



# **H** TECHNICAL PROCEDURE

## LUXAIR® Premium Rear Drive Axle Air Suspension System for Bus Applications

**SUBJECT:** Service Instructions

**LIT NO:** 17730-321

**DATE:** November 2020

**REVISION:** A

### TABLE OF CONTENTS

<b>Section 1</b>	<b>Introduction</b> . . . . .	2	Fasteners . . . . .	15	
<b>Section 2</b>	<b>Product Description</b> . . . . .	2	Height Control Valves & Shock Absorbers. . . . .	15	
<b>Section 3</b>	<b>Important Safety Notice</b> . . . . .	4	Air Spring . . . . .	15	
<b>Section 4</b>	<b>Parts Lists</b> . . . . .	8	Lower Shock Absorber Mounting Bracket . . . . .	16	
<b>Section 5</b>	<b>Special Tools</b> . . . . .	10	Longitudinal TRAAX Rods . . . . .	17	
<b>Section 6</b>	<b>Preventive Maintenance</b>		3-piece Adjustable Torque Rod. . . . .	18	
	Hendrickson Recommended		3-piece XTRB Torque Rod Bushings . . . . .	20	
	Inspection Intervals . . . . .	11	Frame Hanger & Frame Hanger Bracket. . . . .	21	
	Component Inspection . . . . .	11	H-Frame Assembly. . . . .	22	
	Height Control Valves & Shock Absorbers. . . . .	12	<b>Section 9</b>	<b>Troubleshooting Guide</b> . . . . .	25
	Air Springs . . . . .	12	<b>Section 10</b>	<b>Torque Specifications</b> . . . . .	26
	Air Fittings . . . . .	12			
	Torque Rods . . . . .	12			
<b>Section 7</b>	<b>Alignment &amp; Adjustments</b>				
	Ride Height . . . . .	14			
	Drive Axle Pinion Angle . . . . .	14			
	Drive Axle Alignment . . . . .	14			
<b>Section 8</b>	<b>Component Replacement</b>				

## SECTION 1

# Introduction

This publication is intended to acquaint and assist maintenance personnel in the preventive maintenance, service, repair, and rebuild for the Hendrickson LUXAIR® rear drive axle air suspension system as installed on applicable bus applications.

### NOTE

Use only Hendrickson Genuine Parts for servicing this suspension system.

It is important to read and understand the entire Technical Procedure publication prior to performing any maintenance, service, repair, or rebuild of this product. The information in this publication contains parts lists, safety information, product specifications, features, proper maintenance, service, repair and rebuild instructions for the LUXAIR rear drive axle air suspension system.

Hendrickson reserves the right to make changes and improvements to its products and publications at any time. Contact Hendrickson Tech Services for information on the latest version of this manual at 1-866-755-5968 (toll-free U.S. and Canada), 630-910-2800 (outside U.S. and Canada) or e-mail: techservices@hendrickson-intl.com.

**The latest revision of this publication is also available online at [www.hendrickson-intl.com](http://www.hendrickson-intl.com).**

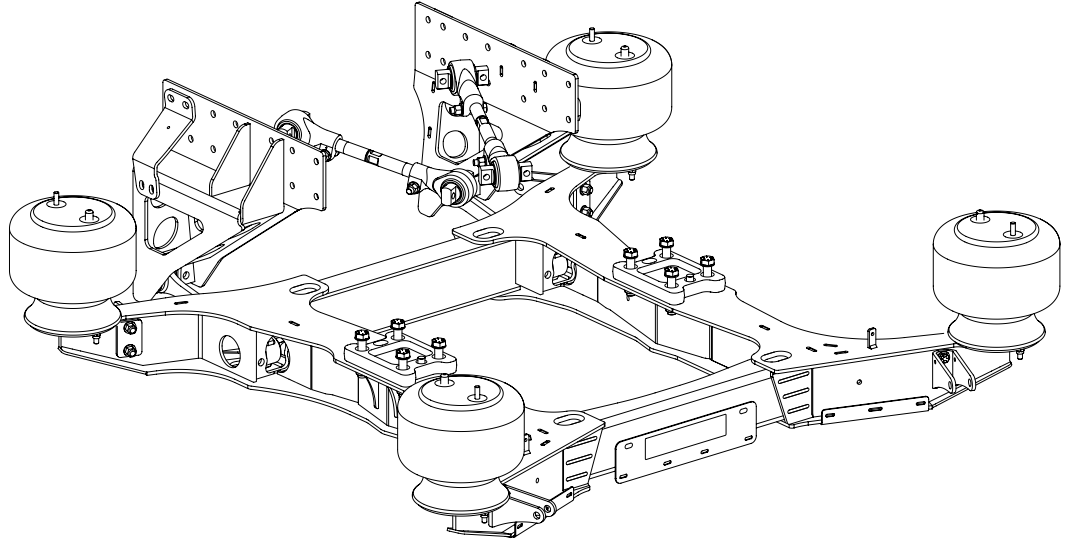
## SECTION 2

# Product Description

Hendrickson's LUXAIR is a premium drive axle air suspension ideal for transit and coach bus applications. Utilizing Hendrickson's expertise in vehicle dynamics, this suspension can package with a variety of Hendrickson-approved air springs and shock absorbers to provide optimal performance. The fabricated construction allows for flexibility, simplifying packaging for a variety of frame types and body styles. The efficient design also results in a lightweight solution that maintains the durability and performance expected in demanding transit and coach applications.

- **Advanced performance** — Tuneable rate, frequency and roll stiffness for varying applications. Multiple shock and air spring combinations. Controls reactions to brake and drive torques
- **TRAAX ROD® torque rods** — Exceptional walk-out performance and durability. Multiple lengths without tooling
- **High volume air springs** — Outstanding level of passenger comfort for inner-city, touring bus and coach applications. Outboard mounting for superb handling and a significant reduction in road-induced shock loads.
- **Fabricated construction** — Robust construction helps ensure exceptional reliability through variations in road conditions. Compatible with C-channel and Monocoque bus chassis configurations.

FIGURE 2-1



## LUXAIR SPECIFICATIONS

<b>Suspension Capacity</b>	27,000 - 31,000 Pounds (12,247 - 14,061 kg)
<b>Suspension Weight</b>	940 Pounds (426 kg)
<b>Axle Configuration</b>	Single
<b>Ride Heights</b>	6.5" - 8.5"
<b>Pinion Angle</b>	2° - 4.5°

1. LUXAIR is approved for 100% on-highway usage with up to 15% operation on unpaved secondary roads. All applications must comply with applicable Hendrickson specifications and must also be approved by the respective vehicle manufacturer with the vehicle in its original, as-built configuration. Contact Hendrickson and the respective vehicle manufacturer for approval of additional applications.
2. LUXAIR suspension weight includes H-Frame, frame hangers, frame hanger brackets, air springs, 3-piece adjustable torque rods and longitudinal TRAAX RODs.

## SECTION 3

# Important Safety Notice

Proper maintenance, service, and repair is important for the reliable operation of the suspension. The procedures recommended by Hendrickson and described in this technical publication are methods of performing such maintenance, service and repair.

This technical publication should be read carefully to help prevent personal injury and to assure that proper methods are used. Improper maintenance, service or repair may damage the vehicle, cause personal injury, render the vehicle unsafe in operation, or void manufacturer's warranty.

Failure to follow the safety precautions in this manual can result in personal injury and/or property damage. Carefully read and understand all safety related information within this publication, on all decals and in all such materials provided by the vehicle manufacturer before conducting any maintenance, service or repair.

### ■ EXPLANATION OF SIGNAL WORDS

Hazard "Signal Words" (Danger-Warning-Caution) appear in various locations throughout this publication. Information accented by one of these signal words must be observed to help minimize the risk of personal injury to service personnel, or possibility of improper service methods which may damage the vehicle or render it unsafe.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

Additional Notes or Service Hints are utilized to emphasize 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.



INDICATES AN IMMINENTLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN SERIOUS INJURY OR DEATH.



INDICATES A POTENTIAL HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN SERIOUS INJURY OR DEATH.



INDICATES A POTENTIAL HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY, OR PROPERTY DAMAGE.

#### NOTE

An operating procedure, practice condition, etc. which is essential to emphasize.

#### SERVICE HINT

A helpful suggestion that will make the servicing being performed a little easier and/or faster.

Also note that particular service operations may require the use of special tools designed for specific purposes. These special tools can be found in the Special Tools Section of this publication.



The torque symbol alerts you to tighten fasteners to a specified torque value. Refer to Torque Specifications Section of this publication.

## ■ SAFETY PRECAUTIONS

 **WARNING**

### **LOAD CAPACITY**

ADHERE TO THE PUBLISHED CAPACITY RATINGS FOR THE SUSPENSION. ADD-ON AXLE ATTACHMENTS AND OTHER LOAD TRANSFERRING DEVICES, SUCH AS LIFTABLE AXLES, CAN INCREASE THE SUSPENSION LOAD ABOVE ITS RATED AND APPROVED CAPACITIES, WHICH CAN RESULT IN COMPONENT DAMAGE AND ADVERSE VEHICLE HANDLING, POSSIBLY CAUSING PERSONAL INJURY OR PROPERTY DAMAGE.

 **WARNING**

### **FASTENERS**

DISCARD USED FASTENERS. ALWAYS USE NEW FASTENERS TO COMPLETE A REPAIR. FAILURE TO DO SO COULD RESULT IN FAILURE OF THE PART OR MATING COMPONENTS, ADVERSE VEHICLE HANDLING, PERSONAL INJURY, OR PROPERTY DAMAGE.

LOOSE OR OVER TORQUED FASTENERS CAN CAUSE COMPONENT DAMAGE, ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE, OR SEVERE PERSONAL INJURY. MAINTAIN CORRECT TORQUE VALUE AT ALL TIMES. CHECK TORQUE VALUES ON A REGULAR BASIS AS SPECIFIED, USING A REGULARLY CALIBRATED TORQUE WRENCH. TORQUE VALUES SPECIFIED IN THIS TECHNICAL PUBLICATION ARE FOR HENDRICKSON SUPPLIED FASTENERS ONLY. IF NON HENDRICKSON FASTENERS ARE USED, FOLLOW TORQUE SPECIFICATION LISTED IN THE VEHICLE MANUFACTURER'S SERVICE MANUAL.

 **WARNING**

### **MODIFYING COMPONENTS**

DO NOT MODIFY OR REWORK PARTS WITHOUT AUTHORIZATION FROM HENDRICKSON. DO NOT SUBSTITUTE REPLACEMENT COMPONENTS NOT AUTHORIZED BY HENDRICKSON. USE OF MODIFIED, REWORKED, SUBSTITUTE OR REPLACEMENT PARTS NOT AUTHORIZED BY HENDRICKSON MAY NOT MEET HENDRICKSON'S SPECIFICATIONS, AND CAN RESULT IN FAILURE OF THE PART, ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE, AND WILL VOID ANY APPLICABLE WARRANTIES. USE ONLY HENDRICKSON AUTHORIZED REPLACEMENT PARTS.

 **CAUTION**

### **PROCEDURES AND TOOLS**

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 JEOPARDIZED BY THE METHOD OR TOOL SELECTED. INDIVIDUALS DEVIATING IN ANY MANNER FROM THE INSTRUCTIONS PROVIDED WILL ASSUME ALL RISKS OF CONSEQUENTIAL PERSONAL INJURY OR DAMAGE TO EQUIPMENT INVOLVED.

 **WARNING**

### **TORQUE RODS**

THE LUXAIR SUSPENSION SYSTEM INCORPORATES LONGITUDINAL AND 3-PIECE ADJUSTABLE TORQUE RODS FOR PROPER VEHICLE STABILITY AND HANDLING. IF THESE COMPONENTS ARE DISCONNECTED OR ARE NON-FUNCTIONAL, THE VEHICLE SHOULD NOT BE OPERATED. FAILURE TO DO SO CAN RESULT IN ADVERSE VEHICLE HANDLING, POSSIBLE TIRE CONTACT WITH THE FRAME, PREMATURE COMPONENT DAMAGE, OR SEVERE PERSONAL INJURY.

 **WARNING**

### **TORCH/WELDING**

DO NOT USE A CUTTING TORCH TO REMOVE ANY FASTENERS. THE USE OF HEAT ON SUSPENSION COMPONENTS WILL ADVERSELY AFFECT THE STRENGTH OF THESE PARTS. A COMPONENT DAMAGED IN THIS MANNER CAN RESULT IN ADVERSE VEHICLE HANDLING AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

EXERCISE EXTREME CARE WHEN HANDLING OR PERFORMING MAINTENANCE IN THE AREA OF THE H-FRAME. DO NOT CONNECT ARC WELDING GROUND LINE TO THE H-FRAME. DO NOT STRIKE AN ARC WITH THE ELECTRODE ON THE H-FRAME. DO NOT USE HEAT NEAR THE H-FRAME ASSEMBLY. DO NOT NICK OR GOUGE THE H-FRAME SUCH IMPROPER ACTIONS CAN DAMAGE THE H-FRAME ASSEMBLY AND CAUSE ADVERSE VEHICLE HANDLING AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

 **WARNING**

### **SUPPORT THE VEHICLE PRIOR TO SERVICING**

PLACE THE VEHICLE ON A LEVEL FLOOR AND CHOCK THE WHEELS TO PREVENT THE VEHICLE FROM MOVING OR ROLLING. DO NOT WORK AROUND OR UNDER A RAISED VEHICLE SUPPORTED BY ONLY A FLOOR JACK OR OTHER LIFTING DEVICE. ALWAYS SUPPORT A RAISED VEHICLE WITH RIGID SAFETY STANDS. FAILURE TO DO SO CAN CAUSE SERIOUS PERSONAL INJURY OR DAMAGE TO EQUIPMENT.

 **CAUTION****AIR SPRING LOWER MOUNTING STUDS**

IF AN AIR SPRING NEEDS TO BE TEMPORARILY REMOVED FOR ANY SUSPENSION RELATED SERVICE OR REPAIR, FIRST LUBRICATE THE LOWER AIR SPRING FASTENERS WITH PENETRATING OIL AND REMOVE WITH HAND TOOLS TO PREVENT DAMAGE TO THE LOWER AIR SPRING MOUNTING STUD. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE AND VOID WARRANTY.

 **WARNING****AIR SPRING PRESSURE RETENTION**

SOME VEHICLE APPLICATIONS, SUCH AS VEHICLES EQUIPPED WITH OUTRIGGERS, RETAIN SOME AIR PRESSURE IN THE AIR SPRINGS AT ALL TIMES. PRIOR TO PERFORMING ANY MAINTENANCE, SERVICE, OR REPAIR OF THE SUSPENSION, VERIFY EACH AIR SPRING IS COMPLETELY DEFLATED. FAILURE TO DO SO COULD RESULT SERIOUS PROPERTY DAMAGE AND/OR SEVERE PERSONAL INJURY.

FAILURE TO PRESS THE AIR SPRING AGAINST THE UNDERSIDE OF THE FRAME WHILE TIGHTENING THE UPPER AIR SPRING MOUNT CAN RESULT IN COMPONENT DAMAGE AND PERSONAL INJURY OR PROPERTY DAMAGE.

 **WARNING****AIR SPRING INFLATION AND DEFLATION**

PRIOR TO DISASSEMBLY OF THE SUSPENSION, AIR SPRING ASSEMBLIES MUST BE DEFLATED. UNRESTRICTED AIR SPRING ASSEMBLIES CAN VIOLENTLY SHIFT. DO NOT INFLATE AIR SPRING ASSEMBLIES WHEN THEY ARE UNRESTRICTED. AIR SPRING ASSEMBLIES MUST BE RESTRICTED BY SUSPENSION OR OTHER ADEQUATE STRUCTURE. DO NOT INFLATE BEYOND PRESSURES RECOMMENDED BY AIR SPRING MANUFACTURER, CONTACT HENDRICKSON TECHNICAL SERVICES FOR DETAILS. IMPROPER USE OR OVER INFLATION MAY CAUSE AIR SPRING ASSEMBLIES TO BURST, CAUSING PROPERTY DAMAGE AND/OR SEVERE PERSONAL INJURY.

PRIOR TO AND DURING DEFLATION AND INFLATION OF THE AIR SUSPENSION SYSTEM, ENSURE ALL PERSONNEL AND EQUIPMENT ARE CLEAR FROM UNDER THE VEHICLE AND AROUND THE SERVICE AREA, FAILURE TO DO SO CAN CAUSE SERIOUS PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE.

 **CAUTION****AIR SPRING INFLATION**

INFLATE THE SUSPENSION SLOWLY AND MAKE SURE THE RUBBER BLADDER OF THE AIR SPRING INFLATES UNIFORMLY AND IS NOT BINDING. FAILURE TO DO SO CAN CAUSE DAMAGE TO THE AIR SPRING AND/OR MOUNTING BRACKETS AND VOID WARRANTY.

 **WARNING****PERSONAL PROTECTIVE EQUIPMENT**

ALWAYS WEAR PROPER EYE PROTECTION AND OTHER REQUIRED PERSONAL PROTECTIVE EQUIPMENT TO HELP PREVENT PERSONAL INJURY WHEN PERFORMING VEHICLE MAINTENANCE, REPAIR OR SERVICE.

 **WARNING****PARTS CLEANING**

SOLVENT CLEANERS CAN BE FLAMMABLE, POISONOUS, AND CAUSE BURNS. TO HELP AVOID SERIOUS PERSONAL INJURY, CAREFULLY FOLLOW THE MANUFACTURER'S PRODUCT INSTRUCTIONS AND GUIDELINES AND THE FOLLOWING PROCEDURES:

1. WEAR PROPER EYE PROTECTION.
2. WEAR CLOTHING THAT PROTECTS YOUR SKIN.
3. WORK IN A WELL-VENTILATED AREA.
4. DO NOT USE GASOLINE OR SOLVENTS THAT CONTAIN GASOLINE. GASOLINE CAN EXPLODE.
5. 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.

DO NOT USE HOT SOLUTION TANKS OR WATER AND ALKALINE SOLUTIONS TO CLEAN GROUND OR POLISHED PARTS. DOING SO WILL CAUSE DAMAGE TO THE PARTS AND VOID WARRANTY.



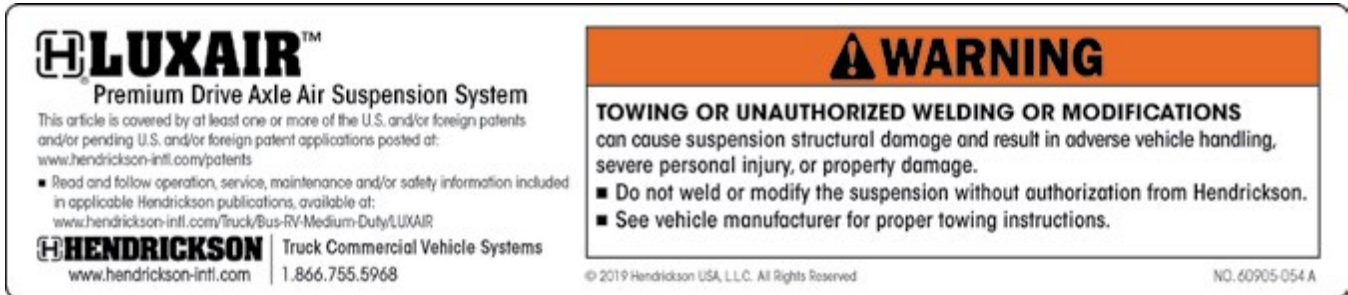
**WARNING**

**TOWING AND UNAUTHORIZED WELDING OR MODIFICATIONS**

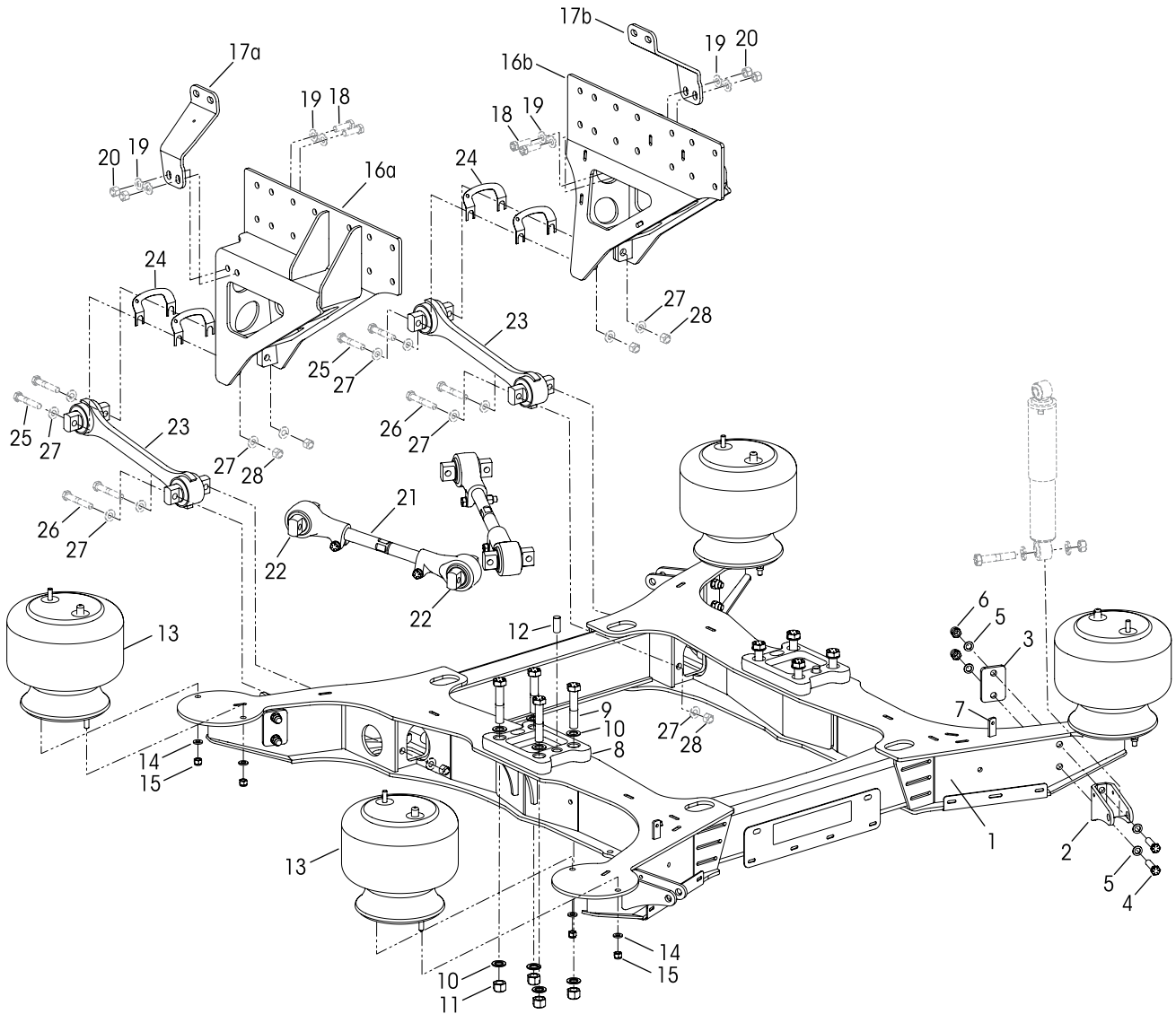
TOWING OR UNAUTHORIZED WELDING OR MODIFICATIONS CAN CAUSE SUSPENSION STRUCTURAL DAMAGE AND RESULT IN ADVERSE VEHICLE HANDLING, SEVERE PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE, SEE FIGURE 3-1

- DO NOT WELD OR MODIFY THE SUSPENSION WITHOUT AUTHORIZATION FROM HENDRICKSON.
- SEE VEHICLE MANUFACTURER FOR PROPER TOWING INSTRUCTIONS.
- REPLACE ANY SAFETY DECALS THAT ARE FADED, TORN, MISSING, ILLEGIBLE, OR OTHERWISE DAMAGED. CONTACT HENDRICKSON TO ORDER REPLACEMENT LABELS

FIGURE 3-1 Decal Number 60905-054



# SECTION 4 Parts Lists







KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
1	79700-000	H-Frame Assembly, Includes Key Nos. 2-8 and 12	1
	34013-415	<b>Single Lower Shock Bracket Service Kit,</b> Includes Key Nos. 2-6	
2	79674-000	Lower Shock Absorber Bracket	4
3	80798-000	Back Plate	4
4	80791-006	5/8"-18 UNF x 2 1/4" Hex Bolt	8
5	80795-007	5/8" Flat Washer	16
6	80796-007	5/8"-18 UNF Locknut	8
7		*Height Control Valve Bracket	2
8		*Axle Mount 1 1/2" Thickness	2
	34013-416	<b>Axle Mount Clamp Group Fastener Service Kit,</b> Includes Key Nos. 9-12	
9		**7/8"-14 UNF x 4 1/2" Hex Bolt	8
10		**7/8" Flat Washer	16
11		**7/8"-14 UNF Locknut	8
12	18831-024	3/4" x 1 3/4" Dowel Pin	2
13	93227-000	Air Spring Assembly	4
14	91861-005	1/2" Flat Washer	8
15	17700-010	1/2"-13 UNC-2B Locknut	8

KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
16		Frame Hanger	
a	79142-001	Left Hand	1
b	79142-002	Right Hand	1
17		Frame Hanger Bracket	
a	79141-001P	Left Hand	1
b	79141-002P	Right Hand	1
18		***5/8"-18 UNF x 2.0" Hex Cap Screw	4
19		***5/8" Flat Washer	8
20		***5/8"-18 UNF Locknut	4
21	80803-001	*** 3-piece Adjustable Torque Rod Assembly, Includes Key No. 22	2
22	66649-007	3-piece Torque Rod XTRB™ Straddle Bushing	4
23	8241-0202-450	***Longitudinal TRAAX ROD® Torque Rod	2
24	91914-000	Longitudinal Torque Rod Shim 1.52 mm	4
25		***3/4" x 3 1/2" Hex Bolt	4
26		***3/4" x 4" Hex Bolt	4
27		***3/4" Washer	16
28		***3/4" Locknut	8

**Notes:** \* Contact Hendrickson Tech Services regarding component replacement.

\*\* Item included in kit/assembly only, part not sold separately.

\*\*\* Not supplied by Hendrickson, used for reference only. Hendrickson is not responsible for components supplied by the vehicle manufacturer. For assistance with maintenance and rebuild instructions on these components, see vehicle manufacturer.

\*\*\*\* The 3-piece adjustable and longitudinal torque rods are mandatory for the LUXAIR suspension regardless of axle spacing.

## SECTION 5

# Special Tools

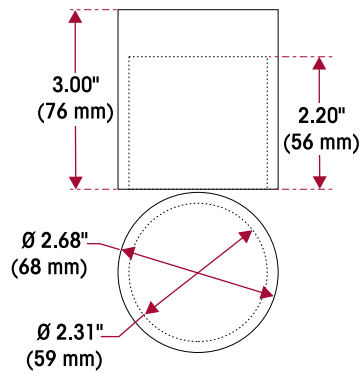
### XTRB TORQUE ROD BUSHING TOOLS

These shop made tools are to be made from cold rolled steel or equivalent. The drawings are for reference only. Hendrickson does not supply these tools.

#### RECEIVING TOOL



#### INSTALLATION / REMOVAL TOOL





## SECTION 6 Preventive Maintenance

Following appropriate inspection procedures is important to help ensure the proper maintenance and operation of the LUXAIR suspension system and that component parts function to their highest efficiency. Look for bent or cracked parts. Replace all worn or damaged parts.

HENDRICKSON RECOMMENDED INSPECTION INTERVALS	PRE-DELIVERY INSPECTION	FIRST IN-SERVICE INSPECTION	PREVENTIVE MAINTENANCE
Visually inspect for proper assembly and function. Check for all the following and replace components as necessary: <ul style="list-style-type: none"> <li>• Signs of unusual movement, loose or missing components</li> <li>• Signs of abrasive or adverse contact with other components</li> <li>• Damaged, or cracked parts</li> <li>• Improper suspension function or alignment</li> </ul>	Within the first 500 miles (800 km)	Within the first 1,000 miles (1,600 km)	Every 25,000 miles (40,000 km) or every 6 months, whichever comes first
Visually inspect the overall condition of and for any signs of damage to: <ul style="list-style-type: none"> <li>• H-Frame assembly</li> <li>• Air springs and air lines</li> </ul>			Every 50,000 miles (80,000 km)
Inspect fasteners for proper torque as recommended in the Torque Specification Section of this publication: <ul style="list-style-type: none"> <li>• Re-torque fasteners</li> <li>• Torque rod fasteners, see vehicle manufacturer's torque specifications</li> </ul>			
Verify ride height, refer to the vehicle manufacturer for specifications.			
Verify the alignment of the drive axles are within the vehicle manufacturer's tolerances			

See vehicle manufacturer's applicable publications for other preventive maintenance requirements.

### COMPONENT INSPECTION

- **Suspension** – Check the entire suspension before each trip to ensure it functions properly.
- **Air Springs** – Visually inspect the air springs for sufficient and equal air pressure and verify the suspension is operating at the proper ride height per the vehicle manufacturer's specifications.
- **Fasteners** – Look for any loose or damaged fasteners on the entire suspension. Make sure all fasteners are tightened to a torque value within the specified torque range. See Torque Specifications Section of this publication for recommended torque requirements. Use a calibrated torque wrench to check torque in a tightening direction. As soon as the fastener starts to move, record the torque. Correct the torque if necessary. Replace any worn or damaged fasteners with genuine specified fasteners.
- **Frame hanger** – Check for cracks, damage, or any signs of looseness at the mounting fasteners. Replace all worn or damaged parts.
- **Height control valve and air lines** – Check the suspension air system for air leaks. Check all air lines for proper routing. Check for chafing or pinched air lines. Check the height control valve linkage for damage or interference with peripheral components and replace all worn or damaged parts per the vehicle manufacturer.
- **H-Frame assembly** – Check for cracks, damage, or any signs of looseness at the mounting fasteners. Replace all worn or damaged parts.

- **Tire wear** – Inspect the tires for wear patterns that may indicate suspension damage or misalignment. Replace all worn or damaged parts.
- **Torque rods** – All torque rods must be inspected for looseness, torn or shredded rubber, and for proper torque. If there is metal-to-metal contact in the bushing joint, this is a sign of excessive bushing wear and torque rod or bushing requires replacement.
- **Wear and damage** – Inspect all parts of the suspension for wear and damage. Look for bent or cracked parts. Replace all worn or damaged parts.

See vehicle manufacturer's applicable publications for other preventive maintenance requirements.

## HEIGHT CONTROL VALVES & SHOCK ABSORBERS

### NOTE

The dual height control valves and shock absorbers equipped on the LUXAIR suspension are not supplied by Hendrickson, although are required components. Hendrickson is not responsible for components supplied by the vehicle manufacturer. For assistance with inspection, maintenance and rebuild instructions on these components see vehicle manufacturer.

### AIR SPRINGS

1. Inspect the air springs for evidence of cracks, punctures, deterioration, or chafing. Replace the air spring if any damage is evident.
2. Inspect the upper and lower retainers and the piston for cracks, burrs, or other damage. All surfaces which contact the air spring must be smooth to prevent damage to the bag.
3. Ensure that the upper bead plate is tight against the upper spring mount.
4. Examine the threads on the studs on the top and bottom of the air spring.

### AIR FITTINGS

1. If an air leak is suspected, begin by building up the air system to normal operating pressure.
2. Spray all nylon tube air fittings with a soapy water solution to detect the leak location.

### NOTE

Air lines and fittings may be inspected for leaks using a soapy water solution. The height control valve, however, cannot be inspected using this method. All height control valves have an allowable leakage rate.

3. If an air leak is located, ensure the tubing end is clean and in good condition and the end is cut square. Check to see if the tubing is binding, bent or being pulled upon.
4. Visually inspect the air fittings for signs of damage or contamination.

### TORQUE RODS



THE LUXAIR SUSPENSION SYSTEM INCORPORATES LONGITUDINAL AND 3-PIECE ADJUSTABLE TORQUE RODS FOR PROPER VEHICLE STABILITY AND HANDLING. IF THESE COMPONENTS ARE DISCONNECTED OR ARE NON-FUNCTIONAL, THE VEHICLE SHOULD NOT BE OPERATED. FAILURE TO DO SO CAN RESULT IN ADVERSE VEHICLE HANDLING, POSSIBLE TIRE CONTACT WITH THE FRAME, PREMATURE COMPONENT DAMAGE, OR SEVERE PERSONAL INJURY.

### VISUAL INSPECTION

All 3-piece adjustable and longitudinal torque rods need to be inspected during preventive maintenance and service for looseness.

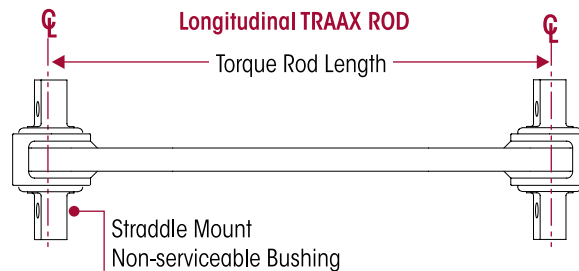
**Visually inspect (1) torque rod bushings** for any torn or shredded rubber material interfaces or elongated oval shapes and **(2) torque rods** for any metal to metal contact, bent, cracked or broken components. The torque rod and / or the torque rod bushings will require replacement if any of these conditions are encountered.

**Torque rod looseness** inspection is necessary. With the vehicle shut down, a lever check can be made with a long pry bar (36") placed under each torque rod end and pressure applied.

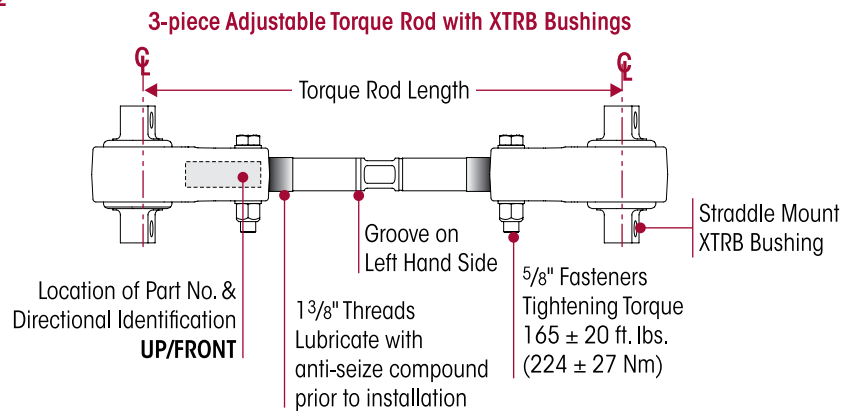
**Torque rod length** is determined by the original vehicle manufacturer (see Figures 6-1 and 6-2). The mounting bracket at the axle housing end of the torque rods are furnished and welded into position on the axle housings by the axle or vehicle manufacturer,

- It is important that the **tightening torque** of the locknuts be checked during preventive maintenance and service. Follow the tightening torque specifications and all applicable preventive maintenance, service and safety instructions issued by the Hendrickson and/or the vehicle manufacturer.
- The **3-piece adjustable** torque rods have right hand and left hand threads. Ensure the correct thread is at the correct end of the rod, see part number and directional location in Figure 6-2.

**FIGURE 6-1**



**FIGURE 6-2**



## SECTION 7

# Alignment & Adjustments

### RIDE HEIGHT

#### NOTE

The dual height control valves to be equipped on LUXAIR suspensions are not supplied by Hendrickson, although they are required components. Hendrickson is not responsible for components supplied by the vehicle manufacturer. For assistance with inspection, maintenance and rebuild instructions on these components see vehicle manufacturer.

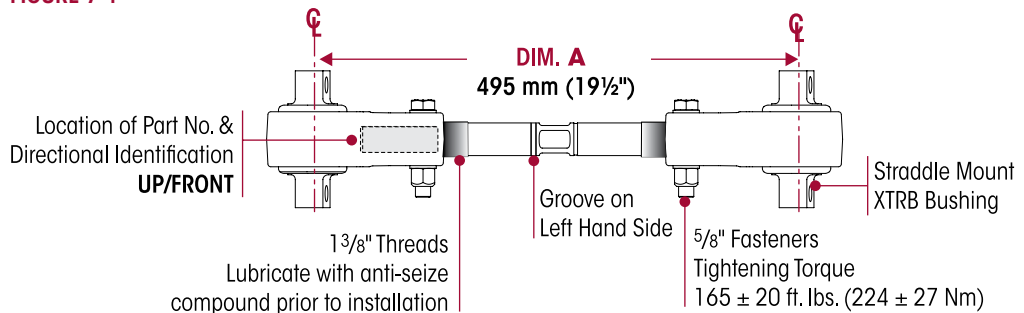
### DRIVE AXLE PINION ANGLE

Drive axle pinion angles are established by the vehicle manufacturer. Proper length of the 3-piece adjustable torque rods must be established to maintain the proper pinion angle. Check and record the pinion angle as originally set by the vehicle manufacturer for future reference.

### 3-PIECE TORQUE ROD LENGTH ADJUSTMENT

If the 3-piece torque rods are replaced, the length must be adjusted to measure from the straddle bushing bar pin centerlines to equal **DIM. A**, 495 mm (19½"), see Figure 7-1.

**FIGURE 7-1**

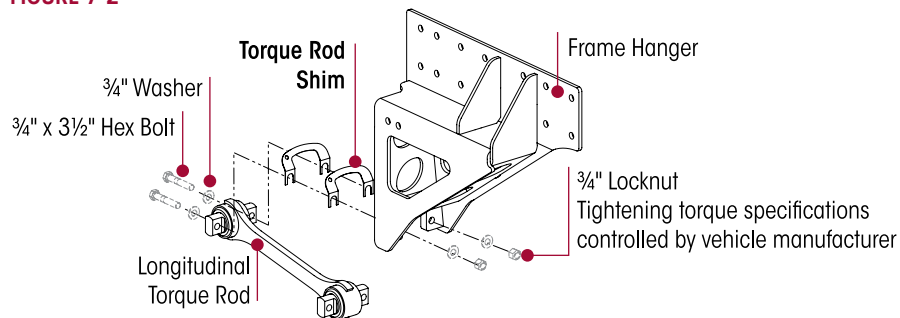


### DRIVE AXLE ALIGNMENT

The rear axle must be kept perpendicular to the frame. The rear axle alignment (thrust angle) is set by the vehicle manufacturer and should only require adjustment if the torque rods are replaced. The thrust angle is the only alignment adjustment that can be made on the LUXAIR suspension. This is achieved by adding and/or removing longitudinal torque rod shims to obtain proper thrust angle, see Figure 7-2.

Computerized alignment equipment is the preferred method of measuring alignment. To calculate the shim thickness required, the target offset must be converted to thrust angle, see alignment equipment manufacturer for procedures.

**FIGURE 7-2**



## SECTION 8

# Component Replacement

### FASTENERS

Hendrickson recommends that when servicing the suspension to replace any removed fasteners with new equivalent fasteners for LUXAIR suspension components. Always maintain correct torque values. Check torque values as specified. See Hendrickson's Torque Specifications Section of this publication. If non-Hendrickson fasteners are used follow the torque specifications listed in the vehicle manufacturer's service manual.

### HEIGHT CONTROL VALVES & SHOCK ABSORBERS

#### NOTE

The dual height control valves and shock absorbers equipped on the LUXAIR suspension are not supplied by Hendrickson, although are required components. Hendrickson is not responsible for components supplied by the vehicle manufacturer. For assistance with inspection, maintenance and rebuild instructions on these components see vehicle manufacturer.

### AIR SPRING

#### DISASSEMBLY

1. Chock the front wheels.

#### WARNING

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH JACK STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

2. Support the frame of the vehicle at ride height with jack stands.
3. Disconnect the height control linkage assembly as per the vehicle manufacturer's instructions.

#### WARNING

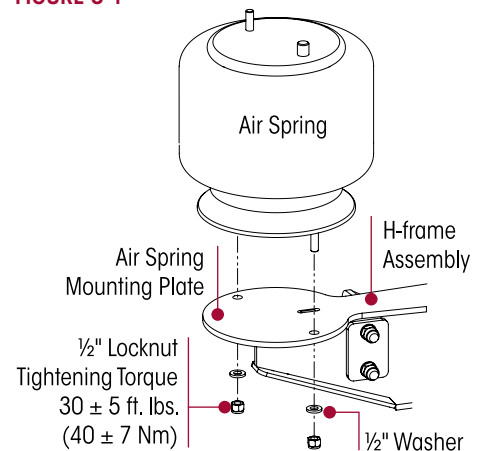
PRIOR TO AND DURING DEFLATION AND INFLATION OF THE AIR SUSPENSION SYSTEM, ENSURE THAT ALL PERSONNEL AND EQUIPMENT ARE CLEAR FROM UNDER THE VEHICLE AND AROUND THE SERVICE AREA, FAILURE TO DO SO CAN CAUSE SERIOUS PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE.

4. See additional Air Spring Cautions and Warnings in the Important Safety Notice Section of this publication prior to deflating or inflating the air system.
5. Exhaust the air in the air springs and deflate the rear suspension.
6. Remove the air line from the air spring.
7. Remove air fittings from air spring.
8. Remove the upper air spring fasteners from the vehicle frame per the vehicle manufacturer's instructions.
9. Remove the ½" lower air spring fasteners from below the H-Frame air spring mounting plate, see Figure 8-1.
10. Remove the air spring.

#### INSPECTION

1. Inspect upper air spring mount for any cracks and the air spring mounting surfaces for any damage. Replace as necessary.

**FIGURE 8-1**



#### NOTE

Apply Anti-seize to the lower mounting studs prior to attaching fasteners.

### ASSEMBLY

1. Install the lower air spring studs into the H-Frame mounting plate.
2. Prior to installing lower air spring fasteners apply anti-seize to the lower studs and install the ½" fasteners to the lower mounting stud of the air spring. **USING HAND TOOLS ONLY**, tighten to 30 ± 5 foot pounds torque, see Figure 8-1.

### CAUTION

FAILURE TO PRESS THE AIR SPRING AGAINST THE UNDERSIDE OF THE UPPER AIR SPRING MOUNT WHILE TIGHTENING THE UPPER AIR SPRING FASTENERS CAN RESULT IN COMPONENT DAMAGE AND PERSONAL INJURY OR PROPERTY DAMAGE.

### SERVICE HINT

It may be necessary to add some air to the air spring so the bottom of the air spring will reach the air spring mounting plate.

3. Install the upper air spring studs into the upper air spring mount.
4. Install the upper air spring fasteners and tighten to the vehicle manufacturer's specifications.
5. Re-install the air fittings.
6. Connect the air lines to the air spring.
7. See additional Air Spring Cautions and Warnings in the Important Safety Notice Section of this publication prior to deflating or inflating the air system.
8. Inflate the suspension by connecting the height control valve linkage to the height control valve arm per the vehicle manufacturer instructions. Verify the air springs inflate uniformly without binding.
9. Remove the jack stands from the frame of the vehicle.
10. Remove the wheel chocks.
11. Verify the vehicle's ride height is within specification per the vehicle manufacturer's instructions.

## LOWER SHOCK ABSORBER MOUNTING BRACKET

### DISASSEMBLY

1. Chock the front wheels.

### WARNING

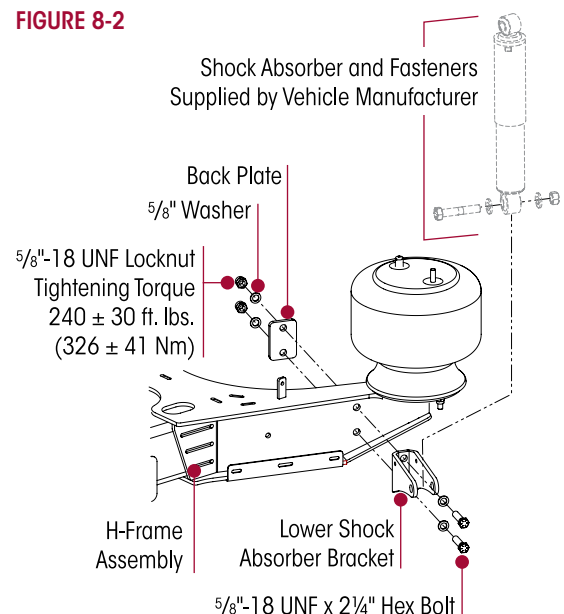
THE VEHICLE MUST BE FIRMLY SUPPORTED WITH JACK STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

2. Support the frame of the vehicle with jack stands.
3. Remove the lower shock fasteners per the vehicle manufacturer's instructions and push up on the shock absorber to gain access to the shock bracket fasteners, see Figure 8-2.
4. Remove and discard the lower shock bracket ½" fasteners, see Figure 8-2.
5. Remove lower shock bracket from H-Frame assembly.

### ASSEMBLY

1. Install the lower shock absorber mounting bracket and back plate to the H-Frame assembly.
2. Install the ½" fasteners and tighten to 240 ± 30 foot pounds torque, see Figure 8-2.

FIGURE 8-2





3. Slide the shock absorber into the lower shock absorber mounting bracket and tighten to vehicle manufacturer's torque specifications.
4. Remove the jack stands from the frame of the vehicle.
5. Remove the wheel chocks.

## LONGITUDINAL TRAAX RODS

### WARNING

THE LUXAIR SUSPENSION INCORPORATES LONGITUDINAL TRAAX ROD TORQUE RODS FOR PROPER VEHICLE STABILITY AND HANDLING. IF THESE COMPONENTS ARE DISCONNECTED OR ARE NON-FUNCTIONAL THE VEHICLE SHOULD NOT BE OPERATED. FAILURE TO DO SO CAN RESULT IN ADVERSE VEHICLE HANDLING, POSSIBLE TIRE CONTACT WITH THE FRAME, PREMATURE COMPONENT DAMAGE OR SEVERE PERSONAL INJURY.

### DISASSEMBLY

#### NOTE

TRAAX ROD assemblies equipped on the LUXAIR air suspension are not rebushable. The entire torque rod assembly must be replaced. This feature provides superior bushing retention in the torque rod end hub.

1. Chock the wheels of the vehicle.

### WARNING

WHEN LIFTING THE VEHICLE TO PERFORM ANY VEHICLE SERVICE, ENSURE THE LUXAIR SUSPENSION SYSTEM DOES NOT FREELY HANG IN AN UNSUPPORTED CONDITION. USE JACK STANDS OR BLOCKS AS NEEDED TO FULLY SUPPORT THE SUSPENSION AT ALL FOUR CORNERS OF ITS H-FRAME ASSEMBLY. FAILURE TO DO SO CAN CAUSE THE H-FRAME TO SHIFT DURING SERVICE, AS WELL AS COMPONENT DAMAGE, MISALIGNMENT, PERSONAL INJURY, OR PROPERTY DAMAGE.

2. Support all four corners of the H-Frame assembly with jack stands or blocks.

### WARNING

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH JACK STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

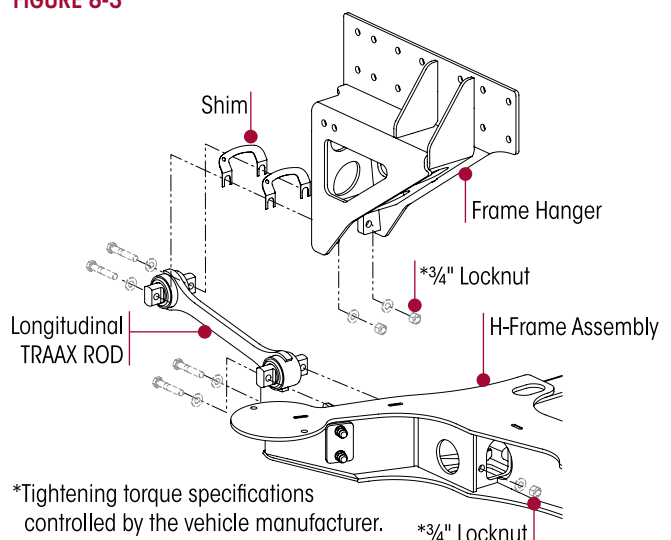
3. Support the vehicle frame with jack stands.
4. Remove the wheel assemblies.

#### NOTE

Prior to disassembly of the longitudinal torque rod fasteners, note the orientation and quantity of torque rod shims (if equipped), see Figures 8-3 and 8-4. It is required that the longitudinal torque rod shims be installed in the same orientation and location as removed to preserve the existing alignment.

**FIGURE 8-3**

5. Prior to removal of the longitudinal fasteners, note the orientation of the fasteners.
6. Remove and discard the  $\frac{3}{4}$ " fasteners that connect the longitudinal TRAAX ROD to the H-Frame assembly and frame hanger, see Figure 8-3.
7. Remove longitudinal torque rod (if replacing both torque rods, replace one side at a time).



### INSPECTION

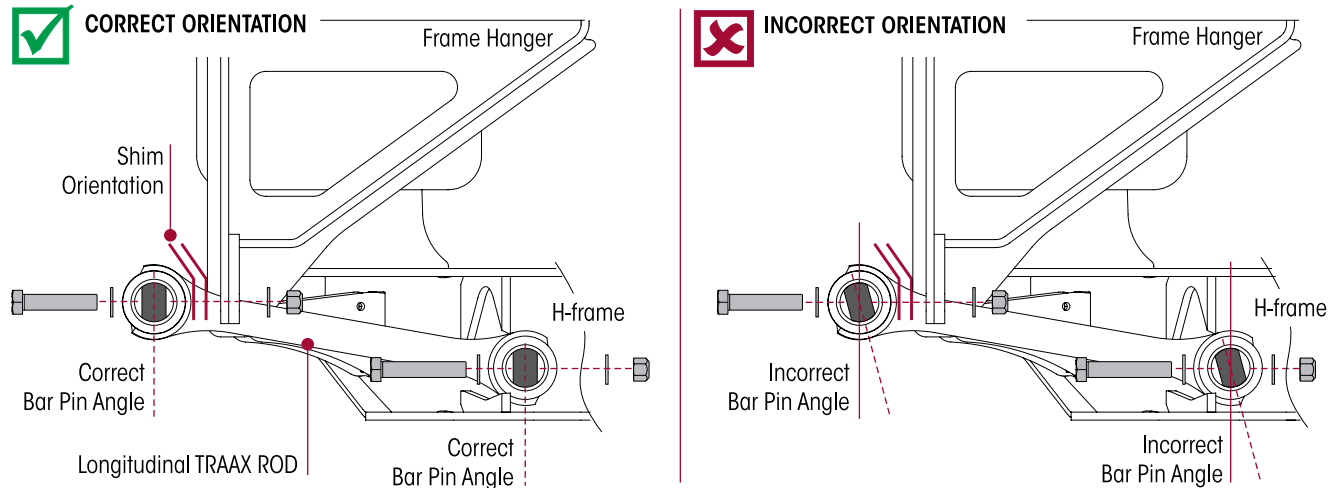
After removal of the longitudinal torque rod, inspect the frame hanger and H-Frame assembly for wear, damage and/or elongation of the mounting holes. Replace as necessary.

\*Tightening torque specifications controlled by the vehicle manufacturer.

### ASSEMBLY

1. Install the torque rod with the bar pin in the same orientation as removed, see Figure 8-4.
2. Install the shims in the same location, orientation and quantity prior to removal, see Figures 8-3 and 8-4.

FIGURE 8-4



3. Install the fasteners in the same orientation as per prior to removal, see Figure 8-3 and tighten the new mounting fasteners per the vehicle manufacturer's instructions.
4. Install wheel assemblies.
5. Remove jack stands from the vehicle frame.
6. Remove the supports from the H-Frame and lower the vehicle.
7. Remove the wheel chocks.
8. A vehicle alignment procedure will need to be performed after assembly, see Alignment & Adjustments Section of this publication.

### 3-PIECE ADJUSTABLE TORQUE ROD

#### WARNING

THE LUXAIR SUSPENSION INCORPORATES 3-PIECE ADJUSTABLE TORQUE RODS FOR PROPER VEHICLE STABILITY AND HANDLING. IF THESE COMPONENTS ARE DISCONNECTED OR ARE NON-FUNCTIONAL THE VEHICLE SHOULD NOT BE OPERATED. FAILURE TO DO SO CAN RESULT IN ADVERSE VEHICLE HANDLING AND POSSIBLE TIRE CONTACT WITH THE FRAME. OPERATING A VEHICLE WITH NON-FUNCTIONAL 3-PIECE ADJUSTABLE RODS CAN RESULT IN ADVERSE VEHICLE HANDLING, SEVERE PERSONAL INJURY, AND PREMATURE COMPONENT DAMAGE.

#### DISASSEMBLY

1. Chock the wheels of the vehicle.

#### WARNING

WHEN LIFTING THE VEHICLE TO PERFORM ANY VEHICLE SERVICE, ENSURE THE LUXAIR SUSPENSION SYSTEM DOES NOT FREELY HANG IN AN UNSUPPORTED CONDITION. USE JACK STANDS OR BLOCKS AS NEEDED TO FULLY SUPPORT THE SUSPENSION AT ALL FOUR CORNERS OF ITS H-FRAME ASSEMBLY. FAILURE TO DO SO CAN CAUSE THE H-FRAME TO SHIFT DURING SERVICE, AS WELL AS COMPONENT DAMAGE, MISALIGNMENT, PERSONAL INJURY, OR PROPERTY DAMAGE.

2. Support all four corners of the H-Frame assembly with jack stands or blocks.

#### WARNING

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH JACK STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

3. Support the vehicle frame with jack stands. It may be necessary to lift the vehicle to access the 3-piece adjustable torque rods.
4. Prior to removal of the 3-piece adjustable torque rod fasteners, note the orientation of the bar pins and fasteners.

5. Remove and discard the fasteners that connect the 3-piece torque rod from the axle housing and chassis bracket per the vehicle manufacturer's instructions, see Figure 8-6.
6. Remove the 3-piece torque rod (if replacing both torque rods, replace one side at a time).

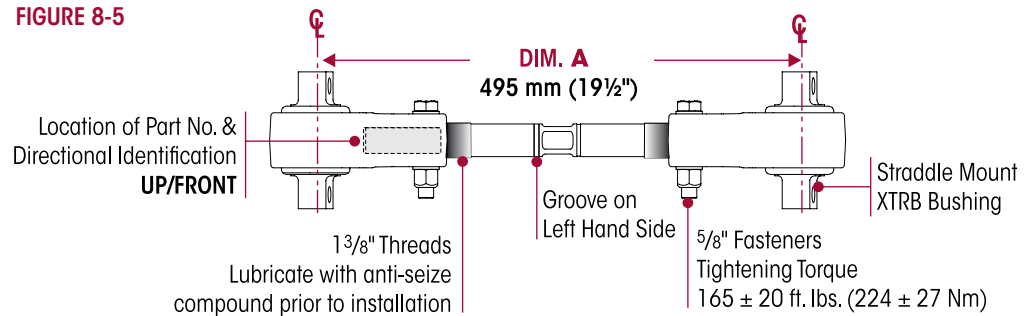
### INSPECTION

After removal of the 3-piece adjustable torque rod, inspect mating surfaces for damage and/or elongation of the mounting holes. Replace as necessary.

### ASSEMBLY

1. Prior to installation of the longitudinal torque rod, measure from the centerline of the straddle bushing bar pins with an equal amount of threads shown on both sides of the torque rod center tube. **Dimension A** needs to equal 495 mm (19½ inches), see Figures 8-5.
2. If an adjustment is necessary, lubricate the torque rod center tube threads with anti-seize, see Figure 8-5.

**FIGURE 8-5**



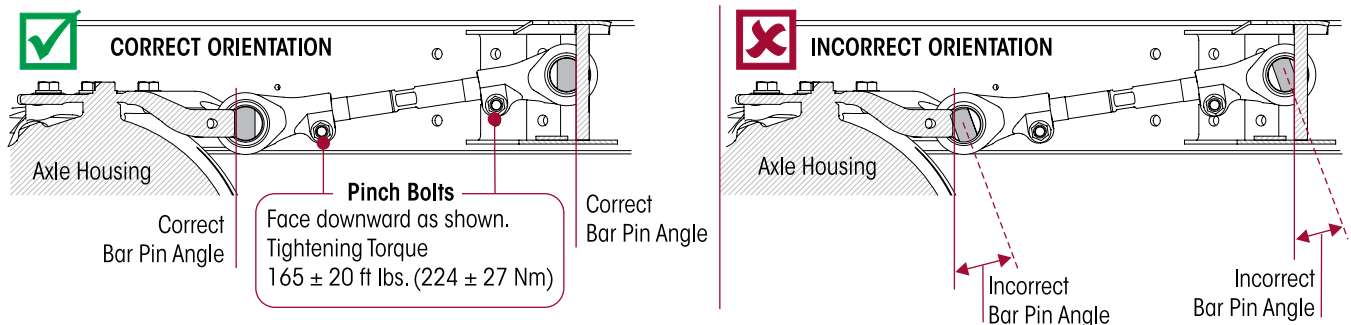
3. Install the 3-piece torque rod with the bar pins and fasteners in the same orientation as prior to removal and with the torque rod pinch bolts facing downward, see Figure 8-6.

### SERVICE HINT

If the angles of the torque rod bar pins and axle / frame bracket are not matching, turn the torque rod 180 degrees and check again.

4. The angles of the torque rod bar pins must match the angle of the axle and frame brackets, see Figure 8-6.
5. Prior to tightening, ensure that the vehicle is at the proper ride height.
6. Tighten the mounting fasteners to vehicle manufacturer's torque specifications.
7. Verify torque rod pinch bolts are tightened to 165 ± 20 foot pounds, see Figure 8-6.
8. Remove the supports from the H-Frame.
9. Remove jack stands from the vehicle frame.
10. Remove the wheel chocks.
11. A vehicle alignment procedure will need to be performed after assembly, see Alignment & Adjustments Section of this publication.

**FIGURE 8-6**



### 3-PIECE XTRB TORQUE ROD BUSHINGS

#### YOU WILL NEED

- A vertical press with a capacity of at least 10 tons
- Shop made receiving tool and installation / removal tool, see the Special Tools Section of this publication for more information

#### DISASSEMBLY

1. Remove the torque rod(s) as detailed in Torque Rod Disassembly instructions in this section.

#### WARNING

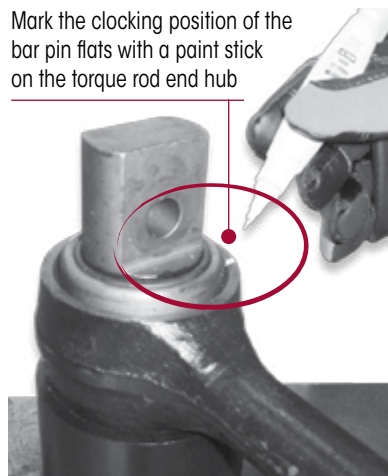
DO NOT USE HEAT OR USE A CUTTING TORCH TO REMOVE THE BUSHINGS FROM THE TORQUE ROD. THE USE OF HEAT WILL ADVERSELY AFFECT THE STRENGTH OF THE TORQUE ROD, HEAT CAN CHANGE THE MATERIAL PROPERTIES. A COMPONENT DAMAGED IN THIS MANNER CAN RESULT IN ADVERSE VEHICLE HANDLING AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

#### SERVICE HINT

When servicing a straddle mount bar pin bushing assembly, mark the clocking position of the straddle mount bar pin flats with a paint stick on the torque rod end hub prior to disassembly, see Figure 8-8. This marking will serve as a guide when installing the new bushing assembly so the original clocking position can be retained.

2. Mark the clocking position of the straddle mount bar pin flats with a paint stick on the torque rod end hub prior to disassembly, see Figure 8-8.

FIGURE 8-8



Mark the clocking position of the bar pin flats with a paint stick on the torque rod end hub

FIGURE 8-9



FIGURE 8-10



3. Support the torque rod end hub centered on the receiving tool. Be sure the torque rod is squarely supported on the press bed for safety.
4. Push directly on the straddle mount bar pin, until the top of the bar pin is level with the top of torque rod end hub, see Figure 8-9.
5. Place the shop made removal tool on the bar pin and press until the bushing clears the torque rod hub, see Figure 8-10.
6. Support the torque rod hub on the receiving tool with the torque rod squarely supported on the press bed for safety.

#### ASSEMBLY

1. Clean and inspect the inner diameter of the torque rod end hubs, see Figure 8-11.

#### SERVICE HINT

**DO NOT** use a paraffinic oil, or soap base lubricant. Such lubricants can cause adverse reactions with the bushing, causing premature failure.

FIGURE 8-7

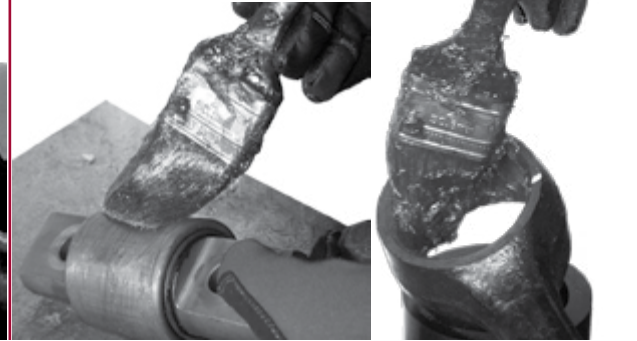


**FIGURE 8-11**

Inspect and clean the inner diameter of torque rod end hubs


**FIGURE 8-12**

Apply NLGI #2-EP (Extreme Pressure) lubricant to the inner diameter of torque rod end hub and bushings



2. Lubricate the inner diameter of the torque rod end hubs and the new bushings with NLGI#2 – EP (Extreme Pressure) lithium base grease, see Figure 8-12.
3. Support the torque rod end hub centered on the receiving tool. Be sure the torque rod is squarely supported on the press bed for safety.
4. Re-align the bar pin bushings to the mark made before removal as shown in Figure 8-8.
5. Using the shop made tool, place the installer tool on the bushing and press in. The bushing must be centered within the hub of the torque rod.
6. Wipe off the excess lubricant.
7. Install the torque rod as detailed in the Torque Rod Assembly instructions in this section.

## FRAME HANGER & FRAME HANGER BRACKET

### DISASSEMBLY

1. Chock the wheels of the vehicle.

**WARNING**

WHEN LIFTING THE VEHICLE TO PERFORM ANY VEHICLE SERVICE, ENSURE THE LUXAIR SUSPENSION SYSTEM DOES NOT FREELY HANG IN AN UNSUPPORTED CONDITION. USE JACK STANDS OR BLOCKS AS NEEDED TO FULLY SUPPORT THE SUSPENSION AT ALL FOUR CORNERS OF ITS H-FRAME ASSEMBLY. FAILURE TO DO SO CAN CAUSE THE H-FRAME TO SHIFT DURING SERVICE, AS WELL AS COMPONENT DAMAGE, MISALIGNMENT, PERSONAL INJURY, OR PROPERTY DAMAGE.

2. Support all four corners of the H-Frame assembly with jack stands or blocks.

**WARNING**

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH JACK STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

3. Lift and support the vehicle frame at ride height with jack stands.
4. Remove the wheel assemblies.

**WARNING**

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH JACK STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

**NOTE**

Prior to disassembly of the longitudinal torque rod fasteners, note the orientation and quantity of torque rod shims (if equipped), see Figure 8-13. It is required that the longitudinal torque rod shims be installed in the same orientation and location as removed to preserve the existing alignment.

5. Remove and discard the fasteners that connect the longitudinal TRAAX ROD to frame hanger, see Figure 8-13.
6. Remove and discard the fasteners that secure the frame hanger bracket to the frame hanger.
7. Remove and discard the frame hanger to vehicle frame fasteners per the vehicle manufacturer's instructions.

- Remove the frame hanger and frame hanger bracket, see Figure 8-13.

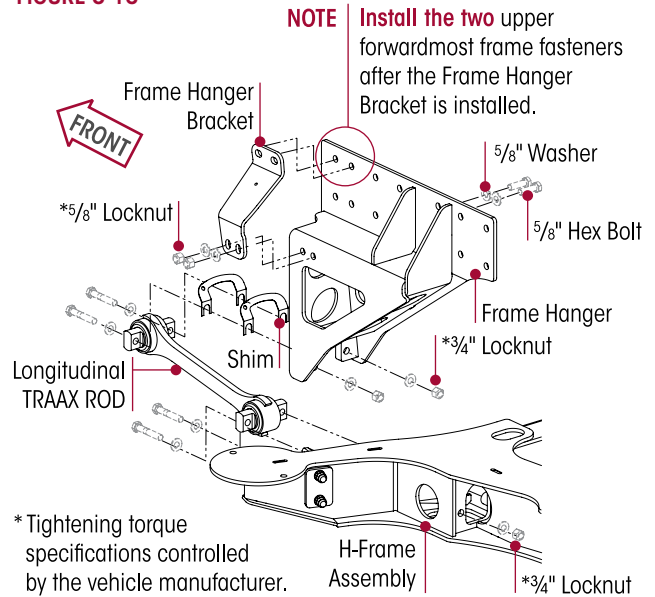
### INSPECTION

- Inspect vehicle frame for any damage or wear.
- Inspect the longitudinal TRAAX ROD for wear or damage. Replace as necessary.

### ASSEMBLY

- Slide the frame hanger over the longitudinal TRAAX ROD's bar pin bushing and loosely install fasteners per the vehicle manufacturer's instructions. **DO NOT** tighten at this time.
- With the exception of the two (2) upper forwardmost fasteners** (see Figure 8-13), secure the frame hanger to the vehicle frame per the vehicle manufacturer's specifications.
- Install the frame hanger bracket fasteners that go to the frame hanger. Tighten to the vehicle manufacturer's torque specifications.
- Install the remaining upper two (2) fasteners that go through the frame hanger bracket, frame hanger and vehicle frame, see Figure 8-13.
- Tighten longitudinal TRAAX ROD fasteners to the vehicle manufacturer's torque specifications.
- Remove jack stands from the vehicle frame and lower the vehicle.
- Remove the supports from the H-Frame.
- Remove the wheel chocks.
- A vehicle alignment procedure will need to be performed after assembly, see Alignment & Adjustments Section of this publication.

FIGURE 8-13



**NOTE** Install the two upper forwardmost frame fasteners after the Frame Hanger Bracket is installed.

## H-FRAME ASSEMBLY

### DISASSEMBLY

- Chock the front wheels.
- Lift the drive axle and remove the wheel assemblies.
- Lift and support the drive axle by the wheel end hubs.

### WARNING

THE VEHICLE FRAME MUST BE FIRMLY SUPPORTED PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

- Support the vehicle frame at ride height.

### WARNING

PRIOR TO AND DURING DEFLATION AND INFLATION OF THE AIR SUSPENSION SYSTEM, ENSURE THAT ALL PERSONNEL AND EQUIPMENT ARE CLEAR FROM UNDER THE VEHICLE AND AROUND THE SERVICE AREA, FAILURE TO DO SO CAN CAUSE SERIOUS PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE.

- See additional Air Spring Cautions and Warnings in the Important Safety Notice Section of this publication prior to deflating or inflating the air system.
- Drain all air from the air tanks by opening the 4 drain valves inside the access door on the battery compartment.



7. Disconnect the height control valve linkage assembly from the H-Frame per the vehicle manufacturer's instructions to exhaust the air in the air springs and deflate the suspension.

**WARNING**

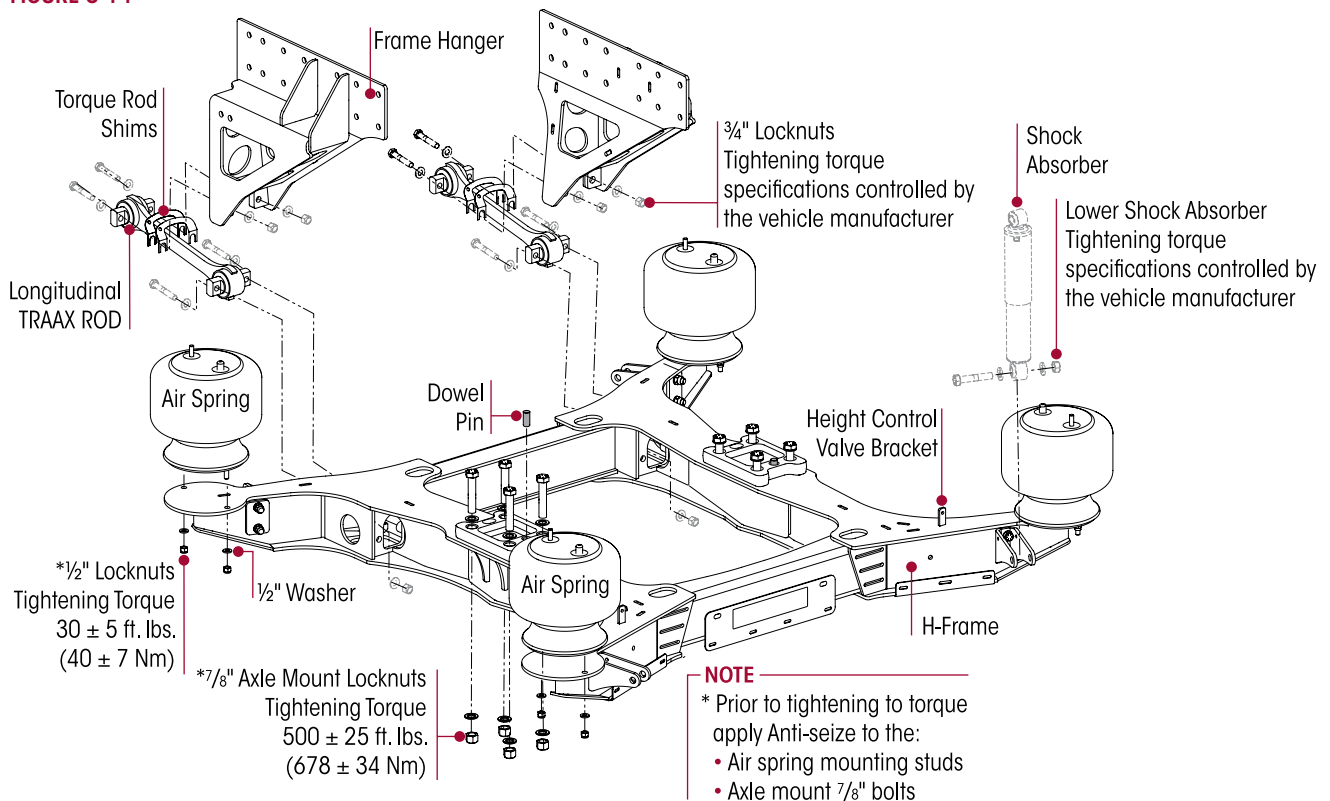
THE WEIGHT OF THE H-FRAME IS APPROXIMATELY 600 POUNDS, IT IS NECESSARY THAT ALL FOUR CORNERS OF THE H-FRAME ARE SUPPORTED DURING REMOVAL AND INSTALLATION TO PREVENT PERSONAL INJURY OR DAMAGE TO COMPONENTS.

8. Support the H-Frame with a suitable hoist or lifting device that will support all four corners of the H-Frame.
9. Disconnect the four (4) lower shock absorber fasteners from the H-Frame per the vehicle manufacturer's instructions. It is not necessary to remove the shock absorbers.

**NOTE**

Prior to disassembly of the longitudinal torque rod fasteners, note the orientation and quantity of torque rod shims (if equipped), see Figures 8-14 and 8-15. It is required that the longitudinal torque rod shims be installed in the same orientation and location as removed to preserve the existing alignment.

10. Remove and discard the longitudinal fasteners to remove two (2) longitudinal torque rods **from the frame hanger**.

**FIGURE 8-14**


11. Remove and discard the lower air spring mounting fasteners from the H-Frame mounting plates. It is not necessary to remove the air springs from the vehicle, see Figure 8-14.
12. Remove and discard the eight (8) 7/8" axle mount fasteners, see Figure 8-14.
13. Lower and remove the H-Frame from the axle.

**NOTE**

Dowel pins are pressed into axle, although during service these may have come loose or damaged.

14. Ensure the dowel pins are installed in the axle (see Figure 8-14) and inspect for damage, replace as necessary.
15. Remove and discard the longitudinal TRAAX ROD fasteners that attach **to the H-Frame**.

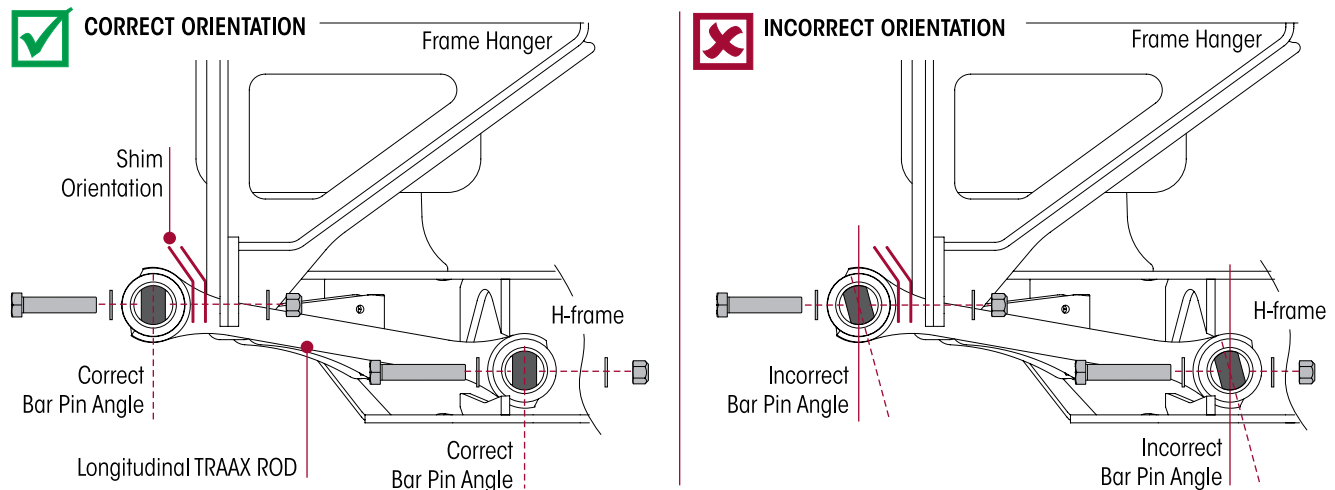
## ASSEMBLY

### WARNING

THE WEIGHT OF THE H-FRAME IS APPROXIMATELY 600 POUNDS, IT IS NECESSARY THAT ALL FOUR CORNERS OF THE H-FRAME ARE SUPPORTED DURING REMOVAL AND INSTALLATION TO PREVENT PERSONAL INJURY OR DAMAGE TO COMPONENTS.

1. Lift and support the new H-Frame onto jack stands.
2. With a suitable lifting device or hoist position the H-Frame under the axle.
3. Align the axle dowel pins with the corresponding holes in the H-Frame.
4. Lift the H-Frame to the axle.
5. Install the eight (8) 7/8" axle mount fasteners with anti-seize and loosely tighten. **DO NOT** tighten to torque at this time.
6. Install the longitudinal TRAAX ROD to the **H-Frame** and **frame hanger** with the bar pin and shims in the same orientation as prior to removal, see Figure 8-15. Tighten fasteners to the vehicle manufacturer's specifications.

FIGURE 8-15



7. Tighten the eight (8) 7/8" axle mount fasteners to  $\boxed{500} \pm 25$  foot pounds torque, see Figure 8-14.
8. Attach the ends of lower air springs to the H-Frame mounting plates.
9. Apply anti-seize to lower mounting studs tighten fasteners to  $\boxed{30} \pm 5$  foot pounds torque.
10. Attach the lower ends of the shock absorbers and fasteners to lower shock brackets on the H-Frame per the vehicle manufacturer's instructions and tighten fasteners to vehicle manufacturer's specifications.
11. Connect the height control valve linkage assembly per the vehicle manufacturer's instructions.
12. Remove the hoist or lifting device from the H-Frame.
13. Lift the axle and remove the jack stands from the wheel end hubs.
14. Install the wheel assemblies.
15. Lower the vehicle.
16. Close all four (4) drain valves inside the access door on the battery compartment.
17. Start the vehicle to build system air pressure and inflate the suspension air springs.
18. Remove the wheel chocks.
19. Remove the vehicle frame supports and lower the vehicle.
20. A vehicle alignment procedure will need to be performed after assembly, see Alignment & Adjustments Section of this publication.





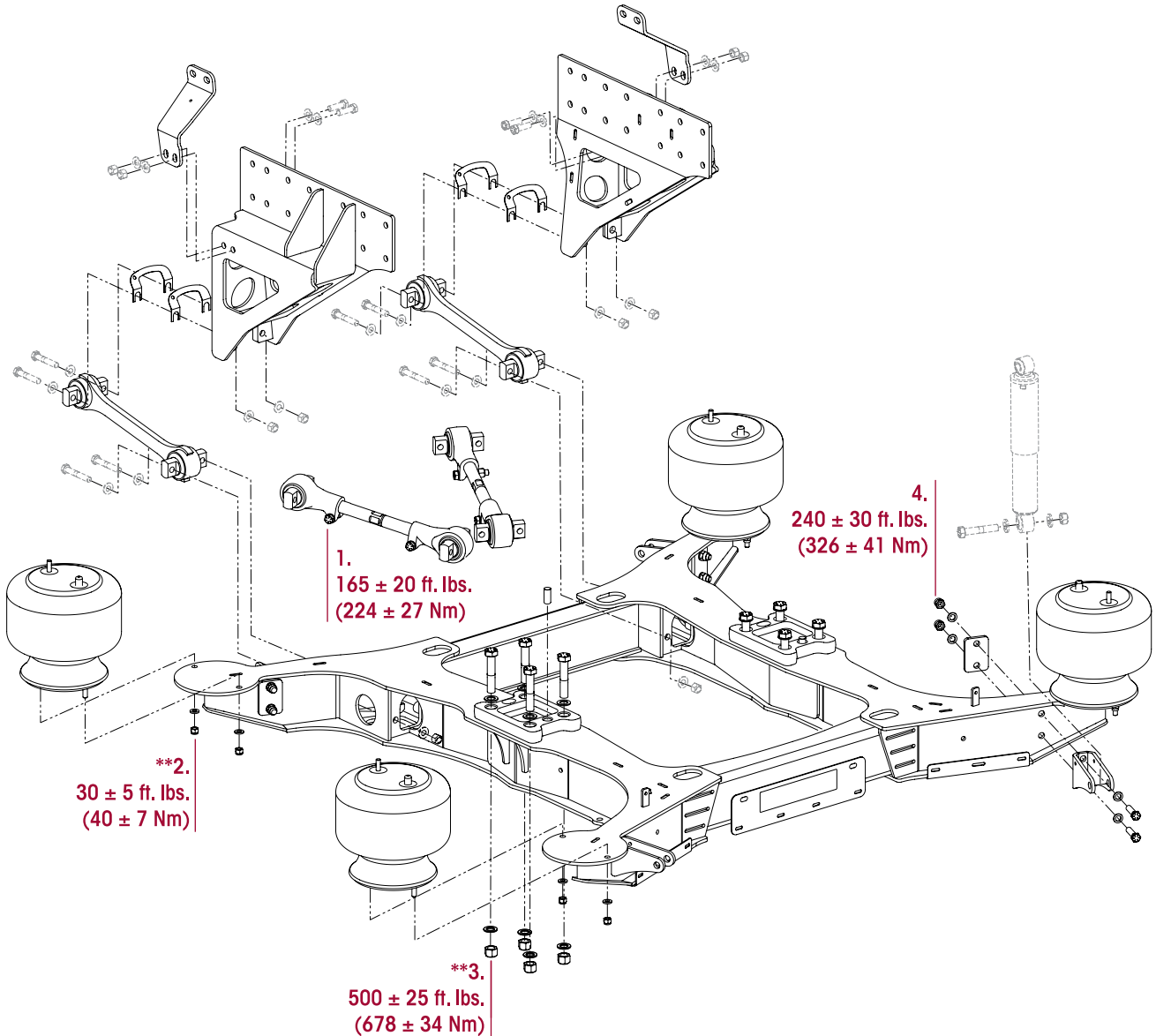
# Troubleshooting Guide

## LUXAIR FOR BUS APPLICATIONS

TROUBLESHOOTING GUIDE		
CONDITION	POSSIBLE CAUSE	CORRECTION
All air springs flat (no air).	Insufficient air pressure in the vehicle air system	Check the air pressure gauge. If air pressure is low, run the engine until a minimum pressure of 100 psi is indicated on the gauge.
	Air drain vales not closed	Close air drain vales inside the access door on the battery compartment.
	Air leakage from the suspension air system or the air brake system	Listen for air leakage due to loose fittings or damaged air lines, air springs, brake actuators, or control valve. Tighten loose fittings to stop leakage and/or replace worn or damaged parts.
Air springs deflate rapidly when vehicle is parked.	Air leakage from the suspension air system	Listen for air leakage due to loose fittings between air tank and air suspension or damaged air lines, air springs, or height control valve. Apply a soapy solution to connections and air springs to check for bubbles (leaks). Tighten loose fittings to stop leakage and/or replace worn or damaged parts with new ones.
Bus ride height too high or too low.	Height control valve out of adjustment	Refer to vehicle manufacturer's instructions.
Air springs ruptured	Air spring cut or punctured	Locate leaks by listening for escaping air; locate smaller leaks by applying soap and water solution to the air spring and watching for bubbles. Temporary repair can be made to punctures and cuts of less than 1/8" by applying hot patches to the damaged area on the inside and outside of the air spring.
	Tires, rims, or other objects are rubbing the air spring	Check the clearance between the air spring and the tire. If the tire, rim, or other objects contact the inflated air spring when the vehicle is loaded, repair this condition or consult with vehicle manufacturer.
Air spring failed	Continual or repeated overextension of the air spring	Visually inspect for broken or loose shock absorber or shock absorber mounting bracket. Reconnect loose parts and replace any defective parts. Check the adjustment of the height control valves per vehicle manufacturer.
	Air spring(s) worn out	Replace the air spring.
Air spring(s) fail to fully deflate when all weight is removed from the suspension	Restricted air line(s) between the height control valve and the air spring(s)	Disconnect the height control valve linkage and rotate the actuating lever to the 45° down position. If the air spring(s) remain inflated, check for pinched or blocked line(s).
Shock absorber failures	Overextension	Refer to the vehicle manufacturer's instructions.
Vehicle unstable or handles poorly	Loose frame hanger to vehicle frame fasteners	Replace or tighten per the vehicle manufacturer's instructions.
	3-piece adjustable or longitudinal torque rods are damaged	Check condition of torque rod bushings and mounting hardware, replace as necessary.
	Worn or leaking shock absorbers	Replace shock absorbers.

# SECTION 9 Torque Specifications

HENDRICKSON RECOMMENDED TORQUE VALUES  
PROVIDED IN FOOT POUNDS AND IN NEWTON METERS





## LUXAIR FOR BUS APPLICATIONS

## HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS

NO.	COMPONENT	FASTENER		*TORQUE VALUE	
		QTY.	SIZE	Foot Pounds	Nm
	Frame Fasteners Furnished & Installed by Vehicle Manufacturer				
1	Adjustable Torque Rod Clamp Pinch Bolt at the Locknut	4	5/8"-18 UNF	165 ± 20	224 ± 27
2	Air Spring to H-Frame Assembly	8	1/2"-13 UNC	**30 ± 5	40 ± 7
3	Axle Mount Locknuts	8	7/8"-14 UNF	**500 ± 25	678 ± 34
4	Shock Bracket to H-Frame Assembly Locknuts	8	5/8"-18 UNF	240 ± 30	326 ± 41

• Frame mount hardware in most cases are Huck style fasteners supplied by the OEM.

**NOTE:** \* Torque values listed above apply only if Hendrickson supplied fasteners are used. If non-Hendrickson fasteners are used, follow torque specifications listed in vehicle manufacturer's service manual.

\*\* Prior to installation, apply anti-seize to the lower air spring studs and / or axle mount bolts and then proceed to tighten to the specified torque.

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.

*Call Hendrickson at **1.866.755.5968** (toll-free) or **1.630.910.2800** for additional information.*



[www.hendrickson-intl.com](http://www.hendrickson-intl.com)

**TRUCK COMMERCIAL VEHICLE SYSTEMS**

800 South Frontage Road  
Woodridge, IL 60517-4904 USA  
1.866.755.5968 (Toll-free U.S. and Canada)  
1.630.910.2800 (Outside U.S. and Canada)  
Fax 1.630.910.2899

17730-321 Rev A 11-20

© 2020 Hendrickson USA, L.L.C. All Rights Reserved. All trademarks shown are owned by Hendrickson USA, L.L.C., or one of the affiliates, in one or more countries.  
Information contained in this literature was accurate at the time of publication. Product changes may have been made after the copyright date that are not reflected.

Printed in United States of America