - J-Bar  
**Condition Code:** D – Weld  
**Why Made Code:** 14 - Cut, Torn  
**Location:** LR – Left Rear

**Action:** Straighten and weld J-Bar, replace hinge pin, hinge butt, and gasket, if necessary.

Post Repair

**Description:** Although the extent of this damage didn’t warrant, one could insert the J-Bar. Cut out the affected piece 6”, 12” and insert a new piece.

*Note: Post repair photo should be taken when all the work, prep, and paint are complete - not mid-repair.*

*Clean, prime, and paint according to manufacturer’s specifications.*
J-Bar - 4630

Description: The photo on the left illustrates damage to the J-bar that is considered “cosmetic” and does not require repair. Even though the bottom edge is broken from the rear sill flange, it does not affect the operation of the door or its structural integrity.

Action: No repair required.

Description: The photo on the left illustrates a poor prior repair to right the J-bar at the bottom. Even though the repair was poorly done, no corrective action is necessary as it does not affect the operation of the door or its structural integrity.

Action: No repair required.

*The J-bar in this area should have been inserted complete from the hinge butt to the rear sill bottom flange with like material.*
CORNER POST - STEEL

AAR JOB CODE

4750
Corner Post Steel - 4750

Pre Repair

Description: Minor deflections in the front corner posts don’t require repair.

Criteria: If the post negatively affects the cubic capacity by more than 2”, is bent out and does not allow container to properly fit into a rail car, or causes one of the joining panels to severely buckle, then repair is required.

Action: No repair required.
Corner Post Steel - 4750

Pre Repair

Description: The right front corner post is cut/torn at the bottom and is small enough to allow a weld.

Job Code: 4750 - Corner Post – Steel  
Condition Code: D – Weld  
Why Made Code: 14 - Cut, Torn  
Location: RF – Right Front  

Action: The damaged area of the corner post must be cut out and a new section inserted in its place.

Post Repair

Description: The defect, in this case, was small enough that welding can properly fill the affected area.

Action: Clean and weld the cut corner post to keep weather from entering.

Note: Clean area prior to painting; remove, tape and burnt and or peeled paint.
Corner Post Steel – 4750 – Improper Repair

Pre Repair

**Description:** The right front corner post is cut/torn near the top and cannot be properly straightened and welded.

**Job Code:** 4750 -- Corner Post – Steel
**Condition Code:** C – Section
**Why Made Code:** 14 - Cut, Torn
**Location:** RF – Right Front

**Action:** The damaged area of the corner post must be cut out and a new section inserted in its place.

Post Repair

**Description:** This post photo shows a new piece improperly overlaid over the damaged portion of the corner post. The section should have been butt-welded flush to existing corner post.

*Note: Clean and paint, as you would any steel component.*
Corner Post Steel - 4750

Pre Repair

**Description:** The right front corner post is cut/torn and a significant amount of material is missing.

**Job Code:** 4750 - Corner Post – Steel  
**Condition Code:** C – Section  
**Why Made Code:** 14 - Cut, Torn  
**Location:** RF – Right Front

**Action:** The damaged area of the corner post must be cut out and a new section (window type) inserted in its place.

Post Repair

**Description:** This post photo shows a window-type insert flush-fitted and butt-welded into place.

**Action:** This is the preferred method of sectioning a corner post that cannot be straightened or welded.

*Note: Clean, prime, and paint according to manufacturer’s specifications.*
FLOORING

AAR JOB CODE

4811
Flooring - 4811

General Interior Repairs

Floor Structure and Damage:

The floor of a trailer or container is a key element of the structural system. In addition to the normal vertical loads, it carries longitudinal loads such as dock bumps, etc. Floors in trailers or containers are normally of glued, laminated hardwood, that is, in most cases, one piece, the full length of the trailer or container, and approximately 12 inches wide. The trailer or container floor consists of three main structural components that serve to support a fork lift and to transfer the load to the side panels. These components include the floorboards, the floor supports or cross members, and the cross member supports or cross member-to-rail connectors. The cross member supports are the most critical of the three structural components because their failure could lead to the total collapse of the entire floor system. Damage to floors is the result of overloading, mechanical handling trucks in the trailer, or deterioration of the floor well over the life of the trailer or container. This will result in sections that are weaker and will fail at a lower load level. Occasionally, a heavy piece of freight can puncture the floor in a local area, resulting in a floor failure.

Flooring Repairs:

Proper repairs to a broken floor section are mandatory so that the integrity of the remaining floor is not affected by the repair. The following repair procedures must be followed:

- Flooring replacements shall fasten to a minimum of three cross members. No adjacent flooring repairs shall end on the same cross member; however, end joints must be staggered and sealed.
- All repairs to flooring or decking must be of a similar quality and like installation as the original flooring, be free of visible defects, and be top-coated/undercoated.
- Before starting repairs, it is recommended that an inspection of the cross members in the area of the board failure be made to determine if any cross members are in need of repair or replacement.
- In the event of floor area damage, determine the extent of the damage and indicate the extremes of the damage.
Flooring - 4811 (Continued)

- Repair, as follows:

  1) From the point at which the damaged area stops, proceed in a forward and rearward direction at least one additional cross member space, and mark the floor. Remove the floor screws in adjacent boards that will allow the damaged floor section to be raised above floor level, and cut the damaged boards at the points marked.

  2) Cut a section of the flooring to a length compatible with the removed material. Apply a bead of butyl or silicone caulking to the mating perimeter edges of the floorboard, and lay in place, ensuring that the joint between adjacent boards interlocks.

  3) Reinstall any missing fasteners in adjacent boards, and drill a minimum of three holes through the new board plank at each cross member location. Install two-inch-long self-tapping flat-head screws at each location.

  4) Install a bead of caulk across the butt joint between the new and adjacent floor planks to ensure against leakage.

  5) In situations where extensive damage is done to a floor and more than one floor board is damaged, be sure to install replacement planks so that no two adjacent butt joint conditions exist at any one cross member. If necessary, stagger the joints by installing longer-than-required floor replacement inserts at adjacent positions. This is extremely important. Any distortion that results in the lack of contact between the floor and the cross member can be remedied by reinstalling screws through the floor and positioning nuts on the bottom shank of the screw, thereby clamping the floor and cross member together.

  6) The butt gap between boards must not exceed ¼ inch.
Flooring - 4811

Pre Repair

Description: Recent floor section broken (inspect underside to see if outrigger has caused damage to floor and if outrigger requires repair).

Job Code: 4811 – Flooring
Condition Code: C – Section
Why Made Code: 3 – Broken
Location: RSF – Right Side Front

Action: Section flooring 4’

Responsibility: Owner (unless associated with cross member/outrigger and/or bottom rail damage).

Post Repair

Flooring replacements shall fasten to a minimum of three cross members.

Multiple floor sections must be staggered and ends of the boards must have three fasteners.
Flooring - 4811

Pre Repair

Description: 3 individual floor boards broken at rear.

Job Code: 4811 - Flooring
Condition Code: C -Section
Why Made Code: 3 - Broken
Location: RSR – Right Side Rear

Action: Section flooring 3’, 4’ and 3’ at rear.
Responsibility: Owner

Note: Inspect underside to see if cross members and/or rear sill are bent.

Post Repair

In example at left, extending further into container at the rear makes for a stronger repair because of the amount of traffic in that area.
Flooring - 4811

Pre Repair

Description: Gouges in flooring less than 9/16” deep.

Action: No repair required.

Repair criteria: Repair if light leakage in gaps between boards. No repair required (regardless of length) if gouge is less than 9/16” deep or less than 3/16” throughout a width of more than 6” of the gouge.

Note: unless associated with cross member/outrigger bottom rail damage, floor repairs are owner's responsibility.

Pre Repair

Description: Gouges in flooring less than 9/16” deep.

Action: No repair required.

Repair criteria: Repair if light leakage in gaps between boards. No repair required (regardless of length) if gouge is less than 9/16” deep or less than 3/16” throughout a width of more than 6” of the gouge.

Note: unless associated with cross member/outrigger bottom rail damage, floor repairs are Owner's responsibility.
Flooring - 4811 – Improper Repairs

Description: Improperly sectioned floor boards with ends terminating at same cross member. They should be staggered lengths.

Action: Rework

Description: Improperly sectioned floor board that overlaps into adjacent board; should be two sections. Current repair offers no ship-lap wind and watertight protection.

Action: Rework
Flooring - 4811 – Improper Repairs

**Description:** Take care not to cut adjacent planks. Use hammer and chisel to cut the remaining portion of the damaged planks loose.

**Action:** Notify vendor to correct future actions.

**Description:** At the rear of a container, it may be necessary to remove and reinstall the thresh plate/strip (4846) in order to facilitate repair of the floor.

**Action:** Remove and re-secure (4846) thresh plate - Associated with floor sections.
Flooring - 4811 – Improper Repairs

**Ship Lap:** Gaps between adjacent boards should not exceed ¼". It may be necessary to loosen existing flooring to allow ship lapped boards to be installed.

**Undercoat:** If the original floor was coated by the manufacturer, apply similar coating to the replacement planks on the underside.
TOP RAIL

AAR JOB CODES

4910 - 4911
Top Rail - Aluminum – 4910

Description: The upper lip or flange of the top rail can be repaired up to 12” by installing an angle, as needed to fit cutout in the upper rail. When damage is larger than 12”, a section or rail replacement may be required. In an upper rail, no splice may be inserted farther than 5’ from the either stack frame. No more than one splice is permitted in any upper rail.

Note: Front or rear mod-top rails cannot be spliced.

Description: Aluminum top rails can be sectioned. According to the manufacturer of this container, “no splice may be inserted farther than 5’ from the either stack frame”. The bend is approx. 8’ from the casting. If the rail can’t be properly straightened, a complete rail replacement is required.

Note: No more than one section per top rail is permitted.
Pre Repair

Description: Front mod top rail fasteners loose and sheared at intermediate header connection.

Job Code: 4910 -Top Rail  
Condition Code: A – Secure  
Why Made Code: 7 –Loose  
Location: LSF – Left Side Front

Action: Re-secure top rail to intermediate header.

Responsibility: Owner

Note: Make sure container is resting square before securing roof repairs.

Post Repair

Description: Original Huck bolts replaced with Grade 5 bolts washers, and nuts.

Inspect other fasteners on opposite side and surrounding area, particularly panel-to-stack post connection.

This defect is common on older Stoughton containers. An indication before shearing is black streaks running down inside panels.

Inspect intermediate headers and stack post-to-casting connection for cracking.
Pre Repair

**Description:** Center top rail is torn 4” in center.

**Job Code:** 4911 - Top Rail  
**Condition Code:** C – Section  
**Why Made Code:** 14 – Cut/Torn  
**Location:** LSF – Left Side Center

**Action:** Section top rail 12”

**Responsibility:** Damage

---

Post Repair

**Description:** Steel top rails can be sectioned at any location along the length of the rail. The only limitations are the section must be a minimum 6”. Any section cannot end within 12” of a casting, but must extend to the casting. Any section welded to a casting must be a minimum of 12” in length. There is no limit to the length of a section.

*The ends of this section, in this example, are angled at 45 degrees; however, perpendicular cuts are the accepted method.*
Top Rail - Steel – 4911

Post Repair

Description: A smaller dimension tube was used and inserted into existing rail and welded.

This is an improper repair and will be declined.

Post Repair

Description: The photo at left is of a proper 24” top rail section.
BOTTOM RAIL

AAR JOB CODES

4960 – 4961
Bottom Rail - Aluminum – 4960

Pre Repair

Description: Prior temporary repair on RSF panel at bottom covering damaged bottom rail.

Job Code: 4960 - Bottom Rail
Condition Code: 1 – Replace With New
Why Made Code: 14 – Cut/Torn
Location: RSF – Right Side Front

Action: Replace 48” section of RSF bottom rail.

Responsibility: Damage

Description: Panel removed for replacement and patch showing damage upper flange of RSF mod bottom rail.
Bottom Rail - Aluminum – 4960

Post Repair

Description: Post-repair photo showing replaced RSF mod bottom rail along with Associated panel patch and short panel replacement.

The structural integrity of a container may be compromised if repairs to upper and/or lower rails are not done properly. Repair procedures and materials must conform to manufacturer's repair procedure for that particular container.

Note: Reduction in time and material in association with panel post replacement due to common rivet line and interior components having to be removed.
**Bottom Rail - Aluminum – 4960**

**Pre Repair**

**Description:** Prior temporary repair on RSF panel at bottom covering damaged bottom rail.

**Job Code:** 4960 - Bottom Rail  
**Condition Code:** C – Section  
**Why Made Code:** 14 – Cut/Torn  
**Location:** LSR – Left Side Rear

**Action:** Section bottom rail 7’.

**Responsibility:** Damage

**Post Repair**

**Description:** Damage to rail is too severe to plate, so a complete new section was replaced.

*Note: Spliced plate must cover a minimum of 3 cross members.*
Bottom Rail - Aluminum – 4960

**Pre Repair**

**Description:** Bottom rail broken 3” at crossmember.

**Job Code:** 4960 - Bottom Rail  
**Condition Code:** – Replace With New  
**Why Made Code:** 03 – Broken  
**Location:** RSC – Right Side Center

**Action:** Overlay Bottom Rail 3’.

**Responsibility:** Damage

---

**Pre Repair**

**Description:** Plating of bottoms rails is acceptable if the structural integrity of the rail is not affected.

*Note: Overlays must cover a minimum of 3 cross members and extend past the damage on each side by at least 12’.*
Bottom Rail - Steel – 4961

Pre Repair

Description: Bottom rail bent and cut at bottom casting.

Job Code: 4960 - Bottom Rail
Condition Code: 8 &D – Straighten & Weld
Why Made Code: 14 – Cut/Torn
Location: RSF – Right Side Front

Action: Straighten and weld bottom rail.

Responsibility: Damage

Note: If damage is limited to flange, leave alone; only repair if cut has traveled to web of rail.

Pre Repair

Description: Bottom rail bent and cut.

Job Code: 4960 - Bottom Rail
Condition Code: I – Insert
Why Made Code: 14 – Cut/Torn
Location: RSF – Right Side Front

Action: If too severe to straighten and weld, cut out damaged portion and insert new piece and butt-weld into place.

Responsibility: Damage
Bottom Rail - Steel – 4961

Pre Repair

Description: 12" cut in LSR bottom rail.

Job Code: 4960 - Bottom Rail
Condition Code: D – Weld
Why Made Code: 14 – Cut/Torn
Location: LSR – Left Side Rear

Action: Remove caulk, straighten to original profile, and weld.

Responsibility: Damage

Post Repair

Description: To repair cracks, splits, or cuts when the original profile can be restored, straighten the damaged area; drill stop holes at each end of any crack, weld the edges of the cut material, clean, mask, prime and paint.

Note: Be careful not to burn flooring; removal of floor maybe necessary.
Match paint color as close to original as possible.
Bottom Rail - Steel – 4961

Pre Repair

Description: RSF torn bottom rail

Job Code: 4961
Condition Code: I – Insert
Why Made Code: 14 – Cut/Torn
Location: RSF – Right Side Front

Responsibility: Damage

Action: Insert bottom rail 24”

Post Repair

Description: Damage to the bottom rail that cannot be straightened may be repaired by installing an insert, as illustrated in the photo on the left.

Note: Prep and painting of steel boxes is critical. In the photo to the left, the area was well prepped, taped off, and painted with sufficient primer and paint.
CHASSIS FRAME

AAR JOB CODES

5001 - 5020
Chassis Bolster - 5001

Pre Repair

**Description:** Bent Left Rear chassis bolster.

**Job Code:** 5001  
**Condition Code:** 8 – Straighten  
**Why Made Code:** 02 – Bent  
**Location:** LR – Left Rear

**Action:** Straighten bolster and replace twist lock assembly as Associated.

**Responsibility:** Damage

Post Repair

**Description:** Left rear bolster was straightened; twist lock will also be replaced.

**Action:** Bolster should be cold-straightened or straightened with minimal heat to guard against metal fatigue.

**Note:** Twist Lock replacement is Associated with bolster repair.
Chassis Bolster - 5001

Pre Repair

Description: Broken Left Rear chassis bolster

Job Code: 5001 – Chassis Bolster
Condition Code: C – Section
Why Made Code: 03 – Broken
Location: LR – Left Rear

Responsibility: Damage

Action: Section Chassis Bolster.

Post Repair

Description: Left Rear Chassis Bolster top plate was cut out and a new section welded in place. Twist lock assembly and riser were also replaced as Associated repairs.

Action: When straightening is not possible, sectioning may be required.

Note: Twist Lock replacement is Associated with repair.
Chassis Bolster - 5001

Description: Left Front Chassis Bolster bottom flange is bent but does not impair use of the chassis or the ability to lock down container or slide lock to the fully open position.

Action: No action required.

Description: Left Front Chassis Bolster was partially straightened but did not require repair.

Action: Since no repair was necessary, repair will be declined.
Securing (Safety) Devices (including twist locks, locking pins, twist lock collars, springs, twist lock handles and handle retainers, retainers, and springs)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Missing component, handles, or retainers</td>
<td>Replace</td>
</tr>
<tr>
<td>* Unattached, inoperable or incapable of secure attachment</td>
<td>Repair</td>
</tr>
<tr>
<td>Cracked or broken components or welds</td>
<td>Repair</td>
</tr>
<tr>
<td>Seized or frozen</td>
<td>Repair</td>
</tr>
<tr>
<td>Deformations (bends, bows, dents, etc.)</td>
<td>If securement operation is impaired, replace</td>
</tr>
<tr>
<td>Loose fasteners</td>
<td>Repair</td>
</tr>
<tr>
<td>Bent handles that are not operable and/or protrude beyond chassis envelope when in locked position</td>
<td>Repair</td>
</tr>
</tbody>
</table>

* Items included in inspection requirements of US FMCSA 49 CFR 393 and 396, Appendix G to 49 CFR, Chapter III and Subchapter B
Twist Lock Push Pin - 5010

**Description:** Twist Lock/ Push Pin missing; keeper bracket broken.

**Job Code:** 5010  
**Condition Code:** 1 – Replace With New  
**Why Made Code:** 08 – Missing  
**Location:** RF – Right Front

**Action:** Replaced RF Twist Lock Push Pin and Handle.

**Responsibility:** Owner

---

**Post Repair**

**Description:** Twist Lock/Push Pin handle retaining bracket was replaced with non-like material as original. Handle keeper design was altered; not replaced like-for-like.

**Action:** Replace with like product.

*Note: This Push Pin assembly is sold as complete unit.*
Twist Lock Handle - 5011

Pre Repair

Description: Twist Lock Handle broken off.

Job Code: 5011
Condition Code: 1 – Replace With New
Why Made Code: 08 – Missing
Location: RR – Right Rear

Action: Replace RF Twist Lock Handle.

Responsibility: Owner

Post Repair

Description: Twist Lock Handle replaced.

Action: Twist Lock Handle replaced. It is not necessary to paint this type of Pin Handle; only the area of the new weld requires painting.
Twist Lock Handle Keeper - 5012

Pre Repair

Description: Twist Lock Handle Keeper missing.
Job Code: 5012
Condition Code: 1 – Replace With New
Why Made Code: 08 – Missing
Location: RF – Right Front

Action: Replace RF Twist Lock Handle Keeper.
Responsibility: Owner

Post Repair

Description: Twist Lock Handle Keeper replaced.

Action: Twist Lock Handle Keeper replaced using new Keeper, Nut, and Bolt. *It is not necessary to paint this type of Keeper.*
Twist Lock Assembly - 5013

**Pre Repair**

**Description:** Twist Lock Assembly Missing.

**Job Code:** 5013  
**Condition Code:** 1 – Replace With New  
**Why Made Code:** 08 – Missing  
**Location:** RF – Right Rear

**Action:** Replace RR Twist Lock Assembly

**Resposibility:** Owner

**Post Repair**

**Description:** Twist Lock Assembly replaced.

**Action:** Twist Lock Assembly replaced using complete new assembly.  
*Paint new assembly to match chassis.*
### Chassis Main Frame – 5020 Criteria Reference

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deformations such as bends, bows, dents, etc.</td>
<td>If damage prevents a container from properly securing to the chassis, would cause damage to the container if left unrepaired, or prevents the chassis from tracking properly, repair/replace.</td>
</tr>
<tr>
<td>Cracked/broken welds of cross members</td>
<td>If cracks exceed 20% of total weld area or component could potentially be lost during use, re-weld.</td>
</tr>
<tr>
<td>Cut or torn component</td>
<td>If damage prevents a container from properly securing to the chassis, would cause damage to the container if left unrepaired, or prevents the chassis from tracking properly, repair/replace.</td>
</tr>
<tr>
<td>Elongation of hole in web for passage of landing leg shaft</td>
<td>If elongated to more than 5in. (125mm) in diameter or within 1” (25mm) of main rail flange, repair.</td>
</tr>
</tbody>
</table>
Main Frame Rail - 5020

Pre Repair

Description: Main Frame Rail

Job Code: 5020
Condition Code: 1 – Replace With New
Why Made Code: 03 – Broken
Location: LSC & RSC – Left Side Center & Right Side Center

Action: Replace Right Side and Left Side Main Frame Rails.

Responsibility: Damage

Post Repair

Description: R and L side Main Frame Rails replaced.

Action: Replaced complete Main Frame Rails R and L sides. Painted new main frame rails using matching paint color.

Note: Cross member appears to be bent and should have been replaced.
Main Frame Rail - 5020

**Pre Repair**

**Description:** Main Frame Rail

**Job Code:** 5020  
**Condition Code:** C – Section  
**Why Made Code:** 03 – Broken  
**Location:** LSR & RSR – Left Side Rear & Right Side Rear

**Action:** Section Left Side Main Frame Rails.

**Responsibility:** Damage

**Post Repair**

**Description:** To facilitate DOT bumper replacement, main rail required window insert in web of rail and repair to bottom flange.

**Action:** Sectioned Left Side Main Frame Rails.

**Responsibility:** Damage
LOWER - CORNER CASTING

AAR JOB CODE

5301
Lower Corner Casting - 5301

Pre Repair

Description: Crack from bottom rail has spread up into the Lower Corner Casting.

Job Code: 5301
Condition Code: D – Weld
Why Made Code: – 18 Weld Broken
Location: RF – Right Front

Action: Weld RF Lower Corner Casting.

Responsibility: Owner

Post Repair

Description: Right Front Lower Corner Casting welded.


Clean and paint area of repair. Pre-heating casting will allow better weld penetration.
STACKING POST

AAR JOB CODE

5310
Stacking Post - 5310

Kinked, bent, or crushed stacking/lifting posts must not be straightened, but must be wholly replaced - including the upper and lower castings. A post is considered kinked or bent when it is bowed out or in by more than 1”. The structural integrity of the assembly requires full replacement.

1. Remove the two rows of rivets that attach side panel/post to the intermediate stacking post. Remove the hucks from the attaching wing. Remove about 24” of rivets, adjacent to the stacking post, attaching the side panel/post to the upper rail and roof and lower rail.

2. Place a support from the floor to the intermediate header inboard of the castings. Also, support the sidewall so that it is positioned out away from the stacking post.

3. Remove, by arc gouging, the welds attaching the stack post and tab to the lower casting and the stack post to the upper casting and attaching wing. Note: The outer stacking post is welded both inside and out at the top casting.

4. With all welds cut loose remove the stacking post from the container.

5. Clean up by grinding all remaining weld material from the upper and lower castings and attaching wing.

6. Weld into place on the lower casting a new attaching tab.

7. Insert a new stacking post assembly by placing the lower end over the lower casting attaching tab, and the upper end against the attaching wing. Note: Make sure the stacking post has the cutout for the tab on the lower casting.

8. Weld the new stacking post to the attaching tab.

9. Weld the new stacking post to the lower casting and upper casting.

10. Weld the new stacking post to the attaching wing.

11. To insure the integrity of the repair; a reinforcement shall be installed.

12. With a good grade of prime coat paint, coat welded areas after cleaning.

13. Install 1/16 x 1 foam seal tape full height on the stack post flanges that contact the side panels.

14. Position the replacement side panel/posts over the stacking post, and transfer drill all attaching holes through the stacking post.
15. Re-install fasteners through the attaching wing and into the upper rail. Use Huck pin #MGPB-R10-12-CA and collar #MGC-R10-C through top group of holes in upper rail and ¼” buck rivets (2117 – T4 alloy) through lower row of holes.

16. Install 1/4 DIA aluminum rivets, 2117-T4 alloy, as shown in Figure 35. The manufactured head is to be inside the container.

Dents in the stacking posts are difficult to repair without cutting and sectioning. If the dents are small and less than ½” deep, they should be left as is. The post should be replaced if the dents are more than ½” deep and are across the width of the structure. A dent or bending of the post panel attachment flanges should be straightened if there are no tears or cuts. This can be done by removing the side panel and straightening. You may heat the area to be straightened, but take care not to heat beyond a dull cherry-red color. Cracks, tears and cuts on the stacking post may be welded up if the cracks, tears and cuts are no longer than 6” vertically or 2” horizontally, and no wider than 1/8”. Prior to welding, drill stop holes at the corners or ends of cracks or tears to halt the propagation of the crack or tear. Grind the crack or tear to create a V-groove for welding. Weld the V-groove and stop holes, clean, prime, and top coat. If any cracks, tears or cuts are larger than those referenced above, the post should be replaced.

*Splicing, inserting and sectioning are not permitted.*
Stacking Post - 5310

Pre Repair

Description: Left Side Rear stack post broken at u-shaped cut out. If crack is caught before reaching radius of post, it can be repaired.

Job Code: 5656 - Stacking Post
Condition Code: D - Weld
Why Made Code: 3 - Broken
Location: LSR - Left Side Rear

Action: Replace Stacking Post.

Responsibility: Owner

Note: The crack is within tolerance for repair and has not spread into radius of stacking post to warrant replacement.

Post Repair

Description: Crack was ground or arc-welded out; crack was welded and a reinforcement plate was installed, as illustrated on the left. Casting must be pre-heated from 250 to 400 degrees prior to welding.
Stacking Post - 5310

Pre Repair

Description: Left Side Rear stacking post broken across entire profile below u-shaped cut out. If crack (in photo below) is caught before reaching radius of post, it can be repaired.

Job Code: 5656 - Stacking Post
Condition Code: 1 – Replace
Why Made Code: 3 – Broken
Location: LSR – Left Side Rear
Action: Replace Stacking Post.
Responsibility: Owner

Post Repair

Description: Replace stacking post per manufacturer’s recommendation.

Note: When replacing a stacking post, the upper casting reinforcement plate must be installed to the new stacking post.
Stacking Post - 5310

Pre Repair

Description: Stacking Post broken below reinforcement plate through entire profile.

Job Code: 5310
Condition Code: 1 – Replace with New
Why Made Code: – 03 Broken
Location: RF – Right Front

Action: Replace RR Stacking Post.

Responsibility: Damage

Note: Photo should be taken from eye level.

Post Repair

Description: Right Rear Stacking Post Replaced.

Action: Replaced Right Rear Stacking Post. New component painted.

Note: Reinforcement plate installed over new stacking post at casting connection.
INTERMEDIATE HEADER

AAR JOB CODE

5320
Intermediate Header - 5320

Pre Repair

**Description:** Intermediate Header crack has not spread past casting into web of intermediate header more than $\frac{3}{4}$" past casting.

**Action:** No repair required.
Intermediate Header - 5320

**Pre Repair**

**Description:** Intermediate Header crack has spread past casting into web of intermediate header more than ¾” past casting.

**Job Code:** 5320 - Intermediate Header  
**Condition Code:** D – Weld  
**Why Made Code:** 23 – Flex Crack  
**Location:** TR – Top Rear

**Action:** Drill stop-hole at end of crack; grind or gouge out crack and weld. Install plate per manufacturer’s specifications.

**Post Repair**

**Description:** Intermediate Header repaired per manufacturer specifications.

**Action:** These plates were fabricated and are sufficient for this application.
Intermediate Header - 5320

Pre Repair

Description: Intermediate Header cracked more than ¾” past casting.

Job Code: 5320
Condition Code: D – Weld
Why Made Code: – 23 Flex Cracked
Location: TR – Top Rear

Action: Stop drill, weld and install reinforcement plates to TR Intermediate Header.

Responsibility: Owner

Post Repair

Description: Intermediate Header at Top Rear Welded

Action: Additional reinforcement plates should have been installed over welded breaks per manufacturer’s recommendation. Without plates, cracks may continue to spread causing additional repairs in the future.

Note: In addition, intermediate header/top rail connection should be checked for fastener integrity (black streaks running down as indicator of failure). Stacking post/panel connection may also have sheared fasteners.
CHANNEL OUTRIGGER

AAR JOB CODE

5340
Pre Repair

Description: Top flanges of outriggers bent not allowing new floor section to properly fit into opening.

Job Code: 5340 - Channel Outrigger – Crossmember
Condition Code: 8 – Straighten
Why Made Code: 2 – Bent
Location: RSF – Right Side Front

Action: Straighten outrigger top flanges.

Responsibility: Damage

Note: Damage to outrigger alters floor repairs from Owner responsibility to Damage.

Post Repair

Description: After damaged flooring was removed, the top flange of the outrigger was straightened back into place using a hammer with no heat required.
Channel Outrigger - 5340

Pre Repair

Description: It’s common to see miscoding of the component in the photo to the left. The image shows the Outrigger bent and torn at the casting due to impact but it’s commonly referred to as broken weld of the Lower Casting (5301).

Job Code: 5340
Condition Code: 1 – Replace
Why Made Code: – 14 Cut/Torn
Location: U – Under

Responsibility: Damage

Action: Replace Outrigger.

Post Repair

Description: The post photo at left shows the outrigger was replaced.

Action: Outrigger was replaced. Care should be taken to avoid burning the surrounding flooring.

Note: Inspect floor to see if boards are broken form outrigger impact. If affected, floor repair is Associated and coded as Damage.
FMCSA, BIT, PRE-TRIP

AAR JOB CODES

5651 - 5655
### FMCSA - 5651

396.21 Periodic inspection recordkeeping requirements.

(a) The qualified inspector performing the inspection shall prepare a report that:

1. Identifies the individual performing the inspection;
2. Identifies the motor carrier operating the vehicle or intermodal equipment provider intending to interchange the vehicle to a motor carrier;
3. Identifies the date of the inspection;
4. Identifies the vehicle inspected;
5. Identifies the vehicle components inspected and describes the results of the inspection, including the identification of those components not meeting the minimum standards set forth in appendix G to this subchapter; and
6. Certifies the accuracy and completeness of the inspection as complying with all the requirements of this section.

(b)(1) The original or a copy of the inspection report shall be retained by the motor carrier, intermodal equipment provider, or other entity that is responsible for the inspection for a period of fourteen months from the date of the inspection report. The original or a copy of the inspection report must be retained where the vehicle is either housed or maintained.

(2) The original or a copy of the inspection report must be available for inspection upon demand of an authorized Federal, State, or local official.

(3) Exception. If the motor carrier operating the commercial motor vehicles did not perform the commercial motor vehicle's last annual inspection, or if an intermodal equipment provider did not itself perform the annual inspection on equipment intended for interchange to a motor carrier, the motor carrier or intermodal equipment provider is responsible for obtaining the original or a copy of the last annual inspection report upon demand of an authorized Federal, State, or local official.

Note: A copy of the signed and dated FMCSA inspection form is required to be submitted with invoice.
Form J-7 (decal) shall be applied on chassis on the left side of front bolster, all old decals should be removed at time. It shall be at least 6 in. × 4 ½ in. in size. The decal shall have black letters on a white background. It shall be at least 8½ in. × 8½ in. in size. Its letters shall have the following minimum dimensions: “AAR FORM J-7”: ½ inch “FHWA – PI,” “MONTH, YEAR”: 1 inch Other letters: 5/16 inch.

Inspection, repair, and maintenance

§ 396.19 Inspector qualifications.

(a) Motor carriers and intermodal equipment providers must ensure that individuals performing annual inspections under § 396.17(d) or (e) are qualified as follows:
(1) Understand the inspection criteria set forth in part 393 and appendix G of this subchapter and can identify defective components;
(2) Are knowledgeable of and have mastered the methods, procedures, tools and equipment used when performing an inspection; and
(3) Are capable of performing an inspection by reason of experience, training, or both as follows:
   (i) Successfully completed a Federal- or State-sponsored training program or have a certificate from a State or Canadian Province that qualifies the individuals to perform commercial motor vehicle safety inspections, or
   (ii) Have a combination of training or experience totaling at least 1 year. Such training or experience may consist of:
      (A) Participation in a commercial motor vehicle manufacturer-sponsored training program or similar commercial training program designed to train students in commercial motor vehicle operation and maintenance;
      (B) Experience as a mechanic or inspector in a motor carrier or intermodal equipment maintenance program;
      (C) Experience as a mechanic or inspector in commercial motor vehicle maintenance at a commercial garage, fleet leasing company, or similar facility; or
      (D) Experience as a commercial motor vehicle inspector for a State, Provincial or Federal government.
(b) Motor carriers and intermodal equipment providers must retain evidence of that individual's qualifications under this section. They must retain this evidence for the period during which that individual is performing annual motor vehicle inspections for the motor carrier or intermodal equipment provider, and for one year thereafter. However, motor carriers and intermodal equipment providers do not have to maintain documentation of inspector qualifications for those inspections performed either as part of a State periodic inspection program or at the roadside as part of a random roadside inspection program.
SOP for Wheel End and Brake Work

Yearly Inspections
During the yearly FMCSA inspections, the following inspections must take place:

- Pull each hub cap and outer bearing for each wheel position, clean and inspect outer bearing for any visible defects and any contamination within the wheel end. Ensure that internal grease is not leaking by the seal.

- If no defects are found, re-pack outer bearing and reassemble the wheel end utilizing the correct installation procedure. If no defects are found, please using Job Code 5657, Condition Code 01, and Why-Made Code 32.

- If the outer bearing shows signs of defects or there is contamination within the wheel end, a full wheel end inspection must be performed, as defined in the following “Complete Wheel End Disassembly and Inspection” for all 4 wheel end positions.