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CONVENTIONS APPLIED IN THIS DOCUMENT
This section explains the techniques used in this document to convey important information, safety issues, how to contact Hendrickson and how to apply hyperlinks.

EXPLANATION OF SIGNAL WORDS
Hazard signal words (such as DANGER, WARNING or CAUTION) appear in various locations throughout this publication. Information accented by one of these signal words must be observed at all times. Additional notes are utilized to emphasize areas of procedural importance and provide suggestions for ease of repair. The following definitions comply with ANSI Z535.4 and indicate the use of safety signal words as they appear throughout the publication.

⚠️ DANGER: INDICATES IMMEDIATE HAZARDS WHICH WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH.

⚠️ WARNING: Indicates hazards or unsafe practices which could result in severe personal injury or death.

⚠️ CAUTION: Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE: Indicates hazards or unsafe practices which could result in damage to machine or equipment.

新たに追加されたセクション

IMPORTANT: An operating procedure, practice or condition that is essential to emphasize.

Safety alert symbol used to indicate a condition exists that may result in personal injury or harm to individuals. It must be applied to DANGER, WARNING and CAUTION statements, which emphasize severity.

LINKS
Links are identified by a dark grey line under the linked text. Internal links allow the reader to jump to a heading, step or page in this document. External links open the website or document referenced.

GENERAL SERVICE NOTES

IMPORTANT: Special attention should be paid to the information included in EXPLANATION OF SIGNAL WORDS.

Before you begin:
Read, understand and comply with:
- All instructions and procedures.
- All signal word (CAUTION, WARNING and DANGER) statements to help avoid personal injury or property damage.
- Company’s maintenance, service, installation and diagnostic practices.
- Vehicle manufacturer’s safety instructions when working on the vehicle.
- Vehicle manufacturer’s instructions for recommended practices not described in this manual.
- Local safety regulations.

DURING SERVICE:
- Work must be carried out by trained personnel.
- Sudden release of parking springs (e.g. the spring brake part of the brake chamber or the brake return spring) may cause injury.
- Use recommended tools only.
- Before releasing trailer back into service, perform operational checks and test the trailer to make sure brakes are working correctly.

Hendrickson reserves the right to make changes and improvements to its products and publications at any time. Consult the Hendrickson website (www.hendrickson-intl.com) for the latest version of this manual.

IMPORTANT SAFETY NOTICES
Proper installation, maintenance, service and repair is important to the reliable operation of the suspension system. The procedures recommended by Hendrickson and described in this publication are methods of performing inspection, maintenance, service and repair.

The warnings and cautions should be read carefully to help prevent personal injury and to ensure that proper methods are used. Improper maintenance, service or repair can cause damage to the vehicle and other property, personal injury, an unsafe operating condition or void the manufacturer’s warranty.
Carefully read, understand and follow all safety related information within this publication.

⚠️ WARNING: DO NOT modify or rework parts. Use ONLY Hendrickson authorized replacement parts. Use of substitute, modified or replacement parts not authorized by Hendrickson may not meet Hendrickson’s specifications. It can also result in failure of the part, loss of vehicle control and possible personal injury or property damage. Do not modify parts without written authorization from Hendrickson.

⚠️ WARNING: Always wear proper eye protection and other required PPE (personal protective equipment) when performing vehicle maintenance, repair or service. Follow federal, state and local regulations as appropriate.

⚠️ WARNING: Solvent cleaners can be flammable, poisonous and can cause burns. To help avoid serious personal injury, carefully follow the manufacturer’s product instructions and guidelines and the following procedures:

- Wear proper eye protection.
- Wear clothing that protects your skin.
- Work in a well ventilated area.
- DO NOT use gasoline or solvents that contain gasoline. Gasoline can explode.
- Hot solution tanks or alkaline solutions must be used correctly. Follow the manufacturer's recommended instructions and guidelines carefully to help prevent personal accident or injury.

⚠️ WARNING: The following precautions and considerations should be applied when handling brake lining:

- Compressed air or dry brushing should never be used for cleaning brake assemblies or work areas.

- Follow applicable shop, local, state and federal safe practices for working with and disposal of brake lining materials.

- Hendrickson recommends that workers doing brake work should take steps to minimize exposure to airborne brake lining particles. Proper procedures to reduce exposure include working in well ventilated area, segregation of areas where brake work is done, use of local filtered ventilation systems or use of enclosed cells with filtered vacuums.

- Material Safety Data Sheets (MSDS) on this product, as required by OSHA, are available online from Hendrickson at www.hendrickson-intl.com/trailerlit.

⚠️ CAUTION: A mechanic using a service procedure or tool which has not been recommended by Hendrickson must first satisfy himself that neither his safety nor the vehicle’s safety will be jeopardized by the method or tool selected. Individuals deviating in any manner from the provided instructions assume all risks of consequential personal injury or damage to equipment.

NOTICE: When welding to or on the axle, take every caution to prevent bearing damage. When grounding welding equipment to axle, prevent current from passing through the wheel bearings.

A connection that places a wheel bearing between the ground cable connection and the weld area can damage the bearing by electric arcing.
S-CAM AND BRAKE CHAMBER BRACKET REPLACEMENT PROCEDURE

CONTACTING HENDRICKSON
Contact Hendrickson Trailer Technical Services for technical assistance as needed. To do so, several options are available. Technical Services must be contacted before performing any warranty related service.

PHONE
Contact Hendrickson directly in the United States at 866-RIDEAIR (743-3247). From the menu, select:
• Technical Services/Warranty for technical information.
• Other selections include:
  – Aftermarket Sales for replacement parts information and ordering.
  – Original Equipment Sales for parts inquiries and ordering for trailer manufacturers.

EMAIL
For Hendrickson Trailer Technical Services, use the following e-mail address:

HTTS@Hendrickson-intl.com

PRIOR TO CONTACTING TECHNICAL SERVICES
It is best to have the following information about your vehicle and Hendrickson suspension available (all that apply):
• Suspension ID Tag information (Refer to Hendrickson Lit. No. L977 ID Guide, page 2 for tag location and details):
  – Suspension model number
  – Suspension serial number
  – Approximate number of suspension miles
• VIN plate data. Refer to trailer OEM manual for VIN plate location.
  – Trailer Type (van, reefer, flat bed, etc.)
  – Manufacturer
  – VIN (Vehicle Identification Number)
  – In-service date 1
• If applicable, description of the system problem, part number and/or part description of the reported non-functioning part.
  – Date of problem
  – Where applicable: location of problem on suspension / trailer (e.g., road side, front axle, rear axle, curb side rear, etc.)

• Symptoms
  » Systems, components or function affected by problem
  » When does problem occur?
  » How often does the problem occur?
  » Etc.
• What troubleshooting and/or measurements have been performed?
• What service data literature do you have or need?
• Digital photos of suspension and damaged areas.
• Special application approval documentation (if applicable).

RELATIVE LITERATURE
If you suspect your version of this or any other Hendrickson manual is not “Up-to-Date”, the most current version is free online at:

www.Hendrickson-intl.com/TrailerLit

Available Hendrickson documentation can be viewed or downloaded from this site.

All Hendrickson online documentation is in PDF format that requires PDF reader software to open. A free application is downloadable from Adobe at http://get.adobe.com/reader/.

Other relative literature may include:

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<thead>
<tr>
<th>NAME</th>
<th>DESCRIPTION</th>
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<tr>
<td>L64</td>
<td>Welding Procedures</td>
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<tr>
<td>L583</td>
<td>Comprehensive Warranty Statement</td>
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<tr>
<td>L1061</td>
<td>Hendrickson Trailer Axles Maintenance Procedures</td>
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<td>L1075</td>
<td>HCA® Hendrickson Chassis Axle® Installation</td>
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<tr>
<td>L1094</td>
<td>HCA® Hendrickson Chassis Axle® Weld-on ABS Bracket Field Installation Procedure</td>
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</tbody>
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1 If the in-service date is unknown or not available, the vehicle date of manufacture can be substituted.
PREPARING TRAILER FOR SERVICE

**NOTE: DO NOT** service a suspension or any components that is under warranty without first contacting Hendrickson Technical Services. Refer to CONTACTING HENDRICKSON for details.

⚠️ **WARNING:** To prevent serious eye injury, always wear safety glasses when performing trailer maintenance and service.

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**GENERAL WELD PARAMETERS**

Refer to L64 _Welding Procedures_ for weld parameters, general practices and procedures.

**S-CAM BRACKET REPAIR**

1. If possible, **remove** axle from trailer.

![Figure 2: Previous bracket weld ground flush to axle tube surface](image)

2. **Remove** damaged S-cam bracket:
   A. **Grind** away any remaining weld or S-cam bracket material from the axle tube (Figure 2).
   B. If bracket had been rewelded:
      i. Use a cutting torch (oxy-fuel, plasma) to **remove** the majority of the bracket. Cut approximately 1/4 inch above the weld.
      ii. **Grind** remaining material from axle tube.

![Figure 3: S-cam bracket assembly must be 3.5 inches (90 mm) from the end of the camshaft](image)

3. **Position** replacement bracket on axle (Figure 3):
   A. **Slide** a new S-cam bracket assembly onto the camshaft and **place** the bracket assembly on the axle tube.

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Before beginning any work on a trailer suspension system, the following steps help to ensure conditions are safe. Refer to GENERAL SERVICE NOTES on page 2.

1. **Park** the trailer on a level, debris-free surface.
2. **Set** the trailer parking brakes.
3. To prevent the trailer from moving, **chock** the wheels of an axle not being raised.
4. **Exhaust** the air from the trailer suspension.

If required during service:

5. **Release** the trailer parking brakes.
6. Using a jack, **raise** trailer and/or axle until wheels clear the work surface.
7. **Support** the raised trailer with safety stands.

⚠️ **WARNING:** Do not work under a trailer supported only by jacks. Jacks can slip or fall over, resulting in serious personal injury. Always use safety stands to support a raised trailer.
B. **Position** the S-cam bracket assembly on the axle tube so the camshaft is parallel to the axle tube and aligned with the other camshaft on the opposite end of the axle tube. Visual placement is acceptable, but the goal is to minimize misalignment.

C. **Laterally position** the S-cam bracket assembly on the axle tube so the inside surface of the S-cam bracket assembly is 3½ inches (90mm) from the end of the camshaft (Figure 3).

---

5. **Ensure** both items to be welded are free from moisture, dirt, scale, paint and grease.

6. **Tack weld** the S-cam bracket assembly in place on the axle tube using a ¼ inch (6 mm) tack weld on each side of the S-cam bracket (Figure 5). The tack welds should be offset from each other about 1/8 inch (6 mm) from the center of the S-cam bracket.

7. **Remove** the camshaft and S-cam support bushing assembly from the S-cam bracket assembly so that a good fillet weld, attaching the S-cam bracket to the axle tube, can be completed.

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4. Using a felt-tip marker, **place** layout lines for the final weld on the axle tube (Figure 4).

8. Using a square, **check** the perpendicularity of the S-cam bracket to the axle tube (Figure 6). Make any adjustments prior to final weld.

9. **Thoroughly clean** the slag from the tack welds before applying the final welds.
10. **Apply** final fillet weld using below specifications:
   - Weld size should be $\frac{1}{4}$ to $\frac{3}{8}$ inches (6 to 10 mm) and should stop $\frac{1}{8}$ to $\frac{3}{16}$ inches (3 to 5 mm) from both ends (Figure 4 and Figure 7).
   - There should be two separate welds, one on each side of the S-cam bracket, that do not extend around the ends of the bracket. Wrapping the weld around the ends of the S-cam bracket can lead to undercutting.

11. **Thoroughly clean** the slag from welds and **apply** surface coat.

12. **Reinstall** the camshaft and S-cam support bushing assembly.

13. Fully **lubricate** both spider and cam bushings.

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**BRAKE CHAMBER BRACKET REPAIR**

1. **If possible, remove** axle from trailer.

2. **Remove** damaged brake chamber bracket:
   - **Grind** away any remaining weld or brake chamber bracket material from the axle tube.
   - **If bracket had been re-welded,**
     - Use a cutting torch (oxy-fuel, plasma) to **remove** the majority of the bracket. Cut approximately $\frac{1}{4}$ inch (6 mm) above the weld.
     - **Grind** remaining material from axle tube.

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**Figure 8: Framing square helps position brake chamber bracket**

**Figure 9: Using a framing square to determine brake chamber bracket placement**
3. **Place** a framing square on the axle contacting the camshaft splines as shown in Figure 8 and Figure 9.

![Brake chamber bracket]

Figure 10: Tangentially positioning brake chamber bracket

4. **Place** a new brake chamber bracket on the axle tube and orient so that it contacts framing square as shown in Figure 10.

5. **Ensure** the items to be welded are free from moisture, dirt, scale, paint and grease.

![Brake chamber bracket]

Figure 11: Brake chamber bracket must be parallel to axle tube

6. **Tack weld** the brake chamber bracket in place using a ¼ inch (6 mm) tack weld on both sides of the brake chamber bracket (Figure 11). Tacks should be near the center of the bracket.

7. **Position** the brake chamber bracket so its mounting surface is parallel to the other brake chamber bracket on the opposite end of the axle tube (Figure 12). If possible, lay a straight edge across the brake chamber bracket to check parallelism to the other bracket or to the axle tube. **Make** any adjustments prior to final weld.

![Brake chamber bracket]

Figure 12: Brake chamber brackets must be parallel to axle tube

8. **Thoroughly clean** the slag from the tack welds before applying the final welds.

![Brake chamber bracket weld specifications]

Figure 13: Brake chamber bracket weld specifications

9. **Apply** ¼ to ⅜ inch (6 to 10 mm) fillet weld to each side of the bracket (Figure 13):

**NOTE:** The resulting weld should wrap around the end of the bracket. Use extra caution to avoid undercut when wrapping the weld around the end of the bracket.

A. The **first weld** should be made on the inside of the bracket and end with just a slight wrap around the edge of the bracket.

B. The **second weld** should be made on the outside of the bracket and end so that it overlaps the end of the first weld.

10. **Thoroughly clean** the slag from welds and **apply** surface coat.

This procedure should create the optimum 105 degree setup angle as shown in Figure 14.
Figure 14: Brake chamber bracket positioning details

Wheel rotation

Axle tube

Framing square

Figure 14: Brake chamber bracket positioning details
Call Hendrickson at 866.RIDEAIR (743.3247) for additional information.