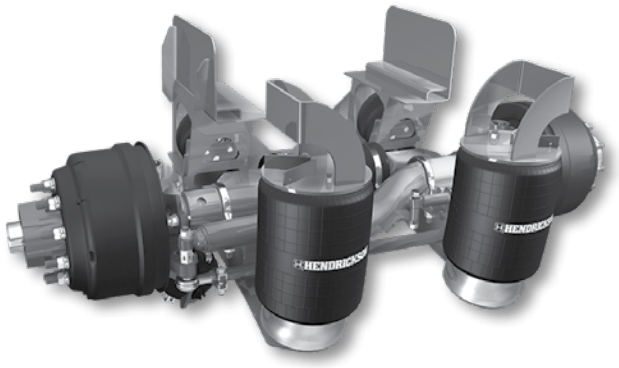


TECHNICAL PROCEDURE

TOUGHLIFT® LK Dual-Tire Steerable Lift Axle Suspension System

SUBJECT: Installation Instructions & Parts List
LIT NO: H759
DATE: November 2023 **REVISION:** E

TABLE OF CONTENTS

HENDRICKSON
The World Rides On Us®

SECTION 1
Introduction

This publication is intended to acquaint and provide proper installation instructions for the Hendrickson TOUGHLIFT® LK steerable auxiliary suspension and auxiliary suspension kits.

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

It is important to read and understand the entire Technical Procedure publication prior to installation of this product. The information in this publication contains parts lists, safety information, product specifications, features, torque specifications, and installation instructions for the TOUGHLIFT LK steerable auxiliary suspension and auxiliary suspension kits.

Hendrickson reserves the right to make changes and improvements to its products and publications at any time. Contact Hendrickson Auxiliary Axle Customer Services for information on the latest version of this manual and maintenance instructions at 1.800.660.2829 (Toll-free U.S. and Canada) or 1.740.929.5600 (Outside U.S. and Canada) or e-mail: LiftAxleTech@hendrickson-intl.com.

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

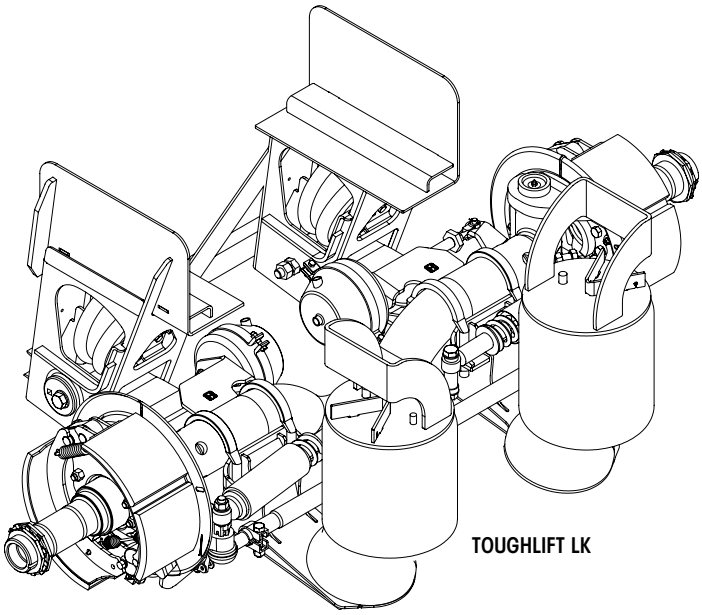
SECTION 2
Product Description

TOUGHLIFT LK

The leading kingpin design offers a winning reputation, reliability, durability and Hendrickson's integrated technology in a dual-tire steerable suspension.

The TOUGHLIFT LK suspension and axle were 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.

FIGURE 2-1



TOUGHLIFT LK

- **Lockstraight Mechanism:** Automatically locks suspension straight when vehicle is placed in reverse and axle is in the raised position
- **Protected Lift Air Springs:** Lift air springs packaged within the hanger design offer protection from road debris, reducing maintenance costs
- **Hendrickson Integrated Brakes:** Hendrickson integrated brakes simplify brake installation and service while optimizing weight savings
- **Fabricated Knuckle Design:** Hendrickson's fabricated knuckle technology with integrated brakes minimizes the kingpin offset for a more efficient package design
- **Self-Centering Steering Dampers:** Coil spring shock absorbers ensure dual-tires return to original centering position
- **Inboard Mounted Upper Air Spring Plate:** Inboard mounted upper air spring plates offer optimal clearance for greater wheel cut
- **Adjustable Tie Rod:** Round tube adjustable tie rod offers increased durability of the self-steering axle allowing for effective and efficient toe adjustment and centering
- **QUIK-ALIGN®:** Simplifies the alignment process for quick and reliable adjustment
- **TRI-FUNCTIONAL Bushing:** Proven to improve absorptions of brake and acceleration forces while providing superior roll stiffness

TOUGHLIFT LK SPECIFICATIONS

Suspension Capacities	25,000 lbs
Weight	1,580 lbs
Axle Travel	9.5"
Lift	6.0"
Packaging Space	26.0"
Wheel Cut	20 degree

It is very important that the proper suspension is chosen for the vehicle application. The following criteria must be considered when selecting a suspension:

- Required capacity
- Loaded frame-to-ground measurement
- Driveline clearance
- Axle travel
- Axle spacing

For additional information concerning suspension selection or other suspension models contact the Hendrickson Customer Service Department at 800.660.2829.

SECTION 3

Important Safety Notice

Proper maintenance, service and repair is important to 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.

The warnings and cautions 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 the 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.

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, OR PROPERTY DAMAGE.

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

SERVICE HINT — A helpful suggestion, which 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

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, LOSS OF VEHICLE CONTROL, PERSONAL INJURY, OR PROPERTY DAMAGE.

LOOSE OR OVER TORQUED FASTENERS CAN CAUSE COMPONENT DAMAGE, LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE, OR SEVERE PERSONAL INJURY. MAINTAIN CORRECT TORQUE VALUE AT ALL TIMES. CHECK TORQUE VALUES ON A REGULAR BASIS AS SPECIFIED, USING A TORQUE WRENCH THAT IS REGULARLY CALIBRATED. 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

QUIK-ALIGN FASTENERS

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

DO NOT ASSEMBLE QUIK-ALIGN JOINT WITHOUT THE PROPER FASTENERS. USE ONLY H-COATED FASTENERS TO SUSTAIN PROPER CLAMP FORCE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY AND VOID WARRANTY. ENSURE THAT THE QUIK-ALIGN FASTENER'S TORQUE VALUES ARE SUSTAINED AS RECOMMENDED IN THE TORQUE SPECIFICATIONS SECTION OF THIS PUBLICATION. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE. FOLLOW VEHICLE MANUFACTURER'S FASTENER ORIENTATION WHEN PERFORMING ANY MAINTENANCE, SERVICE OR REPAIR.

⚠ 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, LOSS OF VEHICLE CONTROL, POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE, AND WILL VOID WARRANTY. USE ONLY HENDRICKSON AUTHORIZED REPLACEMENT PARTS. DEFECTIVE OR INCORRECT COMPONENTS ARE TO BE RETURNED TO HENDRICKSON FOR REPLACEMENT OF THE COMPONENTS IN QUESTION.

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 THE SUSPENSION WARRANTY.

⚠ 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 THE LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

NO WELDING OF ANY OF THE SUSPENSION COMPONENTS IS PERMITTED, EXCEPT WHERE SPECIFIED BY HENDRICKSON (I.E., BEAM ASSEMBLY TO THE AXLE AND BRACING TO THE HANGERS).

⚠ WARNING

LOAD CAPACITY

IT IS THE RESPONSIBILITY OF THE INSTALLER TO DETERMINE THE CORRECT LOCATION OF THE SUSPENSION IN ORDER TO PROVIDE THE PROPER VEHICLE LOAD DISTRIBUTION. THE LOAD CARRIED BY EACH AXLE MUST NOT EXCEED THE RATED CAPACITY OF THE COMPONENTS INVOLVED. FAILURE TO DO SO CAN RESULT IN COMPONENT DAMAGE AND LOSS OF VEHICLE CONTROL, POSSIBLY CAUSING 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.

⚠ WARNING

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.

⚠ CAUTION

AIR SPRING LOWER MOUNTING STUDS

IF THE AIR SPRING IS BEING REMOVED FOR AN ALTERNATE REPAIR, IT IS MANDATORY TO 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

WORK SITE DUMPING

BEFORE THE TRUCK/TRAILER BODY/BOOM/AND OR ATTACHMENT IS LIFTED, IT IS MANDATORY TO COMPLETELY EXHAUST THE AIR FROM THE SUSPENSION SYSTEM TO HELP PROVIDE ADDITIONAL STABILITY. FAILURE TO DO SO CAN RESULT IN LOSS OF VEHICLE CONTROL, ROLL-OVER, OR VEHICLE INSTABILITY, POSSIBLY CAUSING SEVERE PERSONAL INJURY, PROPERTY DAMAGE, OR DEATH. FIRST RAISE ANY AUXILIARY AXLES AND THEN EXHAUST ALL PRESSURE FROM REAR TRACTOR / TRAILER AND TRUCK AIR SUSPENSION SYSTEMS PRIOR TO RAISING THE BODY / BOOM OR ATTACHMENTS. FOLLOW THE VEHICLE MANUFACTURER'S OPERATING INSTRUCTIONS FOR MAINTAINING PROPER STABILITY.

⚠ 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

SUPPORT THE VEHICLE PRIOR TO SERVICING

DO NOT AT ANY TIME WORK AROUND OR UNDER A VEHICLE SUPPORTED ONLY ON LIFTING DEVICES. THE VEHICLE MUST BE SECURELY CHOCKED AND SUPPORTED ON RIGID STANDS OF SUFFICIENT STRENGTH BEFORE WORK MAY COMMENCE, FAILURE TO DO SO CAN CAUSE PERSONAL INJURY OR DAMAGE TO EQUIPMENT.

⚠ 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.

⚠ CAUTION

CLEARANCE

STEERABLE SUSPENSION SYSTEMS,AS WITH ALL AIR SUSPENSION SYSTEMS, MUST BE INSTALLED WITH THE PROPER AMOUNT OF TIRE-TO-GROUND CLEARANCE TO ENSURE TROUBLE FREE OPERATION. IF THERE IS TOO MUCH GROUND CLEARANCE, THE SUSPENSION WILL NOT CARRY ITS SHARE OF THE LOAD. TOO LITTLE GROUND CLEARANCE MAY DAMAGE THE SUSPENSION OR OTHER VEHICLE COMPONENTS.

A CORRECT INSTALLATION MUST RESULT IN A LOADED SUSPENSION RIDE HEIGHT THAT IS WITHIN THE RANGE SPECIFIED ON THE SUSPENSION ASSEMBLY DRAWING.

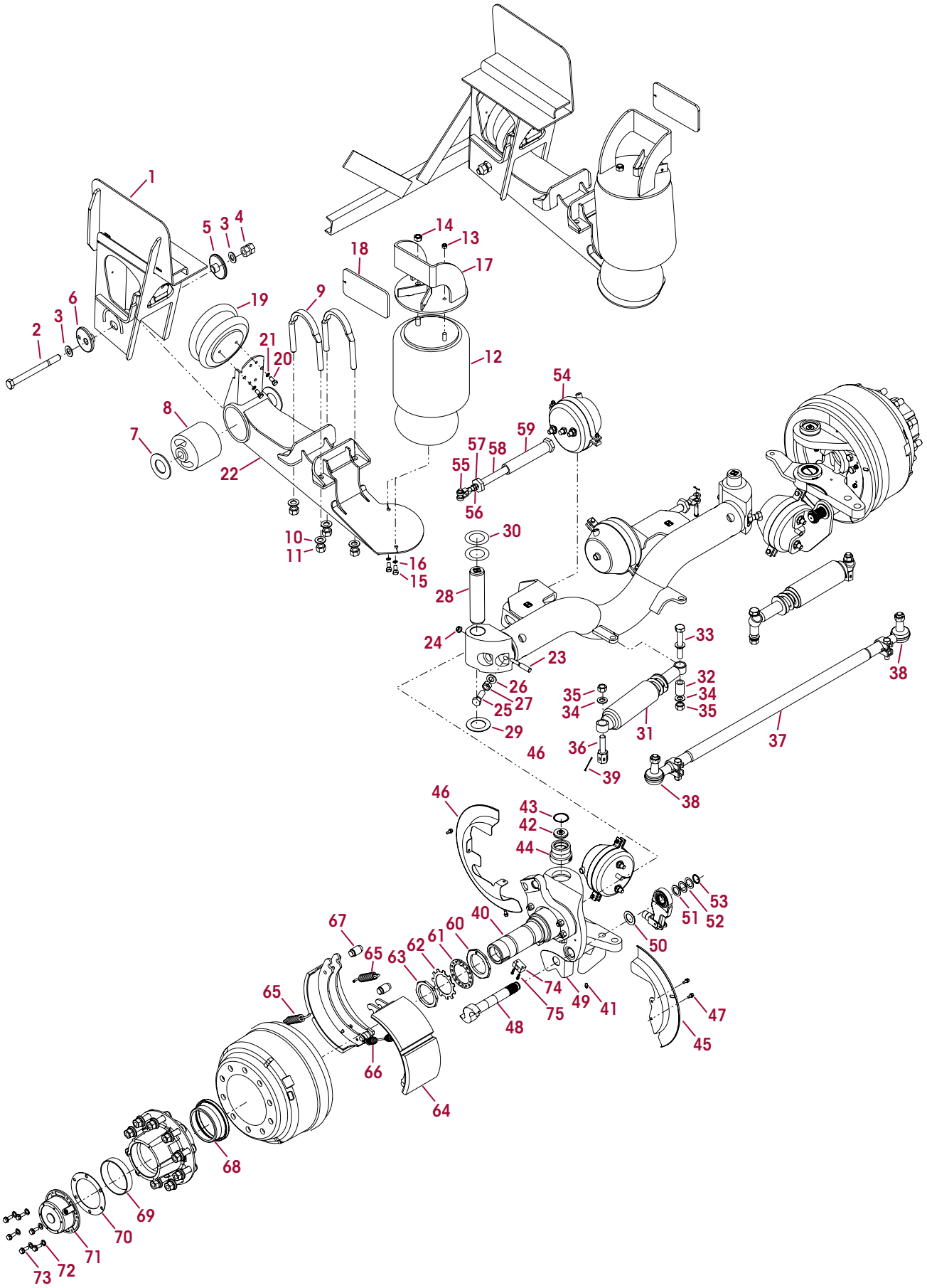
AUXILIARY LIFTABLE AIR RIDE SUSPENSIONS WITH FACTORY INSTALLED AXLES REQUIRE AXLE BRAKE ADJUSTMENT AND VERIFICATION OF BEARING LUBRICATION (OIL).

IT IS THE RESPONSIBILITY OF THE INSTALLER TO ENSURE THAT PROPER CLEARANCES EXIST BETWEEN:

- THE DRIVE SHAFT AND THE AUXILIARY AXLE (IF APPLICABLE)
- TIRES – LATERALLY, FORE, AFT, AND VERTICALLY
- AIR SPRINGS WHEN THEY ARE AT THEIR MAXIMUM DIAMETER (CONTACT HENDRICKSON TECH SUPPORT FOR SPECIFICATIONS)

SECTION 4

Parts List



ITEM	PART NO.	DESCRIPTION	*NO.REQ.
1	R-012757	Frame Hanger Assembly	1 EA
		• 34" Frame Width	
	-9C1/-9C2	9.5" Ride Height	
	-10C1/-10C2	10.5" Ride Height	
	-11C1/-11C2	11.5" Ride Height	
	-12C1/-12C2	12.5" Ride Height	
	-13C1/-13C2	13.5" Ride Height	
		• 35" Frame Width	
	-9E1/-9E2	9.5" Ride Height	
	-10E1/-10E2	10.5" Ride Height	
	-11E1/-11E2	11.5" Ride Height	
	-12E1/-12E2	12.5" Ride Height	
	-13E1/-13E2	13.5" Ride Height	
	R-004588	**Pivot Bolt, Wear Pads and Bushing Kit,** Includes Item Nos. 2-8, 76	2
	R-A-21116	**Pivot Bolt Kit,** Includes Item Nos. 2-6	2
2		**⅞"-9 X 10" Heavy Hex Screw	2
3		**⅞" Washer Dacroment + L Harden	4
4	R-A-15122	QUIK-ALIGN® Service Nut	2
5		**QUIK-ALIGN Concentric Collar	2
6		**QUIK-ALIGN Eccentric Collar	2
7	R-B-11613	Wear Pad	4
8	R-C-3558	TRI-FUNCTIONAL Bushing	2
	R-006362	**U-Bolt Kit,** Includes Item Nos. 9-11	1
9		**U-Bolt w/Coined Radius Grade 8	4
10		**⅞"-14 Hex Nut Zinc Gr C	8
11		**⅞" Narrow Washer Zinc Yellow RC40-45	8
12	R-B-14249	Ride Spring	2
	R-A-1981	**Ride Air Spring Fastener Kit,** Includes Item Nos. 13-16	1
13		**½"-13 Hex Nut Zinc Gr B	2
14		**¾"-16 Hex Nut Zinc Gr B	2
15		**½"-13 X 1.25" Hex Bolt Phos Gr 5	4
16		**½" Lock Washer Zinc Reg	4
17	R-013495	Upper Air Spring Assembly	1 EA
	-1/-2	9.5"-10.5" Ride Height	
	-C1/-C2	11.5" Ride Height	
	-E1/-E2	12.5" Ride Height	
	-01/-02	13.5" Ride Height	
18	R-013707	Upper Air Spring Frame Support Plate	2
19	R-B-14318	Lift Spring	2
	R-A-2849	**Lift Spring Fastener Kit,** Includes Item Nos. 20-21	2
20		**⅜"-16 X 1.00" Hex Bolt Phos Gr 5	4
21		**⅜" Lock Washer Zinc Reg	4
22	R-012752-1/-2	Beam Assembly	1 EA
	R-012562	**Draw Key Kit,** Includes Item Nos. 23-24	2
23	R-008670	7/16"-20 Draw Key Lock Pin	2
24	R-6007FH4FC	7/16"-20 Locking Flange Nut	2
	R-013913	**Stop Bolt Service Kit,** Includes Item Nos. 25-27	1
25	R-6112C300H4H8	¾"-10 X 3.0" Hex Bolt	2
26	R-6212H2H	¾" Washer	2
27	R-6012CH2JC	¾" Stop Bolt Jam Nut	2
		Kingpin Kit,	
	R-013483	With Kingpin, Includes Item Nos. 28-30	1
	R-013483-1	Without Kingpin, Includes Item Nos. 29-30	1
28	R-011600	Kingpin Slotted 2.125" Diameter	2
29	R-012681	Thrust Bearing	2
30	R-012904	Shims	4

ITEM	PART NO.	DESCRIPTION	*NO.REQ.
	R-013484	**Stabilizer Kit,** Includes Item Nos. 31-36	1
31	R-A-14496	Stabilizer	2
32		**Spacer 0.812" X 1.25" X 1.120"	2
33		**¾"-10 X 4.5" Hex Bolt Phos Gr 8	2
34		**¾" Harden Washer Zinc	6
35		**¾"-10 Lock Nut Zinc Gr C	4
36		**Stabilizer Shock Pin	2
37	R-013590-X	Tie Rod Assembly, Includes Item No. 38	1
38	R-005098-1/-2	Tie Rod Ends	1 EA
39	R-001524-15	Cotter Pin	2
40	R-012401	Knuckle Assembly	1 EA
	-1/-2	Standard	
	-1LS/-2LS	with Lock Straight Bracket	
41	R-002804	Zerk Fitting	2
42	R-012459	Kingpin Cap	4
43	R-012460	Kingpin Cap Retaining Ring	4
44	R-011562	Kingpin Housing	4
	R-013485	**Dust Shield Kit,** Includes Item Nos. 45-47	1
45		**Lower Dust Shield LKT	2
46		**Upper Dust Shield LKT	2
47		**5/16"-18 X 0.75" Bolt Zinc Tap Gr 8	8
48	R-012408-1/-2	S-Cam	1 EA
49	R-013072-1/-2	S-Cam Washer Shield	1 EA
50	R-007203	S-Cam Inner Shield	2
51	R-007121	S-Cam Flat Washer, Thick	2
52	R-007202	S-Cam Flat Washer, Thin	4
53	R-007122	S-Cam Clip	2
	R-013912	**Lock Straight Service Kit,** Includes Item Nos. 54-59	1
54	R-003513	Lock Straight Chamber, Includes Item No. 55	2
55	R-007732	Clevis Assembly ⅝"-18	2
56	R-6010FH2JC	Lock Straight Jam Nut	6
57	R-013184	Threaded Nut Plate	2
58	R-012392	Clevis Guide Shaft	2
59	R-013362	Lock Straight Tube Assembly	2
	R-007463	**P22-HP Spindle Fastener Kit,** Includes Item Nos. 60-63	2
60		**P-22 HP Spindle Nut Inner	2
61		**P-22 HP Spindle Lock Washer	2
62		**Tab Lock Washer 3.5" I.D.	2
63		**P-22 HP Spindle Nut Outer	2
	R-009703-25H	**QC Brake Shoe Kit,** Includes Item Nos. 64-67	2
64		**Brake Shoe 16.5 X 7	2
65		**Spring - Coil Or Retaining Spring	4
66		**Spring - Brake Return 16.5" Brake Architecture	2
67		**Pin - Anchor	4
68	R-A-14895	Hub Seal	2
69	R-A-14897	Bearing Cone	2
	R-008182	**Axle Components Kit,** Includes Item Nos. 70-73	1
70	R-007454	Hubcap Gasket 6.75" BC 6-Hole	2
71	R-012899	Hubcap 6.75" BC; Oil; High Temp Sentinel Vent	2
72		**5/16" Lock Washer Zinc Reg	12
73		**5/16"-18 X 0.75" Hex Bolt Phos Gr 5	12
74	R-013348	ABS Mounting Bracket	2
75	R-6104C088H4A8	ABS Bracket Screws	4
76		**Bushing Lubricant - 2 oz. (not shown)	1

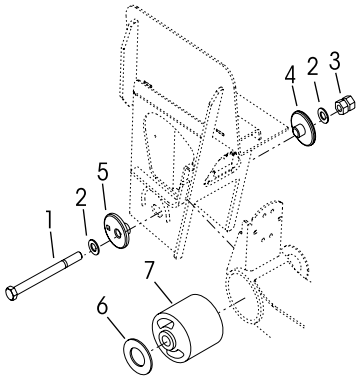
NOTES * Quantities specified are shown per suspension. Quantities of service kit components may vary from amount shown in list, refer to the following service kit pages to confirm item quantities.

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

*** Some components are determined by model specification, such as axles, brakes, and brake chambers. If the part is not listed, contact Hendrickson Specialty Products - Auxiliary Axle Systems with the lift axle model/serial number.

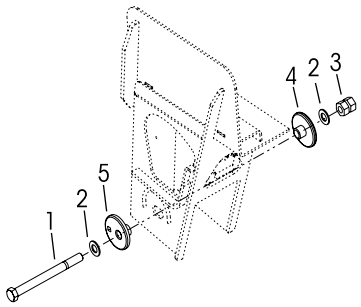
*SERVICE KITS

Service Kit No. R-004588 — **Pivot Bolt, Wear Pads and Bushing Kit**



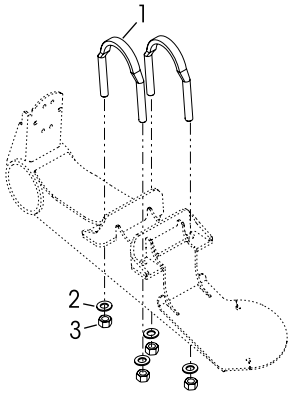
ITEM	CONTENTS	QTY.
1	⅞"-9 X 10" Heavy Hex Screw	1
2	⅞" Washer Dacroment + L Harden	2
3	QUIK-ALIGN® Service Nut	1
4	QUIK-ALIGN Concentric Collar	1
5	QUIK-ALIGN Eccentric Collar	1
6	Wear Pad	4
7	TRI-FUNCTIONAL Bushing	1
8	Bushing Lubricant - 2 oz. (not shown)	1

Service Kit No. R-A-21116 — **Pivot Bolt Fasteners Kit**



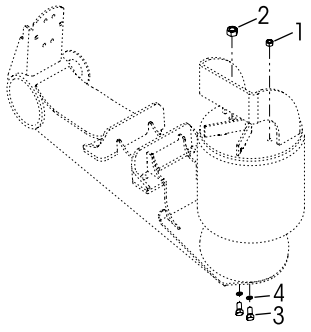
ITEM	CONTENTS	QTY.
1	⅞"-9 X 10" Heavy Hex Screw	1
2	⅞" Washer Dacroment + L Harden	2
3	QUIK-ALIGN Service Nut	1
4	QUIK-ALIGN Concentric Collar	1
5	QUIK-ALIGN Eccentric Collar	1

Service Kit No. R-006362 — **U-Bolt Fasteners Kit**



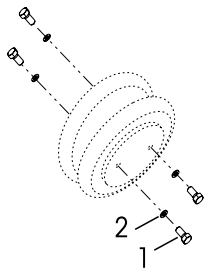
ITEM	CONTENTS	QTY.
1	U-Bolt w/Coined Radius Grade 8	4
2	⅞"-14 Hex Nut Zinc Gr C	8
3	⅞" Narrow Washer Zinc Yellow RC40-45	8

Service Kit No. R-A-1981 — **Ride Air Spring Fasteners Kit**



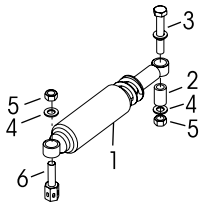
ITEM	CONTENTS	QTY.
1	½"-13 Hex Nut Zinc Gr B	2
2	¾"-16 Hex Nut Zinc Gr B	2
3	½"-13 X 1.25" Hex Bolt Phos Gr 5	4
4	½" Lock Washer Zinc Reg	4

Service Kit No. R-A-2849 — **Lift Air Spring Fasteners Kit**



ITEM	CONTENTS	QTY.
1	⅜"-16 X 1.00" Hex Bolt Phos Gr 5	4
2	⅜" Lock Washer Zinc Reg	4

Service Kit No. R-013484 — **Stabilizer Kit**

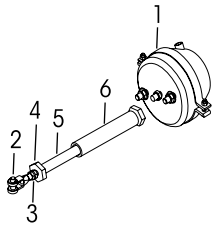


ITEM	CONTENTS	QTY.
1	Stabilizer	2
2	Spacer 0.812" X 1.25" X 1.120"	2
3	¾"-10 X 4.5" Hex Bolt Phos Gr 8	2
4	¾" Harden Washer Zinc	6
5	¾"-10 Lock Nut Zinc Gr C	4
6	Stabilizer Shock Pin	2

* Quantities specified are shown per service kit. Refer to page 9 for quantities of service kits needed per suspension.

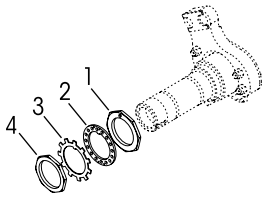
*SERVICE KITS

Service Kit No. R-013912 — **Lock Straight Service Kit**



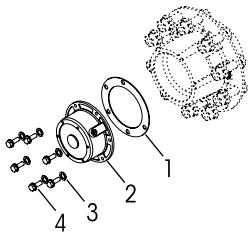
ITEM	CONTENTS	QTY.
1	Lock Straight Chamber	2
2	Clevis Assembly 5/8"-18	2
3	Lock Straight Jam Nut	6
4	Threaded Nut Plate	2
5	Clevis Guide Shaft	2
6	Lock Straight Tube Assembly	2

Service Kit No. R-007463 — **P-22 HP Spindle Fastener Kit**



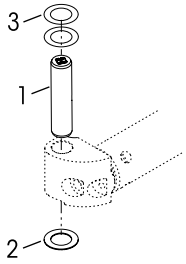
ITEM	CONTENTS	QTY.
1	P-22 Spindle Nut Inner	1
2	P-22 Spindle Lock Washer	1
3	Tab Lock Washer 3.5" I.D.	1
4	P-22 Spindle Nut Outer	1

Service Kit No. R-008182 — **Axle Components Kit**



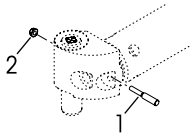
ITEM	CONTENTS	QTY.
1	Hubcap Gasket 6.75" BC 6-Hole	2
2	Hubcap 6.75" BC; Oil; High Temp Sentinel Vent	2
3	5/16" Lock Washer Zinc Reg	12
4	5/16"-18 X 0.75" Hex Bolt Phos Gr 5	12

Service Kit No. R-013483 / R-013483-1 — **Kingpin Kit** With Kingpin / Without Kingpin



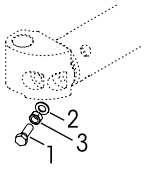
ITEM	CONTENTS	QTY.
1	Kingpin Slotted 2.125" Dia	2
2	Thrust Bearing	2
3	Shims	4

Service Kit No. R-012562 — **Draw Key Kit**



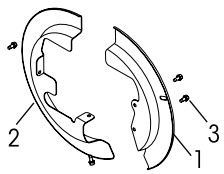
ITEM	CONTENTS	QTY.
1	7/16"-20 Draw Key Lock Pin	2
2	7/16"-20 Locking Flange Nut	2

Service Kit No. R-013913 — **Stop Bolt Service Kit**



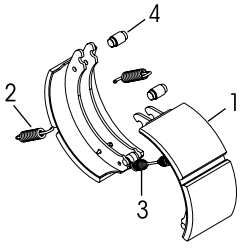
ITEM	CONTENTS	QTY.
1	3/4"-10 X 2.25" Hex Bolt	2
2	3/4" Washer	2
3	3/4" Stop Bolt Jam Nut	2

Service Kit No. R-013485 — **Dust Shield Kit**



ITEM	CONTENTS	QTY.
1	Lower Dust Shield LKT	2
2	Upper Dust Shield LKT	2
3	5/16"-18 X 0.75" Bolt Zinc Tap Gr 8	8

Service Kit No. R-009703-25H — **QC Brake Shoe Kit**



ITEM	CONTENTS	QTY.
1	Brake Shoe 16.5 X 7	1
2	Spring - Coil Or Retaining Spring	2
3	Spring - Brake Return 16.5" Brake Architecture	1
4	Pin - Anchor	2

* Quantities specified are shown per service kit. Refer to page 9 for quantities of service kits needed per suspension.

SECTION 5
Special Tools

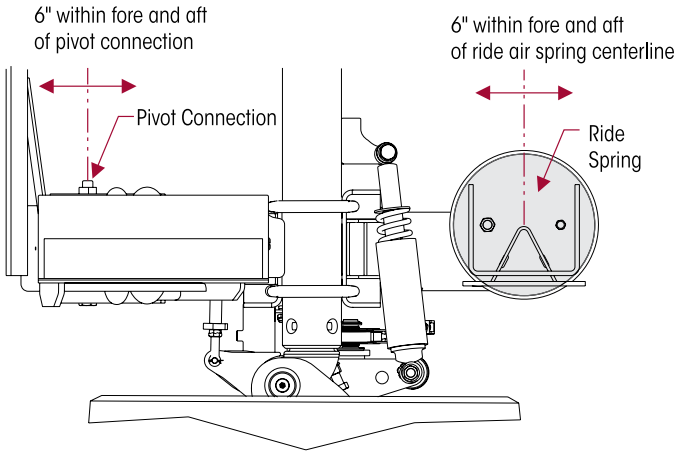
The following is a list of equipment and materials that are needed when installing a Hendrickson steerable auxiliary suspension:

1. Welding equipment and supplies (See axle welding procedures for further details)
2. Torque wrench capability of 475 foot pounds for U-bolt installation
3. Linear measuring instruments (Tape measure or scales) and machinist square
4. Crane or lifting capability
5. Hand grinder
6. Hammer and center punch
7. Customer-supplied Grade 8 frame fasteners, ¾" - 16 SAE (Minimum 20: 6 per frame hanger, 4 per upper air spring assembly)
8. Magnetic frame drill and pilot drill for frame attachment holes
9. Trammel bar for alignment
10. Compressed air supply
11. Air impact gun, air fittings, tubing and associated tools, air impact gun, socket set and wrenches, including the following sizes:
    - 9/16"
    - 1⅛"
    - ¾"
    - 1¼" Deep socket
    - 1 7/16" Impact socket
12. C-clamps or bar clamps with the minimum opening of the vehicle frame depth dimension
13. Suspension assembly drawing and plumbing schematic (supplied by Hendrickson)

SECTION 6
Pre-Installation Check List

1. Check that the suspension about to be installed matches the specifications required for the vehicle.
2. Confirm that the components listed on the suspension assembly drawing have been provided in the proper quantities. Contact Hendrickson Customer Service Department if any missing or damaged components are found.
3. Verify that the selected axle spacing conforms to Federal and Local bridge laws.
4. Verify that the frame width is within the allowable mounting range of the suspension (see Vehicle Frame Section).
5. Locate the center of the axle.
6. Mark appropriate location of the suspension frame rails and check for interferences with any existing brackets or mounting bolts.

FIGURE 6-1



⚠ CAUTION

VEHICLE FRAME CROSSMEMBERS ARE TO BE POSITIONED WITHIN 6" FORE OR AFT OF FORWARD PIVOT CONNECTIONS AND WITHIN 6" FORE OR AFT OF THE CENTER OF THE RIDE AIR SPRING CENTER, SEE FIGURE 6-1. MAINTAIN A MINIMUM OF 12" BETWEEN VEHICLE FRAME CROSSMEMBERS. FAILURE TO DO SO CAN RESULT IN COMPONENT DAMAGE AND LOSS OF VEHICLE CONTROL, POSSIBLY CAUSING PERSONAL INJURY OR PROPERTY DAMAGE.

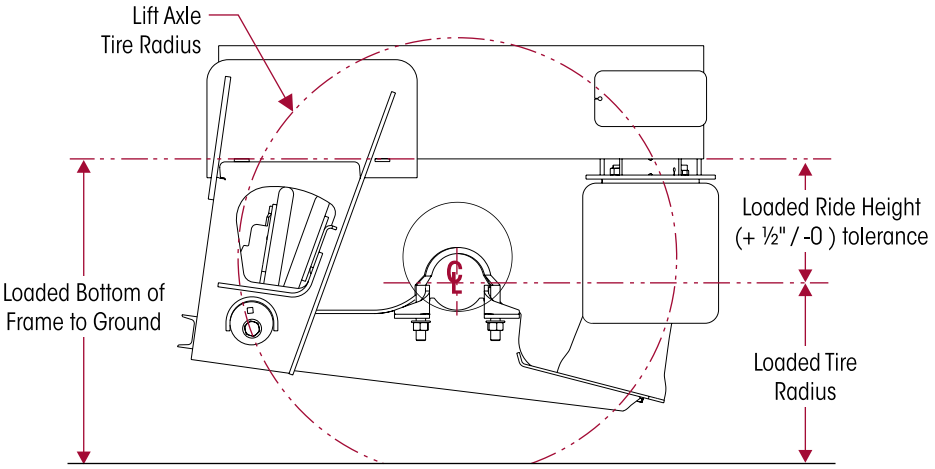
7. Verify the vehicle crossmembers are correctly positioned to properly support the suspension.
8. Check for any interferences between the axle and the driveshaft, if applicable (refer to suspension assembly drawing). If there are questions, please contact the Hendrickson Technical Support Department with the lift axle model number for assistance with driveline clearance confirmation.
9. A minimum of 1" of clearance is required between the driveline and the top of the lift axle tube when lifted.

SECTION 7
Suspension Evaluation & Adjustment

RIDE HEIGHT EVALUATION

Hendrickson defines the lift axle ride height as the distance between the suspension mounting surface (bottom of the vehicle frame) and the spindle center of the auxiliary liftable axle (See Figure 7-1) in the loaded condition. A correct installation requires that the installed suspension ride height for any TOUGHLIFT LK be within the suspension's nominal ride height (+ ½" / -0) tolerance.

FIGURE 7-1



On some applications, a spacer may be required between the suspension frame bracket and the vehicle frame rail to achieve the required installed ride height.

EXAMPLE

If a suspension is ordered with a ride height that is below the minimum, a 1" spacer may be installed at both frame mounting locations to bring the unit within the (+ ½" / -0) tolerance.

To evaluate if a spacer is required, perform the following calculations using the dimensions from the intended lift axle mounting location as follows:

- **Lift Axle Suspension Nominal Ride Height =** Determined by model specification (+ ½" / -0) tolerance
- **Application Ride Height =** (Loaded bottom of frame to ground) **–** (Static loaded radius of lift axle tire)

If application ride height equals the lift axle's specified ride height within the allowable tolerance, no spacer is required.

- **Required Spacer Height* =** (Application ride height) **–** (Suspension nominal ride height)

* If the required **spacer height is more** than 1", a sub-frame should be built due to the mounting surfaces inability to accommodate more than 1" of spacing. If application **ride height is less** than the nominal suspension ride height, the application is outside the parameters for the nominal ride height of the suspension, contact Hendrickson Technical Support for assistance.

⚠ CAUTION

PROPERLY INSTALL THE AUXILIARY SUSPENSION MOUNTING SURFACES WITH THE BRACKETS FLUSH AGAINST BOTH THE SIDE AND BOTTOM OF THE FRAMES RAILS/FRAME RAIL SPACERS, SEE FIGURE 7-2. IMPROPER INSTALLATION WILL ADVERSELY AFFECT MATING COMPONENTS, CAUSE PREMATURE WEAR, AND CAN RESULT IN LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE AND WILL VOID ALL SUSPENSION WARRANTY COVERAGE.

TALLER RIDE HEIGHTS

The standard ride height will come as shown in Figure 7-2.

FIGURE 7-2

STANDARD CONFIGURATION

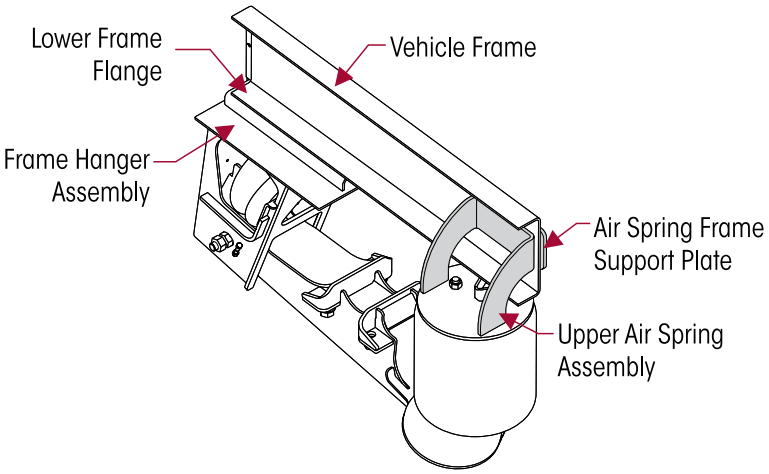


FIGURE 7-3

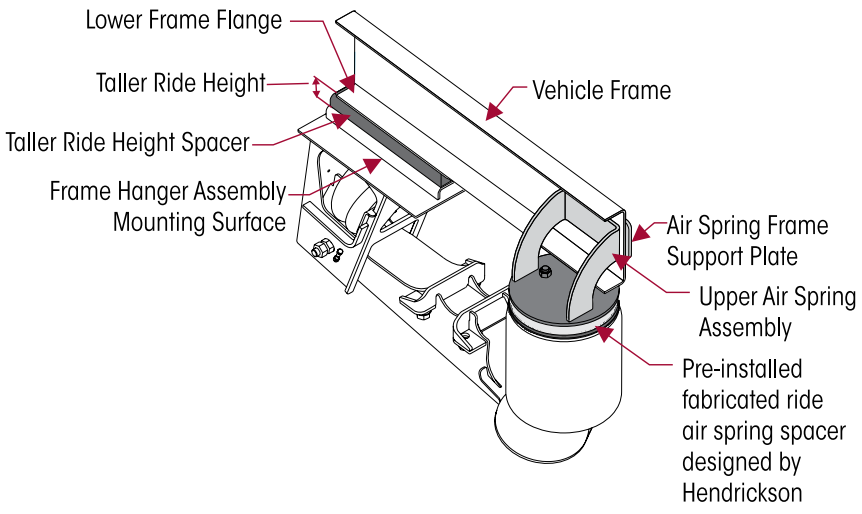
For taller ride heights you will need:

- A pre-installed fabricated ride air spring spacer designed by Hendrickson Engineering to ensure proper functionality, see Figure 7-3. Contact Hendrickson Auxiliary Axle Engineering for more information and availability.
- Taller ride height spacers for the hanger can be shop made. The ride height spacers be identical for both side of the suspension and must cover the entire contact surface of the suspension's hanger assembly. The shop made spacers must also be equivalent to the height of the ride air spring hanger spacer so the suspension's position is level and accurate to the desired proper taller ride height as specified in the Ride Height Evaluation.

Verify the taller ride height spacers do not interfere with the upper air spring fasteners or air fittings and plumbing. Any ride height spacers must be flush and contact the entire width of the lower frame flange to properly secure the suspension to the frame.

FIGURE 7-3

TALLER RIDE HEIGHT CONFIGURATION



FRAME WIDTH

The TOUGHLIFT LK suspension frame widths are determined by the hanger assembly.

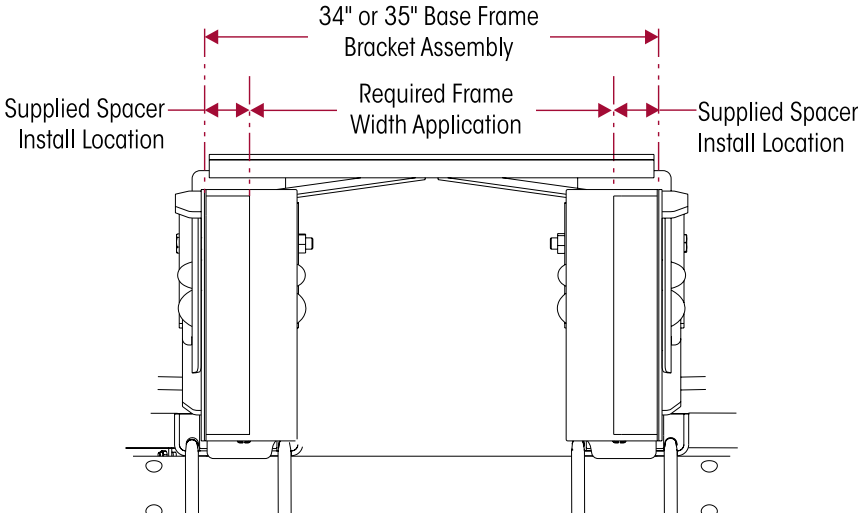
The two standard frame widths are for a 34" or 35" application. The lift axle beam assembly is set to a 30" beam center measurement. Other available frame widths can be achieved by utilizing plate spacers with approval by Hendrickson Engineering.

Plate spacers if required, are supplied with the suspension contents. Quantity determined by Hendrickson Engineering.

NOTE

If plate spacers are installed, it is important to center the TOUGHLIFT LK suspension to the vehicle frame to accommodate the proper turning radius and clearance, (see Figure 7-4). Refer to the Suspension Frame Mounting in the Suspension Installation Section found in this publication for proper plate spacer installation.

FIGURE 7-4



SECTION 8

Suspension Installation

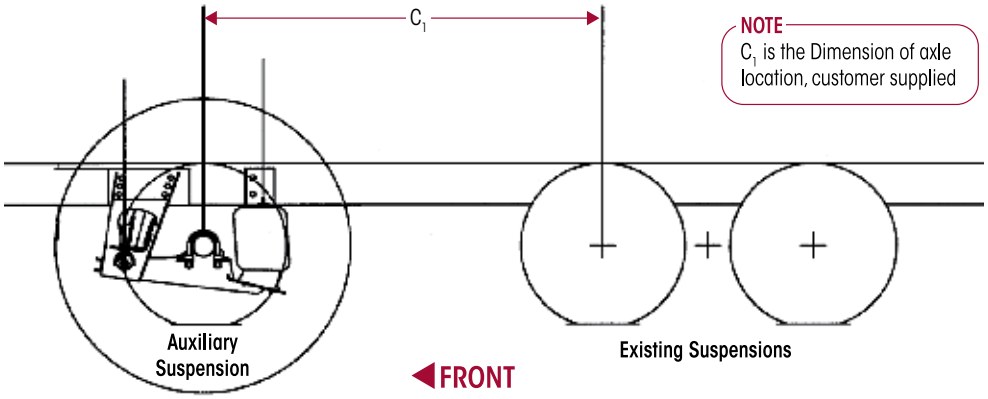
SUSPENSION FRAME MOUNTING

The following TOUGHLIFT LK Dual-Tire Steerable Lift Axle suspension mounting instructions assume the correct suspension has been chosen based on application design criteria, and that the pre-installation checklist has been thoroughly reviewed and completed.

It is important that the vehicle be located on a flat level surface during installation of the suspension.

1. Determine the location of the auxiliary axle as required by local and federal DOT regulations and **mark the location** of the centerline of the axle on the outside of the vehicle frame rail.
2. Refer to the suspension assembly drawing to locate the boundary areas of the mounting hangers. Mark the boundary areas of the mounting hanger on the outboard side of the frame rail, see Figure 8-1 below.

FIGURE 8-1



3. If any interference corrections are determined (ie. auxiliary suspension mounting surface and any existing frame bolts or brackets) make them at this time.
4. Vehicle crossmembers MUST be positioned within 6 inches fore or aft of forward pivot connections and within 6 inches fore or aft of ride spring center while maintaining a minimum of 12 inches between crossmembers, as seen in Figure 8-2 on the next page.

⚠ CAUTION

VEHICLE FRAME CROSSMEMBERS ARE TO BE POSITIONED WITHIN 6" FORE OR AFT OF FORWARD PIVOT CONNECTIONS AND WITHIN 6" FORE OR AFT OF THE RIDE SPRING WHILE ALSO MAINTAINING A MINIMUM DISTANCE OF 12" BETWEEN VEHICLE FRAME CROSSMEMBERS.

5. Ensure suspension is properly supported with a backing plate (customer-supplied-shop made). Dimensions: 8" x 17", made from ¼" steel, installed along the inside of the vehicle frame rail directly behind the front hanger brackets as seen in Figure 8-3 on the next page.

⚠ WARNING

FAILURE TO PROPERLY SUPPORT THE SUSPENSION OR REINFORCE VEHICLE FRAME CAN RESULT IN PREMATURE COMPONENT FAILURE AND/OR LOSS OF WARRANTY COVERAGE. THE BELOW IMAGE IS A SUGGESTED CONFIGURATION.

6. Position the suspension against the vehicle frame with crossmembers located in the proper mounting locations.

FIGURE 8-2

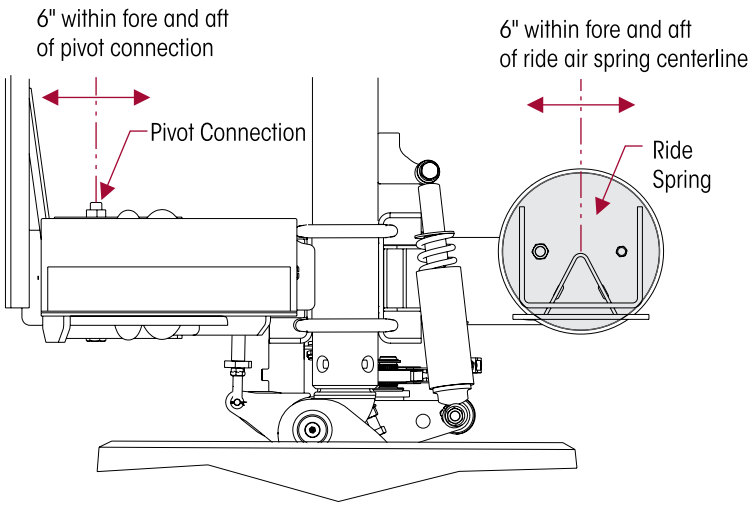


FIGURE 8-3

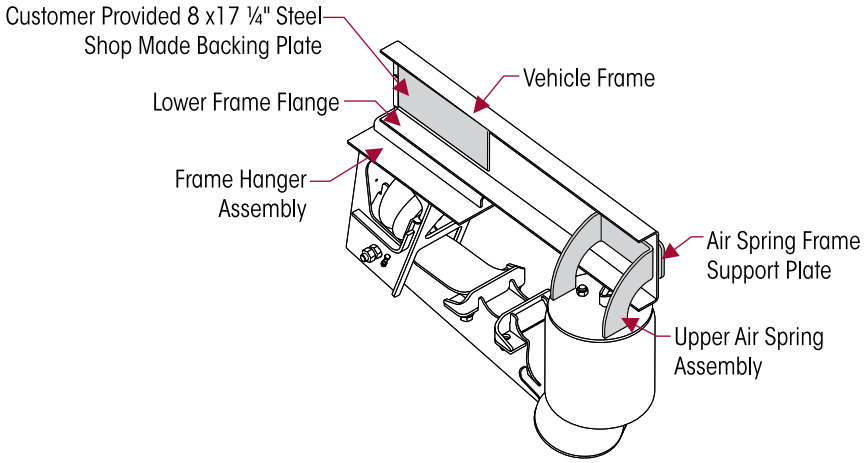
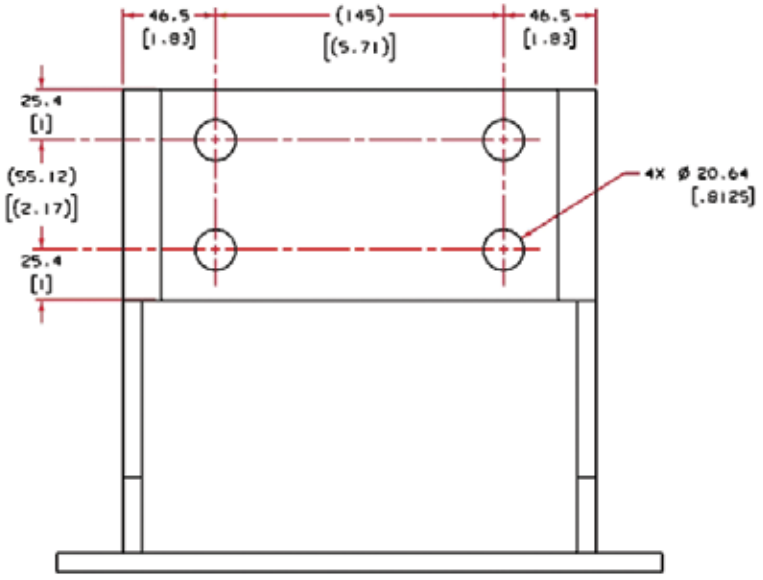


FIGURE 8-4 REFERENCE FOR THE LKT UPPER A/S WELDMENTS HOLE PATTERN



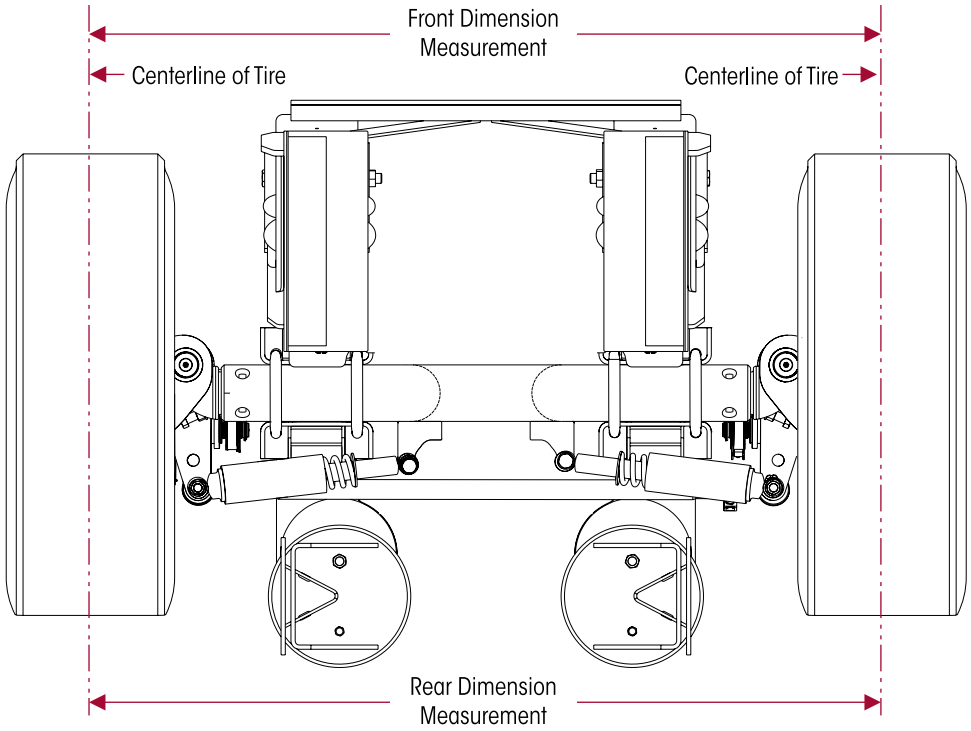
7. Raise the suspension into position. Use both the vehicle crossmembers and the **previously marked** axle centerline location on the frame rail as installation guides.

NOTE

The Hendrickson supplied ride spring reinforcement plate is mounted on the outboard side of the frame rail.

8. Once the suspension is located in the required position, clamp the suspension frame bracket to the truck frame rail.

FIGURE 8-5

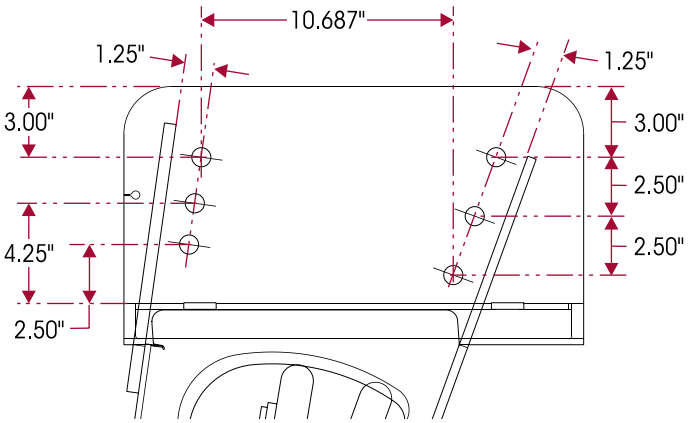


9. Verify the suspension is centered on the vehicle frame and mounting surfaces fit flush with the frame rail; see Figure 8-5 for reference. If the application requires frame width spacers, install between hanger and frame rail.
10. With the suspension frame hanger brackets tight against the vehicle frame, mark the location of the mounting holes on the outboard side of both auxiliary suspension frame rails. Punch mark all hole centers. Figure 8-6 shows suggested mounting pattern. Prior to drilling verify mounting pattern with Hendrickson Engineering.

FIGURE 8-6

⚠ WARNING

DO NOT DRILL OR BOLT THROUGH THE BOTTOM FLANGE OF THE SUSPENSION FRAME BRACKET. VERIFY WITH CHASSIS MANUFACTURER'S WARRANTY DISCLAIMER REGARDING VEHICLE FRAME MODIFICATIONS.

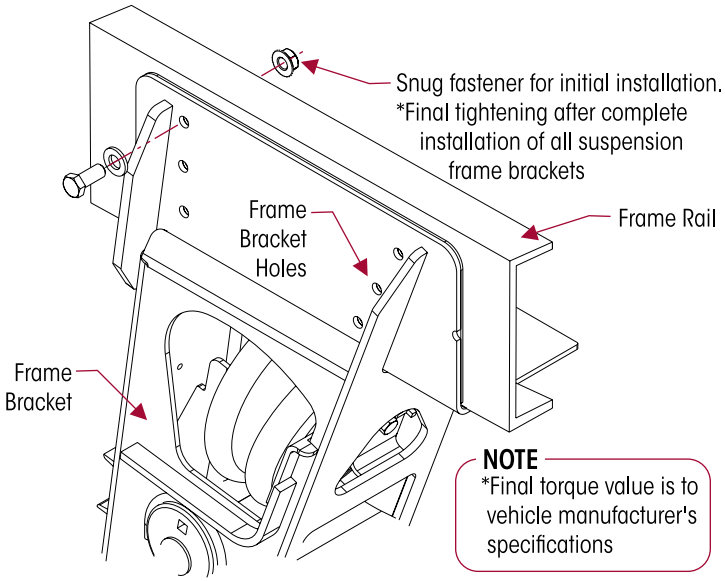


⚠ CAUTION

PRIOR TO DRILLING, INSPECT VEHICLE FRAME RAIL FOR ANY OBSTRUCTION (FUEL LINES,WIRING HARNESS,BRAKE LINES, ETC.) THAT MAY BE LOCATED ON THE BACK SIDE OF THE FRAME RAIL AND ADJUST ACCORDINGLY.

11. Drill one 13⁄16" diameter hole through the vehicle frame rail, the auxiliary suspension frame hanger bracket and the customer supplied backing plate.
12. Install and snug (hand tighten) one set of frame mounting fasteners, see Figure 8-7.

FIGURE 8-7



13. Repeat Steps 11 and 12 for the remaining fasteners on this frame bracket. Minimum of six sets of fasteners, three forward and front pivot connections.
14. Inspect the hanger on the opposite side of the suspension. Verify it is perpendicular and parallel to the drilled frame rail and the vehicle frame.
15. Ensure horizontal and vertical alignment.
16. Repeat Steps 11-13 for the opposite side suspension frame bracket.
17. After the frame and frame brackets are drilled and fasteners are attached, repeat Steps 11-16 for the upper ride spring assembly to frame rail brackets. The upper ride spring assembly will require a minimum of four fasteners, two located above and two located below the horizontal centerline of the ride spring bracket.
18. Tighten all frame mounting to fasteners to the proper torque per the vehicle manufacturer's specifications. A minimum of 20 sets of lift axle suspension to frame mounting fasteners.

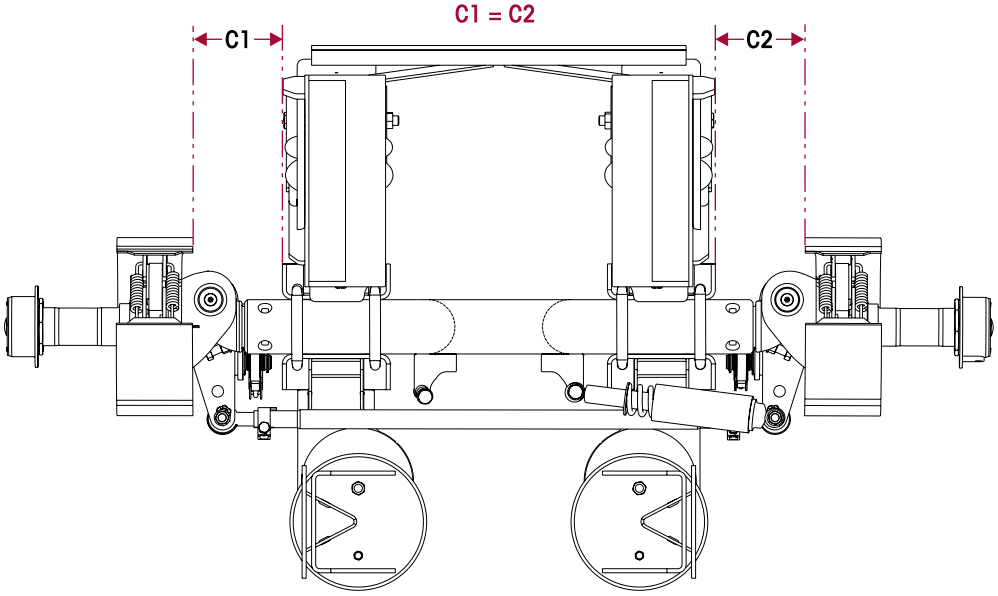
SECTION 9

Alignment & Adjustments

Verify the lift axle is centered properly to the suspension beam assembly. Measure the dimension between the axle and the parallel beams. Measure the left and right dimensions between the suspension beam assembly and the end hub assembly. Left and right dimensions must be equal, C1 = C2, see Figure 9-1.

FIGURE 9-1

Left and Right Dimensions Must Be Equal
C1 = C2



AXLE ALIGNMENT PROCEDURES

The QUIK-ALIGN® alignment feature incorporates two flanged washers that are inserted into slots located on inboard and outboard side of the frame hanger assembly. The outboard flanged washer is eccentric (Figure 9-2). The eccentric washer's diameter is position controlled by an adjustment guide. Rotating the eccentric washer clockwise or counter-clockwise provides fore and aft movement of the suspension's axle (Figure 9-3).

The pivot connection is clamped together with a heavy hex cap screw, hardened washers and a QUIK-ALIGN service nut. The QUIK-ALIGN service nut ensures the proper clamp force is achieved and eliminates the need for a torque wrench.

NOTE

Pre-alignment requirement: In view that the lift axle will be aligned relative to the preceding or trailing drive axle, it is essential that the drive axle be properly aligned and squared to the truck centerline prior to lift axle installation.

1. The axle alignment site area should be flat, level and free of debris.
2. If the vehicle is equipped with an air ride primary suspension, verify the primary suspension is at the proper ride height. This will help ensure that the lift axle will be aligned at the proper ride height.
3. Ensure both lift axle tires are the same tire size.
4. With the lift axle tires on the ground and at the proper ride height, loosen one pivot connection fastener.

ATTENTION

The QUIK-ALIGN pivot connection fasteners should be tight enough to hold the eccentric flanged washer in place against the adjustment guide, but loose enough to permit the hardened flat washers to rotate freely.

5. Using a ½" square drive breaker bar,rotate the eccentric flanged washer to adjust the axle alignment.

IMPORTANT Ensure that the axle adjustment occurred without compressing the QUIK-ALIGN® pivot bushing, if the pivot bushing is damaged during axle adjustment replace as necessary.

6. The lift axle alignment must be adjusted so that the centerline of the lift axle is parallel to the centerline of the front axle.

NOTE Ensure The alignment is within 1/16" specification to be considered acceptable and is measured manually with a trammel bar.

7. Repeat Steps four and five on opposite pivot connection if necessary to accurately complete alignment.
8. Snug pivot connection fasteners and re-check alignment.

⚠ WARNING DISCARD USED QUIK-ALIGN FASTENERS. ALWAYS USE NEW QUIK-ALIGN FASTENERS TO COMPLETE A REPAIR. FAILURE TO DO SO COULD RESULT IN FAILURE OF THE PART, OR MATING COMPONENTS, LOSS OF VEHICLE CONTROL, PERSONAL INJURY, OR PROPERTY DAMAGE.

NOTE Hendrickson Auxiliary Axle Systems recommends new QUIK-ALIGN Pivot Bolt Kit (No. R-A-21116) for any axle alignment or disassembly of the pivot connection. This will help ensure the proper torque values are met without the use of a torque wrench. If a torque wrench is being used, recommended torque value is 425-475 foot pounds.

⚠ WARNING LOOSE OR OVER TORQUED FASTENERS CAN CAUSE COMPONENT DAMAGE, LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE, OR SEVERE PERSONAL INJURY. MAINTAIN CORRECT TORQUE VALUE AT ALL TIMES. CHECK TORQUE VALUES ON A REGULAR BASIS AS SPECIFIED, USING A TORQUE WRENCH THAT IS REGULARLY CALIBRATED.

9. Use a shallow socket and tighten the outer hex on the QUIK-ALIGN service nut (Part No. R-A-15122) to 425-475 foot pounds torque until the outer hex of the QUIK-ALIGN service nut sheers off.

SUSPENSION ALIGNMENT PROCEDURES

1. Use a wrench or impact socket tool to loosen (assembled unit) both QUIK-ALIGN pivot connection fasteners, see Figure 9-2.

ATTENTION The threaded end of the nut must be Inserted onto bolt end first (sticker facing out).

2. The QUIK-ALIGN pivot fasteners should be loose enough to allow the hardened flat washers to spin freely, see Figure 9-3.
3. Ensure the ½" square hole on the eccentric washer is at the 12:00 position, see Figure 9-4.

FIGURE 9-2

FIGURE 9-3

FIGURE 9-4

4. To move lift axle fore and aft, use ½" breaker bar (see Figure 9-5) and adjust the eccentric washer.

SERVICE HINT

Do not shear the outer nut until the alignment is rechecked.

5. Snug the pivot connection fasteners, and check the axle position.

⚠ WARNING

DISCARD USED QUIK-ALIGN® FASTENERS. ALWAYS USE NEW QUIK-ALIGN FASTENERS TO COMPLETE AN ADJUSTMENT OR REPAIR. FAILURE TO DO SO COULD RESULT IN FAILURE OF THE PART, OR MATING COMPONENTS, LOSS OF VEHICLE CONTROL, PERSONAL INJURY, OR PROPERTY DAMAGE.

6. Use a 1 7/16" shallow socket (see Figure 9-6) and tighten the QUIK-ALIGN service nut (R-A-15122) to 425-475 foot pounds torque until the outer hex of the QUIK-ALIGN service nut sheers off, see Figure 9-7.

FIGURE 9-5

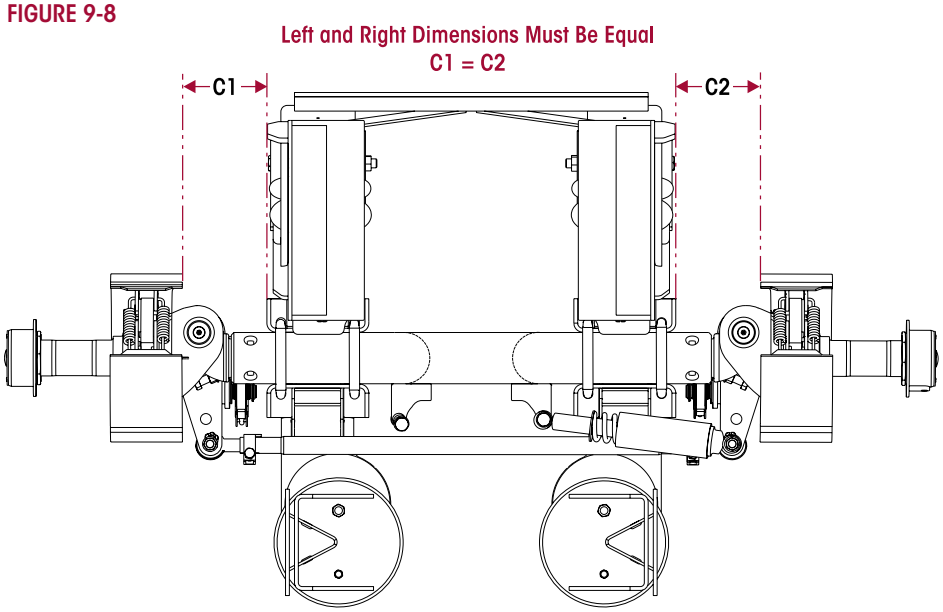
FIGURE 9-6

FIGURE 9-7

TOE SETTING

Toe is the relationship of the distance between the front of the tires and the distance between the rear of the tires on the same self-steer axle measured at spindle height. When the front distance is less than the rear distance, the wheels are in a "toe-in" condition, see Figure 9-8.

FIGURE 9-8



MANUAL TOE SETTING

1. Lift axle until tires are free to spin and scribe a line through the center of the outer tire tread while rotating the tires on the hub. Repeat this step for both sides of the suspension.
2. Use a trammel bar or tape measure to obtain the distance between the scribed lines at the spindle height on the front and rear of the tires.
3. Loosen the tie rod clamp fasteners. Rotate tie rod tube to provide a toe-in setting of 1/16" to 1/8" toe-in.
4. Tighten the tie rod clamp bolts 40-60 foot pounds torque.

SECTION 10

Final Assembly Prior to Operation

FINAL INSTALLATION

ASSEMBLY

1. Install all fasteners hardware and tighten to the proper torque the mounting bolts as per the in the Torque Specifications Section of this publication.
2. Install and plumb air controls, then plumb lift axle into the vehicle air system.
3. Install the wheels and tighten to torque the lug nuts to the manufacturer's specifications.

⚠ WARNING

FAILURE TO LUBRICATE THE WHEEL BEARINGS CAN RESULT IN COMPONENT DAMAGE, BODILY INJURY OR DEATH.

4. Verify the wheel bearings are lubricated to the fill hole level located at the hubcap.
   - Use only NGLI-1 or NLGI-2 grease; GL-5 gear lubricant
5. Install the air brake lines for the lift axle brakes per chassis manufacturer's specifications.

NOTE

ALL suspensions purchased from Hendrickson Auxiliary Axle Systems will require a brake adjustment upon installation. Note, automatic slack adjusters are supplied with the lift axle assembly.

6. Inspect brakes and adjust as necessary.

INSPECTION PRIOR TO OPERATION

1. Check that all suspension fasteners are tightened to Hendrickson Auxiliary Axle System's recommended torque values provided in the Torque Specifications Section of this publication.
2. Check the air control system for leaks and proper valve function.
3. Move the suspension through its entire travel range with wheels and tires installed to ensure adequate component clearances (i.e., air springs, brake chambers, etc.).

⚠ CAUTION

WITH THE VEHICLE UNLOADED, THE RIDE (OR DOWN) AIR SPRING AIR PRESSURE MUST BE LIMITED TO A MAXIMUM OF 30 PSI TO AVOID IMPROPER VEHICLE LOADING OR COMPONENT DAMAGE.

ATTENTION

If the primary suspension type provides more travel than 1", the ride springs can look over-extended. This is normal, as the vehicle is unloaded and the lift axle is specified with a ride height with the vehicle in the loaded condition.

4. Inspect the auxiliary axle for the following:
   - Wheels lug nuts are tighten to the proper torque value
   - Wheels rotate freely
   - Brakes are properly adjusted
   - Wheel hubs are sufficiently filled with the manufacturer's recommended lubricant

SECTION 11

Backing Operation & Lock Straight

When operating a truck in reverse (backing), a conventional self-steering axle **MUST** be raised or locked into a non-steering configuration.

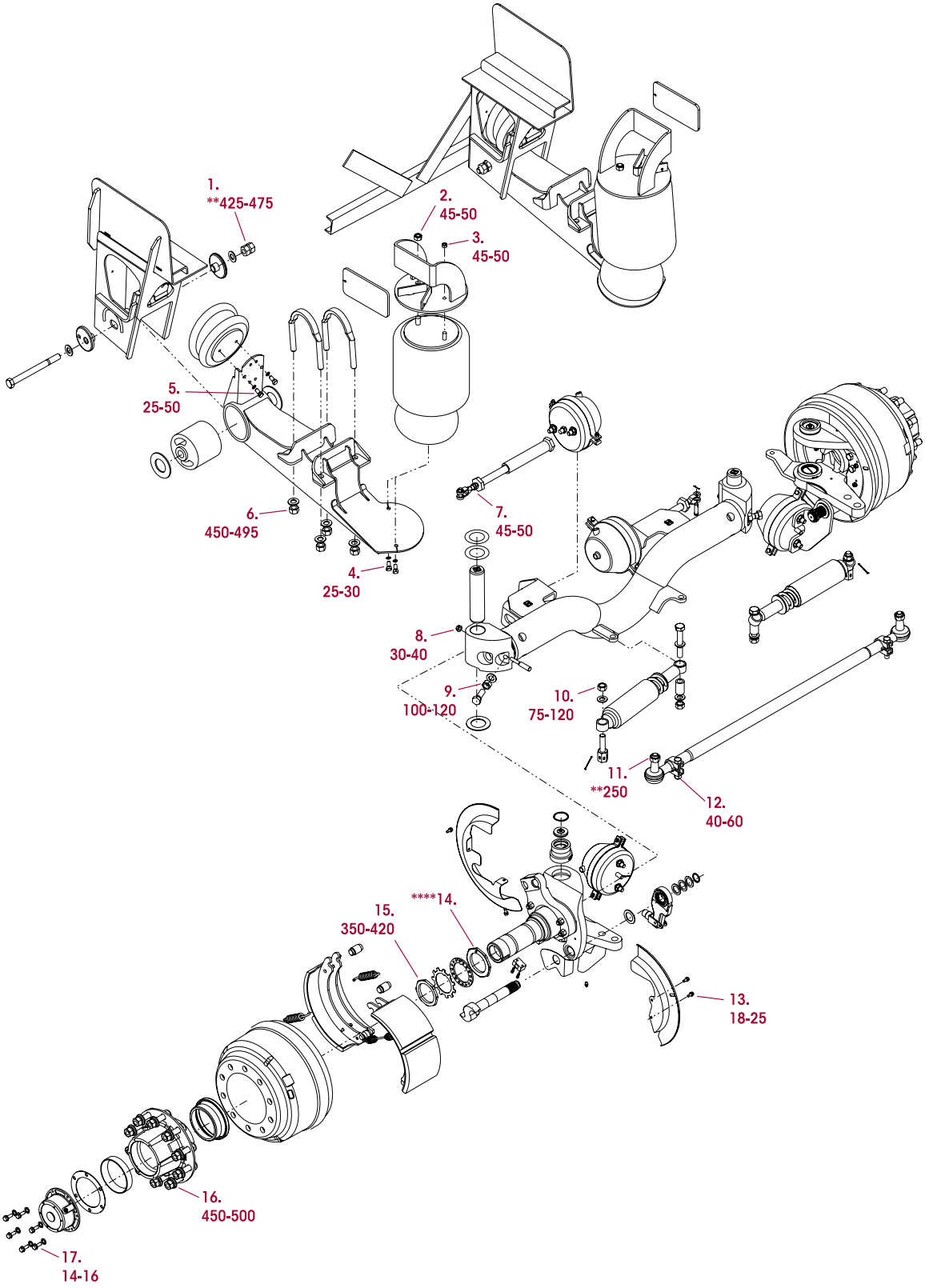
- Lock straight is an available feature on Hendrickson's TOUGHLIFT LT suspension system. The system will lift the suspension and lock the wheels in a straight forward position when going in reverse (backing).
- This feature must be specified at time of purchase. Contact Hendrickson Technical Support with questions regarding this feature.

Refer to Hendrickson Literature H719 for control kit options. Contact Hendrickson Customer Service for additional details, or assistance to choose a control kit compatible with the lift axle suspension's selected features.

SECTION 12
Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	CORRECTION
Not getting the desired load on the axle	Not having proper 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 Publication No. H719
	Mounted too high Incorrect ride height specification	a. Larger tire b. 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 Publication No. 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 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. H674
	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. H674
Axle does not track in reverse (Reverse Caster Only)	Inadequate psi to forward shift chambers	Increase psi 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. H719

SECTION 13
Torque Specifications



TOUGHLIFT LK DUAL-TIRE STEER LIFT AXLE

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS

NO.	COMPONENT	QUANTITY	SIZE	*TORQUE VALUE in foot pounds
1.	QUIK-ALIGN® Service Nut	2	7/8"	**425-475
2.	Upper Ride Air Spring to Bracket	2	3/4"	45-50
3.	Upper Ride Air Spring to Bracket	2	1/2"	45-50
4.	Lower Ride Air Spring to Beam Assembly	4	1/2"	25-30
5.	Lift Air Spring to Beam Assembly	4	3/8"	25-50
6.	U-Bolt Locknut	8	7/8"	450-495
7.	Lock Straight Jam Nut	6	3/4"	45-50
8.	Draw Key Locking Nut	2	7/16"	30-40
9.	Stop Bolt Jam Nut	2	3/4"	100-120
10.	Stabilizer Locknut	4	3/4"	75-120
11.	Tie Rod End Castle Nut	2	7/8"	***250
12.	Tie Rod End Clamp Bolt	2	5/8"	40-60
13.	Dust Shield Bolt	8	5/16"	18-25
14.	P-22 HP Spindle Inner Nut	2	3.48	****
15.	P-22 HP Spindle Outer Nut	2	3.48	385-420
16.	Lug Nuts	10	M22	450-500
17.	Hub Cap Bolts	12	5/16"	14-16

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

** Use a 17/16" shallow socket and tighten the QUIK-ALIGN service nut (R-A-15122) to 425-475 foot pounds torque until the outer hex of the QUIK-ALIGN service nut sheers off.

*** Torque to 185 foot pounds, advance nut to next hex face to install cotter pin. **DO NOT** back off nut for cotter pin installation.

**** Reference TMC RP622 for proper tightening torque procedure.

Refer Any Questions on this publication to Hendrickson Auxiliary Axel Tech Services:

Toll-free U.S. and Canada
1.800.660.2829

Outside U.S. and Canada
1.740.929.5600

Parts Identification
LiftAxle@hendrickson-intl.com

Technical Support
LiftAxleTech@hendrickson-intl.com

1.740.929.5601

Additional Hendrickson
Product Information
www.hendrickson-intl.com

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.*

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