

H OWNER'S MANUAL

Steerable Auxiliary Lift Axle Systems

SUBJECT: Operation and Preventive Maintenance
Procedures

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TABLE OF CONTENTS

Section 1	Introduction	2
	Recording Your Model(s) / Serial Number(s)	2
Section 2	Product Description	
	Identifying your Lift Axle Suspension(s)	3
	Axle Tag Identification	3
	Steerable Models	3
Section 3	Important Safety Notice	5
Section 4	Lift Axle Operation	
	Controlling Inside or Outside-Mounted Lift Axle Air Control System Kits	9
	Raising your Lift Axle	9
	Lowering your Lift Axle	9
	Reverse Caster Operation	9
	Reverse Lockout Operation (if equipped)	10
Section 5	Preventive Maintenance	
	Daily / Pre-trip Operator Inspection	11
	General Inspection	11
	Hendrickson Recommended Maintenance Intervals	11
	Hendrickson Recommended Lubrication Specifications	11
Section 6	Air Pressure Load Information	
	How to Measure Ride Air Spring Extension and Axle Lift	12
	Air Pressure Load Charts	13
Section 7	Torque Specifications	15
Section 8	Troubleshooting Guide	16





SECTION 1 Introduction

This publication is intended to acquaint and assist maintenance personnel in the identification, operation and preventive maintenance of Hendrickson steerable auxiliary lift axle suspension systems. Refer to the current version of Hendrickson Publication No. TP-H633 for installation and additional 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 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 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

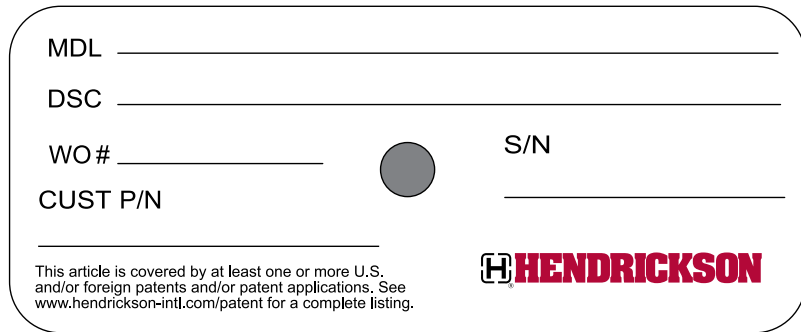
All Hendrickson Auxiliary Lift Axles are manufactured with a serial number plate to help in identification, see Figure 2-1.

When identifying your Hendrickson Auxiliary Lift Axle visually, see Figures 2-2 to 2-6 to compare with your suspension.

AXLE TAG IDENTIFICATION

The Serial Number Label shown in Figure 2-1 is stainless steel label and 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.

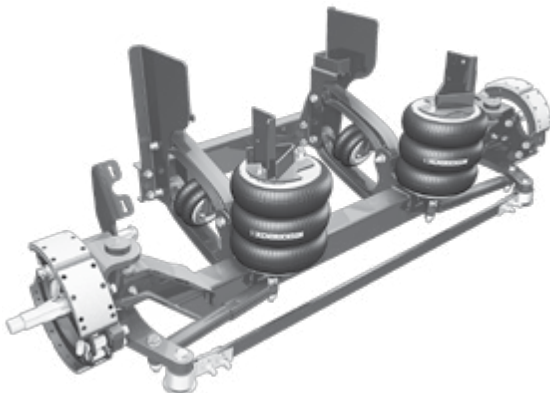
FIGURE 2-1 Serial Number Label



STEERABLE MODELS

Hendrickson’s COMPOSILITE family of steerable lift axles for truck and trailer applications, as well as its TOUGHLIFT LK lift axle for truck applications, deliver reliability, cost-effectiveness and innovation. This lineup offers a full range of capacities from 10,000 to 25,000 pounds, including axles for roll-off and twin steer applications. The COMPOSILITE SCT and COMPOSILITE SCO models come equipped with Hendrickson’s Patented Compliant Tie Rod (CTR) technology and dampening system.

FIGURE 2-2



COMPOSILITE™ SCT | TRUCK

The COMPOSILITE SCT, for truck applications, provides capacity ratings of 8,000, 10,000, 13,500 and 20,000 pounds; the most popular being the SCT13, 13,500 pounds. The line boasts the patented Compliant Tie Rod (CTR) technology, designed to help lower maintenance costs and increase uptime by providing a resilient, impact resistant tie rod assembly. The family also utilizes a fabricated two-piece axle, designed to increase the strength and durability while providing significant weight reduction over the existing I-beam forged design.

Available in 8K, 10K, 13.5K and 20K pound capacities.

FIGURE 2-3



COMPOSILITE™ SCW(B) | TRAILER

The COMPOSILITE SCW, for trailer applications, provides capacity ratings of 8,000, 10,000, 13,500 and 20,000 pounds; available in weld-on or bolt on configurations. The trailer mount COMPOSILITE SC Series boasts a Heavy-duty (HD) Compliant Tie Rod (CTR) with a round tube tie rod and the dampening bushing ends of the popular CTR system. The family also utilizes a fabricated two piece axle, designed to increase the strength and durability while providing significant weight reduction over the existing I-beam forged design.

Available in 8K, 10K, 13.5K and 20K pound capacities.

Available in weld-on (SCW) or bolt-on (SCB).

(Pictured enhancements may differ from options received; please see Hendrickson Literature number TB-H755 for details on enhancements for received capacity).

FIGURE 2-4

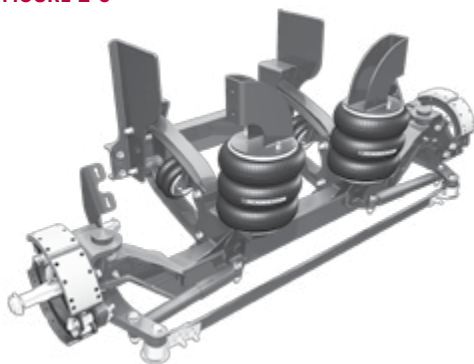


COMPOSILITE™ TVR | TWIN STEER TRUCK

The COMPOSILITE TVR twin steer design, with similar features to the COMPOSILITE SC family, includes a transverse V-Rod feature that provides an increased lateral load rating. The TVR includes an integrated steering arm as well as inboard rail-mounted upper air spring plates and a standard tubular tie rod. It is offered in capacities up to 20,000 pounds and utilizes a fabricated two-piece axle engineered to optimize strength and durability.

Available in 20K pound capacity.

FIGURE 2-5



COMPOSILITE™ SCO | ROLL OFF TRUCK

The COMPOSILITE SCO, available in 13,500 and 20,000 capacities, mounts to the inside of the frame to help provide maximum clearance from cylinder beams, attachments and sliding components for roll-off applications. Its scalloped hangers, inboard positioned ride springs and parallelogram components aid in the clearance around roll-off cylinders.

Available in 13K and 20K pound capacities.

FIGURE 2-6



TOUGHLIFT™ LK | DUAL TIRE TRUCK

The TOUGHLIFT LK, the leading kingpin suspension and axle is designed around the proven HLM concept for rigorous environments and incorporates Hendrickson's popular QUIK-ALIGN® feature and TRI-FUNCTIONAL® Bushings. The fabricated knuckle design minimizes kingpin offset for a more efficient package while incorporating a fully integrated system designed by Hendrickson.

Available in 25K 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

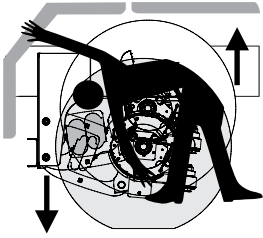
An operating procedure, practice condition, etc. which is essential to emphasize.

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**REVERSE LOCKOUT OPERATION**

DO NOT ACTUATE STEERABLE LIFT AXLE REVERSE LOCKOUT FEATURE (IF EQUIPPED) WHILE VEHICLE IS TURNING. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE.

BEFORE TRAVELING IN REVERSE:

- ENSURE STEERABLE LIFT AXLE REVERSE LOCKOUT FEATURE (IF EQUIPPED) IS PROPERLY ACTUATED.
- RAISE ALL STEERABLE LIFT AXLES NOT EQUIPPED WITH REVERSE LOCKOUT FEATURE.

FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE.

⚠ 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-H633 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

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

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 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.

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.



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.
2. If the lift axle controls are mounted 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.
3. Visually confirm that the lift axle is lifting.

NOTE

Air system pressure may drop during suspension lifting process.

4. 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

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.

**CAUTION**

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.

2. If the lift axle controls are mounted 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.
3. Using the regulator, adjust air system pressure on the gauge to appropriate air pressure for vehicle load conditions, see Air Pressure Load Information Section in this publication.

NOTE

Air system pressure may drop during suspension lowering process.

4. 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).

REVERSE CASTER OPERATION

**CAUTION**

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.

To ensure proper operation of the Hendrickson steerable lift axles with the reverse caster feature:

1. The lift axle must be in down position and the vehicle transmission must be in reverse.



REVERSE LOCKOUT OPERATION (if equipped)

 **CAUTION**

DO NOT ACTUATE STEERABLE LIFT AXLE REVERSE LOCKOUT FEATURE (IF EQUIPPED) WHILE VEHICLE IS TURNING. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE.

BEFORE TRAVELING IN REVERSE:

- ENSURE STEERABLE LIFT AXLE REVERSE LOCKOUT FEATURE (IF EQUIPPED) IS PROPERLY ACTUATED.
- RAISE ALL STEERABLE LIFT AXLES NOT EQUIPPED WITH REVERSE LOCKOUT FEATURE.

FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE.

Actuation of reverse lockout will depend on the model of lift axle control kit installed on the vehicle and any design restrictions in place.

Refer to the current version of Hendrickson Publication No. OM-H719 for lift axle control kits operation instructions. Contact Hendrickson (800.660.2829) for information on Reverse Lockout Operation design restrictions.



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-H633 for additional service, repair, and rebuild 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 procedure is important to help ensure the proper maintenance and operation of the lift axle system and 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 in this publication if fasteners are supplied by Hendrickson, 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 as necessary.

HENDRICKSON RECOMMENDED MAINTENANCE INTERVALS

COMPONENT	INITIAL BREAK-IN	INTERVALS AFTER INITIAL BREAK-IN	PROCEDURE
Wheel Bearings	5,000 mi.	8,000 mi. or every 2 months, whichever comes first	Verify end play is between 0.001" and 0.005" adjust as required, and grease or oil
Tie Rod Ends		10,000 mi. or monthly, whichever comes first	Verify torque, inspect for leaking, and lubricate
Kingpin Bushings		10,000 mi. or 6 months, whichever comes first	Check for wear and grease
Compliant Tie Rod Ends		5,000 mi. or as needed, whichever comes first	Check bushing for wear and verify torque
Pivot Connections			Verify torque
Stabilizers		Check for oil leak and adequate return	
Shift Chamber	3,000 mi.	20,000 mi. or 10 months, whichever comes first	Inspect for leaking, inspect shift chamber components for wear

HENDRICKSON RECOMMENDED LUBRICATION SPECIFICATIONS

COMPONENT	GREASE
Kingpin	NLGI-1 or NLGI-2 grease
Tie Rod Ends	EP-1 or EP-2 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 steerable 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-H633 for proper lift axle installation and additional service, repair, and rebuild instructions.

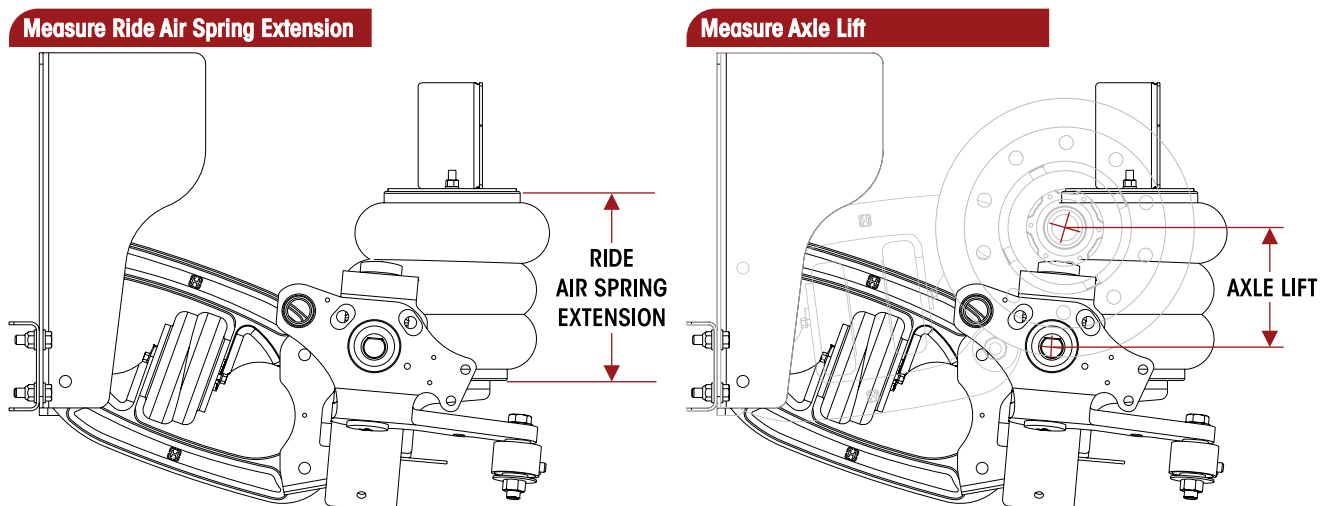
NOTE It is the responsibility of the vehicle owner, operator, and/or fleet manager to ensure the vehicle and lift axle(s) comply with all applicable federal, state/provincial and/or local weight, dimension and configuration regulations under loaded and unloaded conditions. Consult your appropriate regulatory 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 SCT/SCB/SCW 8 • 10										
* 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	31	32	33	34	35	37	39	41	44
	5,500	34	35	37	38	40	41	43	46	49
	6,000	38	39	41	42	44	46	48	51	54
	6,500	42	43	44	46	48	50	52	55	59
	7,000	45	47	48	50	52	54	57	60	64
	7,500	49	50	52	54	56	59	61	65	68
	8,000	53	54	56	58	60	63	66	69	73
	8,500	56	58	60	62	64	67	70	74	78
	9,000	60	62	64	66	68	71	74	78	82
	9,500	63	65	67	70	72	75	79	83	87
	10,000	67	69	71	74	76	79	83	87	91

ESTIMATED AIR SYSTEM PRESSURE REQUIREMENTS (in PSI)

COMPOSILITE SCT /SCB/SCW/SCO 13										
* 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	31	32	33	35	36	38	40	42	45
	5,500	35	36	37	39	40	42	44	47	50
	6,000	39	40	41	43	44	46	49	51	55
	6,500	42	44	45	47	49	51	53	56	59
	7,000	46	47	49	51	53	55	58	61	64
	7,500	49	51	53	55	57	59	62	65	69
	8,000	53	55	56	59	61	63	66	70	74
	8,500	57	58	60	63	65	68	71	74	78
	9,000	60	62	64	66	69	72	75	79	83
	9,500	64	66	68	70	73	76	79	83	88
	10,000	67	69	72	74	77	80	84	88	92
	10,500	71	73	75	78	81	84	88	92	97
	11,000	75	77	79	82	85	88	92	96	101
	11,500	78	80	83	86	89	92	96	101	106
	12,000	82	84	87	90	93	96	100	105	110
	12,500	85	88	90	93	97	100	104	109	114
	13,000	89	91	94	97	101	104	109	113	119
13,500	92	95	98	101	104	108	113	118	123	

ESTIMATED AIR SYSTEM PRESSURE REQUIREMENTS (in PSI)

*To measure ride air spring extension and axle lift, see Figure 6-1.



COMPOSILITE SCT /SCB/SCW/SCO/TVR 20										
* 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)	6,000	22	23	23	24	25	26	27	28	30
	7,000	27	28	28	29	30	31	32	34	37
	8,000	31	33	33	34	35	37	38	40	43
	9,000	36	38	38	39	40	42	44	46	49
	10,000	41	43	43	44	46	48	49	52	56
	11,000	45	47	47	49	51	53	55	58	62
	12,000	50	52	52	54	56	58	61	64	68
	13,000	55	57	57	59	61	64	66	70	75
	14,000	59	62	62	64	66	69	72	76	81
	15,000	64	67	67	69	72	75	78	82	87
	16,000	68	72	72	74	77	80	83	88	94
	17,000	73	77	77	79	82	86	89	94	100
	18,000	78	82	81	84	87	91	95	100	106
	19,000	82	86	86	89	92	97	100	106	112
20,000	87	91	91	95	98	102	106	111	119	

ESTIMATED AIR SYSTEM PRESSURE REQUIREMENTS (in PSI)

TOUGHLIFT LK 25							
* 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)	8000	23	24	25	27	30	33
	9000	27	28	29	32	34	38
	10000	31	32	33	36	39	43
	11000	35	36	37	40	43	48
	12000	39	40	41	44	48	53
	13000	43	44	45	48	52	58
	14000	47	48	49	53	57	63
	15000	51	52	53	57	61	68
	16000	55	56	57	61	66	73
	17000	59	60	61	65	71	78
	18000	64	65	65	70	75	83
	19000	68	68	69	74	80	87
	20000	71	72	73	78	84	92
	21000	75	76	77	82	88	97
	22000	78	80	81	86	93	101
	23000	82	84	85	91	97	106
	24000	86	88	89	95	102	111
25000	90	92	93	99	106	116	

ESTIMATED AIR SYSTEM PRESSURE REQUIREMENTS (in PSI)

*To measure ride air spring extension and axle lift, see Figure 6-1.



SECTION 7 Torque Specifications

STEERABLE AUXILIARY LIFT AXLE SYSTEM

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS

	DESCRIPTION		SIZE	TORQUE VALUE (FOOT POUNDS)
1.	Pivot Bolt		¾"	275-300
2.	Pivot Bolt / Shift Arm		7/8"	425-475
3.	Frame Attachment Bolt (Recommended)		¾"	300-325
4.	Air Spring Bolt (Lower)		3/8"	25-30
5.			½"	25-30
6.	Air Spring Nut (Upper)		½"	45-50
7.			¾"	45-50
8.	Compliant Tie Rod (CTR)	Attachment	7/8"	425-475
9.		Adjustment	5/8"	180-190
10.	Round Tube Tie Rod	Attachment	7/8"	125-180
11.		Adjustment	5/8"	45-50
12.	Heavy-duty (HD) Tie Rod	Attachment	7/8"	425-475
13.		Adjustment	5/8"	180-190
14.	Stabilizer Shock Bolt		¾"	75-125
15.	Suspension Cross Member Bolt		5/8"	160-180
16.	Brake Bolts		9/16"	90-110
17.	Bolt-on Brake Attachments		5/8"	160-180
18.	Shift Chamber Attachment		7/16"	40-50
19.			5/8"	130-150
20.	Shift Chamber Yoke Attachment		7/16"	70-90
21.			5/8"	35-45
22.	Radius Rod Bolt		7/8"	425-475
23.	U-bolts		7/8"	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

STEERABLE AUXILIARY LIFT AXLE SYSTEM

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	CORRECTION
Not getting the desired load on the axle	Improper air pressure to the ride bags	a. Adjust the air pressure at regulator valve b. Verify sufficient pressure to the air control system
	Air control system not properly installed	Check plumbing of air system, refer to Hendrickson Publication No. OM-H719
	Mounted too high	Larger tire
	Incorrect ride height specification	Change axle seat height
Unit not getting the correct lift	Lift air springs not getting proper air pressure	a. Check system pressure b. Check air system plumbing, refer to Hendrickson Publication No. OM-H719 c. Check air spring pressure
	Interference with chassis, drive line or other components	Inspect for interference
	Unit not installed properly	Check installation with factory installation drawing
Unit has vertical hop	Not running sufficient load	Increase air system pressure
	Unbalanced tires	Balance tires
Axle shimmy	Improper caster setting	Readjust caster if possible
	Toe setting is incorrect	Readjust toe setting, refer to Hendrickson Publication No. TP-H785
	Axle bolt connection loose	Re-torque to factory torque values, see Torque Specification Section in this publication
	Pivot bolt connection loose	Re-torque to factory torque values, see Torque Specification Section in this publication
	Axle out of alignment	Re-align axle
	Tires different size on each side	Use same size tires
	Tires unbalanced	Balance tires
	Air pressure in tires different from side to side	Equalize air pressure
	Stabilizers worn	Verify stabilizer resistance and replace as necessary
Axle does not track forward	Toe setting	Set toe, refer to Hendrickson Publication No. TP-H845
Axle does not track in reverse (Reverse Caster Only)	Inadequate air pressure to forward shift chambers	Increase air pressure minimum (100 psi)
	One or both forward shift chambers is damaged	Replace chamber(s)
	Hanger bracket mounted incorrectly on the frame rail	Remount frame rail bracket
	Installed unit is not designed to accommodate the reverse castor option	a. Contact Hendrickson Customer Service to spec out a unit with reverse caster if required or b. Lift axle is in reverse, if reverse caster is not necessary
Axle in reverse caster when lifted	Incorrect air line plumbing	Correct air plumbing, refer to Hendrickson Publication No. OM-H719

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