# OWNER'S MANUAL

## Non–Steerable Auxiliary Lift Axle Systems

**SUBJECT:** Operation & Preventive Maintenance Procedures
**LIT NO:** OM–H757
**DATE:** July 2019 **REVISION:** F

TABLE OF CONTENTS



HENDRICKSON
*The World Rides On Us®*

# SECTION 1
# Introduction

This publication is intended to acquaint and assist maintenance personnel in the identification and operation of and preventive maintenance for Hendrickson non-steerable auxiliary lift axle suspension systems. Refer to the current versions of Hendrickson product-specific technical procedures, including Publication No. H621, for additional installation, service, repair, and rebuild instructions for such products.

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

It is important to read and understand this entire publication prior to operating or performing any maintenance of the product. The information in this publication contains product images, safety information, product specifications, features and proper maintenance and operating instructions of Hendrickson non-steerable auxiliary lift axles.

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 1–800–660–2829 (toll-free U.S. and Canada), 1–740–929–5600 (Outside U.S. and Canada), or email: liftaxle@hendrickson-intl.com.

**The latest revision of this publication is also available online at www.hendrickson-intl.com.**

## Recording Your Model(s) / Serial Number(s)

Please utilize Table 1–1 to record the Model(s) and Serial Number(s) of your suspensions / axles for future reference to help identify such equipment when contacting Hendrickson Specialty Products – Auxiliary Lift Axle Systems. This information is necessary for warranty and / or customer service needs. To locate the Model and Serial Number information refer to Figure 2–1.

**NOTE** Refer to the current version of Hendrickson Publication No. H624 for information on the limited warranty coverage and warranty claims process for Hendrickson auxiliary lift axle suspension systems.

**TABLE 1-1**

| | MODEL | SERIAL NUMBER |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |
| 6. | | |

**NOTES**

SECTION 2
# Product Description

## IDENTIFYING YOUR LIFT AXLE SUSPENSION(S)

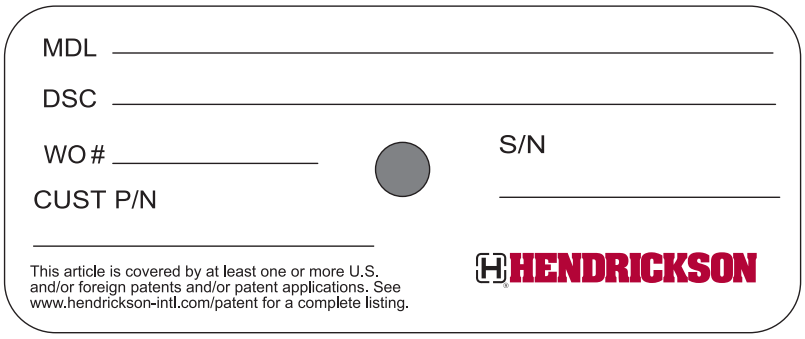
**NOTE** All Hendrickson Auxiliary Lift Axles are manufactured with a serial number plate to help in identification, see Figure 2–1.

When identifying your Hendrickson Auxiliary Lift Axle visually, see Figures 2–2 to 2–7 to compare with your suspension.

## AXLE TAG IDENTIFICATION

The Serial Number Label shown in Figure 2–1 is stainless steel label attached to the body of the suspension system. The label contains the model and serial number unique to that particular suspension system. These two numbers are important to use when contacting Hendrickson for customer service, replacement parts and warranty.

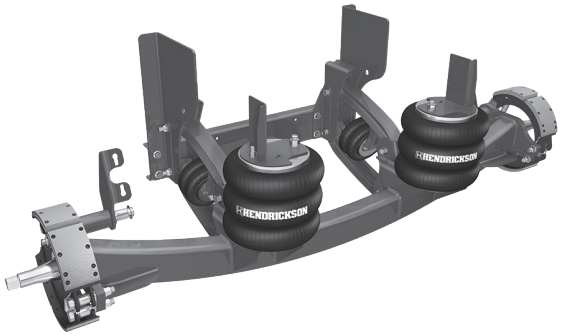
**FIGURE 2–1 Serial Number Label**



## NON–STEERABLE MODELS

Hendrickson's line of non–steerable lift axles offer the rugged reliability expected from Hendrickson in both truck and trailer applications. The non-steerable line is engineered for rugged on- and off-highway applications accommodating a wide range of ride heights. The Hendrickson product line includes the popular COMPOSILITE™ FX and TOUGHLIFT™ FM and TOUGHLIFT™ FR with capacities ranging from 13,500 to 25,000 pounds.

**FIGURE 2–2**

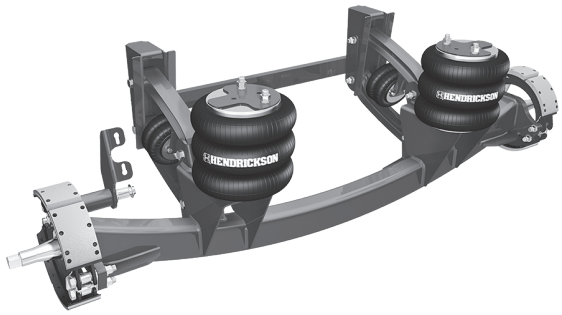



### COMPOSILITE® FXT | TRUCK

The COMPOSILITE FXT, for non-steerable truck applications is designed with a lightweight fabricated axle that accommodates both pusher and tag applications. The COMPOSILITE FXT includes components that are common with the SC steerable lift axle family to ease replacement and maintenance procedures on the same vehicle.

Available in 8K and 10K and 13.5K pound capacities.

**FIGURE 2–3**




### COMPOSILITE® FXW • FXB | TRAILER

The COMPOSILITE FXW and FXB non-steerable trailer applications are designed with a lightweight fabricated axle that accommodates both pusher and tag applications. The FXW and FXB include components that are common with the COMPOSILITE SC steerable lift axle family to ease replacement and maintenance procedures on the same vehicle. Trailer applications of the FX13 are available in weld-on and bolt-on configurations.

Available in 13.5K pound capacity. Available in weld-on (FXW) or bolt-on (FXB).

**FIGURE 2–4**


### COMPOSILITE® FXO | ROLL OFF TRUCK

The COMPOSILITE FXO for non-steerable roll-off truck applications is designed with a lightweight fabricated axle accommodating capacities up to 13,500 pounds. The FXO includes components that are common with the COMPOSILITE SCO13 steerable lift axle to ease replacement and maintenance procedures on the same vehicle. Its scalloped hangers, inbound-positioned ride springs, and parallelogram components aid in the clearance around roll-off cylinders.

Available in capacities up to 13.5K pounds.

FIGURE 2–5


## TOUGHLIFT® FMT | TRUCK

The TOUGHLIFT FMT is engineered for rugged on- and off-highway truck applications accommodating capacities up to 25,000 pounds in both pusher and tag axle configurations. The integration of Hendrickson's TRI-FUNCTIONAL® bushing helps absorb brake and acceleration forces while providing superior roll-control. The QUIK-ALIGN feature simplifies the alignment process by eliminating welding of the alignment collar.

Available in capacities up to 25K pounds.

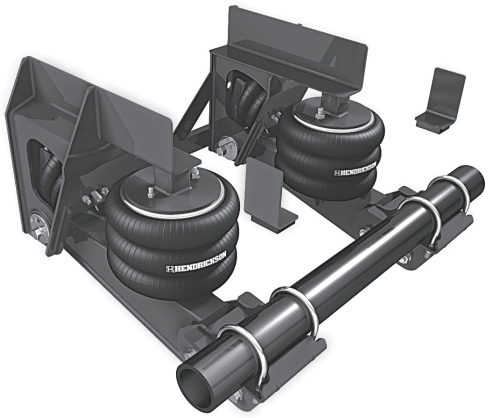
FIGURE 2–6


## TOUGHLIFT® FMW • FMB | TRAILER

The TOUGHLIFT FMW and FMB are engineered for rugged on- and off-highway trailer applications accommodating capacities up to 22,000 pounds in both weld-on and bolt-on configurations. The integration of Hendrickson's TRI-FUNCTIONAL bushing helps absorb brake and acceleration forces while providing superior roll-control. The QUIK-ALIGN feature simplifies the alignment process by eliminating welding of the alignment collar.

Available in capacities up to 22K pounds. Available in weld-on (FMW) or bolt-on (FMB).

FIGURE 2–7



## TOUGHLIFT® FRT | TRUCK

The TOUGHLIFT FRT is designed to provide high lifting capability, accommodate various ride heights, and facilitate easier installation in truck applications. The axle is positioned at the rear of the suspension, allowing for greater clearance of the vehicle undercarriage. Available in short- and medium-beam versions to accommodate a variety of frame packaging dimensions with a capacity up to 13,000 pounds.

Available in 13K pound capacity.

SECTION 3

# Important Safety Notice

Proper installation, 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.

All safety related information should be read carefully to help prevent personal injury and to assure that proper methods are used. Improper installation, maintenance, service or repair may damage the vehicle, cause personal injury, render it 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 installation, 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.

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

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

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

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

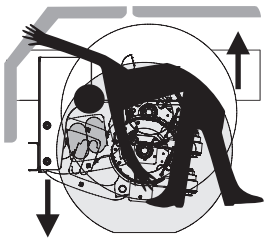
**SERVICE HINT** A helpful suggestion that will make the servicing being performed a little easier and/or faster.

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

## SAFETY PRECAUTIONS

**WARNING**

### LIFT AXLE RAPID MOVEMENT



LIFT AXLE RAPID MOVEMENT CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

IF LIFT AXLE IS OPERATED BY AN AUTOMATIC OR SEMI-AUTOMATIC LIFT AXLE CONTROL SYSTEM, SUCH SYSTEM MAY CAUSE LIFT AXLE TO AUTOMATICALLY RAISE OR LOWER UNDER DIFFERENT CONDITIONS.

LIFT AXLE ACTIVATION AND MOVEMENT MAY VARY DEPENDING ON THE BRAND, CONFIGURATION, AND OPERATING CONDITION OF THE LIFT AXLE CONTROL SYSTEM AND / OR OTHER FACTORS. READ, UNDERSTAND, AND COMPLY WITH ALL APPLICABLE OPERATING INSTRUCTIONS AND SAFETY INFORMATION PROVIDED BY THE LIFT AXLE CONTROL SYSTEM MANUFACTURER AND VEHICLE MANUFACTURER.

ENSURE ALL PERSONNEL ARE CLEAR OF LIFT AXLE BEFORE AND DURING VEHICLE LOADING AND LIFT AXLE ACTIVATION UP OR DOWN.

**CAUTION**

### LIFT AXLE ACTIVATION

DO NOT LOWER LIFT AXLE WHILE THE VEHICLE IS MOVING IN REVERSE OR TRAVELING AT MORE THAN 15 MPH. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE.

**CAUTION**

### NAVIGATING A 90 DEGREE CURVE OR TURN

TO MINIMIZE PREMATURE TIRE WEAR OR POSSIBLE DAMAGE TO LIFT AXLE COMPONENTS, THE LIFT AXLE MAY BE RAISED TO THE UP POSITION PRIOR TO NAVIGATING A 90 DEGREE OR TIGHTER CURVE OR TURN. COMPLY WITH ALL FEDERAL, STATE / PROVINCIAL AND / OR LOCAL WEIGHT, DIMENSION AND CONFIGURATION REGULATIONS UNDER LOADED AND UNLOADED CONDITIONS.

**WARNING**

### LOAD CAPACITY

ADHERE TO THE PUBLISHED CAPACITY RATINGS FOR THE AUXILIARY AXLE. ADD-ON AXLE ATTACHMENTS (I.E. SLIDING FIFTH WHEELS) AND OTHER LOAD TRANSFERRING DEVICES CAN INCREASE THE AUXILIARY AXLE LOAD ABOVE THE RATED AND APPROVED CAPACITIES WHICH CAN RESULT IN FAILURE AND ADVERSE VEHICLE HANDLING, POSSIBLY CAUSING PERSONAL INJURY OR PROPERTY DAMAGE.

**CAUTION**

### DAILY/PRE-TRIP OPERATOR INSPECTION

DAILY (AND BEFORE EACH TRIP) INSPECT ALL LIFT AXLE COMPONENTS FOR PROPER OPERATING CONDITION AND PROPER INSTALLATION TO THE TRUCK / TRAILER FRAME. THIS ESSENTIAL **DAILY / PRE-TRIP OPERATOR INSPECTION** MUST ALSO INCLUDE A VISUAL INSPECTION OF ALL WHEEL SEALS AND GASKETS FOR LEAKS, A VERIFICATION OF PROPER OIL LEVEL IN THE HUBS (IF APPLICABLE), INSPECTION OF ALL LIFT AND RIDE AIR-SPRINGS FOR WEAR, AND INSPECTION OF ALL TIRES FOR PROPER INFLATION AN ABNORMAL WEAR PATTERNS. IDENTIFY AND REPAIR / REPLACE ANY LOOSE, DAMAGED OR IMPROPERLY INSTALLED COMPONENTS. REFER TO THE CURRENT VERSION OF HENDRICKSON PUBLICATION NO. TP-H621 FOR ADDITIONAL SERVICE, REPAIR, AND REBUILD INSTRUCTIONS.

**WARNING**

### REPAIR AND RECONDITIONING

THE REPAIR OR RECONDITIONING OF AUXILIARY AXLE COMPONENTS THAT ARE BENT, DAMAGED OR OUT OF SPECIFICATION IS NOT ALLOWED. ANY AXLE COMPONENTS FOUND TO BE DAMAGED OR OUT OF SPECIFICATION, MUST BE REPLACED. AXLE COMPONENTS CANNOT BE BENT, WELDED, HEATED, OR REPAIRED WITHOUT REDUCING THE STRENGTH OR LIFE OF THE COMPONENT. FAILURE TO FOLLOW THESE GUIDELINES CAN CAUSE ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE AND WILL VOID APPLICABLE WARRANTIES.

**WARNING**

### PERSONNEL PROTECTIVE EQUIPMENT

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

**CAUTION**

### PROCEDURES AND TOOLS

A MECHANIC USING A SERVICE PROCEDURE OR TOOL, THAT 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 ASSUME ALL RISKS OF POTENTIAL PERSONAL INJURY OR DAMAGE TO EQUIPMENT INVOLVED.

**⚠ 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 SPECIFICATIONS 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 APPLICABLE WARRANTIES. USE ONLY HENDRICKSON-AUTHORIZED REPLACEMENT PARTS.

THE VEHICLE MANUFACTURER SHOULD BE CONSULTED BEFORE MAKING ANY CHANGES TO THE VEHICLE'S FRAME. TYPICALLY, CUTTING OR ALTERING THE VEHICLE'S FRAME OR SIDE RAIL IS NOT PERMITTED AND MAY AFFECT THE MANUFACTURER'S WARRANTY COVERAGE.

ANY INSTALLATION DEVIATIONS MUST BE APPROVED IN WRITING BY HENDRICKSON'S PRODUCT ENGINEERING DEPARTMENT. FAILURE TO COMPLY WITH ANY OF THE ABOVE WILL VOID APPLICABLE WARRANTIES.

**⚠ WARNING**

### DAMAGED AXLE COMPONENTS

IF A VEHICLE EQUIPPED WITH A HENDRICKSON AUXILIARY AXLE IS INVOLVED IN A CRASH, A THOROUGH INSPECTION OF THE AXLE MUST BE PERFORMED NOTING THE CONDITION OF THE AXLE BEAM, KINGPINS, AND KNUCKLE ASSEMBLIES, INCLUDING THE AREAS OF AXLE-TO-KINGPIN INTERFACE, FOR ANY DAMAGE, GAPS, KINGPIN MOVEMENT OR PLAY. IF ANY COMPONENT APPEARS DAMAGED, OR THE KINGPINS APPEAR TO CONTAIN ANY DAMAGE, GAPS, MOVEMENT OR PLAY, THE COMPLETE AXLE ASSEMBLY MUST BE REPLACED.

IN ADDITION, IN THE EVENT A CRASH RESULTS IN EXCESSIVE SIDE LOAD DAMAGE TO ADJACENT PARTS, SUCH AS A BENT WHEEL, HUB, OR SPINDLE, IT IS STRONGLY RECOMMENDED TO REPLACE SUCH ADJACENT PARTS AND THE COMPLETE AXLE ASSEMBLY.

CONTACT HENDRICKSON TECHNICAL SERVICES DEPARTMENT WITH ANY QUESTIONS. FAILURE TO REPLACE ANY DAMAGED COMPONENTS CAN CAUSE ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE AND WILL VOID ANY APPLICABLE WARRANTIES.

**⚠ WARNING**

### LIFT AXLE CAMBER

UNAUTHORIZED WELDING OR MODIFICATIONS CAN CAUSE CRACKS OR OTHER LIFT AXLE STRUCTURAL DAMAGE AND RESULT IN ADVERSE VEHICLE HANDLING, SEVERE PERSONAL INJURY OR DEATH. DO NOT BEND, WELD OR MODIFY AXLE WITHOUT AUTHORIZATION FROM HENDRICKSON. AXLE CAMBER IS NOT ADJUSTABLE. DO NOT CHANGE THE AXLE CAMBER ANGLE OR BEND THE AXLE BEAM. BENDING THE AXLE BEAM TO CHANGE THE CAMBER ANGLE CAN DAMAGE THE AXLE AND REDUCE AXLE STRENGTH, CAN CAUSE ADVERSE VEHICLE HANDLING, POSSIBLY CAUSING PERSONAL INJURY OR PROPERTY DAMAGE AND WILL VOID APPLICABLE WARRANTIES.

**⚠ WARNING**

### IMPROPER JACKING METHOD

IMPROPER JACKING METHOD CAN CAUSE STRUCTURAL DAMAGE AND RESULT IN ADVERSE VEHICLE HANDLING, SEVERE PERSONAL INJURY OR DEATH. DO NOT USE AXLE BEAM OUTBOARD OF AXLE SPRING SEATS. REFER TO VEHICLE MANUFACTURER FOR PROPER JACKING INSTRUCTIONS.

**⚠ WARNING**

**SUPPORT THE VEHICLE PRIOR TO SERVICING**

PLACE THE VEHICLE ON A LEVEL FLOOR AND CHOCK THE WHEELS TO HELP PREVENT THE VEHICLE FROM MOVING. PRIOR TO SERVICING A VEHICLE IN THE RAISED POSITION, PROPERLY SUPPORT THE VEHICLE WITH SAFETY STANDS. DO NOT WORK AROUND OR UNDER A RAISED VEHICLE SUPPORTED ONLY WITH FLOOR JACKS OR OTHER LIFTING DEVICES, FAILURE TO DO SO CAN CAUSE DEATH, PERSONAL INJURY OR DAMAGE TO COMPONENTS.

**⚠ WARNING**

**SUPPORT THE LIFT AXLE PRIOR TO SERVICING**

PLACE THE VEHICLE ON A LEVEL FLOOR AND CHOCK THE WHEELS TO HELP PREVENT THE VEHICLE FROM MOVING. PRIOR TO SERVICING A LIFT AXLE IN THE RAISED POSITION, (1) PROPERLY SUPPORT THE LIFT AXLE WITH SAFETY STANDS, AND (2) RELEASE ALL AIR PRESSURE IN THE LIFT AXLE AIR SPRINGS AND RIDE SPRINGS. DO NOT WORK AROUND OR UNDER A RAISED LIFT AXLE SUPPORTED ONLY WITH FLOOR JACKS OR OTHER LIFTING DEVICES, FAILURE TO DO SO CAN CAUSE DEATH, PERSONAL INJURY OR DAMAGE TO COMPONENTS.

**⚠ WARNING**

**AIR SPRINGS**

AIR SPRING ASSEMBLIES MUST BE DEFLATED PRIOR TO LOOSENING ANY ADJACENT HARDWARE. 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.

**⚠ WARNING**

**AIR SPRINGS**

EXHAUST ALL PRESSURE IN LIFT AXLE AIR SPRINGS AND VEHICLE AIR SYSTEM BEFORE WORKING ON OR AROUND LIFT AXLE. FAILURE TO DO SO CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

**⚠ WARNING**

**AIR SPRINGS**

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 SEVERE PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE.

**⚠ CAUTION**

**AIR SPRINGS**

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 WILL VOID APPLICABLE WARRANTIES.

**⚠ WARNING**

**OFF ROADWAY TOWING**

HENDRICKSON DOES NOT RECOMMEND TOWING A VEHICLE BY THE AUXILIARY AXLE. DOING SO WILL DAMAGE THE AXLE AND WILL VOID APPLICABLE WARRANTIES.

**⚠ 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 APPLICABLE WARRANTIES.

SECTION 4
# Lift Axle Operation

## CONTROLLING INSIDE OR OUTSIDE-MOUNTED LIFT AXLE AIR CONTROL SYSTEM KITS

1. If vehicle is already running, please proceed to the appropriate section below.
2. Set parking brake of truck.
3. Turn your vehicle ignition to **ON** position.
4. Press ignition **START** switch and release when engine is started.
5. Allow the vehicle to idle until the vehicle's air system pressure has reached compressor cut-out point, (typically 120 psi).

## RAISING YOUR LIFT AXLE

1. If the lift axle controls are mounted:
   - **Inside** the vehicle cab – move the control panel mechanism (pull to lift) to the axle up position.
   - **Outside** the vehicle cab – ensure vehicle is stopped and parking brake is set. Exit vehicle, go to and open air control enclosure. Move the control panel mechanism to the axle up position.
2. Visually confirm that the lift axle is lifting.

**NOTE** Air system pressure may drop during suspension lifting process.

3. Lift axle should be completely lifted when air system pressure returns to the air compressor cut-out point (typically 120 psi).

## LOWERING YOUR LIFT AXLE

**⚠ CAUTION**

DO NOT LOWER LIFT AXLE WHILE VEHICLE IS MOVING IN REVERSE OR TRAVELLING MORE THAN 15 MPH. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE.

1. If the lift axle controls are mounted:
   - **Inside** the vehicle cab – move the control panel mechanism (push to lower) to the axle down position.
   - **Outside** the vehicle cab – ensure the vehicle is stopped and parking brake is set. Exit vehicle, go to and open air control enclosure. Move the control panel mechanism to the axle down position.
2. Using the regulator, adjust air system pressure on the gauge to appropriate air pressure for vehicle load conditions, see Air Pressure Load Information Section of this publication.

**NOTE** Air system pressure may drop during suspension lowering process.

3. Lift axle should be completely lowered and supporting pre-determined load when air system pressure returns to the air compressor cut-out point (typically 120 psi).

**⚠ CAUTION**

### NAVIGATING A 90 DEGREE CURVE OR TURN

TO MINIMIZE PREMATURE TIRE WEAR OR POSSIBLE DAMAGE TO LIFT AXLE COMPONENTS, THE LIFT AXLE MAY BE RAISED TO THE UP POSITION PRIOR TO NAVIGATING A 90 DEGREE OR TIGHTER CURVE OR TURN. COMPLY WITH ALL FEDERAL, STATE / PROVINCIAL AND / OR LOCAL WEIGHT, DIMENSION AND CONFIGURATION REGULATIONS UNDER LOADED AND UNLOADED CONDITIONS.

SECTION 5

# Preventive Maintenance

## DAILY / PRE–TRIP OPERATOR INSPECTION

Daily (and before each trip) inspect all lift axle components for proper operating condition and proper installation to the truck / trailer frame. This essential **Daily/Pre–Trip Operator Inspection** must also include a visual inspection of all wheel seals and gaskets for leaks, a verification of proper oil level in the hubs (if applicable), inspection of all lift and ride air-springs for wear, and inspection of all tires for proper inflation and abnormal wear patterns. Identify and repair / replace any loose, damaged or improperly installed components. Refer to the current version of Hendrickson Publication No. TP–H621 for additional service, repair, and re–build instructions.

**NOTE** Replace any safety decals that are faded, torn, missing, illegible, or otherwise damaged. Contact Hendrickson to order replacement labels.

## GENERAL INSPECTION

Following appropriate inspection procedures is important to help ensure the proper maintenance and operation of the suspension system and that component parts function to their highest efficiency.

- **Fasteners** — Inspect for any loose or damaged fasteners on the entire lift axle suspension. Make sure all fasteners are tightened to the specified torque. Refer to the Torque Specifications Section of this publication if fasteners are supplied by Hendrickson. For non-Hendrickson fasteners, refer to the vehicle manufacturer. 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.
- **Air springs** — Visually Inspect suspension for any debris rubbing against air springs or signs of chaffing. Clear debris and / or replace air springs with Hendrickson Genuine Parts as necessary.

## HENDRICKSON RECOMMENDED MAINTENANCE INTERVALS

| COMPONENT | INITIAL BREAK-IN | INTERVALS AFTER INITIAL BREAK-IN | PROCEDURE |
|---|---|---|---|
| Wheel Bearings | 5,000 mi. | 8,000 miles or every 2 months, whichever comes first | Verify end play is between 0.001" and 0.005" adjust as required, and grease or oil |
| Brake Chamber | 3,000 mi. | 20,000 miles or 10 months, whichever comes first | Inspect for leaks, inspect brake chamber components for wear |
| Wheel Seals | 5,000 mi. | 5,000 miles or every 2 months, whichever comes first | Inspect seals for leaks<br>**NOTE:** If the hub or drum are removed for service, wheel seals will require replacement. |
| Pivot Connections | | 5,000 miles or as needed, whichever comes first | Verify torque |

## HENDRICKSON RECOMMENDED LUBRICATION SPECIFICATIONS

| COMPONENT | GREASE |
|---|---|
| Wheel Bearings | NLGI–1 or NLGI–2 grease; GL–5 gear lubricant |
| ⚠ WARNING | FAILURE TO LUBRICATE THE WHEEL BEARINGS CAN RESULT IN COMPONENT DAMAGE, BODILY INJURY OR DEATH. |

SECTION 6

# Air Pressure Load Information

The air pressure load chart(s) on the following pages are intended to assist vehicle owners, operators, and fleet managers (i) to estimate the lift axle air system pressure necessary to support a particular target lift axle load, and (ii) to meet applicable federal, state/provincial and/or local vehicle weight regulations.

The air pressure load chart(s) list estimated lift axle air system pressure requirements based upon particular sets of:

1. Ride air spring extension measurements (refer to Figure 6–1);
2. Axle lift measurements (refer to Figure 6–1); and
3. Target lift axle loads.

The estimated lift axle air system pressure requirements listed in the air pressure load chart(s) are applicable to a range of lift axle ride heights and tire sizes intended for Hendrickson non-steer lift axle applications. The actual lift axle air system pressure needed to support a particular target lift axle load may vary depending upon the above-referenced parameters, as well as vehicle and lift axle configuration, operation, payload, service and other factors. If necessary, vehicle operators should use appropriate truck/trailer weight scale equipment to measure actual lift axle loads.

**NOTE**

Any/all penalties incurred from improperly loaded vehicles or improperly installed, modified, operated, serviced or maintained lift axle systems are the sole responsibility of the vehicle owner, operator, and/or fleet manager. Hendrickson Auxiliary Axle Systems shall not be responsible for any such penalties or any damage or other adverse effects on vehicle and/or lift axle form, fit, or function due to any such improper activity. Refer to the current version of Hendrickson Publication No. TP–H621 for proper lift axle installation and additional service, repair, and rebuild instructions.

**NOTE**

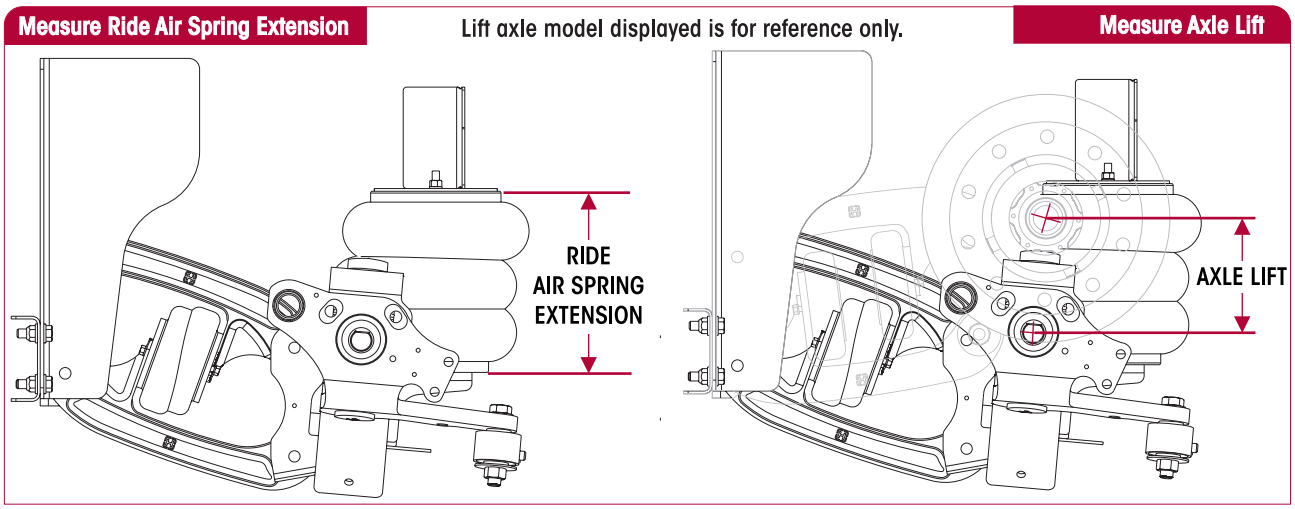
It is the responsibility of the vehicle owner, operator, and/or fleet manager to ensure the vehicle and lift axle(s) comply with all applicable federal, state/provincial and/or local weight, dimension and configuration regulations under loaded and unloaded conditions. Consult your appropriate regulatory and/or law enforcement authorities to determine how such regulations may (i) vary by operating location, and (ii) apply to your particular vehicle, lift axle(s), and applications.

## HOW TO MEASURE RIDE AIR SPRING EXTENSION AND AXLE LIFT

**⚠ 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.

FIGURE 6–1



## AIR PRESSURE LOAD CHARTS

| COMPOSILITE FXT 8K • FXT 10K | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *RIDE AIR SPRING EXTENSION (in inches) | | 10.5" | 11.0" | 11.5" | 12.0" | 12.5" | 13.0" | 13.5" | 14.0 | 14.5" |
| *AXLE LIFT (IN INCHES) | | 6.0" | 6.5" | 7.0" | 7.5" | 8.0" | 8.5" | 9.0" | 9.5" | 10.0" |
| AXLE LOAD (in pounds) | 5,000 | 32 | 33 | 34 | 35 | 37 | 38 | 40 | 42 | 45 |
| | 5,500 | 35 | 37 | 38 | 39 | 41 | 43 | 45 | 47 | 50 |
| | 6,000 | 39 | 40 | 42 | 43 | 45 | 47 | 49 | 52 | 55 |
| | 6,500 | 43 | 44 | 45 | 47 | 49 | 51 | 54 | 57 | 60 |
| | 7,000 | 46 | 48 | 49 | 51 | 53 | 55 | 58 | 61 | 65 |
| | 7,500 | 50 | 51 | 53 | 55 | 57 | 60 | 62 | 66 | 70 |
| | 8,000 | 53 | 55 | 57 | 59 | 61 | 64 | 67 | 70 | 74 |
| | 8,500 | 57 | 59 | 61 | 63 | 65 | 68 | 71 | 75 | 79 |
| | 9,000 | 61 | 63 | 65 | 67 | 69 | 72 | 76 | 79 | 84 |
| | 9,500 | 64 | 66 | 68 | 71 | 73 | 76 | 80 | 84 | 88 |
| | 10,000 | 68 | 70 | 72 | 75 | 77 | 80 | 84 | 88 | 93 |

ESTIMATED AIR SYSTEM PRESSURE REQUIREMENTS (in PSI)

| COMPOSILITE FXT 13.5K• FXO 13.5K • FXW 13.5K • FXB 13.5K | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *RIDE AIR SPRING EXTENSION (in inches) | | 10.5" | 11.0" | 11.5" | 12.0" | 12.5" | 13.0" | 13.5" | 14.0" | 14.5" |
| *AXLE LIFT (in inches) | | 6.0" | 6.5" | 7.0" | 7.5" | 8.0" | 8.5" | 9.0" | 9.5" | 10.0" |
| AXLE LOAD (in pounds) | 5,000 | 30 | 31 | 32 | 33 | 35 | 36 | 38 | 40 | 43 |
| | 5,500 | 34 | 35 | 36 | 37 | 39 | 41 | 43 | 45 | 48 |
| | 6,000 | 37 | 39 | 40 | 41 | 43 | 45 | 47 | 50 | 53 |
| | 6,500 | 41 | 42 | 44 | 45 | 47 | 49 | 52 | 54 | 58 |
| | 7,000 | 45 | 46 | 48 | 49 | 51 | 54 | 56 | 59 | 63 |
| | 7,500 | 48 | 50 | 51 | 53 | 55 | 58 | 61 | 64 | 67 |
| | 8,000 | 52 | 53 | 55 | 57 | 59 | 62 | 65 | 68 | 72 |
| | 8,500 | 55 | 57 | 59 | 61 | 64 | 66 | 69 | 73 | 77 |
| | 9,000 | 59 | 61 | 63 | 65 | 68 | 70 | 74 | 77 | 82 |
| | 9,500 | 63 | 65 | 67 | 69 | 72 | 74 | 78 | 82 | 86 |
| | 10,000 | 66 | 68 | 70 | 73 | 76 | 79 | 82 | 86 | 91 |
| | 10,500 | 70 | 72 | 74 | 77 | 80 | 83 | 86 | 91 | 95 |
| | 11,000 | 73 | 76 | 78 | 81 | 84 | 87 | 91 | 95 | 100 |
| | 11,500 | 77 | 79 | 82 | 84 | 88 | 91 | 95 | 99 | 104 |
| | 12,000 | 80 | 83 | 85 | 88 | 91 | 95 | 99 | 104 | 108 |
| | 12,500 | 84 | 86 | 89 | 92 | 95 | 99 | 103 | 108 | 113 |
| | 13,000 | 88 | 90 | 93 | 96 | 99 | 103 | 107 | 112 | 117 |
| | 13,500 | 91 | 94 | 97 | 100 | 103 | 107 | 111 | 116 | 121 |

ESTIMATED AIR SYSTEM PRESSURE REQUIREMENTS (in PSI)

* To measure ride air spring extension and axle lift, refer to Figure 6–1.

| TOUGHLIFT FRT 13K | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| * RIDE AIR SPRING EXTENSION (in inches) | | 10.75" | 11.0" | 11.25" | 11.63" | 12.0" | 12.13 | 12.5" |
| *AXLE LIFT (in inches) | | 6.0" | 6.5" | 7.0" | 7.5" | 8.0" | 8.5" | 9.0" |
| AXLE LOAD (in pounds) | 5,000 | 41 | 43 | 45 | 47 | 48 | 49 | 50 |
| | 5,500 | 45 | 47 | 49 | 50 | 52 | 54 | 55 |
| | 6,000 | 48 | 50 | 52 | 54 | 56 | 58 | 60 |
| | 6,500 | 51 | 53 | 55 | 57 | 59 | 61 | 63 |
| | 7,000 | 53 | 55 | 57 | 60 | 62 | 64 | 66 |
| | 7,500 | 58 | 38 | 38 | 39 | 40 | 42 | 44 |
| | 8,000 | 62 | 64 | 65 | 68 | 70 | 72 | 74 |
| | 8,500 | 66 | 68 | 69 | 72 | 74 | 76 | 78 |
| | 9,000 | 70 | 72 | 73 | 76 | 78 | 80 | 81 |
| | 9,500 | 74 | 75 | 77 | 79 | 82 | 83 | 85 |
| | 10,000 | 77 | 79 | 81 | 83 | 85 | 87 | 89 |
| | 10,500 | 80 | 82 | 84 | 86 | 88 | 90 | 92 |
| | 11,000 | 82 | 84 | 86 | 89 | 91 | 93 | 95 |
| | 11,500 | 86 | 88 | 90 | 92 | 95 | 96 | 98 |
| | 12,000 | 90 | 92 | 93 | 96 | 98 | 100 | 101 |
| | 12,500 | 93 | 94 | 96 | 98 | 101 | 103 | 105 |
| | 13,000 | 95 | 97 | 99 | 101 | 103 | 106 | 108 |

ESTIMATED AIR SYSTEM PRESSURE REQUIREMENTS (in PSI)

| TOUGHLIFT FMT 25K / FMW 25K / FMB 25K | | | | | | | |
|---|---|---|---|---|---|---|---|
| * RIDE AIR SPRING EXTENSION (in inches) | | 19.0" | 20.0" | 21.0" | 22.0" | 23.0" | 24.0" |
| *AXLE LIFT (in inches) | | 4.5" | 5.0" | 5.5" | 6.0" | 6.5" | 7.0" |
| AXLE LOAD (in pounds) | **8,000** | 26 | 27 | 28 | 30 | 33 | 36 |
| | **9,000** | 30 | 31 | 32 | 35 | 37 | 41 |
| | **10,000** | 34 | 35 | 36 | 39 | 42 | 46 |
| | **11,000** | 38 | 39 | 40 | 43 | 46 | 51 |
| | **12,000** | 42 | 43 | 44 | 47 | 51 | 56 |
| | **13,000** | 46 | 47 | 48 | 51 | 55 | 61 |
| | **14,000** | 50 | 51 | 52 | 56 | 60 | 66 |
| | **15,000** | 54 | 55 | 56 | 60 | 64 | 71 |
| | **16,000** | 58 | 59 | 60 | 64 | 69 | 76 |
| | **17,000** | 62 | 63 | 64 | 68 | 74 | 81 |
| | **18,000** | 67 | 68 | 68 | 73 | 78 | 86 |
| | **19,000** | 71 | 71 | 72 | 77 | 83 | 90 |
| | **20,000** | 74 | 75 | 76 | 81 | 87 | 95 |
| | **21,000** | 78 | 79 | 80 | 85 | 91 | 100 |
| | **22,000** | 81 | 83 | 84 | 89 | 96 | 104 |
| | **23,000** | 85 | 87 | 88 | 94 | 100 | 109 |
| | **24,000** | 89 | 91 | 92 | 98 | 105 | 114 |
| | **25,000** | 93 | 95 | 96 | 102 | 109 | 119 |

ESTIMATED AIR SYSTEM PRESSURE REQUIREMENTS (in PSI)

* To measure ride air spring extension and axle lift, refer to Figure 6–1.

SECTION 7
# Torque Specifications

## NON-STEERABLE AUXILIARY LIFT AXLE SYSTEMS

| HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS | | | |
|---|---|---|---|
| | **DESCRIPTION** | **SIZE** | **TORQUE VALUE (FOOT POUNDS)** |
| 1. | Pivot Bolt | ¾" | 275–300 |
| 2. | Quick Align® (shear nut) | ⅞" | 500–600 |
| 3. | Frame Attachment Bolt (Recommended) | ¾" | 300–325 |
| 4. | Air Spring Bolt (Lower) | ⅜" | 25–30 |
| 5. | | ½" | 25–30 |
| 6. | Air Spring Nut (Upper) | ½" | 45–50 |
| 7. | | ¾" | 45–50 |
| 8. | Suspension Cross Member Bolt | ⅝" | 160–180 |
| 9. | Brake Bolts | 9⁄16" | 90–110 |
| 10. | Bolt-on Brake Attachments | ⅝" | 160–180 |
| 11. | U–bolts | ⅞" | 450–495 |

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

## SECTION 8
# Troubleshooting Guide

### NON-STEERABLE AUXILIARY LIFT AXLE SYSTEM

| PROBLEM | POSSIBLE CAUSE | CORRECTION |
|---|---|---|
| Lift axle not getting the desired load on the axle | Improper air pressure to the air springs | a. Adjust the air pressure at regulator valve to increase ride spring pressure.<br>b. Verify sufficient pressure to the air control system, see Air Pressure Load Charts in the Air Pressure Load Information Section of this publication. |
| | Air control system not properly installed | Check plumbing of air system, refer to Publication No. OM–H817 |
| | Lift axle mounted too high or incorrect ride height specification | a. Spec a larger diameter tire, if desired height is not achieved then, change axle seat height |
| The lift axle is not getting the correct lift | Lift axle air springs not getting proper air pressure | a. Check system air pressure<br>b. Check air system plumbing, refer to Publication No. OM–H817<br>c. Check lift spring pressure |
| | Interference with chassis, drive line or other components | Inspect for interference |
| | Lift axle not installed properly | Check installation with factory installation drawing |
| Lift axle has a vertical hop | Insufficient load in the air system | Adjust the air pressure at regulator valve to increase ride spring pressure. |
| | Unbalanced tires | Balance tires |
| Lift axle has excessive lateral movement | Axle bolt connection loose | Re–torque to factory torque values, see Torque Specification Section of this publication |
| | Pivot bolt connection loose | Re–torque to factory torque values, see Torque Specification Section of this publication |
| | Lift axle out of alignment | Re–align lift axle |
| | Different size tires on each side | Use same size tires |
| | Tires are unbalanced | Balance tires |
| | Air pressure in tires different from side to side | Equalize air pressure in tires |
| Excessive tire wear | Lift axle is not raised before vehicle turns or curves greater than 90 degrees are navigated. | **⚠ CAUTION**<br>TO MINIMIZE PREMATURE TIRE WEAR OR POSSIBLE DAMAGE TO LIFT AXLE COMPONENTS, THE LIFT AXLE MAY BE RAISED TO THE UP POSITION PRIOR TO NAVIGATING A 90 DEGREE OR TIGHTER CURVE OR TURN. COMPLY WITH ALL FEDERAL, STATE / PROVINCIAL AND / OR LOCAL WEIGHT, DIMENSION AND CONFIGURATION REGULATIONS UNDER LOADED AND UNLOADED CONDITIONS. |
| | Lift axle out of alignment | Re-align axle. Reference Hendrickson Publication No. TP–H621 |

*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 **800.660.2829** or **800.668.5360** in Canada for additional information.*

HENDRICKSON

**www.hendrickson-intl.com**

**SPECIALTY PRODUCTS - AUXILIARY AXLE SYSTEMS**
277 North High Street
Hebron, OH 43025 USA
800.660.2829
740.929.5600 • Fax 740.929.5601

**Hendrickson Canada**
250 Chrysler Drive, Unit #3
Brampton, ON Canada L6S 6B6
800.668.5360
905.789.1030 • Fax 905.789.1033

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