
SOFTEK®


AIRTEK®

TECHNICAL PROCEDURE

SOFTEK® • STEERTEK NXT/ STEERTEK • AIRTEK® for International Truck Vehicles

SUBJECT: Service Instructions
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HENDRICKSON
The World Rides On Us®

SECTION 1
Introduction

This publication is intended to acquaint and assist maintenance personnel in the preventive maintenance, service, repair and rebuild of the following Hendrickson equipment as installed on applicable International Truck vehicles:

- **SOFTEK®** — An integrated monoleaf spring suspension with the STEERTEK NXT axle.
- **STEERTEK NXT** — A durable, lightweight, fabricated steer axle assembly.
- **AIRTEK®** — An integrated front air suspension with the STEERTEK axle.

See AIRTEK, SOFTEK and STEERTEK NXT parts lists to determine the components that are manufactured by Hendrickson. For components not manufactured or supplied by Hendrickson contact the vehicle manufacturer for proper preventive maintenance and rebuild instructions.

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

It is important to read and understand the entire Technical Procedure publication prior to performing any maintenance, service, repair, or rebuild of the product. The information in this publication contains parts lists, safety information, product specifications, features, proper maintenance, service, repair and rebuild instructions for the SOFTEK / AIRTEK Suspension and the STEERTEK NXT axle.

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

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

SECTION 2
Product Description

STEERTEK NXT — Integrated into the SOFTEK systems as well as being an option on International's 2-leaf mechanical suspension system, see Figure 2-2. The box-shaped design provides a stiffer axle and resists torsional, longitudinal and vertical loads more effectively than traditional I-beam axles. Together with the front limbs of the leaf springs, the robotically welded axle beam forms a torsion system, enhancing roll stability characteristics and improving handling.

Axle Clamp Group — The Clamp Group consists of the top pad, ¾" U-bolts, washers, and nylon locknuts

Adjustable Tie Rod — To help maximize tire life, the tie rod easily adjusts toe-in/out.

Steering Knuckles — The steering and tie rod arms are integrated for increased strength and reduced weight. The unique steering knuckle packaging delivers up to 55° wheel cut. The two piece knuckle design makes replacing the kingpin bushings easier by eliminating the need to remove the kingpins.

SOFTEK — Lightweight mechanical front suspension and steer axle system, see Figure 2-1. As with AIRTEK, Hendrickson has engineered the following components to optimize the performance of the SOFTEK System.

Monoleaf Spring Assembly — The lightweight, durable design provides excellent ride and handling, and eliminates inner leaf friction that is inherent to typical 2-leaf suspension systems.

AIRTEK (available prior to August 2011) — Winner of the 2001 Automotive News and Cap Gemini Ernst & Young PACE Award for Product Innovation, AIRTEK is an integrated front air suspension and robotically welded steer axle that work together to form an integrated torsion system. This lightweight system provides enhanced driver comfort and is ideal for on-highway line and bulk haul operations, see Figure 2-3. Utilizing a system approach, Hendrickson has engineered and optimized the following components to form a system delivering superior ride, stability and handling characteristics with reduced weight and maintenance.

Air Springs — Exclusive to Hendrickson, the lightweight air springs deliver an extremely soft ride. The air springs are engineered to support 85% of the vertical load while providing very low spring rate.

AIRTEK Leaf Spring Assembly — With its innovative design, the leaf spring provides superior stability, performance and a soft ride. The patented leaf spring shares loads with the air spring. Durable rubber front and rear bushings are greaseless and only require periodic inspections.

Shock Absorbers — SOFTEK / AIRTEK utilizes premium shocks that have been tested and tuned specifically for the SOFTEK / AIRTEK system.

Frame Brackets — Optimized designs deliver weight reduction and proven durability.

FIGURE 2-1

SOFTEK Monoleaf Suspension and STEERTEK NXT axle System
Capacity: 12,000 pounds,
Suspension Weight: 217 pounds

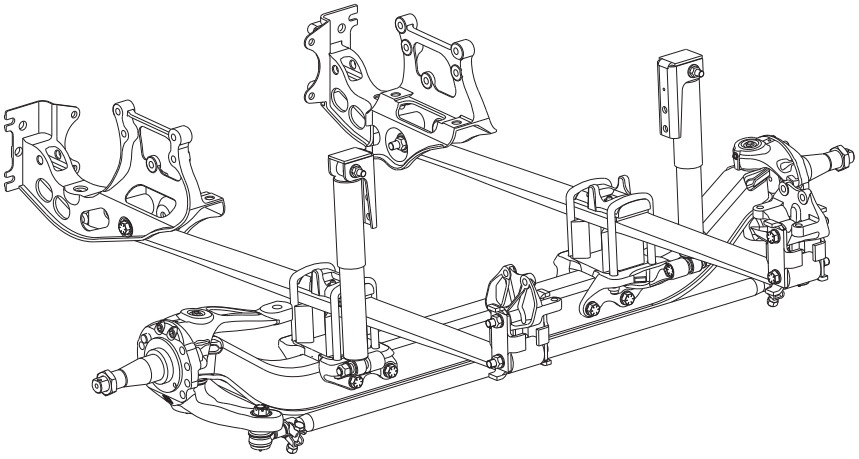


FIGURE 2-2

STEERTEK NXT axle with International's Parabolic, Taper Leaf (2-Leaf) Mechanical Suspension
Capacity: 12,000, 12,350, 13,000, 13,200, 14,000, 14,600 pounds

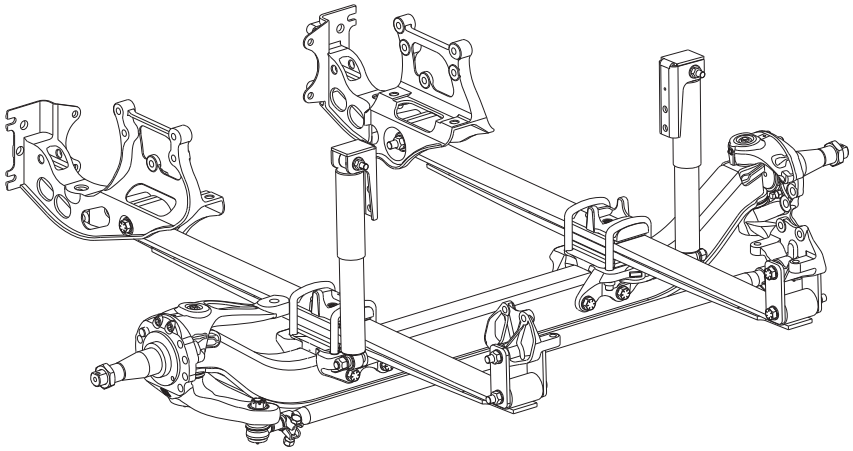
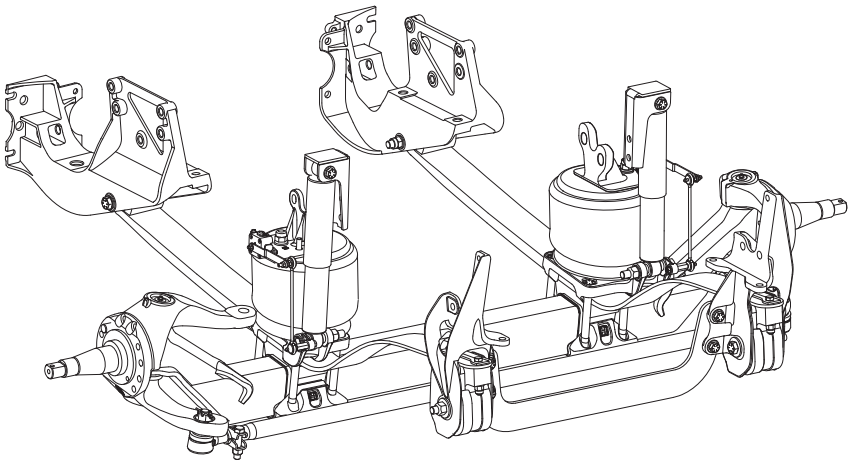


FIGURE 2-3

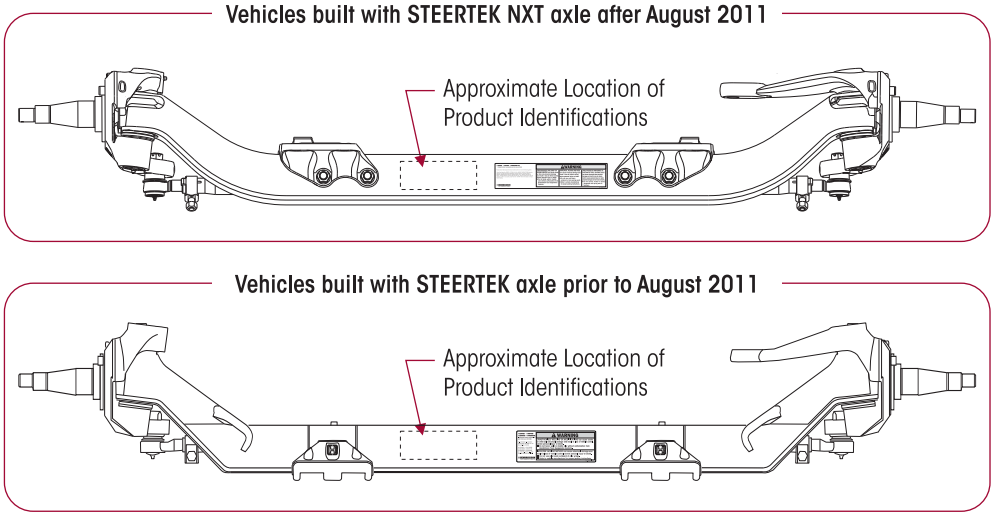
AIRTEK Air Suspension and STEERTEK axle System (available prior to August 2011)
Capacity: 12,000 pounds,
Suspension Weight:
275 pounds (w/Belly Band),
263 pounds (w/o Belly Band)



TECHNICAL NOTES

1. SOFTEK and AIRTEK are approved for on-highway usage with up to 15 percent operation on unpaved secondary roads. Other applications must be pre-approved by both Hendrickson and vehicle manufacturer. This system has a 12,000 pound capacity. System capacity represents maximum loads on tires at ground level.
2. The STEERTEK NXT axle is available with 69.02" and 70.89" Kingpin Intersections (KPI).
3. The STEERTEK NXT axle offers 4.25" and 5.36" axle beam drop height. Axle beam drop is measured from the kingpin intersection to the top of the axle.
4. AIRTEK suspension weight includes rear frame hangers, main springs, bushings, air springs and air spring brackets, height control system, shocks, upper shock brackets, belly band (if equipped) and axle attachment hardware.
5. STEERTEK NXT axle system weight is based on a 4.25" drop height and a 70.87" KPI axle. Weight includes, axle beam with axle spring seats, knuckle/steering arm assemblies and tie rod assemblies.
6. SOFTEK is an integral to and available exclusively with the STEERTEK NXT axle. STEERTEK NXT can be used in applications that are up to 100 percent off road. Contact Hendrickson for approval and guidelines on any application that exceeds 15 percent off road usage. This system is anti-lock braking system (ABS) ready. STEERTEK NXT is compatible with industry standard wheel ends and brakes. STEERTEK NXT is also available with mechanical suspension options. Contact Hendrickson or vehicle manufacturer for availability.
7. The STEERTEK NXT axle product identification is etched on the front of the axle beam providing the following information, see Figure 2-4:
   - Axle part number: Identifies the features of the axle beam.
   - Axle assembly number: Identifies the complete assembly, which includes the steering knuckles and bracket assemblies.

FIGURE 2-4 Front view of axle showing approximate location of etched Product Identification.



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 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 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 REGULARLY CALIBRATED TORQUE WRENCH. TORQUE VALUES SPECIFIED IN THIS TECHNICAL PUBLICATION ARE FOR HENDRICKSON SUPPLIED FASTENERS ONLY. IF NON HENDRICKSON FASTENERS ARE USED, FOLLOW TORQUE SPECIFICATION LISTED IN THE VEHICLE MANUFACTURER'S SERVICE MANUAL.

WARNING

AIR SPRINGS

AIR SPRING ASSEMBLIES MUST BE COMPLETELY DEFLATED PRIOR TO LOOSENING ANY CLAMP GROUP HARDWARE, OR OTHERWISE PERFORMING ANY MAINTENANCE, SERVICE OR REPAIR OF THE SUSPENSION SYSTEM. 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

WHEN SERVICING THE VEHICLE OR ATTACHING AN AIR SPRING AND THE VEHICLE IS ON THE GROUND, PRIOR TO AIRING THE SUSPENSION SYSTEM MAKE CERTAIN THE AIR SPRING LOCATOR IS INDEXED INTO THE UPPER AIR SPRING BRACKET PROPERLY, AND THE AIR SPRING IS FULLY SEATED ON THE TOP PAD. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN PREMATURE AIR SPRING FAILURE, CAUSE PERSONAL INJURY, OR PROPERTY DAMAGE.

WARNING

PRIOR TO AND DURING DEFLATION AND INFLATION OF THE FRONT 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.

WARNING

LOAD CAPACITY

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

WARNING

REPAIR OR RECONDITIONING

THE REPAIR OR RECONDITIONING OF SUSPENSION OR AXLE COMPONENTS IS NOT ALLOWED AS SHOWN ON LABEL IN FIGURE 3-3. ANY AXLE COMPONENTS FOUND TO BE DAMAGED OR OUT OF SPECIFICATIONS MUST BE REPLACED. ALL MAJOR HENDRICKSON COMPONENTS ARE HEAT TREATED AND TEMPERED. AIRTEK COMPONENTS CANNOT BE BENT, WELDED, HEATED, OR REPAIRED WITHOUT REDUCING THE STRENGTH OR LIFE OF THE COMPONENT. FAILURE TO FOLLOW THESE GUIDELINES CAN CAUSE LOSS OF VEHICLE CONTROL, POSSIBLE PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE AND WILL VOID APPLICABLE WARRANTIES.

WARNING

SHOCK ABSORBERS

THE SHOCK ABSORBERS ARE THE REBOUND TRAVEL STOPS FOR THE SPRINGS. ANYTIME THE FRONT AXLE ON AN AIRTEK SUSPENSION IS SUSPENDED IT IS MANDATORY THAT THE SHOCK ABSORBERS REMAIN CONNECTED. FAILURE TO DO SO COULD CAUSE THE AIR SPRINGS TO EXCEED THEIR MAXIMUM LENGTH, POSSIBLY CAUSING THE AIR SPRINGS TO SEPARATE FROM THE PISTON, OR CAUSE A REVERSE ARCH IN THE STEEL LEAF SPRINGS, POSSIBLY RESULTING IN PREMATURE STEEL LEAF SPRING FAILURE.

⚠ WARNING

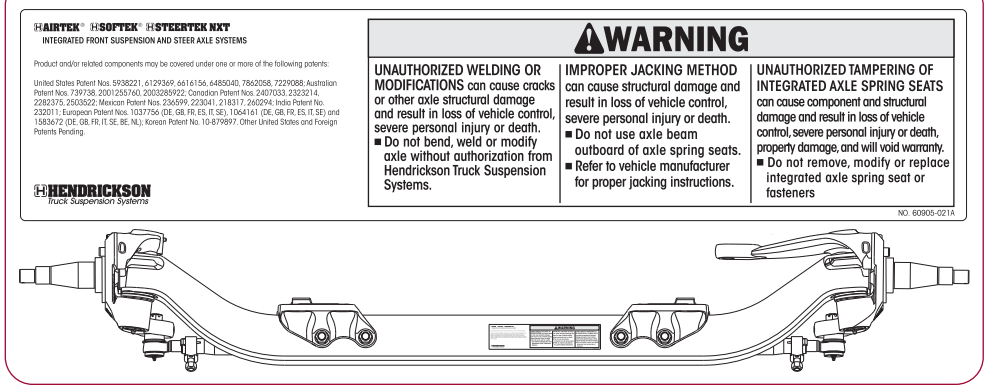
AXLE CAMBER

UNAUTHORIZED WELDING OR MODIFICATIONS CAN CAUSE CRACKS OR OTHER AXLE STRUCTURAL DAMAGE AND RESULT IN LOSS OF VEHICLE CONTROL, SEVERE PERSONAL INJURY OR DEATH. DO NOT BEND, WELD OR MODIFY AXLE WITHOUT AUTHORIZATION FROM HENDRICKSON TRUCK SUSPENSION SYSTEMS.

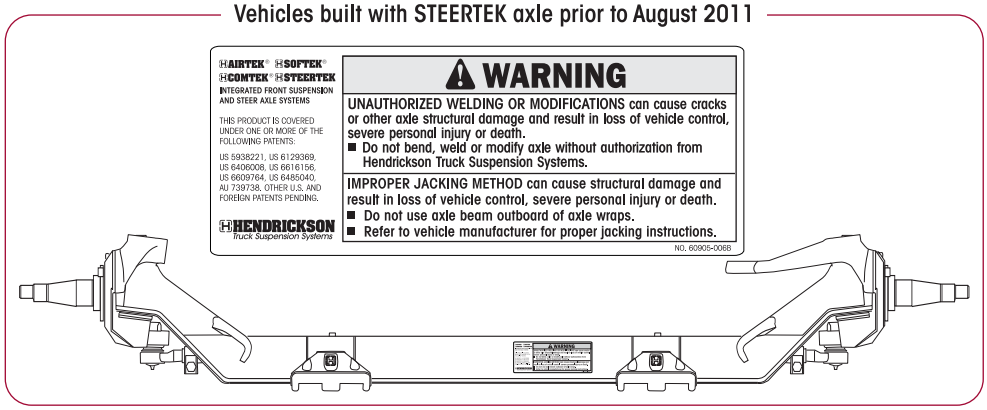
AXLE CAMBER IS NOT ADJUSTABLE. DO NOT CHANGE THE AXLE CAMBER ANGLE OR BEND THE AXLE BEAM, SEE FIGURE 3-1. BENDING THE AXLE BEAM TO CHANGE THE CAMBER ANGLE CAN DAMAGE THE AXLE AND REDUCE AXLE STRENGTH, WILL VOID HENDRICKSON'S WARRANTY AND CAN CAUSE LOSS OF VEHICLE CONTROL, POSSIBLY CAUSING PERSONAL INJURY OR PROPERTY DAMAGE.

FIGURE 3-1 REPLACE ANY SAFETY DECALS THAT ARE FADED, TORN, MISSING, ILLEGIBLE, OR OTHERWISE DAMAGED. CONTACT HENDRICKSON TO ORDER REPLACEMENT LABELS.

Vehicles built with STEERTEK NXT axle after August 2011



Vehicles built with STEERTEK axle prior to August 2011



⚠ WARNING

AXLE KINGPINS

STEERTEK NXT / STEERTEK IS A UNIQUE AXLE, IN THAT THE KINGPIN IS CRYOGENICALLY INSTALLED IN THE AXLE. THE KINGPIN IS A NON-REPLACEABLE COMPONENT OF THE AXLE ASSEMBLY. DO NOT TRY TO REMOVE THE KINGPIN. IF THE KINGPIN OR ADJACENT MATING SURFACE SHOW SIGNS OF DAMAGE OR MOVEMENT, DO NOT OPERATE THE VEHICLE AND IMMEDIATELY CONTACT THE HENDRICKSON TECH SERVICES DEPARTMENT.

⚠ DANGER

STEERTEK NXT AXLE SPRING SEATS

THE INTEGRATED AXLE SPRING SEATS ON THE STEERTEK NXT AXLE ARE NON-SERVICEABLE. UNAUTHORIZED TAMPERING OF INTEGRATED AXLE SPRING SEATS CAN CAUSE COMPONENT AND STRUCTURAL DAMAGE AND RESULT IN LOSS OF VEHICLE CONTROL, SEVERE PERSONAL INJURY OR DEATH, PROPERTY DAMAGE, AND WILL VOID ANY APPLICABLE WARRANTY. DO NOT REMOVE, MODIFY OR REPLACE INTEGRATED AXLE SPRING SEAT OR FASTENERS, SEE FIGURE 3-1.

⚠ WARNING

IMPROPER JACKING METHOD

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

⚠ WARNING

DAMAGED AXLE COMPONENTS

IF A VEHICLE EQUIPPED WITH A STEERTEK NXT / STEERTEK AXLE IS INVOLVED IN A CRASH, THE AXLE STEER KNUCKLES MUST BE DISASSEMBLED AND 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 WITH ANY QUESTIONS. FAILURE TO REPLACE ANY DAMAGED COMPONENTS CAN CAUSE LOSS OF VEHICLE CONTROL, POSSIBLE PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE AND WILL VOID ANY APPLICABLE WARRANTIES.

⚠ WARNING

MODIFYING COMPONENTS

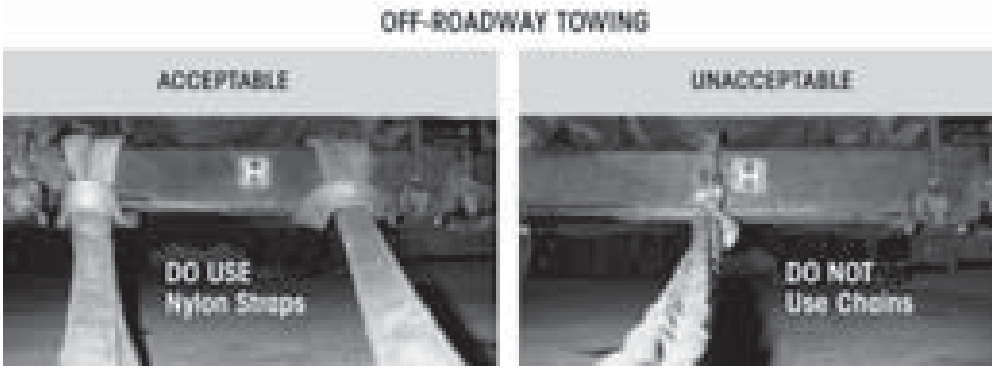
DO NOT MODIFY OR REWORK PARTS WITHOUT AUTHORIZATION FROM HENDRICKSON. DO NOT SUBSTITUTE REPLACEMENT COMPONENTS NOT AUTHORIZED BY HENDRICKSON. USE OF MODIFIED, REWORKED, SUBSTITUTE OR REPLACEMENT PARTS NOT AUTHORIZED BY HENDRICKSON MAY NOT MEET HENDRICKSON'S SPECIFICATIONS, AND CAN RESULT IN FAILURE OF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

⚠ WARNING

OFF-ROADWAY TOWING

WHEN A VEHICLE IS DISABLED AND EQUIPPED WITH A STEERTEK NXT / STEERTEK AXLE, CARE MUST BE TAKEN TO ENSURE THERE IS NO DAMAGE TO THE SUSPENSION OR AXLE WHEN TOWING THE VEHICLE. THE USE OF A TOW STRAP IS NECESSARY TO TOW A DISABLED VEHICLE TO A REPAIR FACILITY PARKING LOT INTO THE SHOP BAY. THE TOW STRAPS SHOULD BE CONNECTED TO THE TOW HOOKS PROVIDED BY THE VEHICLE MANUFACTURER AT THE FRONT OF THE BUMPER. IF THE USE OF TOW HOOKS IS NOT AN OPTION, THEN A TOW STRAP MAY BE WRAPPED AROUND THE FRONT AXLE, (SEE FIGURE 3-2) IN A MANNER THAT IS ACCEPTABLE FOR TOWING THE VEHICLE FROM A REPAIR FACILITY PARKING LOT INTO THE SHOP BAY. DO NOT USE A TOW CHAIN AROUND THE FRONT AXLE OR WITH A SINGLE POINT LOCATION TO TOW THE VEHICLE. DOING SO WILL DAMAGE THE AXLE AND VOID ANY APPLICABLE WARRANTY, SEE FIGURE 3-2. FOR DETAILED TOWING INSTRUCTIONS FOR ON-HIGHWAY TOWING, SEE TOWING PROCEDURES SECTION IN THIS PUBLICATION.

FIGURE 3-2



⚠ CAUTION

PROCEDURES AND TOOLS

A MECHANIC USING A SERVICE PROCEDURE OR TOOL WHICH HAS NOT BEEN RECOMMENDED BY HENDRICKSON MUST FIRST SATISFY HIMSELF THAT NEITHER HIS SAFETY NOR THE VEHICLE'S SAFETY WILL BE JEOPARDIZED BY THE METHOD OR TOOL SELECTED. INDIVIDUALS DEVIATING IN ANY MANNER FROM THE INSTRUCTIONS PROVIDED ASSUME ALL RISKS OF POTENTIAL PERSONAL INJURY OR DAMAGE TO EQUIPMENT INVOLVED.

⚠ WARNING

PERSONNEL 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

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.

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

⚠ WARNING

SUPPORT THE VEHICLE PRIOR TO SERVICING

PLACE THE VEHICLE ON A LEVEL FLOOR AND CHOCK THE WHEELS TO HELP PREVENT THE VEHICLE FROM MOVING. NEVER WORK UNDER A RAISED VEHICLE SUPPORTED ONLY BY A FLOOR JACK. ALWAYS SUPPORT A RAISED VEHICLE WITH SAFETY STANDS. BLOCK THE WHEELS AND MAKE SURE THE UNIT WILL NOT ROLL BEFORE RELEASING BRAKES. A JACK CAN SLIP OR FALL OVER. SERIOUS PERSONAL INJURY CAN RESULT.

⚠ 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 PROCEDURE:

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 ANY APPLICABLE WARRANTY.

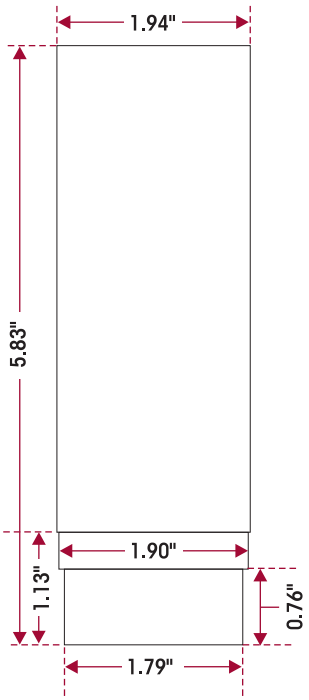
SECTION 4

Special Tools

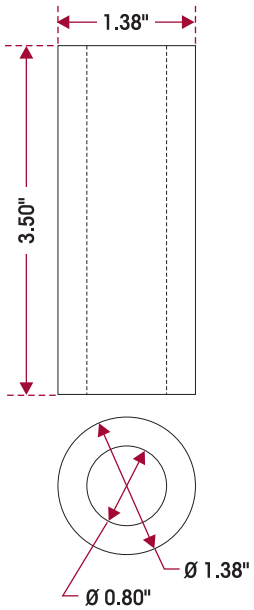
These shop made tools are designed to install and remove kingpin bushings. Bushing tools are made from cold rolled steel or equivalent. Drawings are for reference only. Hendrickson does not supply these tools.

KINGPIN BUSHING TOOLS

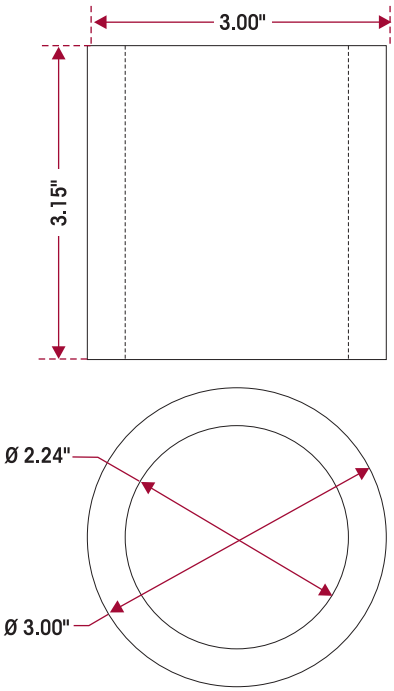
STEERTEK Kingpin Bushing Driver Tool



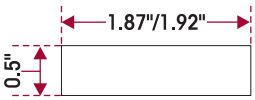
STEERTEK Kingpin Bushing Push-out Tool



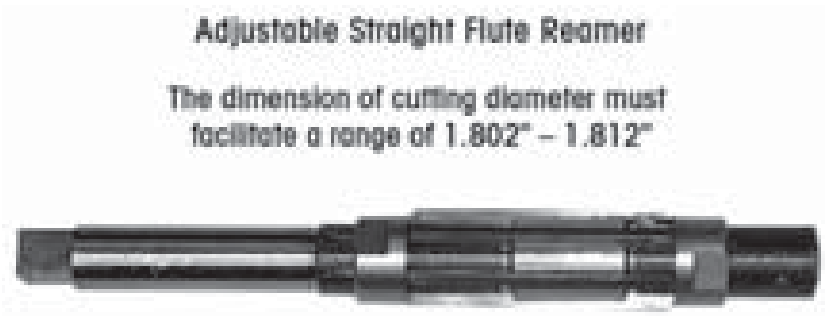
STEERTEK Receiving Tool



STEERTEK NXT Kingpin Bushing Installer / Remover Tool



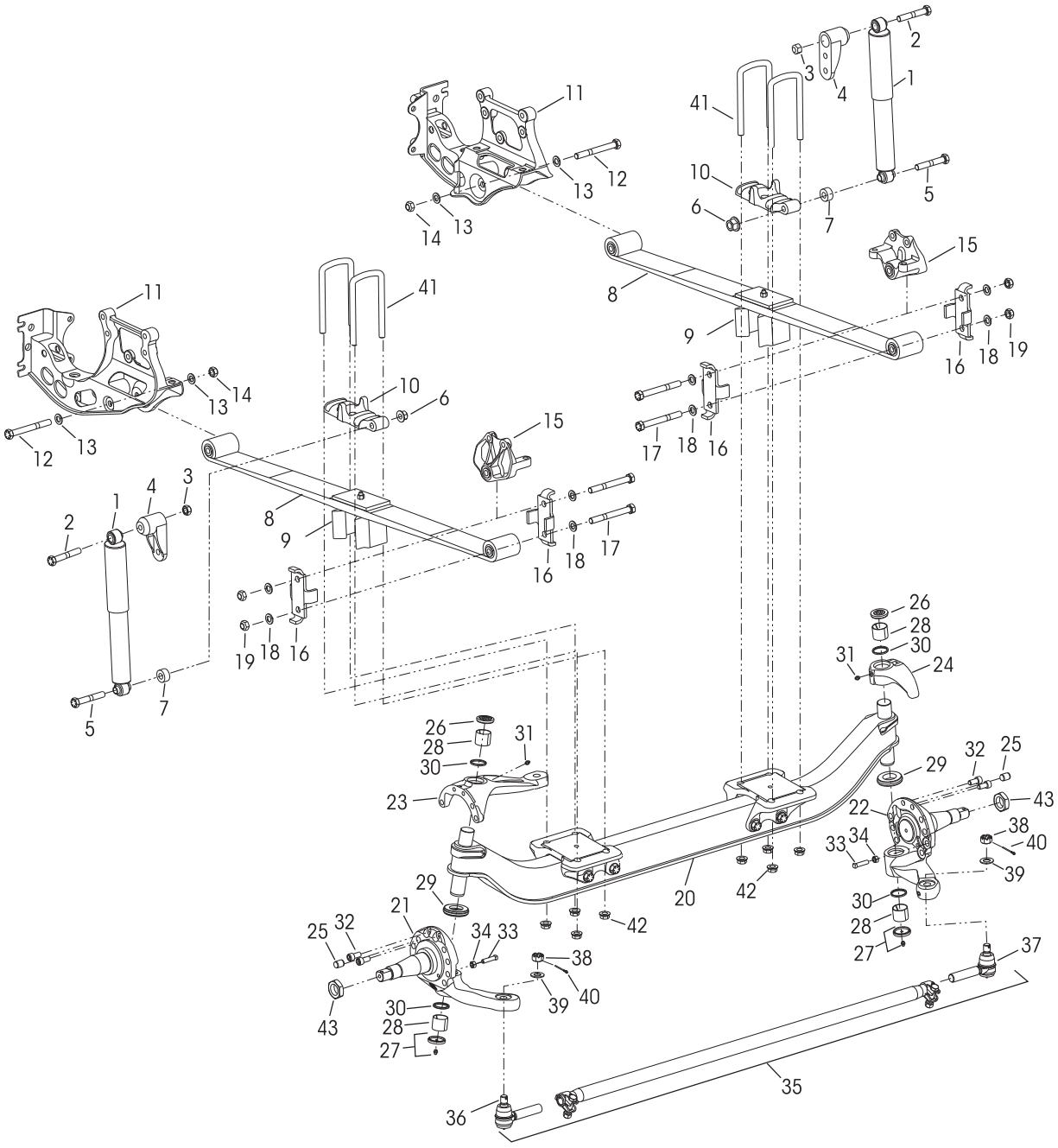
ADJUSTABLE STRAIGHT FLUTE REAMER



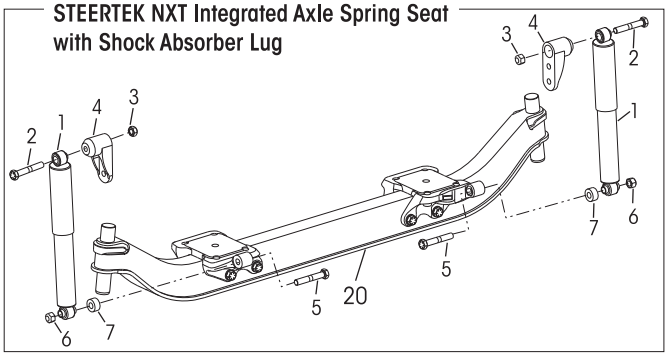
Parts List

SOFTEK Monoleaf – Vehicles built with STEERTEK NXT axle after August 1, 2011

International Truck Models • LoneStar - 12.35K **• ProStar -** 12K, 12.35K **• TranStar -** 12K



STEERTEK NXT Integrated Axle Spring Seat with Shock Absorber Lug



KEY NO.	PART NO.	DESCRIPTION	NO.REQ.
1		*Shock Absorber	2
2		*⅝"-11 UNC 4.0" Upper Shock Flange Bolt	2
3		*⅝"-11 UNC Upper Shock Flange Locknut	2
4		*Upper Shock Bracket	2
5		*¾"-10 UNC 5.0" Lower Shock Flange Bolt	2
6		*¾"-10 UNC Lower Shock Flange Locknut	2
7		*Shock Spacer (if equipped)	2
8		Monoleaf Spring Assembly, Includes Key No. 9	2
	53297-000	Models LoneStar, ProStar	
	53297-008	Model TranStar	
9		**Front Axle Spacer	2
10		*Top Pad	2
11		*Front Hanger	2
12		*¾"-10 UNC 8.5" Hex Bolt	2
13		*¾" Flat Washer	4
14		*¾"-10 UNC Locknut	2
15		*Rear Spring Mount	2
16	66545-000	Shackle Plate	4
17		*¾"-16 UNF 6.5" Bolt	4
18		*¾" Flat Washer	8
19		*¾"-16 UNF Locknut	4
		STEERTEK NXT Axle Assembly, Includes Key Nos. 20-43, *See chart on pages 14-15*	1
20		***Axle & Kingpin Assembly, *See chart on pages 14-15*	1
21		LH Lower Steering Knuckle Assembly *See chart on pages 14-15*	1
22		RH Lower Steering Knuckle Assembly *See chart on pages 14-15*	1
23		LH Upper Steering Knuckle Assembly *See chart on pages 14-15*	1
24		RH Upper Steering Knuckle Assembly *See chart on pages 14-15*	1
25	64246-000	ABS Sensor Sleeve	2

KEY NO.	PART NO.	DESCRIPTION	NO.REQ.
	60961-630	**Kingpin Bushing and Roller Thrust Bearing Service Kit, One Side,** Includes Key Nos. 26-30, 32, Loctite	
26	68687-003	Grease Cap Assembly, Upper	2
27	68687-002	Grease Cap Assembly, Lower	2
28	58909-001	Kingpin Bushing	4
29	64256-000	Roller Thrust Bearing	2
30	68731-000	Kingpin Seal	4
31	33117-000	Grease Fitting	2
32	60236-001	⅝"-11 UNC Socket Head Cap Screw	4
Not Shown	60937-000	Loctite® (Red) Compound Tube	1
	60961-069	**Stop Bolt Service Kit, One Side,** Includes Key Nos. 33-34	
33	60238-001	½"-13 UNC Square Head Bolt	2
34	60240-000	½"-13 UNC Hex Jam Nut	2
35		Tie Rod Assembly, Includes Key Nos. 36-38 *See chart on pages 14-15*	1
	60961-010	**Tie Rod End Service Kit, Axle Set,** Includes Kit Nos. 60961-025 & -26	
	60961-025	**LH Tie Rod End Service Kit,** Includes Key Nos. 36, 39-40	
	60961-026	**RH Tie Rod End Service Kit,** Includes Key Nos. 37, 39-40	
36	64000-001	LH Tie Rod End	1
37	64000-002	RH Tie Rod End	1
38		**⅞" Castle Nut	2
39	22962-007	⅞" Flat Washer	2
40	17800-004	Tie Rod Nut Cotter Pin	2
41		*¾"-16 UNF U-bolt 7.75" Ride Ht. - 9" Long 7.00" Ride Ht. - 8.25" Long	4
42		*¾" Flange Locknut	8
43	64578-000	1½"-12 UNF Spindle Nut	2

NOTE: * Not supplied by Hendrickson, used for reference only. Refer to the vehicle manufacturer for more information.

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

*** Axle spring seats come assembled with the axle beam and are not serviceable.

SOFTEK Monoleaf – Vehicles built with STEERTEK NXT after August 1, 2011
International Truck Models ProStar

	CAPACITY	MOUNTING FASTENERS	WHEEL BASE	KPI	STEERTEK NXT Assembly	Axle & Kingpin Assembly Key No. 20	LH Lower Steering Knuckle Assembly Key No. 21	RH Lower Steering Knuckle Assembly Key No. 22	LH Upper Steering Knuckle Assembly Key No. 23	RH Upper Steering Knuckle Assembly Key No. 24	Tie Rod Assembly Key No. 35
					PART NUMBERS						
Model ProStar	12K	¾"	Below 200"	70.87	68997-003	68996-001M	58900-493	58900-494	60903-463	60904-432	60239-005
			Above 200"		68997-004		58900-473	58900-474			60239-002
		¾"	Below 200"	70.87	68997-047	68996-005M	58900-493	58900-494	60903-463	60904-432	60239-005
			Above 200"		68997-048		58900-473	58900-474			60239-002
		⅝"	Below 200"	70.87	68997-063	68996-001M	58900-293	58900-294	60903-263	60904-232	60239-005
			Above 200"		68997-064		58900-273	58900-274			60239-002
		⅝"	Below 200"	70.87	68997-099	68996-005M	58900-293	58900-294	60903-263	60904-232	60239-005
			Above 200"		68997-100		58900-273	58900-274			60239-002
	12.35K	¾"	Below 200"	70.87	68997-043	68996-001M	58900-493	58900-494	60903-463	60904-432	60239-005
			Above 200"		68997-044		58900-473	58900-474			60239-002
		¾"	Below 200"	69.00	68997-049	68996-006M	58900-493	58900-494	60903-462	60904-432	60239-004
			Above 200"		68997-050		58900-473	58900-474			60239-005
		⅝"	Below 200"	70.87	68997-095	68996-001M	58900-293	58900-294	60903-263	60904-232	60239-005
			Above 200"		68997-096		58900-273	58900-274			60239-002
		⅝"	Below 200"	69.00	68997-101	68996-006M	58900-293	58900-294	60903-262	60904-232	60239-004
			Above 200"		68997-102		58900-273	58900-274			60239-005

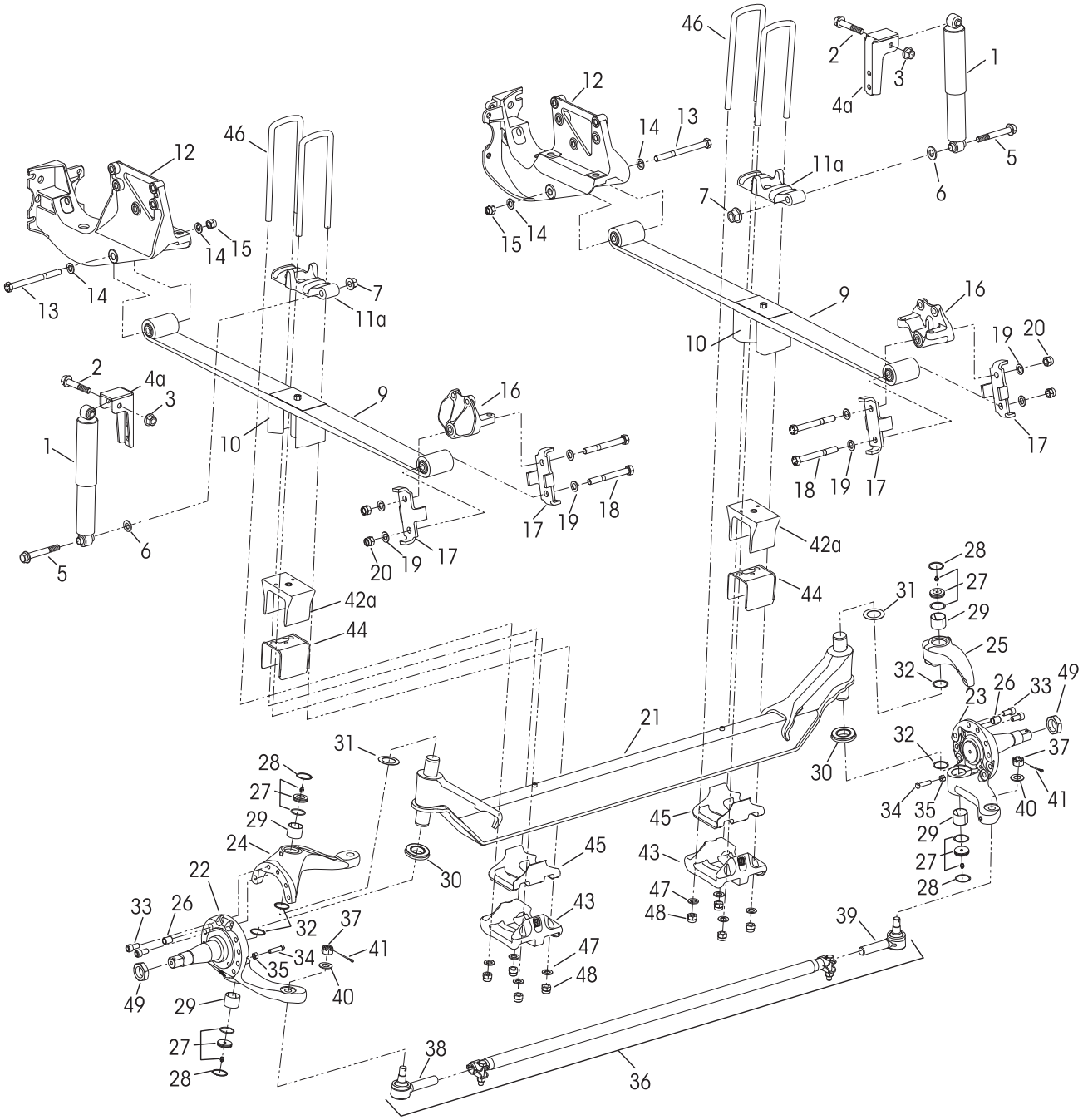
Items shown in gray denotes STEERTEK NXT integrated axle spring seat **without** shock absorber lug.

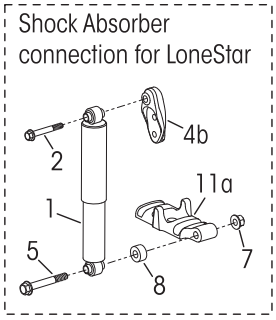
SOFTEK Monoleaf – Vehicles built with STEERTEK NXT after August 1, 2011
International Truck Models LoneStar / TranStar

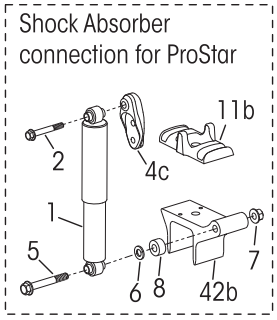
	CAPACITY	MOUNTING FASTENERS	WHEEL BASE	KPI	STEERTEK NXT Assembly	Axle & Kingpin Assembly Key No. 20	LH Lower Steering Knuckle Assembly Key No. 21	RH Lower Steering Knuckle Assembly Key No. 22	LH Upper Steering Knuckle Assembly Key No. 23	RH Upper Steering Knuckle Assembly Key No. 24	Tie Rod Assembly Key No. 35
					PART NUMBERS						
Model LoneStar	12.35K	¾"	Below 200"	70.87	68997-015	68996-001M	58900-493	58900-494	60903-468	60904-432	60239-005
			Above 200"		68997-016		58900-473	58900-474			60239-002
		⅝"	Below 200"	70.87	68997-075		58900-293	58900-294	60903-468	60904-232	60239-005
			Above 200"		68997-076		58900-273	58900-274			60239-002
Model TranStar	12K	¾"	Below 200"	70.87	68997-029	68996-001M	58900-493	58900-494	60903-467	60904-432	60239-005
			Above 200"		68997-030		58900-473	58900-474			60239-002
			Below 200"	69.00	68997-033	68996-002M	58900-493	58900-494	60903-464	60904-432	60239-004
			Above 200"		68997-034		58900-473	58900-474			60239-005
		⅝"	Below 200"	70.87	68997-087	68996-001M	58900-293	58900-294	60903-267	60904-232	60239-005
			Above 200"		68997-088		58900-273	58900-274			60239-002
			Below 200"	69.00	68997-089	68996-002M	58900-293	58900-294	60903-264	60904-232	60239-004
			Above 200"		68997-090		58900-273	58900-274			60239-005

Vehicles built with STEERTEK axle prior to August 1, 2011

International Truck Models • LoneStar - 12.35K • **ProStar -** 12K, 12.35K • **9200 / 9400 / 8600 -** 12K







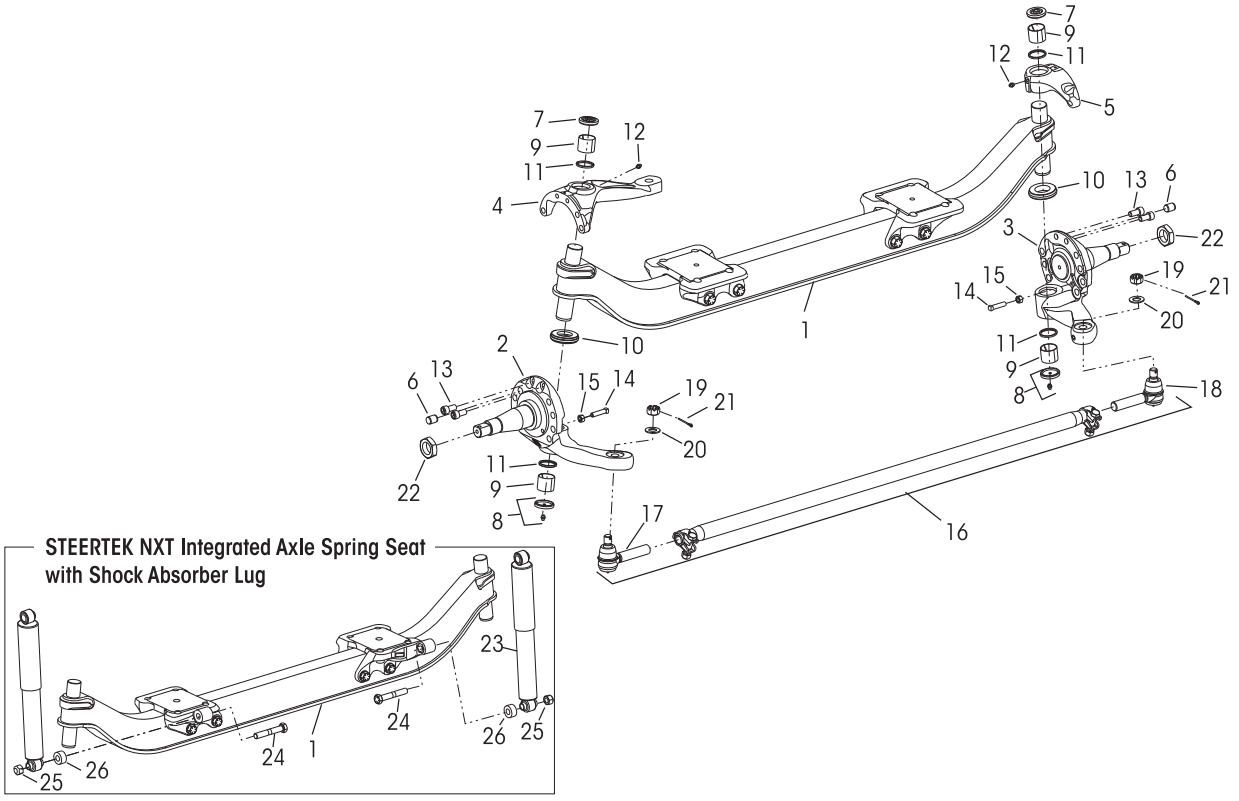
KEY NO.	PART NO.	DESCRIPTION	NO.REQ.
1		*Shock Absorber	2
2		*⅝"-11 UNC 4.0" Upper Shock Flange Bolt	2
3		*⅝"-11 UNC Upper Shock Flange Locknut	2
4		*Upper Shock Bracket	2
a		Models 9200/9400/8600	
b		Model LoneStar	
c		Model ProStar	
5		*¾"-10 UNC 5.0" Lower Shock Flange Bolt	2
6		*¾" Lower Shock Hardened Washer	2
7		*¾"-10 UNC Lower Shock Flange Locknut	2
8		*Shock Spacer - 19mm	2
9		Monoleaf Spring Assembly, Includes Key No.10	2
	53297-000	Models LoneStar, ProStar, 9200/9400	
		Replaces 67399-001, 66347-001	
	53298-000	Model TranStar, 8600	
		Replaces 67399-002, 66347-002	
10		**Front Axle Spacer	2
11		*Top Pad,	
a		Models LoneStar/TranStar/9200/9400/8600	2
b		Models ProStar	2
12		*Front Hanger	2
13		*¾"-10 UNC 8.5" Hex Bolt	2
14		*¾" Flat Washer	4
15		*¾"-10 UNC Locknut	2
16		*Rear Spring Mount	2
17	66545-000	Shackle Plate	4
18		*¾"-16 UNF 6.5" Bolt	4
19		*¾" Flat Washer	8
20		*¾"-16 UNF Locknut	4
		STEERTEK Axle Assembly,	1
		Includes Key Nos. 21-45	
		Model LoneStar, 12.35K	
	70952-311	Above 200" Wheel Base	
	70952-310	Below 200" Wheel Base	
		Model ProStar, 12K	
	70952-313	Above 200" Wheel Base	
	70952-312	Below 200" Wheel Base	
		Models 9200/9400, 12K	
	70952-278	Above 200" Wheel Base	
	70952-279	Below 200" Wheel Base	
		Model 8600 / TranStar, 12K	
	70952-280	Above 200" Wheel Base	
	70952-281	Below 200" Wheel Base	
21	64905-001	Axle & Kingpin Assembly	1
22		LH Lower Steering Knuckle Assembly	1
	58900-073	Above 200" Wheel Base	
	58900-075	Below 200" Wheel Base	
23		RH Lower Steering Knuckle Assembly	1
	58900-074	Above 200" Wheel Base	
	58900-076	Below 200" Wheel Base	
24		LH Upper Steering Knuckle Assembly	1
	60903-056	Model LoneStar	
	60903-042	Models ProStar, 9200/9400	
	60903-044	Model 8600 / TranStar	
25	60904-034	RH Upper Steering Knuckle Assembly	1
26	64246-000	ABS Sensor Sleeve	2
	60961-039	**Kingpin Bushing and Roller Thrust Bearing Service Kit, One Side,** Includes Key Nos. 27-33, Loctite	
27	59156-000	Grease Cap Assembly	4
28	58937-000	Retaining Ring	4
29	58909-000	Kingpin Bushing	4
	60961-042	**Roller Thrust Bearing Service Kit, One Side,** Includes Key Nos. 30-33, Loctite	
30	64256-000	Roller Thrust Bearing	2
31		Kingpin Shim (As Needed for Service)	
	60259-002	0.047" Thickness	2
	60259-001	0.005" Thickness	4
32	58910-001	Kingpin Seal, *Replaces 58910-000*	4
33	60236-001	⅝"-11 UNC Socket Head Cap Screw	4
Not Shown	60937-000	Loctite® (Red) Compound Tube	1
	60961-069	**Stop Bolt Service Kit, One Side,** Includes Key Nos. 34-35	
34	60238-001	½"-13 UNC Square Head Bolt	2
35	60240-000	½"-13 UNC Hex Jam Nut	2
36		Tie Rod Assembly, Includes Key Nos. 37-39	1
	60239-002	Above 200" Wheel Base	
	60239-001	Below 200" Wheel Base	
37		**⅞" Castle Nut	2
	60961-010	**Tie Rod End Service Kit, Axle Set,** Includes Kit Nos. 60961-025 & -26	
	60961-025	**LH Tie Rod End Service Kit,** Includes Key Nos. 38, 40-41	
	60961-026	**RH Tie Rod End Service Kit,** Includes Key Nos. 39-41	
38	64000-001	LH Tie Rod End	1
39	64000-002	RH Tie Rod End	1
40	22962-007	⅞" Flat Washer	2
41	17800-004	Tie Rod Nut Cotter Pin	2
42		Top Axle Wrap	2
a	59952-023	Models LoneStar/9200/9400/8600	
b	59952-032	Model ProStar	
43	64722-003	Bottom Axle Wrap	2
44	65757-000	Top Axle Wrap Liner	2
45	59845-000	Bottom Axle Wrap Liner	2
46		*¾"-16 UNF U-bolt	4
		7.75" Ride Ht. - 13" Long	
		7.00" Ride Ht. - 12.25" Long	
47		*¾" Flat Washer	8
48		*¾"-16 UNF Locknut	8
49	64578-000	1½"-12 UNF Spindle Nut	2

NOTE: * Not supplied by Hendrickson, used for reference only. Refer to the vehicle manufacturer for more information.

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

Vehicles built with STEERTEK NXT axle after August 1, 2011

International Truck Models • ProStar - 12K, 12.35K, 13.2K, 14K, 14.6K • **TranStar -** 12K, 12.35K, 14K • **LoneStar -** 12.35K, 13.2K, 14K, 14.6K



STEERTEK NXT Integrated Axle Spring Seat with Shock Absorber Lug

KEY NO.	PART NO.	DESCRIPTION	NO.REQ.
		STEERTEK NXT Axle Assembly, Includes Key Nos. 1-22, *See chart on page 19*	1
1		***Axle & Kingpin Assembly *See chart on page 19*	1
2		LH Lower Steering Knuckle Assembly	1
	58900-473	Above 200" Wheel Base	
	58900-493	Below 200" Wheel Base	
3		RH Lower Steering Knuckle Assembly	1
	58900-474	Above 200" Wheel Base	
	58900-494	Below 200" Wheel Base	
4		LH Upper Steering Knuckle Assembly *See chart on page 19*	1
5	60904-432	RH Upper Steering Knuckle Assembly	1
6	64246-000	ABS Sensor Sleeve	2
	60961-630	**Kingpin Bushing and Roller Thrust Bearing Service Kit, One Side,** Includes Key Nos. 7-11, 13 and Loctite	
7	68687-003	Grease Cap Assembly, Upper	2
8	68687-002	Grease Cap Assembly, Lower	2
9	58909-001	Kingpin Bushing	4
10	64256-000	Roller Thrust Bearing	2
11	68731-000	Kingpin Seal	4
12	33117-000	Grease Fitting	2
13	60236-001	5/8"-11 UNC Socket Head Cap Screw	4
Not Shown	60937-000	Loctite® (Red) Compound Tube	1
	60961-069	**Stop Bolt Service Kit, One Side,** Includes Key Nos. 14-15	
14	60238-001	½"-13 UNC Square Head Bolt	2
15	60240-000	½"-13 UNC Hex Jam Nut	2
16		Tie Rod Assembly, Includes Key Nos. 17-19 *See chart on page 19*	1
		Tie Rod End Service Kit, Axle Set	
	60961-010	12K, Includes Kit Nos. 60961-025 & -026	
	60961-011	14K, Includes Kit Nos. 60961-027 & -028	
		LH Tie Rod End Service Kit	
	60961-025	12K, Includes Key Nos. 17a, 20-21	
	60961-027	14K, Includes Key Nos. 17b, 20-21	
		RH Tie Rod End Service Kit,	
	60961-026	12K, Includes Key Nos. 18a, 20-21	
	60961-028	14K, Includes Key Nos. 18b, 20-21	
17		LH Tie Rod End	1
a	64000-001	12K	
b	64002-001	14K	
18		RH Tie Rod End	1
a	64000-002	12K	
b	64002-002	14K	
19		**7/8" Castle Nut	2
20	22962-007	7/8" Flat Washer	2
21	17800-004	Tie Rod Nut Cotter Pin	2
22	64578-000	1½"-12 UNF Spindle Nut	2
23		*Shock Absorber	2
24		*¾"-10 UNC 5.0" Lower Shock Flange Bolt	2
25		*¾"-10 UNC Lower Shock Hex Flange Locknut	2
26		*Shock Spacer (if equipped)	2

Vehicles built with STEERTEK NXT for International Truck 2-Leaf Mechanical Suspension
International Truck Models ProStar / TranStar / LoneStar

					STEERTEK NXT Assembly	Axle & Kingpin Assembly Key No. 1	LH Upper Steering Knuckle Assembly Key No. 4	Tie Rod Assembly Key No. 16
	CAPACITY	MOUNTING FASTENERS	WHEEL BASE	KPI	PART NUMBERS			
Model ProStar	12K	¾"	Below 200"	69.00	68997-001	68996-002M	60903-462	60239-004
			Above 200"		68997-002			60239-005
			Below 200"	70.87	68997-003	68996-001M	60903-463	60239-005
			Above 200"		68997-004			60239-002
		¾"	Below 200"	69.00	68997-045	68996-006M	60903-462	60239-004
			Above 200"		68997-046			60239-005
			Below 200"	70.87	68997-047	68996-005M	60903-463	60239-005
			Above 200"		68997-048			60239-002
		⅝"	Below 200"	69.00	68997-061	68996-002M	60903-262	60239-004
			Above 200"		68997-062			60239-005
			Below 200"	70.87	68997-063	68996-001M	60903-263	60239-005
			Above 200"		68997-064			60239-002
		⅝"	Below 200"	69.00	68997-097	68996-006M	60903-262	60239-004
			Above 200"		68997-098			60239-005
			Below 200"	70.87	68997-099	68996-005M	60903-263	60239-005
			Above 200"		68997-100			60239-002
	12.35K	¾"	Below 200"	69.00	68997-005	68996-002M	60903-462	60239-004
			Above 200"		68997-006			60239-005
			Below 200"	70.87	68997-043	68996-001M	60903-463	60239-005
			Above 200"		68997-044			60239-002
		¾"	Below 200"	69.00	68997-049	68996-006M	60903-462	60239-004
			Above 200"		68997-050			60239-005
			Below 200"	70.87	68997-059	68996-005M	60903-463	60239-005
			Above 200"		68997-060			60239-002
		⅝"	Below 200"	69.00	68997-065	68996-002M	60903-262	60239-004
			Above 200"		68997-066			60239-005
			Below 200"	70.87	68997-095	68996-001M	60903-263	60239-005
			Above 200"		68997-096			60239-002
		⅝"	Below 200"	69.00	68997-101	68996-006M	60903-262	60239-004
			Above 200"		68997-102			60239-005
			Below 200"	70.87	68997-111	68996-005M	60903-263	60239-005
			Above 200"		68997-112			60239-002
	13.2K	¾"	Below 200"	70.87	68997-007	68996-003M	60903-463	64006-001
			Above 200"		68997-008			64006-002
			Below 200"	69.00	68997-009	68996-004M	60903-462	64006-001
			Above 200"		68997-010			64006-001
		¾"	Below 200"	70.87	68997-051	68996-007M	60903-463	64006-001
			Above 200"		68997-052			64006-002
			Below 200"	69.00	68997-053	68996-008M	60903-462	64006-001
			Above 200"		68997-054			64006-001
		⅝"	Below 200"	70.87	68997-067	68996-003M	60903-263	64006-001
			Above 200"		68997-068			64006-002
			Below 200"	69.00	68997-069	68996-004M	60903-262	64006-001
			Above 200"		68997-070			64006-001
		⅝"	Below 200"	70.87	68997-103	68996-007M	60903-263	64006-001
			Above 200"		68997-104			64006-002
			Below 200"	69.00	68997-105	68996-008M	60903-262	64006-001
			Above 200"		68997-106			64006-001

Items shown in gray denotes STEERTEK NXT integrated axle spring seat **without** shock absorber lug.

Continued on Page 20

Vehicles built with STEERTEK NXT for International Truck 2-Leaf Mechanical Suspension
International Truck Models ProStar / TranStar / LoneStar

					STEERTEK NXT Assembly	Axle & Kingpin Assembly Key No. 1	LH Upper Steering Knuckle Assembly Key No. 4	Tie Rod Assembly Key No. 16
	CAPACITY	MOUNTING FASTENERS	WHEEL BASE	KPI	PART NUMBERS			
Model ProStar	14K	¾"	Below 200"	69.00	68997-011	68996-004M	60903-462	64006-001
			Above 200"		68997-012			
		¾"	Below 200"	69.00	68997-055	68996-008M	60903-462	64006-001
			Above 200"		68997-056			
		⅝"	Below 200"	69.00	68997-071	68996-004M	60903-262	64006-001
			Above 200"		68997-072			
		⅝"	Below 200"	69.00	68997-107	68996-008M	60903-262	64006-001
			Above 200"		68997-108			
	14.6K	¾"	Below 200"	69.00	68997-013	68996-004M	60903-462	64006-001
			Above 200"		68997-014			
		¾"	Below 200"	69.00	68997-057	68996-008M	60903-462	64006-001
			Above 200"		68997-058			
		⅝"	Below 200"	69.00	68997-073	68996-004M	60903-262	64006-001
			Above 200"		68997-074			
		⅝"	Below 200"	69.00	68997-109	68996-008M	60903-262	64006-001
			Above 200"		68997-110			
Model LoneStar	12.35K	¾"	Below 200"	70.87	68997-015	68996-001M	60903-468	60239-005
			Above 200"		68997-016			60239-002
		⅝"	Below 200"	70.87	68997-075	68996-001M	60903-268	60239-005
			Above 200"		68997-076			60239-002
	13.2K	¾"	Below 200"	70.87	68997-017	68996-003M	60903-468	64006-001
			Above 200"		68997-018			64006-002
			Below 200"	69.00	68997-019	68996-004M	60903-465	64006-001
			Above 200"		68997-020			
		⅝"	Below 200"	70.87	68997-077	68996-003M	60903-268	64006-001
			Above 200"		68997-078			64006-002
			Below 200"	69.00	68997-079	68996-004M	60903-265	64006-001
			Above 200"		68997-080			
	14K	¾"	Below 200"	70.87	68997-021	68996-003M	60903-469	64006-001
			Above 200"		68997-022			64006-002
			Below 200"	69.00	68997-023	68996-004M	60903-466	64006-001
			Above 200"		68997-024			
		⅝"	Below 200"	70.87	68997-081	68996-003M	60903-269	64006-001
			Above 200"		68997-082			64006-002
			Below 200"	69.00	68997-083	68996-004M	60903-266	64006-001
			Above 200"		68997-084			
	14.6K	¾"	Below 200"	69.00	68997-025	68996-004M	60903-466	64006-001
			Above 200"		68997-026			
		⅝"	Below 200"	69.00	68997-085	68996-004M	60903-266	64006-001
			Above 200"		68997-086			

Items shown in gray denotes STEERTEK NXT integrated axle spring seat **without** shock absorber lug.

Continued on Page 21

Vehicles built with STEERTEK NXT for International Truck 2-Leaf Mechanical Suspension
International Truck Models ProStar / TranStar / LoneStar

					STEERTEK NXT Assembly	Axle & Kingpin Assembly Key No. 1	LH Upper Steering Knuckle Assembly Key No. 4	Tie Rod Assembly Key No. 16
	CAPACITY	MOUNTING FASTENERS	WHEEL BASE	KPI	PART NUMBERS			
Model TranStar	12K	¾"	Below 200"	70.87	68997-029	68996-001M	60903-467	60239-005
			Above 200"		68997-030			60239-002
			Below 200"	69.00	68997-033	68996-002M	60903-464	60239-004
			Above 200"		68997-034			60239-005
		⅝"	Below 200"	70.87	68997-087	68996-001M	60903-267	60239-005
			Above 200"		68997-088			60239-002
			Below 200"	69.00	68997-089	68996-002M	60903-264	60239-004
			Above 200"		68997-090			60239-005
	13K	¾"	Below 200"	70.87	68997-037	68996-003M	60903-467	64006-001
			Above 200"	70.87	68997-038			64006-002
		⅝"	Below 200"	70.87	68997-091	68996-003M	60903-267	64006-001
			Above 200"	70.87	68997-092			64006-002
	14K	¾"	Below 200"	70.87	68997-041	68996-003M	60903-467	64006-001
			Above 200"	70.87	68997-042			64006-002
		⅝"	Below 200"	70.87	68997-093	68996-003M	60903-267	64006-001
			Above 200"	70.87	68997-094			64006-002

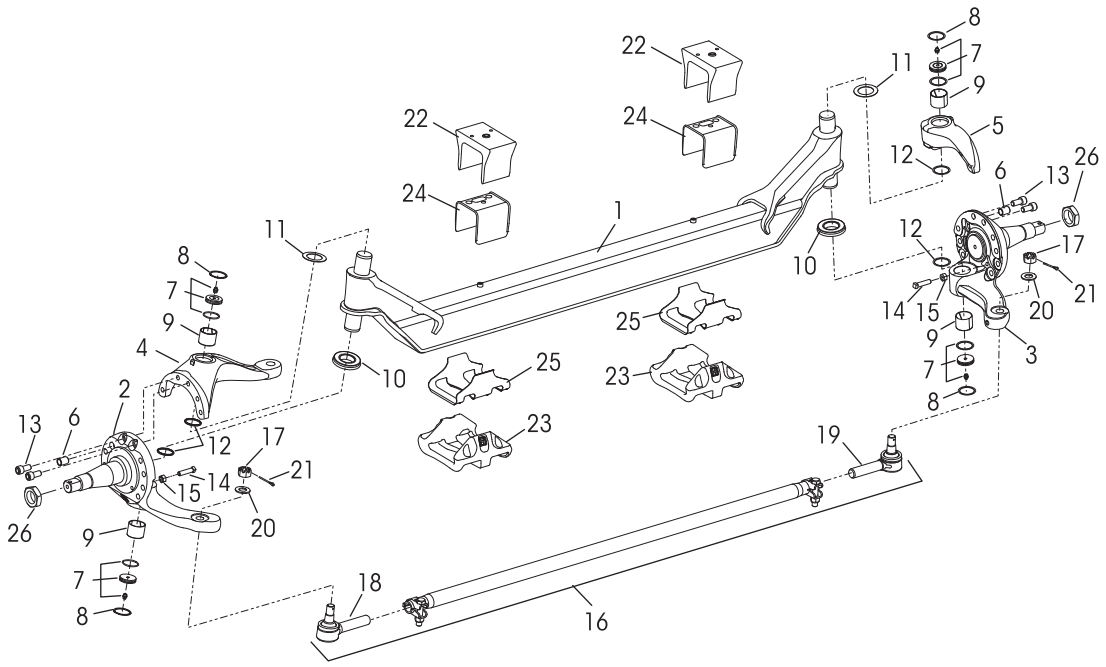
NOTE: * Not supplied by Hendrickson, used for reference only. Refer to the vehicle manufacturer for more information.

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

*** Axle spring seats come assembled with the axle beam and are not serviceable.

Vehicles built with STEERTEK axle prior to August 1, 2011

International Truck Models • ProStar - 12K, 12.35K, 13.2K, 14K, 14.6K • **TranStar -** 12K, 13K, 14K • **LoneStar -** 12.35K, 13.2K, 14K, 14.6K • **9200 / 9400 / 8600 -** 12K



KEY NO.	PART NO.	DESCRIPTION	NO.REQ.
		STEERTEK Axle Assembly, Includes Key Nos. 1-26, *See chart on page 23*	1
1		Axle & Kingpin Assembly	1
	64905-001	Models 9200 / 9400 / LoneStar & TranStar-12K	
	64905-002	Model ProStar-12K,12.35K	
	64905-005	Model TranStar-13K, 14K	
	64905-006	Model ProStar / LoneStar-13.2K,14K,1436K	
2		LH Lower Steering Knuckle Assembly *See chart on page 23*	1
3		RH Lower Steering Knuckle Assembly *See chart on page 23*	1
4		LH Upper Steering Knuckle Assembly *See chart on page 23*	1
5	60904-034	RH Upper Steering Knuckle Assembly	1
6	64246-000	ABS Sensor Sleeve	2
	60961-039	**Kingpin Bushing and Roller Thrust Bearing Service Kit, One Side,** Includes Key Nos. 7-13, Loctite	
7	59156-000	Grease Cap Assembly	4
8	58937-000	Retaining Ring	4
9	58909-000	Kingpin Bushing	4
	60961-042	**Roller Thrust Bearing Service Kit, One Side,** Includes Key Nos. 10-13, Loctite	
10	64256-000	Roller Thrust Bearing	2
11		Kingpin Shim (As Needed for Service)	
	60259-002	0.047" Thickness	2
	60259-001	0.005" Thickness	4
12	58910-001	Kingpin Seal, *Replaces 58910-000*	4
13	60236-001	5/8"-11 UNC Socket Head Cap Screw	4
Not Shown	60937-000	Loctite® (Red) Compound Tube	1

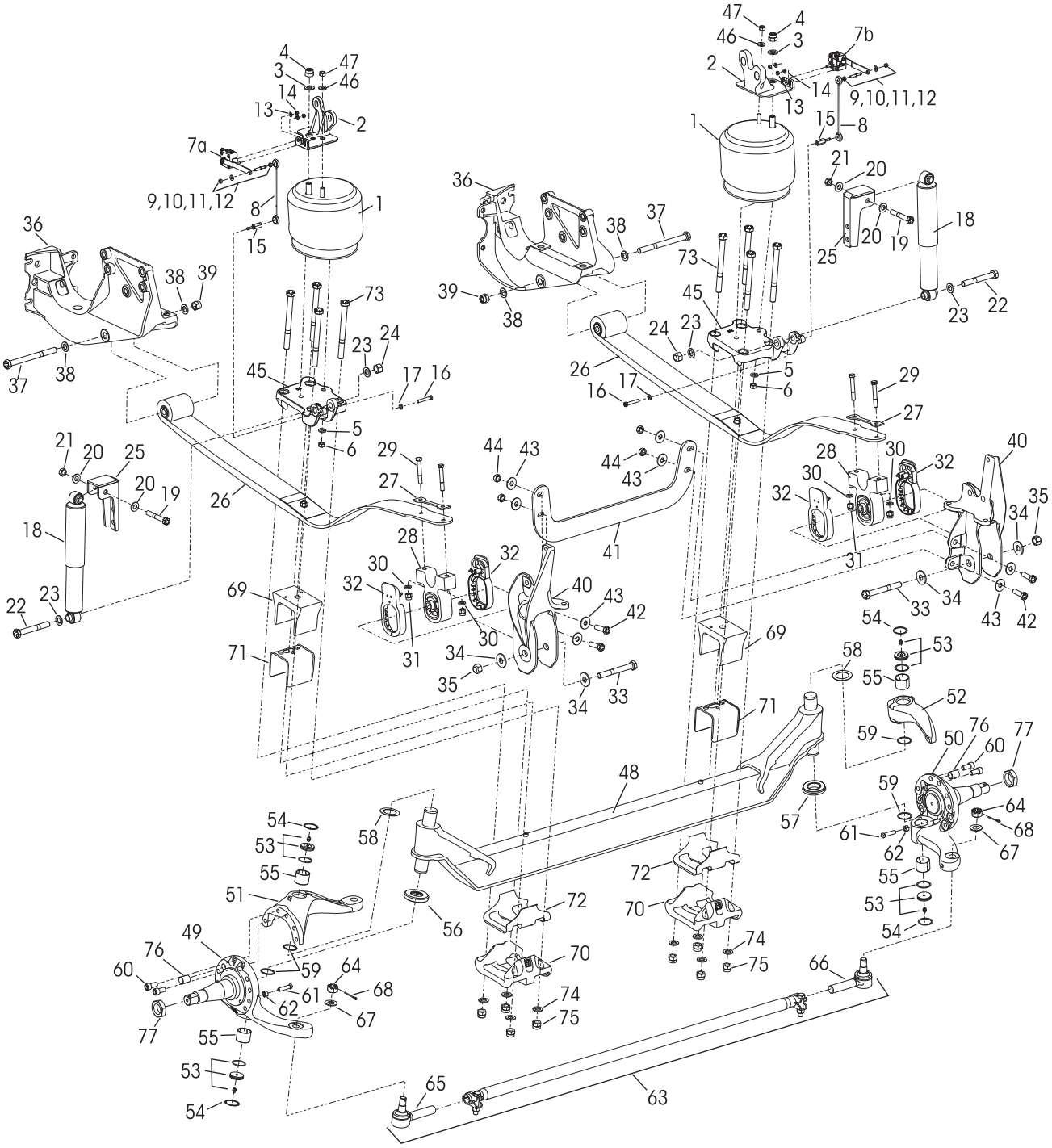
KEY NO.	PART NO.	DESCRIPTION	NO.REQ.
	60961-069	**Stop Bolt Service Kit, One Side,** Includes Key Nos. 14-15	
14	60238-001	½"-13 UNC Square Head Bolt	2
15	60240-000	½"-13 UNC Hex Jam Nut	2
16		Tie Rod Assembly, Includes Key Nos. 17-19 *See chart on page 23*	1
17		******7/8" Castle Nut	2
		Tie Rod End Service Kit, Axle Set	
	60961-010	12K, Includes Kit Nos. 60961-025 & -026	
	60961-011	14K, Includes Kit Nos. 60961-027 & -028	
		LH Tie Rod End Service Kit	
	60961-025	12K, Includes Key Nos. 18a, 20-21	
	60961-027	14K, Includes Key Nos. 18b, 20-21	
		RH Tie Rod End Service Kit,	
	60961-026	12K, Includes Key Nos. 19a, 20-21	
	60961-028	14K, Includes Key Nos. 19b, 20-21	
18		LH Tie Rod End	1
a	64000-001	12K	
b	64002-001	14K	
19		RH Tie Rod End	1
a	64000-002	12K	
b	64002-002	14K	
20	22962-007	7/8" Flat Washer	2
21	17800-004	Tie Rod Nut Cotter Pin	2
22		Top Axle Wrap, *See chart on page 23*	2
23	64722-003	Bottom Axle Wrap	2
24	65757-000	Top Axle Wrap Liner	2
25	59845-000	Bottom Axle Wrap Liner	2
26	64578-000	1½"-12 UNF Spindle Nut	2

Vehicles built with STEERTEK axle for International Truck 2-Leaf Mechanical Suspension
International Truck Models ProStar / TranStar / LoneStar / 9200 / 9400 / 8600

				STEERTEK Assembly	LH Lower Steering Knuckle Assembly Key No. 2	RH Lower Steering Knuckle Assembly Key No. 3	LH Upper Steering Knuckle Assembly Key No. 4	Tie Rod Assembly Key No. 16	Top Axle Wrap Key No. 22
	CAPACITY	WHEEL BASE	KPI	PART NUMBERS					
Model ProStar	12K	Below 200"	69.0"	70952-351	58900-075	58900-076	60903-042	60239-004	59952-032
		Above 200"		70952-352	58900-073	58900-074		60239-005	
	12.35K	Below 200"		70952-353	58900-075	58900-076		60239-004	
		Above 200"		70952-354	58900-073	58900-074		60239-005	
	13.2K	Below 200"	70.87"	70952-355	58900-075	58900-076		64006-001	
		Above 200"		70952-356	58900-073	58900-074		64006-002	
		Below 200"	69.0"	70952-357	58900-075	58900-076		64006-001	
		Above 200"		70952-358	58900-073	58900-074			
	14K	Below 200"		70952-359	58900-075	58900-076			
		Above 200"		70952-390	58900-073	58900-074			
	14.6K	Below 200"		70952-391	58900-075	58900-076			
		Above 200"		70952-392	58900-073	58900-074			
Model TranStar	12K	Below 200"	70.87"	70952-281	58900-075	58900-076	60903-044	60239-001	59952-023
		Above 200"		70952-280	58900-073	58900-074		60239-002	
		Below 200"		70952-335	58900-093	58900-094		60239-001	59952-032
		Above 200"		70952-336	58900-091	58900-092		60239-002	
		Below 200"	69.0"	70952-337	58900-093	58900-094	60903-061	60239-004	59952-023
		Above 200"		70952-338	58900-091	58900-092		60239-005	
		Below 200"		70952-339	58900-093	58900-094		60239-004	59952-032
		Above 200"		70952-340	58900-091	58900-092		60239-005	
	13K	Below 200"	70.87"	70952-341	58900-093	58900-094	60903-056	64006-001	59952-023
		Above 200"		70952-342	58900-091	58900-092		64006-002	
		Below 200"		70952-343	58900-093	58900-094		64006-001	59952-032
		Above 200"		70952-344	58900-091	58900-092		64006-002	
	14k	Below 200"		70952-345	58900-093	58900-094	60903-061	64006-001	59952-023
		Above 200"		70952-346	58900-091	58900-092		64006-002	
		Below 200"		70952-347	58900-093	58900-094		64006-001	59952-032
		Above 200"		70952-348	58900-091	58900-092		64006-002	
Model LoneStar	12.35K	Below 200"	70.87"	70952-310	58900-075	58900-076	60903-056	60239-001	59952-023
		Above 200"		70952-311	58900-073	58900-074		60239-002	
	13.2K	Below 200"		70952-393	58900-075	58900-076		64006-001	59952-034
		Above 200"		70952-394	58900-073	58900-074		64006-002	
		Below 200"	69.0"	70952-395	58900-075	58900-076		64006-001	59952-023
		Above 200"		70952-396	58900-073	58900-074			
	14K	Below 200"	70.87"	70952-397	58900-075	58900-076		64006-001	59952-034
		Above 200"		70952-398	58900-073	58900-074		64006-002	
		Below 200"	69.0"	70952-399	58900-075	58900-076		64006-001	59952-023
		Above 200"		70952-400	58900-073	58900-074			
	14.6K	Below 200"		70952-401	58900-075	58900-076			
		Above 200"		70952-402	58900-073	58900-074			
Model 9200/9400	12K	Below 200"	70.87"	70952-279	58900-075	58900-076	60903-042	60239-001	59952-023
		Above 200"		70952-278	58900-073	58900-074		60239-002	

Vehicles built with AIRTEK after 9/06

International Models 9200/9400 with New Engine Configuration (NEC)

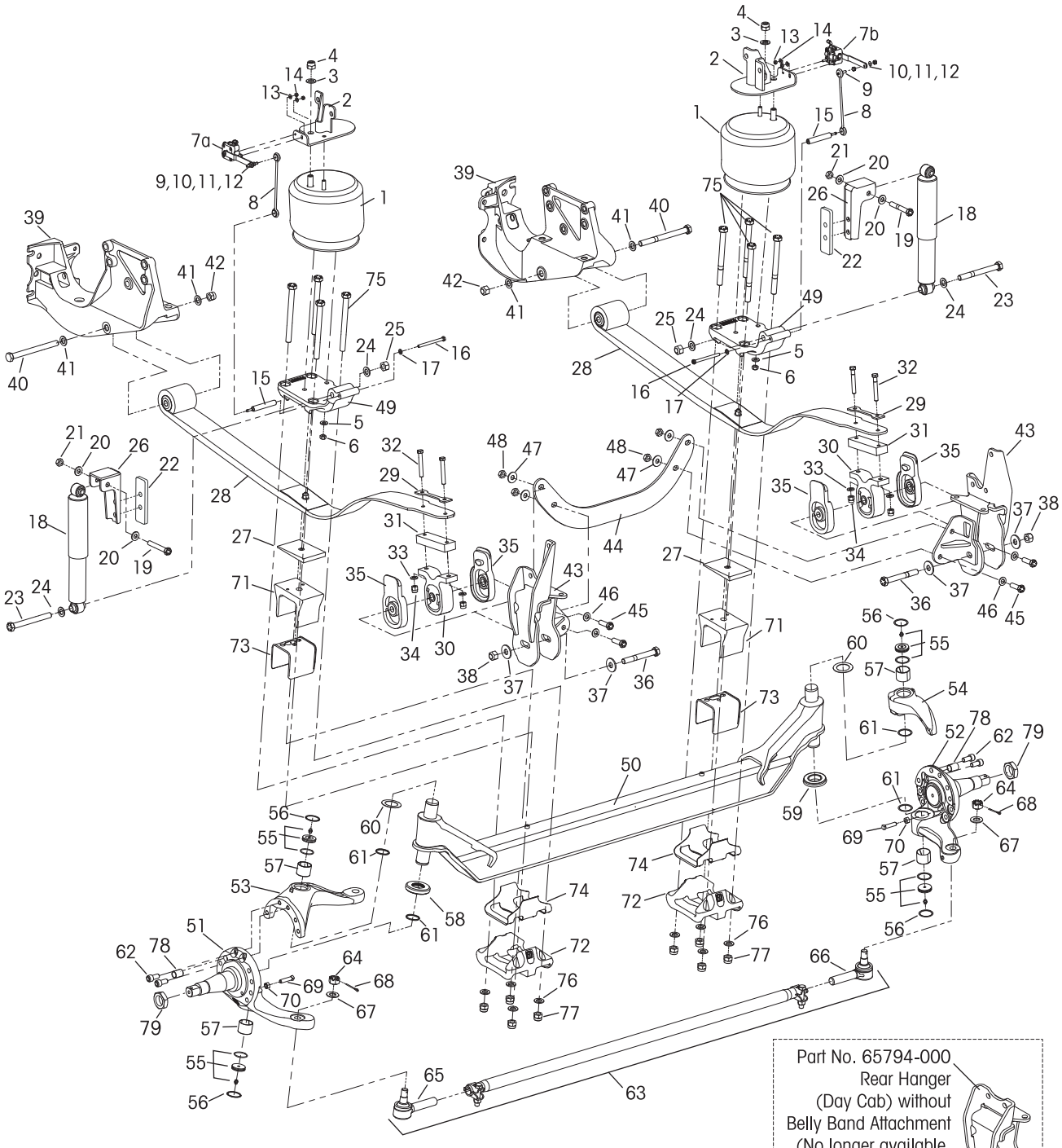


KEY NO.	PART NO.	DESCRIPTION	NO.REQ.
1	65790-002L	Air Spring	2
2		Air Spring Bracket	
	66775-000	Left Hand	1
	66776-000	Right Hand	1
3		*¾" Flat Washer	2
4		*¾"-16 UNF Nylon Locknut	2
5		*½" Hardened Washer	2
6		*½"-13 UNC Nylon Locknut	2
	59427-013	LH HCV & Linkage Assembly, Includes Key Nos. 7a-14	
	59427-014	RH HCV & Linkage Assembly, Includes Key Nos. 7b-14	
7		*** Height Control Valve	1
a	59935-011	Left Hand	
b	59935-018	Right Hand	
8	59428-004	HCV Linkage	2
9	59169-000	5/16"-18 UNC Stud	2
10	17491-011	5/16"-18 UNC Nut	2
11	22962-029	5/16" Hardened Washer	2
12	59016-000	5/16"-18 UNC Locknut	2
13	22962-028	¼" Hardened Washer	4
14	49983-000	¼"-20 UNC Locknut	4
	60961-154	**Lower Link Mount Service Kit, One Side,** Includes Key Nos. 15-17	
15	59429-003	Lower Link Mount	2
16	58035-002	3/8"-16 UNC 1.38" Hex Bolt	2
17	22962-015	3/8" Flat Washer	2
		Shock Absorber Service Kit, One Side, Includes Key Nos. 18-24	
	60961-156	Sleeper	
	60961-157	Day Cab	
18		Shock Absorber	2
	65992-001L	Sleeper	
	65992-002L	Day Cab	
19		*5/8"-11 UNC 4.0" Upper Shock Bolt	2
20		*5/8" Upper Shock Washer	4
21		*5/8"-11 UNC Upper Shock Locknut	2
22		*¾"-10 UNC 5.0" Lower Shock Bolt	2
23		*¾" Lower Shock Hardened Washer	4
24		*¾"-10 UNC Lower Shock Hex Locknut	2
25		*Shock Bracket	2
26	66420-000	Leaf Spring Assembly Includes Spring Eye Bushing	2
	60961-158	**Rear Spring Mount Service Kit, One Side,** Includes Key Nos. 27-31	
27	58920-000	Spring End Plate	2
28	66774-000	Rear Spring Mount	2
29	30970-001	½"-20 UNF 3.5" Bolt	4
30	22962-014	½" Hardened Washer	4
31	17700-034	½"-20 UNF Nylon Locknut	4
	60961-159	**Rear Spring Hardware Service Kit, One Side,** Includes Key Nos. 32-35	
32	66779-000	Thrust Washer	4
33		*¾"-10 UNC 6.0" Hex Bolt	2
34		*¾" Flat Washer	4
35		*¾"-10 UNC Locknut	2
36		*Front Hanger	2
37		*¾"-10 UNC 8.5" Hex Bolt	2
38		*¾" Flat Washer	4
39		*¾"-10 UNC Locknut	2
40		Rear Hanger	
	66382-001	Left Hand	1
	66382-002	Right Hand	1
41	66419-000	Belly Band	1
42		*5/8"-11 UNC 2.0" Hex Bolt	4
43		*5/8" Hardened Washer - O.D. 1.75"	8
44		*5/8"-11 UNC Hex Locknut	4
45		Top Pad	
	68318-001	Left Hand	1
	68318-002	Right Hand	1
46		*½" Hardened Washer	2
47		*½"-13 UNC Nylon Locknut	2
	70952-0XX	Axle Assembly, Includes Key Nos. 48-72 Contact Hendrickson Tech Services for part number.	1
48	64905-001	Axle & Kingpin Assembly	1
49		LH Lower Steering Knuckle Assembly	1
	58900-073	Above 200" Wheel Base	
	58900-075	Below 200" Wheel Base	
50		RH Lower Steering Knuckle Assembly	1
	58900-074	Above 200" Wheel Base	
	58900-076	Below 200" Wheel Base	
51	60903-041	LH Upper Steering Knuckle Assembly	1
52	60904-034	RH Upper Steering Knuckle Assembly	1
	60961-040	**Kingpin Bushing and Bearing Service Kit, Axle Set,** Includes Kit Nos. 60961-009 & 60961-039	
	60961-009	**LH Kingpin Bushing and Composite Thrust Bearing Service Kit**, Includes Key Nos. 53-56, 58-60, Loctite	
	60961-039	**RH Kingpin Bushing and Roller Thrust Bearing Service Kit**, Includes Key Nos. 53-55, 57-60, Loctite	
53	59156-000	Grease Cap Assembly	4
54	58937-000	Retaining Ring	4
55	58909-000	Kingpin Bushing	4
56	59828-000	LH Composite Thrust Bearing	1
57	64256-000	RH Roller Thrust Bearing	1
58		Kingpin Shim (As Needed for Service)	
	60259-002	0.047" Thickness	2
	60259-001	0.005" Thickness	4
59	58910-001	Kingpin Seal, *Replaces 58910-000*	4
60	60236-001	5/8"-11 UNC Socket Head Cap Screw	4
Not Shown	60937-000	Loctite® (Red) Compound Tube	1
	60961-069	**Stop Bolt Service Kit, One Side,** Includes Key Nos. 61-62	
61	60238-001	½"-13 UNC Square Head Bolt	2
62	60240-000	½"-13 UNC Hex Jam Nut	2
63		Tie Rod Assembly, Includes Key Nos. 64-66	1
	60239-002	Above 200" Wheel Base	
	60239-001	Below 200" Wheel Base	
64		**7/8" Castle Nut	2
	60961-010	**Tie Rod End Service Kit, Axle Set,** Includes Kit Nos. 60961-025 & 60961-026	
	60961-025	**LH Tie Rod End Service Kit,** Includes Key Nos. 65, 67-68	
	60961-026	**RH Tie Rod End Service Kit,** Includes Key Nos. 66-68	
65	64000-001	LH Tie Rod End	1
66	64000-002	RH Tie Rod End	1
67	22962-007	7/8" Flat Washer	2
68	17800-004	Tie Rod Nut Cotter Pin	2
69	59952-023	Top Axle Wrap	2
70	64722-003	Bottom Axle Wrap	2
71	65757-000	Top Axle Wrap Liner	2
72	59845-000	Bottom Axle Wrap Liner	2
73		*¾"-10 UNC 8.5" Hex Bolt	8
74		*¾" Flat Washer	8
75		*¾"-10 UNC-2B Nylon Locknut	8
76	64246-000	ABS Sensor Sleeve	2
77	64578-000	1½"-12 UNF Spindle Nut	2

• See Notes on Page 28

Vehicles built with AIRTEK prior to 9/06

International Models with Prior to New Engine Configuration (PEC)

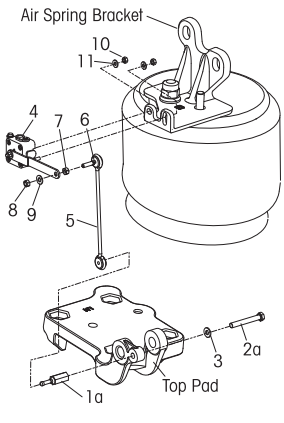


KEY NO.	PART NO.	DESCRIPTION	NO.REQ.
1	65790-002L	Air Spring	2
2		****Air Spring Bracket • 64583-000 LH and 64586-000 RH, Replace with Kit No. 60961-132, *See replacement guide on page 29*	
3		*¾" Flat Washer	2
4		*¾"-16 UNC Nylon Locknut	2
5		*½" Hardened Washer	2
6		*½"-13 UNC Nylon Locknut	2
		HCV & Linkage Assembly	
	59427-013	LH, If equipped, Includes Key Nos. 7a-14	1
	59427-014	RH, Includes Key Nos. 7b-14	1
7		Height Control Valve	
a	59935-011	LH, If equipped	1
b	59935-018	RH, *Replaces 59935-010*	1
8	59428-004	HCV Linkage	2
9	59169-000	5/16"-18 UNC Stud	2
10	17491-011	5/16"-18 UNC Nut	2
11	22962-029	5/16" Hardened Washer	2
12	59016-000	5/16"-18 UNC Locknut	2
13	22962-028	¼" Hardened Washer	4
14	49983-000	¼"-20 UNC Locknut	4
	60961-071	**Lower Link Mount Service Kit, One Side,** Includes Key Nos. 15-17	
15	59429-002	Lower Link Mount	2
16	58035-006	3/8"-16 UNC 3.5" Hex Bolt	2
17	22962-015	3/8" Flat Washer	2
		Shock Absorber Service Kit, One Side, Includes Key Nos. 18-25	
	60961-094	Sleeper	
	60961-095	Day Cab	
18		Shock Absorber	2
	65992-001L	Sleeper	
	65992-002L	Day Cab	
19		*5/8"-11 UNC 4.0" Upper Shock Bolt	2
20		*5/8" Upper Shock Washer	4
21		*5/8"-11 UNC Upper Shock Locknut	2
22	59946-001	Shock Spacer	2
23		*¾"-10 UNC 8.0" Lower Shock Bolt	2
24		*¾" Lower Shock Hardened Washer	4
25		*¾"-10 UNC Lower Shock Hex Locknut	2
26		*Shock Bracket	2
27		*Caster Wedge	2
28		****Leaf Spring Assembly with Bushing • Replace 65771-000 with Kit No. 60961-134, *See replacement guide on page 29*	
	60961-109	**Rear Spring Mount Service Kit** (One Side) Includes Key Nos. 29-35	
29	58920-000	Spring End Plate	2
30	58918-000	Rear Spring Mount	2
31	65772-000	Rear Mount Spacer	2
32	30970-001	½"-20 UNF 3.5" Bolt	4
33	22962-014	½" Hardened Washer	4
34	17700-034	½"-20 UNF Nylon Locknut	4
35	65856-000	Thrust Washer	4
36		*¾"-10 UNC 6.0" Hex Bolt	2
37		*¾" Flat Washer	4
38		*¾"-10 UNC Locknut	2
39		*Front Hanger	2
40		*¾"-10 UNC 8.5" Hex Bolt	2
41		*¾" Flat Washer	4
42		*¾"-10 UNC Locknut	2
43		Rear Hanger	1
	68317-001	Left Hand	
	68317-002	Right Hand	
44	66019-000	Belly Band (For Service Only)	1
45		*5/8"-11 UNC 2.0" Hex Bolt	4
46		*5/8" Hardened Washer-O.D. 1.3"	4
47		*5/8" Hardened Washer-O.D. 1.75"	4
48		*5/8"-11 UNC Hex Locknut	4
49		****Top Pad • Replace 64580-000 with Kit No. 60961-132, *See replacement guide on page 29*	
	70952-0XX	Axle Assembly, Includes Key Nos. 50-74 Contact Hendrickson Tech Services for part number.	1
50	64905-001	Axle & Kingpin Assembly	1
51		LH Lower Steering Knuckle Assembly	1
	58900-071	250 Ackermann - Long Wheel Base	
	58900-073	200 Ackermann - Short Wheel Base	
52		RH Lower Steering Knuckle Assembly	1
	58900-072	250 Ackermann - Long Wheel Base	
	58900-074	200 Ackermann - Short Wheel Base	
53	60903-041	LH Upper Steering Knuckle Assembly	1
54	60904-034	RH Upper Steering Knuckle Assembly	1
	60961-040	**Kingpin Bushing and Bearing Service Kit Axle Set,** Includes Kit Nos. 60961-009 & -039	
	60961-009	**LH Kingpin Bushing and Composite Thrust Bearing Service Kit**, Includes Key Nos. 55-58, 60-62, Loctite	
	60961-039	**RH Kingpin Bushing and Roller Thrust Bearing Service Kit**, Includes Key Nos. 55-57, 59-62, Loctite	
55	59156-000	Grease Cap Assembly	4
56	58937-000	Retaining Ring	4
57	58909-000	Kingpin Bushing	4
58	59828-000	LH Composite Thrust Bearing	1
59	64256-000	RH Roller Thrust Bearing	1
60		Kingpin Shim (As Needed for Service)	
	60259-002	0.047" Thickness	2
	60259-001	0.005" Thickness	4
61	58910-001	Kingpin Seal, *Replaces 58910-000*	4
62	60236-001	5/8"-11 UNC Socket Head Cap Screw	4
Not Shown	60937-000	Loctite (Red) Compound Tube	1
63		Tie Rod Assembly, Includes Key Nos. 64-66	1
	60239-003	250 Ackermann – Long Wheel Base	
	60239-002	200 Ackermann – Short Wheel Base	
64		**7/8" Castle Nut	2
	60961-010	**Tie Rod End Service Kit, Axle Set,** Includes Kit Nos. 60961-025 & 60961-026	
	60961-025	**LH Tie Rod End Service Kit,** Includes Key Nos. 65, 67-68	
	60961-026	**RH Tie Rod End Service Kit,** Includes Key Nos. 66-68	
65	64000-001	LH Tie Rod End	1
66	64000-002	RH Tie Rod End	1
67	22962-007	7/8" Flat Washer	2
68	17800-004	Tie Rod Nut Cotter Pin	2
	60961-069	**Stop Bolt Service Kit, One Side,** Includes Key Nos. 69-70	
69	60238-001	½"-13 UNC Square Head Bolt	2
70	60240-000	½"-13 UNC Hex Jam Nut	2
71	59952-023	Top Axle Wrap	2
72	64722-003	Bottom Axle Wrap	2
73	65757-000	Top Axle Wrap Liner	2
74	59845-000	Bottom Axle Wrap Liner	2
75		*¾"-10 UNC 8.5" Hex Bolt	8
76		*¾" Flat Washer	8
77		*¾"-10 UNC-2B Nylon Locknut	8
78	64246-000	ABS Sensor Sleeve	2
79	64578-000	1½"-12 UNF Spindle Nut	2

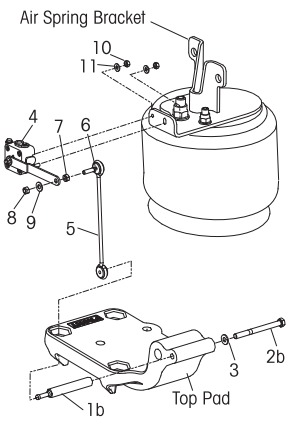
• See Notes on Page 28

DUAL HEIGHT CONTROL VALVE CONVERSION SERVICE KIT, to convert from a single height control valve to dual height control valve.

NEC DUAL HCV & LINKAGE CONVERSION KIT NO. 60961-155



PEC DUAL HCV & LINKAGE CONVERSION KIT NO. 60961-116



KEY NO.	PART NO.	DESCRIPTION	QTY.
		Dual HCV & Linkage Conversion Kit	
	60961-155	NEC, Includes key Nos. 1a-2a, 3-11	
	60961-116	PEC, Includes Key Nos. 1b-2b, 3-11	
		Lower Link Mount	1
1a	59429-003	NEC	
1b	59429-002	PEC	
		3/8"-16 UNC Hex Bolt	1
2a	59429-002	NEC	
2b	59429-006	PEC	
3	22962-015	3/8" Flat Washer	1
	59427-013	LH HCV & Linkage Assembly, Includes Key Nos. 4-11	1
4	59935-011	LH Height Control Valve	1
5	59428-004	HCV Linkage	1
6	59169-000	5/16"-18 UNC Stud	1
7	17491-011	5/16"-18 UNC Nut	1
8	22962-029	5/16" Hardened Washer	1
9	59016-000	5/16"-18 UNC Locknut	1
10	22962-028	1/4" Hardened Washer	2
11	49983-000	1/4"-20 UNC Locknut	2

NOTES:

* Not supplied by Hendrickson, used for reference only. Refer to the vehicle manufacturer for more information.

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

*** The recommendation of the vehicle manufacturer is that dual height control valves are only to be installed on the front suspension when the rear suspension is equipped with a single height control valve system. This arrangement is best suited to keep the vehicle level versus having dual height control systems on both the front and rear suspensions.

**** No longer available for service, see replacement guide on page 29.

HENDRICKSON AIRTEK RIDE HEIGHT GAUGE FOR INTERNATIONAL VEHICLES: Ride height gauge, Literature No. 45745-251, can be obtained on-line at www.hendrickson-intl.com/literature/litform.asp

AIRTEK Prior to new Engine Configuration (PEC) COMPONENT Replacement Guide

Description	Current Part No. (PEC*)	Replacement Part No.	Service Kit No.	Comments
Air Spring Bracket	64583-000 (LH) 64586-000 (RH)	**66775-000 (LH) **66776-000 (RH)	**60961-132**	Requires the replacement of both air spring brackets, both top pads, lower link mount(s) with the new NEC** design and the elimination of both upper shock bracket spacers.
Lower Link Mount	59429-002	59429-002	—	Will continue to be serviced with the PEC* design in the aftermarket.
Spacer for Upper Shock Bracket	59946-001	See Comments	—	No longer required when the top pad is replaced with the NEC** design.
Leaf Spring Assembly	65771-000	66420-000	**60961-134**	Requires the replacement of both leaf springs along with the removal of the caster wedge (if equipped).
Top Pad	64580-000	See Comments	**60961-132**	Requires the replacement of both top pads, both air spring brackets, lower link mount(s) with the new NEC** design and removal of both upper shock bracket spacers.

AIRTEK WITH PEC REPLACEMENT SERVICE KITS CONTENTS

PART NO.	DESCRIPTION	QTY.
60961-132	**Air Spring Bracket and Top Pad Replacement Kit, Axle Set**	
66775-000	LH Air Spring Bracket	1
66776-000	RH Air Spring Bracket	1
68318-001	LH Top Pad	1
68318-002	RH Top Pad	1
59429-003	Link Mount	2
58035-002	3/8"-16 UNC 1.38" Hex Bolt (Link Mount)	2
22962-015	3/8" Flat Washer	2
58917-020	3/4"-10 UNC 4.5" Bolt (Lower Shock)	2
22962-001	3/4" Hardened Washer	4
49842-000	3/4"-10 UNC Hex Locknut	2
58917-016	3/4"-10 UNC 8.5" Hex Bolt (Clamp Group)	8
22962-001	3/4" Flat Washer	8
17700-033	3/4"-10 UNC Nylon Locknut	8

PART NO.	DESCRIPTION	QTY.
60961-134	**Leaf Spring Assembly Replacement Kit, Axle Set**	
66420-000	Leaf Spring Assembly • Pre-assembled with Spring End Plate, Thrust washers, Rear Spring Mount, Rear Spring Mount Spacer, and Fasteners	
58917-016	3/4"-10 UNC 8.5" Hex Bolt	10
22962-001	3/4" Flat Washer	8
17700-033	3/4"-10 UNC-2B Nylon Locknut	8
58917-002	3/4"-10 UNC 5.0" Hex Bolt	2
22962-033	3/4" Flat Washer	8
49842-000	3/4"-10 UNC-2B Nylon Locknut	4

***PEC** — Prior to new Engine Configuration, vehicles built prior to 9/06

****NEC** — New Engine Configuration, vehicles built after 9/06

SECTION 6
Towing Procedures

ON-HIGHWAY AND ON-ROADWAY

Hendrickson recommends that a vehicle equipped with a STEERTEK NXT / STEERTEK axle be towed by the following methods (listed in order of preference) for ON-HIGHWAY or ON-ROADWAY applications.

- **METHOD 1** — Wheel lift, the ideal towing procedure
- **METHOD 2** — Towing the vehicle from the rear
- **METHOD 3** — Conventional axle fork

Please read, understand and comply with any additional towing instructions and safety precautions that may be provided by the vehicle manufacturer.

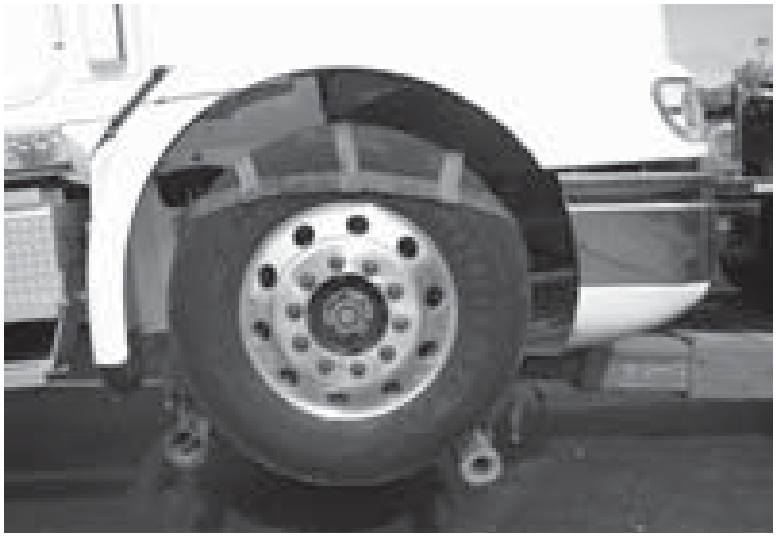
Hendrickson will not be responsible for any damage to the axle, suspension or other vehicle components resulting from any towing method or fixture not authorized by Hendrickson.

Please contact Hendrickson Tech Services at 1-866-755-5968 or send e-mail to: techservices@hendrickson-intl.com with any questions regarding proper towing procedures for vehicles equipped with a STEERTEK NXT / STEERTEK axle.

METHOD 1 — WHEEL LIFT

This method provides the greatest ease for towing the vehicle. Lifting at the tires helps reduce the risk of possible damage to the axle, suspension, and engine components during towing operations, see Figure 6-1.

FIGURE 6-1 Wheel Lift Method



METHOD 2 — TOWING VEHICLE FROM THE REAR

This method is preferred when the proper equipment is not available to perform the wheel lift method and is necessary for wreckers not equipped with an under lift system.

METHOD 3 — AXLE FORK LIFT

This is an alternative method for towing the vehicle, but requires standard tow forks and designated lift points depending on which front axle is equipped on the vehicle, STEERTEK NXT or STEERTEK.

NOTE

When lifting a vehicle with an under lift boom, care must be taken not to damage the engine's oil pan. Vehicles equipped with a front fairing may require removal of the front fairing prior to towing to prevent component damage.

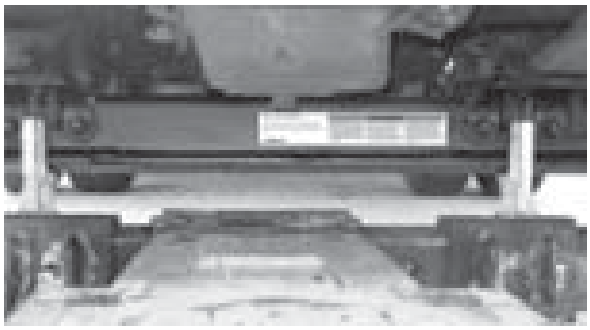
- Place a spacer on the boom, to provide adequate clearance between the oil pan and the boom if necessary. Lift the vehicle in order to place spacer under tires. This will provide sufficient room under the axle to locate forks in the proper position.
- It is recommended to maintain the air in the air springs (if equipped) to help prevent damage to the air spring bump stop while towing the vehicle. An alternative air source may be necessary if the engine or compressor will not function. If the air spring is punctured, tow the steer axle suspension with the air springs deflated.
- Release the tractor brakes.
- Install safety straps prior to towing the vehicle, it is preferred to use nylon safety straps. Chains have a tendency to bind and may cause damage to the axle.

STEERTEK NXT EQUIPPED (vehicles built after August 2011)

1. Use a Miller Short Frame Fork, Part No. 0200019, or comparable (3.25" Clearance), 4.5" Opening, 2" Shank, see Figure 6-2.
2. Install the fork in the boom properly.
3. The proper tow fork location is centered between the locknuts on the axle spring seats, see Figure 6-3.

FIGURES 6-2

FIGURE 6-3



STEERTEK EQUIPPED (vehicles built prior to August 2011)

1. Install the fork in the boom properly.
2. Position the proper tow forks directly under the axle, inside the axle clamp groups as shown in Figures 6-4 and 6-5.

FIGURE 6-4

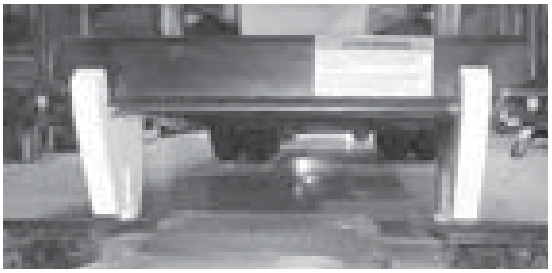


FIGURE 6-5

3. Prior to lifting the vehicle, ensure that the bottom axle plate is flat in the tow fork to minimize any gap between the bottom axle plate and the tow fork, see Figure 6-6. Lift vehicle and secure the vehicle to the boom.

FIGURE 6-6

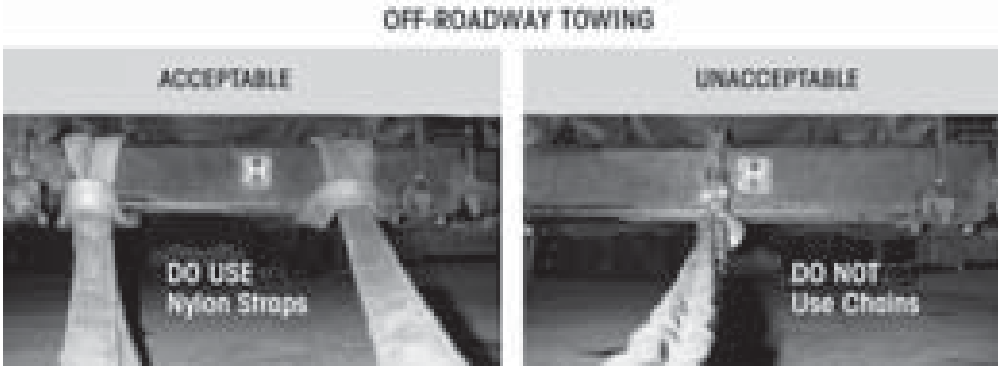
OFF-ROADWAY TOWING

⚠ WARNING

WHEN A VEHICLE IS DISABLED AND EQUIPPED WITH A STEERTEK NXT / STEERTEK AXLE, CARE MUST BE TAKEN TO ENSURE THERE IS NO DAMAGE TO THE SUSPENSION OR AXLE WHEN TOWING THE VEHICLE. THE USE OF A TOW STRAP IS NECESSARY TO TOW A DISABLED VEHICLE TO A REPAIR FACILITY PARKING LOT INTO THE SHOP BAY. THE TOW STRAPS SHOULD BE CONNECTED TO THE TOW HOOKS PROVIDED BY THE VEHICLE MANUFACTURER AT THE FRONT OF THE BUMPER. IF THE USE OF TOW HOOKS IS NOT AN OPTION, THEN A TOW STRAP MAY BE WRAPPED AROUND THE FRONT AXLE, (SEE FIGURE 6-7) IN A MANNER THAT IS ACCEPTABLE FOR TOWING THE VEHICLE FROM A REPAIR FACILITY PARKING LOT INTO THE SHOP BAY. DO NOT USE A TOW CHAIN AROUND THE FRONT AXLE OR WITH A SINGLE POINT LOCATION TO TOW THE VEHICLE. DOING SO WILL DAMAGE THE AXLE AND VOID ANY APPLICABLE WARRANTY, SEE FIGURE 6-7.

- NYLON STRAPS OR CHAINS ARE NOT RECOMMENDED FOR ON-HIGHWAY OR ON-ROADWAY TOWING.

FIGURE 6-7



SECTION 7

Preventive Maintenance

The SOFTEK®, AIRTEK® and other suspension systems installed on STEERTEK NXT / STEERTEK axle are low maintenance systems. Following appropriate inspection procedure is important to help ensure the proper maintenance and operation of the SOFTEK/AIRTEK suspension system and component parts function to their highest efficiency.

HENDRICKSON RECOMMENDED PREVENTIVE MAINTENANCE INTERVALS

- **The first 1,000 miles**
- **On-highway** – every 50,000 miles (80,000 km) or 6 months, whichever comes first

COMPONENT INSPECTION

- **Air spring** — Look for chaffing or any signs of spring or component damage.
- **Belly band** (if equipped) — Inspect for damage, cracks, dents, or loose fasteners. Any cracks require replacement. Replace as necessary.
- **Clamp group** — Check torque on clamp group mounting hardware, refer to vehicle manufacturer's torque specifications.
- **Fasteners** — Look for any loose or damaged fasteners on the entire suspension. Make sure all fasteners are tightened to the specified torque. Refer to Tightening 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.
- **Operation** — All steering components must move freely through the full range of motion from axle stop to axle stop.
- **Rear spring hangers** — Check for cracks or loose mounting hardware. Replace if necessary, see the Component Replacement Section of this publication for replacement procedure.
- **Rear spring mount** — Check for proper alignment with spring taper and check for proper torque on rear spring mount fasteners. Refer to the Tightening Torque Specifications Section in this publication.
- **Shock absorbers** — Look for any signs of dents or leakage, misting is not considered a leak. See Shock Absorber Inspection in this section.
- **Steel leaf spring** — Look for cracks. Replace if cracked or broken. Check the front bushing for any wear or deterioration. Replace if necessary, see the Component Replacement Section of this publication for replacement procedure.
- **Steering pivot points** — Check for looseness at all pivot points. Inspect and lubricate all pivot points. Refer to the Troubleshooting Guide Section in this publication.
- **STEERTEK NXT / STEERTEK Axle** — The axle should be free of any nicks or gouges. Inspect for any cracks or dents on axle.
- **Thrust washers and rear hanger** — Look for any signs of excessive wear to the thrust washers and rear hanger clamp. See Thrust Washer Inspection detailed in this section.
- **Tire wear** — Inspect tires for wear patterns that may indicate suspension damage or misalignment. See Tire Inspection in this section.
- **Top and bottom axle wrap liners (If equipped)** — Look for any cracking or broken pieces on liner in load bearing areas. See Axle Wrap Liner Inspection in this section.
- **Wear and damage** — Inspect all parts of suspension for wear and damage. Look for bent or cracked parts. Replace all worn or damaged parts.

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

LUBRICATION INTERVALS

For vehicles equipped with the STEERTEK NXT / STEERTEK axle, regular lubrication intervals should be followed to help prevent premature wear to the kingpin bushings and tie rod ends, see lubrication chart below.

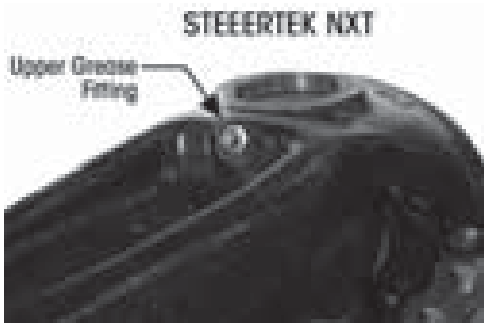
STEERTEK NXT / STEERTEK GREASING AND LUBRICATION SPECIFICATIONS

Component	Greasing Interval	Grease	NLGI Grade	Outside Temperature
Kinpin Bushings	Maximum of 25,000 miles (40,225 kilometers) or 90 days, whichever comes first.	Multipurpose Grease	2	Refer to the lubricant manufacturer's specifications for the temperature service limits applicable to your area.
Tie Rod Ends				
Drag Link	See Vehicle Manufacturer			

NOTE: Lubrication greases acceptable for use on the STEERTEK axle will carry a designation of NLGI #2 EP and rated GC-LB or equivalent.

KINGPIN LUBRICATION

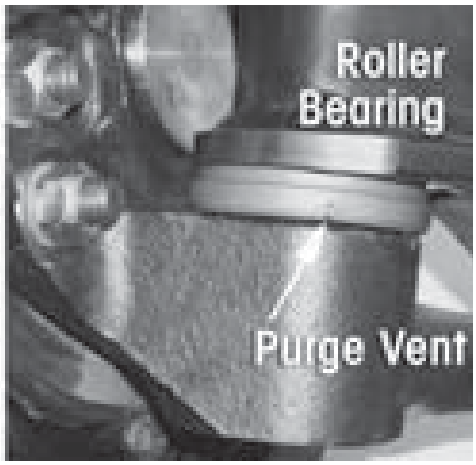
FIGURE 7-1



- On the Hendrickson **STEERTEK NXT** front axle, the upper kingpin grease fittings are located on the inboard side of the steering knuckle and upper kingpin connection, see Figure 7-1.The lower kingpin grease fitting is located on a bottom of the kingpin grease caps.
- On the Hendrickson **STEERTEK** front axle the kingpin grease fittings are located on the top and bottom of the kingpin grease caps.

1. Place vehicle on the ground.
2. Prior to greasing the kingpins on the vehicle, the suspension must be in a loaded condition.
3. Clean off all the grease fittings and grease gun tip with a clean shop towel prior to lubrication.
4. Lubricate the kingpins through the grease fittings on the top and bottom of the steering knuckle, see Lubrication Specification chart above.
5. Force the required lubricant into the upper and lower kingpin grease fittings, until new lubricant flows out from the upper kingpin connection and steering knuckle and the thrust bearing purge location, see Figures 7-2.

FIGURE 7-2



NOTE

Greasing at the lower zerk should purge grease from the thrust bearing shell.

- **SOFTEK Monoleaf and International Truck 2-leaf Mechanical Suspensions** – The left and right side of the STEERTEK NXT/ STEERTEK axle have steel roller thrust bearing, see Figure 7-4.

FIGURE 7-3

FIGURE 7-4

- **AIRTEK** – The left side of the STEERTEK axle has a composite style thrust bearing, and the right side of the STEERTEK axle has a steel roller thrust bearing, see Figures 7-3 and 7-4. Both purge in the same area.

TIE ROD END LUBRICATION

LUBRICATION PROCEDURE

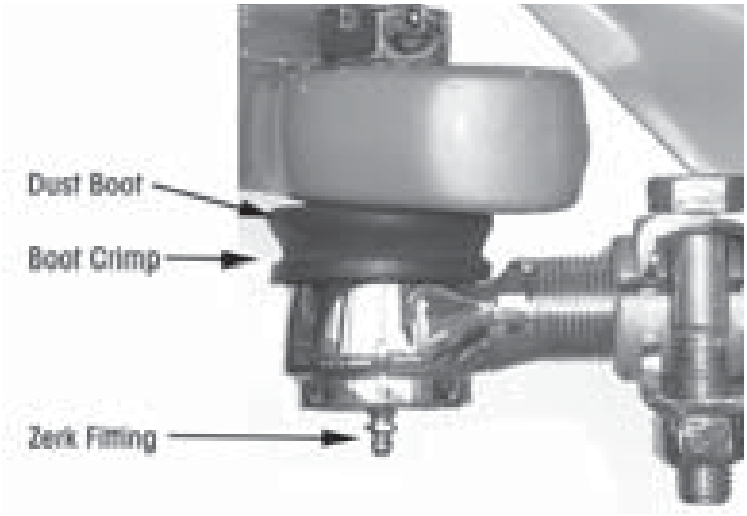
1. Turn the vehicle wheels straight ahead.
2. Wipe the zerk fitting and grease gun tip with clean shop towels.
3. Wipe the seal/boot clean with shop towels.
4. Attach a grease gun to the zerk fitting. Either a hand or pneumatic grease gun is acceptable. If air operated grease gun is used, system air pressure should not exceed 150 psi (1035 kPa).

⚠ CAUTION

EXCEEDING THE MAXIMUM AIR PRESSURE TO THE ZERK FITTING CAN CAUSE DAMAGE TO THE DUST BOOT AND COMPONENT FAILURE.

5. Dirt, water, and discolored old grease should flow from the relief vents or purge holes near the boot crimp or bellows area, see Figure 7-5. Continue to purge grease until fresh grease flows from the purge area.

FIGURE 7-5



6. If the tie rod end is designed for lube service and it will not accept grease proceed as follows:
   a. Remove the zerk fitting
   b. Inspect the threaded zerk fitting hole in the tie rod end and remove any obstructions

c. Install a new zerk fitting

d. Continue the lubrication procedure

e. If the tie rod end will not accept grease following this procedure it will be necessary to replace the tie rod end, (see Tie Rod End replacement in the Component Replacement Section of this publication)

7. Apply grease until all the old grease is purged from the boot and fresh grease is coming out.

TIE ROD END INSPECTION

INSPECTION PROCEDURE

Before beginning this inspection procedure, the entire system must be unloaded (i.e., the front end of the vehicle must be raised and supported with safety stands).

⚠ CAUTION

DO NOT GREASE THE TIE ROD ASSEMBLY BEFORE PERFORMING THE INSPECTION. DOING SO CAN INHIBIT EFFORTS TO DETERMINE ACTUAL WEAR.

⚠ CAUTION

REPLACE THE ENTIRE TIE ROD END IF THE BOOT IS TORN OR MISSING, FAILURE TO DO SO CAN CAUSE PREMATURE WEAR OF THE TIE ROD END.

1. Block rear wheels of vehicle. Using the bottom of the axle beam or the frame rails, raise the front end off the ground and support with stands.
2. With the engine off, turn the wheels from full left to full right and then return to the straight-ahead position.
3. Check that the boots are in place and completely installed over the tie rod ends.
4. Check for cracking or tears in the boots. Also check the boot seals for damage. Replace the entire tie rod end if the boot is damaged.

⚠ WARNING

THE COTTER PIN MUST BE INSTALLED CORRECTLY THROUGH THE TIE ROD END WITH THE CASTLE NUT TIGHTENED TO THE PROPER TORQUE SPECIFICATION IN ORDER TO SECURELY ATTACH THE TIE ROD. LOSS OF THE COTTER PIN CAN CAUSE THE TIE ROD END NUT TO BECOME LOOSE AND ADVERSELY AFFECT VEHICLE STEERING AND POSSIBLY RESULT IN TOTAL LOSS OF STEERING CONTROL.

5. Check that the tie rod end nut is installed and secured with a cotter pin. If the cotter pin is missing, check the nut torque specification and then install a new cotter pin. Always tighten the castle nut to specified torque when setting the cotter pin. **DO NOT** back off the nut to insert cotter pin.

⚠ WARNING

IT IS CRITICAL TO CHECK THE 5/8" TIE ROD CLAMP BOLT HEAD LOCATION TO VERIFY THE CLAMP FASTENERS HAVE SUFFICIENT CLEARANCE AWAY FROM THE LOWER SHOCK MOUNT AT FULL WHEEL CUT. THE FASTENERS MUST NOT CONTACT THE LOWER SHOCK MOUNT. FAILURE TO DO SO CAN CAUSE ONE OR MORE COMPONENTS TO FAIL CAUSING LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

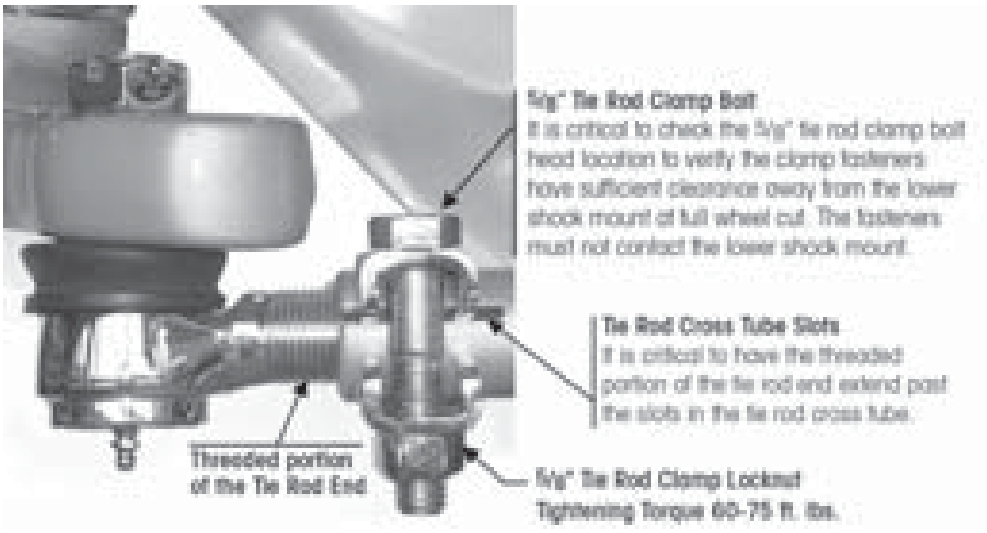
6. Verify the 5/8" tie rod clamp bolt head does not contact the lower shock mount at full wheel cut, see Figure 7-6.

⚠ WARNING

THE THREADED PORTION OF THE TIE ROD END MUST EXTEND PAST THE SLOTS INTO THE TIE ROD CROSS TUBE, SEE FIGURE 7-6. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE, LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

7. Check that the tie rod end is threaded correctly into the cross tube and is engaged deeper than the end of the cross tube slot. The tie rod end must be visible the entire length of the cross tube slot, see Figure 7-6.

FIGURE 7-6



8. Check that zerk fittings are installed. Replace a damaged zerk fitting with a new one.

CAUTION

DO NOT USE THE FOLLOWING ITEMS OR METHODS TO CHECK FOR MOVEMENT OF THE TIE ROD ASSEMBLY, WHICH CAN CAUSE DAMAGE TO COMPONENTS:

- A CROW BAR, PICKLE FORK OR 2 X 4.
- ANYTHING OTHER THAN HANDS USED TO GRASP AND ROTATE THE CROSS TUBE ASSEMBLY (CAN RESULT IN DAMAGE TO THE CROSS TUBE).
- EXCESSIVE PRESSURE OR FORCE APPLIED TO THE TIE ROD ENDS OR THE JOINTS OF THE ASSEMBLY.

9. By hand or using a pipe wrench, with jaw protectors to avoid gouging the cross tube, rotate the cross tube toward the front of the vehicle and then toward the rear. After rotating, center the cross tube. If the cross tube will not rotate in either direction, replace both tie rod ends, see Figure 7-7.

FIGURE 7-7

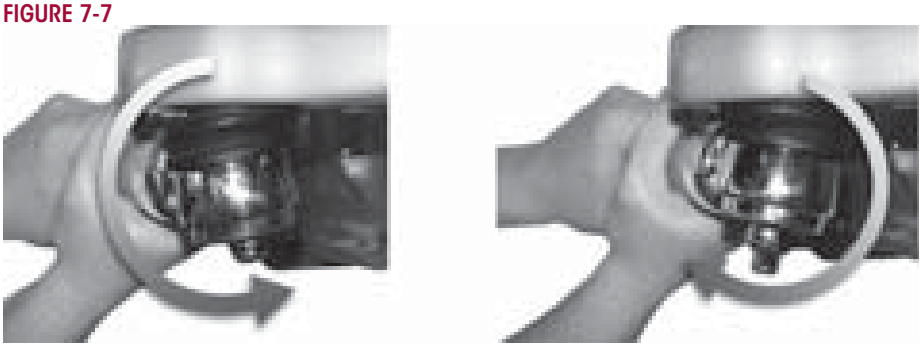


FIGURE 7-8

10. Position yourself directly below the tie rod end. Using both hands, grab the assembly end as close to the tie rod end as possible (no more than 6" or 152.4 mm). Apply hand pressure with reasonable human effort vertically up and down in a push-pull motion several times (using approx. 50-100 lbs. of force). Check for any movement or looseness at both tie rod end locations, see Figure 7-8.

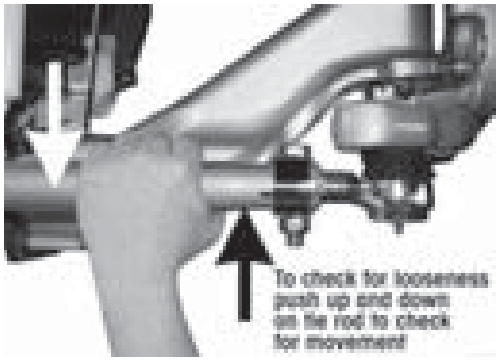


FIGURE 7-9

11. If there is any movement in the tie rod assembly, install a magnetic based dial indicator on the Ackermann arm, see Figure 7-9.
12. Set the dial indicator to zero.
13. Apply hand pressure with reasonable human effort vertically up and down in a push-pull motion several times (using approx. 50-100 lbs. of force). Observe the reading on the dial indicator.
14. If the reading is more than 0.060", replace both tie rod ends at the next service interval.
15. If a tie rod end exhibits ≥ 0.125" of movement by hand, the vehicle should be removed immediately from use and the tie rod end be replaced.

NOTE

According to the Commercial Vehicle Safety Alliance (CVSA), the "out of service" criteria for front steer axle tie rod assemblies on any commercial vehicle is: Any motion other than rotational between any linkage member and its attachment point of more than ⅛" (3 mm) measured with hand pressure only. (393.209(d)), (published in the North American Standard Out-of-Service Criteria Handbook, April 1, 2006.)

CLAMP GROUP RE-TORQUE INTERVAL

1. Clamp group locknuts must be torqued to specification at preparation for delivery.
2. Clamp group locknuts must be re-torqued at 1,000 miles.
3. Thereafter follow the 6 month/ 50,000 mile inspection and annual re-torque interval.

⚠ WARNING

ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

4. Ensure that the clamp group is properly aligned and the U-bolts/hex bolts are seated in the top pad, and the top pad/bottom axle wrap is centered on the axle spring seat/top axle wrap, see Figures 7-10 through 7-12.

FIGURE 7-10

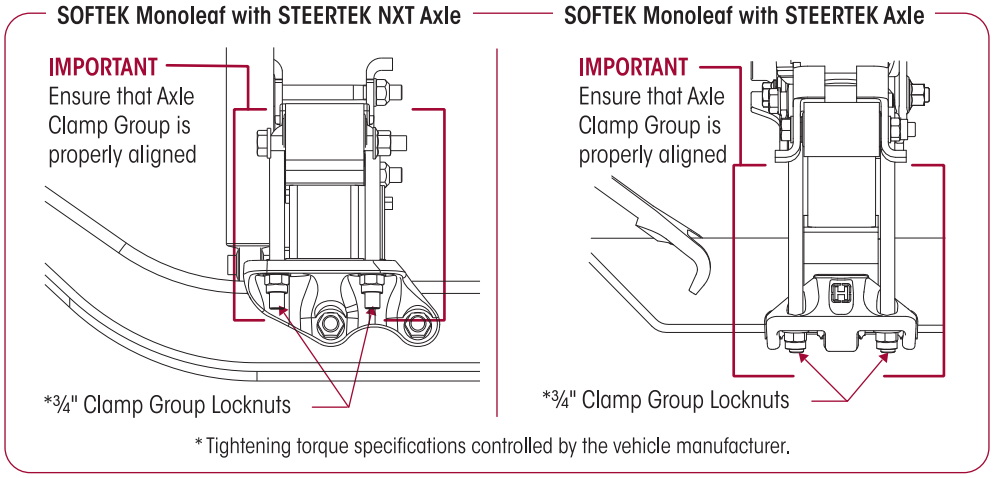


FIGURE 7-11

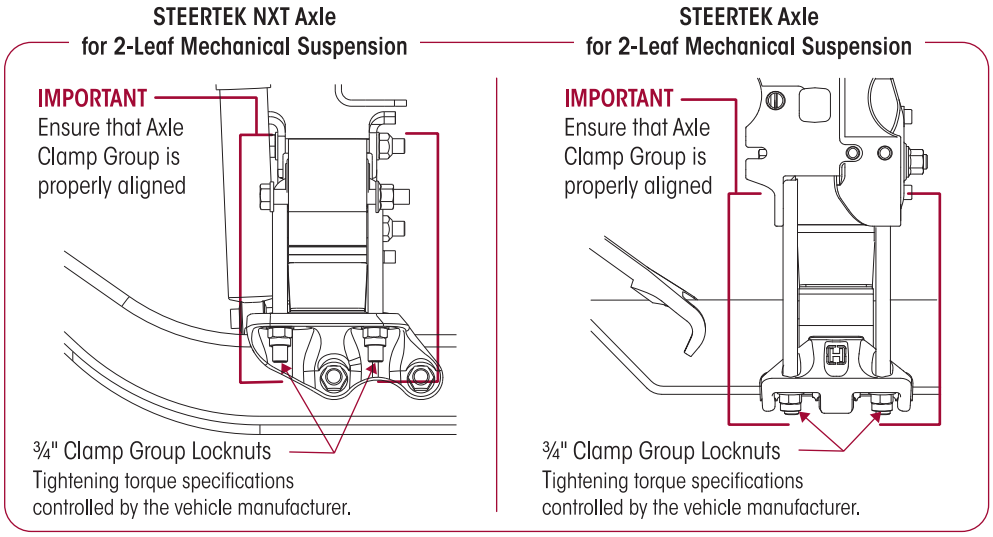
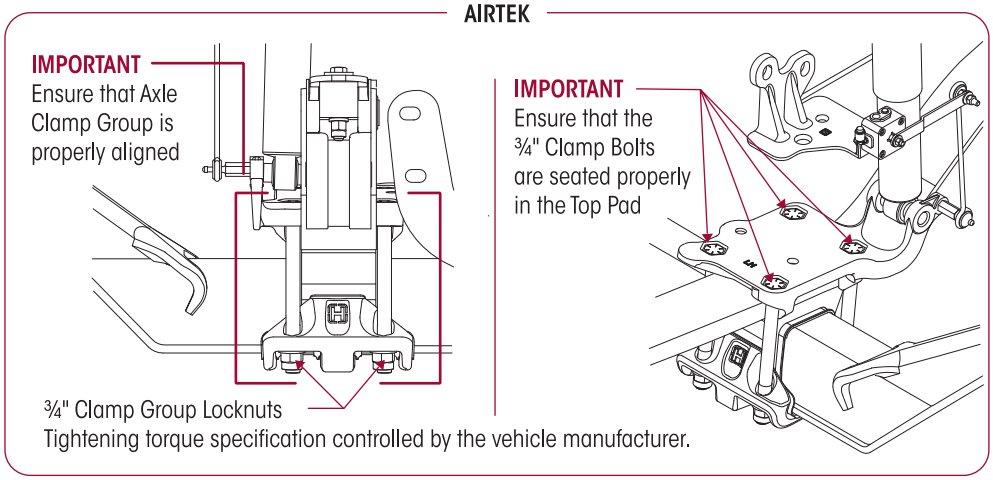
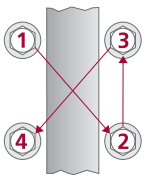


FIGURE 7-12



5. Check for the signs of component or bolt movement.
6. If signs of movement are present, disassemble the clamp group fasteners, check for component wear or damage and replace as necessary, then install new clamp group fasteners and repeat Steps 1 through 5.

FIGURE 7-13



7. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specification in the proper pattern to achieve uniform bolt tension, see Figure 7-13.

TIRE INSPECTION

The leading causes of tire wear are the following, in order of importance:

1. Tire Pressure
2. Toe Setting
3. Thrust Angle
4. Camber

The following tire Inspection guidelines are based upon Technology & Maintenance Council (TMC) recommended practices. Any issues regarding irregular tire wear where Hendrickson is asked for assistance will require tire and alignment maintenance records, reference TMC's literature numbers RP219A, RP230, or RP 642.

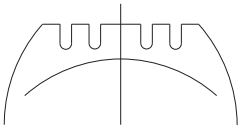
Tire wear is normally the best indicator of vehicle alignment condition. If tires are wearing too rapidly or irregularly, alignment corrections may be needed. The tire wear patterns described below can help isolate specific alignment problems.

The most common conditions of concern are:

- Overall Fast Wear (Miles per 32nd)
- Feather Wear
- Cupping
- Diagonal Wear
- Rapid Shoulder Wear (One Shoulder Only)
- One-Sided Wear

FIGURE 7-14

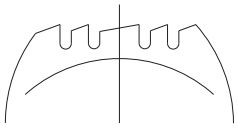
OVERALL FAST WEAR (Miles per 32nd)



Overall Fast Wear — Fast wear can be described as exhibiting a good, but accelerated wear pattern. It is typically caused by operating conditions, such as mountainous terrain, frequency and severity of turning, abrasive road surfaces in combination with vehicle configurations and their attributes-such as power steering, heavy axle loads, high wheel cuts, setback axles, short wheel base tractors, long wheel base straight trucks. To correct this problem, consult with vehicle and tire manufacturers when specifying equipment or replacing tires. For more information, see TMC RP 219A publication, page 11. For information on how to accurately measure and record tire rates, see TMC RP 230 publication.

FIGURE 7-15

FEATHER WEAR



Feather wear — Tread ribs or blocks worn so that one side is higher than the other resulting in step-offs across the tread face. Generally, ribs or blocks exhibit this wear. To spot this problem, do the following:

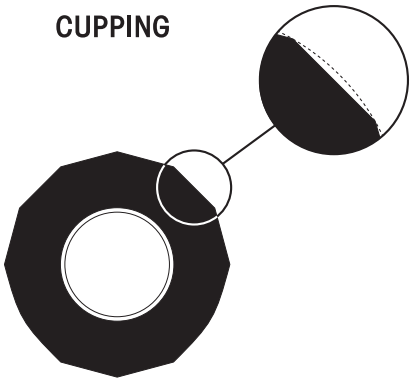
With one hand flat on the tread of the tire and a firm down pressure, slide your hand across the tread of the tire. In one direction, the tire will feel smooth and in the opposite direction there will be a sharp edge to the tread. Typical causes of feather wear include: excessive side force scrubbing, resulting from conditions of misalignment such as excessive toe, drive axle misalignment, worn, missing or damaged suspension components, bent tie rods or other chassis misalignment.

To correct this problem, tires can be rotated to another axle for maximum utilization of remaining tread. Additionally, diagnose the vehicle itself and correct misalignment condition as required. If steer tire feathers are in opposite directions, an improper toe condition is most likely the cause. For more information, see TMC RP 219A publication, page 5.

If feather wear on both steer tires is in the same direction, drive axle or other chassis misalignment is indicated. If one steer tire shows feather wear and the other steer tire has normal wear, a combination of toe and drive axle or chassis misalignment is indicated.

FIGURE 7-16

CUPPING



Cupping — Localized, dished out areas of fast wear creating a scalloped appearance around the tire. Cupping, which appears around the tire on the shoulder ribs, may also progress to adjoining ribs, see TMC RP 219A publication, page 7.

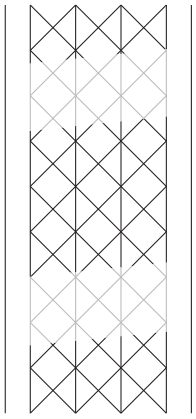
Cupping is usually a result of moderate-to-severe imbalance, improper rim/wheel mounting, excessive wheel end play or other assembly non-uniformity. It can also be due to lack of shock absorber control on some suspension types.

To solve cupping problems:

- *Tires* – Correct mismount or balance problem. If ride complaints arise, steer tires may be rotated to drive or trailer axle.
- *Vehicle* – Diagnose component imbalance condition, i.e., wheel, rim, hub, brake, drum. Correct as necessary.

FIGURE 7-17

DIAGONAL WEAR



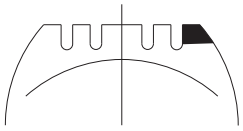
Diagonal Wear — Can be described as localized flat spots worn diagonally across the tread at approximately 25-35° angles, often repeating around the tread circumference. For more information, see TMC RP 219A publication, page 20.

Diagonal wear is usually caused by bad wheel bearings, toe out, mismounting of tire and wheel assembly to axle, and mismatched duals for size and/or inflation pressures. It may start as brake skid. Diagonal wear is aggravated by high speed empty or light load hauls.

To correct diagonal wear, reverse direction of rotation of the tire. If wear is excessive, true tire. If the source of trouble is the vehicle, diagnose cause and correct as needed.

FIGURE 7-18

RAPID SHOULDER WEAR (One Shoulder Only)



Rapid Shoulder Wear (One Shoulder Only) — Is defined as a tire worn on the edge of one shoulder, sometimes extending to inner ribs. It can progress to diagonal wipeout. For more information, see TMC RP 219A publication, page 22.

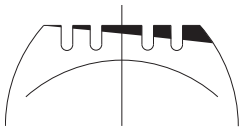
This wear condition is usually caused by excessive toe or excessive camber. These conditions can be created by a misaligned or bent axle and can also be caused by loose or worn wheel bearings.

To correct this type of rapid shoulder wear:

- *Tires* – Change direction of rotation of tire. If shoulder wear is severe, remove and retread.
- *Vehicle* – Diagnose misalignment and/or mechanical condition and correct.

FIGURE 7-19

ONE-SIDED WEAR



One-sided wear — Is excessive wear on one side of tire extending from the shoulder towards the center of the tread. For more information, see TMC RP 219A, page 26.

One-sided wear is usually caused by improper alignment, worn kingpins, loose wheel bearings, excessive camber, excessive axle loads, non-parallel axles, or non-uniform tire and wheel assembly caused by improper bead seating or bent wheel.

To correct one-sided wear:

- *Tires* – Depending on severity, rotate tires to another axle position or, if worn to minimum tread depths, submit for possible retreading.
- *Vehicle* – Diagnose mechanical problem and correct.

SHOCK ABSORBER INSPECTION

FIGURE 7-20

Hendrickson uses a long service life, premium shock absorber on all SOFTEK / AIRTEK suspensions. When the shock absorber replacement is necessary, Hendrickson recommends that the shock absorbers be replaced with identical Hendrickson Genuine parts for servicing. Failure to do so will affect the suspension performance, durability, and will void any applicable warranty. See vehicle manufacturer's applicable publications for other shock absorber inspection requirements.

Inspection of the shock absorber can be performed by doing a heat test, and a visual inspection. For instructions on shock absorber replacement see the Component Replacement Section of this publication. It is not necessary to replace shock absorbers in pairs if one shock absorber requires replacement.

HEAT TEST

1. Drive the vehicle at moderate speeds on rough road for minimum of fifteen minutes.

WARNING

DO NOT GRAB THE SHOCK AS IT COULD POSSIBLY CAUSE PERSONAL INJURY.

2. Lightly touch the shock body carefully below the dust cover, see Figure 7-20.
3. Touch the frame to get an ambient reference. A warm shock absorber is acceptable, a cold shock absorber should be replaced.
4. To inspect for an internal failure, remove and shake the suspected shock. Listen for the sound of metal parts rattling inside. Rattling of metal parts can indicate that the shock has an internal failure.

VISUAL INSPECTION

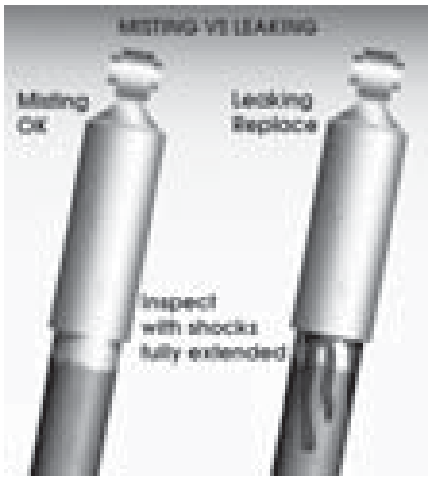
Look for these potential problems when doing a visual inspection. Inspect the shock absorbers fully extended. Replace as necessary.

FIGURE 7-21

LEAKING VS. MISTING SHOCK VISUAL INSPECTION

The inspection must not be conducted after driving in wet weather or a vehicle wash. Shocks needs to be free from water. Many shocks are often mis-diagnosed as failures. Misting is the process whereby very small amounts of shock fluid evaporate at a high operating temperature through the upper seal of the shock. When the "mist" reaches the cooler outside air, it condenses and forms a film on the outside of the shock body. Misting is perfectly normal and necessary function of the shock. The fluid which evaporates through the seal area helps to lubricate and prolong the life of the seal.

FIGURE 7-22



A shock that is truly leaking and needs to be replaced will show signs of fluid leaking in streams from the upper seal. These streams can easily be seen when the shock is fully extended, underneath the main body (dust cover) of the shock. Look for these potential problems when doing a visual inspection. Inspect the shock absorbers fully extended. Replace as necessary.

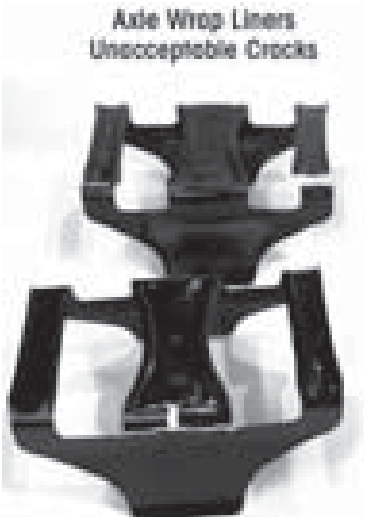
NOTE The AIRTEK and SOFTEK systems are equipped with a premium seal on the shock, however this seal will allow for misting to appear on the shock body (misting is not a leak and is considered acceptable).

If the shock is damaged install new shock absorber as detailed in the Component Replacement Section of this publication.

AXLE WRAP LINER (If equipped)

NOTE Axle wrap liners are not equipped on vehicles built with STEERTEK NXT axle after August 2011.

FIGURE 7-23



INSPECTION PROCEDURE

- Axle wrap liners are installed on the STEERTEK axle to help prevent any type of abrasion on the axle at the clamp group area. Any time an axle wrap is removed it is mandatory that the axle wrap liner be replaced.
- Liner Crack Criteria:

  It is possible for the axle wrap liner to crack during service. If the liner is cracked and all the pieces are intact it is not necessary to replace the liner. If the liner is broken out and there are pieces missing the liner must be replaced immediately, see Figure 7-23. See Axle Wrap replacement in the Component Replacement Section of this publication.

STEERING KNUCKLE INSPECTION

CHECKING VERTICAL END PLAY (UP AND DOWN MOVEMENT)

The operating spec for vertical end play on the steering knuckle is 0.008" to 0.030".

1. Chock the rear tires to help prevent the vehicle from moving.
2. Set the parking brakes.
3. Use a jack to raise the vehicle until both tires are 1" off the ground.
4. Place a dial indicator on each side of the axle as follows:

FIGURE 7-24

   a. Index the wheels slightly (left or right).
   b. Place the magnetic dial indicator base on the axle, see Figure 7-24.
   c. Place the tip of the dial indicator on the top of the upper steering knuckle (not on the grease cap).
5. Set the dial indicator to "0" (zero).
6. Lower the jack.
7. If vertical end play is greater than 0.030", or below 0.008" an adjustment of the upper knuckle is necessary.
8. - If the vertical end play is **greater than 0.030"**, loosen the socket head cap screws and **push down** on the knuckle assembly until the proper vertical end play is achieved.
   - If the vertical end play is **less than 0.008"**, loosen the socket head cap screws and **pull up** on the knuckle assembly until the proper vertical end play is achieved.
9. Retighten the socket head cap screws to 175-200 foot pounds torque.

NOTE

ONLY if the vehicle is built **prior to July 2011** equipped with the **STEERTEK** axle can the vertical end play be further adjusted with a shim.

STEERTEK axle (prior to July 2011)

10. - If vertical end play is **greater than 0.030"**, install shims (Hendrickson part no. 60259-002) between the top of the axle and the bottom of the upper steering knuckle to obtain the proper vertical end play specification.
    - If the vertical end play is **less than 0.008"**, remove shims (Hendrickson part no. 60259-002) between the top of the axle and the bottom of the upper steering knuckle to obtain the proper vertical end play specification.

KINGPIN BUSHING INSPECTION

INSPECTION PROCEDURE (STEERING KNUCKLE LATERAL MOVEMENT)

1. Chock the wheels to help prevent the vehicle from moving. Set the parking brake.
2. Use a jack to raise the vehicle until the wheels are off the ground. Support the vehicle with safety stands.
3. **CHECKING THE UPPER KINGPIN BUSHING**. Install the base of a dial indicator onto the axle beam and place the tip against the steering knuckle, see Figure 7-25.

FIGURE 7-25

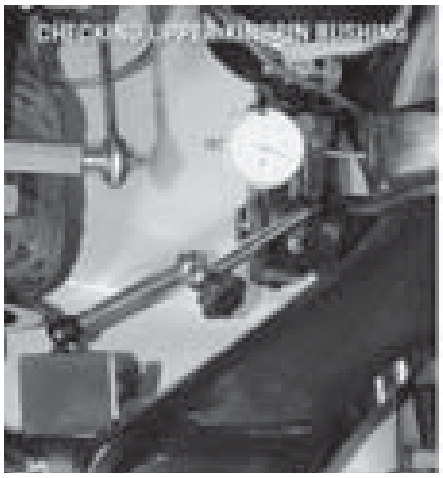


FIGURE 7-26

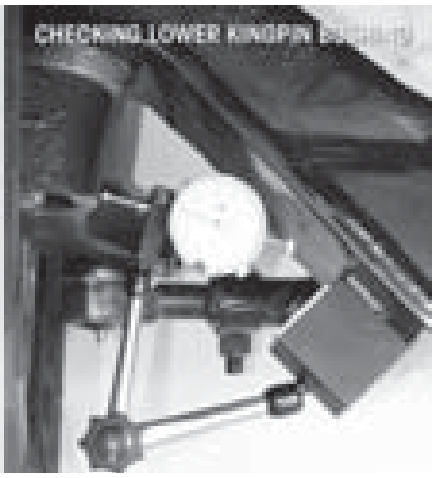


FIGURE 7-27

4. Set the dial indicator to "0" zero.
5. Move the top of the tire in and out by applying reasonable constant pressure and then release, see Figure 7-27.
6. Check the reading on the dial indicator. If the dial indicator moves more than 0.015", the upper bushing is worn or damaged. Replace both bushings. Refer to the Kingpin Bushing replacement procedure in the Component Replacement Section of this publication.
7. **CHECKING THE LOWER KINGPIN BUSHING**. Install a dial indicator so that the base is on the axle and the indicator tip is against the inside of the bottom of the knuckle, see Figure 7-26.
8. Set the dial indicator to "0" zero.
9. Move the bottom of the tire in and out. If the dial indicator moves more than 0.015", the lower bushing is worn or damaged. Replace both kingpin bushings. Refer to the Component Replacement Section of this publication.

NOTE If one bushing is worn or damaged, it is mandatory to replace both the top and bottom bushings on that knuckle assembly.

AIRTEK THRUST WASHER INSPECTION

FIGURE 7-28
Vehicles built after 9/06

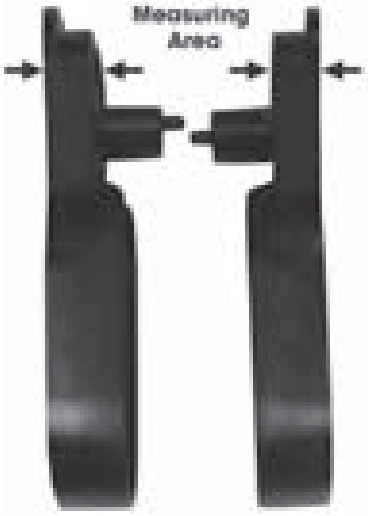
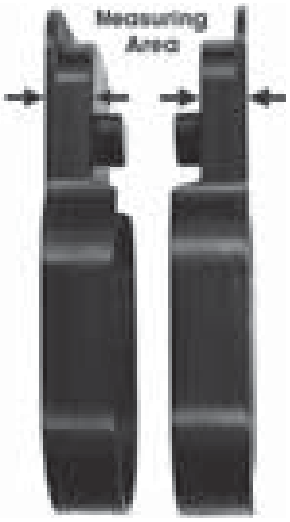


FIGURE 7-29
Vehicles Built Prior to 9/06



In normal use these components will function satisfactorily, even though the components may show some wear.

An indication that the rear mount/thrust washers are worn, or need replacement is when the suspension exhibits one or more of the following conditions:

1. Excessive lateral movement of the spring.
2. The spring taper is making contact with the rear hanger clamp or the rear hanger.
3. The thrust washers in Figures 7-28 and 7-29, show normal acceptable thickness. Thickness can be measured with a micrometer or a ruler.

If one or more of these conditions is experienced, disassembly of the rear leaf spring hanger is required to replace the thrust washers.

NOTE

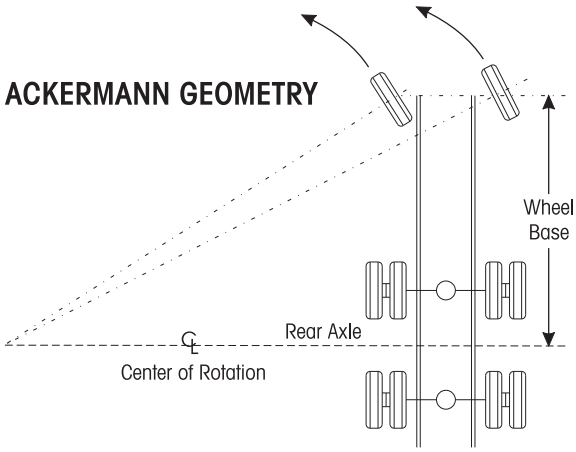
If one thrust washer is worn out, Hendrickson recommends both thrust washers on that side of the suspension be replaced. Inspect the thrust washers on the other side of the vehicle and replace if necessary, see Thrust Washer replacement procedure in the Component Replacement Section of this publication.

- The normal thickness of a new thrust washer is $^{11}/_{16}$" (0.685") or 17.4 mm
- The minimum thickness allowable for a thrust washer is $^{9}/_{16}$" (0.560") or 14.2 mm

SECTION 8
Alignment & Adjustments

ALIGNMENT DEFINITIONS

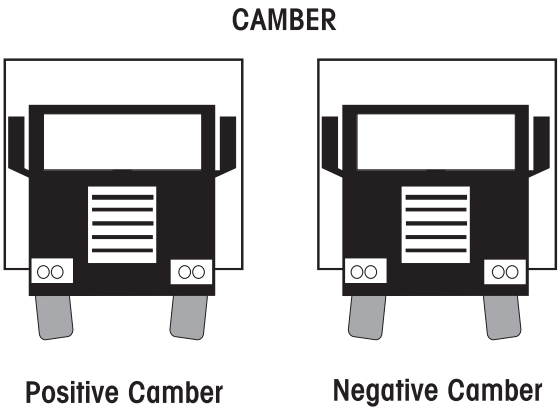
FIGURE 8-1



Ackermann steering geometry — The geometry of the four bar linkage consisting of the front axle, two knuckle assemblies, and tie rod assembly is designed to provide free rolling of front tire in a turn. Ackermann geometry is dependent upon the steering axle track-width and wheelbase of the vehicle. Improper geometry results in wheel scrub in turns which generally appears as toe wear on the tire, usually more wear on one side of the vehicle than the other due to the operational route of the vehicle.

Bump steer (feedback) — The feedback felt through the steering linkage to the steering wheel when a steer axle tire hits a bump in the road. This occurs because the axle-end of the drag link and the axle attachment point of the spring do not travel in parallel circular arcs as the suspension moves up and down. This condition can also be caused by trapped air in the power steering system.

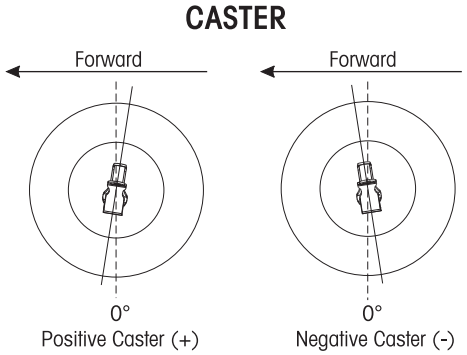
FIGURE 8-2



Camber — The angle formed by the inward or outward tilt of the wheel reference to a vertical line. Camber is positive when the wheel is tilted outward at the top and is negative when the wheel is tilted inward at the top.

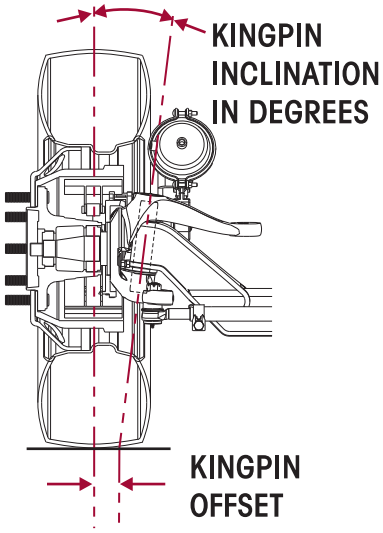
Excessive positive camber may cause smooth wear on the outer half of the tire tread. Excessive negative camber may cause wear on the inner half of the tread. Static-unloaded camber angles are built into the axle to put the loaded tire perpendicular to the road.

FIGURE 8-3



Caster — The forward or rearward tilt of the steering axle kingpin in reference to a vertical line. The angle is measured in degrees. Caster is positive when the top of the steering axis is titled rearward and is negative when the tilt is forward. Proper caster is important for directional stability and returnability. Too much positive caster can cause shimmy, excessive steering effort and is normally a vehicle performance and handling consideration. Uneven positive caster may create a steering pull toward the side with the lower caster. This attribute may be used to compensate for crowned roads.

FIGURE 8-4



Kingpin inclination (KPI) — The inward tilt of the kingpin from the vertical. This front suspension parameter has a pronounced effect on steering effort and returnability. As the front wheels are turned around an inclined kingpin, the front of the truck is lifted. This lifting of the vehicle is experienced as steering effort when the turn is executed and exhibits itself as recovery force when the steering wheel is released.

Kingpin offset — The distance between the center of the tire patch and intersection of the kingpin axis with the ground. This parameter of front-end geometry is important in vehicles without power steering and has a major effect on static steering. If there is no kingpin offset, the tires must scrub around the center of the pin patch when turned in a static condition, resulting in higher static steering efforts.

Steering arm — The component that connects the drag link to the axle knuckle assembly.

FIGURE 8-5

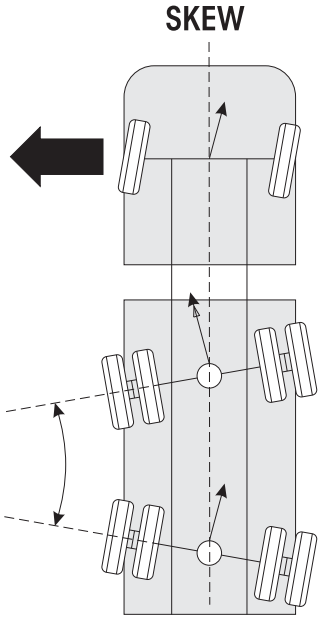
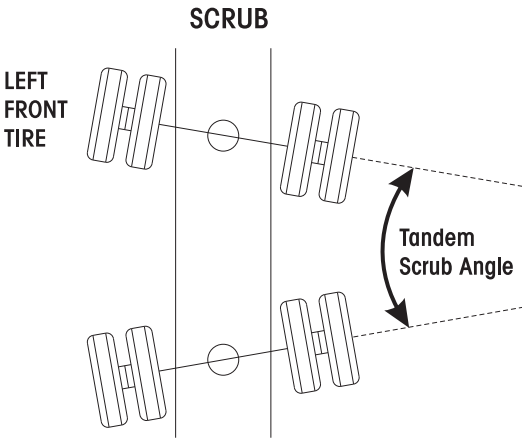


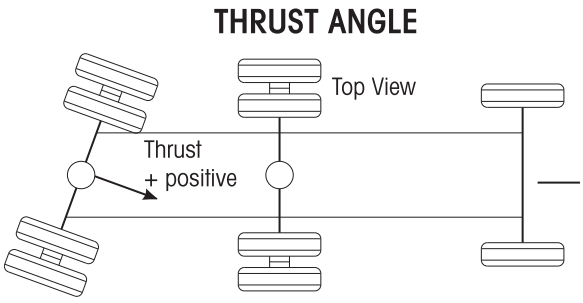
FIGURE 8-6



Scrub, skew, tram angle or parallelism — The angle formed by two thrust or tracking lines of a tandem (or multiple) axle vehicle. As indicated by the term "parallelism", the ideal condition is when the two thrust lines form a 0° angle, or are parallel to each other. Positive skew or tram is when the distance between the right axle ends is less than the distance between the left.

Any scrub angle other than 0° will cause the tandem axles to work against each other. The steer axle must be turned to offset the "push" of the tandem axles to keep the vehicle moving straight ahead. This causes every tire on the vehicle to "scrub". Tire wear from tandem scrubbing occurs at the leading edge of the steer tires in a pattern called "inside/ outside" wear, that is, the inside edge of the left steer tire and the outside edge of the right steer tire will exhibit irregular wear for example. Additional tire wear may occur on all tandem axle tires.

FIGURE 8-7

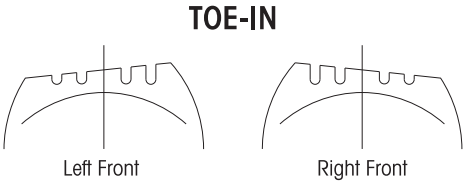


Thrust angle, tracking, or square — The angle formed by the centerline of the vehicle frame (geometric centerline) and the direction that an axle points. As indicated by the term "square", the ideal value for the angle is 0° or when the axle centerline is at 90° or perpendicular to the geometric centerline. Thrust or tracking to the right is positive, and to the left is negative.

A steering correction is required to offset the effect of the thrust angles and keeps the vehicle traveling in a straight line. It results in a lateral offset between the steer and drive axle tires commonly referred to as "dog tracking."

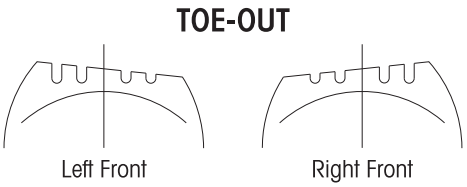
Tie rod arm (ackermann-arm, cross tube arm) — The component that transmits steering forces between left and right axle knuckle assemblies through the cross tube assembly.

FIGURE 8-8



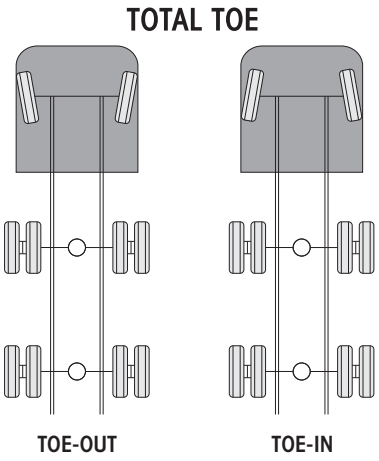
Toe-in — Is when the horizontal line intersects in front of the wheels, or the wheels are closer together in front than in the back. Toe-in is commonly designated as positive, toe-out as negative. Excessive toe-in wears the outside edge of the tires. Steer axle toe is adjustable to reduce wear to the leading edge of the tire and also to avoid road wander. Toe is adjusted in a static, unloaded condition so that the tires will run in a straight line under a dynamic, loaded condition.

FIGURE 8-9



Toe-out — Is when the horizontal lines intersect behind the wheels, or the wheels are closer together in back than in front. Toe-in is commonly designated as positive, toe-out as negative. Excessive toe-out wears the inside edge of the tires. Steer axle toe is adjustable to reduce wear to the leading edge of the tire and also to avoid road wander. Toe is adjusted in a static, unloaded condition so that the tires will run in a straight line under a dynamic, loaded condition.

FIGURE 8-10



Toe-out on turns — (See Ackermann Geometry). Excessive turning angles such as those encountered in pickup and delivery operations may contribute to premature tire wear. Be advised that the greater turning angles, the more that toe and camber change. If you have any doubt regarding the optimum turning angles for your operation, contact the vehicle's manufacturer, axle OEM, tire OEM and alignment equipment manufacturer for advice.

Total toe — The angle formed by two horizontal lines through the planes of two wheels. Steer axle toe is adjustable to reduce wear to the leading edge of the tire and also to avoid road wander. Toe is adjusted in a static, unloaded condition so that the tires will run in a straight line under a dynamic, loaded condition.

INSPECTION PRIOR TO ALIGNMENT

WHEELS AND TIRES

Examine the following items:

- The tires are inflated to the manufacturer's specified tire pressure.
- The steer axle tires are the same size and type.
- The lug nuts are tightened to manufacturer's specified torque.
- The wheels are balanced.
- The wheels and tires are free of excessive wear and damage.
- Wheel bearing end play is within OEM specification.

FRONT SUSPENSION

Inspect the following:

- All fasteners are installed and tightened to the specified torque. See Tightening Torque Specification Section of this publication.
- Leaf springs are free of wear or damage.
- Air springs are free of wear or damage.
- Shock absorbers are free of wear and damage.
- Vehicle ride height for both the front and rear are within specification. Follow manufacturer's guidelines (if equipped).
- Front and rear spring mounts are free of wear or damage.

INSPECT TIE ROD ENDS

Perform Tie Rod Inspection procedure; refer to the Preventive Maintenance Section in this publication.

REAR AXLE AND REAR SUSPENSION

The rear axle can cause front tire wear. If the outer edge of one front tire is worn and the inner edge of the other front tire is worn, check the following:

- Make sure the rear axle (especially a tandem axle) is correctly aligned. Refer to the procedure dictated by the vehicle or suspension manufacturer.
- All fasteners including U-bolts (if applicable) are installed and tightened to the specified torque.
- The leaf springs are not worn or damaged.
- The bushings in the leaf springs are not worn or damaged.
- The torque rods (if used) are correctly adjusted (if adjustable).
- The frame is not bent or twisted.
- Refer to any additional recommendations and specifications from the manufacturer of vehicle on rear axles and suspensions. Reference The Technology & Maintenance Council (TMC) Guidelines for Total Vehicle Alignment.

FRONT WHEEL ALIGNMENT

Hendrickson recommends technicians review The Technology & Maintenance Council's publication (TMC) "Guidelines for Total Vehicle Alignment" (TMC RP 642).

Check total (front and rear) vehicle wheel alignment when any of the following occurs:

- Every 80,000 to 100,000 miles, or 12-18 months (normal maintenance).
- When the vehicle does not steer correctly.
- To correct a tire wear condition.

For rear wheel alignment specifications and adjustments refer to the vehicle manufacturer.

The AIRTEK front wheel alignment specifications can be found in the Alignment Specifications Section of this publication. There are two types of front wheel alignment:

1. *Minor alignment* – a minor front wheel alignment is done **for all** normal maintenance conditions, see below.
2. *Major alignment* – a major alignment is done when uneven or excessive tire wear is evident, or response at the steering wheel is sluggish, or the need for major wheel alignment check and adjustment is required, see below.

MINOR FRONT WHEEL ALIGNMENT

Perform the minor front wheel alignment in the following sequence:

1. Inspect all systems that affect wheel alignment. Refer to the Inspection Prior to Alignment in this section.
2. Check the wheel bearing end play.
3. Check and adjust toe.
4. Check and adjust the vehicle ride height as specified in the Preventive Maintenance Section of this publication.

MAJOR FRONT WHEEL ALIGNMENT

Be certain to follow wheel alignment inspection intervals as specified by the original equipment manufacturer. Before performing a major front wheel alignment it is recommended that alignment equipment calibration be checked to ensure proper vehicle alignment.

Major wheel alignment is accomplished in the following sequence of operation:

1. Inspect all the systems that influence the wheel alignment. Refer to the Inspection Prior to Alignment in this section.
2. Check and adjust the maximum turn angle, refer to the Steering Stop Adjustment Procedure in this section, see Figures 8-11 and 8-12.

FIGURE 8-11

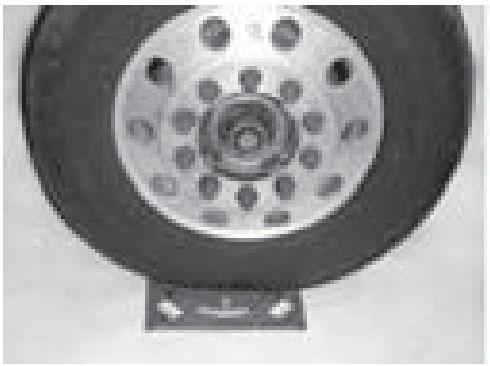


FIGURE 8-12

3. If the vehicle is equipped with power steering, check the pressure relief in the power steering system and reset if necessary. Refer to the vehicle manufacturer regarding the subject: Adjusting the Pressure Relief in the Power Steering System.

4. Check the turning angle. Refer to the original equipment manufacturer specifications.
5. Check the kingpin (or steering axis) inclination. Refer to Kingpin Inclination under Alignment Definitions in this section.

WARNING

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, AND WILL VOID HENDRICKSON'S WARRANTY. A BENT AXLE BEAM CAN CAUSE LOSS OF VEHICLE CONTROL, POSSIBLY CAUSING PERSONAL INJURY OR PROPERTY DAMAGE, SEE FIGURE 8-13.

WARNING

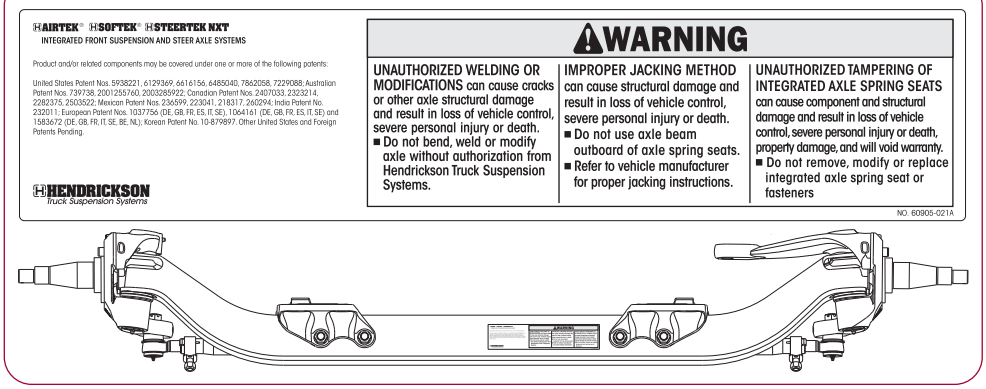
THE INTEGRATED AXLE SPRING SEATS ON THE STEERTEK NXT AXLE ARE NON-SERVICEABLE. UNAUTHORIZED TAMPERING OF INTEGRATED AXLE SPRING SEATS CAN CAUSE COMPONENT AND STRUCTURAL DAMAGE AND RESULT IN LOSS OF VEHICLE CONTROL, SEVERE PERSONAL INJURY OR DEATH, PROPERTY DAMAGE, AND WILL VOID ANY APPLICABLE WARRANTY. DO NOT REMOVE, MODIFY OR REPLACE INTEGRATED AXLE SPRING SEAT OR FASTENERS.

NOTE

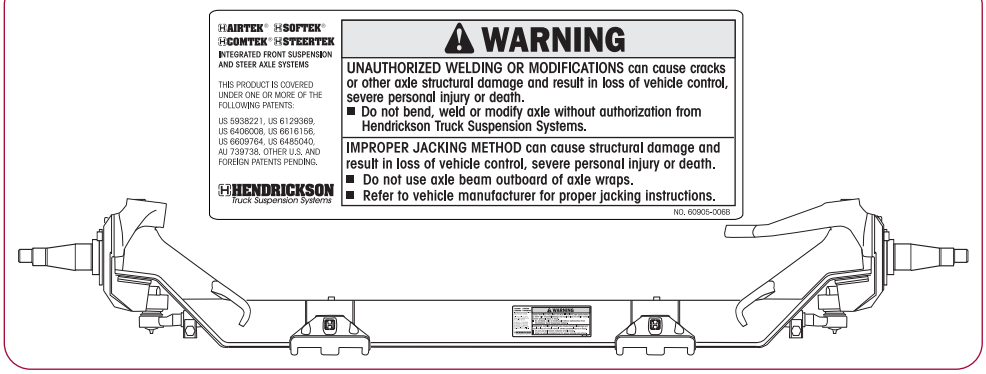
Contact Hendrickson Tech Services for any questions regarding STEERTEK NXT integrated axle spring seats and / or fasteners.

FIGURE 8-13

Vehicles built with STEERTEK NXT axle after August 2011



Vehicles built with STEERTEK axle prior to August 2011



6. Check camber angle. **DO NOT** attempt to adjust camber. Refer to "Camber" under the Alignment Definitions in this section.
7. It is necessary to verify that all ride heights (front and rear) are within specifications prior to checking caster to get an accurate caster reading.
8. Check and adjust caster angle. Refer to Caster Angle under Alignment Definitions in this section.

NOTE

The use of two different angle caster shims will not change cross caster. Cross caster is the difference between the caster readings for left and right side of the vehicle.

9. Check and adjust toe-in, refer to adjusting the Toe-In under Alignment Definitions in this section.

AIRTEK SINGLE RIDE HEIGHT VERIFICATION

1. Drive the vehicle onto a level surface.
2. Free and center all suspension joints by slowly moving vehicle back and forth several times without using the brakes. It is **IMPORTANT** when coming to a complete stop to verify the brakes are released.
3. Chock drive wheels.
4. Verify that the air system is at full operating pressure.
5. Detach the lower rubber grommet of the height control valve linkage from the lower stud and exhaust the suspension system air by lowering the height control valve arm.
6. Re-attach the lower grommet of the height control valve linkage onto the lower stud to fill the suspension system with air. Wait until the airflow to front air springs has stopped.
7. The ride height is measured at the front of the air spring. Place the height gauge (Literature No. 45745-251) so the flat surface of the height gauge is against the side of the frame rail, the horizontal flat is sitting on top of the air spring bead plate. Align the bottom of the height gauge to the air spring piston flange as shown in Figure 8-14. Verify that the air spring height is within the "ACCEPTABLE" tolerance indicated on the gauge.
8. If the air spring is piston flange edge contacts the "BELOW SPEC" region, the ride is set too low. If the air spring piston flange contacts to the "ABOVE SPEC" region, the ride height is set too high. If the ride height is out of specification it will be necessary to adjust the ride height.
9. If a gauge is not available, measure the suspension reference ride height on the front axle (top front of the air spring to the bottom of the air spring piston flange). The reference ride height specification is 8⅛" ± 3/16", see Figure 8-15. If the reference ride height is out of specification it will be necessary to adjust the ride height.

FIGURE 8-14

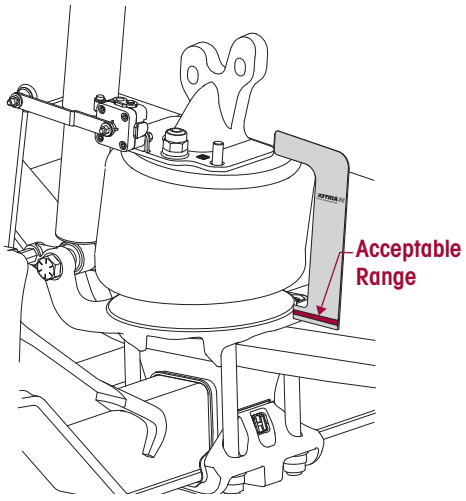
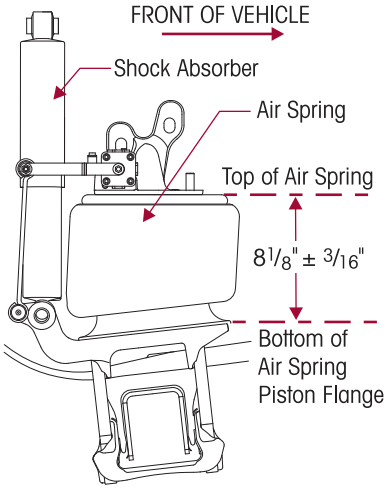


FIGURE 8-15



ADJUSTMENT PROCEDURE

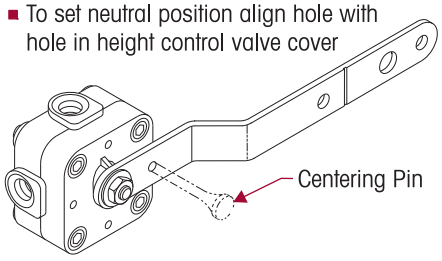
1. Verify that the air system is at full operating pressure.

SERVICE HINT It is very important that the leveling valve be cycled completely before and after any ride height adjustments. Cycling of the leveling valve will help make the adjustment more accurate.

2. See Air Spring Safety Notice in the Important Safety Notice section of this publication prior to deflating or inflating the suspension system. Cycle the air system. Detach the lower rubber grommet of the height control valve linkage from the lower stud and exhaust the suspension system air by lowering the height control valve arm.
3. Refill the suspension by raising the height control valve arm by hand, so that the air springs are above the proper ride height.

4. Lower the leveling valve arm to exhaust the air system until the suspension is at the proper ride height.
5. Use a ⅛" wooden dowel rod (golf tee) to set the neutral position for the height control valve by aligning the hole in the leveling arm with the hole in the height control valve cover, as shown in Figure 8-16. **DO NOT** use a metal rod or nail as this may cause damage to the height control valve.

FIGURE 8-16
- To set neutral position align hole with hole in height control valve cover

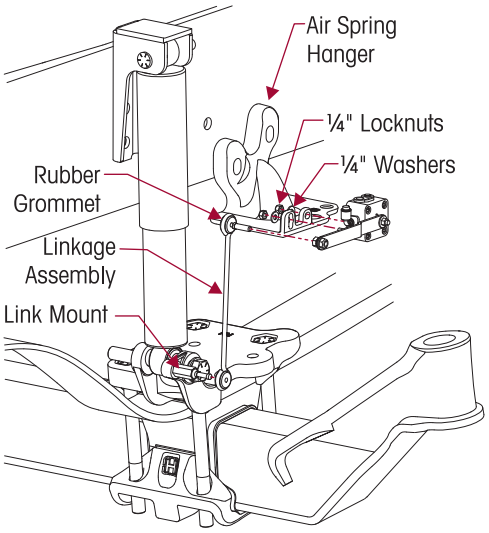


NOTE

Hendrickson recommends the following be performed during any type of ride height adjustment to help prevent socket head cap screws from loosening from the height control valve housing, potentially causing subsequent air leaks from the height control valve.

6. Prior to adjusting the height control valve, clean the threads of the mounting fasteners of any debris and corrosion.
7. To adjust the height control valve, loosen the mounting locknuts.
8. Facing the air spring from the outboard side of the vehicle, pivot the valve body counter clockwise to increase the ride height and clockwise to decrease the ride height.

FIGURE 8-17



9. Pivot the valve body around the mounting bolt until the link mount stud inserts directly into the center hole of the rubber grommet at the proper height. Check the rubber grommet for any tearing or damage, replace as necessary.
10. Tighten the mounting locknuts to 7-10 foot pounds torque after the adjustment is made, see Figure 8-17. Install a (5 mm) allen wrench in the bottom socket head cap screws to prevent the screws from turning while re-tightening the locknuts.
11. Remove the dowel from the height control valve.
12. Cycle the air from the system by lowering the height control valve arm.
13. Reconnect the height control valve linkage rubber grommet to the link mount. Allow the air suspension system to completely fill with air.
14. Recheck the ride height after adjustment.
15. Repeat Steps 2 through 11 until the ride height is within specification.

AIRTEK DUAL RIDE HEIGHT VERIFICATION (If Equipped)

The recommendation of the vehicle manufacturer is that dual height control valves are only to be installed on the front suspension when the rear suspension is equipped with a single height control valve system.This arrangement is best suited to keep the vehicle level versus having dual height control systems on both the front and rear suspensions.

1. Drive the vehicle onto a level surface.
2. Free and center all suspension joints by slowly moving vehicle back and forth several times without using the brakes. It is **IMPORTANT** when coming to a complete stop to verify the brakes are released.
3. Chock drive wheels.
4. Verify that the air system is at full operating pressure.
5. Detach the lower rubber grommet of the height control valve linkage from the lower stud and exhaust the suspension system air by lowering the height control valve arms.
6. Re-attach the lower grommet of the height control valve linkages onto the lower studs to fill the suspension system with air. Wait until the airflow to the front air springs has stopped.
7. The ride height is measured at the front of the air spring. Place the height gauge (Literature No. 45745-251) so the flat surface of the gauge is against the side of the frame rail, the horizontal flat is sitting on top of the air spring bead plate. Align the bottom of the height gauge to the air spring piston flange as shown in Figure 8-18. Verify that the air spring height is within the "ACCEPTABLE" tolerance indicated on the gauge.
8. If the air spring is piston flange edge contacts the "BELOW SPEC" region, the ride is set too low. If the air spring piston flange contacts to the "ABOVE SPEC" region, the ride height is set too high. If the ride height is out of specification it will be necessary to adjust the ride height.
9. If a height gauge is not available, measure the suspension reference ride height on the front axle (top front of the air spring to the bottom of the air spring flange height 8⅛" ± 3/16"), see Figure 8-19. If reference ride height is out of specification, it will be necessary to adjust the ride height.

FIGURE 8-18

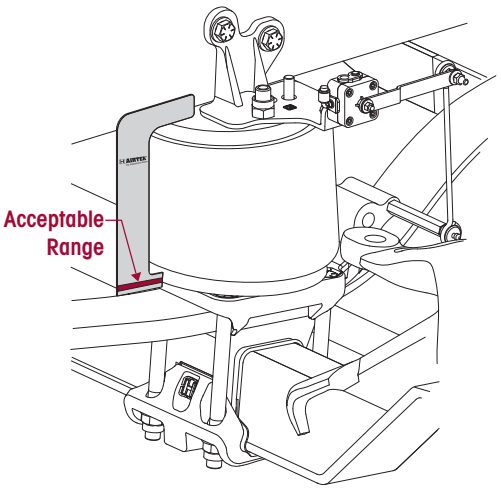
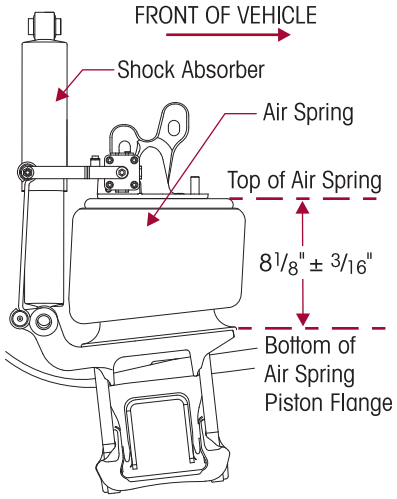


FIGURE 8-19



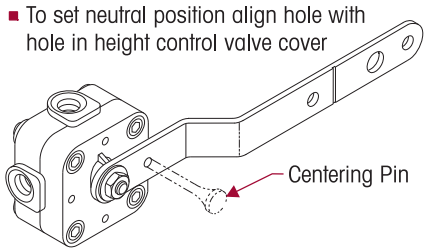
ADJUSTMENT PROCEDURE

1. Verify that the air system is at full operating pressure.

SERVICE HINT It is very important that the leveling valve be cycled completely before and after any ride height adjustments. Cycling of the leveling valve will help make the adjustment more accurate.

2. See Air Spring Safety Notice in the Important Safety Notice section of this publication prior to deflating or inflating the suspension system. Cycle the air system. Detach the lower rubber grommet(s) of the height control valve linkage(s) from the lower stud and exhaust the suspension system air by lowering the height control valve arm.
3. Refill the suspension by raising the height control valve arm(s) by hand, so that the air springs are above the proper ride height.
4. Lower the leveling valve arm(s) to exhaust the air system until the suspension is at the proper ride height.
5. Use a ⅛" wooden dowel rod (golf tee) to set the neutral position for the height control valve(s) by aligning the hole in the leveling arm(s) with the hole in the height control valve cover, as shown in Figure 8-20. **DO NOT** use a metal rod or nail as this may cause damage to the height control valve.

FIGURE 8-20

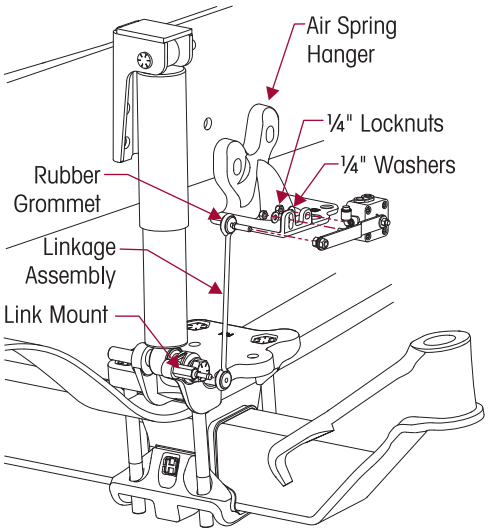


NOTE

Hendrickson recommends the following be performed during any type of ride height adjustment to help prevent socket head cap screws from loosening from the height control valve housing, potentially causing subsequent air leaks from the height control valve.

6. Prior to adjusting the height control valves, clean the threads of the mounting fasteners of any debris and corrosion.
7. To adjust the height control valve, loosen the mounting locknuts.
8. Adjust the height control valves by loosening the mounting locknuts and pivoting the valve body about the mounting bolt so the link mount stud inserts directly into the center hole of the rubber grommet at the proper height. Check the rubber grommet for any tearing or damage, replace as necessary.

FIGURE 8-21



9. Facing the air spring from the outboard side for the left side of the vehicle, pivot the valve body clockwise to increase the ride height and counter clockwise to decrease the ride height. For the right side of the vehicle, pivot the valve body counter clockwise to increase the ride height and clockwise to decrease the ride height.
10. Tighten the mounting locknuts to 7-10 foot pounds torque after the adjustment is made, see Figure 8-21. Install a (5 mm) allen wrench in the bottom socket head cap screws to prevent the screws from turning while re-tightening the locknuts. Remove the dowel from the height control valves.
11. Cycle the air from the system by lowering the height control valve arm.
12. Reconnect the height control valve linkage rubber grommet to the link mounts. Allow the air suspension system to completely fill with air.
13. Recheck the ride height after adjustment, (if equipped with dual height control valves check both sides of the vehicle).
14. Repeat Steps 2 through 11 until the ride height is within specification.

STEERING STOP

ADJUSTMENT PROCEDURE

When the axle or lower steering knuckle is replaced, the steering stop adjustment must be checked.

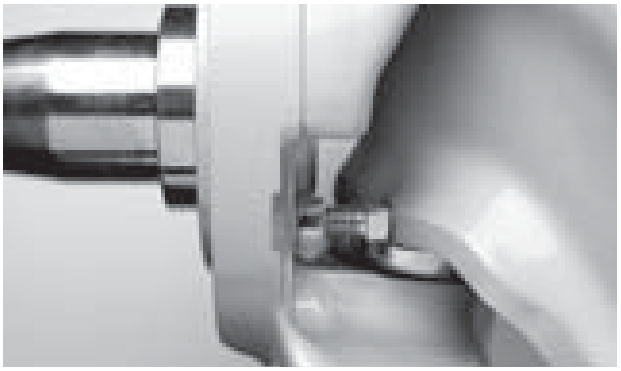
The steering stop adjustment procedure is as follows:

1. Drive truck onto turntables and chock the rear wheels.
2. Measure the wheel cut. The wheel cut is determined by steering the tires. Wheel cut is measured at the inside wheel only, therefore the tires must be turned to the full lock position for each right hand and left hand direction. Refer to the vehicle manufacturer for exact specifications.
3. Increase the wheel cut by loosening the jam nuts and screw the axle stops in clockwise.
4. Tighten the jam nuts.

NOTE

It is very important that the sides of the square head axle stops are set parallel to the axle beam to ensure a good contact point on the axle, see Figure 8-22.

FIGURE 8-22



5. Decrease the wheel cut by loosening the jam nuts and screw the axle stops out counter-clockwise.
6. Tighten the jam nuts to 40-60 foot pounds torque.
7. Measure the wheel cut and check for any interference with related steering components.

⚠ WARNING

ALWAYS CHECK/RESET THE STEERING GEAR BOX POPPETS WHEN THE WHEEL CUT IS DECREASED. FOLLOW MANUFACTURER'S GUIDELINES FOR THE GEAR BOX POPPET RESETTING PROCEDURE. FAILURE TO DO SO CAN RESULT IN PREMATURE FAILURE OF THE AXLE OR STEERING KNUCKLE. THIS CONDITION CAN CAUSE LOSS OF VEHICLE CONTROL, PERSONAL INJURY OR PROPERTY DAMAGE AND VOID ANY APPLICABLE WARRANTY.

TOE SETTING

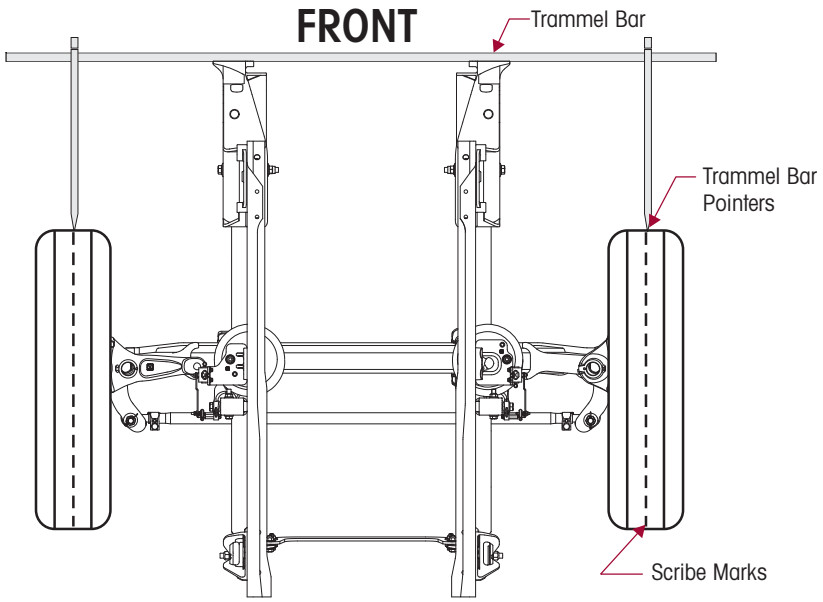
1. Place the vehicle on a level floor with the wheels in a straight ahead position.
2. Raise the vehicle and support the front axle with jack stands.
3. Use paint and mark the center area of tread on both steer axle tires around the complete outer diameter of the tires.
4. Scribe a line through both steer axle tires in the painted area around the complete outer diameter of the tires.
5. Raise the vehicle and remove the jack stands.
6. Set the vehicle on the ground.

NOTE

DO NOT measure toe-in with the front axle off the ground. The weight of the vehicle must be on the front axle when toe-in is measured.

7. Use a trammel bar and measure the distance between the scribe marks at the rear of the steer axle tires. Record the measurement.
8. Install the trammel bar and measure the distance between the scribe marks at the front of the steer axle tires. Record the measurement, see Figure 8-23.

FIGURE 8-23



NOTE When setting up the trammel bar the pointers should be level with the spindles at the front and rear of the steer axle tires.

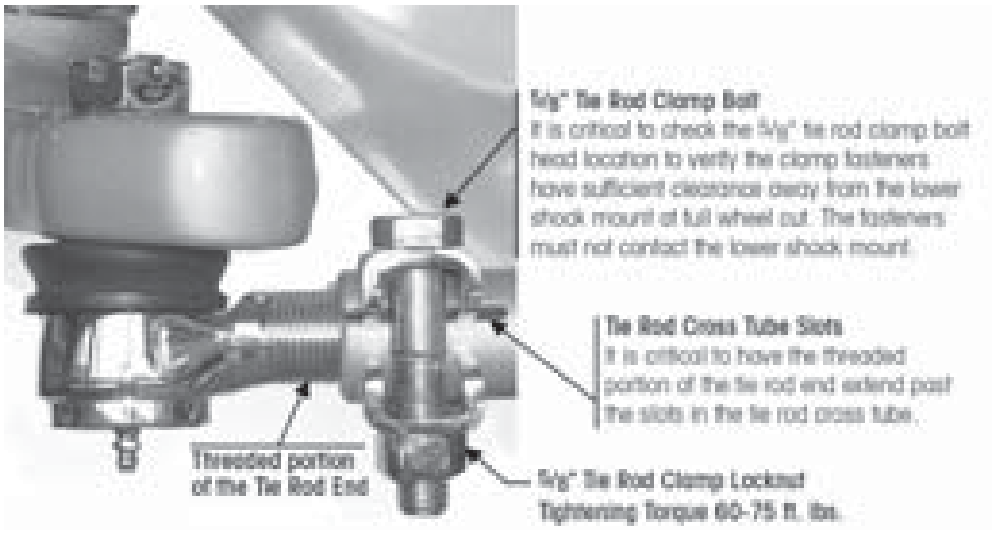
9. To calculate the toe setting subtract the front measurement from the rear measurement, the difference between the two will equal the toe-in/toe-out measurement.
10. If the toe measurement is not within the specifications of 1/16" ± 1/32" (0.060" ± 0.030"), it will be necessary to adjust the toe setting. Refer to the following procedure.
    a. Loosen the tie rod cross tube clamp bolts and locknuts.
    b. Turn the tie rod cross tube until the specified toe-in distance is achieved.

⚠ WARNING

THE THREADED PORTION OF THE TIE ROD END MUST EXTEND PAST THE SLOTS INTO THE TIE ROD CROSS TUBE, SEE FIGURE 8-24. FAILURE TO DO SO CAN CAUSE COMPONENT TO FAIL CAUSING LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

    c. Tighten the bolt and locknut on the tie rod cross tube to 60-75 foot pounds torque.

FIGURE 8-24



⚠ WARNING

IT IS CRITICAL TO CHECK THE 5/8" TIE ROD CLAMP BOLT HEAD LOCATION TO VERIFY THE CLAMP FASTENERS HAVE SUFFICIENT CLEARANCE AWAY FROM THE LOWER SHOCK MOUNT AT FULL WHEEL CUT. THE FASTENERS MUST NOT CONTACT THE LOWER SHOCK MOUNT. FAILURE TO DO SO CAN CAUSE ONE OR MORE COMPONENTS TO FAIL CAUSING LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

11. Verify the 5/8" tie rod clamp bolt head does not contact the lower shock mount at full wheel cut, see Figure 8-24.
12. Repeat Steps 1-10 until the correct toe setting is achieved.

SECTION 9
Component Replacement

FASTENERS

Hendrickson recommends that when servicing the vehicle to replace the removed fasteners with new equivalent fasteners. Maintain correct torque values at all times. Check torque values as specified, see Hendrickson's Torque Specifications Section in this publication. If non-Hendrickson fasteners are used follow torque specifications listed in the vehicle manufacturer's service manual.

AIRTEK HEIGHT CONTROL VALVE

The recommendation of the vehicle manufacturer is that dual height control valves are only to be installed on the front suspension when the rear suspension is equipped with a single height control valve system.This arrangement is best suited to keep the vehicle level versus having dual height control systems on both the front and rear suspensions.

DISASSEMBLY

1. Drain the air from the secondary air tank.

⚠ WARNING

PRIOR TO AND DURING DEFLATION AND INFLATION OF THE FRONT 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.

2. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
3. Deflate the air spring(s) by removing the height control valve linkage(s) at the rubber grommet(s) and lowering the height control linkage arm.This will exhaust the air pressure in the air springs.

⚠ CAUTION

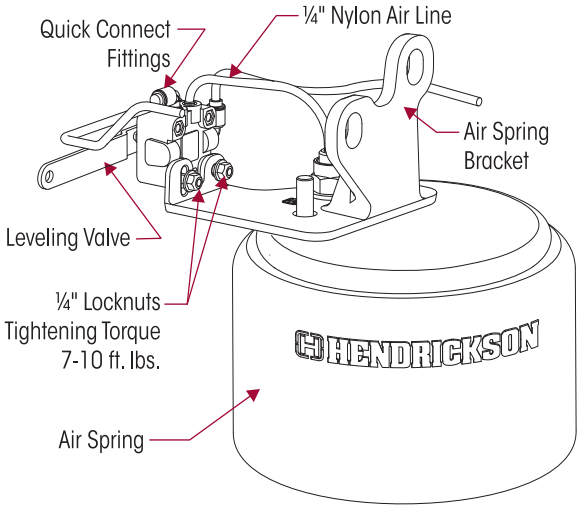
THE HEIGHT CONTROL VALVE FITTINGS ARE NON-SERVICEABLE. IF THE HEIGHT CONTROL VALVE IS TO BE RE-INSTALLED; CARE MUST BE TAKEN TO REMOVE DIRT AND DEBRIS FORM THE PUSH-TO-CONNECT FITTINGS. FAILURE TO DO SO CAN RESULT IN THE PUSH-TO-CONNECT FITTINGS FAILING TO SEAL PROPERLY WITH THE AIR LINE.

4. Disconnect the air line(s) from the height control valve(s), see Figure 9-1.
5. Remove the mounting fasteners.
6. Remove the height control valve .

ASSEMBLY

1. Attach the height control valve(s) on the mounting bracket as shown in Figure 9-1.

FIGURE 9-1

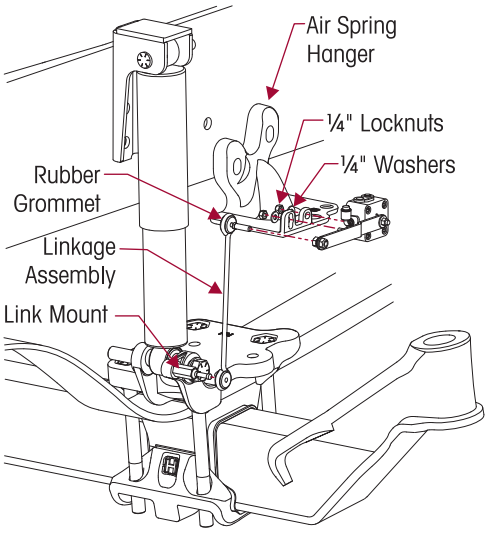


2. Attach the ¼" fasteners. **DO NOT** tighten the locknuts to specified torque until after the proper ride height is attained. Mount the height control valve parallel to the flange of the upper air spring bracket, see Figure 9-2.

SERVICE HINT

When replacing or installing nylon air line tubing into quick-connect fittings it is critical that the end of the air line is cut square. Improper cut of the end of the air line tubing can cause the air line to seat improperly in the quick connect fitting causing air leakage.

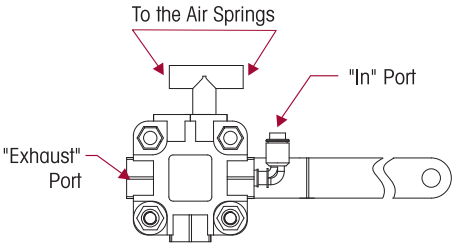
FIGURE 9-2



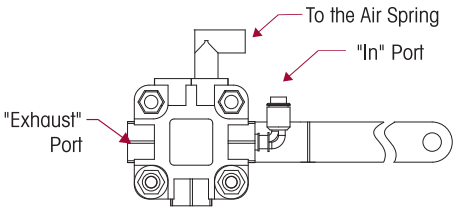
3. Attach the air lines to the height control valve(s), see Figure 9-3.
4. Install the height control valve linkage assembly(s).
5. Adjust the height control valve(s) to proper specifications. See the Alignment & Adjustments Section of this publication for proper ride height adjustment.
6. After the adjustment is made, install a 3/16" allen wretch in the bottom socket head cap screws to prevent the screws from turning while tightening the ¼" locknuts to torque.
7. Tighten the ¼" locknuts to 7-10 foot pounds torque.

FIGURE 9-3

Single Height Control Valve



Dual Height Control Valves (if equipped)



AIRTEK AIR SPRING

DISASSEMBLY

1. Place the vehicle on level floor.
2. Chock the wheels.
3. Support the vehicle with frame stands.

⚠ WARNING

WHEN SERVICING THE VEHICLE OR ATTACHING AN AIR SPRING AND THE VEHICLE IS ON THE GROUND, PRIOR TO AIRING THE SUSPENSION SYSTEM MAKE CERTAIN THE AIR SPRING LOCATOR IS INDEXED INTO THE UPPER AIR SPRING BRACKET PROPERLY, AND THE AIR SPRING IS FULLY SEATED ON THE TOP PAD. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN PREMATURE AIR SPRING FAILURE, CAUSE PERSONAL INJURY, OR PROPERTY DAMAGE.

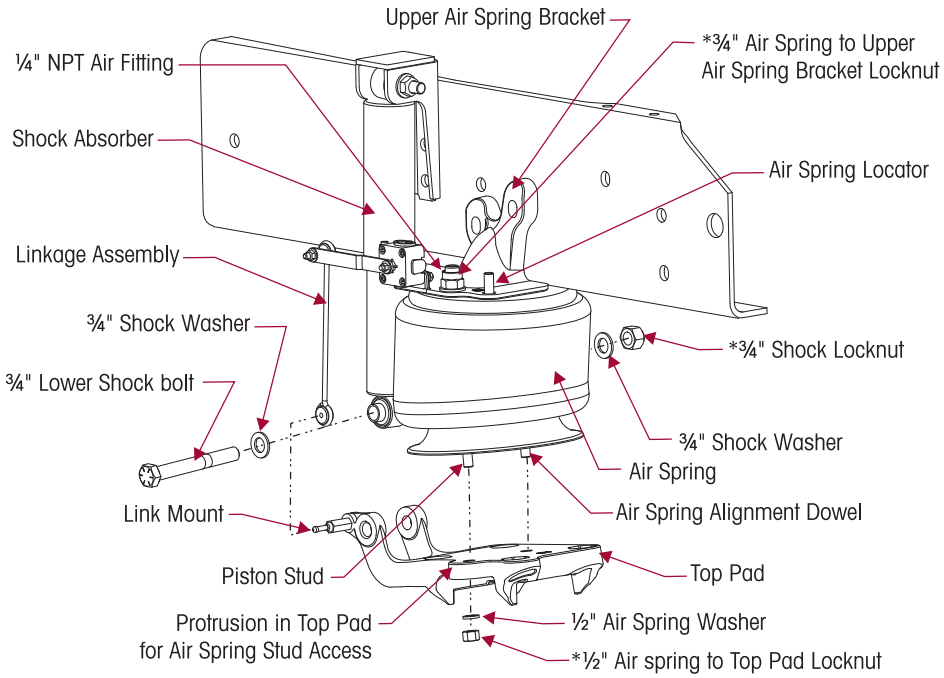
⚠ WARNING

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

4. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.

5. Remove the air from the air system by disconnecting the height control valve linkage(s) at the rubber grommet(s) and allowing the lever(s) to drop. This will exhaust air from the system.
6. If the air spiring is damaged and the suspension is deflated, it will be necessary to raise the frame and support the vehicle with frame stands to obtain adequate clearance for air spring removal.
7. Disconnect the ¼" NPT air fitting from the air spring.
8. Remove the lower ½" air spring locknut from the piston stud to remove the air spring from the top pad and discard fasteners, see Figure 9-4.
9. Remove the ¾" upper air spring locknut from the air spring bracket, discard fasteners.
10. Remove the air spring.

FIGURE 9-4



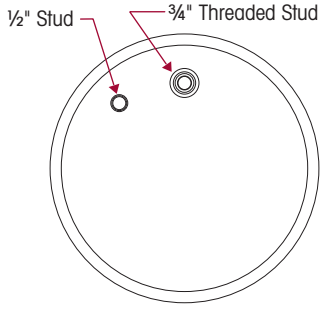
*Tightening torque specifications controlled by the vehicle manufacturer.

ASSEMBLY

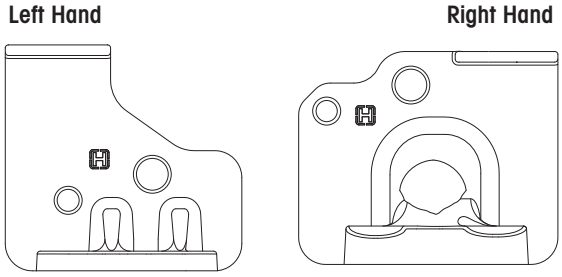
1. Compress the air spring and slide into vertical position.
2. There is a locating ½" stud and ¾" threaded stud on top of the air spiring, see Figure 9-5.
3. There are two studs on the bottom of the air spring. Guide studs through the air spring bracket and properly seat the lower air spring piston into the top axle pad. Secure the ½" locknut to the piston.

FIGURE 9-5

Top View of Air Spring



Top View of Air Spring Bracket



4. Tighten the ¾" upper air spring locknuts and the lower ½" lower air spring locknuts to vehicle manufacturer's torque specifications.

WARNING

WHEN SERVICING THE VEHICLE OR ATTACHING AN AIR SPRING AND THE VEHICLE IS ON THE GROUND, PRIOR TO AIRING THE SUSPENSION SYSTEM MAKE CERTAIN THE AIR SPRING LOCATOR IS INDEXED INTO THE UPPER AIR SPRING BRACKET PROPERLY, AND THE AIR SPRING IS FULLY SEATED ON THE TOP PAD. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN PREMATURE AIR SPRING FAILURE, CAUSE PERSONAL INJURY, OR PROPERTY DAMAGE.

5. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
6. Install the air line into the air spring.
7. Air up the suspension.
8. Check the air spring for leaks.
9. Check the ride height and adjust if necessary, see the Alignment & Adjustments Section of this publication for the proper ride height adjustment.
10. Remove the wheel chocks.

SOFTEK / AIRTEK SHOCK ABSORBER

It is not necessary to replace the shock absorber in pairs if only one shock requires replacement.

- There are different lower shock mount configurations for SOFTEK Monoleaf, refer to the SOFTEK Monoleaf Parts Lists Section of this publication.

WARNING

THE SHOCK ABSORBERS ARE THE REBOUND TRAVEL STOPS FOR THE SPRINGS. ANYTIME THE FRONT AXLE ON AN AIRTEK SUSPENSION IS SUSPENDED IT IS MANDATORY THAT THE SHOCK ABSORBERS REMAIN CONNECTED. FAILURE TO DO SO COULD CAUSE THE AIR SPRINGS TO EXCEED THEIR MAXIMUM LENGTH, POSSIBLY CAUSING THE AIR SPRINGS TO SEPARATE FROM THE PISTON, OR CAUSE A REVERSE ARCH IN THE STEEL LEAF SPRINGS, POSSIBLY RESULTING IN PREMATURE STEEL LEAF SPRING FAILURE.

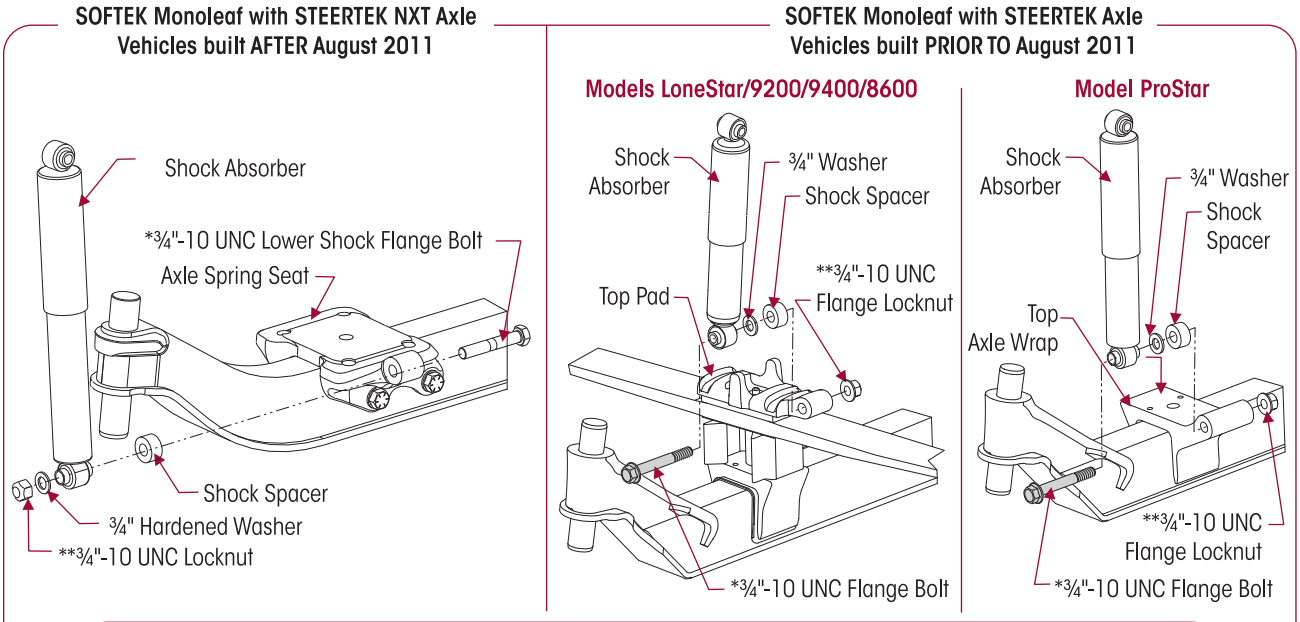
DISASSEMBLY

1. Remove the lower mounting bolts, shock spacer (if equipped) and fasteners.
2. Remove the upper mounting bolts and fasteners.
3. Slide out the shock absorber.
4. Inspect the shock absorber mounting brackets and hardware for damage or wear, replace as necessary.

ASSEMBLY

1. Install the shock absorber into the upper mounting bracket.
2. Install the upper shock mounting bolt and fasteners.
3. Install the lower bolt from the inboard side to the outboard side of the axle spring seat/top pad/top axle wrap and attach the shock spacer (if equipped) and fasteners, see Figures 9-6 and 9-7.
4. Tighten both the shock eye locknuts to vehicle manufacturer's torque specifications.

FIGURE 9-6

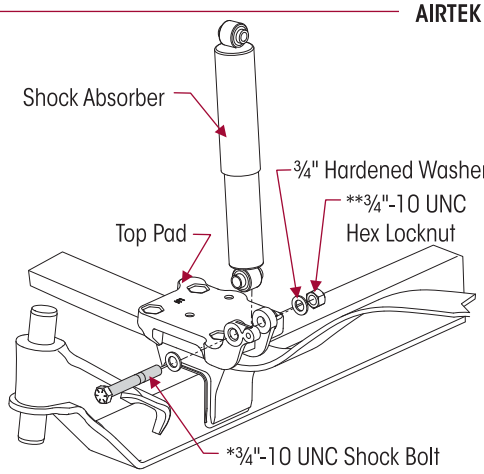


NOTES:

* Apply a thin coating of anti-seize compound to the shock absorber lower mounting bolt shank and to the inside bore of the aluminum top axle wrap/top pad/axle spring seat to help prevent seizing of the bolt to the aluminum axle wrap/top pad/axle spring seat.

** Tightening torque specifications controlled by the vehicle manufacturer.

FIGURE 9-7



NOTES:

* Apply a thin coating of anti-seize compound to the shock absorber lower mounting bolt shank and to the inside bore of the aluminum top pad to help prevent seizing of the bolt to the aluminum top pad.

** Tightening torque specifications controlled by the vehicle manufacturer.

AIRTEK BELLY BAND (If equipped)

DISASSEMBLY

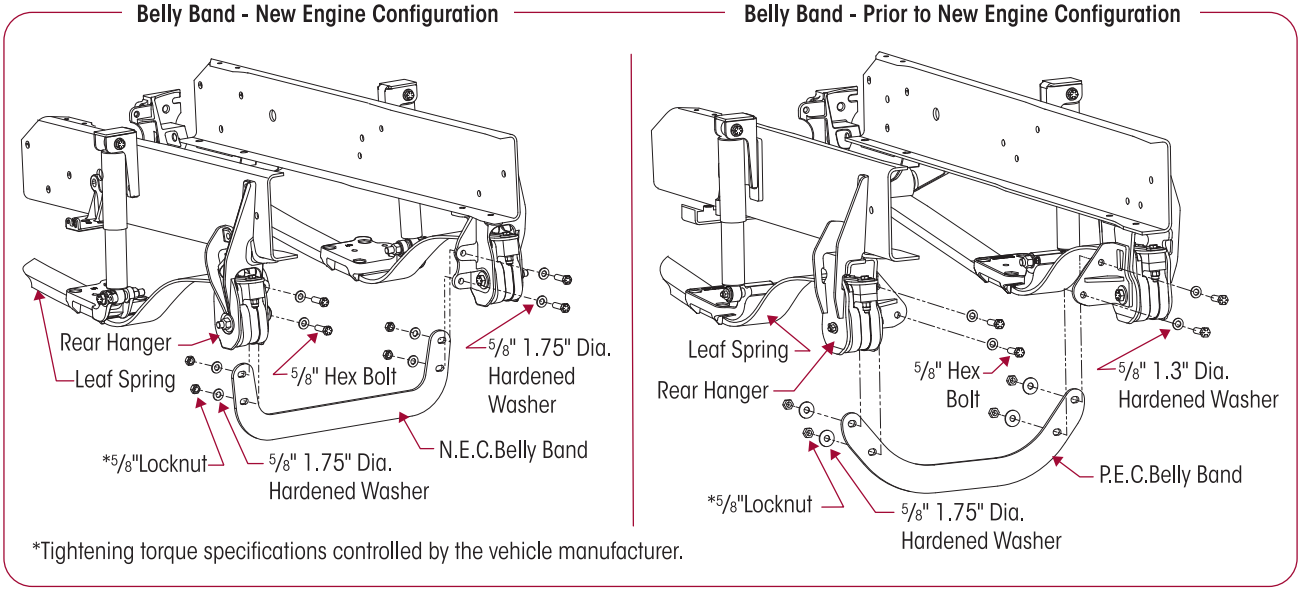
1. Place the vehicle on level floor.
2. Chock the wheels.
3. Remove the four belly band mounting fasteners and discard.
4. Remove belly band.

ASSEMBLY

1. Install belly band in front of mounting bracket.

2. Install the new belly band mounting fasteners, see Figure 9-8.
   - PEC – Install the new belly band mounting fasteners with the larger diameter washer located on the belly band side of the connection and with the smaller diameter washer located on the back of the rear hanger, see Figure 9-8.
3. Tighten to vehicle manufacturer's torque specifications.
4. Remove the wheel chocks.

FIGURE 9-8



*Tightening torque specifications controlled by the vehicle manufacturer.

AIRTEK – REAR SPRING HANGER AND THRUST WASHERS (NEC)

NOTE

The AIRTEK with the PEC design rear spring hangers require modified hangers and other components contained in Kit Number 60961-131. See AIRTEK with PEC to NEC Rear Spring Hanger and Thrust Washer component replacement in this section.

DISASSEMBLY

1. Place the vehicle on level floor.
2. Chock the wheels.

⚠ WARNING

PRIOR TO AND DURING DEFLATION AND INFLATION OF THE FRONT 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.

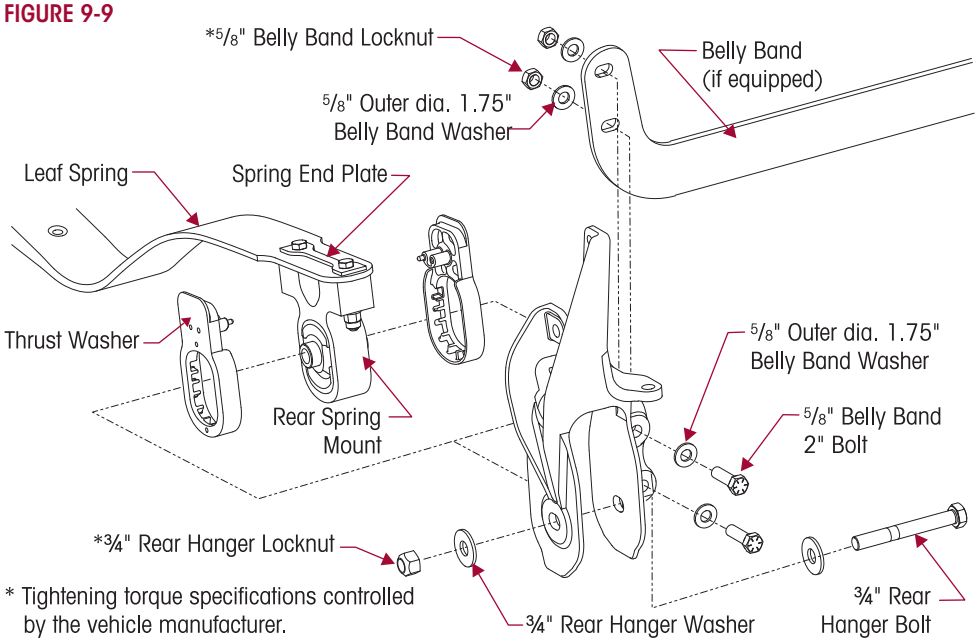
3. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
4. Deflate the air springs by detaching the upper rubber grommet of the height control valve linkage from the upper stud and exhaust the suspension system air by lowering the height control valve arm.
5. Remove the air lines from air springs.
6. Raise the frame.
7. Support the vehicle with frame stands.
8. Remove the (2) mounting fasteners that connect the belly band (if equipped) to the rear hanger.
9. Suspend the front axle from the shock absorbers.
10. Remove the rear spring eye bolt and fastener.

SERVICE HINT

A bottle jack may be required to raise the axle slightly to facilitate removal of the rear spring eye bolt.

11. Remove the hardware from the rear spring hanger. See manufacturer's guidelines.
12. Remove the rear hanger from the vehicle, see Figure 9-9.
13. Remove the two thrust washers from the rear spring mount.
14. Inspect the rear spring mount and both thrust washers for excessive wear or damage. See Thrust Washer Inspection in the Preventive Maintenance Section of this publication.
15. If damaged or worn excessively, replace with Genuine Hendrickson Parts as detailed in the Component Replacement Section of this publication.

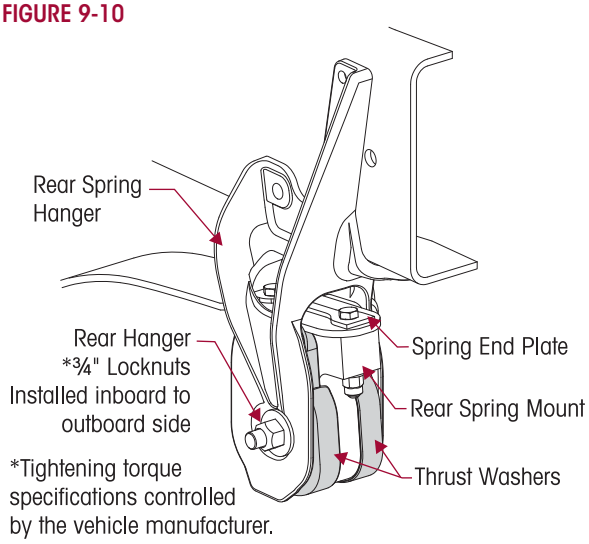
FIGURE 9-9



ASSEMBLY

1. Install the thrust washers on the rear spring mount, see Figure 9-9.
2. Slide the rear hanger clamp over the rear spring mount.
3. Install the rear spring hanger on the frame.
4. Install new frame mounting hardware. Follow manufacturer's guidelines.
5. Install belly band fasteners. (if equipped). Tighten 5/8" locknuts to vehicle manufacturer's torque specifications.
6. Install 3/4" x 6" rear hanger bolt from the inboard to outboard side.

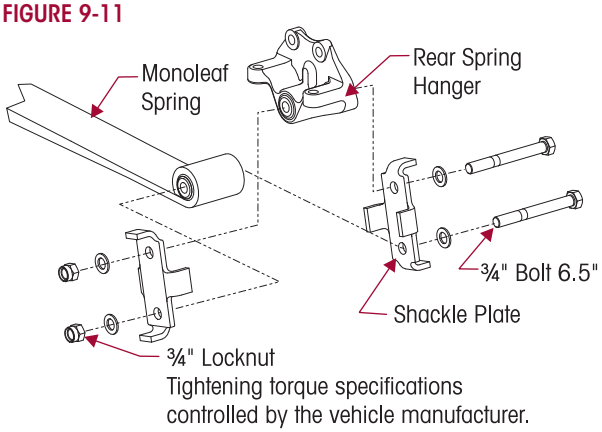
FIGURE 9-10



7. Install the rear hanger fasteners. Tighten 3/4" locknuts to vehicle manufacturer's torque specifications, see Figure 9-10.
8. Remove the wheel chocks.

SOFTEK SHACKLE PLATE

FIGURE 9-11



DISASSEMBLY

1. Place the vehicle on a level floor.
2. Chock the wheels.
3. Raise the vehicle and support the frame.
4. Suspend the front axle to remove the load from the shackle assembly.
5. Remove rear shackle fasteners.
6. Remove shackle plates.

ASSEMBLY

1. Install shackle bracket and fasteners, see Figure 9-11.
2. Tighten fasteners to the vehicle manufacturer's torque specifications.
3. Raise the vehicle and remove the frame stands.
4. Lower the vehicle and remove the wheel chocks.

AIRTEK LEAF SPRING ASSEMBLY

DISASSEMBLY

1. Place the vehicle on a level floor.
2. Chock the wheels.

⚠ WARNING

DEFLATE AND DISCONNECT THE AIR SYSTEM PRIOR TO RAISING THE FRONT OF THE VEHICLE. PRIOR TO AND DURING DEFLATION AND INFLATION OF THE FRONT 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.

3. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
4. Deflate the air springs by detaching the upper rubber grommets of the height control valve linkages from the upper studs and exhaust the suspension system air by lowering the height control valve arms.
5. Disconnect the air lines from the air springs.
6. Install a floor jack with a 4" lifting plate below the axle and raise the truck.
7. Remove the tires.
8. Install frame stands behind the rear spring mounts to support the vehicle. It may be necessary to remove peripheral components for installation.
9. Lower the jack allowing the axle to hang, but do not remove the jack from the axle.
10. Loosen both front spring eye bolts, but **DO NOT** remove the bolts.
11. Remove both rear spring eye bolts.
12. Remove both lower shock absorber mounting bolts.

SERVICE HINT

To ease in the removal of the spring eye bolts it may be necessary to raise or lower the axle slightly.

13. Disconnect the lower air spring mounting fasteners from the top pad and discard.

14. Loosen (**DO NOT** remove at this time) the clamp group locknuts for the leaf spring that is **NOT** being serviced.

WARNING

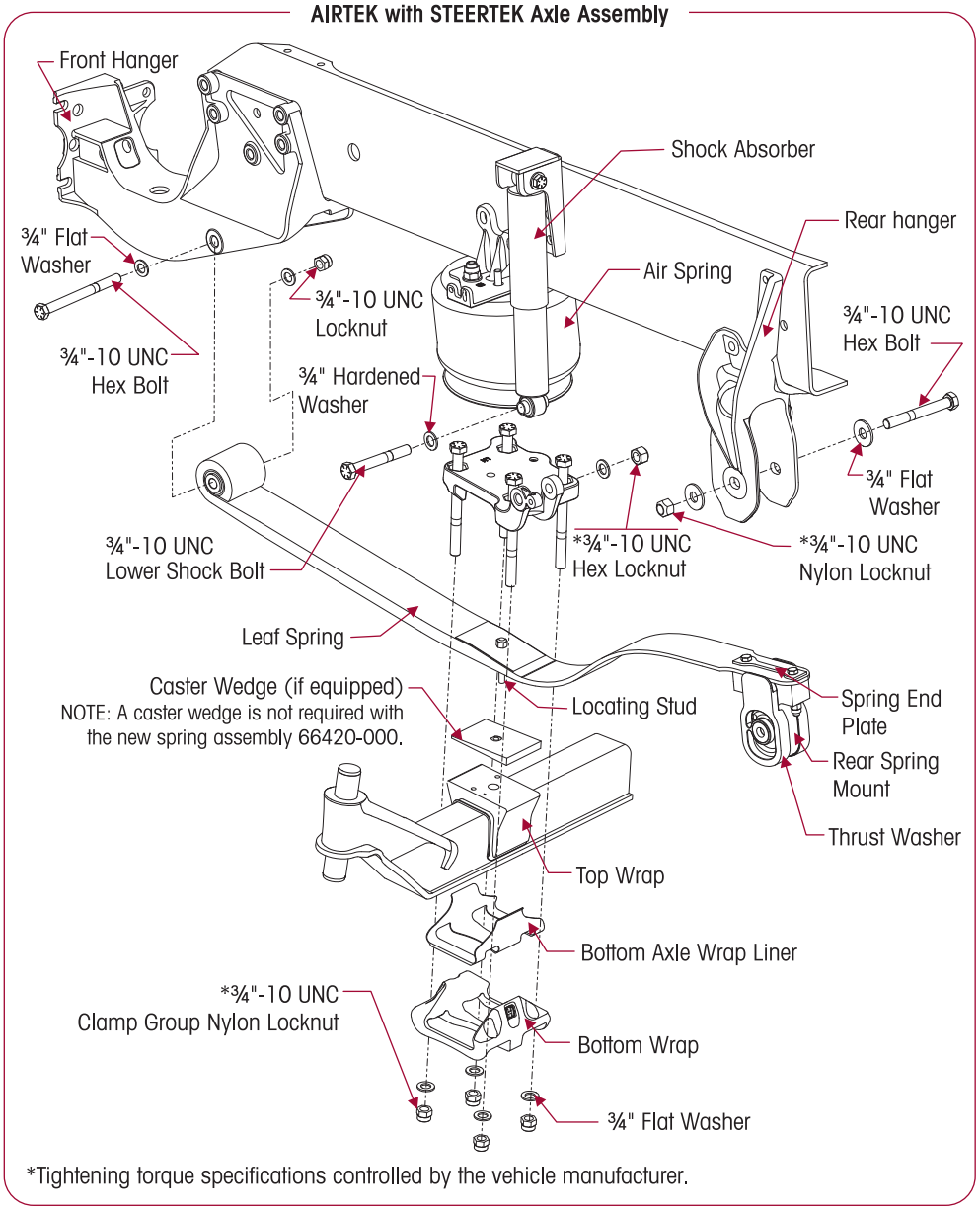
DO NOT USE A CUTTING TORCH TO REMOVE CLAMP GROUP BOLTS OR ATTACHING FASTENERS. THE USE OF SUCH HEAT ON SUSPENSION COMPONENTS CAN ADVERSELY AFFECT THE STRENGTH OF THESE PARTS. A COMPONENT DAMAGED IN THIS MANNER CAN RESULT IN THE LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

15. Remove and discard the ¾" clamp group fasteners. Remove the top pad, bottom axle wrap and liner from the leaf spring that is being serviced, see Figure 9-12.
16. Lower the jack, allowing the suspension to pivot down out of the rear hanger.

NOTE

Be aware of the amount and the orientation of caster wedges (if equipped) on the top axle wrap, they may slide during leaf spring removal. Caster wedges are supplied by the vehicle manufacturer. A caster wedge should not be used if the new spring part number is 66420-000. The proper caster is built into this spring part number.

FIGURE 9-12



17. Remove and discard the front spring eye bolt from the leaf spring being serviced.
18. Remove the leaf spring assembly. Approximate weight of the leaf spring is 60 pounds.

ASSEMBLY

1. Install the leaf spring assembly over the axle and into the front spring hanger.
2. Install the ¾" front spring eye bolt and fastener, but **DO NOT** tighten.
3. Ensure to replace any caster wedges (if equipped) that may have been displaced during leaf spring disassembly, in the same orientation as removed prior to disassembly. Caster wedges are supplied by the vehicle manufacturer. A caster wedge should not be used if the new spring part number is 66420-000. The proper caster is built into this spring part number.
4. Engage the leaf spring to the axle with the leaf spring locating stud into the aligning hole of the top axle wrap.
5. Install the top pad on top of the leaf spring.

⚠ WARNING

DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

6. Install a new bottom axle wrap liner in the bottom axle wrap.
7. Install the bottom axle wrap.
8. Install the new clamp group fasteners. The clamp group locknuts must be replaced when the clamp group is removed.
9. Snug the clamp group fasteners to 100 foot pounds pre-torque.
10. Raise the axle and the rear spring assembly into the rear spring hanger.
11. Install the ¾" rear spring eye bolt in the rear hanger. The bolt must be installed from the inboard side to the outboard side, see Figure 9-12.
12. Install the lower shock mounting bolts from the outboard side to the inboard side.
13. Lower the floor jack

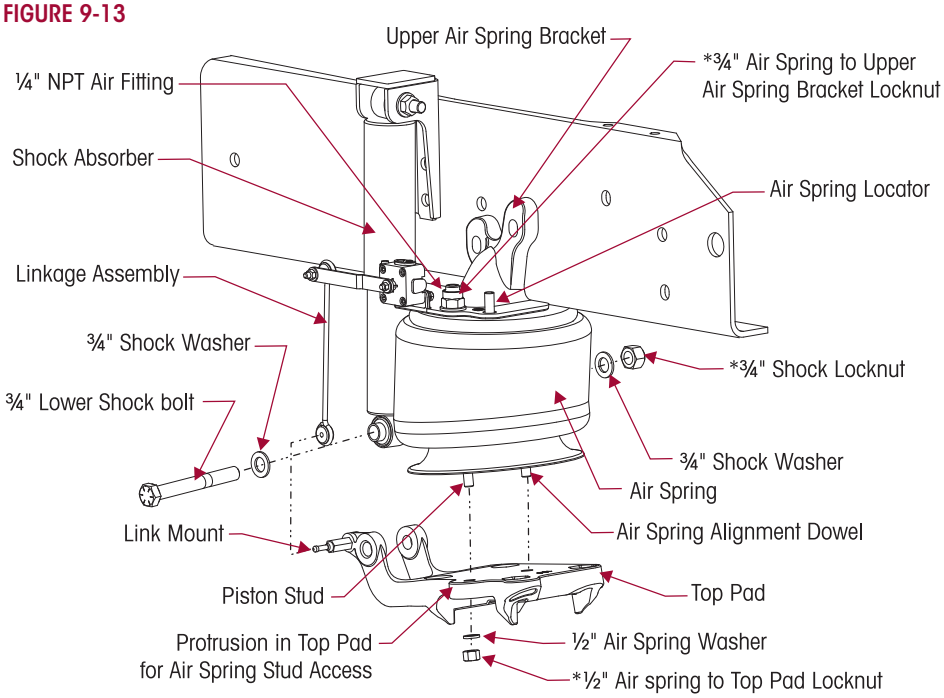
IMPORTANT NOTE Only the weight of the axle should be on the spring at the time of the front and rear spring eye fasteners are tighten to torque.

14. Tighten the lower shock mounting bolts to vehicle manufacturer's torque specifications.
15. Tighten the front and rear spring eye ¾" locknuts to vehicle manufacturer's torque specifications.
16. Install the air spring into the top pad using new hardware (nut and washer). Make sure the air spring piston seats into the top pad correctly, see Figure 9-13
17. Install the tires.
18. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
19. Install air lines to the air spring.
20. Install the height control valve linkage and inflate the suspension to normal operating pressure.
21. Raise the vehicle and remove the frame supports.
22. Lower the vehicle.
23. Remove the floor jack.

⚠ WARNING

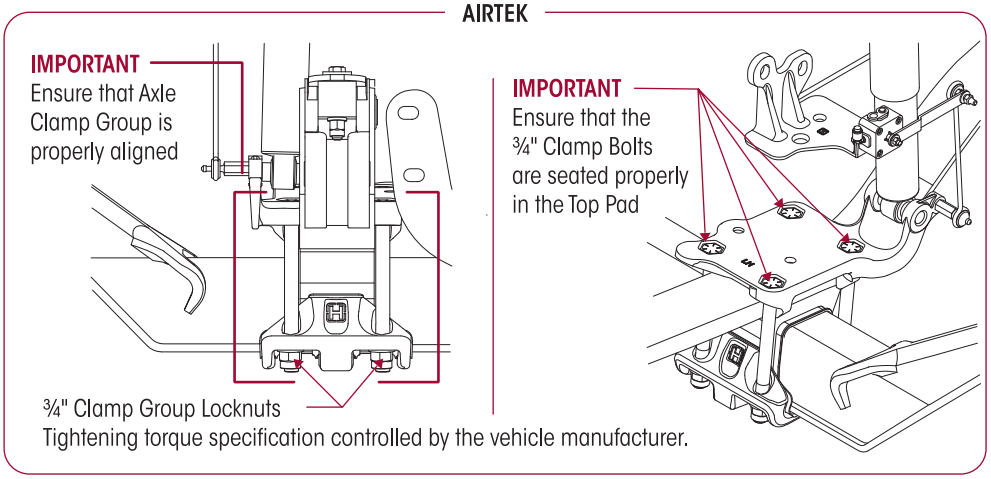
ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

FIGURE 9-13



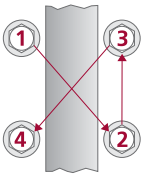
*Tightening torque specifications controlled by the vehicle manufacturer.

FIGURE 9-14



24. Ensure that the clamp group is properly aligned and the hex bolts are seated in the top pad, and the bottom axle wrap is centered on the top axle wrap, see Figure 9-14.

FIGURE 9-15



25. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications in the proper pattern to achieve uniform bolt tension, see Figure 9-15.
26. Verify proper ride height. See Alignment & Adjustments Section of this publication.
27. Remove the wheel chocks.

SOFTEK MONOLEAF LEAF SPRING ASSEMBLY

■ Vehicles built with STEERTEK NXT axle after August 2011

DISASSEMBLY

1. Place the vehicle on a level floor.
2. Chock the wheels.
3. Raise the vehicle.
4. Support the vehicle with frame stands.
5. Suspend the front axle to remove the load from leaf spring assembly.
6. Remove the front and rear ¾" spring eye bolts fasteners. Loosen the ¾" shackle pivot bolt.

SERVICE HINT To ease in the removal of the spring eye bolts, it may be necessary to raise the axle slightly.

7. Remove the clamp group U-bolts and fasteners. Discard the fasteners.

⚠ WARNING

DO NOT USE A CUTTING TORCH TO REMOVE CLAMP GROUP BOLTS OR ATTACHING FASTENERS. THE USE OF SUCH HEAT ON SUSPENSION COMPONENTS CAN 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.

SERVICE HINT If a clamp group locknut fails to come off the bolt, cut half way through the U-bolt with an abrasive cut off wheel, taking care not to contact the axle beam or other components. Using an impact wrench, spin the locknut to fracture the bolt and remove.

⚠ WARNING

THE INTEGRATED AXLE SPRING SEATS ON THE STEERTEK NXT AXLE ARE NON-SERVICEABLE. UNAUTHORIZED TAMPERING OF INTEGRATED AXLE SPRING SEATS CAN CAUSE COMPONENT AND STRUCTURAL DAMAGE AND RESULT IN LOSS OF VEHICLE CONTROL, SEVERE PERSONAL INJURY OR DEATH, PROPERTY DAMAGE, AND WILL VOID ANY APPLICABLE WARRANTY. DO NOT REMOVE, MODIFY OR REPLACE INTEGRATED AXLE SPRING SEAT OR FASTENERS.

NOTE Contact Hendrickson Tech Services for any questions regarding STEERTEK NXT axle spring seats and / or fasteners.

8. Remove the top pad from the leaf spring assembly, see Figure 9-16.
9. Remove the leaf spring and axle spacer assembly.

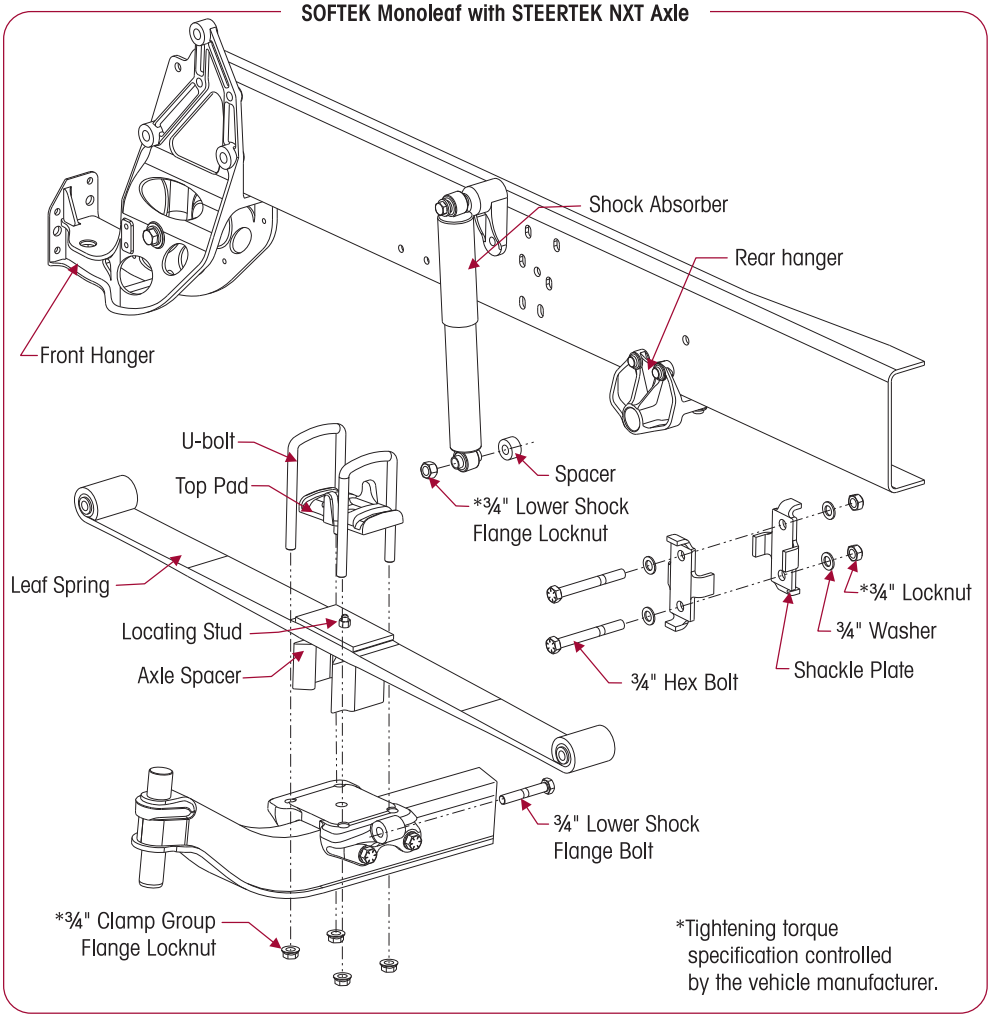
ASSEMBLY

1. Install the new spring and axle spacer assembly on the axle. Verify that the locating stud is engaged properly in the axle spring seat, see Figure 9-16.
2. Install the top pad.
3. Install the new ¾" clamp group U-bolts and fasteners. The U-bolts and fasteners must be replaced when the clamp group is disassembled.
4. Snug the clamp group, **DO NOT** tighten to torque at this time.
5. Raise the axle and the leaf spring assembly into the front hanger and rear shackle assembly.
6. Install the ¾" spring eye bolts and fasteners. Snug bolts. **DO NOT** tighten at this time. Front spring eye bolts are inserted from the outboard side to the inboard side to avoid component interference.

⚠ WARNING

ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

FIGURE 9-16



7. Ensure that the clamp group is properly aligned and the U-bolts are seated in the top pad, and the top pad is centered with the axle spring seat see Figure 9-17.

FIGURE 9-17

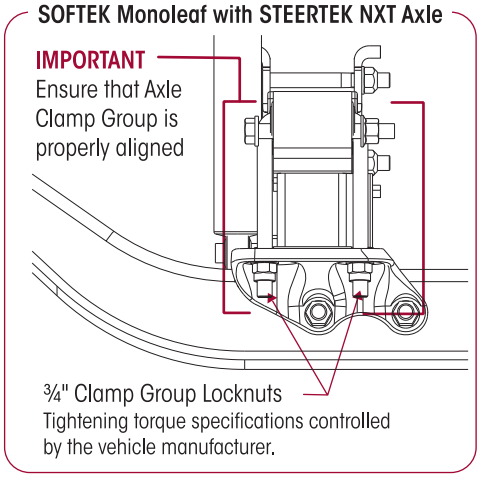
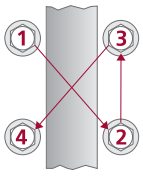


FIGURE 9-18



8. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications in the proper pattern to achieve uniform bolt tension, see Figure 9-18.
9. Remove the frame supports and load the front axle with the vehicle weight.
10. Tighten the ¾" spring eye bolt locknuts to the vehicle manufacturer's torque specifications, see Figure 9-16.
11. Remove the wheel chocks.

Vehicles built with STEERTEK axle prior to August 2011

DISASSEMBLY

1. Place the vehicle on a level floor.
2. Chock the wheels.
3. Raise the vehicle.
4. Support the vehicle with frame stands.
5. Suspend the front axle to remove the load from leaf spring assembly.
6. Remove the front and rear ¾" spring eye bolts fasteners. Loosen the ¾" shackle pivot bolt.

SERVICE HINT To ease in the removal of the spring eye bolts, it may be necessary to raise the axle slightly.

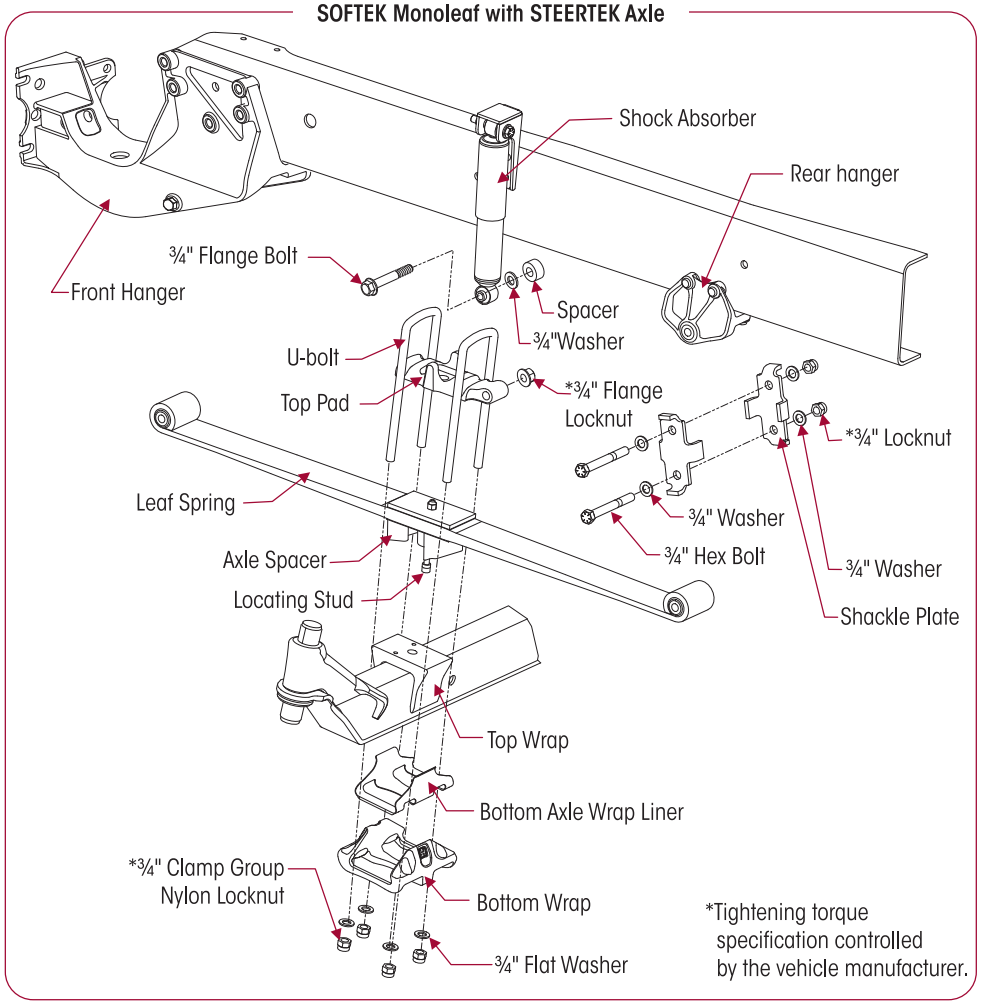
7. Remove the clamp group U-bolts and fasteners. Discard the fasteners.

⚠ WARNING

DO NOT USE A CUTTING TORCH TO REMOVE CLAMP GROUP BOLTS OR ATTACHING FASTENERS. THE USE OF SUCH HEAT ON SUSPENSION COMPONENTS CAN 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.

SERVICE HINT If a clamp group locknut fails to come off the bolt, cut half way through the U-bolt with an abrasive cut off wheel, taking care not to contact the axle beam or other components. Using an impact wrench, spin the locknut to fracture the bolt and remove.

FIGURE 9-19



8. Remove the top pad from the leaf spring assembly and the bottom axle wrap, see Figure 9-19.
9. Remove the leaf spring and axle spacer assembly.

ASSEMBLY

1. Install the new spring and axle spacer assembly on the axle. Verify that the locating stud is engaged properly in the top axle wrap, see Figure 9-19.
2. Install the top pad with the shock mount (if equipped) facing the rear of the vehicle, see Figure 9-19.

⚠ WARNING

DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

3. Remove and replace the bottom axle wrap liner located in the bottom axle wrap.
4. Install the bottom axle wrap.
5. Install the new ¾" clamp group U-bolts and fasteners. The U-bolts and fasteners must be replaced when the clamp group is disassembled.
6. Snug the clamp group, **DO NOT** tighten to torque at this time.
7. Raise the axle and the leaf spring assembly into the front hanger and rear shackle assembly.
8. Install the ¾" spring eye bolts and fasteners. Snug bolts. **DO NOT** tighten at this time. Front spring eye bolts are inserted from the outboard side to the inboard side to avoid component interference.

⚠ WARNING

ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

9. Ensure that the clamp group is properly aligned and the U-bolts are seated in the top pad, and the bottom axle wrap is centered with the top axle wrap, see Figure 9-20.

FIGURE 9-20

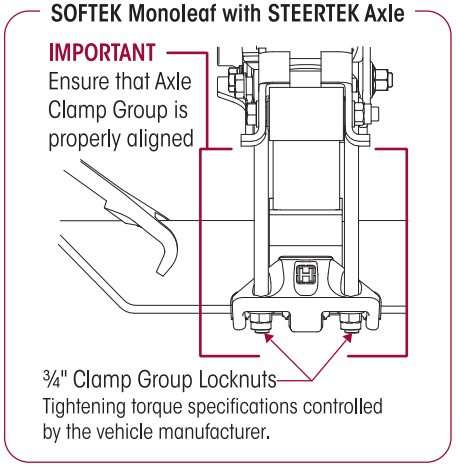
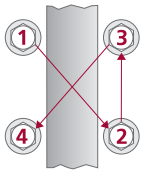


FIGURE 9-21



10. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications in the proper pattern to achieve uniform bolt tension, see Figure 9-21.
11. Remove the frame supports and load the front axle with the vehicle weight.
12. Tighten the ¾" spring eye bolt locknuts to the vehicle manufacturer's torque specifications, see Figure 9-19.
13. Remove the wheel chocks.

AIRTEK REAR SPRING MOUNT

DISASSEMBLY

1. Place the vehicle on a level floor.
2. Chock the wheels.

⚠ WARNING

PRIOR TO AND DURING DEFLATION AND INFLATION OF THE FRONT 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.

3. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
4. Deflate the air springs by detaching the upper rubber grommet of the height control valve linkage from the upper stud and exhaust the suspension system air by lowering the height control valve arm.
5. Support the vehicle with frame stands.
6. Install a floor jack with a 4" lifting plate below the axle and raise the truck.
7. Remove the tires.
8. Lower the jack allowing the axle to hang, but do not remove the jack from the axle.
9. Loosen, **DO NOT REMOVE** both front spring eye bolts.
10. Remove both lower shock absorber mounting bolts.

SERVICE HINT

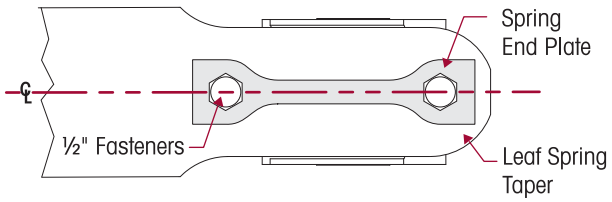
To ease in the removal of the spring eye bolts it may be necessary to raise or lower the axle slightly.

11. Remove both rear spring eye bolts.
12. Disconnect both air springs from the top pads of the clamp groups.
13. Loosen the clamp group locknuts.
14. Lower the jack allowing the suspension to pivot down out of the rear hanger clamps.
15. Remove the ½" rear spring mounting fasteners.
16. Remove the rear spring mount.
17. Inspect the leaf spring taper for cracks or damage. Replace leaf spring if damaged.

ASSEMBLY

1. Install the spring end plate so that it is centered on the spring taper, see Figure 9-22.
2. Install new ½" bolts through the spring end plate and spring taper.

FIGURE 9-22



3. Install the rear spring mount centered on the underside of the leaf spring taper.
4. Install new fasteners to snug. **DO NOT TIGHTEN** at this time.

5. Align the rear spring mount and the leaf spring taper so that the mating surfaces are flush with each other, see Figure 9-23.
6. Tighten rear spring mount locknuts to 80-110 foot pounds torque.
7. Raise the leaf springs into the rear hangers.
8. Install the rear spring eye bolts.
9. Install the lower shock absorber mounting bolts.
10. Install the air spring into the top pad. Make sure the air spring piston seats into the top pad correctly, see Figure 9-24.

FIGURE 9-23

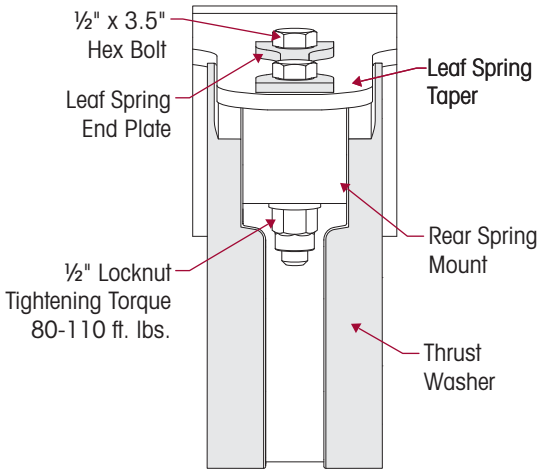
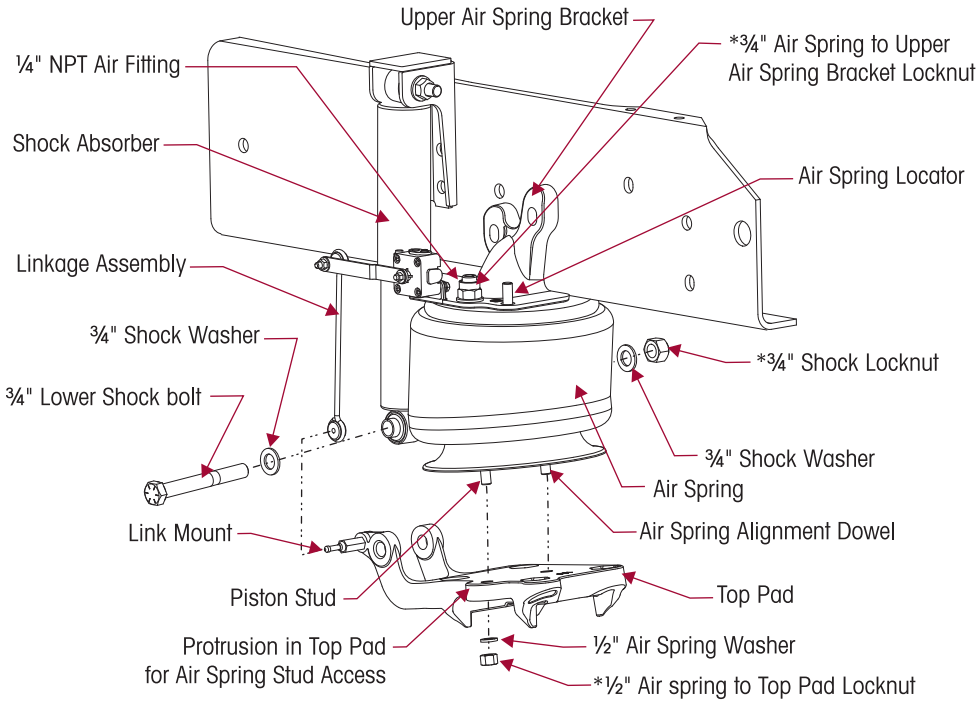


FIGURE 9-24



*Tightening torque specifications controlled by the vehicle manufacturer.

11. Lower the floor jack and allow the suspension to hang.
12. Install the tires.
13. Raise the vehicle and remove the frame supports.
14. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
15. Install air lines to the air spring.
16. Install the height control valve linkage and inflate the suspension to normal operating pressure.
17. Remove the floor jacks.

⚠ WARNING

ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

18. Ensure that the clamp group is properly aligned and the hex bolts are seated in the top pad, and the bottom axle wrap is centered on the top axle wrap, see Figures 9-25.

FIGURE 9-25

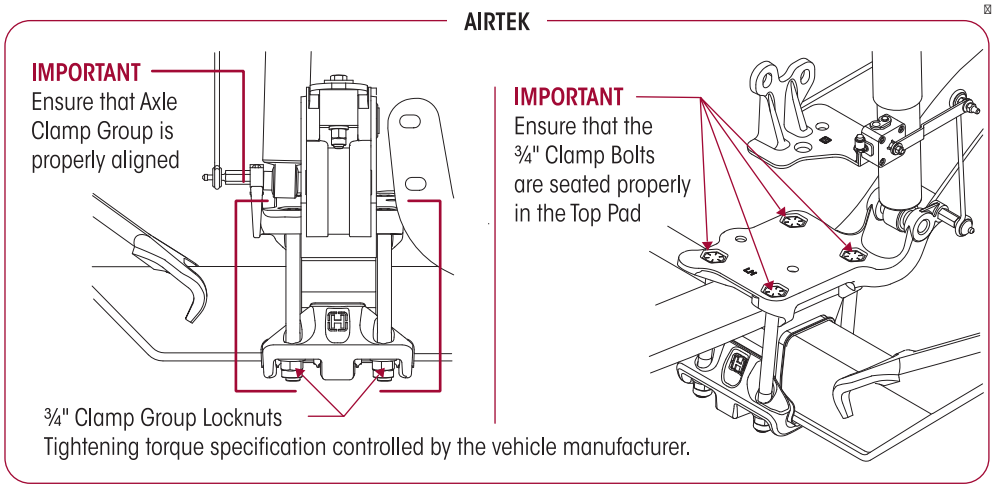
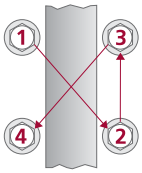


FIGURE 9-26



19. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications in the proper pattern to achieve uniform bolt tension, see Figure 9-26.
20. Tighten the lower shock mounting bolts to vehicle manufacturer's torque specifications.
21. Tighten the front and rear spring eye ¾" locknuts to vehicle manufacturer's torque specifications.
22. Verify proper ride height, see Alignment & Adjustments Section of this publication.
23. Remove the wheel chocks.

FRONT LEAF SPRING EYE BUSHING

The spring eye bushings for the SOFTEK / AIRTEK spring are designed for extended service life. In the event of premature/excessive wear or damage, careful consideration must be given to the contributing factors. This must be corrected in order to help prevent the new bushings from sustaining wear or damage in the same manner. The front bushings are not replaceable components, therefore Hendrickson requires in the event of premature/excessive wear or damage, that the front leaf spring assembly be replaced.

AIRTEK BOTTOM AXLE WRAP

DISASSEMBLY

1. Place the vehicle on level floor.
2. Chock the wheels.
3. Support the vehicle with frame stands.

⚠ WARNING

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

4. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.

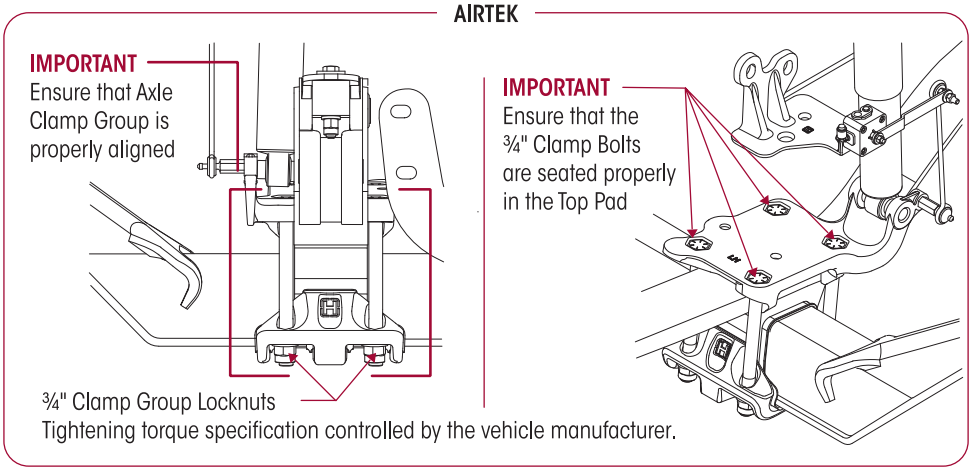
5. Deflate the air springs by disconnecting the height control valve linkage and lowering the height control valve arm. This will exhaust the air pressure in the air springs.
6. Remove air spring on side being replaced, see Air Spring Replacement in this section.

WARNING

DO NOT USE A CUTTING TORCH TO REMOVE CLAMP GROUP BOLTS OR ATTACHING FASTENERS. THE USE OF SUCH HEAT ON SUSPENSION COMPONENTS CAN 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.

7. Remove the ¾" clamp group bolts and fasteners on the side being replaced, see Figure 9-27.

FIGURE 9-27



8. Remove the bottom axle wrap. It may be necessary to use a dead blow mallet to dislodge axle wrap.
9. Once removed, inspect the axle wrap for damage and replace if necessary.
10. Discard the used bottom axle wrap liner.

ASSEMBLY

WARNING

DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

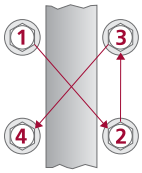
1. Install the new bottom axle wrap liner into bottom axle wrap.
2. Install the bottom axle wrap on axle.
3. Install the new ¾" bolts (if removed) and fasteners.

WARNING

ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

4. Ensure that the clamp group is properly aligned and the bolts are seated in the top pad, and the bottom axle wrap is centered on the top axle wrap, see Figure 9-27.

FIGURE 9-28



5. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications in the proper pattern to achieve uniform bolt tension, see Figure 9-28.
6. Install the air spring, see Air Spring Assembly in this section.
7. Install the height control valve linkage and inflate the suspension to normal operating pressure.
8. Remove the frame stands and wheel chocks.

SOFTEK / STEERTEK BOTTOM AXLE WRAP (If equipped)

■ Vehicles built with STEERTEK axle PRIOR to August 2011

DISASSEMBLY

1. Place the vehicle on level floor.
2. Chock the wheels.
3. Raise the frame.
4. Support the vehicle with frame stands.

⚠ WARNING

DO NOT USE A CUTTING TORCH TO REMOVE CLAMP GROUP BOLTS OR ATTACHING FASTENERS. THE USE OF SUCH HEAT ON SUSPENSION COMPONENTS CAN 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.

SERVICE HINT

If a clamp group nut fails to come off bolt, cut half way through the bolt with an abrasive cut off wheel, taking care not to contact axle beam or other components. Using an impact wrench, spin the locknut to fracture the bolt and remove.

5. Remove the ¾" U-bolts and fasteners. Discard fasteners.
6. Remove bottom axle wrap. It may be necessary to use a dead blow mallet to dislodge axle wrap.
7. Once removed inspect axle wrap for damage. Replace if necessary.
8. Discard used bottom axle wrap liner.

ASSEMBLY

⚠ WARNING

DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

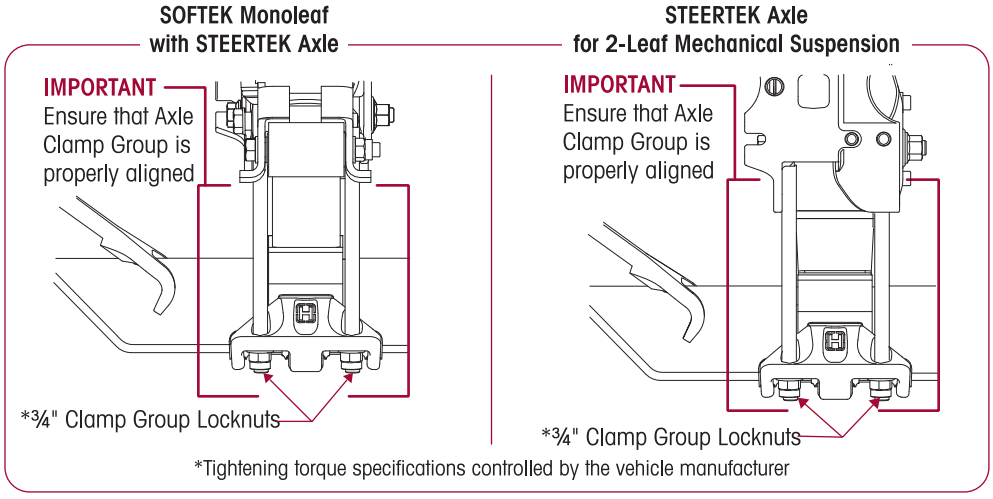
1. Install new bottom axle wrap liner into bottom axle wrap.
2. Install bottom axle wrap on axle.
3. Install new ¾" U-bolts and fasteners.

⚠ WARNING

ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

4. Ensure that the clamp group is properly aligned and the U-bolts are seated in the top pad casting, and the bottom axle wrap is centered with the top axle wrap, see Figure 9-29.

FIGURE 9-29



5. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications in the proper pattern to achieve uniform bolt tension, see Figure 9-29.
6. Remove the wheel chocks.

AIRTEK TOP AXLE WRAP (In Chassis)

DISASSEMBLY

1. Place the vehicle on level floor.
2. Chock the wheels.

⚠ WARNING

PRIOR TO AND DURING DEFLATION AND INFLATION OF THE FRONT 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.

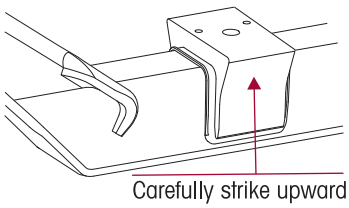
3. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
4. Deflate the air springs by disconnecting the height control valve linkage and lowering the height control valve arm. This will exhaust the air pressure in the air springs.
5. Disconnect the air lines at the air springs.
6. Support the vehicle with frame stands.
7. Lower the floor jack and suspend the front axle to remove the load from the leaf springs.
8. Remove the air spring, see Air Spring Disassembly in the Component Replacement Section of this publication.

⚠ WARNING

DO NOT USE A CUTTING TORCH TO REMOVE CLAMP GROUP BOLTS OR ATTACHING FASTENERS. THE USE OF SUCH HEAT ON SUSPENSION COMPONENTS CAN 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.

9. Remove the ¾" clamp group hex bolts and fasteners from the side being serviced.
10. Remove the lower shock mounting bolt from the side being serviced.
11. Remove the top spring pad casting, the bottom axle wrap and liner (discard liner).
12. Remove the front and rear leaf spring eye bolts.
13. Remove the leaf spring assembly and caster wedge (if equipped).
14. Strike the axle wrap with a dead blow mallet at the front and rear on the underside of the axle wrap to dislodge it from the axle, see Figure 9-30.
15. Clean and inspect the axle wrap and axle for cracks or damage, replace if cracks or damage are present.

FIGURE 9-30



Carefully strike upward with a dead blow mallet on both ends

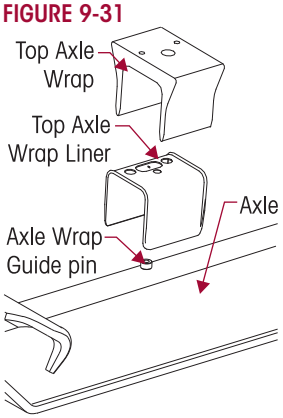
ASSEMBLY

⚠ WARNING

DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

1. Install the new axle wrap liner on the axle.
2. Spray the top of the axle wrap liner and the inside of the axle wrap with a silicon lubricant.

FIGURE 9-31



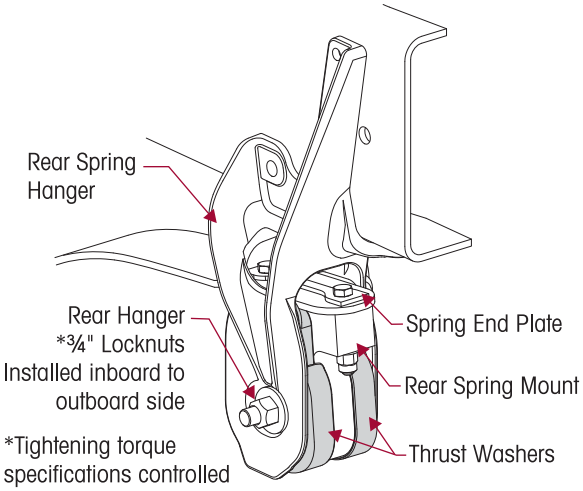
3. Position the axle wrap on the axle over the axle wrap liner, see Figure 9-31.
4. Protect the top surface of the axle wrap with a block of wood, cardboard, or shop towels.

CAUTION

DO NOT STRIKE THE TOP AXLE WRAP WITH A HAMMER. HENDRICKSON RECOMMENDS USING A PLASTIC DEAD BLOW MALLET WITH CARE WHEN INSTALLING THE AXLE WRAP.

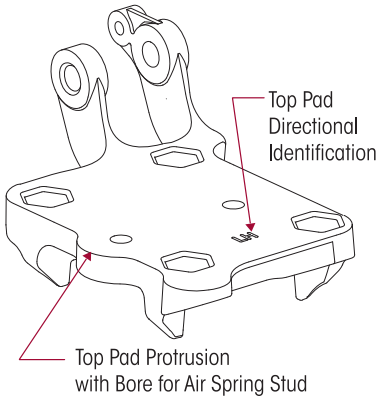
5. Using a dead blow mallet drive the axle wrap onto the axle indexing the axle guide pin until the axle wrap is firmly seated on the axle.
6. Install the caster wedge (if equipped).

FIGURE 9-32



7. Install the leaf spring assembly into the front and rear hangers.
8. Install the ¾" spring eye bolts in the front and rear hangers. The rear spring eye bolt must be installed from the inboard side to the outboard side, see Figure 9-32.
9. Engage the spring dowel pin into the top axle wrap. It may be necessary to raise or lower the axle to facilitate dowel pin engagement into the top axle wrap.
10. Install the top pad on the leaf spring with the directional identification facing the front of the vehicle, see Figure 9-33.

FIGURE 9-33 AIRTEK



11. Install new clamp group hex bolts into the top pad.

WARNING

DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

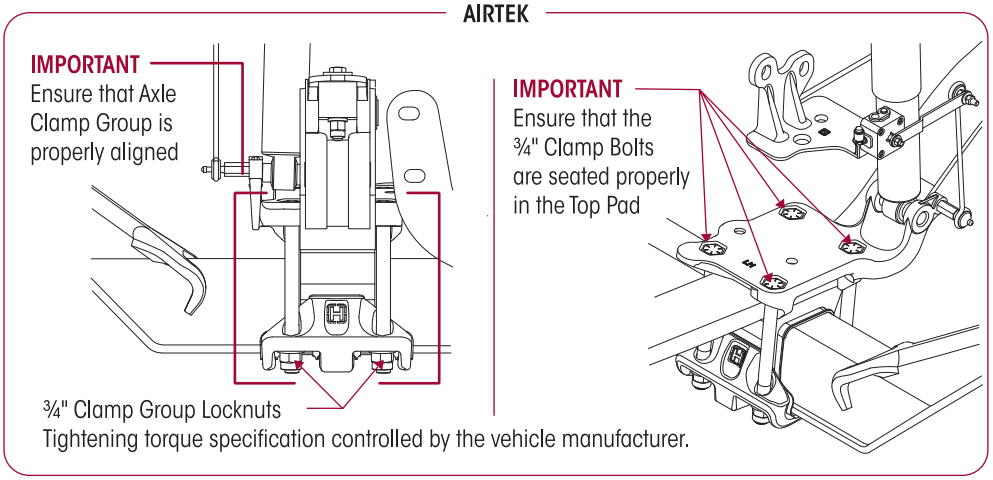
12. Remove and replace the bottom axle wrap liner.
13. Install the bottom axle wrap.
14. Install the new clamp group (Grade C) fasteners.

WARNING

ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

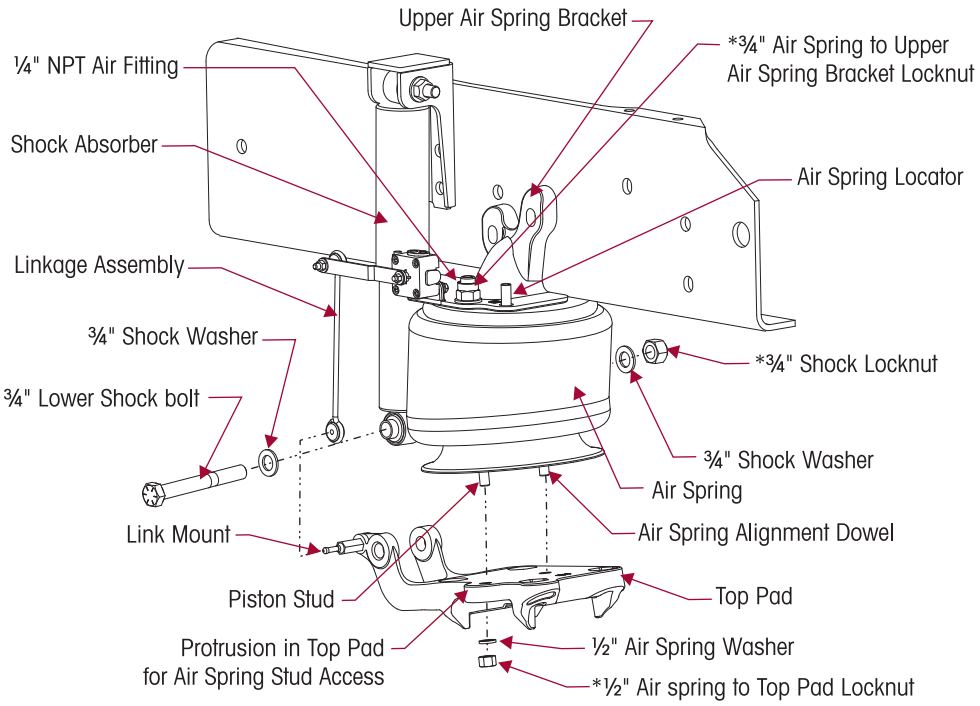
15. Ensure that the clamp group is properly aligned and the hex bolts are seated in the top pad, and the bottom axle wrap is centered on the top axle wrap, see Figure 9-34.
16. Snug the clamp group fasteners to 100 foot pounds pre-torque.

FIGURE 9-34



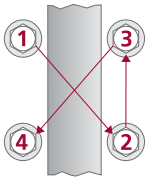
17. Install the lower shock mounting bolts from the outboard side to the inboard side.
18. Install the air spring into upper air spring mounting bracket and the top pad. Make sure the air spring piston seats into the top pad correctly, see Figure 9-35.
19. Attach new air spring mounting fasteners. Tighten upper air spring mounting fastener and the lower air spring mounting fastener to vehicle manufacturer's torque specifications.
20. Raise the vehicle and remove the frame supports.
21. Lower the floor jack and load the front axle with the truck's weight. Remove the floor jack.
22. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
23. Install air lines to the air spring.
24. Install the height control valve linkage and inflate the suspension to normal operating pressure.

FIGURE 9-35



*Tightening torque specifications controlled by the vehicle manufacturer.

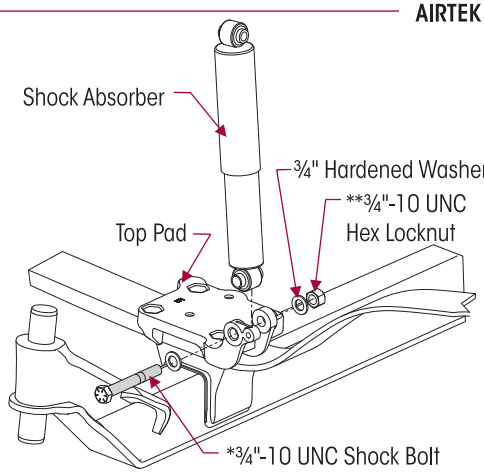
FIGURE 9-36



25. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications in the proper pattern to achieve uniform bolt tension, see Figure 9-36.
26. Tighten the lower shock mounting bolts to vehicle manufacturer's torque specifications, see Figure 9-37.
27. Verify proper ride height. See Alignment & Adjustments Section of this publication.
28. Tighten the front and rear spring eye ¾" locknuts to vehicle manufacturer's torque specifications.
29. Remove the wheel chocks.

FIGURE 9-37

AIRTEK



NOTES:

* Apply a thin coating of anti-seize compound to the shock absorber lower mounting bolt shank and to the inside bore of the aluminum top pad to help prevent seizing of the bolt to the aluminum top pad.

** Tightening torque specifications controlled by the vehicle manufacturer.

SOFTEK / STEERTEK TOP AXLE WRAP (In Chassis) (If equipped)

■ Vehicles built with STEERTEK axle PRIOR to August 2011

DISASSEMBLY

1. Place the vehicle on level floor.
2. Chock the wheels.
3. Raise the frame.
4. Support the vehicle with frame stands.
5. Suspend the front axle to remove the load from the spring and wrap leaf assembly.
6. Remove the front and rear M20 spring eye bolts and fasteners. Loosen the M20 shackle pivot bolt.

SERVICE HINT A bottle jack may be required to raise the axle slightly in order to remove spring eye bolts.

7. Support the axle with a jack.

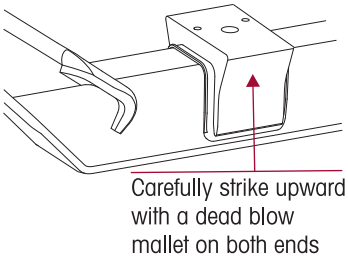
⚠ WARNING DO NOT USE A CUTTING TORCH TO REMOVE CLAMP GROUP BOLTS OR ATTACHING FASTENERS. THE USE OF SUCH HEAT ON SUSPENSION COMPONENTS CAN ADVERSELY AFFECT THE STRENGTH OF THESE PARTS. A COMPONENT DAMAGED IN THIS MANNER CAN RESULT IN THE LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

SERVICE HINT If a clamp group nut fails to come off bolt, cut half way through the bolt with an abrasive cut off wheel, taking care not to contact axle beam or other components. Using an impact wrench, spin the locknut to fracture the bolt and remove.

8. Remove the ¾" clamp group U-bolts and fasteners. Discard fasteners.
9. Remove the top pad casting and the bottom axle wrap.

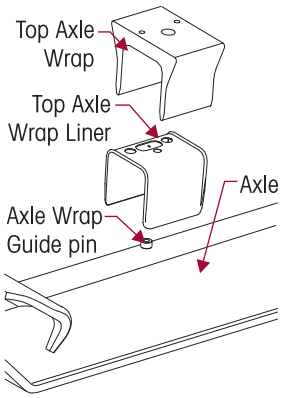
NOTE There are different lower shock mount configuration for SOFTEK Monoleaf, see Parts Lists Section of this publication.

FIGURE 9-38



10. Remove the lower shock mounting bolt.
11. Remove the spring and wrap leaf assembly.
12. Strike the axle wrap with a dead blow mallet at the front and rear on the underside of the axle wrap to dislodge it from the axle, see Figure 9-38.
13. Clean and inspect the axle wrap and axle wrap liners for cracks or damage, replace each if cracks or damage are present.

FIGURE 9-39



ASSEMBLY

WARNING

DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

1. Install the new axle wrap liner on the axle.
2. Spray the axle wrap liner and the axle wrap with a silicon lubricant.
3. Position the axle wrap on the axle, see Figure 9-39.

CAUTION

DO NOT STRIKE THE TOP AXLE WRAP WITH A HAMMER. HENDRICKSON RECOMMENDS USING A PLASTIC DEAD BLOW MALLET WITH CARE WHEN INSTALLING THE AXLE WRAP.

4. Protect the top surface of the axle wrap with a block of wood, cardboard, or shop towels.
5. Install a bottle jack between the axle wrap and frame rail flange.
6. Jack the axle wrap down into position on the axle, using care to make sure the axle wrap bore indexes the locating bushing on the axle.
7. Install the spring and wrap leaf assembly on the axle wrap indexing the center bolt in the locating hole.
8. Install the top pad casting on the spring and wrap leaf assembly.

WARNING

DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

9. Remove and replace the bottom axle wrap liner.
10. Install the bottom axle wrap.
11. Install the new ¾" clamp group U-bolts and fasteners.
12. Snug the clamp group, **DO NOT** torque at this time.
13. Use a jack and raise the axle and spring assembly into the front spring hanger and shackle assembly.

SERVICE HINT A bottle jack may be required to raise the axle slightly in order to install the spring eye bolts.

14. Install the ¾" spring eye bolts and fasteners in the front spring hanger and rear shackle assembly.
15. Ensure that the clamp group is properly aligned and the U-bolts are seated in the top pad casting, and the bottom axle wrap is centered with the top axle wrap, see Figure 9-40.

FIGURE 9-40

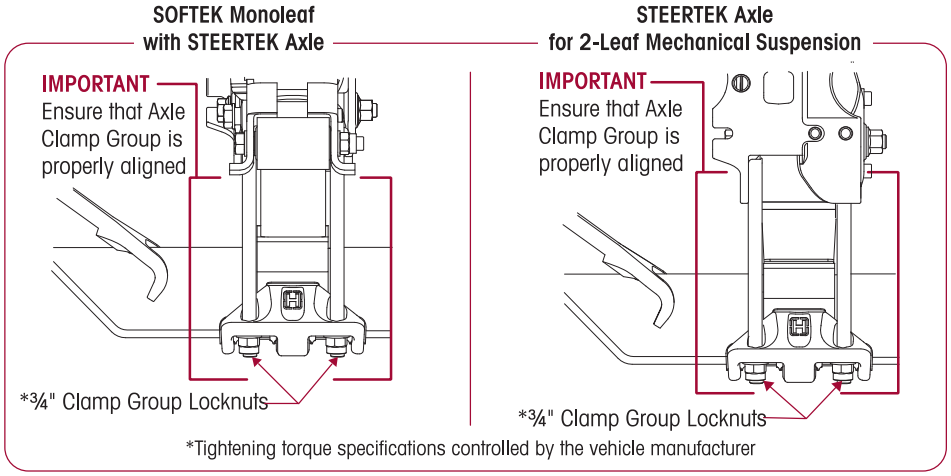
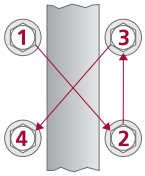
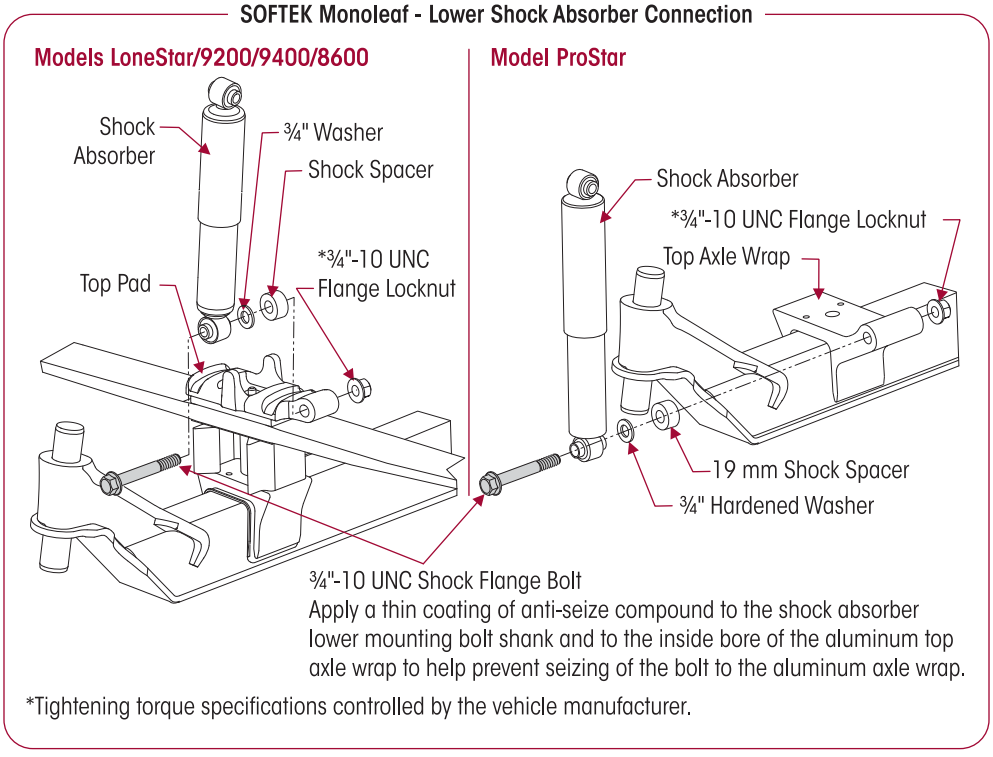


FIGURE 9-41



16. Tighten the ¾" clamp group locknuts evenly to vehicle manufacturer's torque specifications in the proper sequence, see Figure 9-41.
17. Apply a thin coating of anti-seize to the lower shock mounting bolt.
18. Install the ¾" lower shock bolt (oriented from the inboard side to the outboard side), spacer and fasteners, see Figure 9-42.

FIGURE 9-42



19. Tighten the ¾" lower shock locknut to vehicle manufacturer's torque specifications.
20. Remove the jack from the axle.
21. Remove the frame stands.
22. Tighten the ¾" spring eye bolt locknuts to vehicle manufacturer's torque specifications.
23. Remove the wheel chocks.

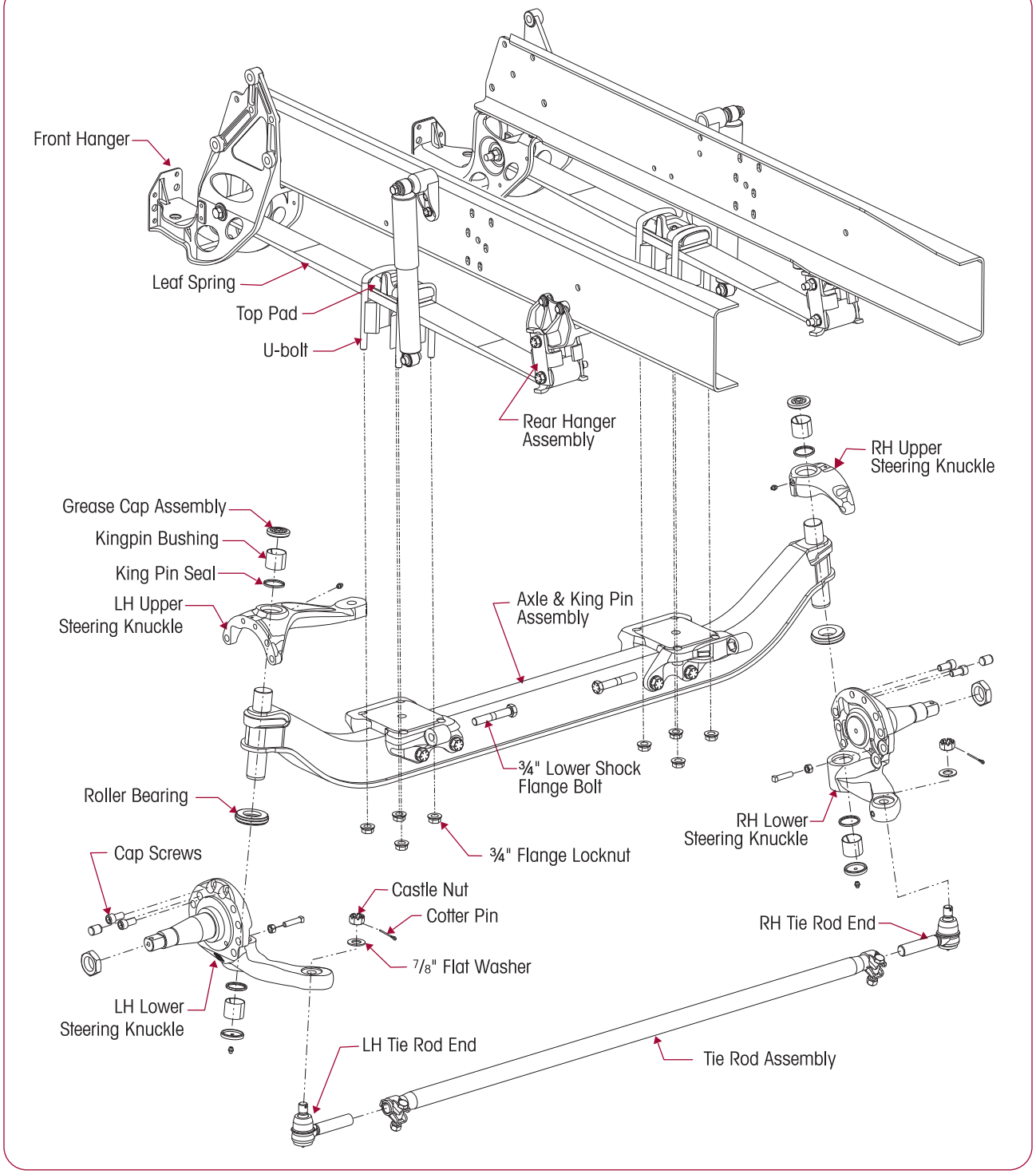
SOFTEK MONOLEAF FRONT AXLE ASSEMBLY

■ Vehicles built with STEERTEK NXT axle after August 2011

CLAMP GROUP consist of top pad, U-bolts, washers and locknuts.

FIGURE 9-43

SOFTEK Monoleaf with STEERTEK NXT Axle • Vehicles built after August 2011



STEERTEK NXT AXLE REMOVAL

■ Vehicles built after August 2011

Refer to Figure 9-43 when replacing the components of the STEERTEK axle.

⚠ WARNING

DO NOT USE A TORCH ON CLAMP GROUP BOLTS OR ANY OTHER PART OF THE SOFTEK SUSPENSION. IF THE CLAMP GROUP BOLTS WILL NOT COME LOOSE WITH AN IMPACT WRENCH, USE A CUT OFF WHEEL AND CUT THE SHANK OF THE BOLT. THE USE OF A TORCH CAN CAUSE DAMAGE TO CERTAIN SOFTEK COMPONENTS THAT CAN RESULT IN THE LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

1. Place the vehicle on level floor.
2. Chock the wheels.
3. Raise the frame.
4. Support the vehicle with frame stands. and suspend the front axle with the shocks attached.

⚠ DANGER

THE INTEGRATED AXLE SPRING SEATS ON THE STEERTEK NXT AXLE ARE NON-SERVICEABLE. DO NOT REMOVE, MODIFY OR REPLACE INTEGRATED FASTENERS, DOING SO CAN CAUSE STRUCTURAL DAMAGE AND RESULT IN LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE, SEVERE PERSONAL INJURY, OR DEATH AND VOID ANY APPLICABLE WARRANTY.

5. Remove the front wheels, hubs, brake shoes, ABS sensors, and backing plate assembly.
6. Disconnect the drag link from the steering arm.
7. Support the axle with a floor jack.

⚠ WARNING

DO NOT REPAIR OR RECONDITION SUSPENSION OR AXLE COMPONENTS FOUND TO BE DAMAGED OR OUT OF SPECIFICATIONS. ALL SUCH DAMAGED OR OUT OF SPECIFICATION COMPONENTS MUST BE REPLACED. ALL MAJOR HENDRICKSON COMPONENTS ARE HEAT TREATED AND TEMPERED. SOFTEK COMPONENTS CANNOT BE BENT, WELDED, HEATED, OR REPAIRED WITHOUT REDUCING THE STRENGTH OR LIFE OF THE COMPONENT. FAILURE TO FOLLOW THESE GUIDELINES CAN CAUSE LOSS OF VEHICLE CONTROL, AND POSSIBLE PERSONAL INJURY OR DEATH OR PROPERTY DAMAGE AND WILL VOID APPLICABLE WARRANTIES.

SERVICE HINT

If a clamp group nut fails to come off bolt, cut half way through the bolt with an abrasive cut off wheel, taking care not to contact axle beam or other components. Using an impact wrench, spin the locknut to fracture the bolt and remove.

8. Disconnect and remove the lower shock mounting bolts and shock spacer (if equipped).
9. Remove the ¾" clamp group bolts and fasteners.
10. Lower the axle and remove from the vehicle.

■ STEERTEK NXT Axle (Removed From Chassis)

AXLE DISASSEMBLY

1. Remove the tie rod assembly, see Tie Rod disassembly in this section.

⚠ WARNING

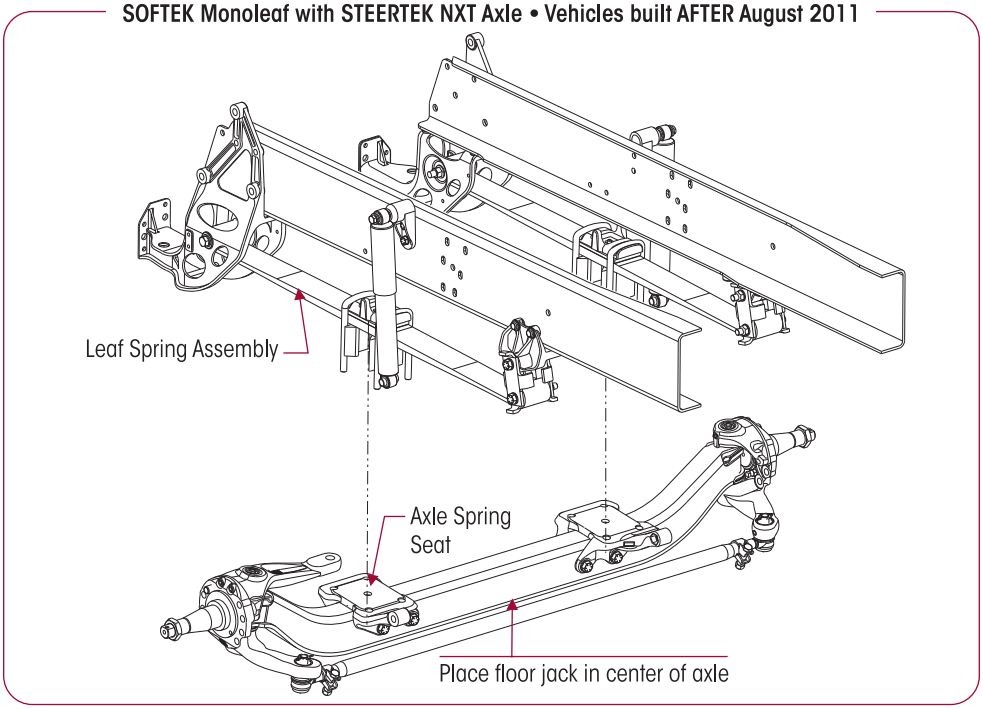
REMOVAL OF THE CAP SCREWS WILL ALLOW THE STEERING KNUCKLE TO SEPARATE FROM THE AXLE. THE STEERING KNUCKLE MUST BE SUPPORTED BEFORE REMOVAL OF THESE TWO (2) CAP SCREWS. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE OR PERSONAL INJURY.

2. Remove the two ⅝" socket head cap screws from the steering knuckle assembly.
3. Remove the steering knuckle, thrust bearing, and shims (if equipped).
4. After complete removal of the one side, repeat steps 1-3 for the opposite side of the axle.
5. Inspect the steering kingpin bushings for excessive wear. If worn, replace the kingpin bushings and seals. See the Kingpin Bushing replacement instructions in this section.

STEERTEK NXT AXLE INSTALLATION

1. Place the new axle on the floor jack and position the axle under the vehicle.
2. Raise the axle into position. Care must be taken at this point to ensure that the front leaf spring assembly's center bolt is aligned correctly in the axle spring seat, see Figures 9-44.

FIGURE 9-44



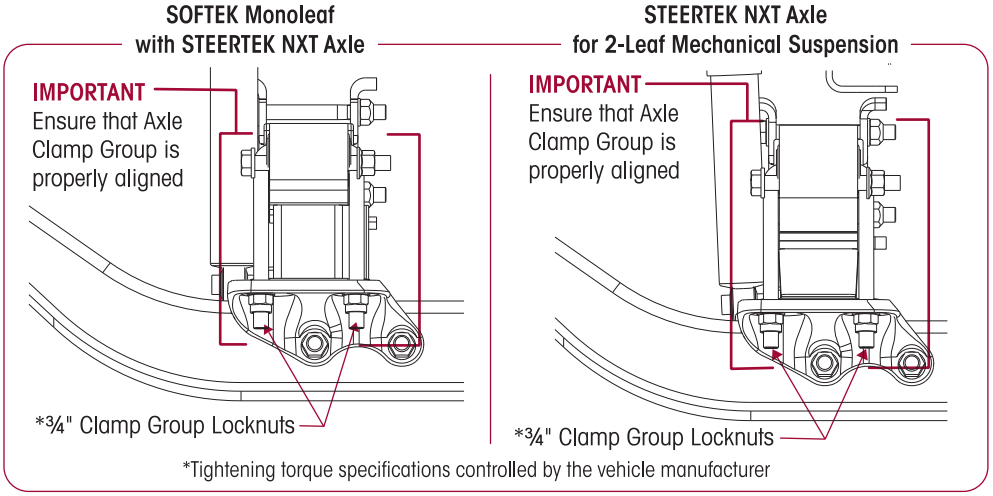
3. Install the top pad.
4. Install the new clamp group fasteners. **DO NOT** tighten to torque at this time.

⚠ WARNING

ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

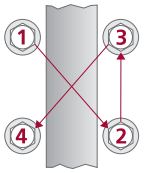
5. Ensure the clamp group is properly aligned and the U-bolts are seated in the top pad, and the top pad is centered on the axle spring seat, see Figure 9-45.
6. Snug the clamp group fasteners to 100 foot pounds pre-torque.

FIGURE 9-45



7. Install the steering knuckles as per the Steering Knuckle Assembly instructions in this section.
8. Install the tie rod assembly in the Ackermann arms.
9. Install the ⅞" hardened washers on the Ackermann arm and the castle nuts. Tighten the castle nuts to 185 foot pounds, then rotate until the first castle slot lines up with the cotter pin bore in the tie rod end. **DO NOT** back off nut for cotter pin installation.
10. Install the tie rod end cotter pin.
11. Connect the drag link in the steering arm.
12. Install the castle nut on the drag link taper stud. Tighten the castle nut to 185 foot pounds, then rotate until the first castle slot lines up with the cotter pin bore in the drag link. **DO NOT** back off nut for cotter pin installation.
13. Install the drag link cotter pin.
14. Install and tighten the lower shock mounting bolts and spacer (if equipped) to vehicle manufacturer's torque specifications.
15. Install the brake backing plate assemblies and ABS sensor and torque all fasteners per manufacturer's specifications.
16. Install the brakes, hubs, and wheels per the manufacturer's guidelines.
17. Raise the vehicle and remove the frame supports.
18. Lower the floor jack and load the front axle with the truck's weight. Remove the floor jack.

FIGURE 9-46



19. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications in the proper pattern to achieve uniform bolt tension, see Figure 9-46.
20. Remove the wheel chocks.
21. Fill the hubs with the proper lubricant, (see manufacturer's guidelines for recommended lubrication), if required.
22. Grease the front steering components as per lubrication guidelines in the Preventive Maintenance Section of this publication.

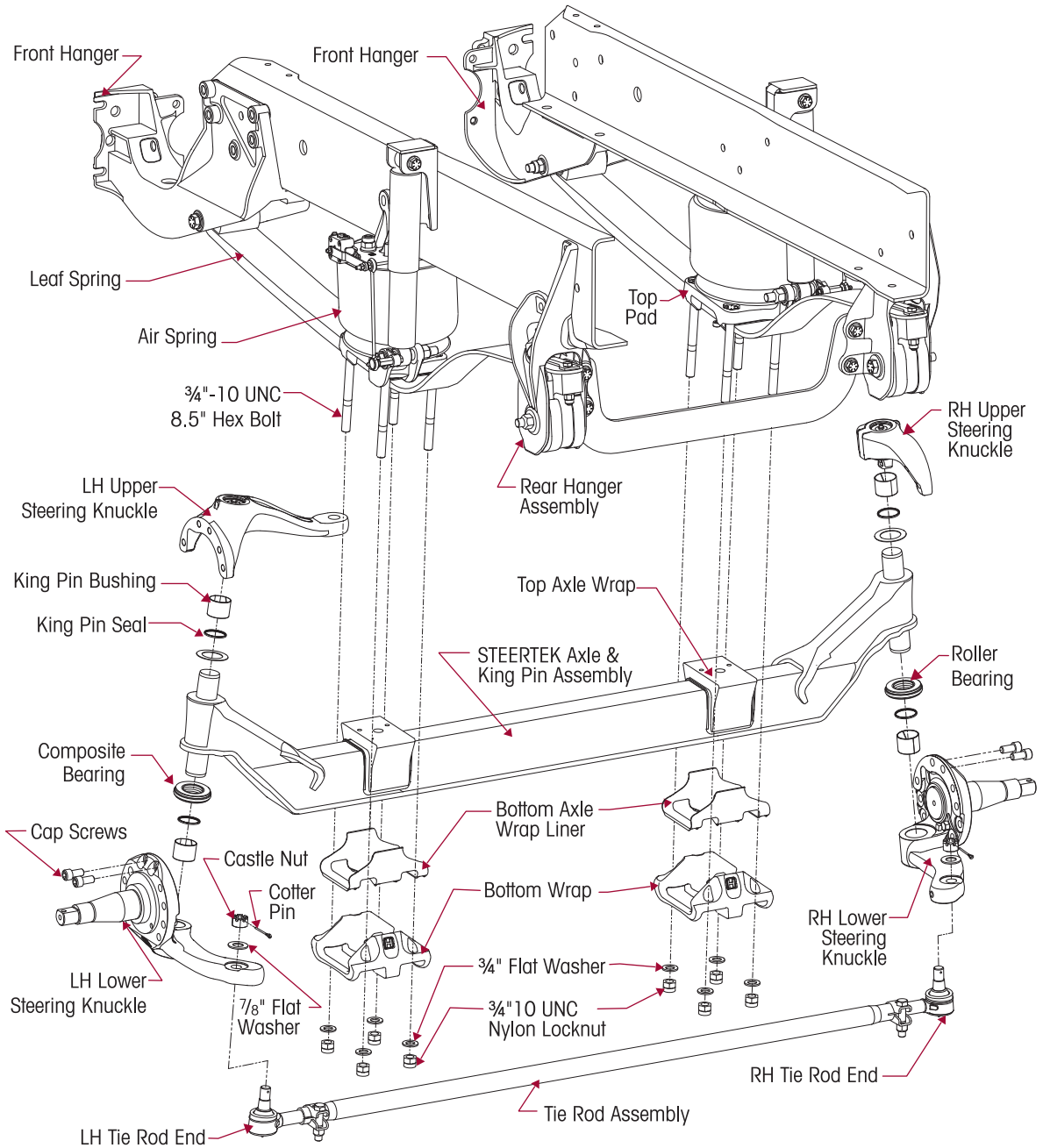
AIRTEK FRONT AXLE ASSEMBLY

STEERTEK AXLE CLAMP GROUP consist of the following components:

- Top axle wrap
- Top axle wrap liner
- Top pad
- Bottom axle wrap
- Bottom axle wrap liner
- ¾" Bolts, washers and nylon locknuts

FIGURE 9-47

AIRTEK with International New Engine Configuration • Vehicles built after September 2006



SOFTEK FRONT AXLE ASSEMBLY

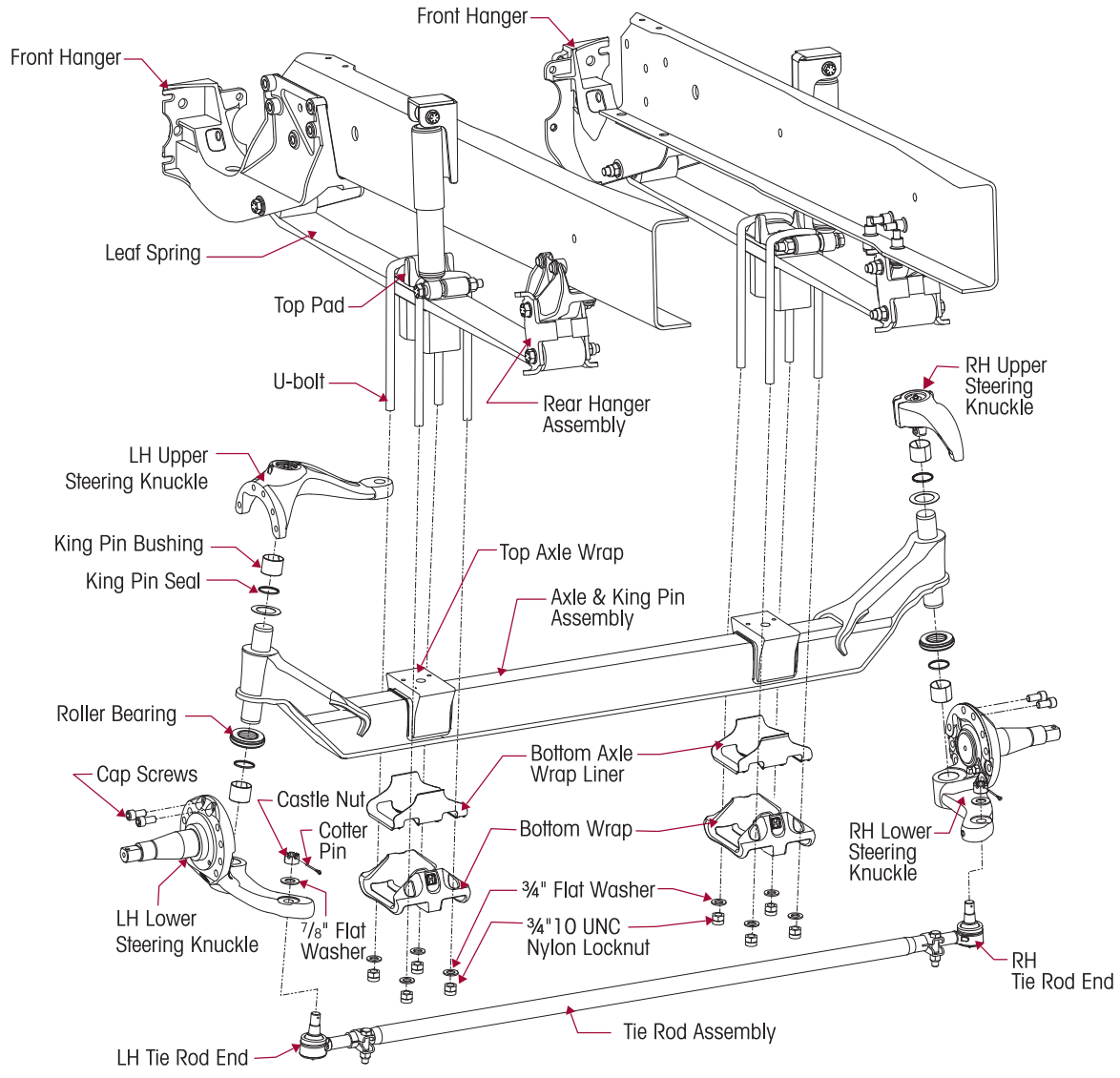
■ Vehicles built with STEERTEK axle prior to August 2011

STEERTEK AXLE CLAMP GROUP consist of the following components:

- Top axle wrap
- Top axle wrap liner
- Top pad
- Bottom axle wrap
- Bottom axle wrap liner
- ¾" Bolts, washers and nylon locknuts

FIGURE 9-48

SOFTEK Monoleaf with STEERTEK Axle • Vehicles built piror to August 2011



STEERTEK Axle Removal

■ Vehicles built prior to August 2011

Refer to Figures 9-47 and 9-48 when replacing the components of the STEERTEK axle.

⚠ WARNING

DO NOT USE A TORCH ON CLAMP GROUP BOLTS OR ANY OTHER PART OF THE AIRTEK SUSPENSION. IF THE CLAMP GROUP BOLTS WILL NOT COME LOOSE WITH AN IMPACT WRENCH, USE A CUT OFF WHEEL AND CUT THE SHANK OF THE BOLT. THE USE OF A TORCH CAN CAUSE DAMAGE TO CERTAIN SOFTEK / AIRTEK COMPONENTS THAT CAN RESULT IN THE LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

1. Place the vehicle on level floor.
2. Chock the wheels.
3. **SOFTEK equipped vehicles** — proceed to Step 6.

⚠ WARNING

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

4. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
5. **AIRTEK equipped vehicles** — Deflate the air springs by disconnecting the height control valve linkage and lowering the height control valve arm. This will exhaust the air pressure in the air springs.
6. Raise the frame.
7. Support the vehicle with frame stands.
8. Suspend the front axle with the shocks attached.
9. Remove the front wheels, hubs, brake shoes, ABS sensors, and backing plate assembly.
10. Disconnect the drag link from the steering arm.
11. **SOFTEK equipped vehicles** — proceed to Step 13.
12. **AIRTEK equipped vehicles** — Remove lower air spring mounting fasteners for both air springs at the axle top pad and unseat from the top pad.
13. Support the axle with a floor jack.

⚠ WARNING

DO NOT REPAIR OR RECONDITION SUSPENSION OR AXLE COMPONENTS FOUND TO BE DAMAGED OR OUT OF SPECIFICATIONS. ALL SUCH DAMAGED OR OUT OF SPECIFICATION COMPONENTS MUST BE REPLACED. ALL MAJOR HENDRICKSON COMPONENTS ARE HEAT TREATED AND TEMPERED. AIRTEK COMPONENTS CANNOT BE BENT, WELDED, HEATED, OR REPAIRED WITHOUT REDUCING THE STRENGTH OR LIFE OF THE COMPONENT. FAILURE TO FOLLOW THESE GUIDELINES CAN CAUSE LOSS OF VEHICLE CONTROL, AND POSSIBLE PERSONAL INJURY OR DEATH OR PROPERTY DAMAGE AND WILL VOID APPLICABLE WARRANTIES.

SERVICE HINT

If a clamp group nut fails to come off bolt, cut half way through the bolt with an abrasive cut off wheel, taking care not to contact axle beam or other components. Using an impact wrench, spin the locknut to fracture the bolt and remove.

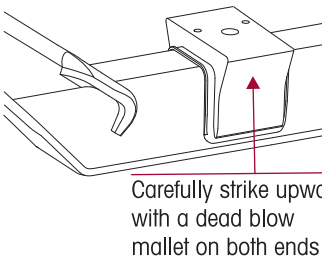
14. Remove the ¾" clamp group bolts and fasteners.
15. Lower the axle and remove from the vehicle.

STEERTEK AXLE (Removed from Chassis)

CLAMP GROUP DISASSEMBLY

1. Remove the bottom axle wrap and liner from the axle.

FIGURE 9-49



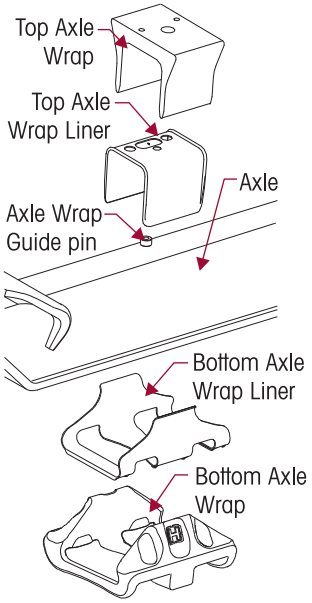
2. Strike the top axle wrap with a dead blow mallet at the front and rear on the underside of the axle wrap to dislodge it from the axle, see Figure 9-49.
3. After removal of the top axle wrap from the axle, inspect for cracks or fretting.
4. Remove the tie rod assembly, see Tie Rod disassembly in this section.

WARNING

REMOVAL OF THE CAP SCREWS WILL ALLOW THE STEERING KNUCKLE TO SEPARATE FROM THE AXLE. THE STEERING KNUCKLE MUST BE SUPPORTED BEFORE REMOVAL OF THESE TWO (2) CAP SCREWS. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE OR PERSONAL INJURY.

5. Remove the two ⅝" socket head cap screws from the steering knuckle assembly.
6. Remove the steering knuckle, thrust bearing, and shims (if equipped).
7. After complete removal of the one side, repeat steps 1-6 for the opposite side of the axle.
8. Inspect the steering kingpin bushings for excessive wear. If worn, replace the kingpin bushings and seals. See Kingpin Bushing component replacement instructions in this section.

FIGURE 9-50



CLAMP GROUP ASSEMBLY

WARNING

DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

1. Install the new upper axle wrap liner on the axle. Index the liner with the axle's guide pin, see Figure 9-50.

CAUTION

DO NOT STRIKE THE TOP AXLE WRAP WITH A HAMMER. DAMAGE TO THE ALUMINUM AXLE WRAP WILL OCCUR. USA A PLASTIC DEAD BLOW MALLET WITH CARE WHEN INSTALLING THE AXLE WRAP.

WARNING

SECURELY INSTALL THE TOP WRAP TO THE AXLE. FAILURE TO DO SO CAN CAUSE LOSS OF CONTROL OF THE VEHICLE, PERSONAL INJURY OR PROPERTY DAMAGE.

SERVICE HINT

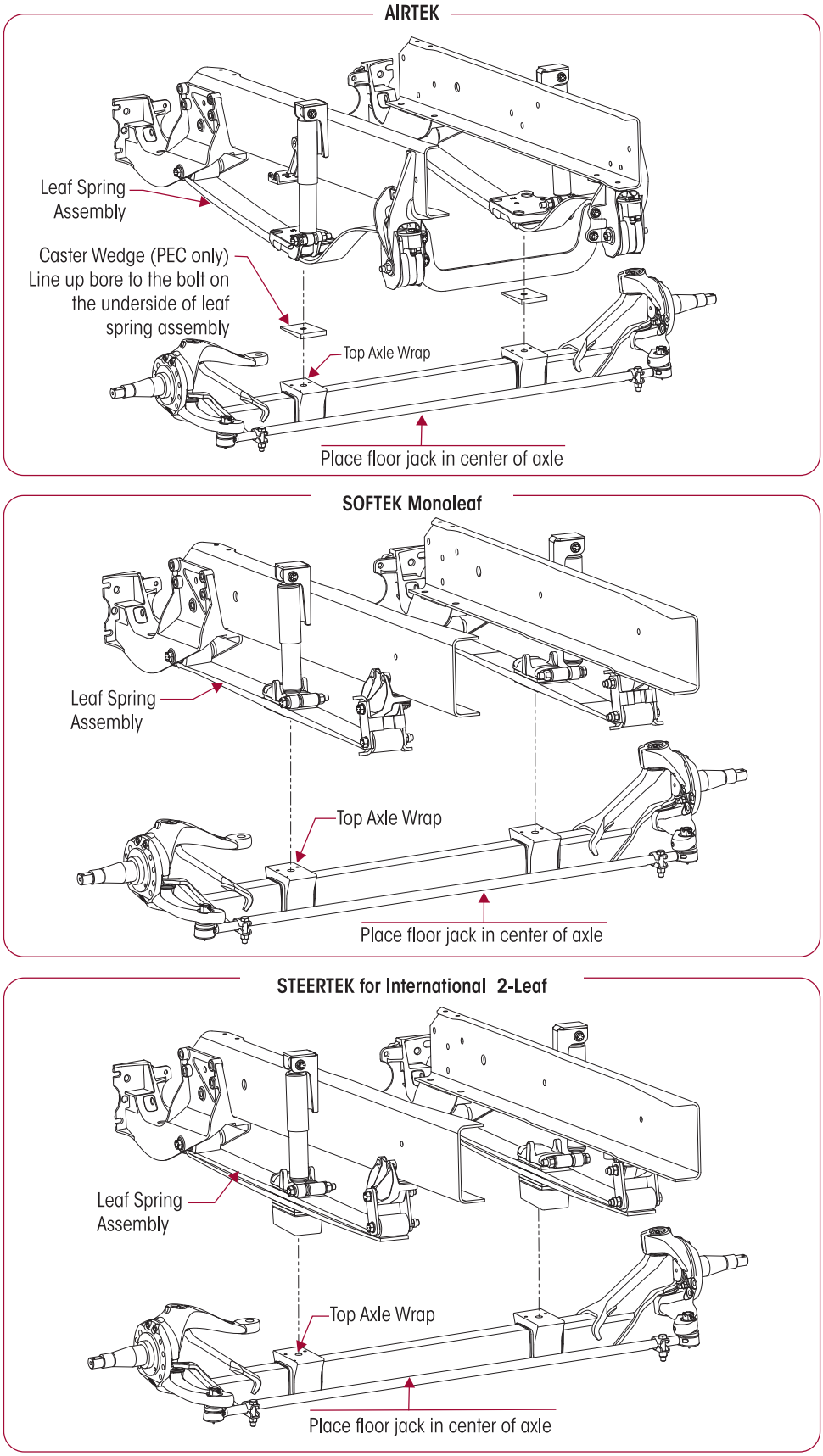
Apply a lubricant (such as an aerosol silicone) to the outer surface of the plastic liner to aid in assembly of the top axle wrap.

2. Install the top axle wrap, see Axle Wrap Assembly instructions located in this section. The axle wrap must be aligned with the guide pin on the axle.
3. At this point in the assembly do not install anything further on the axle.

AXLE INSTALLATION

1. Place the new axle on the floor jack and position the axle under the vehicle.
2. Install PEC caster wedges (if equipped).
3. Raise the axle into position. Care must be taken at this point to ensure that the front leaf spring assembly's center bolt is aligned correctly in the top axle wrap, see Figure 9-51.

FIGURE 9-51

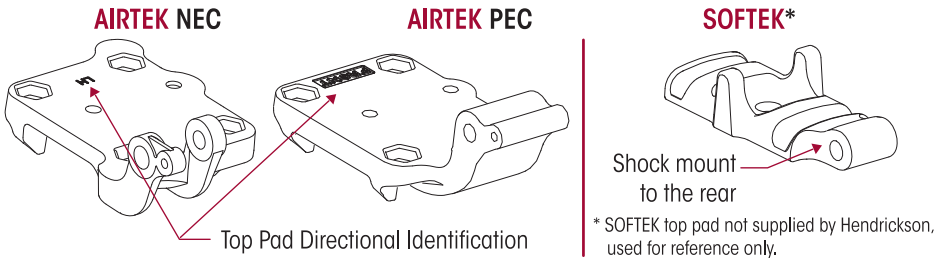

AIRTEK
Leaf Spring Assembly
Caster Wedge (PEC only) Line up bore to the bolt on the underside of leaf spring assembly
Top Axle Wrap
Place floor jack in center of axle
SOFTEK Monoleaf
Leaf Spring Assembly
Top Axle Wrap
Place floor jack in center of axle
STEERTEK for International 2-Leaf
Leaf Spring Assembly
Top Axle Wrap
Place floor jack in center of axle

⚠ WARNING

DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

4. Install the new bottom axle wrap liners and front axle spacers on the bottom axle wraps.
5. Install the bottom axle wrap on the axle.
6. Install the top pad with the directional identification facing the front of the vehicle, see Figure 9-52.

FIGURE 9-52



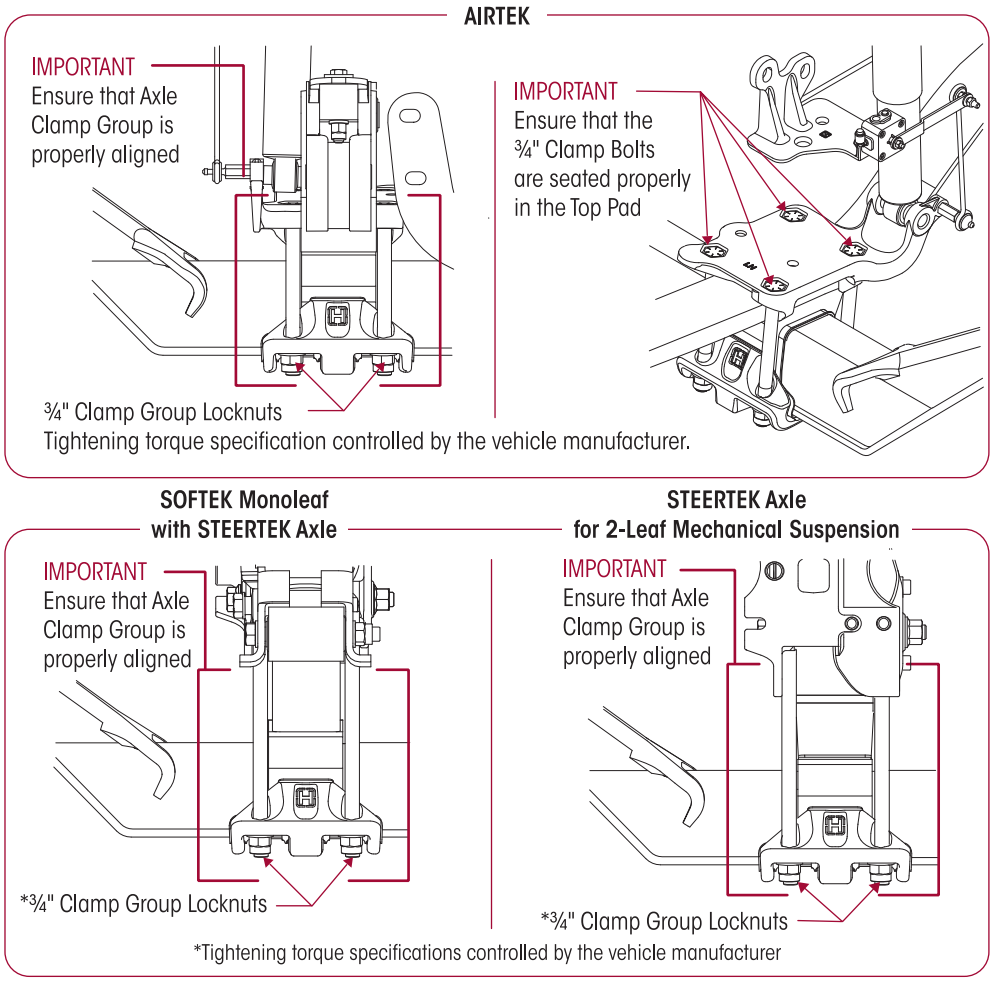
7. Install the new clamp group fasteners.

⚠ WARNING

ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.

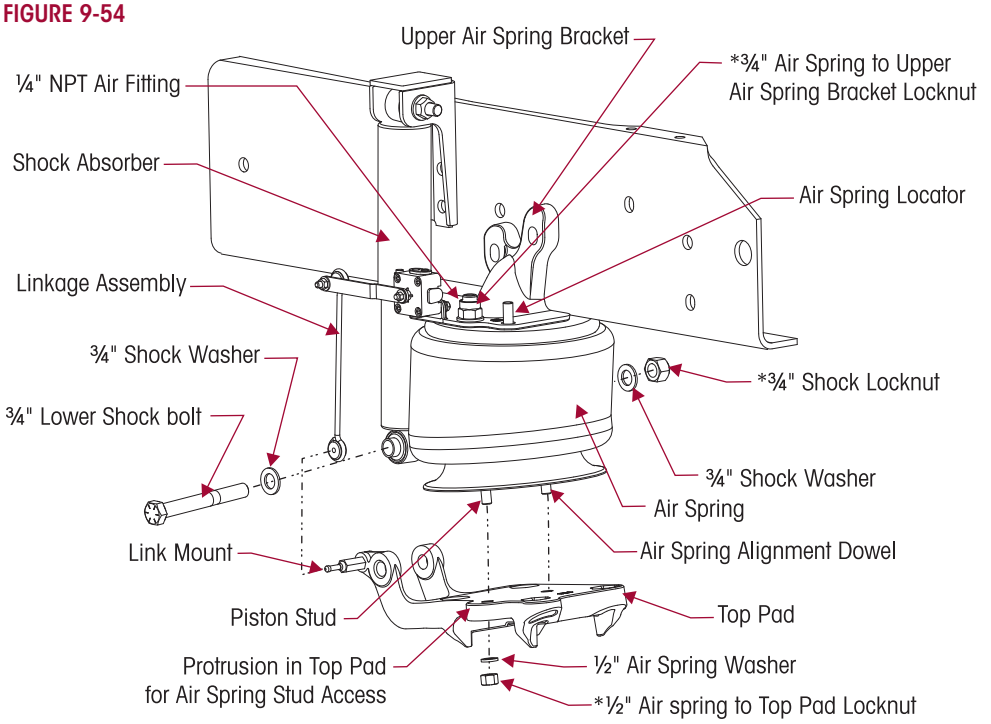
8. Ensure the clamp group is properly aligned and the hex bolts are seated in the top pad, and the bottom axle wrap is centered on the top axle wrap, see Figure 9-53.

FIGURE 9-53



9. Snug the clamp group fasteners to 100 foot pounds pre-torque.
10. **SOFTEK equipped vehicles** — proceed to Step 13.
11. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
12. **AIRTEK equipped vehicles** — Engage the air springs into the top pad and install new lower air spring mounting fasteners. Tighten the lower air spring mounting fastener to vehicle manufacturer's torque specifications, see Figure 9-54.

FIGURE 9-54

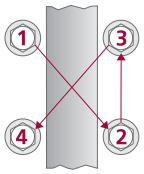


*Tightening torque specifications controlled by the vehicle manufacturer.

13. Install the lower shock mounting bolts.
14. Install the steering knuckles as per the Steering Knuckle replacement instructions in this section.
15. Install the tie rod assembly.
16. Install the ⅞" hardened washers on the Ackermann arm and the castle nuts. Tighten the castle nuts to 185 foot pounds, then rotate until the first castle slot lines up with the cotter pin bore in the tie rod end. **DO NOT** back off nut for cotter pin installation.
17. Install the tie rod end cotter pin.
18. Connect the drag link. Install the castle nut to install the steering arm. Tighten the castle nut to 185 foot pounds, then rotate until the first castle slot lines up with the cotter pin bore in the drag link. **DO NOT** back off nut for cotter pin installation.
19. Install the drag link cotter pin.
20. Install the brake backing plate assemblies and ABS sensor and torque all fasteners per manufacturer's specifications.
21. Install the brakes, hubs, and wheels per the manufacturer's guidelines.
22. Raise the vehicle and remove the frame supports.
23. Lower the floor jack and load the front axle with the truck's weight. Remove the floor jack.
24. **SOFTEK equipped vehicles** — proceed to Step 26.

25. A**IRTEK equipped vehicles** — Install the height control valve linkage and inflate the suspension to normal operating pressure.

FIGURE 9-55



26. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications in the proper pattern to achieve uniform bolt tension, see Figure 9-55.
27. Tighten the lower shock mounting bolts to vehicle manufacturer's torque specifications.
28. **SOFTEK equipped vehicles** — proceed to Step 31.
29. **AIRTEK equipped vehicles** — Reconnect the height control valve and air up the suspension.
30. Verify proper ride height. See Alignment & Adjustments Section of this publication.
31. Remove the wheel chocks.
32. Fill the hubs with the proper lubricant, (see manufacturer's guidelines for recommended lubrication), if required.
33. Grease the front steering components as per lubrication guidelines in the Preventive Maintenance Section of this publication.

STEERING KNUCKLE DISASSEMBLY

DISASSEMBLY

See tools needed to remove and install kingpin bushing under the Special Tools Section of this publication.

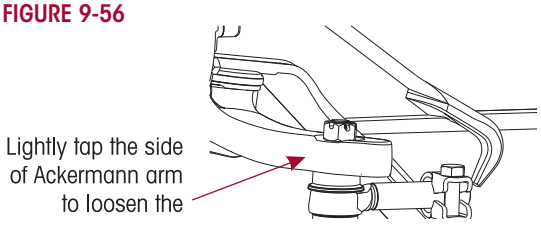
The steering knuckle disassembly and assembly includes the Kingpin Preparation and Measurement and Kingpin Bushing Removal process.

1. Place the vehicle on level floor.
2. Chock the wheels.
3. Support the vehicle with jack stands on the axle.
4. Remove the wheel and hub assembly.
5. Remove the brake components from steering knuckle.
6. Remove the tie rod assembly.

SERVICE HINT

Lightly tap the side of the Ackermann arm with a mallet to separate the tie rod end from the Ackermann arm, see Figure 9-56.

FIGURE 9-56



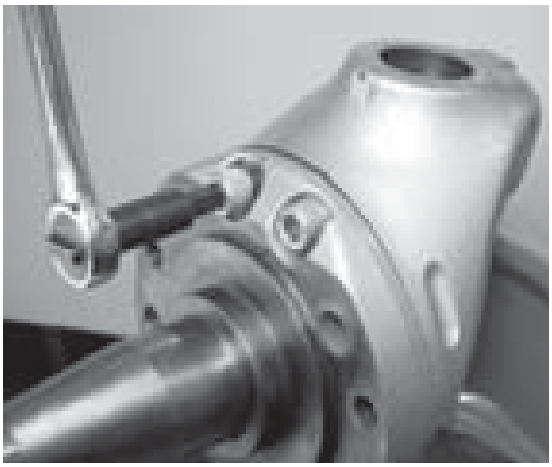
7. Remove the drag link from the knuckle if necessary.

⚠ WARNING

REMOVAL OF THE CAP SCREWS WILL ALLOW THE STEERING KNUCKLE TO SEPARATE FROM THE AXLE. THE STEERING KNUCKLE MUST BE SUPPORTED BEFORE REMOVAL OF THESE TWO (2) CAP SCREWS. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE OR PERSONAL INJURY.

8. Remove the 2 socket head cap screws that connect upper kingpin connection to the steering knuckle, see Figure 9-57.
9. Remove the lower steering knuckle from the kingpin by sliding it down the kingpin.
10. Remove the upper steering knuckle by sliding it up off the kingpin.

FIGURE 9-57



KINGPIN PREPARATION AND MEASUREMENT

CLEANING GROUND AND POLISHED PARTS

- Use a cleaning solvent to clean ground or polished parts and surfaces. **DO NOT USE GASOLINE.**
- **DO NOT** clean ground or polished parts in a hot solution tank or with water, steam, or alkaline solutions. These solutions will cause corrosion of the parts.

DRYING THE CLEANED PARTS

- Parts must be dried immediately after cleaning. Dry the parts with clean paper towels, clean rags, or compressed air. **DO NOT** dry bearings by spinning with compressed air. Damage to the bearings will result.

PREVENTING CORROSION ON CLEANED PARTS

- Apply a light coating of oil to all cleaned and dried parts that are going to be reused. **DO NOT** apply oil to the brake lining or the brake drums. If parts are to be stored, apply an effective rust inhibitor to all surfaces.

⚠ WARNING

TO HELP PREVENT SERIOUS EYE INJURY, ALWAYS WEAR PROPER EYE PROTECTION WHEN YOU PERFORM VEHICLE MAINTENANCE OR SERVICE.

⚠ WARNING

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:

- WEAR PROPER EYE PROTECTION.
- WEAR CLOTHING THAT PROTECTS YOUR SKIN.
- WORK IN A WELL VENTILATED AREA.
- DO NOT USE GASOLINE, SOLVENTS OR OTHER MATERIALS THAT CONTAIN GASOLINE THAT CAN EXPLODE.
- 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.

⚠ CAUTION

DO NOT USE HOT SOLUTION TANKS OR WATER AND ALKALINE SOLUTIONS TO CLEAN GROUND OR POLISHED PARTS. DAMAGE TO THE PARTS WILL RESULT.

⚠ WARNING

THE STEERTEK HAS A UNIQUE AXLE. THE KINGPIN IS CRYOGENICALLY INSTALLED IN THE AXLE. THE KINGPIN IS A NON-REPLACEABLE COMPONENT OF THE AXLE ASSEMBLY. DO NOT TRY TO REMOVE THE KINGPIN. DOING SO WILL DAMAGE THE AXLE AND MAY CAUSE LOSS OF VEHICLE CONTROL, PERSONAL INJURY OR PROPERTY DAMAGE. IF THE KINGPIN SHOWS SIGNS OF MOVEMENT, CONTACT HENDRICKSON PRODUCT ENGINEERING - TECH SERVICES.

1. Prepare and polish the kingpin by removing all grease and excess debris using a fine grit (220 grit or higher) emery cloth and parts solvent, see Figures 9-58 through 9-61.

FIGURE 9-58

FIGURE 9-59

FIGURE 9-60

FIGURE 9-61

2. Inspect the kingpin for wear or damage. Use a micrometer and measure the upper and lower kingpin in two locations. Positions must be 90° opposed from each other. If the kingpin has less than 1.802" diameter, replacement of the axle is necessary, see Figures 9-62 through 9-65. **Kingpin minimum dimension is 1.802".**

FIGURE 9-62

FIGURE 9-63

FIGURE 9-64

FIGURE 9-65

KINGPIN BUSHING REMOVAL

You will need:

- A hydraulic shop press with a minimum forcing capacity of 2.5 tons (or use an arbor press)
- Kingpin Bushing Tools, see Special Tool Section in this publication
  - Push-out Tool
  - Driver Tool
  - Receiving Tool
  - STEERTEK NXT (Vehicles built after August 2011) Remover / Installer Tool

WARNING

BEFORE APPLYING HYDRAULIC PRESSURE TO ANY TOOLING SET-UP, ALWAYS CHECK TO ENSURE THE PRESS PLATE, ADAPTERS, AND COMPONENTS BEING WORKED ON ARE POSITIONED PROPERLY, I.E. "IN LINE" WITH THE RAM OF THE PRESS. IMPROPER POSITIONING CAN CAUSE PERSONAL INJURY OR COMPONENT DAMAGE.

CAUTION

PRIOR TO APPLYING HYDRAULIC PRESSURE TO REMOVE OR INSTALL THE KINGPIN BUSHING, SUPPORT THE LOWER STEERING KNUCKLE AS SHOWN IN FIGURES 9-66 THROUGH 9-68. IMPROPER SUPPORT TO THE STEERING KNUCKLES CAN CAUSE COMPONENT DAMAGE.

FIGURE 9-66

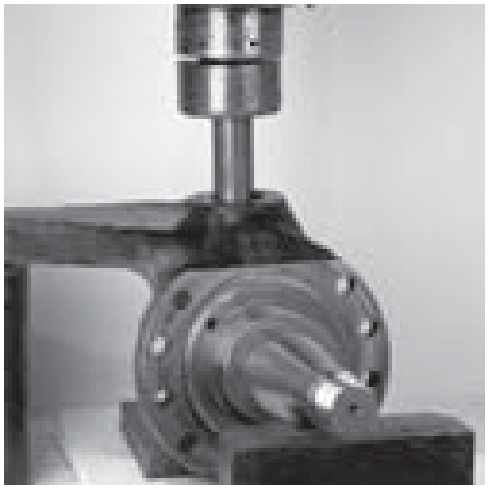


FIGURE 9-67

FIGURE 9-68

FIGURE 9-69

1. **STEERTEK** axle (Vehicles built prior to August 2011)
   a. Remove the grease cap retaining ring.
   b. Ensure that each part of the steering knuckle assembly is squarely supported on the receiving tool before applying hydraulic pressure to press out the kingpin bushings, see Figures 9-66 through 9-68.
   c. Remove the grease zerk in the grease cap or use the kingpin bushing push-out tool, (see Figure 9-67) to press out the kingpin bushing.
   d. Place the kingpin push-out tool on top of the grease cap and press out the kingpin bushing and seal.
   e. Proceed to Step 3.
2. **STEERTEK NXT** axle (Vehicles built after August 2011)
   a. Remove the threaded grease cap.
   b. Ensure that each part of the steering knuckle assembly is squarely supported on the receiving tool before applying hydraulic pressure to press out the kingpin bushings, see Figures 9-66 through 9-68.
   c. Place the STEERTEK NXT installer/remover tool in the steering knuckle/kingpin bore. Then place the kingpin bushing push-out tool on top of the installer/remover.
   d. Press out the kingpin bushing.
3. Clean the parts and inspect for reassembly, see Figure 9-69.

STEERING KNUCKLE BORE MEASUREMENT

Complete the following steering knuckle bore inspection and the measurement instructions prior to installing the kingpin bushing.

1. Measure the upper knuckle bore inside diameter at two locations. Always use an inside micrometer or a telescoping gauge when taking a knuckle bore measurement. Some out-of-roundness at the top and bottom of the bore edges is acceptable. Steering knuckle bore diameter is 1.938" ± 0.003".
2. Measure the upper and lower bore in two positions and at two locations. The two positions must be 90° opposed from each other, see Figures 9-70 through 9-72. If the average measurement is more than the knuckle bore maximum diameter specification, replace the knuckle.

FIGURE 9-70

FIGURE 9-71

FIGURE 9-72

KINGPIN BUSHING INSTALLATION

You will need:

- A hydraulic shop press with a minimum forcing capacity of 2.5 tons.

WARNING

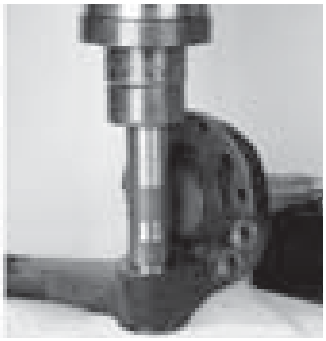
BEFORE APPLYING HYDRAULIC PRESSURE TO ANY TOOLING SET-UP, ALWAYS CHECK TO BE SURE THE PRESS PLATE, ADAPTERS, AND COMPONENTS BEING WORKED ON ARE POSITIONED PROPERLY, I.E. "IN LINE" WITH THE RAM. IMPROPER POSITIONING CAN CAUSE PERSONAL INJURY OR COMPONENT DAMAGE.

1. Install the lower or upper steering knuckle in the press. Ensure that each part of the steering knuckle assembly is squarely supported on the receiving tool before applying hydraulic pressure to press in the kingpin bushings.
2. Always install the kingpin bushing from the machined side (axle side) of the lower steering knuckle using a bushing driver, (see driver specifications in the Special Tools Section of this publication). Press in bushing to a depth of no less than 15⁄64" (0.236") or 6 millimeters and no more than 5⁄16" (0.32") or 8 millimeters, see Figures 9-73 and 9-75.
3. Following this procedure it is necessary to ream the kingpin bushings to fit the kingpins, see Kingpin Bushing Reaming Instructions in this section.

FIGURE 9-73

FIGURE 9-74

FIGURE 9-75



KINGPIN BUSHING REAMING

CAUTION

REAM THE KINGPIN BUSHINGS WITH AN ADJUSTABLE STRAIGHT FLUTE REAMER. (SEE SPECIAL TOOLS SECTION OF THIS PUBLICATION) DO NOT HONE OR BURNISH THE KINGPIN BUSHINGS. HONING OR BURNISHING WILL DAMAGE THE BUSHINGS AND VOID ANY APPLICABLE WARRANTY.

WARNING

WHEN INSTALLING STEERING KNUCKLE COMPONENTS IN A VISE IT IS NECESSARY TO PROTECT THE MACHINED SURFACES FROM GOUGES OR MARRING BY USING BRASS JAWS. FAILURE TO DO SO CAN CAUSE PREMATURE PART DAMAGE, DAMAGE TO THE STEERING KNUCKLE COMPONENTS, LOSS OF WARRANTY, LOSS OF VEHICLE CONTROL, CAUSING PERSONAL INJURY OR PROPERTY DAMAGE.

1. Install the lower steering knuckle assembly in a vise with brass jaws.

SERVICE HINT

It is acceptable to mount the knuckle components in a vise either vertically or horizontally when performing the reaming procedure.

2. Install the reamer into the lower steering knuckle until the blades touch the kingpin bushing.
3. Rotate the reamer with light downward pressure. Rotate the reamer smoothly. **DO NOT** apply too much pressure, see Figures 9-76 and 9-77.
4. Slide the reamer out of the bottom of the steering knuckle assembly. If it is necessary to remove the reamer from the top, rotate the reamer opposite of cutting rotation.
5. Clean and remove all kingpin bushing material from the steering knuckle assembly. Take special attention to remove material from the grease channels and dimples.

FIGURE 9-76

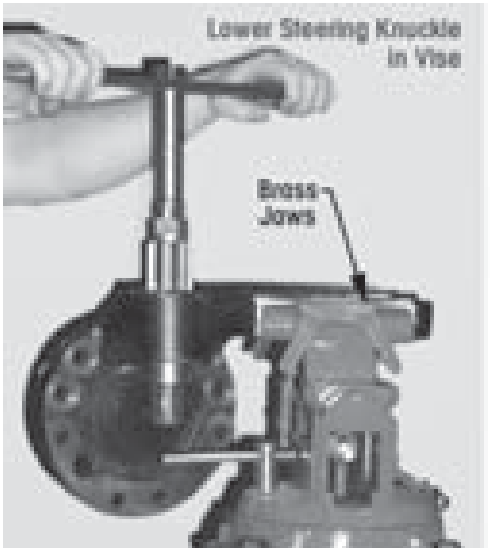
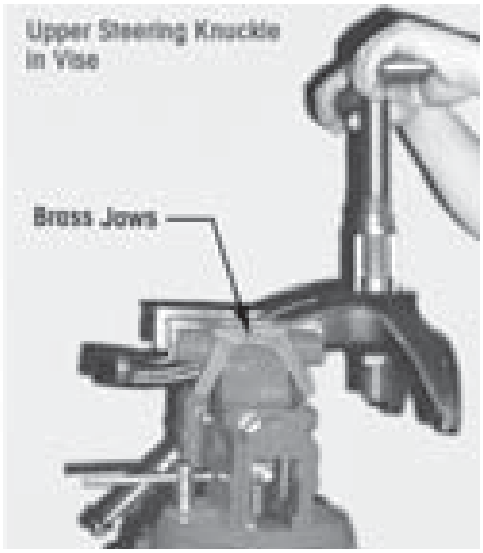


FIGURE 9-77



6. Clean the ⅝" brake backing plate bolts with a wire wheel and run a tap through the threads of the lower steering knuckle assembly and then flush out with brake cleaner and dry with compressed air.

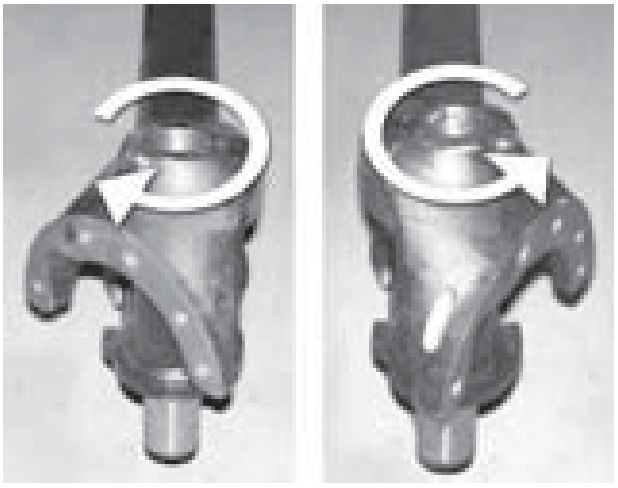
⚠ WARNING

PRIOR TO INSTALLATION ENSURE THAT ALL RESIDUAL LOCTITE® MATERIAL IS REMOVED FROM THE MOUNTING BOLTS AND THE THREAD BORES IN THE UPPER STEERING KNUCKLES, AND NEW LOCTITE 277 OR EQUIVALENT IS APPLIED TO HELP ENSURE THAT THE BOLTS SUSTAIN THE PROPER TORQUE REQUIREMENT. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE.

NOTE

The Hendrickson Genuine part, socket head cap screw comes with a pre-applied loctite compound.

FIGURE 9-78



7. Install the upper and lower steering knuckle on the kingpin.
8. Check for the proper fit by rotating the knuckle assembly back and forth to verify there is no binding on the kingpin, see Figure 9-78.
9. If the bushing is too tight repeat Steps 1 through 8 until the proper clearance is achieved.

NOTE

Bushing size is to be 0.001" larger than the kingpin size.

KINGPIN SEAL INSTALLATION

1. Place the steering knuckle assembly in a vise with brass jaws or place on a suitable workbench. The steering knuckle will have the machined surface facing up (axle side up).

FIGURE 9-79

2. Lay the kingpin seal into the bore of the steering knuckle. The seal lip should face outward or toward the axle, see Figure 9-79.
3. Use a kingpin bushing driver tool (see Special Tool Section) and press seal firmly into the steering knuckle assembly.
4. **STEERTEK NXT** — Double Lip design, see Figure 9-80. Install the kingpin seal until it bottoms out in the kingpin bore.
5. **STEERTEK** — Single Lip design, see Figure 9-81. Install the kingpin seal until it makes contact with the kingpin bushing.

FIGURE 9-80
FIGURE 9-81

STEERING KNUCKLE ASSEMBLY

ASSEMBLY

After replacement of the kingpin bushings it is necessary to re-assemble the steering knuckle assemblies. **DO NOT** substitute aftermarket components when servicing.

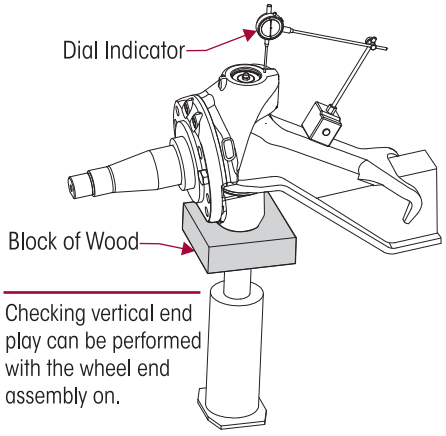
- **SOFTEK Monoleaf and International Truck 2-leaf Mechanical Suspensions** – The left and right side of the STEERTEK NXT/ STEERTEK axle have steel roller thrust bearing, see Figure 9-83.
- **AIRTEK** – The left side of the STEERTEK axle has a composite style thrust bearing and the right side of the STEERTEK axle has a steel roller thrust bearing, see Figure 9-82.

FIGURE 9-82

FIGURE 9-83

1. Install the thrust bearing on the lower kingpin with the seal facing up toward axle (the black seal will designate the top side), see Figures 9-82 and 9-83.
2. Install the shim, if equipped, on the upper kingpin.
3. Pack the bushing dimples on the upper and lower steering knuckles with multi purpose Lithium based grease (NLGI Grade 2) before installation.
4. Install the upper steering knuckle on the upper arm kingpin.
5. Install the lower steering knuckle on the lower kingpin and install the old socket head cap screws loose into the top two threaded holes.
6. Install a bottle jack under the lower knuckle and slightly raise the knuckle until it is possible to thread in the (3) brake backing plate bolts by hand. These are for guide purposes only.
7. Snug the two socket head cap screws.
8. Lower the bottle jack so that all the vertical end play is on the underside of the axle.
9. Affix a magnetic base dial indicator on the axle and place the tip of the dial indicator on top of the knuckle assembly, see Figure 9-84.

FIGURE 9-84



Checking vertical end play can be performed with the wheel end assembly on.

10. Zero the dial indicator.
11. Raise the bottle jack until there is **NO CLEARANCE** between the knuckle assembly and the bottom of the axle, slightly lifting the axle.
12. Check the reading on the dial indicator. The specification for vertical travel on the steering knuckle during assembly is 0.008" to 0.011".
13. If the clearance is **above 0.011"**, loosen the socket head cap screws and **push down** on the knuckle assembly until the proper vertical end play is achieved.

    If the clearance is **below 0.008"**, loosen the socket head cap screws and **pull up** on the knuckle assembly until the proper vertical end play is achieved.

NOTE

ONLY if the vehicle is built **prior to July 2011** equipped with the **STEERTEK** axle can the vertical end play be further adjusted with a shim.

STEERTEK (prior to August 1, 2011)

- If the vertical clearance is above 0.011", add a 0.005" shim
- If the vertical clearance is below 0.008", it may be necessary to remove a 0.005" shim

NOTE

The Hendrickson Genuine part, socket head cap screw comes with a pre-applied loctite compound.

⚠ WARNING

PRIOR TO INSTALLATION ENSURE THAT ALL RESIDUAL LOCTITE MATERIAL IS REMOVED FROM THE MOUNTING BOLTS AND THE THREAD BORES IN THE UPPER STEERING KNUCKLE, AND NEW LOCTITE 277 OR EQUIVALENT IS APPLIED TO HELP ENSURE THAT THE BOLTS SUSTAIN THE PROPER TORQUE REQUIREMENT. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE.

14. Remove one old socket head cap screw and replace with new socket head cap screw.
15. Remove second socket head cap screw and replace with new socket head cap screw. Tighten both socket head cap screws to 175-200 foot pounds torque.
16. Recheck the vertical end play with the dial indicator, see Figure 9-84 or a 0.010" feeler gauge.
17. Remove the brake spider bolts, they should thread out freely.
18. Remove the bottle jack and continue assembling the wheel ends.

IMPORTANT NOTE

It is critical to apply Loctite to the three brake spider bolts to ensure that these bolts sustain the proper torque requirement of steering knuckle assembly.

19. Apply loctite to the three brake spider bolts prior to installation into the brake spider. Tighten bolts to 175-200 foot pounds torque.

⚠ WARNING

DO NOT GREASE KNUCKLES WITHOUT THE BRAKE SPIDER INSTALLED AND TIGHTENED TO PROPER TORQUE. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE RESULTING IN FAILURE AND LOSS OF VEHICLE CONTROL, POSSIBLY CAUSING PERSONAL INJURY OR PROPERTY DAMAGE.

20. Install the tie rod end into the lower steering knuckle arm.
21. Tighten the castle nuts to 185 foot pounds torque then rotate the castle nut to the next castle slot and install cotter pin.
22. Install the drag link into the steering arm and tighten to the vehicle manufacturer's specifications.
23. Install new O-rings on the grease caps and lubricate O-rings with grease.
24. Install grease caps and new retaining rings. Note the grease caps on the STEERTEK NXT are threaded, tighten to 50-70 foot pounds torque, see Figures 9-85 and 9-86. **Allow** 30 minutes for thread sealant to cure before greasing.

FIGURE 9-85

FIGURE 9-86

25. Install brakes, drums, wheels and tires.
26. Remove jack and safety stands.
27. Grease steering knuckles with the vehicle on the floor.
28. Remove the wheel chocks.

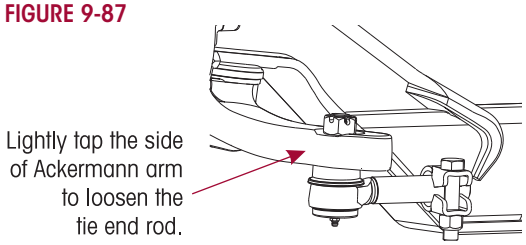
TIE ROD END AND CROSS TUBE

NOTE: Hendrickson supplies different tie rod configurations. Prior to ordering, locate the part number on the tie rod tube, for additional information see Technical Bulletin SEU-0223 or contact Hendrickson.

DISASSEMBLY

1. Chock the wheels.
2. Position the steer axle tires straight ahead.
3. Remove the cotter pin and castle nut.
4. Lightly tap the side of the Ackermann arm to loosen the tie rod end from the Ackermann arm, see Figure 9-87.

FIGURE 9-87



5. Repeat to Steps 3 and 4 to remove the other tie rod end.
6. Remove the cross tube and tie rod ends from the vehicle.
7. Mount the cross tube in a soft jaw vice.
8. Remove the hardware from the clamp on the cross tube.
9. Count the exposed threads on the tie rod end being replaced.
10. Remove the tie rod end from the cross tube.

⚠ WARNING DO NOT HEAT THE CROSS TUBE WITH A TORCH TO FACILITATE THE REMOVAL OF THE TIE ROD END. THE USE OF SUCH HEAT CAN ADVERSELY AFFECT THE STRENGTH OF THE CROSS TUBE. A COMPONENT DAMAGED IN THIS MANNER WILL RESULT IN LOSS OF WARRANTY, AND CAN RESULT IN THE AND LOSS OF VEHICLE CONTROL, AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

11. If the opposing tie rod end is being replaced repeat Steps 8 through 10.
12. Inspect the cross tube for dents, cracks, or thread damage. Replace the cross tube if needed.

ASSEMBLY

1. Lubricate the new tie rod end threads with Anti-Seize.

NOTE When installing the cross tube the thread direction of the tie rod ends are as follows:
- A right hand threaded tie rod end will be installed into the right side Ackermann arm.
- A left hand threaded tie rod end will be installed into the left side Ackermann Arm.

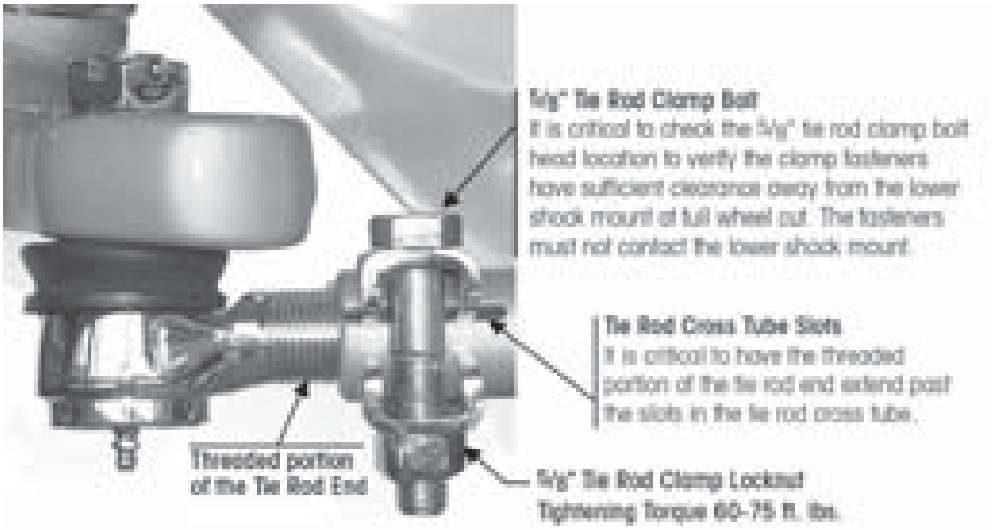
2. Install the new tie rod end into the cross tube, leaving the same amount of threads exposed that were counted on the failed tie rod end prior to removal.

⚠ WARNING THE THREADED PORTION OF THE TIE ROD END MUST EXTEND PAST THE SLOTS INTO THE TIE ROD CROSS TUBE, SEE FIGURE 9-88. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE, LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

⚠ WARNING IT IS CRITICAL TO CHECK THE 5/8" TIE ROD CLAMP BOLT HEAD LOCATION TO VERIFY THE CLAMP FASTENERS HAVE SUFFICIENT CLEARANCE AWAY FROM THE LOWER SHOCK MOUNT AT FULL WHEEL CUT. THE FASTENERS MUST NOT CONTACT THE LOWER SHOCK MOUNT. FAILURE TO DO SO CAN CAUSE ONE OR MORE COMPONENTS TO FAIL CAUSING LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

3. Replace the opposing tie rod end if necessary by repeating Steps 2 and 3.

FIGURE 9-88



WARNING

DO NOT HEAT THE CROSS TUBE WITH A TORCH TO ROTATE THE CROSS TUBE IN THE TIE ROD END. THE USE OF SUCH HEAT CAN ADVERSELY AFFECT THE STRENGTH OF THE CROSS TUBE. A COMPONENT DAMAGED IN THIS MANNER WILL RESULT IN LOSS OF WARRANTY, AND CAN RESULT IN THE LOSS OF VEHICLE CONTROL, AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

4. It is critical that the cross tube rotate in the opposing tie rod end, even if it is not replaced.
5. Install the tie rod end into the lower steering knuckle.
6. Tighten the castle nuts to 185 foot pounds (251 Nm) torque then rotate the castle nut to the next castle slot and install cotter pin.
7. Grease the tie rod ends. Refer to the Lubrication Chart for required lubricant in the Preventive Maintenance Section of this publication.
8. Set the toe, refer to the Toe Adjustment Procedure in the Alignment & Adjustments Section in this publication.

SINGLE TO DUAL HEIGHT CONTROL VALVE CONVERSION

Hendrickson has Dual Height Control Valve Conversion Kits available to convert from a single height control valve to dual height control valves, (Kit number 60961-116), see Parts List Section in this publication for more information.

NOTE

The recommendation of the vehicle manufacturer is that dual height control valves are only to be installed on the front suspension when the rear suspension is equipped with a single height control valve system. This arrangement is best suited to keep the vehicle level versus having dual height control systems on both the front and rear suspensions.

DISASSEMBLY

1. Place vehicle on level floor.
2. Chock the wheels.

WARNING

PRIOR TO AND DURING DEFLATION AND INFLATION OF THE FRONT 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.

3. See Air Spring Warnings and instructions in the Important Safety Notice Section of this publication prior to deflating or inflating the suspension system.
4. Remove the air from the air system by disconnecting the height control valve linkage at the rubber grommet and allowing the lever to drop. This will exhaust air from the system.

⚠ CAUTION

THE HEIGHT CONTROL VALVE FITTINGS ARE NON-SERVICEABLE. IF THE HEIGHT CONTROL VALVE IS TO BE RE-INSTALLED; CARE MUST BE TAKEN TO REMOVE DIRT AND DEBRIS FORM THE PUSH-TO-CONNECT FITTINGS. FAILURE TO DO SO CAN RESULT IN THE PUSH-TO-CONNECT FITTINGS FAILING TO SEAL PROPERLY WITH THE AIR LINE.

5. Disconnect the delivery air line to the right air spring at the T-fitting.
6. Remove the T-fitting from the right air spring.

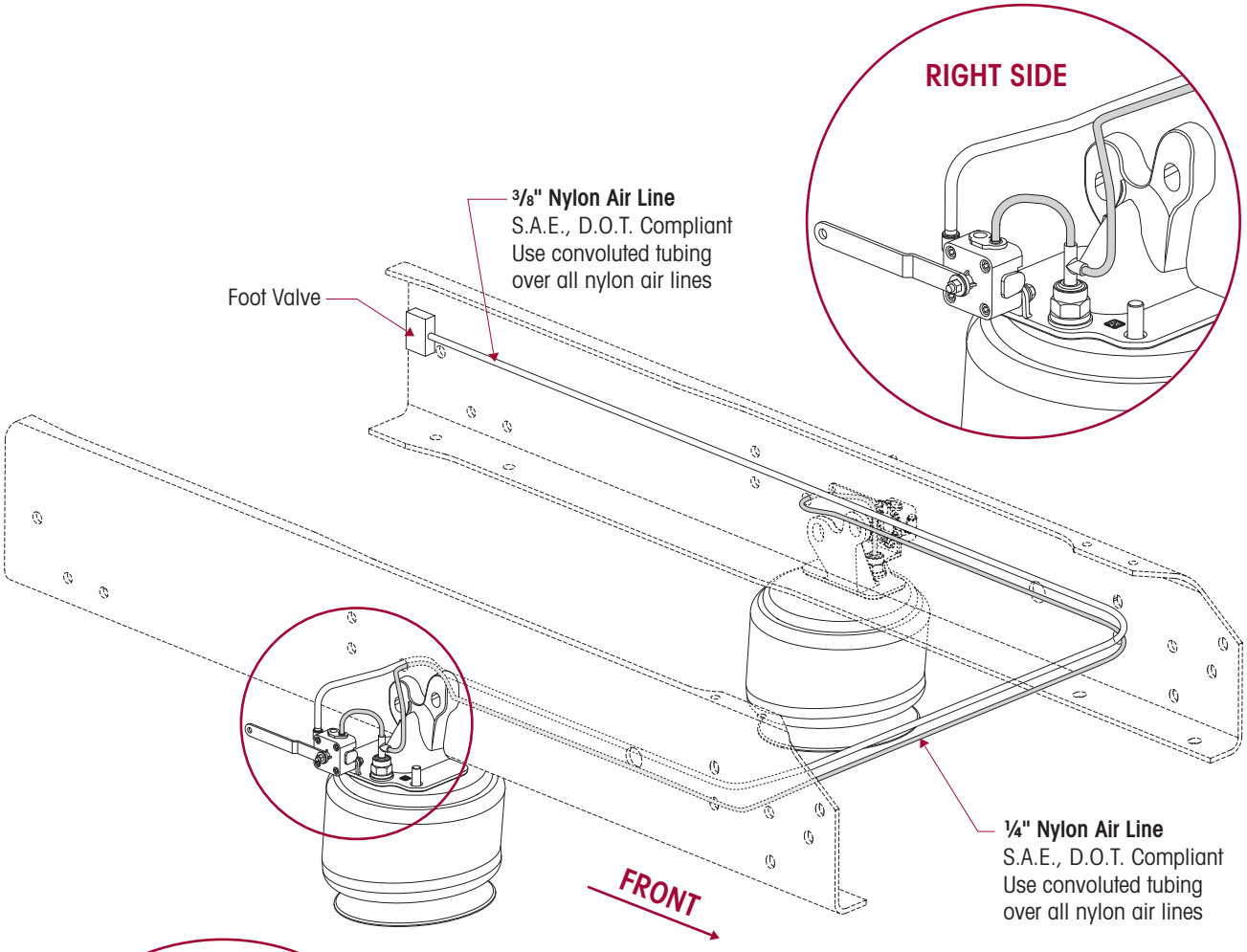
ASSEMBLY

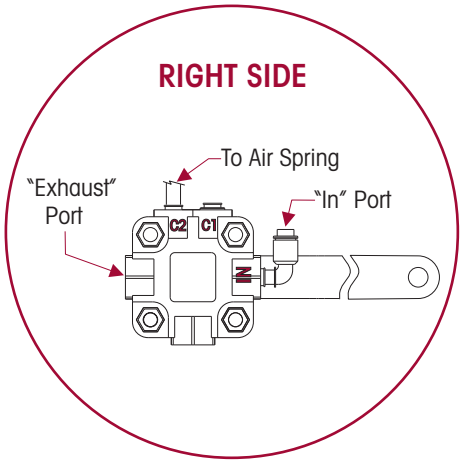
1. Install the new left side height control valve assembly on the left side upper air spring bracket and connect the new height control valve linkage to the bracket on the top pad.
2. Inspect the air line removed from the T-fitting to the right air spring. Trim the end square if necessary. Insert the air line into the right air spring.
3. Install a new air line from the left height control valve delivery port into the left air spring. Cut the new line to length and ensure that the ends of the line are cut square. Make sure that air lines are fully seated in the fittings.
4. Acquire access to the air lines inside the left frame rail. Cut plastic ties as necessary to gain access to the air lines routed inside the frame rail.
5. The supply line from the foot valve will continue to be the supply line for both height control valves. It will be necessary to cut the supply line install a T-fitting at or near a frame rail hole location closest to the left height control valve.
6. Cut to length and install an air line from the T-fitting to the right height control valve supply port.
7. Trace the former left air spring delivery line (which will now be the left height control valve supply line).
8. Cut this line to length and insert into the T-fitting.
9. Install new plastic ties and secure all air lines inside the right frame rail. This should complete the installation and plumbing of the height control valves, see Dual Height Control Valve in the Plumbing Diagram Section of this publication.
10. Air up vehicle system to proper air pressure.
11. Install the height control valve linkage(s) and inflate the suspension to normal operating pressure.
12. Remove chocks from wheels.
13. Verify proper ride height, see Alignment & Adjustments Section of this publication.

SECTION 10
AIRTEK Plumbing Diagrams

SINGLE HEIGHT CONTROL VALVE (Originally equipped from the manufacturer)

When replacing or installing nylon air line tubing into quick-connect fittings it is critical that the end of the air line is cut square. Improper cut of the end of the air line tubing can cause the air line to seat improperly in the quick connect fitting causing air leakage.

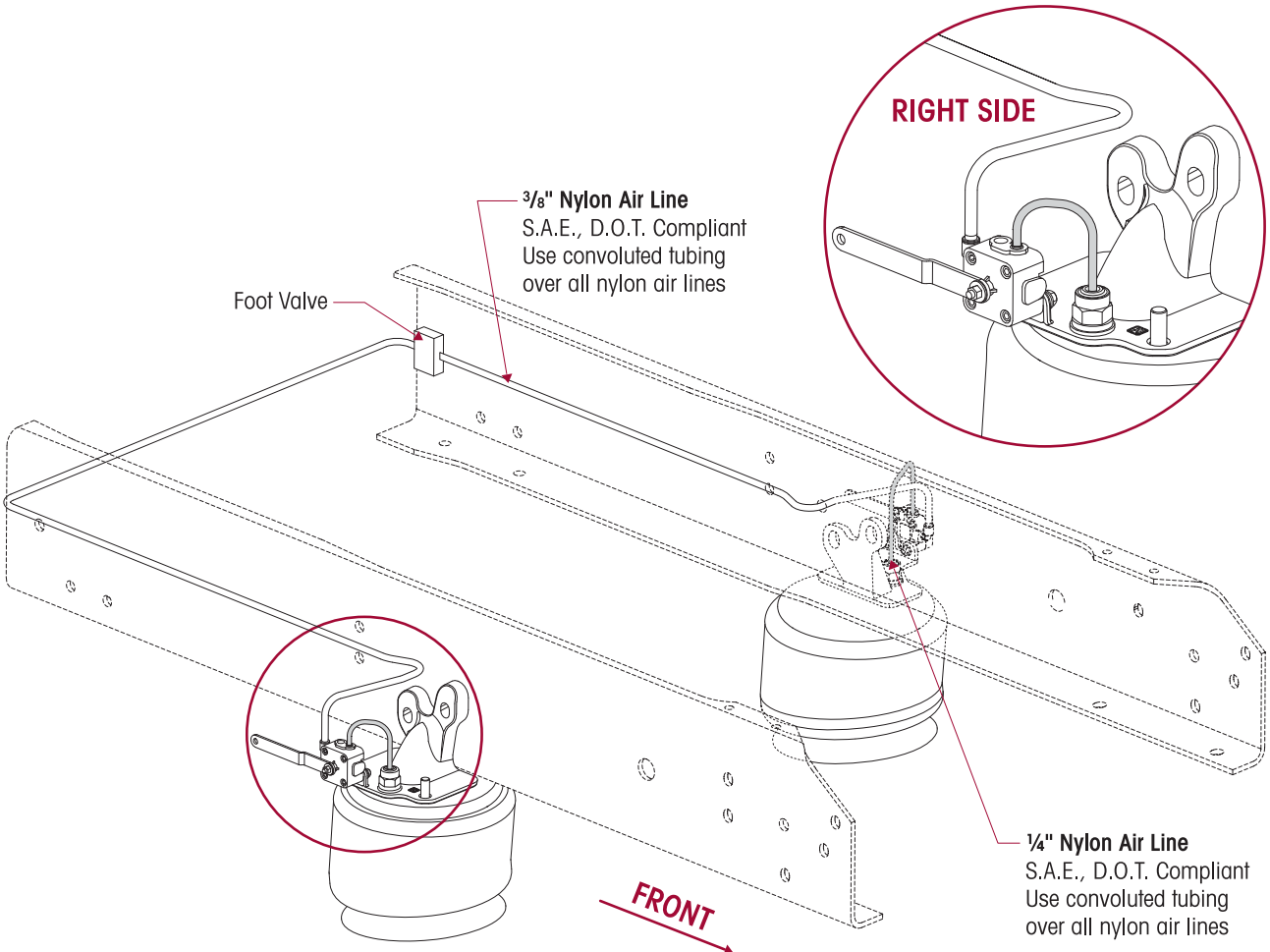


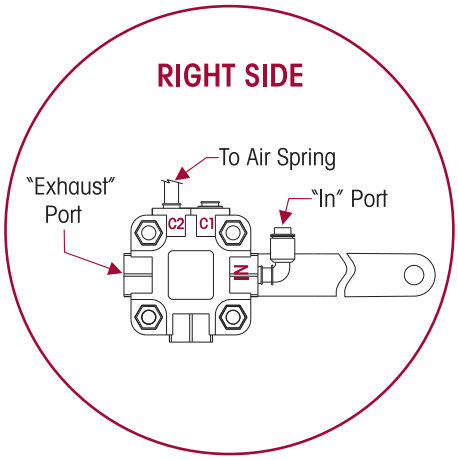


DUAL HEIGHT CONTROL VALVES (Originally equipped from the manufacturer)

When replacing or installing nylon air line tubing into quick-connect fittings it is critical that the end of the air line is cut square. Improper cut of the end of the air line tubing can cause the air line to seat improperly in the quick connect fitting causing air leakage.

The recommendation of the vehicle manufacturer is that dual height control valves are only to be installed on the front suspension when the rear suspension is equipped with a single height control valve system. This arrangement is best suited to keep the vehicle level versus having dual height control systems on both the front and rear suspensions.

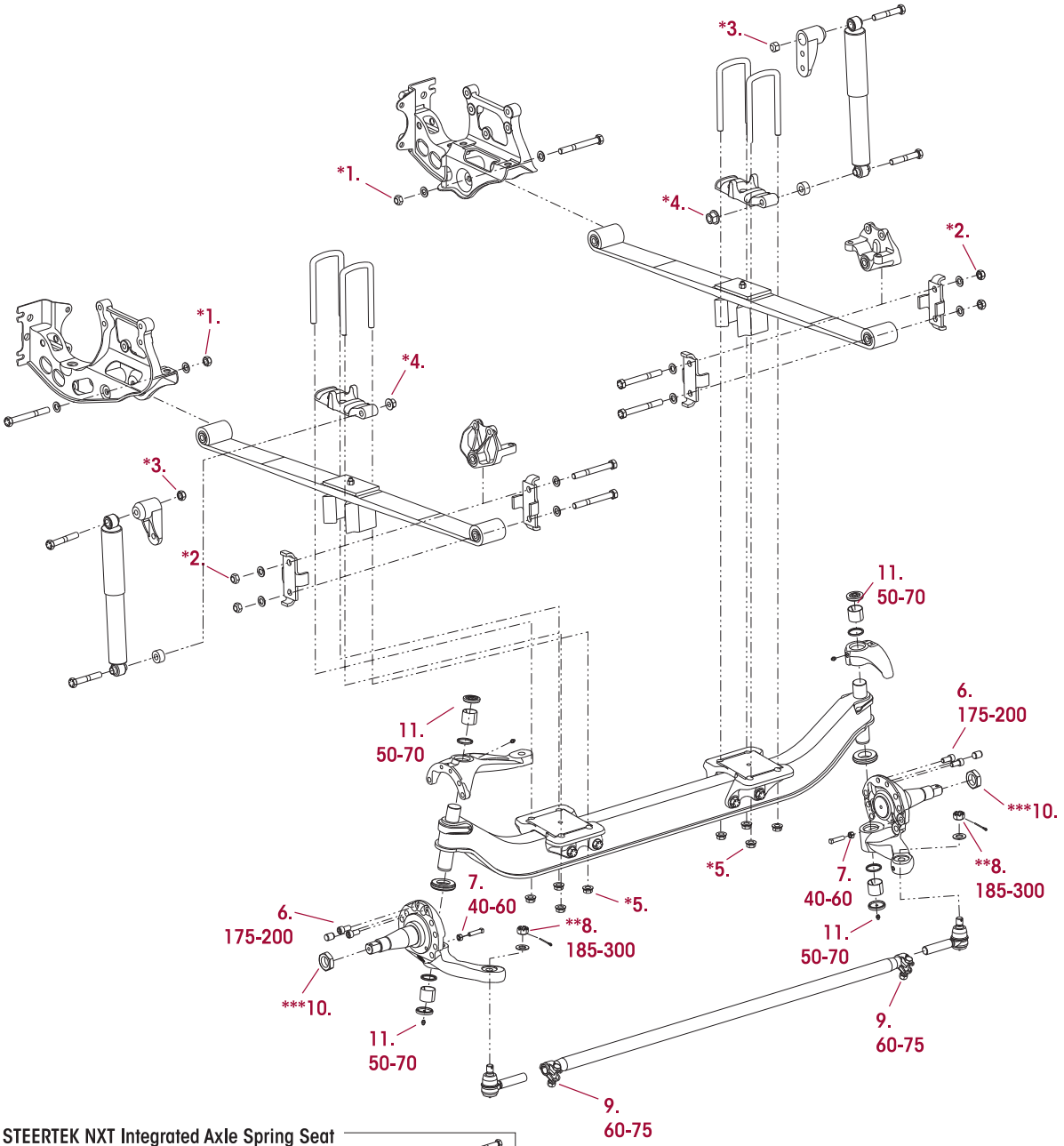




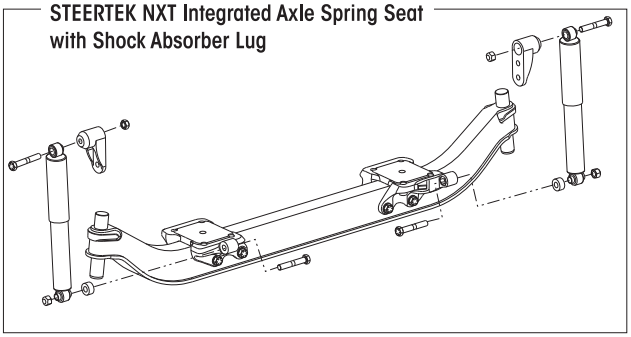
Torque Specifications

SOFTEK Monoleaf with STEERTEK NXT Axle
International Models – LoneStar / ProStar
Vehicles built AFTER August 2011

HENDRICKSON RECOMMENDED TORQUE VALUES
PROVIDED IN FOOT POUNDS



STEERTEK NXT Integrated Axle Spring Seat
with Shock Absorber Lug



SOFTEK Monoleaf with STEERTEK NXT Axle
Vehicles built AFTER August 2011

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS				
NO.	**COMPONENT**	**QUANTITY**	**SIZE**	***TORQUE VALUE in foot pounds**
1.	Front Frame Hanger to Front Leaf Spring Eye	2	¾"	*
2.	Rear Spring Hanger to Rear Spring Mount	4	¾"	*
3.	Upper Shocks Eye Bolts	2	¾"	*
4.	Lower Shocks Eye Bolts	2	¾"	*
5.	Clamp Group Hardware	8	¾"	*
	WARNING: ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.			
6.	Knuckle Attachment Bolt (Socket Head Cap Screw)	4	⅝"	175-200
7.	Knuckle / Axle Wheel Stop Bolt	2	⅝" Jam Nut	40-60
8	Tie Rod Ends / Drag Link to Steering Knuckle	2	⅞" Castle Nut	**185-300
9	Tie Rod Tube to Tie Rod Ends	2	⅝"	60-75
10	Spindle Nut	2	1½"	***
11	Grease Cap Assembly	4	½"	50-70

• All hardware ¼" and greater is Grade 8 with no additional lubrication.

NOTE: Frame fasteners are furnished and installed by the vehicle manufacturer. Vehicle manufacturer may use an equivalent HUCK fastener at frame mount.

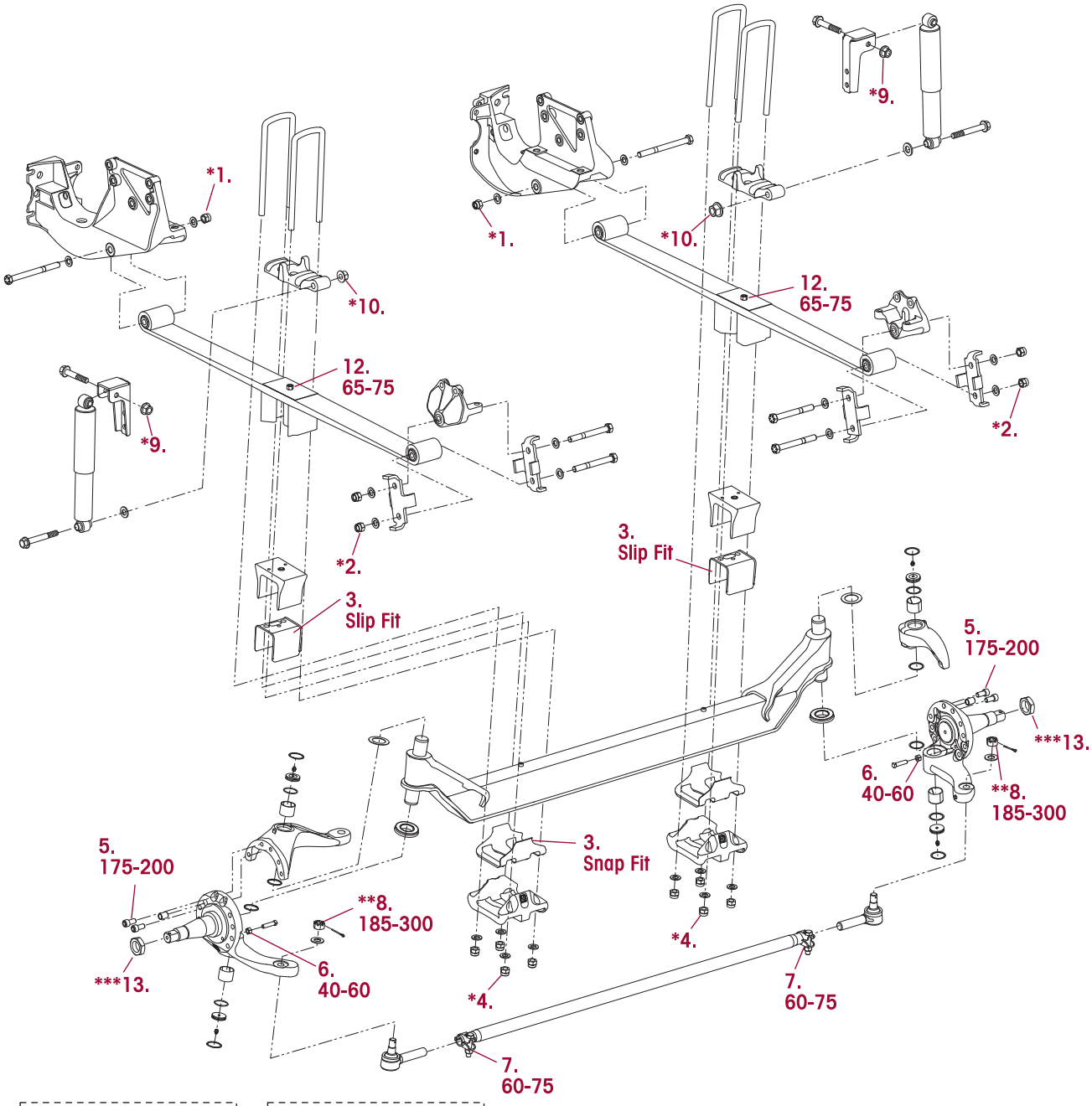
* All hardware information *highlighted in gray* in the matrix denotes fasteners originally supplied by the vehicle manufacturer. Follow vehicle manufacturer's torque specifications. Hendrickson is not responsible for maintaining vehicle manufacturer's torque values.

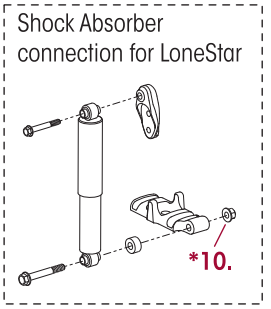
** Torque to 185 foot lbs., advance nut to next hex face to install cotter pin. **DO NOT** back off nut for cotter pin installation.

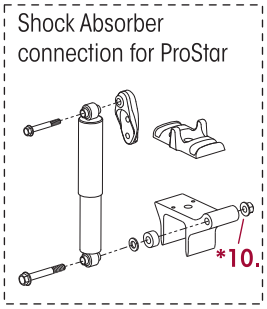
*** Torque value based on wheel end hardware. Contact vehicle manufacturer.

International Models LoneStar/ProStar/9200/9400/8600
Vehicles built PRIOR to August 2011

HENDRICKSON RECOMMENDED TORQUE VALUES
PROVIDED IN FOOT POUNDS







SOFTEK MONOLEAF WITH STEERTEK AXLE
Vehicles built PRIOR to August 2011

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS				
NO.	COMPONENT	QUANTITY	SIZE	*TORQUE VALUE in foot pounds
1	Front Frame Hanger to Front Leaf Spring Eye	2	¾"	*
2	Rear Spring Hanger to Rear Spring Mount	4	¾"	*
3	Axle Wrap Liners for Clamp Group	4	Formed	Slip Fit
	WARNING: DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.			
4	Clamp Group Hardware	8	¾"	*
	WARNING: ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.			
5	Knuckle Attachment Bolt (Socket Head Cap Screw)	4	⅝"	175-200
6	Knuckle / Axle Wheel Stop Bolt	2	⅝" Jam Nut	40-60
7	Tie Rod Tube to Tie Rod Ends	2	⅝"	60-75
8	Tie Rod Ends / Drag Link to Steering Knuckle	2	⅞" Castle Nut	**185-300
9	Upper Shocks Eye Bolts	2	⅝"	*
10	Lower Shocks Eye Bolts	2	¾"	*
11	Upper Shock Mounting Bracket to Frame (not shown)	2	⅝"	*
12	Leaf Spring Center Bolt Nut	2	½"	65-75
13	Spindle Nut	2	1½"	***

• All hardware ¼" and greater is Grade 8 with no additional lubrication.

NOTE: Frame fasteners are furnished and installed by the vehicle manufacturer. Vehicle manufacturer may use an equivalent HUCK fastener at frame mount.

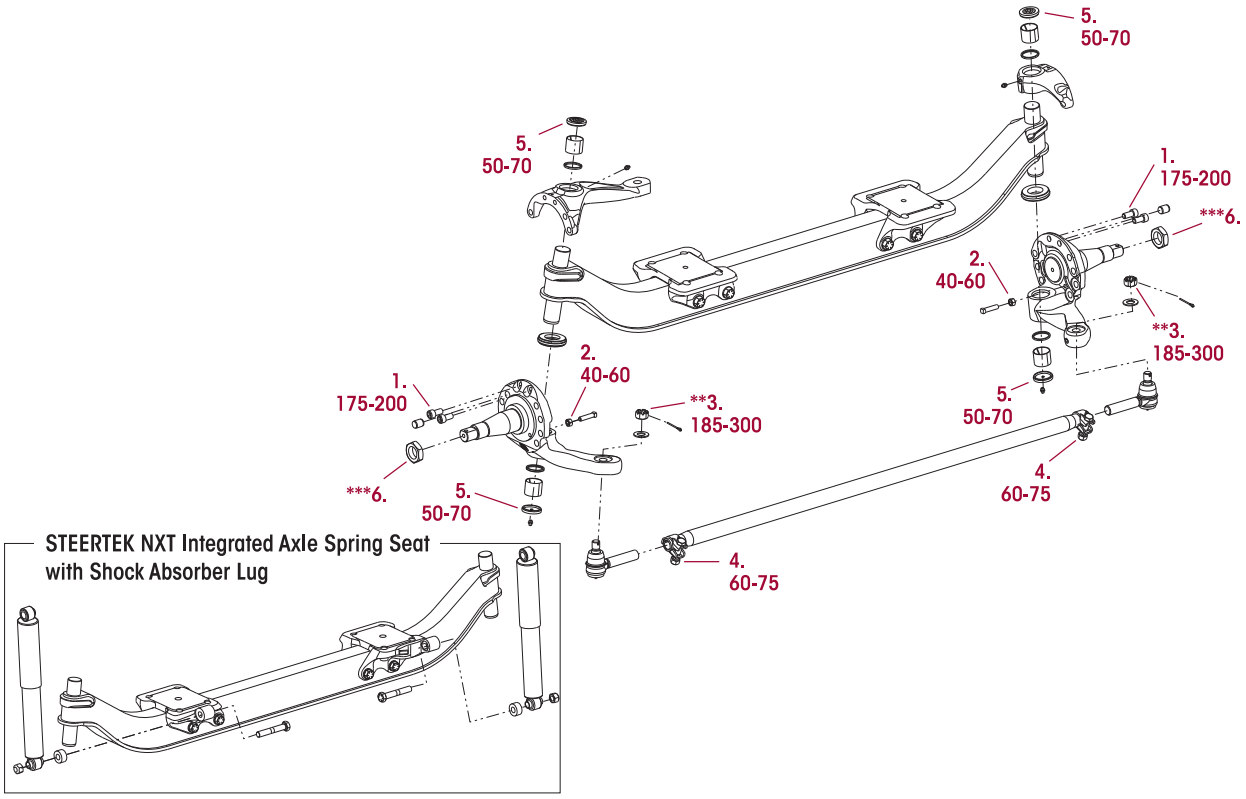
* All hardware information *highlighted in gray* in the matrix denotes fasteners originally supplied by the vehicle manufacturer. Follow vehicle manufacturer's torque specifications. Hendrickson is not responsible for maintaining vehicle manufacturer's torque values.

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

*** Torque value based on wheel end hardware. Contact vehicle manufacturer.

International Models ProStar / TranStar
Vehicles built AFTER August 2011

HENDRICKSON RECOMMENDED TORQUE VALUES PROVIDED IN FOOT POUNDS



STEERTEK NXT AXLE FOR 2-LEAF MECHANICAL SUSPENSION
Vehicles built AFTER August 2011

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS				
NO.	**COMPONENT**	**QUANTITY**	**SIZE**	***TORQUE VALUE in foot pounds**
1	Knuckle Attachment Bolt (Socket Head Cap Screw)	4	5/8"	175-200
2	Knuckle / Axle Wheel Stop Bolt	2	5/8" Jam Nut	40-60
3	Tie Rod Tube to Tie Rod Ends	2	5/8"	60-75
4	Tie Rod Ends / Drag Link to Steering Knuckle	2	7/8" Castle Nut	**185-300
5	Grease Cap Assembly	4	1/2"	50-70
6	Spindle Nut	2	1 1/2"	***

• All hardware ¼" and greater is Grade 8 with no additional lubrication.

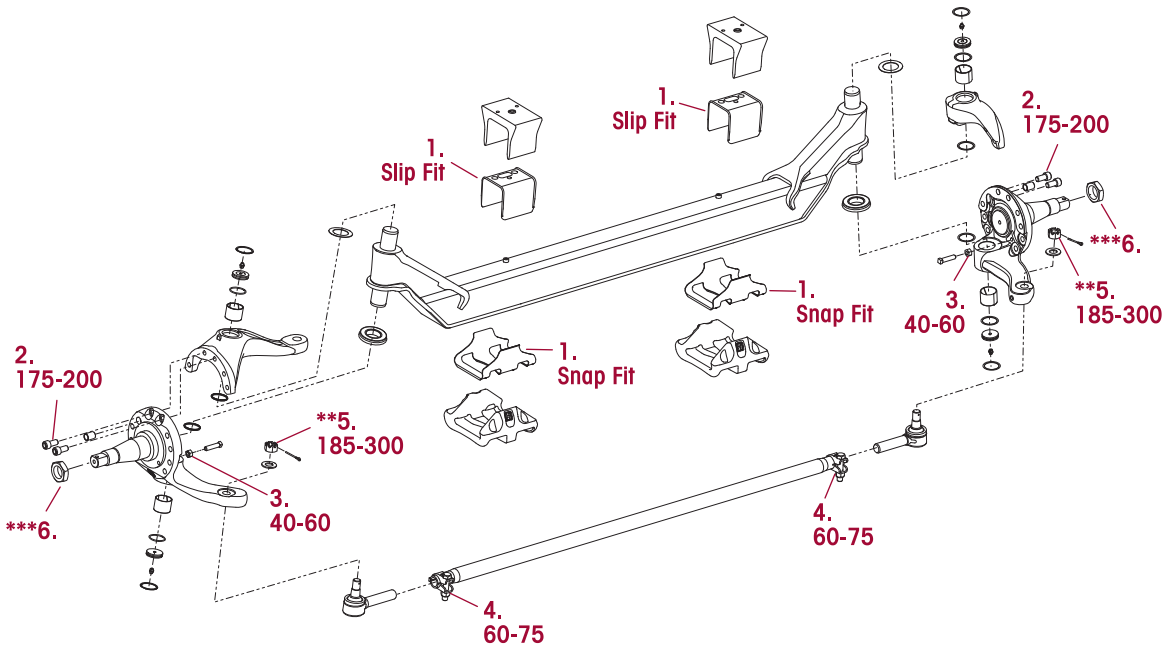
NOTE: Frame fasteners are furnished and installed by the vehicle manufacturer. Vehicle manufacturer may use an equivalent HUCK fastener at frame mount.

* Follow vehicle manufacturer's torque specifications. Hendrickson is not responsible for maintaining vehicle manufacturer's torque values.

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

*** Torque value based on wheel end hardware. Contact vehicle manufacturer.

International Models 9200 / 9400 / 8600
Vehicles built PRIOR to August 2011



STEERTEK AXLE FOR 2-LEAF MECHANICAL SUSPENSION
Vehicles built PRIOR to August 2011

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS				
NO.	**COMPONENT**	**QUANTITY**	**SIZE**	***TORQUE VALUE in foot pounds**
1	Axle Wrap Liners for Clamp Group	4	Formed	Slip Fit
	WARNING: DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.			
2	Knuckle Attachment Bolt (Socket Head Cap Screw)	4	5/8"	175-200
3	Knuckle / Axle Wheel Stop Bolt	2	5/8" Jam Nut	40-60
4	Tie Rod Tube to Tie Rod Ends	2	5/8"	60-75
5	Tie Rod Ends / Drag Link to Steering Knuckle	2	7/8" Castle Nut	**185-300
6	Spindle Nut	2	1½"	***
• All hardware ¼" and greater is Grade 8 with no additional lubrication.				

NOTE: Frame fasteners are furnished and installed by the vehicle manufacturer. Vehicle manufacturer may use an equivalent HUCK fastener at frame mount.

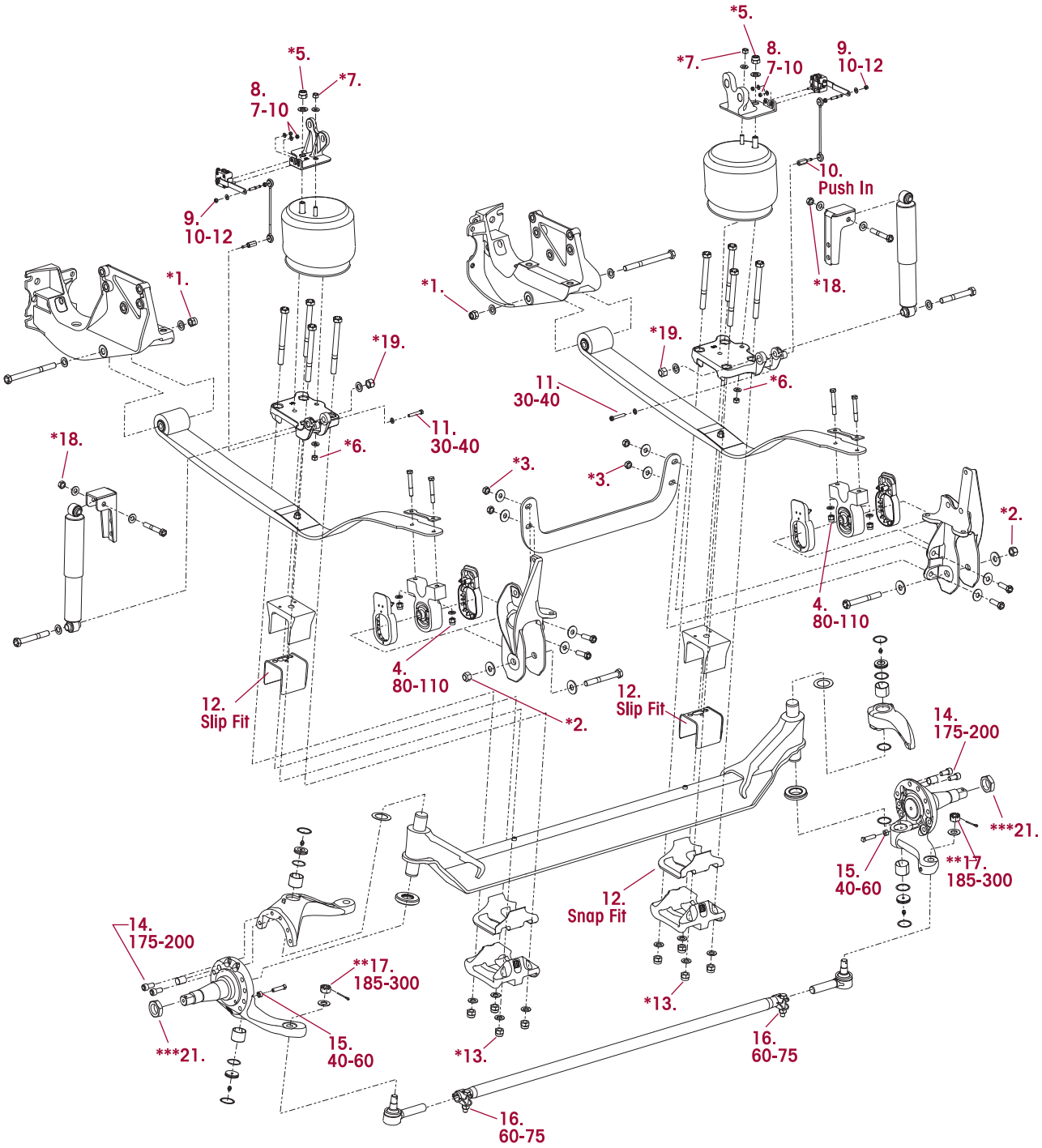
* Follow vehicle manufacturer's torque specifications. Hendrickson is not responsible for maintaining vehicle manufacturer's torque values.

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

*** Torque value based on wheel end hardware. Contact vehicle manufacturer.

International Models 9200 / 9400
Vehicles built AFTER September 2006

HENDRICKSON RECOMMENDED TORQUE VALUES
PROVIDED IN FOOT POUNDS



AIRTEK

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS				
NO.	COMPONENT	QUANTITY	SIZE	*TORQUE VALUE in foot pounds
1	Front Frame Hanger to Front Leaf Spring Eye	2	¾"	*
2	Rear Spring Hanger to Rear Spring Mount	2	¾"	*
3	Rear Spring Hanger to Belly Band	4	⅝"	*
4	Rear Spring Mount to Leaf Spring	2	½"	80-110
5	Air Spring to Air Spring Bracket	2	¾"	*
6	Air Spring to Top Pad	2	½"	*
7	Air Spring Bracket to Frame	2	⅝"	*
8	Height Control Valve to Air Spring Bracket	2	¼"	7-10
9	Linkage Rod to Height Control Valve Arm	1	5/16"	10-12
10	Linkage Rod to Link Mount	None	Grommet	Push In
11	Link Mount to Top Pad	1	⅜"	30-40
12	Axle Wrap Liners for Clamp Group	4	Formed	Slip Fit
	WARNING: DO NOT ASSEMBLE CLAMP GROUP WITHOUT AXLE WRAP LINERS. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.			
13	Clamp Group Hardware	8	¾"	*
	WARNING: ENSURE CLAMP GROUP IS ALIGNED PROPERLY PRIOR TO TIGHTENING HARDWARE. FAILURE TO DO SO CAN CAUSE LOSS OF VEHICLE CONTROL, PROPERTY DAMAGE OR PERSONAL INJURY.			
14	Knuckle Attachment Bolt (Socket Head Cap Screw)	4	⅝"	175-200
15	Knuckle / Axle Wheel Stop Bolt	2	⅝" Jam Nut	40-60
16	Tie Rod Tube to Tie Rod Ends	2	⅝"	60-75
17	Tie Rod Ends / Drag Link to Steering Knuckle	2	⅞" Castle Nut	**185-300
18	Upper Shocks Eye Bolts	2	⅝"	*
19	Lower Shocks Eye Bolts	2	¾"	*
20	Upper Shock Mounting Bracket to Frame (not shown)	2	⅝"	*
21	Spindle Nut	2	1½"	***

• All hardware ¼" and greater is Grade 8 with no additional lubrication.

NOTE: Frame fasteners are furnished and installed by the vehicle manufacturer. Vehicle manufacturer may use an equivalent HUCK fastener at frame mount.

* All hardware information *highlighted in gray* in the matrix denotes fasteners originally supplied by the vehicle manufacturer. Follow vehicle manufacturer's torque specifications. Hendrickson is not responsible for maintaining vehicle manufacturer's torque values.

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

*** Torque value based on wheel end hardware. Contact vehicle manufacturer.

SECTION 12
Troubleshooting Guide

AIRTEK TROUBLESHOOTING GUIDE		
CONDITION	**POSSIBLE CAUSE**	**CORRECTION**
Worn or damaged kingpins and kingpin bushings	Dirt in system– contaminated lubricant	Polish and inspect kingpin, replace bushing and seals, then follow specified lubrication procedures
	Incorrect lubricant	Lubricate axle with specified lubricant
	Axle not lubricated at scheduled frequency	Lubricant axle at scheduled frequency
	Incorrect lubrication procedures	Use correct lubrication procedures
	Lubrication interval not compatible with operating conditions	Change lubrication interval to match operating conditions
	Worn or missing seals	Replace worn or missing seals
Vibration or shimmy of front axle during operation	Caster out of specification	Check ride height and adjust caster to specification
	Wheels and/or tires out of balance	Balance or replace wheels and/or tires
	Worn shock absorbers	Replace shock absorbers
	Worn thrust washers and rear hanger clamps	Replace thrust washers and rear hanger clamps
	Broken engine mount	Replace engine mount
	Wheel bearing adjustment	Adjust wheel bearing to the vehicle manufacturer's specifications.
Excessive wear on tires or uneven tire tread wear	Tires have incorrect air pressure	Adjust tire pressure to manufacturer's specification.
	Tires out of balance	Balance or replace tires
	Incorrect tandem axle alignment	Align tandem axles
	Incorrect toe setting	Adjust toe-in to manufacturer's specification
	Incorrect steering arm geometry	Repair steering system as necessary
	Worn kingpin bushings	Replace kingpin bushings
	Excessive wheel bearing end play	Check specified wheel nut torque, replace worn or damaged wheel bearings
	Wheel bearing adjustment	Adjust wheel bearing to the vehicle manufacturer's specifications.
Vehicle is hard to steer	Low pressure in the power steering system	Repair power steering system
	Steering linkage needs lubrication	Lubricate steering linkage
	Steering knuckles are binding	Check vertical end play
	Incorrect steering arm geometry	Repair steering system as necessary
	Caster out of specification	Check ride height and adjust caster to specification
	Tie rod ends hard to move	Replace tie rod ends
	Worn thrust bearing	Replace thrust bearing
	Steering gear box internal problem	Perform steering gear troubleshooting procedures per steering gear manufacturing guidelines.

AIRTEK TROUBLESHOOTING GUIDE (CONTINUED)		
CONDITION	**POSSIBLE CAUSE**	**CORRECTION**
Tie rod ends are worn and require replacement	Tie rod ends need lubrication	Lubricate tie rod end. Make sure lubrication schedule is followed
	Severe operating conditions	Increase frequency of inspection and lubrication intervals
	Damaged boot on tie rod end	Replace tie rod end
Bent or broken cross tube, tie rod end ball stud, or tie rod end NOTE: Damaged components require replacement	Pump/gear relief valve pressure setting exceeds system specifications	Adjust power steering system to manufacturer's specified pressure
	Steering gear poppets improperly set or malfunctioning	Check for proper operation or adjust poppets to vehicle manufacturer's specifications
	Axle stops improperly set	Set axle stops to vehicle manufacturer's specifications
	Severe duty cycle service	Increase frequency of inspection and lubrication intervals
Worn or broken steering ball stud	Drag link fasteners lightened past specified torque	Tighten drag link fasteners to the specified torque
	Lack of lubrication or incorrect lubricant	Lubricate linkage with specified lubricant
	Power steering stops out of adjustment	Adjust steering stops to vehicle manufacturer's specifications
Suspension has harsh or bumpy ride	Air spring not inflated	Check air supply to air spring, repair as necessary
	Air spring ride height out of specification	Adjust ride height to proper specification
	Broken or worn leaf spring	Replace leaf spring
	Front suspension overloaded	Redistribute steer axle load
Restricted steering radius	Steering stops not adjusted correctly	Adjust steering stops to achieve correct wheel cut
Vehicle leans	Ride height incorrect	Adjust ride height to specification
	Air spring(s) are not inflated	Repair source of air pressure loss
	Leaf spring broken	Replace leaf spring
	Excessive weight bias	Contact the vehicle manufacturer or Hendrickson Tech Services
Vehicle wanders	Caster out of specifications	Check ride height prior and adjust caster to specification
	Incorrect toe setting	Adjust toe to specification
	Fifth wheel not greased	Grease fifth wheel
	Air in the power steering system	Remove air form the power steering systems
	Rear ride height out of adjustment	Adjust ride height to specification
	Front ride height out of adjustment	Adjust ride height to specification

SOFTEK MONOLEAF TROUBLESHOOTING GUIDE		
CONDITION	**POSSIBLE CAUSE**	**CORRECTION**
Worn or damaged kingpins and kingpin bushings	Dirt in system– contaminated lubricant	Polish and inspect kingpin, replace bushing and seals, then follow specified lubrication procedures
	Incorrect lubricant	Lubricate axle with specified lubricant
	Axle not lubricated at scheduled frequency	Lubricant axle at scheduled frequency
	Incorrect lubrication procedures	Use correct lubrication procedures
	Lubrication interval not compatible with operating conditions	Change lubrication interval to match operating conditions
	Worn or missing seals	Replace worn or missing seals
Vibration or shimmy of front axle during operation	Caster out of specification	Adjust caster to specification
	Wheels and/or tires out of balance	Balance or replace wheels and/or tires
	Worn shock absorbers	Replace shock absorbers
	Wheel bearing adjustment	Adjust wheel bearing to the vehicle manufacturer's specifications.
Excessive wear on tires or uneven tire tread wear	Tires have incorrect air pressure	Adjust tire pressure to manufacturer's specification.
	Tires out of balance	Balance or replace tires
	Incorrect axle alignment	Align axles
	Incorrect toe setting	Adjust toe-in to manufacturer's specification
	Incorrect steering arm geometry	Repair steering system as necessary
	Excessive wheel bearing end play	Check specified wheel nut torque, replace worn or damaged wheel bearings
	Wheel bearing adjustment	Adjust wheel bearing to the vehicle manufacturer's specifications.
Vehicle is hard to steer	Low pressure in the power steering system	Repair power steering system
	Steering linkage needs lubrication	Lubricate steering linkage
	Steering knuckles are binding	Check vertical end play
	Incorrect steering ar geometry	Repair steering system as necessary
	Caster out of specification	Adjust caster to specification
	Tie rod ends hard to move	Replace tie rod ends
	Worn thrust bearing	Replace thrust bearing

SECTION 13
Alignment Specifications

*AIRTEK AND SOFTEK FOR INTERNATIONAL TRUCK VEHICLES

FRONT SUSPENSION ALIGNMENT SPECIFICATIONS

CAMBER[1]	DESIGN SPECIFICATION		RANGE			
	AIRTEK	SOFTEK	AIRTEK		SOFTEK	
			MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
LEFT	0.00°±1.0°	0.0°±1.0°	-1.0°	+1.0°	-1.0°	+1.0°
RIGHT	-0.25°±1.0°	-0.25°±1.0°	-1.25°	+0.75°	-1.25°	+0.75°
CROSS	0.25°±1.0°	0.0°	-0.75°	+1.25°	—	+2.0°

CAMBER NOTES:

1 The camber angle is not adjustable. **DO NOT** bend axle or otherwise try to adjust camber. If found out of specification, notify Hendrickson Tech Services for further information.

CASTER[1,2]	DESIGN SPECIFICATION		RANGE			
	AIRTEK	SOFTEK	AIRTEK		SOFTEK	
			MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
LEFT	6.0°±1.0°	5.0°±1.0°	+5.0°	+7.0°	+4.0°	+6.0°
RIGHT	6.0°±1.0°	5.0°±1.0°	+5.0°	+7.0°	+4.0°	+6.0°
CROSS[3]	0.0°	0.0°	—	+1.5°	—	+1.5°

CASTER NOTES:

1 Caster is determined with the vehicle at specified ride height for air suspension or at rated load for mechanical suspension systems. It is critical that the vehicle front and rear ride height is within specifications prior to performing a caster measurement or adjustment. See Hendrickson ride height specifications and procedure.

2 In most cases actual vehicle caster is defined with the frame rails at zero slope. Refer to the vehicle manufacturer's specifications for correct frame rail slope. (Both the alignment surface and the vehicle's frame rails should be level during execution of alignment procedures). For vehicles with a positive frame rake (higher in rear) add the frame slope (in degrees) to the caster reading to determine true vehicle caster.

3 **The Cross caster angle is not adjustable** – **DO NOT** bend axle or otherwise try to adjust cross caster. If found out of specifications notify Hendrickson Tech Services for further information. Changes to caster can be attained by using caster shims as provided by the vehicle manufacturer or chassis and body manufacturer. Caster shims must match, side to side, to reduce uneven loading to the suspension components. **The use of two different angle caster shims will not correct cross caster.**

4 **Example of caster adjustment:** 4.5° RH/5° LH, would require one, 1.0 shim on each side to increase caster and achieve 5.50° RH/6.00° LH, which is in specification. **DO NOT** attempt to use uneven shims.

Hendrickson recommends the following TMC[2] practices:

	DESIGN SPECIFICATION[1]	RANGE	
		MINIMUM	MAXIMUM
TOTAL TOE[2]	1/16" ± 1/32" (0.06" ± 0.03")	1/32" (0.03")	3/32" (0.09")

TOE-IN NOTES:

1 Toe-in is to be set and adjusted in the normal vehicle unladed configuration. Actual vehicle curb weight on the ground. Toe should be checked at the tires front and rear tread center, at a distance above ground equal to the tire's rolling radius.

2 In most instances total toe is set by the vehicle manufacturer or body builder. Consult the vehicle manufacturer for specifications.

* For International 2-Leaf mechanical suspension equipped with STEERTEK axle, refer to vehicle manufacturer's specifications.

SECTION 14
Reference Material

This technical publication covers Hendrickson Truck Suspension's recommended procedures for our parts/products. Other components play a major role in overall performance and Hendrickson recommends you follow the specific vehicle manufacturer's recommendation for care and maintenance. Some recommended procedures have been developed by The Technology & Maintenance Council (TMC) and Hendrickson supports these recommendations. We have compiled a list of these below.

TMC

To obtain copies of the following RP's, video's, or charts, contact TMC at:

TMC/ATA
2200 Mill Road
Alexandria, VA 22314

Phone: 703-838-1763
website: tmc.truckline.com
online ordering: www.truckline.com/store

Important References

TMC RP 214B	Tire/Wheel End Balance and Runout
TMC RP 216	Radial Tire Conditions Analysis Guide
TMC RP 219A	Radial Tire Wear Conditions and Causes
TMC RP 222A	User's Guide To Wheels and Rims
TMC RP 230	Tire Test Procedures for Tread wear, Serviceability, and Fuel Economy
TMC RP 514	Pre-Alignment Inspection
TMC RP 618	Wheel Bearing Adjustment Procedure
TMC RP 620B	Front End Alignment Steering Geometry
TMC RP 708A	Trailer Axle Alignment
TMC RP 642	Guidelines For Total Vehicle Alignment
TMC RP 644	Wheel End Conditions Analysis Guide
TMC RP 645	Tie Rod End Inspection and Maintenance Procedure

Video's

TMC T0326	Wheel End Maintenance
TMC T0372	Tire Pre-Trip Inspection Guidelines

Other

TMC T0400	Wheel bearing Adjustment Procedure Wall Chart

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