H **TECHNICAL BULLETIN** QUIK-ALIGN® PIVOT BOLT SERVICING

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INTRODUCTION

This document is designed to provide a summary of procedures required to correctly replace, service and maintain Hendrickson QUIK-ALIGN® pivot hardware. This design is used on Hendrickson HT and INTRAAX® trailer suspensions and TOUGHLIFT® truck lift axles. More detailed procedures are found in the Hendrickson Technical Manuals that are listed below. Other relevant manuals are listed in the accompanying text.

- 97117-161 Trailer Suspension Maintenance Manual. This manual contains an overview of alignment procedures and a maintenance schedule along with other servicing and maintenance subjects.
- 97117-251 Fastener Torque Specifications. This manual contains fastener specifications and locations as well as fastener identification and related information.
- <u>L579</u> Wheel Alignment Procedures. This is a comprehensive trailer suspension alignment manual.

IMPORTANT NOTES

Important points to remember when working on Hendrickson suspensions:

- QUIK-ALIGN pivot bolts must be torqued IMMEDIATELY after wheel alignment. This will ensure the connection does not move out of alignment.
- The suspension must be at RIDE HEIGHT when the bolts are tightened to ensure TFB[®] reliability is not compromised.
- QUIK-ALIGN pivot bolts are SINGLE USE only. They must be discarded after removal and replaced with new.
- Ensure the surface where the fastener sits is not cracked, gouged, or fatigued and that the through holes are not elongated.
- Do not apply anti-seize or any lubricant to QUIK-ALIGN pivot bolts as it will interfere with the thread coating.
- Settle QUIK-ALIGN concentric and eccentric pivot washers by tapping them with a hammer before final tightening.
- Bolts should be installed from the inside, with the nut on the outside. (Refer Figure 1.) Installing it this way will ensure that even if the bolt did come loose, it would not spear the tyre on the way out.
- Ensure the QUIK-ALIGN collars are against clean bare metal without any lubricants or paint that could allow the collars to move.
- Use a correctly calibrated torque wrench.



Figure 1: QUIK-ALIGN Bolt Installation



INSPECTION

The QUIK-ALIGN pivot connection should be checked regularly for movement. It should be part of the driver's daily inspection. A closer examination should be made at the monthly service inspections. Then every three months the hardware should be checked with a torque wrench. Hendrickson publication <u>97117-169</u> comprises a complete recommended trailer suspension service and maintenance schedule.



Figure 2: QUIK-ALIGN Visual Inspection

A simple visual inspection is essential to identify pivot connection problems before they cause breakdowns. Look for signs of movement, damage, or anything unusual that would indicate a problem. Unsheared E20 pivot bolt heads usually indicate that the bolt has not been torqued correctly. Movement can be indicated by unpainted or polished metal near the collar (refer <u>Figure 2</u>), or a QUIK-ALIGN square alignment hole that is not within the normal adjustment range (refer <u>Figure 9</u>).



Figure 3: Hanger Inspection

Inspect the hanger alignment guides to see if they are missing or damaged. If so, this is usually caused by a loose pivot connection. If there is a problem, remove the bolt and inspected the hanger for cracks, a damaged or distorted slot, and worn or gouged metal. (Refer <u>Figure 3</u>.) Hangers may be repaired depending on the severity of the damage. Refer Hendrickson technical manual <u>97117-101</u> for recommended hanger repair procedures.

QUIK-ALIGN® SHEAR-HEAD BOLTS

Shear-head bolts are often used in critical applications where fastener tightness is essential. These bolts have heads that shear off when the specified torque is reached. In Hendrickson suspensions they are used as part of the vital suspension alignment pivot bolt.



Figure 4: The E20 Head Shears Off

The shear-head bolts, and associated nuts, are not reusable and must only be used once. However, they may be partially tightened until the suspension is correctly aligned. Then, when it is fully aligned, the bolt must be tightened with the correct E20 socket until the head shears off. This is usually carried out with a suitable rattle gun capable of up to 1000 Nm for QUIK-ALIGN pivot bolts. Use of a lower rated rattle gun may not have sufficient torque to shear the E20 bolt head.

▲ CAUTION: Failure to correctly torque these critical shear-head bolts will result in damage to suspension components.

No Anti-Seize Compound

Do not apply anti-seize compound or additional lubricant to the bolt or nut thread. Hendrickson shear-head bolts have a special coating. The coating is comprised of minuscule flakes of zinc and aluminium that protects the bolts from corrosion, in addition to providing a surface that allows for consistent bolt torque and clamp load.

Do not allow paint, surface coatings, oil, nickel anti-seize or any other commonly used compounds to contact the threads before final tightening. These compounds can lead to overtightened fasteners, unpredictable clamp loads and possible component failure. Threads should be clean, dry, free of contamination and not have any visible damage that could cause galling.



TOOLS

Hendrickson offers three drive sockets that may be used with these shear-head type bolts. However, equivalent 3/4 and 1 inch drive impact sockets may also be used. (Refer <u>Table 1</u> below.) For example, Action Impact Tools 3/4" drive **63340020** or 1" drive **63350020** are available in Australia. Other possible sockets are Camcar/Apex TX-8120 and Strong Tools E-20 T.S.

Torx Head Damage

To avoid damaging the shear-head bolt's Torx head, ensure that the drive socket is fully engaged with the Torx head. If the socket is not fully engaged, the head will simply twist, instead of breaking off cleanly at the specified torque. The bolt will then need to be replaced to avoid suspension damage.



Figure 5: Ensure E20 Socket is Fully Engaged

QUIK-ALIGN® Bolt Installation Tips

Install the alignment collars, bolt, hardened washers, and nut to the suspension pivot, ensuring the bolt and nut threads are kept clean and dry. If the pivot does not move evenly when rotating the eccentric for alignment, you may need to tap the concentric (inboard side) collar with a hammer.

Ensure the eccentric collar is properly positioned against the axle and is not caught up on the alignment guide. The pivot bolt must at right angles to the suspension arm. Tap the washers with a hammer before tightening to ensure that they are positioned correctly and properly seated. Refer diagrams <u>Figure 6</u>, <u>Figure 7</u>, and <u>Figure 8</u>.



Figure 6: Correct – Properly Positioned Bolt & Eccentric Washer



Figure 7: Wrong – Eccentric Washer Caught on Alignment Guide



Figure 8: Wrong – Pivot Bolt at an Angle

Description	Drive Size	Part Number	Comments
Hendrickson E20 Torx [™] Socket	3/4 Inch	S-24303	Cost effective tool for occasional use (not recommended for use in high-volume production).
Hendrickson E20 Torx Socket	1 Inch	S-24536	For medium-duty use (dealers, repair facilities, etc.) or for those with one-inch drive air tools.
Hendrickson E20 Torx Socket with Sleeve	1 Inch	S-25119	Ideal for high-volume trailer production environments or manufacturing facilities.

Table 1: Hendrickson E20 Sockets

ALIGNMENT

A summary of alignment procedures can be found in the Tyres & Axle Alignment section of Maintenance Manual 9717-161. For a comprehensive examination of trailer axle alianments, refer to Hendrickson technical publication <u>L579</u> Axle Alignment Procedures.

- Install a new QUIK-ALIGN® shear-type bolt from the 1. inside of the trailer.
- Install nut and hardened flat washers into the axle 2. pivot connection to be adjusted, but do not fully tighten at this time. The pivot connection fasteners should be tight enough to hold the flanged eccentric collar in place between the alignment guides and flat against the frame bracket, but loose enough to permit the hardened flat washers to rotate freely.



Figure 9: QUIK-ALIGN Eccentric Collar Positions

- **NOTICE**: It is good practice to carry out axle alignment by rotating the eccentric QUIK-ALIGN® collars on both left and right sides (one forward and the other backwards). This ensures that the axle remains centred on the trailer. Simply moving the QUIK-ALIGN collar on one side may result in an axle that is excessively forward or rearward, which may result in further problems, such as a wheel rubbing on a mudguard. Refer Figure 9.
- CAUTION: The QUIK-ALIGN® pivot bolt and nut are not reusable. Ensure new hardware is used when adjust axle alignment to ensure a reliable assembly.
- 3. Carry out axle alignment using alignment equipment manufacturer's procedures and those found in Hendrickson L579.
- 4. After successfully conducting an axle alignment, tighten the QUIK-ALIGN pivot bolts at ride height until the Torx head shears off. This helps ensure the torque has been correctly set to 800 Nm. The pivot bolt torque should be re-checked after 1,500 km to ensure correct clamping load on the pivot connection.

The pivot connections should be inspected for movement at every service. They must be physically checked for torque at every three-month service.

Description	Thread	Torque (Nm)
QUIK-ALIGN® Torx Head Pivot Bolt	7/8″ UNC	800

REVISIONS TABLE

Date	Rev	Page	Description

Actual product performance may vary depending upon vehicle configuration, operation, service and other factors.

All applications must comply with applicable Hendrickson specifications and must be approved by the respective vehicle manufacturer with the vehicle in its original, as-built configuration. Contact Hendrickson for additional details regarding specifications, applications, capacities, and operation, service and maintenance instructions.

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