

Asia Pacific Region Only

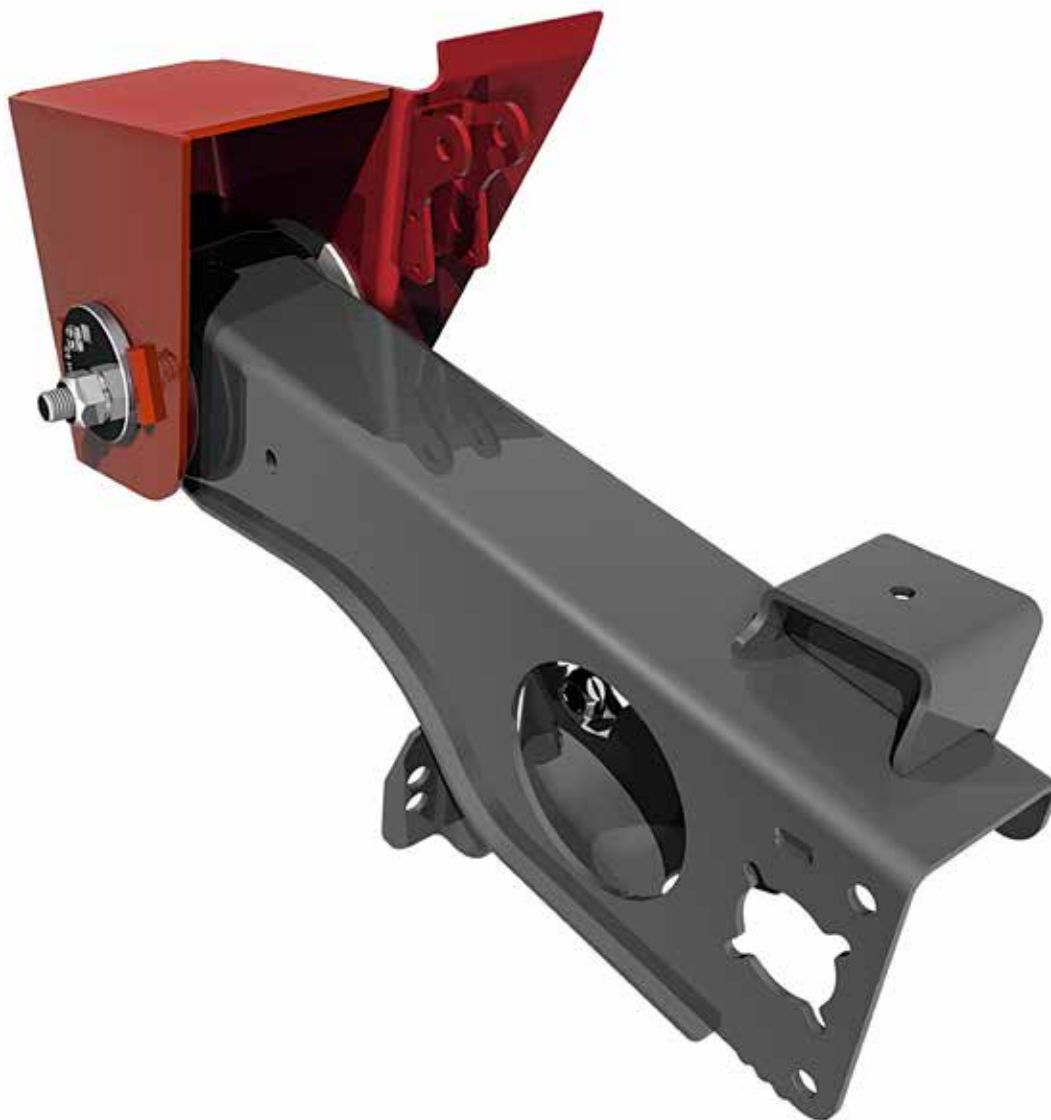
# **TECHNICAL BULLETIN** INTRAAX® AND HT HANGER REPAIR

LIT NO: 97117-101

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## INTRODUCTION

This bulletin details repair procedures for rectifying cracked, gouged or worn suspension pivot hangers in suspensions supplied by Hendrickson Asia Pacific.

### Gouged and Worn Hanger

Hangers are not an item that normally wears. However, they may become gouged or worn from a loose pivot bolt or spacer washers that have worn through. Any hanger wear or gouging will need closer inspection to determine the repair needed. Hanger wear less than 1 mm deep will usually be acceptable, provided there are no cracks or sharp ridges that cannot be smoothed out.

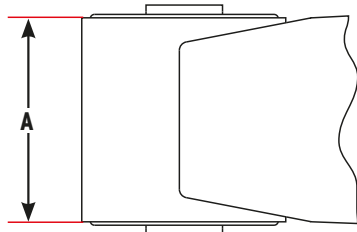
Hendrickson have developed repair kits to restore considerably gouged or worn hangers. Each kit includes two adaptors, bolt, nut, and washers to repair one hanger. Refer to “[Worn or Gouged Hanger Repair](#)” on page 7.

The gouged or worn hanger repair kits are:

- **98690-001** – Wide (6”) bush hanger repair kit
- **98690-003** – Narrow (3”) bush hanger repair kit

However, the hanger should be replaced if the damage is severe. Additional QUIK-ALIGN® hardware and wear washers should also be purchased as required.

Likewise, the trailing arm tube should also be inspected to ensure wear is less than that shown in [Table 1](#) and that any sharp ridges are removed. Refer [Figure 1](#).



**Figure 1: Measuring Bush Tube Wear**

Bush	'A'	Action
Wide	146 mm or more	If tube radius is worn, remove bush, dress radius (as detailed in <a href="#">Hendrickson Bulletin L750</a> ), install new bush and spacers.
	Less than 146 mm	Replace HALFTRAAX or axle assembly
Narrow	78.5 mm or more	No significant narrow bush tube wear is allowed.
	Less than 78.5 mm	Replace HALFTRAAX

**Table 1: Bush Tube Wear Criteria**

**NOTICE:** No bush tube wear into the weld is acceptable.

### Cracked Hanger

A hanger may suffer from fatigue cracks, especially at high mileage in severe operating conditions.

Typical crack inspection, evaluation and repair methods should be used when dealing with frame hangers that are cracked. Hendrickson manufactures a hanger repair kit that includes a reinforced steel plate, along with instructions. The kit part number is **98544-024**. QUIK-ALIGN hardware and wear washers should also be purchased as required.

This kit is designed for hangers with minor fatigue cracks on the inboard side. Refer to “[Cracked Hanger Repair](#)” on page 10 and to the engineering drawing 49441-285 that is supplied with the kit.

For hangers with cracks on the outboard side, severe cracking, or excessive wear, replacement is the ideal solution. However, in some circumstances the inboard side repair kit or the gouged repair kit may be used, depending on location and severity of cracks and damage. New hangers may have the reinforcing plate installed at the same time to improve durability in severe conditions.

## SERVICE NOTES

Before you begin:

- Read and understand all instructions and procedures before installing any component.
- Read and observe all Caution and Warning statements to help avoid personal injury or property damage.
- Follow your company’s maintenance, service, installation and diagnostic practices.

Hendrickson reserves the right to make changes and improvements to its products and publications at any time. Check the Hendrickson Asia Pacific website at [www.hendrickson.com.au](http://www.hendrickson.com.au) for the latest available publications.

**NOTE:** Use only Hendrickson Genuine parts for servicing this suspension system.

## IMPORTANT SAFETY NOTICE

Proper installation is important to the reliable operation of your Hendrickson suspension. The procedures recommended by Hendrickson and described in this publication are methods of performing such installation.

The warnings and cautions should be read carefully to help prevent personal injury and to assure that proper methods are used. Improper installation 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.

## 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 utilised to emphasise areas of procedural importance and provide suggestions for ease of repair. The following definitions indicate the use of these 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 hazards or unsafe practices which could result in damage to machine or minor personal injury.

**IMPORTANT** An operating procedure, practice or condition that is essential to emphasise.

## GENERAL SERVICE NOTES

Ensure proper safety apparel is worn when welding and that any potential fire hazards are removed from the welding area. Basic welding safety gear includes leather boots, cuff-less full-length trousers, a flame-resistant welding jacket, welding gloves, a welding helmet, safety glasses and hair protection.

- Wear proper eye protection
- Wear clothing that protects your skin
- Work in a well-ventilated area

Suitable personal protective equipment (PPE) must be in good condition and worn at appropriate times. This applies

even if the task is only brief, because this is often when injuries occur.

However, PPE should be regarded only as a secondary safety measure because it will not compensate for unsafe work practices. If there are safer or better workplace procedures, then these should be adopted.

**⚠ WARNING:** Do not modify or rework parts. Do not use substitute parts of the suspension or axle components. Use of a modified part or replacement part not authorised by Hendrickson may not meet Hendrickson specifications and can result in failure of the part, loss of vehicle control and possible personal injury or property damage. Use only Hendrickson authorised replacement parts. Do not modify parts without authorisation from Hendrickson.

**⚠ CAUTION:** A technician 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 jeopardised 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.

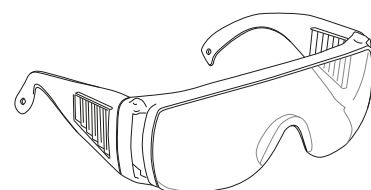
**⚠ WARNING:** Always wear proper eye protection and other required personal protective equipment when performing vehicle maintenance, repair or service.

**⚠ 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.

## PPE

Ensure the PPE is:

- Suitable for the type of work
- Correct size and fit
- Properly stored and maintained



**Figure 2: Wear safety glasses**

## WELDING PARAMETERS

**NOTE:** Welding must be performed by welders certified to AS1554 SP capability and shall satisfy the conditions of Clause 4.12.2 of AS 1554.1.

All welding must to the Australian Standard Structural steel welding, AS1554.1-2014.

## WELDING HARDWARE TO AXLES

**⚠CAUTION:** When welding to or on the suspension, take every precaution to prevent bearing damage. When grounding welding equipment to the suspension, 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.

For all welded connections, use the following parameters to achieve spray arc transfer:

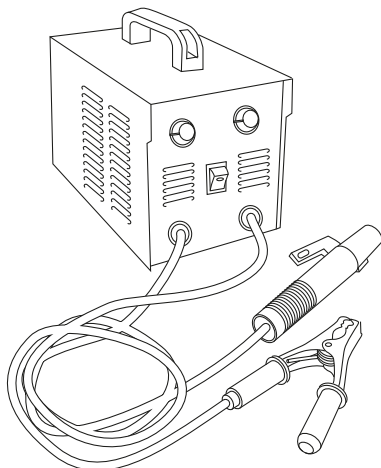
## SURFACE PREPARATION

The items to be welded must be at a minimum temperature of 16° C and must be free of moisture, dirt, scale, paint and grease.

## ARC WELDING

**Standard Electrode:** AWS E7018 (oven dried)

- **3.2 mm (0.125") Diameter**  
120-140 Amps DC  
Electrode Positive
- **4.0 mm (0.156") Diameter**  
120-160 Amps DC  
Electrode Positive



**Figure 3: Arc Welder**

## MIG WELDING

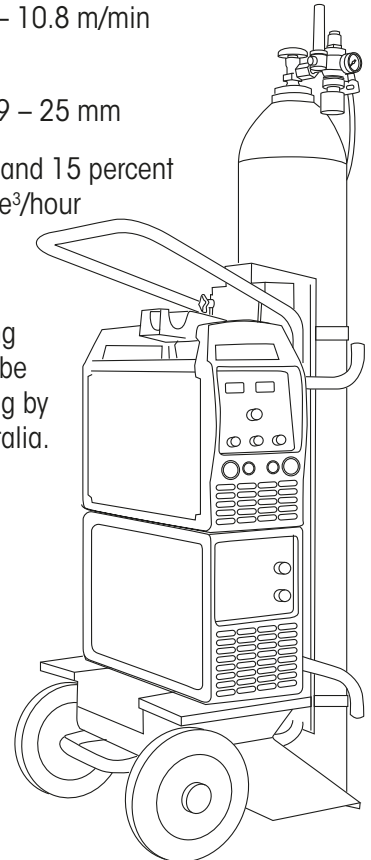
**1.2 mm (0.045") Diameter Wire**

- **Standard Wire:** AWS ER-70S-6  
1.2 mm (0.045") diameter
- **Optional Wire:** AWS ER-70S-3  
1.2 mm (0.045") diameter
- **Volts:** 26 - 30 DCRP
- **Current:** 275 - 325 Amps
- **Wire Feed Speed:** 9.6 to 10.7 m/min  
(380 to 420 IPM)
- **Electrode Extension:** 19 – 25 mm
- **Gas:** 86 percent argon and 14 percent CO2 at 0.85 to 1.0 metre<sup>3</sup>/hour (30 to 35 CFH)

**0.9 mm (0.035") Diameter Wire**

- **Standard Wire:** ER80S-D2  
0.9 mm (0.035") diameter
- **Volts:** 25 – 27.5 DCRP
- **Current:** 160 - 180 Amps
- **Wire Feed Speed:** 9.9 – 10.8 m/min  
(390 – 425 IPM)
- **Electrode Extension:** 19 – 25 mm
- **Gas:** 85 percent Argon and 15 percent CO2 at 1.0 to 1.3 metre<sup>3</sup>/hour (35 to 45 CFH)

**NOTE:** Any deviation from these welding parameters must be approved in writing by Hendrickson Australia.

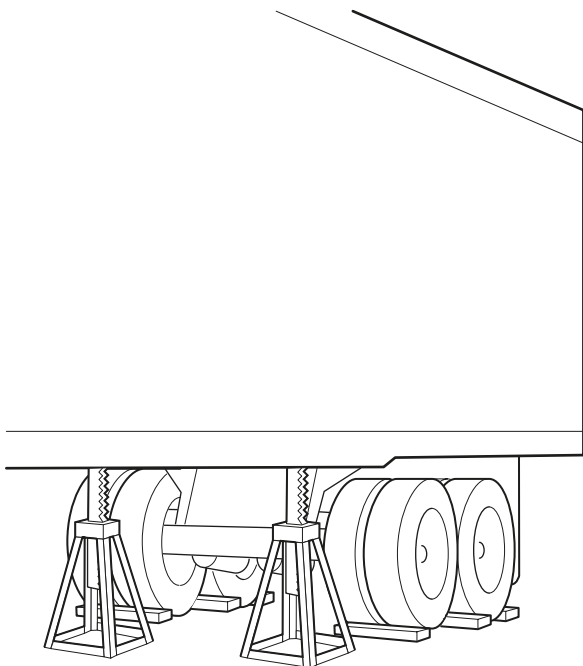


**Figure 4: MIG Welder**

## PREPARING TRAILER FOR SERVICE

**IMPORTANT:** Do not repair a suspension or any component that is under warranty without first contacting Hendrickson Customer Service.

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



*Figure 5: Trailer preparation*

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 4.

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.
5. Release the trailer parking brakes.
6. Raise trailer with a jack until un-chocked wheels clear the work surface.
7. Support the raised trailer with suitable load-rated safety stands.

**⚠ WARNING:** Chock or block the wheels on the trailer to prevent movement while working on the suspension or brake system. Failure to block the trailer may lead to serious injury or death.

**⚠ 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.

**NOTICE:** Failure to follow these instructions could result in damage to the suspension and/or its components.

## WORN OR GOUGED HANGER REPAIR

**NOTE:** Wide bush hangers repaired with **98690-001** require unique repair pivot bolts and QUIK-ALIGN® collars. These components are available as kits to service one repaired pivot connection.

- **98591-013** Repaired pivot bolt, nut and washer kit
- **98591-012** Repaired pivot bolt, nut, washer and QUIK-ALIGN collar kit
- **98591-011** Repaired pivot bolt, nut, washer, flat wear washer and TFB bush kit

1. Prepare trailer as detailed in “Preparing Trailer For Service” on page 6.
2. Support axle to prevent it dropping and remove QUIK-ALIGN® pivot fasteners.
3. Lower suspension trailing arms away from hangers.
4. Discard used fasteners.
5. Inspect wear washers and replace if worn.
6. Remove hanger alignment collar by grinding off the weld. Ensure that no hanger material is removed when removing the alignment collar.

**⚠ CAUTION:** Do not use heat or a cutting torch to remove the original weld. The application of heat will affect the metal properties and alter the strength of the hanger.

7. Cut pivot bolt openings in hanger to suit step in repair adaptors. Openings must be level horizontally and approximately 78 x 58 mm in size. Refer to the template “Pattern For Gouged or Worn Hanger Repair” on page 9.

8. Finish inside of hanger to ensure the surface is smooth and free of any spots that would cause premature deterioration of wear washers.

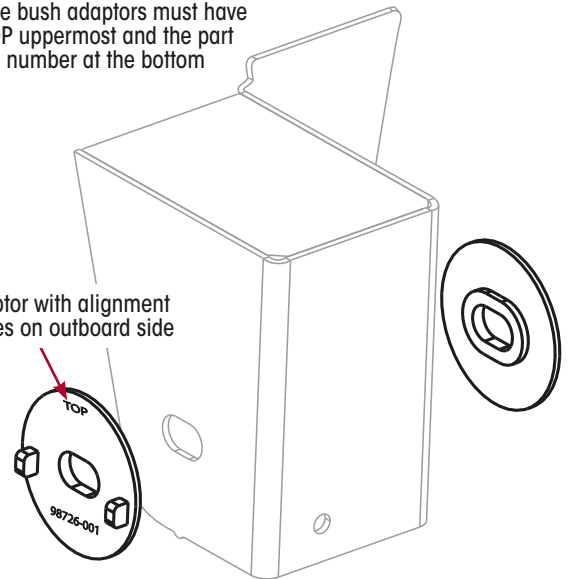
9. Install the two new QUIK-ALIGN hanger repair adaptors onto the hanger. Ensure the adaptor with the alignment guides is located on the outboard side of the hanger.

For wide bush suspensions ensure the stamped part number is located at the bottom and TOP at the top. Refer [Figure 6](#) and [Figure 9](#).

The narrow bush adaptors are symmetrical, so they can be fitted in any orientation. The narrow bush repair kit uses a smaller diameter adaptor on the inboard side of the hanger. Refer [Figure 6](#) and [Figure 10](#).

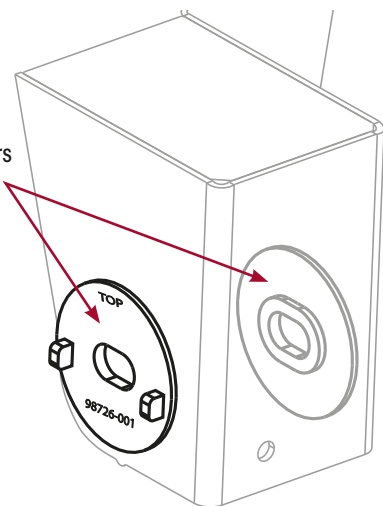
Wide bush adaptors must have TOP uppermost and the part number at the bottom

Adaptor with alignment guides on outboard side



**Figure 6: Install Hanger Repair Adaptors**

Clamp adaptors into position

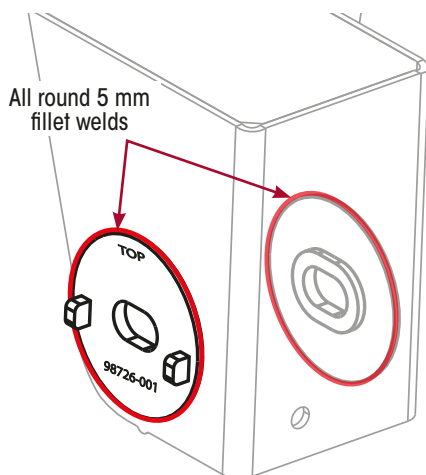


**Figure 7: Clamp Adaptors Into Position For Welding**

10. Clamp adaptors in place, ensuring they are level horizontally and as far forward as possible. Refer [Figure 7](#).
11. Strike both adaptors with a copper hammer to ensure they are fully seated in the hanger slots.
12. Measure the distance of the adaptors from the bottom of the hanger to ensure they are level within 1 mm. If not, move them into the correct position and recheck.

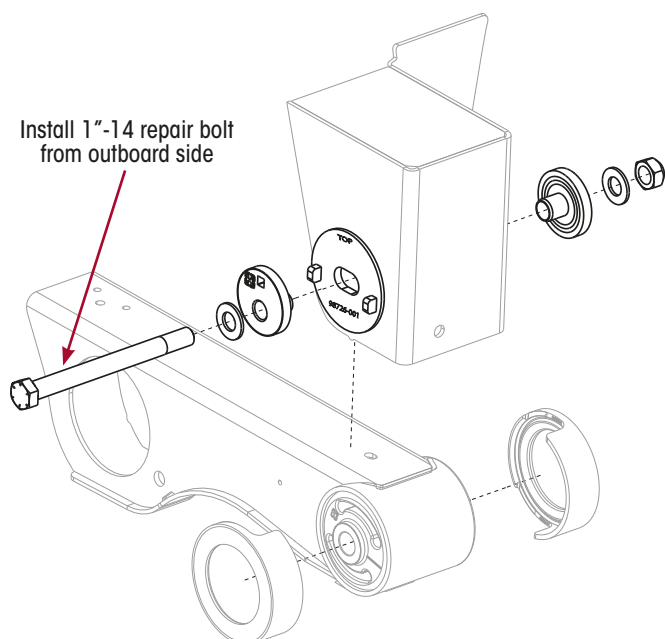
**NOTICE:** Adaptors must be attached within 1 mm horizontally.





**Figure 8: Weld Adaptors In Place**

13. Weld the adaptors to the hangers with complete all-round 5 mm fillet welds. Refer [Figure 8](#).

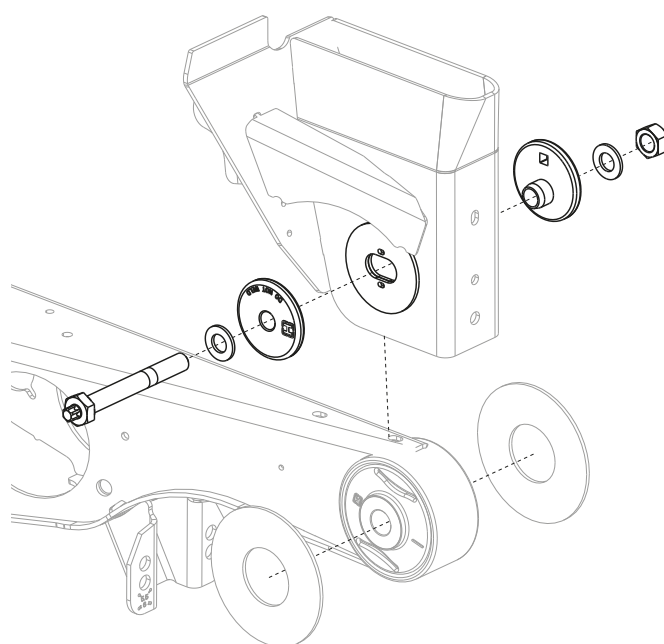


**Figure 9: Assemble QUIK-ALIGN Wide Bush Pivot Connection (Right hand side shown)**

14. Assemble suspension trailing arms with wear washers, hardware and new QUIK-ALIGN bolts.

It is best to install the wide bush repair kit bolts from the outboard side. However, all standard QUIK-ALIGN bolts, including those that are part of the narrow bush repair kit, may be installed from either side. Refer [Figure 9](#) and [Figure 10](#).

**NOTICE:** Ensure the eccentric flanged washer is outboard, with the square adjusting hole at the 12 o'clock position.



**Figure 10: Assemble QUIK-ALIGN Narrow Bush Pivot Connection (Left hand side shown)**

15. Tighten pivot bolt to around 100 Nm (70 ft. lb.) to hold in place until the alignment is completed.
16. Reassembly trailer and restore to normal operation.
17. Align trailer axle(s) to manufacturer's specifications using Hendrickson Technical Bulletin [L579 Alignment Procedure](#) and the alignment equipment manufacturer's requirements directions for reference.
18. When axle is properly aligned, and at ride height, fully torque the wide bush QUIK-ALIGN repair kit 1"-14 UNS bolt to 850 Nm (627 ft. lb.). Torque any standard and narrow bush QUIK-ALIGN bolts until the Torx head shears off, which is approximately 800 Nm (590 ft. lb.).
19. After alignment, paint all affected areas to the trailer manufacturer's specifications.
20. Recheck trailer components and operation of systems and return to service.

Bolt	Thread	Torque
Standard QUIK-ALIGN Shear Bolt	7/8" UNC	800 Nm
Wide Bush Repair Bolt	1"-14 UNS	850 Nm



## PATTERN FOR GOUGED OR WORN HANGER REPAIR

Print out the pattern, in [Figure 11](#), using the Acrobat pdf with the “Actual Size” option selected to ensure that the image is not scaled.  
Measurements should be checked for correctness before marking and cutting. .

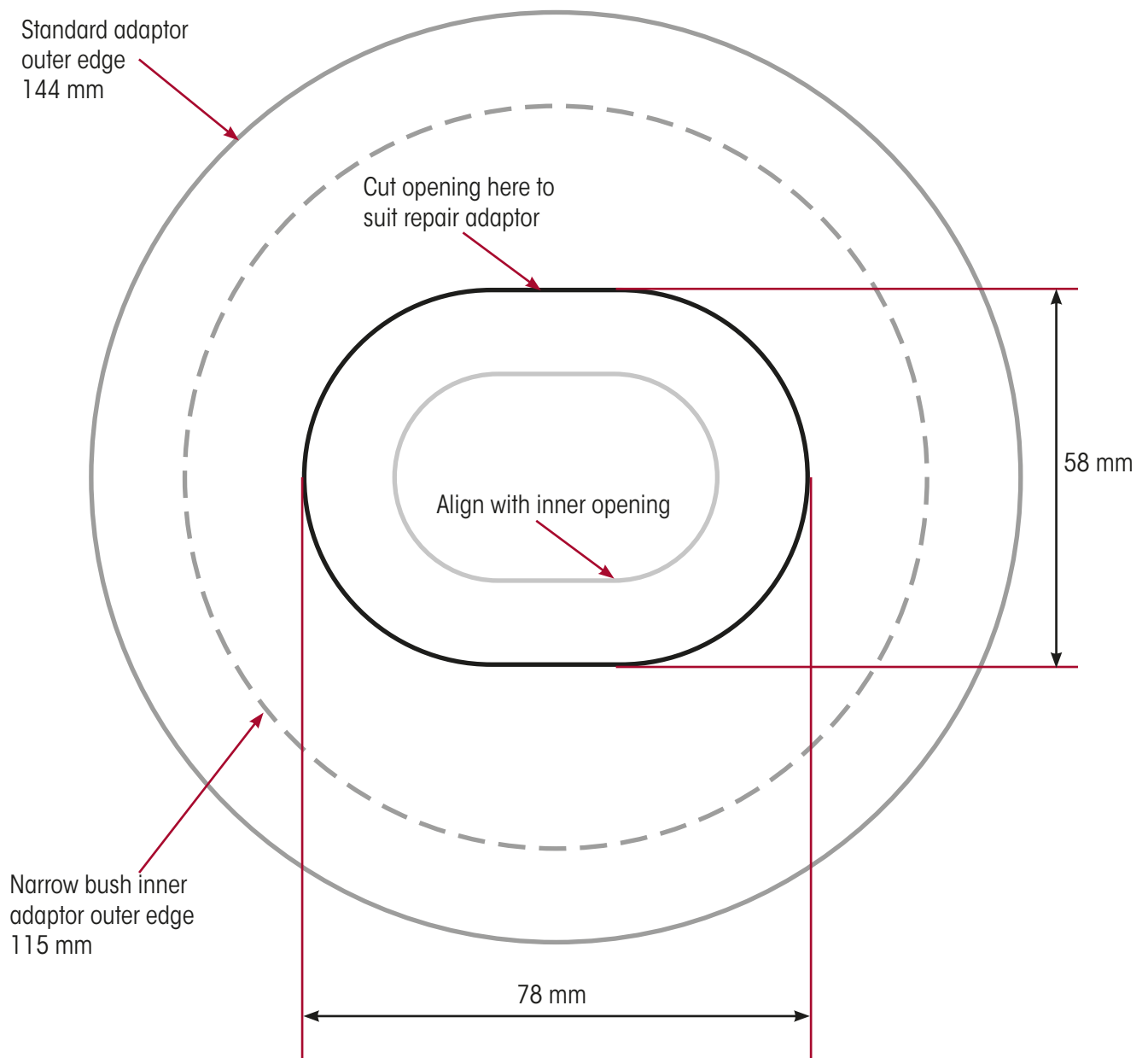
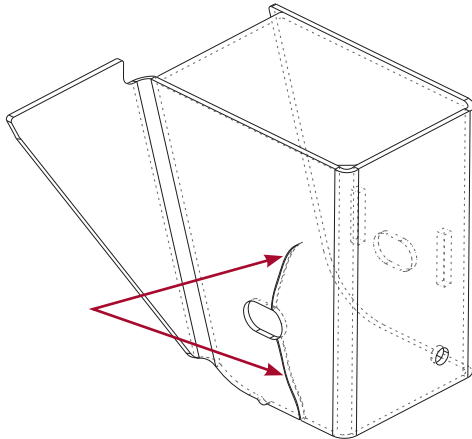


Figure 11: Pattern For Hanger Patch

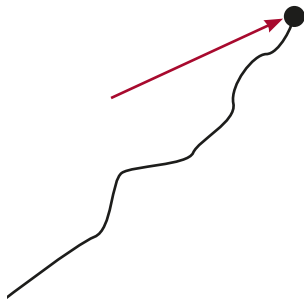
## CRACKED HANGER REPAIR

1. Prepare trailer as detailed in “Preparing Trailer For Service” on page 6.
2. Support axle to prevent it dropping and remove QUIK-ALIGN® pivot fasteners.
3. Lower suspension trailing arms away from hangers.
4. Discard used fasteners.



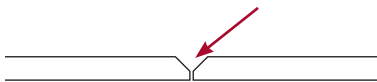
**Figure 12: Clean Area and Prepare Surface**

5. Clean area around crack(s) and prepare surface for welding the reinforcing plate. Refer [Figure 12](#).



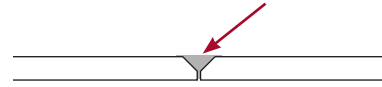
**Figure 13: Stop Drill Crack**

6. Stop drill the crack(s) at start and finish. Refer [Figure 12](#).



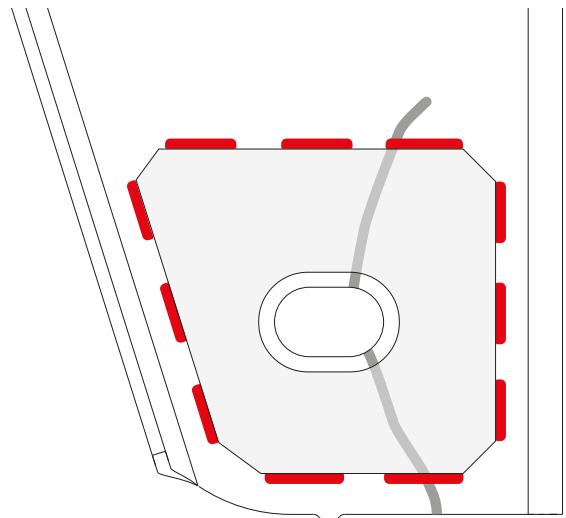
**Figure 14: Grind A V-Groove Into Crack**

7. Grind a V into the crack to prepare for the weld repair. Refer [Figure 14](#).



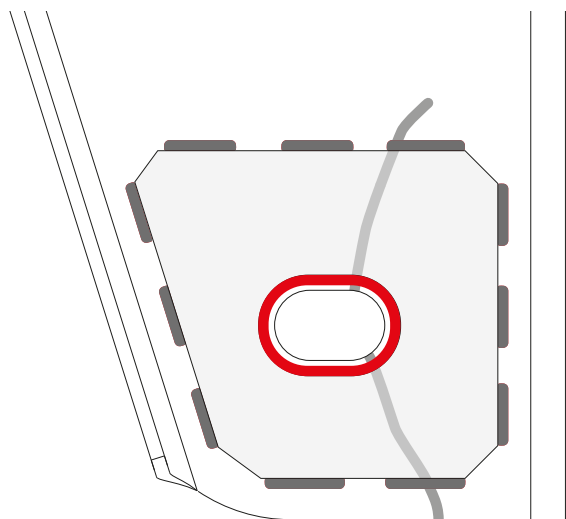
**Figure 15: Repair Crack with Butt Weld**

8. Repair crack with V-groove butt joint weld. Refer [Figure 15](#).
9. Grind weld until it is level with hanger.
10. Install reinforcing plate into position.
11. Clamp plate in position, ensuring QUIK-ALIGN® openings are horizontal within 1 mm.



**Figure 16: Stitch Weld Around Outside Of Plate**

12. Stitch weld the plate into position. Make 6 mm fillet welds 25 mm long with approximately 30 mm gaps around the outside of the plate. Refer [Figure 16](#).



**Figure 17: Fillet Weld Inside Of Plate**

13. Weld the inside of the plate to the hanger with a 6 mm fillet weld. Refer [Figure 17](#).



14. Check the inside of the hanger to ensure the surface will not be detrimental to wear washer durability. Clean, repair and finish as necessary.
15. Assemble suspension trailing arms with wear washers, hardware and new QUIK-ALIGN bolts.

**NOTICE:** Ensure the eccentric flanged washer is outboard, with the square adjusting hole at the 12 o'clock position.

16. Tighten pivot bolt to around 100 Nm (70 ft. lb.) to hold in place until the alignment is completed.
17. Reassembly trailer and restore to normal operation.
18. Align trailer axle(s) to manufacturer's specifications using Hendrickson Technical Bulletin [L579 Alignment Procedure](#) and the alignment equipment manufacturer's requirements directions for reference.
19. When axle is properly aligned, and at ride height, fully torque the standard QUIK-ALIGN bolts until the Torx head shears off, which is approximately 800 Nm (590 ft. lb.).
20. After alignment, paint all affected areas to the trailer manufacturer's specifications.
21. Recheck trailer components and operation of systems and return to service.

Bolt	Thread	Torque
Standard QUIK-ALIGN Shear Bolt	7/8" UNC	800 Nm



Revisions Table

DATE	REV	PAGE	DESCRIPTION
Sep-2018	B	All	Expanded to include 97117-175 and updated to include new procedures and parts. ECN 11274, 11419.
Oct-2018	C	3, 7, 8 & 9	Add narrow bush parts and amend procedures ECN 11457.
Dec-2019	D	7, 8	Add wide bush pivot bolt kit part numbers, ECN 11669. Correct bolt size to 1"-14 UNS.
Mar-2024	E	All	Number table and images, add links in text and minor textual refinements.

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