TECHNICAL PROCEDURE

SOFTEK® Front Suspension with STEERTEK™ NXT Axle for Peterbilt Vehicles

SUBJECT: Service Instructions
LIT NO: 17730-367
DATE: April 2026 **REVISION:** A

TABLE OF CONTENTS

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 Hendrickson SOFTEK® front mechanical suspensions with fabricated STEERTEK NXT axles installed on applicable Peterbilt vehicles.

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

It is important to read and understand this entire Technical Procedure publication and all work instructions and safety related information provided by the vehicle manufacturer prior to performing any maintenance, service, repair, or rebuild of this product. The information in this publication contains parts lists, safety information, product specifications, features, proper maintenance, service, repair, and rebuild instructions for the SOFTEK suspension with 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 855-743-3733 (toll-free U.S. and Canada), 630-910-2800 (outside U.S. and Canada) or e-mail: wdtechservices@hendrickson-intl.com.

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

SECTION 2
Product Description

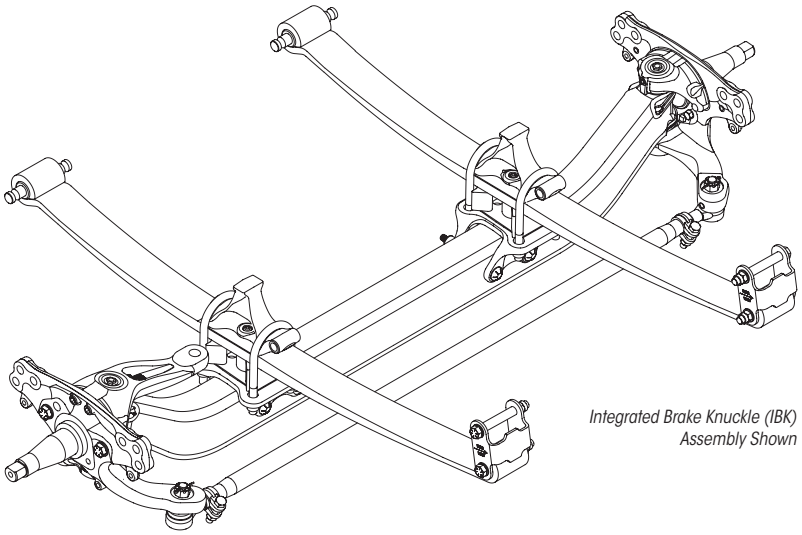
SOFTEK Integrated Front Suspension and Steer Axle System — that works to form an integrated torsion system. Utilizing a system approach, Hendrickson has engineered and optimized the following components to form a system delivering ride, stability and handling characteristics with reduced weight and maintenance.

- **Leaf spring assembly** — With its innovative design, the leaf spring provides superior roll stability, performance and a soft ride. Durable rubber bushings are greaseless and only require periodic inspections.
- **Shock absorbers** — SOFTEK utilizes premium shocks that have been tested and tuned specifically for the suspension system.
- **Frame brackets** — Optimized design delivers weight reduction and proven durability.

STEERTEK NXT Front Steer Axle — The fabricated box-shaped cross section resists horizontal, vertical and twisting forces more effectively than traditional I beam axles to improve handling.

- **Axle Clamp Group** — The Clamp Group consists of the top pad, U-bolts, washers, and locknuts.
- **Integrated Axle Seats** — Improve ground clearance, reduce part count, and simplify assembly.
- **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 a maximum of 50° wheel cut. The two piece knuckle design makes replacing the kingpin bushings easier by eliminating the need to remove the kingpins. Premium kingpin bushings and seals provide enhanced protection from the elements to improve bushing life.

FIGURE 2-1

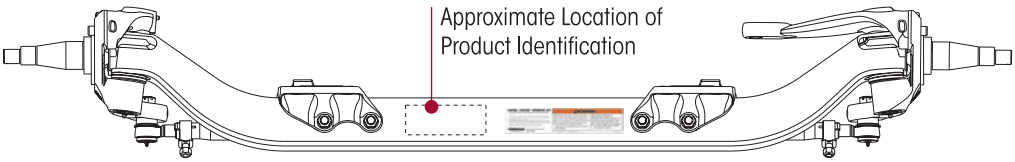


Integrated Brake Knuckle (IBK) Assembly Shown

TECHNICAL NOTES

1. The SOFTEK system with STEERTEK NXT axle is approved for applications rated from 12,500 to 14,600 pound capacity.
2. SOFTEK is approved for on-highway use; other applications must be pre-approved by Hendrickson Sales Engineering. System capacity rating for the suspension represents maximum loads on tires at ground level.
3. The STEERTEK NXT axle is available with 69" and 70.9" kingpin intersection (KPI).
4. SOFTEK suspension weight (275 pounds) includes frame and shackle bracket assemblies, steel leaf springs, bushings, shocks, upper shock brackets and axle clamp group.
5. STEERTEK NXT axle weight (525 pounds) includes the axle beam, knuckle / steering arm assemblies, tie rod assembly and wheel end components.
6. SOFTEK is integral to and available exclusively with the STEERTEK NXT axle. This system is anti-lock braking system (ABS) ready. STEERTEK NXT is compatible with most industry standard wheel ends and brakes. Contact vehicle manufacturer for more information.
7. The STEERTEK NXT axle product identification is etched on the center front of the axle beam (See Figure 2-2) providing the following information:
   - Axle part number: Identifies the features of the axle beam.
   - Axle assembly number: Identifies the complete assembly, which includes the steering knuckles, bracket assemblies and tie rod assemblies

FIGURE 2-2 Front view of the axle showing approximate location of 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, POSSIBLE PERSONAL INJURY, OR PROPERTY DAMAGE.

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

WARNING

LOAD CAPACITY

ADHERE TO THE PUBLISHED CAPACITY RATINGS FOR THE SUSPENSIONS. ADD-ON AXLE ATTACHMENTS 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

SUPPORT THE VEHICLE PRIOR TO SERVICING

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

CAUTION

PROCEDURES AND TOOLS

A TECHNICIAN USING A SERVICE PROCEDURE OR TOOL WHICH HAS NOT BEEN RECOMMENDED BY HENDRICKSON MUST FIRST SATISFY THEMSELVES THAT NEITHER THEIR 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

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

TORCH / WELDING

DO NOT USE A CUTTING TORCH TO REMOVE ANY ATTACHING 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 MAIN SUPPORT MEMBER. DO NOT CONNECT ARC WELDING GROUND LINE TO THE MAIN SUPPORT MEMBER. DO NOT STRIKE AN ARC WITH THE ELECTRODE ON THE MAIN SUPPORT MEMBER. DO NOT USE HEAT NEAR THE MAIN SUPPORT MEMBER ASSEMBLY. DO NOT NICK OR GOUGE THE MAIN SUPPORT MEMBER. SUCH IMPROPER ACTIONS CAN DAMAGE TO THE MAIN SUPPORT MEMBER ASSEMBLY AND CAN CAUSE AND CAN CAUSE LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

⚠ WARNING

SHOCK ABSORBERS

THE SHOCK ABSORBERS ARE THE REBOUND TRAVEL STOPS FOR THE SUSPENSION. ANYTIME THE AXLE ON SOFTEK SUSPENSION IS SUSPENDED IT IS MANDATORY THAT THE SHOCK ABSORBERS REMAIN CONNECTED. FAILURE TO DO SO CAN CAUSE THE AIR SPRINGS TO SEPARATE FROM THE PISTON AND RESULT IN PREMATURE AIR SPRING FAILURE. REPLACEMENT OF SHOCK ABSORBERS WITH NON-HENDRICKSON PARTS CAN ALTER THE REBOUND TRAVEL OF THE SUSPENSION.

⚠ WARNING

UNAUTHORIZED REPAIR OR RECONDITIONING

THE REPAIR OR RECONDITIONING OF SUSPENSION OR AXLE COMPONENTS IS NOT ALLOWED AS SHOWN ON LABEL IN FIGURE 3-1. ANY AXLE COMPONENTS FOUND TO BE DAMAGED OR OUT OF SPECIFICATIONS MUST BE REPLACED. ALL MAJOR COMPONENTS ARE HEAT TREATED AND TEMPERED. THE 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

STEERTEK NXT AXLE

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 COMMERCIAL VEHICLE SYSTEMS.

⚠ WARNING

DAMAGED AXLE COMPONENTS

IF A VEHICLE EQUIPPED WITH A STEERTEK NXT 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 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.

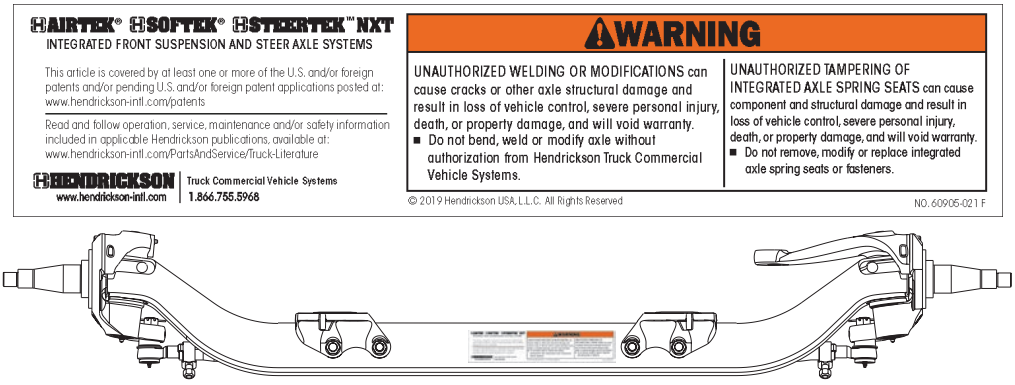
⚠ WARNING

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.

NOTE: REPLACE ANY SAFETY DECALS THAT ARE FADED, TORN, MISSING, ILLEGIBLE, OR OTHERWISE DAMAGED. CONTACT HENDRICKSON TO ORDER REPLACEMENT LABELS.

FIGURE 3-1



⚠ 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, WILL VOID WARRANTY, AS APPLICABLE AND CAN CAUSE LOSS OF VEHICLE CONTROL, POSSIBLY CAUSING PERSONAL INJURY OR PROPERTY DAMAGE.

⚠ WARNING

AXLE KINGPINS

STEERTEK NXT 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.

⚠ 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 SEATS. REFER TO VEHICLE MANUFACTURER FOR PROPER JACKING INSTRUCTIONS, SEE FIGURE 3-1.

⚠ 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. ACIDIC SOLUTIONS CANNOT BE USED ON ALUMINUM COMPONENTS
6. 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.

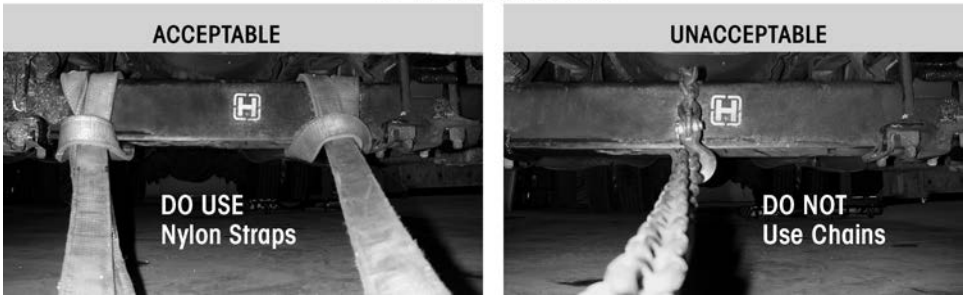
⚠ WARNING

OFF-ROADWAY TOWING

WHEN A VEHICLE IS DISABLED AND EQUIPPED WITH A STEERTEK NXT 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

OFF-ROADWAY TOWING



SECTION 4
Special Tools

KINGPIN BUSHING TOOLS

NOTE: Hendrickson does not supply these tools. Contact tool manufacturer

ADJUSTABLE STRAIGHT FLUTE REAMER
1.802" to 1.812" Cutting Diameter

McMaster-Carr #3141A28

EXTENSION PILOT TOOL

McMaster-Carr #3004A32

OR

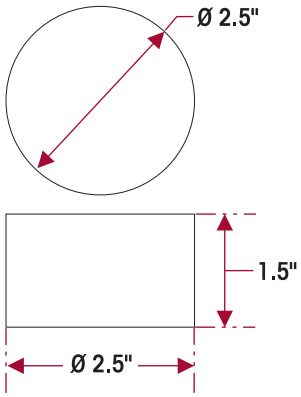
PRECISION-FINISH CYLINDER HONE
1.75" to 2.75" Cylinder ID

McMaster-Carr #7362A45

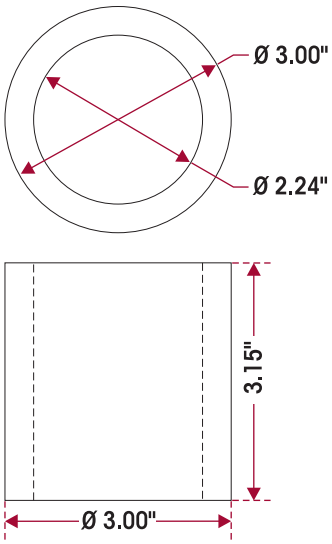
KINGPIN BUSHING AND SEAL TOOLS – SHOP MADE TOOLS

These shop made tools are designed to help 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.

***Bushing Driver**



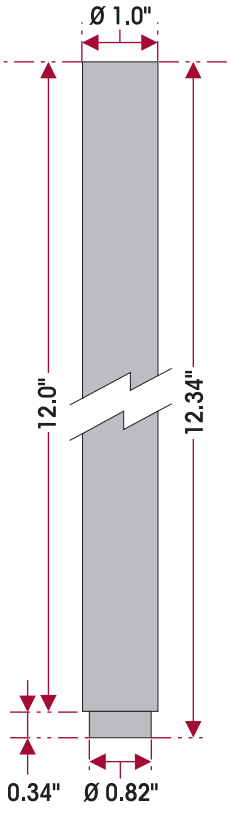
Bushing Receiving Tool
(press bushing replacement)



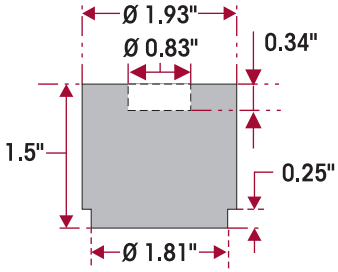
NOTE: *The bushing driver is necessary to sink the kingpin bushing flush into the steering knuckle bore.

NOTE: Kingpin Handle is used for both bushing installer / remover and seal installer tools

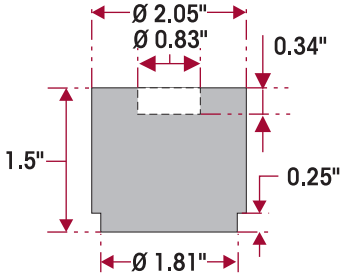
Kingpin Handle



Bushing Installer / Remover Tool
(to seat bushing)



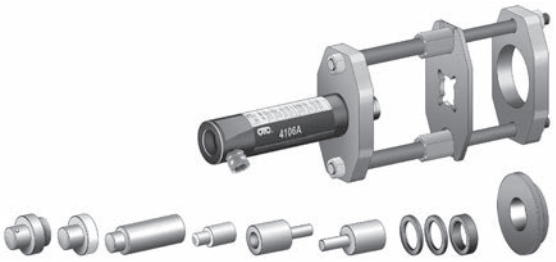
Seal Installer Tool
(to seat seal)



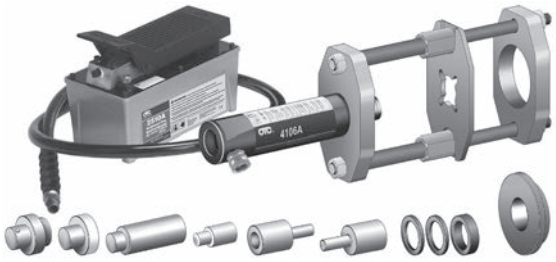
LEAF SPRING BUSHING TOOLS

NOTE: Hendrickson does not supply these tools. Contact tool manufacturer

OTC Part No. 4274 Visit otctools.com



OTC Part No. 4275 Visit otctools.com



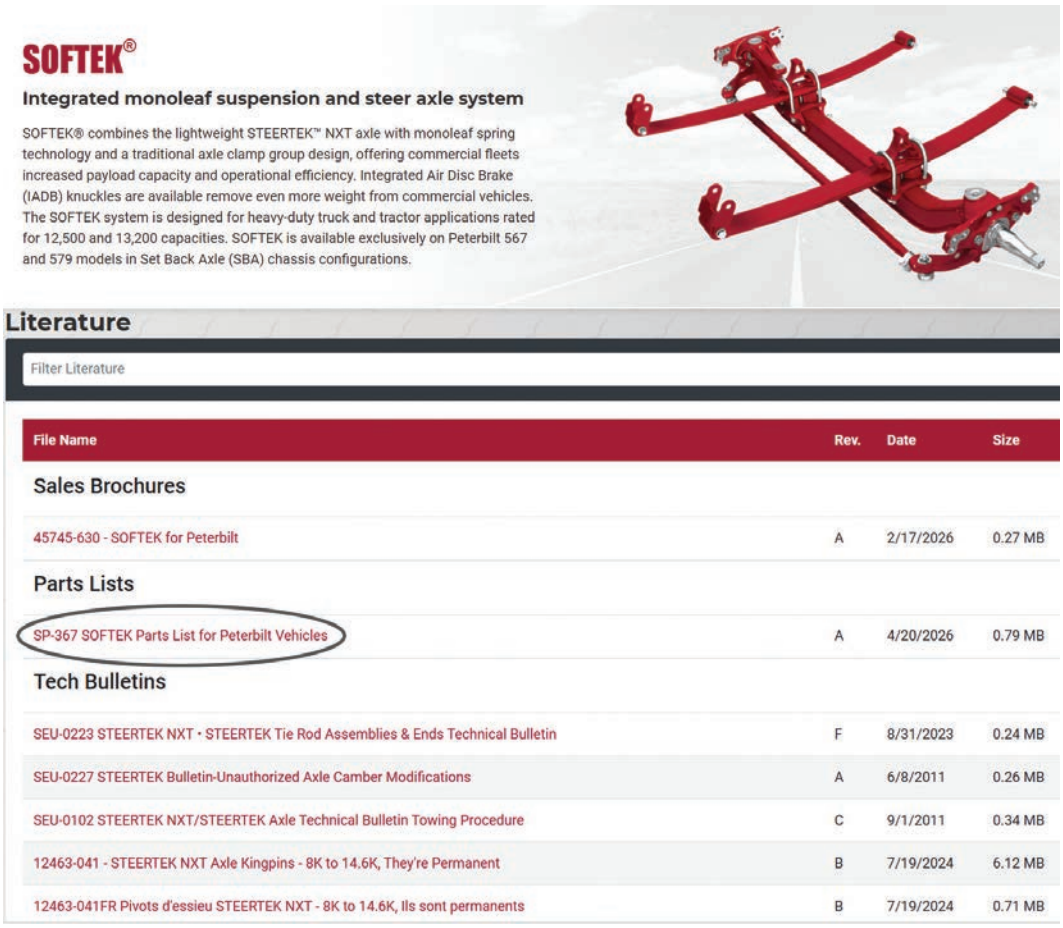
Pin & Bushing Base Tool

Tiger Tool Part No. 15000 Visit tigertool.com

SECTION 5
Parts Lists

Refer to Hendrickson Literature Number SP-367, SOFTEK Front Suspension with STEERTEK NXT Axle for Peterbilt Vehicles, available online at www.hendrickson-intl.com

FIGURE 5-1



SECTION 6
Towing Procedure

ON-HIGHWAY AND ON-ROADWAY

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.

For questions regarding proper towing procedures for vehicles equipped with a STEERTEK NXT axle, please contact Hendrickson Tech Services at 855-743-3733 (U.S. and Canada) or send e-mail to: wdtechservices@hendrickson-intl.com.

Hendrickson recommends that a vehicle equipped with a STEERTEK NXT 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** — Conventional axle fork

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

METHOD 2 — CONVENTIONAL AXLE FORK

This is an alternative method for towing the vehicle, but requires standard tow forks and designated lift points inside the STEERTEK NXT axle clamp groups.

NOTE When lifting a vehicle with an under lift boom, care must be taken not to damage the underbody components.

- Ensure there is sufficient clearance between the underbody components and the boom.
- Release the tractor brakes.
- Install the 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.

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.

FIGURE 6-2

FIGURE 6-3

OFF-ROADWAY TOWING METHOD

WARNING

WHEN A VEHICLE IS DISABLED AND EQUIPPED WITH A STEERTEK NXT 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 FROM 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 6-4) 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 6-4. FOR DETAILED TOWING INSTRUCTIONS FOR ON-HIGHWAY TOWING, SEE TOWING PROCEDURES SECTION IN THIS PUBLICATION.

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

FIGURE 6-4

SECTION 7
Preventive Maintenance

Following appropriate inspection procedures are important to help ensure the proper maintenance and operation of the SOFTEK suspension with STEERTEK NXT axle system and component parts function to their highest efficiency.

HENDRICKSON RECOMMENDED INSPECTION INTERVALS	PRE-DELIVERY	FIRST IN-SERVICE	PREVENTIVE MAINTENANCE	
	within the first 100 miles (160 km)	1,000 miles (1,600 km), 100 hours or whichever comes first	15,000 miles (24,000 km), every 3 months or whichever comes first	25,000 miles (40,000 km), every 6 months or whichever comes first
Hendrickson recommends to visually inspect for proper assembly, function, overall condition, and any signs of damage. During the inspection intervals as shown, check for any unusual movement, loose or missing components, abrasive or adverse contact with other parts, damaged or cracked parts, and improper suspension function or alignment. Replace components as necessary.				
Clamp Group	■	■	■	
Fasteners	■	■		■
Front Hanger Plate, Rear Shackle Bracket and Shackle Plate	■	■	■	
Front and Rear Spring Eye Connection	■	■		■
Front Wheel Alignment	■	■		■
Leaf Spring Assembly	■	■	■	
Shock Absorber	■		■	
Steering Operation	■		■	
STEERTEK NXT Axle Assembly and Tie Rod	■	■	■	
Tire Wear			■	
Top Pad and Bump Stop	■	■	■	
Wear and Damage			■	

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

COMPONENT INSPECTION

- **Clamp group** — Check torque on clamp group mounting hardware. Refer to the Clamp Group Re-torque Intervals in this section.
- **Fasteners** — Visually inspect for any loose or damaged fasteners on the entire suspension. Make sure all fasteners are tightened to the specified torque. Refer to the Torque Specifications section of this publication. 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.

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

- **Front hanger plates, rear shackle brackets and shackle plates** — Visually inspect for any cracks or loose mounting hardware. Replace if necessary, see the Component Replacement section of this publication for replacement procedure.

- **Front and rear spring eye connection** — Visually inspect for any cracks or damage to spring eye bushing. Visually inspect for any loose or damaged fasteners. Ensure the spring eye fasteners are tightened to the specified torque.
- **Front wheel alignment** — Refer to Front Wheel Alignment Specifications section of this publication
- **Leaf spring assembly** — Visually inspect for any cracks. Replace if cracked or broken, see the Component Replacement section of this publication for replacement procedure.
- **Shock absorbers** — Visually inspect for any signs of dents or leakage, misting is not considered a leak. See Shock Absorbers in this section.
- **Steering operation** — All steering components must move freely through the full range of motion from axle stop to axle stop. Check for looseness at all pivot points. Inspect and lubricate all pivot points. Refer to the Troubleshooting Guide section of this publication.
- **STEERTEK NXT axle assembly and tie rods** — Visually inspect for any cracks or dents on the axle, refer to Tie Rod Ends in this section. The axle should be free of any nicks or gouges. Replace as necessary.
- **Tire wear** — Visually inspect the tires for any wear patterns that may indicate suspension damage or misalignment, see Visual Tire Inspection in this section.
- **Top pad and bump stop** — Visually inspect for any cracks and/or missing rubber bump stops. Replace if necessary, see the Component Replacement section of this publication for replacement procedure.
- **Wear and damage** — Visually inspect all parts of suspension for wear and damage. Replace all worn or damaged parts.

LUBRICATION INTERVALS

For vehicles equipped with the STEERTEK NXT axle, regular lubrication intervals should be followed to help prevent premature wear to the kingpin bushings and tie rod ends, see Lubrication Specifications in Table 7-1.

NOTE The recommended service lubrication interval is a guideline, the vehicle may require increased lubrication intervals depending on severity of operation.

TABLE 7-1

STEERTEK NXT • STEERTEK Greasing and Lubrication Specifications

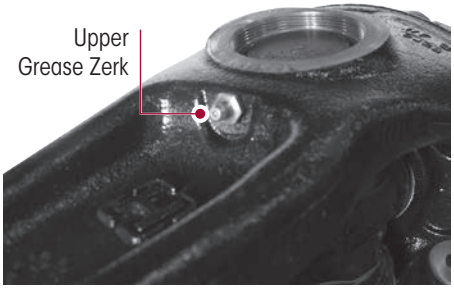
	Application	Component	Greasing Intervals	Grease	Outside Temperature
GENERAL	Does not include linehaul or medium-duty applications	Kingpin Bushings	Maximum of 25,000 miles (40,200 km) or 90 days, whichever comes first.	Multipurpose Grease NGLI Grade 2 EP, rated GC-LB or equivalent.	Refer to the lubricant manufacturer's specifications for the temperature service limits applicable to your area.
		Tie Rod Ends			
		Drag Link	See Vehicle Manufacturer		
ON-HIGHWAY	Linehaul Only High Mileage Accumulation 95% Highway Surface No off-road operation Greater than 50,000 miles per year (80,500 kilometers per year)	Kingpin Bushings	Maximum of 100,000 miles (161,000 km) or 1 year, whichever comes first.	Multipurpose Grease NGLI Grade 2 EP, rated GC-LB or equivalent.	Refer to the lubricant manufacturer's specifications for the temperature service limits applicable to your area.
		Tie Rod Ends			
		Drag Link	See Vehicle Manufacturer		

KINGPIN LUBRICATION

STEERTEK NXT upper kingpin grease zerk are located on the inboard side of the steering knuckle and upper kingpin connection, see Figure 7-1.

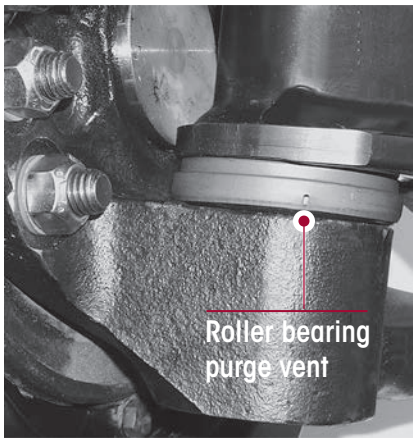
1. Place vehicle on the ground.
2. Chock the wheels and set parking brake.
3. Prior to greasing the kingpins on the vehicle, the suspension must be in a loaded condition.
4. Clean off all the grease zerk and grease gun tip with a clean shop towel prior to lubrication.
5. Lubricate the kingpins through the grease zerk on the top and bottom of the steering knuckle, see Lubrication Specification Table 7-1.

FIGURE 7-1



6. Force the required lubricant into the upper and lower kingpin grease zerk, until new lubricant flows out from the upper kingpin connection and steering knuckle and the thrust bearing purge location, see Figure 7-2.

FIGURE 7-2



NOTE Greasing at the lower fitting should purge grease from the thrust bearing shell. The STEERTEK NXT Axle for Peterbilt vehicles is equipped with a steel roller thrust bearing on both left and right sides.

7. Remove the wheel chocks.

TIE ROD ENDS

INSPECTION

Prior to inspection the entire system must be unloaded (i.e., the front end of the vehicle must be raised and supported with frame 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. Chock the rear wheels of the vehicle.
2. Use the bottom of the axle beam or the frame rails to raise the front end off the ground and support the frame with safety stands.
3. With the engine off, turn the wheels from full left to full right and then return to the straight-ahead position.
4. Check that the boots are in place and completely installed over the tie rod ends.
5. Check for cracking or tears in the boots. Also check the boot seals for damage. If the boot is damaged, replace the tie rod end.

⚠ 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 POSSIBLY RESULT IN TOTAL LOSS OF VEHICLE CONTROL.

6. 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

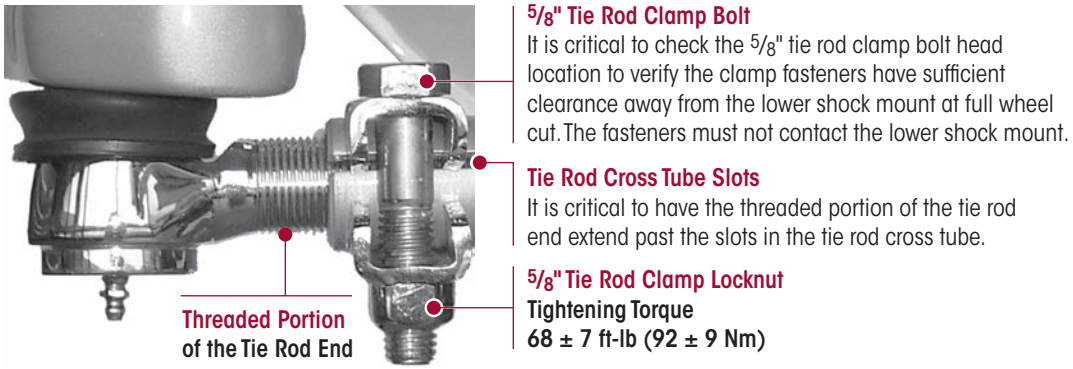
IT IS CRITICAL TO CHECK THE TIE ROD CLAMP BOLT HEAD LOCATION TO VERIFY THE CLAMP FASTENERS HAVE SUFFICIENT CLEARANCE AWAY FROM THE LOWER SHOCK MOUNT AT FULL WHEEL CUT. THE FASTENERS MUST NOT CONTACT THE LOWER SHOCK MOUNT. FAILURE TO DO SO CAN CAUSE ONE OR MORE COMPONENTS TO FAIL CAUSING LOSS OF VEHICLE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

⚠ WARNING

THE THREADED PORTION OF THE TIE ROD END MUST EXTEND PAST THE SLOTS INTO THE TIE ROD CROSS TUBE, SEE FIGURE 7-3. 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 7-3.

FIGURE 7-3



8. Check that grease zerk are installed. Replace a damaged grease zerk 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 7-4.

FIGURE 7-4

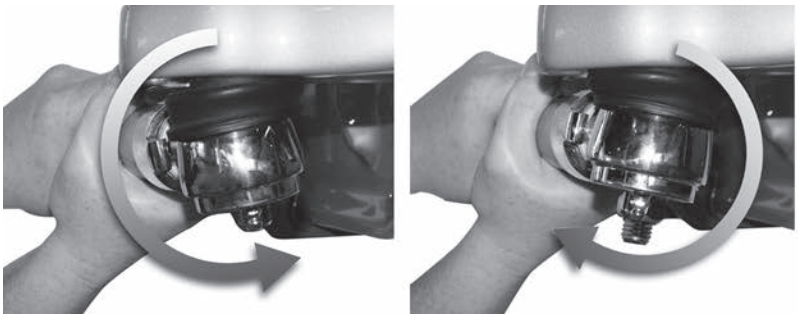
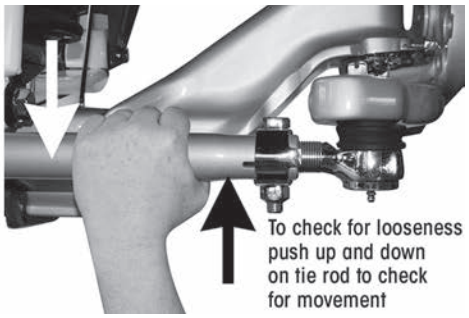


FIGURE 7-5



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 approximately 75 ± 25 foot pounds of force). Check for any movement or looseness at both tie rod end locations, see Figure 7-5.
11. If there is any movement in the tie rod assembly, install a magnetic based dial indicator on the lower steering knuckle, see Figure 7-6.
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 approximately 75 ± 25 pounds 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.

FIGURE 7-6

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.

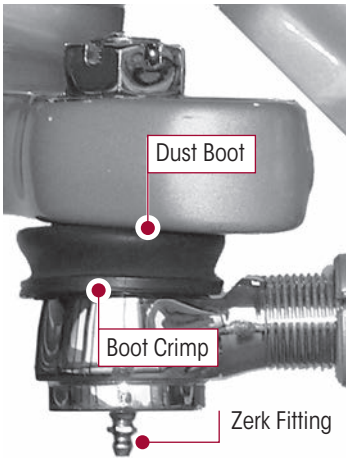
NOTE

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 0.125" (3 mm) measured with hand pressure only. (393.209(d)), (published in the North American Standard Out-of-Service Criteria Handbook, 2026.)

16. Remove the vehicle frame safety stands and lower the vehicle.
17. Remove the rear wheel chocks..

LUBRICATION PROCEDURE

FIGURE 7-7



1. Turn the vehicle wheels straight ahead.
2. Chock the wheels.
3. Wipe the grease zerk and grease gun tip with clean shop towels.
4. Wipe the seal / boot clean with shop towels.
5. Attach a grease gun to the grease zerk. 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 GREASE ZERK CAN CAUSE DAMAGE TO THE DUST BOOT CAUSING COMPONENT FAILURE.

6. Dirt, water, and discolored old grease should flow from the relief vents or purge holes near the boot crimp or bellows area, see Figure 7-7.
7. Continue to purge grease until fresh grease flows from the purge area.
8. Tie rod ends are designed for lube service. If a tie rod end will not accept grease, proceed as follows:
   a. Remove the grease zerk.
   b. Inspect the threaded grease zerk hole in the tie rod end and remove any obstructions.
   c. Install a new grease zerk.
   d. Continue the lubrication procedure.

NOTE If the tie rod end still does not accept grease following this procedure, replace the tie rod end (see Tie Rod End and Cross Tube in the Component Replacement section of this publication).

9. Remove the wheel chocks.

KINGPIN BUSHING

INSPECT STEERING KNUCKLE LATERAL MOVEMENT

NOTE If one (1) bushing is worn or damaged, it is mandatory to replace both the top and bottom bushings on that knuckle assembly.

1. Chock the wheels to help prevent the vehicle from moving. Set the parking brake.
2. Use a jack to raise the vehicle. Support the vehicle with safety stands.
3. **CHECK THE UPPER KINGPIN BUSHING**. Install the base of a dial indicator onto the axle beam and place the tip against the side of the upper steering knuckle, see Figure 7-8.
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 7-10.
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 kingpin bushings. Refer to Kingpin Bushing in the Component Replacement section of this publication.
   - **less than** 0.015", proceed to Step 7.
7. **CHECK THE LOWER KINGPIN BUSHING**. Install a dial indicator so that the base is on the axle and the indicator tip is against the side of the lower steering knuckle, see Figure 7-9.
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 Kingpin Bushing replacement procedure in the Component Replacement section of this publication.
   - **Less than** 0.015", proceed to Step 10.
10. Lower the vehicle and remove the safety stands.
11. Remove the wheel chocks.

FIGURE 7-8
Check the UPPER Kingpin Bushing

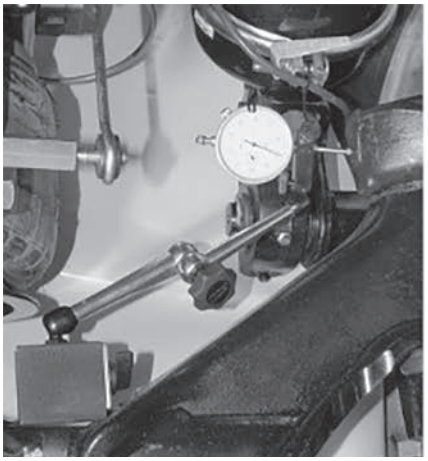


FIGURE 7-9
Check the LOWER Kingpin Bushing

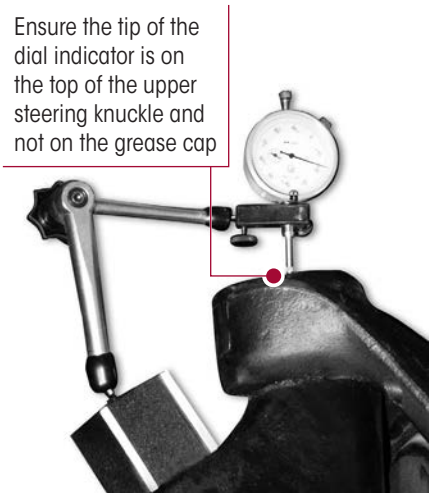
FIGURE 7-10
Move the TOP and BOTTOM of the tire in and out

STEERING KNUCKLE

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".

FIGURE 7-11



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. Support the vehicle with safety stands.
5. Place a dial indicator on each side of the axle as follows:
   a. Index the wheels slightly (left or right)
   b. Place the magnetic dial indicator base on the axle, see Figure 7-11.
   c. Place the tip of the dial indicator on the top of the upper steering knuckle (not on the grease cap).
6. Set the dial indicator to "0" (zero).
7. Lower the jack.
8. If vertical end play is greater than 0.030", or below 0.008" an adjustment of the upper steering knuckle is necessary.
9. **Upper steering knuckle adjustment:** Refer to Steering Knuckle in Component Replacement section of this publication for proper shim installation / removal.

   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.
   - **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.
10. Re-tighten the socket head cap screws to 187 ± 12 foot pounds torque.
11. Remove the safety stands and lower the vehicle.
12. Remove wheel chocks.

CLAMP GROUP

RE-TORQUE INTERVALS

WARNING

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

- Clamp group U-bolt locknuts must be torqued to specification at preparation for delivery and must be re-torqued at 1,000 miles
- Thereafter follow the 3 month/15,000 mile visual inspection and annual re-torque interval

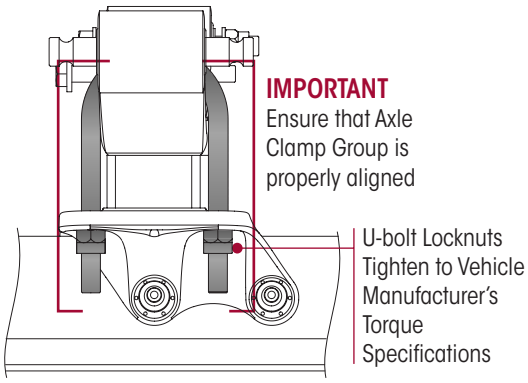
WARNING

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

13. Ensure that 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 7-12.

14. Visually inspect for the signs of component or bolt movement. If signs of movement are present:
    a. Disassemble the clamp group fasteners, check for component wear or damage and replace as necessary, then install new clamp group fasteners.
    b. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications.

FIGURE 7-12



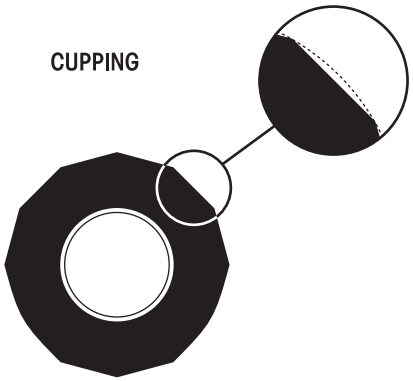
VISUAL TIRE INSPECTION

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 RP 642 in TMC Recommended Practices Manual.

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 for steer tires are: cupping, diagonal wear, feather wear, one-sided wear, overall fast wear (10/32nd inch tread depth), and rapid shoulder wear (one shoulder only).

FIGURE 7-13



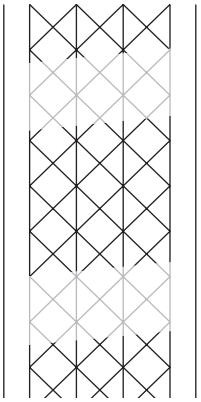
Cupping — Localized, dished out areas of fast wear creating a scalloped appearance around the tire. Cupping, which appears around the tire on the shoulder ribs, may also progress to adjoining ribs.

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 as well as loose kingpins.

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 7-14
DIAGONAL WEAR

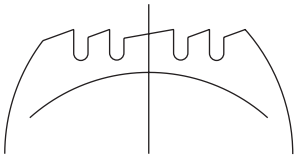


Diagonal Wear — Localized flat spots worn diagonally across the tread at approximately 25-35° angles, often repeating around the tread circumference. For more information.

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 or retread tire. If the source of trouble is the vehicle, diagnose cause and correct as needed.

FIGURE 7-15
FEATHER WEAR

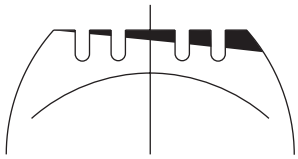


Feather Wear — Tread ribs or blocks worn so that one side is higher than the other resulting in step–offs across the tread face. Generally, all ribs or blocks exhibit this wear.

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.

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
ONE-SIDED WEAR



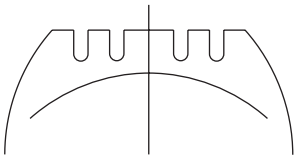
One-sided Wear — Excessive wear on one side of tire extending from the shoulder towards the center of the tread.

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

To correct one-sided wear:

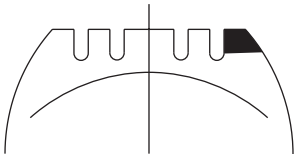
- **Tires** – Depending on severity, rotate tires to another axle position or, if worn to minimum tread depths, submit for possible retreading.
- **Vehicle** – Diagnose mechanical problem and correct.

FIGURE 7-17
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. Reference RP-230 of TMC manual.

FIGURE 7-18
RAPID SHOULDER WEAR
(One Shoulder Only)



Rapid Shoulder Wear (one shoulder only) — Is a tire worn on the edge of one shoulder, sometimes extending to inner ribs. It can progress to diagonal wipeout.

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.

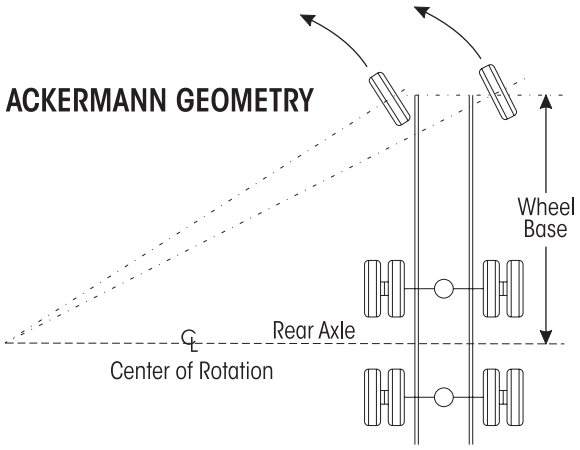
To correct this type of rapid shoulder wear:

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

SECTION 8
Alignment & Adjustments

ALIGNMENT DEFINITIONS

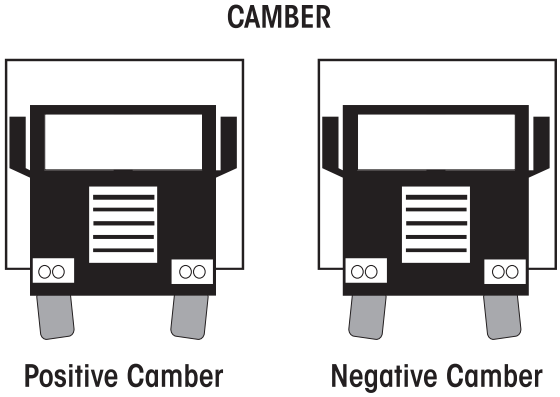
FIGURE 8-1



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.

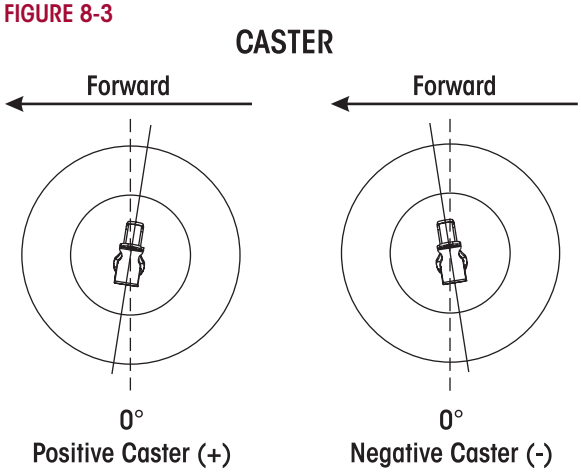
FIGURE 8-2



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.

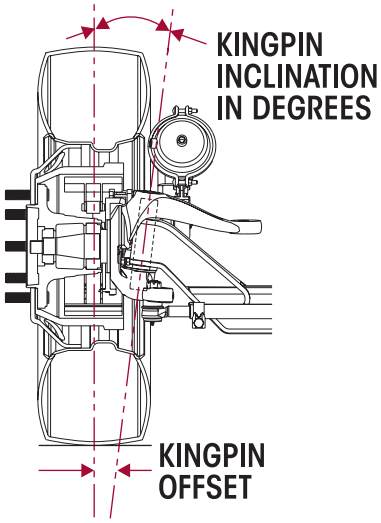
Excessive positive camber may cause smooth wear on the outer half of the tire tread. Excessive negative camber may cause wear on the inner half of the tread. Static-unloaded camber angles are built into the axle to put the loaded tire perpendicular to the road.

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

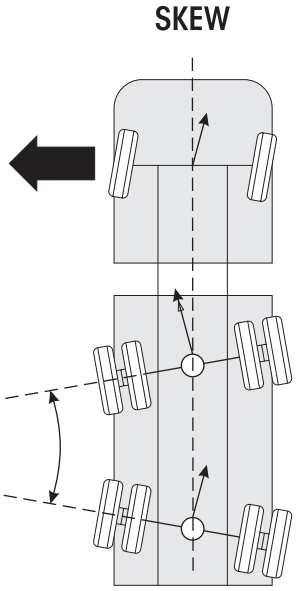
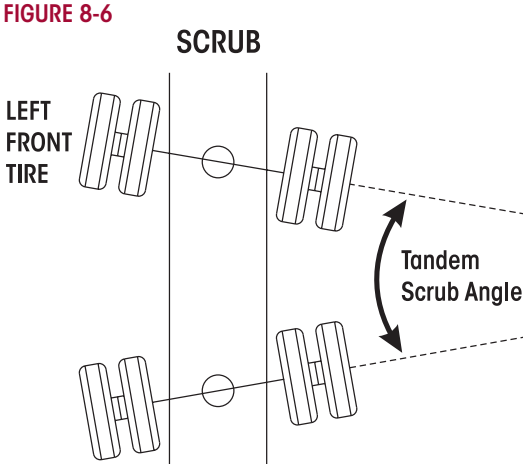
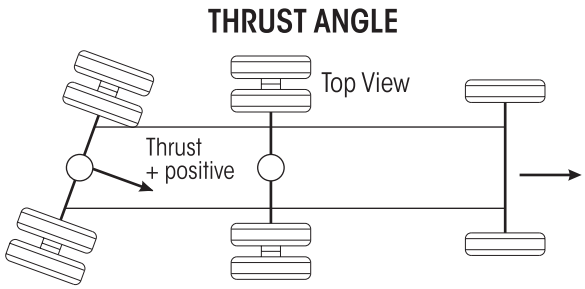


FIGURE 8-6



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

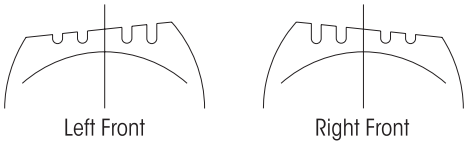


Thrust Angle, Tracking, or Square — The angle formed by the centerline of the vehicle frame (geometric centerline) and the direction that an axle points. As indicated by the term "square", the ideal value for the angle is 0° or when the axle centerline is at 90° or perpendicular to the geometric centerline.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

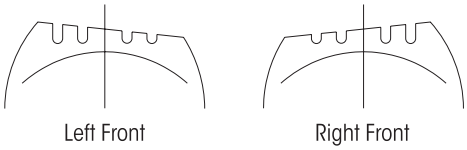
FIGURE 8-8



TOE-IN

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

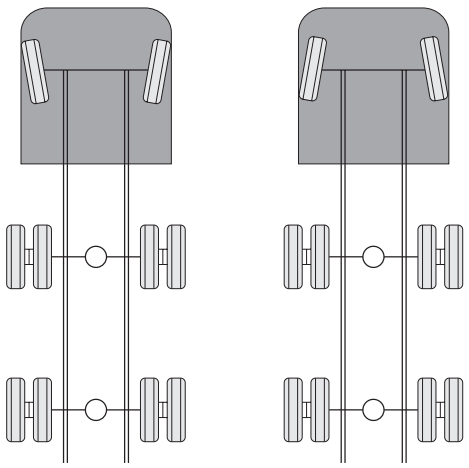
Toe-Out — Is when the horizontal lines intersect behind the wheels, or the wheels are closer together in back than in front. Toe-in is commonly designated as positive, toe-out as negative. Excessive toe-out wears the inside edge of the tires. Steer axle toe is adjustable to reduce wear to the leading 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.

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.

FIGURE 8-10

TOTAL TOE



TOE-OUT TOE-IN

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 and check for tire to rim runout.
- The wheels and tires are free of excessive wear and damage.
- Wheel bearing end play is within vehicle manufacturer's specification.

FRONT SUSPENSION

Inspect and ensure the following:

- All fasteners are installed and tightened to the specified torque, refer to the Torque Specifications section of this publication.
- Leaf 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 for wear or damage.

TIE ROD ENDS

Perform the Tie Rod Inspection procedure, refer to the Preventive Maintenance section of this publication.

REAR AXLE AND REAR SUSPENSION

Rear axle misalignment 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:

- Ensure the rear axle is correctly aligned. Follow the vehicle or suspension manufacturer's guidelines.
- All fasteners, including U-bolts (if applicable) are installed and tightened to the specified torque.
- Ensure the leaf spring and leaf spring bushings are not worn or damaged.
- Verify the vehicle frame is not bent or twisted.
- Refer to any additional recommendations and specifications from the vehicle, rear axle, and/or suspension manufacturer. Reference the TMC (The Technology & Maintenance Council) Guidelines for Total Vehicle Alignment.

FRONT WHEEL ALIGNMENT

Hendrickson recommends technicians review TMC's publication "Guidelines for Total Vehicle Alignment" (TMC RP 642).

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

- Every 25,000 miles (40,000 km), or 6 months, whichever comes first.
- When the vehicle does not steer correctly.
- When correcting a tire wear condition.

For **rear** wheel alignment specifications and adjustment, refer to the vehicle manufacturer.

The **front** wheel alignment specifications can be found in the Front Wheel 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 per the vehicle manufacturer's instructions.
3. Check and adjust toe if necessary, refer to Toe Setting in this section.
4. Check and adjust the vehicle ride height as per vehicle manufacturer.

MAJOR FRONT WHEEL ALIGNMENT

Follow wheel alignment inspection intervals as specified by the vehicle 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 specifications.
4. Check the turning angle. Refer to the vehicle manufacturer's specifications.
5. Check the kingpin (or steering axis) inclination. Refer to Kingpin Inclination under Alignment Definitions in this section.

⚠ WARNING

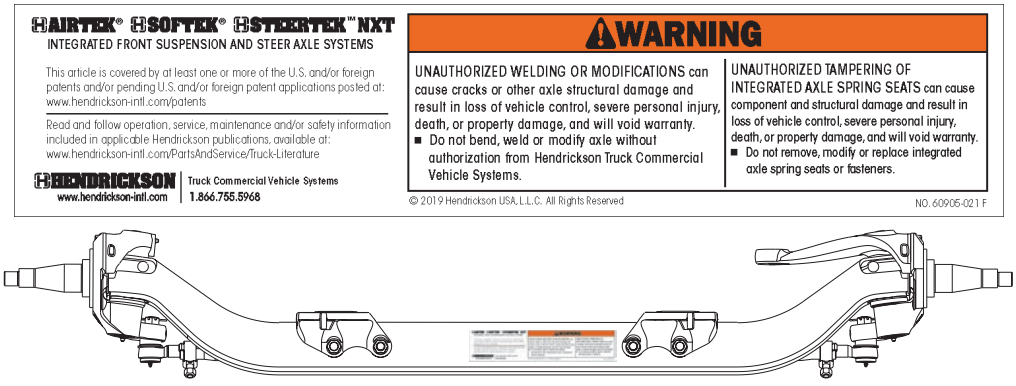
AXLE CAMBER IS NOT ADJUSTABLE. DO NOT CHANGE THE AXLE CAMBER ANGLE OR BEND THE AXLE BEAM. BENDING THE AXLE BEAM TO CHANGE THE CAMBER ANGLE CAN DAMAGE THE AXLE AND REDUCE AXLE STRENGTH, AND WILL VOID HENDRICKSON'S WARRANTY. A BENT AXLE BEAM CAN CAUSE LOSS OF VEHICLE CONTROL, POSSIBLY CAUSING PERSONAL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

6. Check camber angle. **DO NOT** attempt to adjust. Refer to Camber in Front Wheel Alignment Specifications section.

⚠ 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, SEE FIGURE 8-13.

FIGURE 8-13



NOTE

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

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 in the Front Wheel Alignment Specifications section. **The use of two (2) 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 Toe Setting in this section.

STEERING STOP

ADJUSTMENT PROCEDURE

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

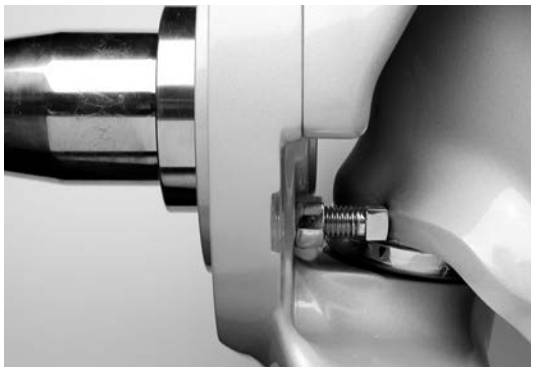
WARNING

ALWAYS CHECK/RESET THE STEERING GEAR BOX POPPET 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, POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE AND VOID ANY APPLICABLE WARRANTY.

1. Drive the vehicle 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.

NOTE It is very important that the sides of the square head stop bolts are set parallel to the axle beam to ensure a good contact point on the axle, see Figure 8-14.

FIGURE 8-14



3. **Increase** the wheel cut:
   a. Loosen the jam nuts and screw the stop bolts **in (clockwise)**.
   b. Tighten the stop bolts to 50 ± 10 foot pounds torque.
4. **Decrease** the wheel cut:
   a. Loosen the jam nuts and screw the stop bolts **out** (**counter-clockwise)**.
   b. Tighten the stop bolts to 50 ± 10 foot pounds torque.
5. Measure the wheel cut and check for any interference with related steering components.
6. Remove wheel chocks.

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 safety stands.
3. Chock the rear wheels of the vehicle.
4. Use paint and mark the center area of tread on both steer axle tires around the complete outer diameter of the tires.
5. Scribe a line through both steer axle tires in the center of the painted area around the complete outer diameter of the tires.
6. Raise the vehicle and remove the safety stands.
7. Set the vehicle on the ground.

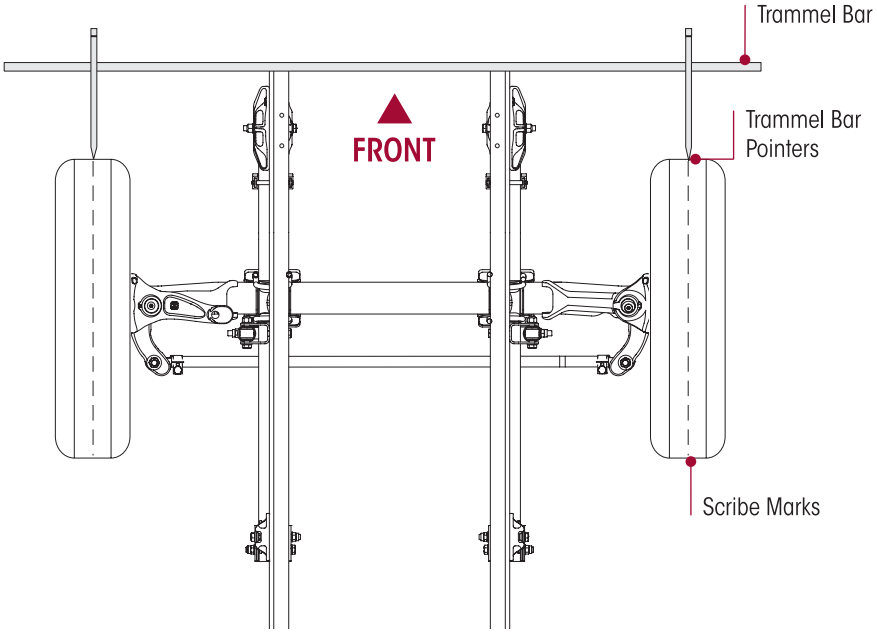
NOTE **DO NOT** measure toe-in with the front axle off the ground. The weight of the vehicle must be on the front axle when toe-in is measured.

8. Use a trammel bar and measure the distance between the scribe marks at the rear of the steer axle tires. Record the measurement.

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. 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 8-15.

FIGURE 8-15



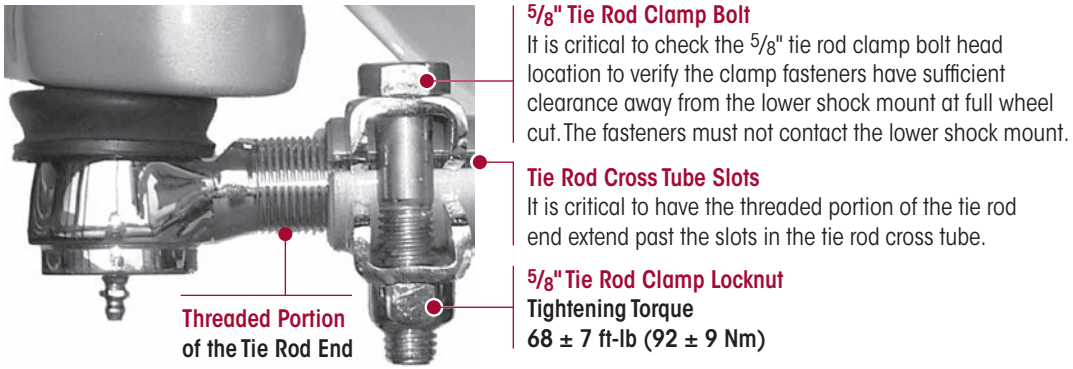
10. To calculate the toe setting, subtract the front measurement from the rear measurement. The difference between the two will equal the toe-in/toe-out measurement.
11. If the toe measurement is not within the specifications of 1/16" ± 1/32" (0.060" ± 0.030"), it will be necessary to adjust the toe setting as per 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.
    c. Tighten the bolt and locknut on the tie rod cross tube to 68 ± 7 foot pounds torque.

WARNING

THE THREADED PORTION OF THE TIE ROD END MUST EXTEND PAST THE SLOTS INTO THE TIE ROD (SEE FIGURE 8-16). IT IS CRITICAL TO CHECK THE 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.

12. Repeat Steps 1-12 until the correct toe setting is achieved.
13. Remove the vehicle frame safety stands and lower the vehicle.
14. Remove the rear wheel chocks.

FIGURE 8-16



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 of this publication. If non-Hendrickson fasteners are used follow torque specifications listed in the vehicle manufacturer's service manual.

REAR SHACKLE

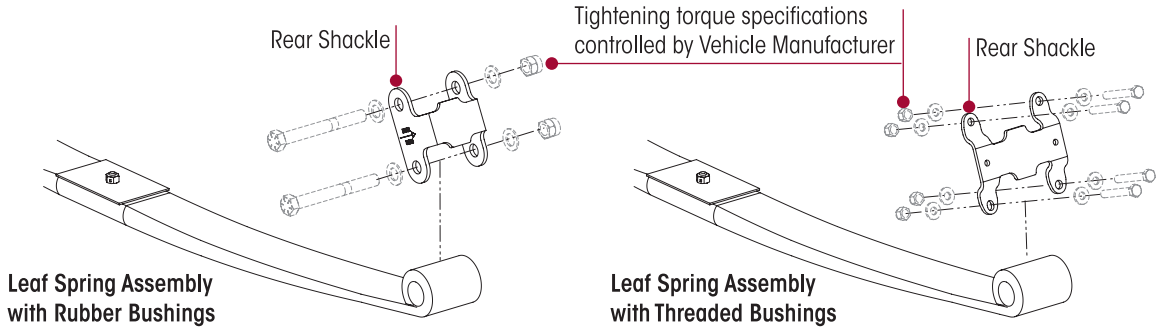
DISASSEMBLY

1. Place the vehicle on level floor.
2. Chock the wheels.
3. Raise the vehicle frame and support with safety stands.
4. Remove the wheel assemblies as per the vehicle manufacturer's instructions.
5. Suspend the front axle to remove the load from the shackle.
6. Remove and discard the rear shackle fasteners, see Figure 9-1.

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

7. Remove the frame fasteners from the shackle per manufacturer's guidelines.
8. Remove the shackle from the vehicle, see Figure 9-1.
9. Inspect the shackle for excessive wear or damage and replace if necessary.

FIGURE 9-1



ASSEMBLY

1. Install the shackle on the frame.
2. Install new frame fasteners per manufacturer's guidelines.
3. Install the shackle with the new fasteners. Snug the shackle bolts. **DO NOT** tighten at this time.
4. Remove the safety stands and lower frame.
5. Tighten the shackle locknuts as per vehicle manufacturer's specifications.
6. Install the wheel assemblies as per the vehicle manufacturer's instructions.
7. Remove the wheel chocks.

LEAF SPRING ASSEMBLY

NOTE The leaf spring assembly replacement procedure is done on one side with the other leaf spring assembly attached.

DISASSEMBLY

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

NOTE It may be necessary to remove the peripheral components for installation of the safety stands.

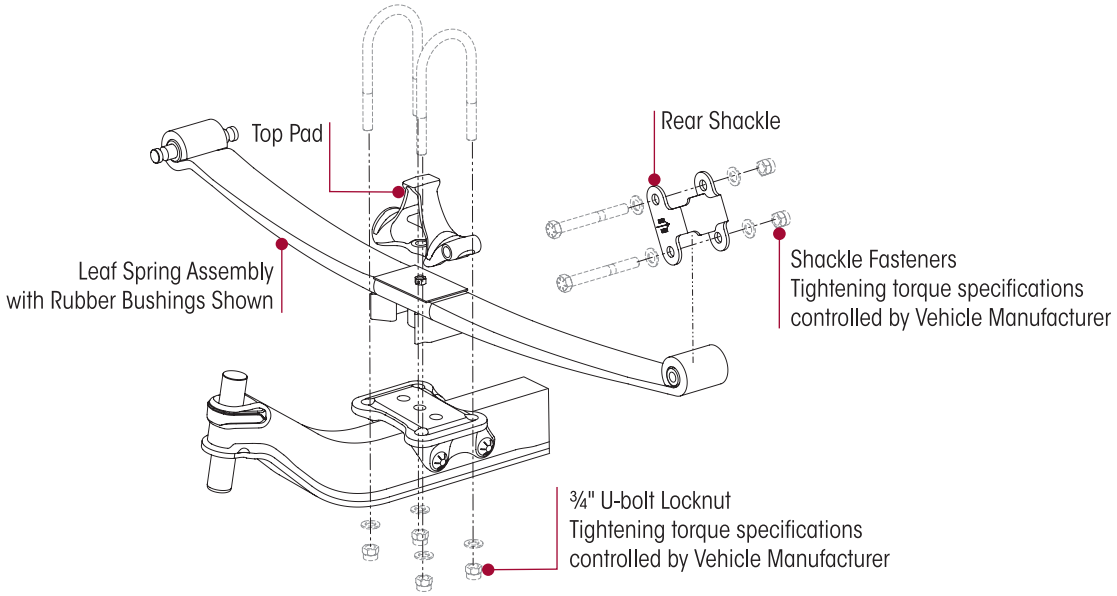
3. Raise the vehicle and support with safety stands.
4. Remove the wheel assemblies as per the vehicle manufacturer's instructions.
5. Install a floor jack with a 4 inch plate below the axle and raise the axle.
6. Lower the floor jack to remove the load on the leaf spring assembly (keep jack on axle, **DO NOT** remove).
7. Remove and discard front spring eye fasteners from the side being serviced per the vehicle manufacturer's instructions.
8. Remove and discard the rear shackle pivot bolt fasteners, see Figure 9-2, from the side being serviced per the vehicle manufacturer's instructions.
9. Loosen, **DO NOT** remove, the clamp group locknuts for the **opposite** leaf spring assembly 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.

SERVICE HINT If a clamp group locknut fails to come off the 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.

10. On the side being serviced, remove and discard the clamp group U-bolts and fasteners.
11. From the side being serviced, remove the top pad from the leaf spring assembly, see Figure 9-2.
12. Lower the floor jack to allow enough clearance to remove the leaf spring assembly from the frame hanger.

FIGURE 9-2



13. It is not necessary to remove the spacer or spring pin, although if it is removed it is required to re-install in the same location as prior to removal during assembly.

WARNING

THE APPROXIMATE WEIGHT OF THE LEAF SPRING ASSEMBLY IS 70 POUNDS. CARE SHOULD BE TAKEN AT REMOVAL AND INSTALLATION TO PREVENT PERSONAL INJURY OR DAMAGE TO COMPONENTS.

14. Remove the leaf spring assembly. Approximate weight of the leaf spring assembly is 70 pounds.

ASSEMBLY

SERVICE HINT

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

1. If removed, install the spring pin and the spacer on the axle in the same location and orientation as prior to removal. Install the new leaf spring assembly on the axle.
2. Verify that the slotted spring pin is engaged properly in the axle spring seat.
3. Install the top pad on top of the leaf spring assembly.

SERVICE HINT

New clamp group fasteners must be used when the clamp group is removed, to prevent premature bolt fatigue.

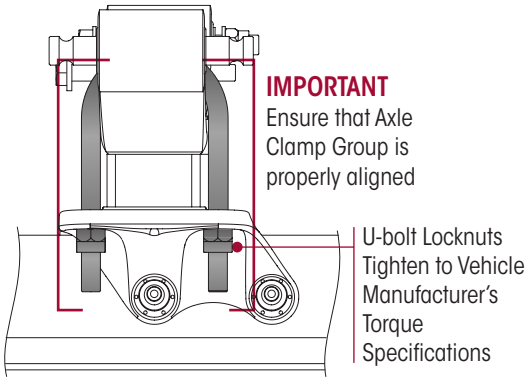
4. Install clamp group fasteners.
5. Snug the clamp group, **DO NOT** tighten to torque at this time.
6. Install the front spring eye bolt and fastener, snug but **DO NOT** tighten at this time.
7. Raise the axle and the rear of the leaf spring assembly into the rear shackle bracket.
8. Install the rear spring eye bolts in the rear shackle, snug but **DO NOT** tighten at this time, see Figure 9-2.
9. Raise the vehicle and remove the safety stands.
10. Place two safety stands under the axle to load the front axle and then lower the vehicle.
11. Tighten the front and rear spring eye locknuts as per vehicle manufacturer's specifications.

WARNING

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

12. Ensure that the clamp group is properly aligned, and the U-bolts are seated in top pad, see Figure 9-3.
13. Tighten the clamp group fasteners evenly in 50 foot pounds increments to vehicle manufacturer's specifications.
14. Install the wheel assemblies per the vehicle manufacturer's instructions.
15. Remove the wheel chocks.

FIGURE 9-3



FRONT AND REAR SPRING EYE BUSHINGS

WARNING

DO NOT USE HEAT OR A CUTTING TORCH TO REMOVE THE SPRING EYE BUSHINGS FROM THE STEEL SPRING. THE USE OF SUCH HEAT CAN ADVERSELY AFFECT THE STRENGTH OF THE SPRING. A COMPONENT DAMAGED IN THIS MANNER CAN RESULT IN THE LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

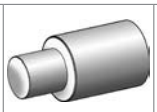
The spring eye bushings for the SOFTEK leaf spring assembly are designed for extended service life. In the event of premature wear or damage, consideration must be given to the contributing factors. This

must be corrected to help prevent the new spring eye bushings from sustaining wear or damage in the same manner. Hendrickson recommends that in the event of a high mileage spring eye bushing wear that the leaf spring assembly also be replaced.

You will need:

Spring Eye Bushing Tools

- OTC Tool Nos. 4274 and 4275, refer to the Special Tools Section in this publication.

							
	577542 Cylinder Adapter	**577544** Alignment Tool	**577546** Alignment Pin	**577560** Bushing Support	**577706** Extension	**578286** Spacer **A** Thru-bolt	**578288** Spacer **B** Bar Pin
REMOVAL	✔	✔	✔	✔	✔		✔
INSTALLATION	✔	✔	✔	✔		✔	

DISASSEMBLY

Prior to removal, note the front and rear leaf spring eye bushings are different and require different bushing tools for component replacement, see Figures 9-8 and 9-9.

There are two options to prepare for spring eye bushing replacement:

- **OPTION ONE —** Replace spring eye bushings in-chassis. To select this option proceed to **Spring Eye Bushing Replacement In-Chassis**
- **OPTION TWO —** Remove the leaf spring and clamp group assembly as detailed in this section then proceed to **Spring Eye Bushing**

FIGURE 9-8

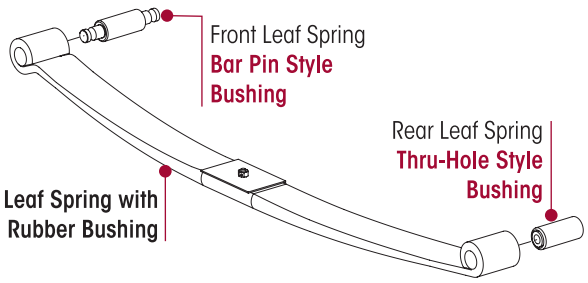
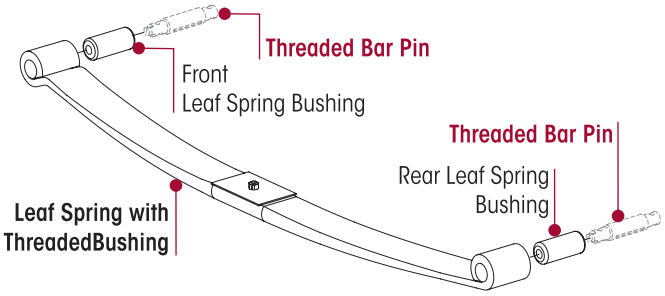


FIGURE 9-9



Option One – Spring Eye Bushing Replacement In-chassis

DISASSEMBLY

1. Place the vehicle on a level floor.
2. Chock the wheels.
3. Raise the vehicle high enough to lower the spring eye bushing being replaced out of the hangers or shackles. If necessary remove the tires for greater access.
4. Support the vehicle with frame stands.
5. Suspend the front axle to remove the load from leaf spring assembly.
6. Support the axle with a floor jack.
7. If replacing only the front bushings, see **A**, if replacing only the rear see **B**, if replacing both front and rear see **C**, see Figures 9-8 and 9-9.

A **FRONT SPRING EYE BUSHINGS**

a. Remove the eight (8) **FRONT** spring eye clamp bolts (both sides).
   - **Rubber bushing** – loosen the rear ¾" spring eye bolt fasteners
   - **Threaded bushing** – loosen the rear M12 spring eye bolt fasteners

b. Lower the axle and spring assembly to gain access to replace the **FRONT** spring eye bushings.

B **REAR SPRING EYE BUSHINGS**

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

a. Loosen the eight (8) **FRONT** spring eye clamp bolts (both sides).
   - **Rubber bushing** – remove the rear ¾" spring eye bolt fasteners
   - **Threaded bushing** – remove the rear M12 spring eye bolt fasteners

b. Lower the axle and spring assembly to gain access to replace the **REAR** spring eye bushings.

C **FRONT AND REAR SPRING EYE BUSHINGS**

a. To replace both **FRONT** and **REAR** spring eye bushings, is either done by doing the front bushings first, then rear or rear bushings first then front. Begin with either procedure.

8. Proceed to Spring Eye Bushing instructions below.

■ Option Two – Spring Eye Bushing

REMOVAL

1. For the **threaded bushing**, prior to inserting the alignment tools (OTC Tool Nos. 4274 and 4275), it will be necessary to remove the grease zerk from the threaded pin. Retain zerk for reuse after bushing installation.
2. Insert the **two (2) alignment tools** into the spring eye bushing as shown in Figure 9-10.
3. Place the bushing support over an alignment tool.
4. Place the head plate over the bushing support.
5. Place the clamping plate over the other alignment tool with the cutouts in the plate facing away from the bushing.
6. Assemble the clamping nuts to the threaded rods, see Figure 9-10.
7. Insert a threaded rod through the **lower** holes in the clamping plate and the head plate. Install a hex nut on the end of the threaded rod, fully seated and hand tighten.
8. Insert a threaded rod through the **upper** holes in the clamping plate and the head plate. Install a hex nut on end of the threaded rod, fully seated and hand tighten.
9. Tighten the clamping nuts to the clamping plate ¼" to ½" turn past hand tight, see Figures 9-10 and 9-11.

⚠ WARNING

TO PREVENT PERSONAL INJURY, THE CYLINDER MUST BE FULLY THREADED INTO THE CYLINDER MOUNTING PLATE, SEE FIGURE 9-12.

10. Thread the cylinder into the cylinder mounting plate, see Figure 9-12.
11. Install the **cylinder mounting plate** onto the end of the threaded rods. Assemble the hex nuts on the threaded rods until they are fully seated and hand tighten.
12. Carefully remove the **two (2) alignment tools**, see Figure 9-10.

FIGURE 9-10

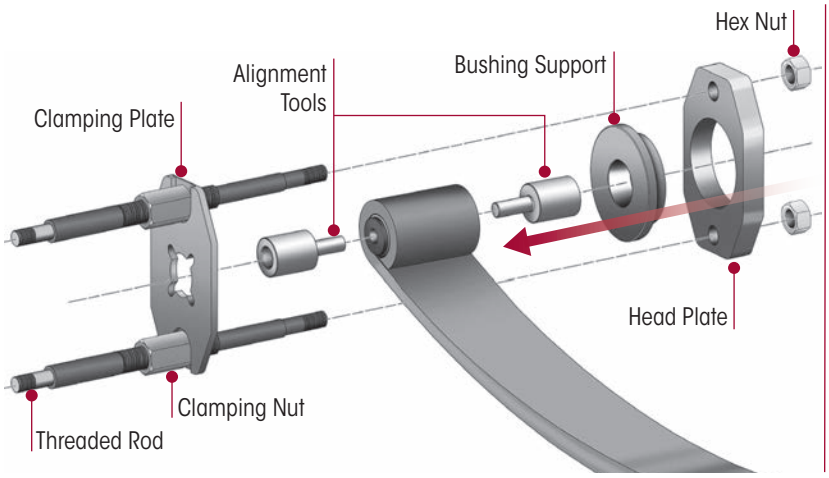
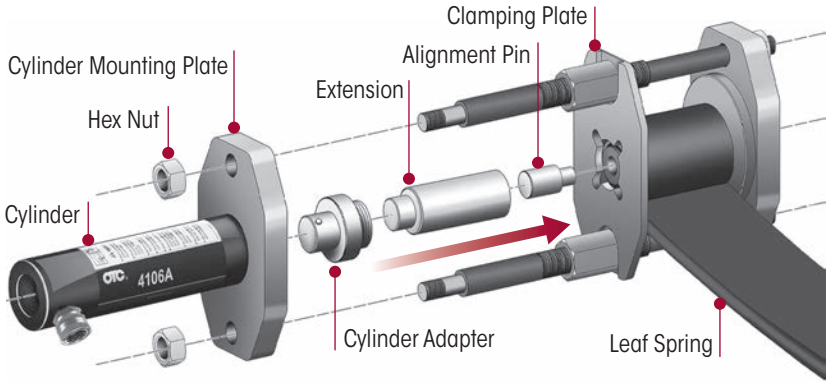


FIGURE 9-11

FIGURE 9-12



13. Insert the cylinder adapter into the head of the cylinder.
14. Follow below per the type of bushing, front or rear:
    - **Rear** Spring Eye Thru-bolt Bushing — Insert the extension into the cylinder adapter. Place the alignment pin into the extension
    - **Front** Spring Eye Bar Pin Bushing — Insert the extension into the cylinder adapter
15. Prepare the hydraulic pump for use by following the instructions provided with the pump regarding hookup, venting, priming, and operation.

⚠ WARNING

TO PREVENT PERSONAL INJURY, PUMP CAPACITY MUST NOT EXCEED 10,000 PSI.

16. Connect the hydraulic hose from the hydraulic pump to the cylinder.

⚠ WARNING

TO PREVENT PERSONAL INJURY FROM POSSIBLE BREAKAGE UNDER PRESSURE, DO NOT STAND IN THE VICINITY OF THE TOOL WHILE THE PIVOT BUSHING IS BEING EXTRACTED. IT IS ESPECIALLY IMPORTANT TO NOT STAND IN THE DIRECTION OF THE HYDRAULIC FORCE.

17. Verify all components are aligned. Slowly and carefully operate the pump to extend the cylinder piston rod. Guide the assembly until the alignment pin enters the bushing. Operate the pump until the bushing is driven out of the spring.
18. **DO NOT** remove tool components to preserve alignment for installation.

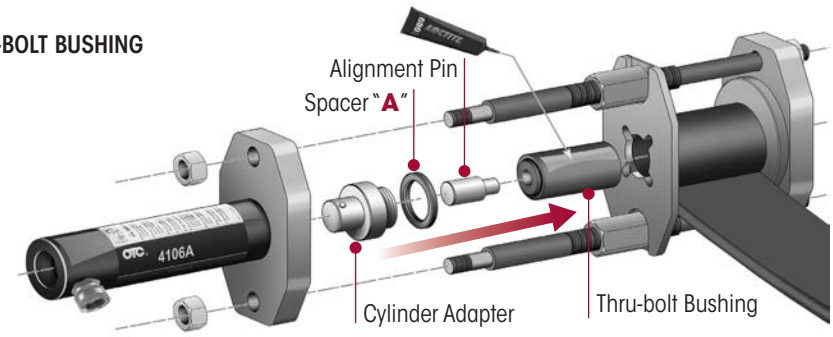
INSTALLATION

■ REAR SPRING EYE – THRU-BOLT BUSHING

1. Remove residual adhesive from the inside diameter of the beam using Hendrickson-approved methods.

2. Insert the cylinder adapter into the head of the cylinder as shown in Figure 9-13.
3. Place spacer "**A**" over the cylinder adapter.

FIGURE 9-13
REAR
THRU-BOLT BUSHING



4. Insert the alignment pin into the cylinder adapter.
5. Clean the outer diameter of the new bushing and apply Loctite® 680 adhesive, being careful to apply the adhesive to metal only. **DO NOT** apply adhesive to the rubber part of the bushing.
6. Insert the alignment pin into the spring eye bushing.
7. Operate the pump to extend the cylinder piston rod. Guide the assembly until the bushing contacts the bore of the spring. Check the alignment of the pivot bushing.

WARNING

TO PREVENT PERSONAL INJURY, PUMP CAPACITY MUST NOT EXCEED 10,000 PSI.

8. Operate the pump to drive the bushing into the spring. When the spacer contacts the clamping plate, bushing installation is complete.

WARNING

TO PREVENT PERSONAL INJURY FROM POSSIBLE BREAKAGE UNDER PRESSURE, DO NOT STAND IN THE VICINITY OF THE TOOL WHILE THE PIVOT BUSHING IS BEING INSTALLED. IT IS ESPECIALLY IMPORTANT TO NOT STAND IN THE DIRECTION OF THE HYDRAULIC FORCE.

9. Wipe away any residual Loctite® 680 adhesive from exposed faces of the bushing, spring, and tools.
10. If the front spring eye does not require replacement, proceed to installation.

■ FRONT AND REAR SPRING EYE – BAR PIN/THREADED BUSHING

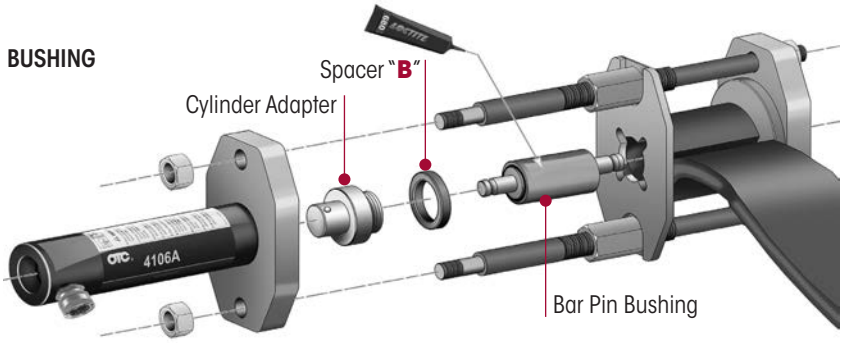
1. Remove residual adhesive from the inside diameter of the beam using Hendrickson approved methods.
2. Insert the cylinder adapter into the head of the cylinder as shown in Figure 9-14.
3. Place spacer **B** over the cylinder adapter.

WARNING

TO HELP PREVENT PERSONAL INJURY, PUMP CAPACITY MUST NOT EXCEED 10,000 PSI.

FIGURE 9-14

FRONT
BAR PIN BUSHING



4. Clean the outer diameter of the new bushing and apply Loctite® 680 adhesive, being careful to apply the adhesive to metal only. **DO NOT** apply adhesive to the rubber part of the bushing.
5. Insert the bar pin/threaded bushing into the cylinder adapter. It may be necessary to adjust the threaded pin to facilitate the correct driver installation on bushing.
6. Operate the pump to extend the cylinder piston rod. Guide the assembly until the bushing contacts the bore of the spring. Check the alignment of the pivot bushing.
7. Operate the pump to drive the bushing into the spring. When the spacer contacts the clamping plate, bushing installation is complete.

⚠ WARNING

TO PREVENT PERSONAL INJURY FROM POSSIBLE BREAKAGE UNDER PRESSURE, DO NOT STAND IN THE VICINITY OF THE TOOL WHILE THE PIVOT BUSHING IS BEING INSTALLED. IT IS ESPECIALLY IMPORTANT TO NOT STAND IN THE DIRECTION OF THE HYDRAULIC FORCE.

8. Wipe away any residual Loctite® 680 adhesive from exposed faces of the bushing, spring, and tools.
9. If the other spring eye replacement is complete or does not require replacement, proceed to leaf spring installation.
10. If removed, re-install the grease zerk into the threaded pin.

LEAF SPRING INSTALLATION

If the choice of the two options during spring eye bushing preparation replacement was:

- **OPTION ONE —** Replace spring eye bushings in-chassis, proceed to Step 1
- **OPTION TWO —** Install the leaf spring and clamp group assembly as detailed in this section

1. If replacing only the front bushings, see **A**, if replacing only the rear bushing, see **B**, if replacing both front and rear bushings, see **C**.

A FRONT SPRING EYE BUSHINGS

a. Raise the axle and spring assembly to engage the **FRONT** spring eye bushings in the hangers.

b. Install the new eight (8) **FRONT** spring eye clamp bolts (both sides). Snug the front and rear spring eye fasteners to 50 foot pounds. Proceed to Step 2.

B REAR SPRING EYE BUSHINGS

a. Raise the axle and spring assembly to engage the **REAR** spring eye bushings into the shackle brackets. Install the spring eye bolt fasteners into the shackle.

b. Snug the front and rear spring eye fasteners to 50 foot pounds. Proceed to Step 2.

C FRONT AND REAR SPRING EYE BUSHINGS

a. Follow **A** or **B** whichever was done last.

b. Snug the front and rear spring eye fasteners to 50 foot pounds. Proceed to Step 2.

2. Install tires if removed.
3. Raise the vehicle and remove frame stands.
4. Lower the vehicle.
5. Tighten both front and rear spring eye fasteners to the required torque.
6. Remove wheel chocks.

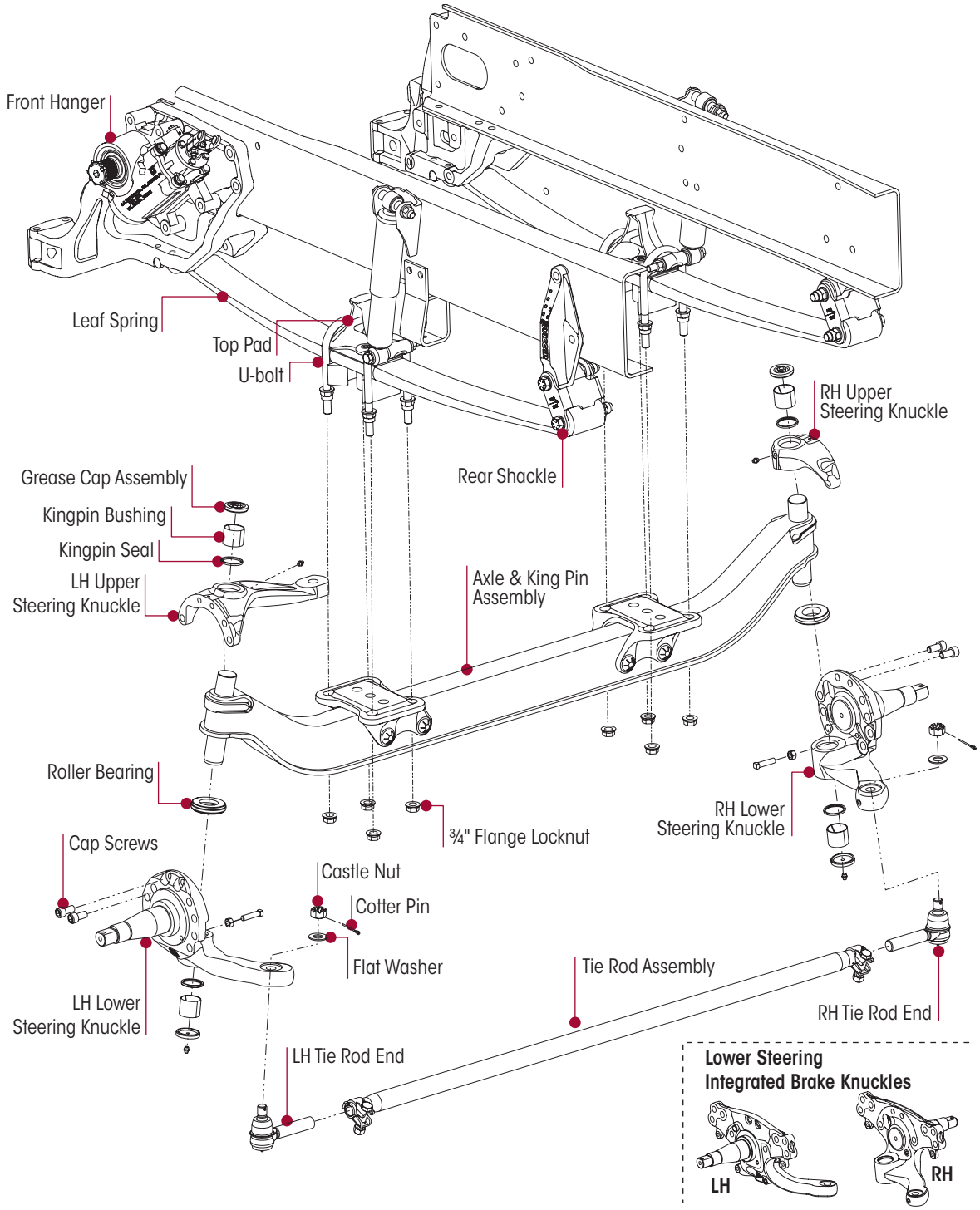
STEERTEK NXT AXLE

STEERTEK NXT AXLE REMOVAL

Refer to Figure 9-15 when replacing STEERTEK NXT axle components.

1. Place the vehicle on level floor.
2. Chock the wheels.
3. Raise the frame and support the vehicle with safety stands.

FIGURE 9-15



4. Suspend the front axle with the shock absorbers attached.

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.

5. Remove the front wheel end assemblies per the vehicle manufacturer's instructions.
6. Disconnect the drag link from the steering arm.
7. Support the axle with safety stands.

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.

SERVICE HINT

If a clamp group locknut fails to come off the 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 and discard the 5/8" clamp group fasteners.
9. Lower the axle and remove axle assembly from the vehicle.

AXLE DISASSEMBLY (Removed from Chassis)

1. Remove the tie rod assembly. See Tie Rod in this section.

WARNING

PRIOR TO REMOVAL OF THE SOCKET HEAD STOP BOLTS SUPPORT THE LOWER STEERING KNUCKLE, FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE OR PERSONAL INJURY. REMOVAL OF THE SOCKET HEAD STOP BOLTS WILL ALLOW THE STEERING KNUCKLE TO SEPARATE FROM THE AXLE.

2. Remove and discard the two (2) socket head stop bolts from the steering knuckle assembly with the lower steering knuckle supported, see Figure 9-15.
3. Remove the steering knuckles and thrust bearings.
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 in this section.

STEERTEK NXT AXLE INSTALLATION

1. Place the new axle on the floor jack and position the axle under the vehicle, see Figure 9-16.
2. Raise the axle into position.
3. Ensure the front leaf spring assembly's center bolt is aligned correctly in the axle spring seat, see Figure 9-16.
4. Install the new clamp group fasteners. **DO NOT** tighten to torque at this time.

WARNING

ENSURE THE 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 9-17.
6. Install the steering knuckles, see Steering Knuckle in this section.
7. Install the tie rod assembly, see Tie Rod End and Cross Tube in this section.
8. Connect the drag link in the steering arms per the vehicle manufacturer's instructions.
9. Install the wheel end assemblies as per the vehicle manufacturer's instructions.

FIGURE 9-16

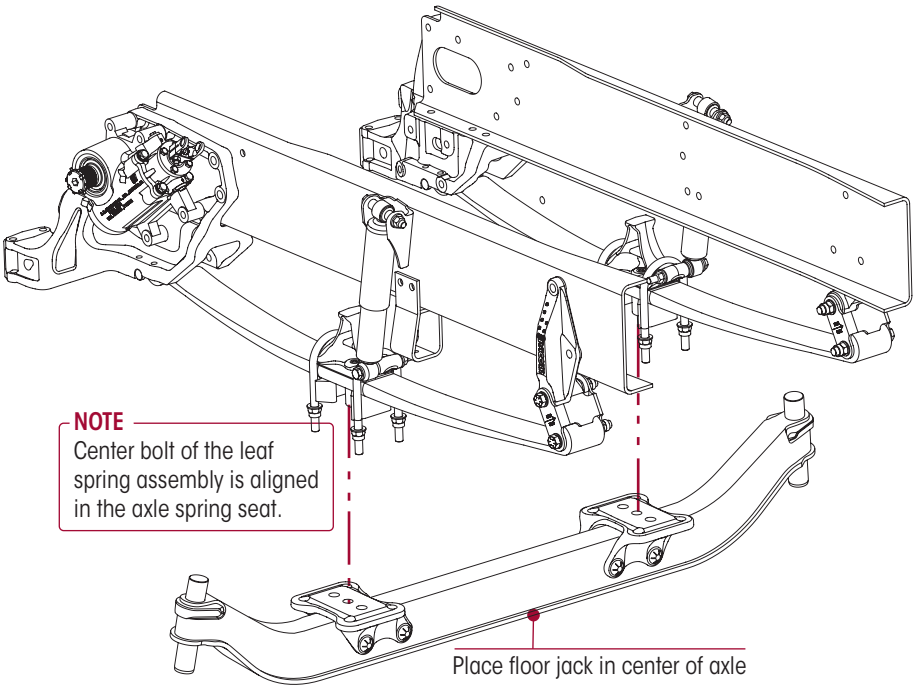
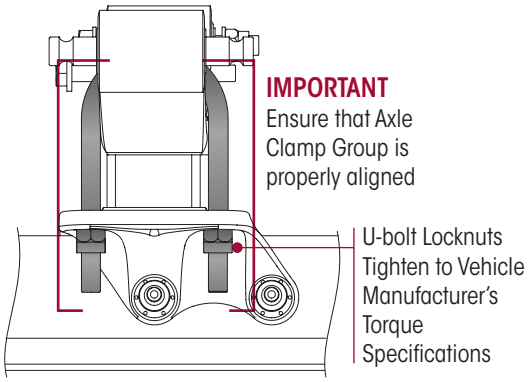


FIGURE 9-17



10. Raise the vehicle and remove the safety stands.
11. Lower the floor jack and load the front axle with the vehicle's weight.
12. Remove the floor jack.
13. Tighten the clamp group locknuts evenly in 50 foot pounds increments to vehicle manufacturer's torque specifications.
14. Remove the wheel chocks.
15. Fill the hubs with the proper lubricant (see manufacturer's guidelines for recommended lubrication specifications).
16. Grease the front steering components as per lubrication guidelines in the Preventive Maintenance section of this publication.

STEERING KNUCKLE DISASSEMBLY

You will need:

- A hydraulic shop press with a minimum forcing capacity of 2.5 tons
- Kingpin Bushing and Seal Installer/Remover tool, Driver and Receiver Tool, refer to the Special Tool section of this publication.

NOTE Steering knuckle component replacement includes kingpin preparation and measurement, kingpin bushing removal, steering knuckle bore measurement, kingpin bushing installation, reaming or honing, and kingpin seal installation.

1. Place the vehicle on level floor.
2. Chock the wheels.
3. Support the vehicle with safety stands.
4. Raise and support the axle with safety stands.

5. Remove the wheel end assemblies per the vehicle manufacturer's instructions.

CAUTION

DO NOT USE A PICKLE FORK STYLE TOOL TO SEPARATE THE TIE ROD END FROM THE STEERING KNUCKLE ARM. DOING SO WILL RESULT IN DAMAGE TO THE GREASE BOOT.

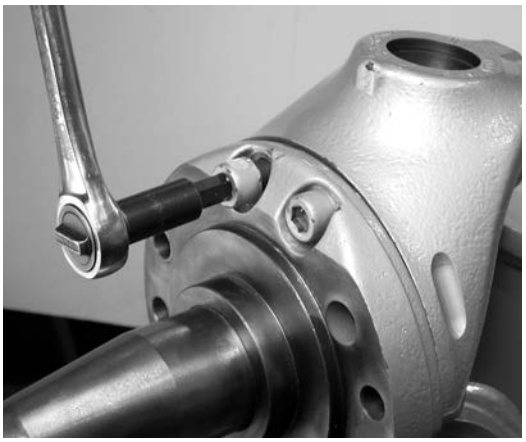
6. Remove the tie rod assembly using a 7/8" -14 tie rod end removal tool to separate the tie rod end from the lower steering knuckle, refer to Tie Rod End and Cross Tube in this section.
7. Remove the drag link from the steering knuckle if necessary per the vehicle manufacturer`s instructions.

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 two socket head cap screws that connect the kingpin to the upper steering knuckle, see Figure 9-18.

FIGURE 9-18



SERVICE HINT

Remove the grease zerk from the knuckle assemblies. This will allow the knuckle assemblies to freely slide up and down the kingpins without creating back pressure.

9. Remove the grease zerk from the knuckle assemblies.
10. Remove the lower steering knuckle from the kingpin by sliding it down the kingpin.
11. Remove the upper steering knuckle by sliding it up off the kingpin.

KINGPIN PREPARATION & MEASUREMENT

Cleaning the 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.

Cleaning the Rough Parts

- Rough parts can be cleaned with the ground or polished parts. Rough parts can also be cleaned in hot solution tanks with a weak alkaline solution. The parts must remain in the hot solution tanks until they are completely cleaned and heated.

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

THE STEERTEK NXT 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.

⚠ 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 PROCEDURE:

- WEAR PROPER EYE PROTECTION
- WEAR CLOTHING THAT PROTECTS YOUR SKIN
- WORK IN A WELL VENTILATED AREA
- DO NOT USE GASOLINE, OR SOLVENTS THAT CONTAIN GASOLINE. GASOLINE CAN EXPLODE
- ACIDIC SOLUTIONS CANNOT BE USED ON ALUMINUM COMPONENTS
- 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.

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 9-19 through 9-22.

FIGURE 9-19

FIGURE 9-20

FIGURE 9-21

FIGURE 9-22

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.
   Kingpin minimum dimension is: 1.802" for 12,500 to 14,600 pound capacity.
3. If the kingpin has less than 1.802" diameter, replacement of the axle is necessary, see Figures 9-23 through 9-26.

FIGURE 9-23

FIGURE 9-24

FIGURE 9-25

FIGURE 9-26

KINGPIN BUSHING

You will need, refer to the Special Tools section of this publication:

- **A hydraulic shop press** with a minimum forcing capacity of 2.5 tons (or an arbor press) or use hand tools. If a shop press is not available to remove/install the kingpin bushings, an acceptable **optional method** is to use a hammer along with the appropriate shop made tools on a work bench
- Kingpin Bushing and Seal Tools (including Kingpin Handle, Kingpin Bushing Installer/Remover Tool, Bushing Driver and Bushing Receiving Tool

- An adjustable straight flute reamer with extension pilot tool **or** precision-finish cylinder hon.
- Vise with brass jaws (soft jaws)

NOTE If one (1) bushing is worn or damaged, it is mandatory to replace both the upper and lower bushings on that knuckle assembly.

⚠ WARNING BEFORE APPLYING HYDRAULIC PRESSURE TO ANY TOOLING SET-UP, ALWAYS CHECK TO ENSURE THE PRESS PLATE, TOOLS, 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 FIGURE 9-27. IMPROPER SUPPORT TO THE STEERING KNUCKLE CAN CAUSE COMPONENT DAMAGE.

KINGPIN BUSHING REMOVAL

NOTE To remove the kingpin bushing, always **drive the bushing from the non-machined surface** of the upper or lower steering knuckle.

1. Remove the threaded grease cap and grease zerk.
2. Place the **machined surface** of the upper or lower steering knuckle face down (axle side down), ensure that each part of the steering knuckle assembly is squarely supported on the bushing receiving tool before applying hydraulic pressure to press out the kingpin bushings, see Figures 9-27 and 9-28.
3. From the **non-machined surface** of the upper or lower steering knuckle, use the kingpin bushing installer/remover tool (see Special Tools section of this publication) to drive the kingpin bushing and kingpin seal out of the steering knuckle, see Figure 9-29.
4. Clean the parts and inspect for reassembly, see Figure 9-30.

FIGURE 9-27

FIGURE 9-28

FIGURE 9-29

FIGURE 9-30

STEERING KNUCKLE BORE MEASUREMENT

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

FIGURE 9-31

FIGURE 9-32

FIGURE 9-33

1. Measure the upper and lower steering knuckle bore inside diameter at two locations. Always use an inside micrometer or a telescoping gauge when taking a knuckle bore measurement. The two positions must be 90° opposed from each other, see Figures 9-31 through 9-33. Some out-of-roundness at the top and bottom of the bore edges is acceptable.

   Steering knuckle bore diameter specification is 1.938" ± 0.003".

   a. If the average measurement is more than the knuckle bore maximum diameter specification, steering knuckle replacement is necessary.

KINGPIN BUSHING INSTALLATION

WARNING

BEFORE APPLYING HYDRAULIC PRESSURE TO ANY TOOLING SET-UP, ALWAYS CHECK TO ENSURE THE PRESS PLATE, TOOLS, 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.

NOTE

If a shop press is not available to remove / install the kingpin bushings, an acceptable optional method is to use a hammer along with the shop made tools (kingpin bushing driver, receiving tool, kingpin handle, bushing installer / remover and seal installer tools) on a work bench.

NOTE

To install the kingpin bushing, always drive the bushing from the machined side of the steering knuckle.

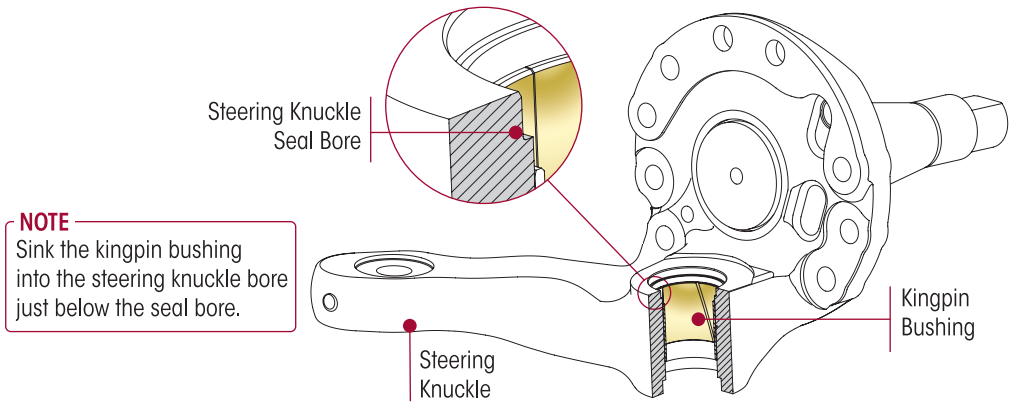
1. Place the **machined surface** of the upper / lower steering knuckle **face up** (axle side up). Ensure that each part of the steering knuckle assembly is squarely supported before applying hydraulic pressure to press in the kingpin bushing, see Figure 9-34.
2. From the **machined surface** of the steering knuckle, use the kingpin bushing driver tool to drive the kingpin bushing flush into steering knuckle, see Figure 9-35.
3. Use the kingpin bushing installer / remover tool to sink the kingpin bushing into the steering knuckle bore to just below the seal bore, see Figures 9-36 and 9-37.
4. Properly size the kingpin bushings to fit the kingpins, see instructions in the Kingpin Bushing Reaming / Honing instructions in this section.

FIGURE 9-34

FIGURE 9-35

FIGURE 9-36

FIGURE 9-37



KINGPIN BUSHING REAMING / HONING

Once new replacement kingpin bushings are installed, they will need to be properly sized to fit the respective kingpins using one of the following two methods:

METHOD A – REAMING or METHOD B – HONING

NOTE Bushing inner diameter size is to be 0.001" larger than the measured kingpin outer diameter size.

CAUTION DO NOT BURNISH THE KINGPIN BUSHINGS. BURNISHING WILL DAMAGE THE BUSHINGS AND VOID ANY APPLICABLE WARRANTY.

WARNING WHEN INSTALLING THE STEERING KNUCKLE COMPONENTS IN A VISE, IT IS NECESSARY TO PROTECT THE MACHINED SURFACES FROM GOUGES OR MARRING BY USING BRASS JAWS (SOFT 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.

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

■ Method A – Reaming

NOTE Prior to reaming, re-assemble the steering knuckle, see Figures 9-38 and 9-39.

1. Place the steering knuckle (equipped with a replacement kingpin bushing) in a vise with brass jaws (soft jaws), see Figures 9-38 and 9-39.
2. Install the reamer onto the end of the extension pilot tool and position the extension pilot tool through the kingpin bushing.

SERVICE HINT The pilot tool helps keep the reamer straight during the reaming process.

3. Slide the reamer into the steering knuckle until the blades touch the kingpin bushing inner diameter surface.
4. Rotate the reamer with a light **DOWNWARD** pressure. **DO NOT** apply too much force. Rotate the reamer smoothly, see Figures 9-38 and 9-39.

NOTE To remove the reamer, rotate the tool in the opposite cutting direction.

FIGURE 9-38
Upper Steering Knuckle in Vise Shown

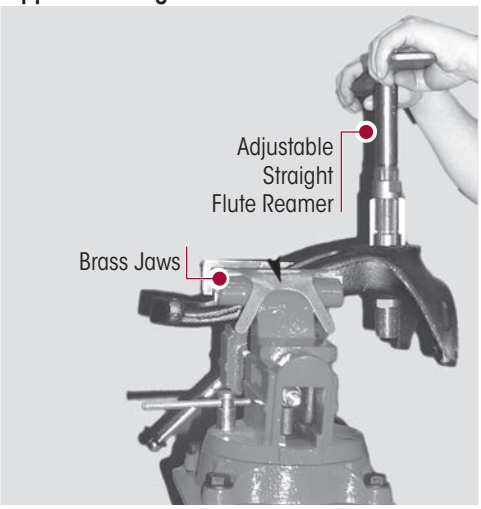


FIGURE 9-39
Lower Steering Knuckle in Vise Shown

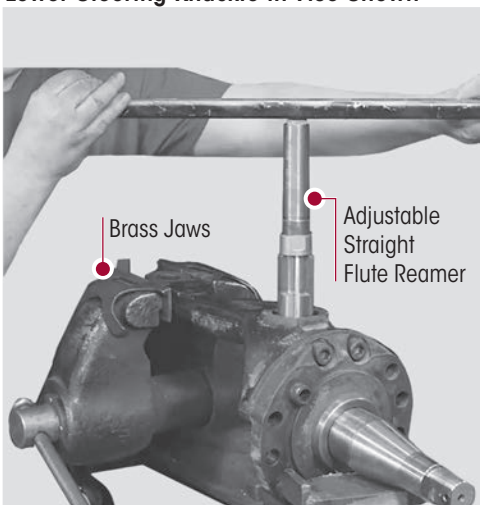
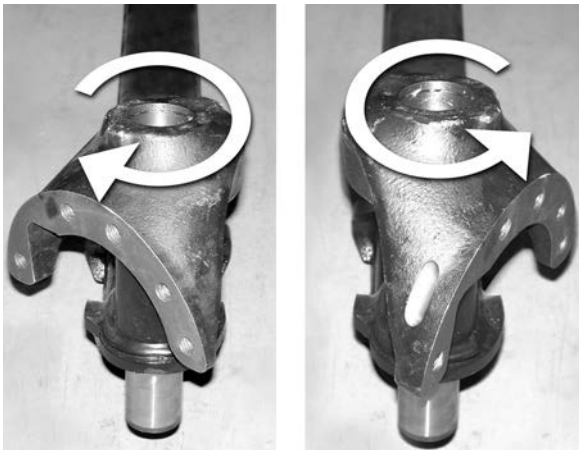


FIGURE 9-40



5. Remove the steering knuckle from the vise and repeat Steps 1 through 4 for the other mating steering knuckle equipped with a replacement kingpin bushing.
6. Clean and remove all loose kingpin bushing material created by the reaming operation from the steering knuckle(s). Take special attention to remove material from the grease channels and dimples.
7. Clean the ⅝" brake backing plate bolts with a wire wheel and run a tap through the threads of the steering knuckle and then flush out with brake cleaner and dry with compressed air.
8. Lightly lubricate the mating kingpins with penetrating oil.
9. Temporarily install the steering knuckle on the mating kingpin to ensure a close slip fit.

NOTE If the steering knuckle does not fit onto the kingpin, **DO NOT** force it.

10. Rotate the steering knuckle back and forth to verify there is no binding on the kingpin, see Figure 9-40.
11. If either of the bushings are too tight, repeat Steps 1 through 10 until proper clearance is achieved.
12. After verifying that the kingpin is free of binding, remove the steering knuckle assembly. Proceed with the Kingpin Seal Installation procedure.

■ Method B – Honing

1. Assemble the cylinder hone with clean, dry honing stones.

SERVICE HINT If the honing stones are damaged or oily, they should be replaced.

2. Ensure the wiper blocks are clean and dry, see Figure 9-41.
3. Place the steering knuckle (equipped with a replacement kingpin bushing) on a work surface.
4. Size the precision cylinder hone slightly smaller than the kingpin bushing inner diameter and insert it into the kingpin bushing, see Figures 9-42 and 9-43.
5. Increase the precision cylinder hone's diameter until there is just enough pressure on the kingpin bushing inner diameter to hold the hone in place.
6. Connect a power drive to the precision cylinder hone, see Figure 9-43.
7. Using the power drive, rotate the precision cylinder hone about ten revolutions in the kingpin bushing. The power drive should rotate at a speed of **less than 30 revolutions per minute (RPM)**.
8. Stop the power drive rotation.
9. Reduce the precision cylinder hone's diameter and remove it from the kingpin bushing.
10. Remove the steering knuckle from the work surface and repeat Steps 1 through 9 for the other steering knuckle.
11. Clean and remove all loose kingpin bushing material created by the honing operation from the steering knuckle(s). Take special attention to remove material from the grease channels and dimples.

NOTE If the steering knuckle does not fit onto the kingpin, **DO NOT** force it.

12. Perform Steps 7 through 10 in the Method A – Reaming section of this publication.

13. If either of the bushings are too tight, repeat steps 1 through 12 in the Method B – Honing section, until proper clearance is achieved.
14. After verifying that the kingpin is free of binding, remove the steering knuckle assembly. Proceed with the Kingpin Seal Installation procedure.

FIGURE 9-41

STEERTEK NXT Axle
Upper Steering Knuckle Shown

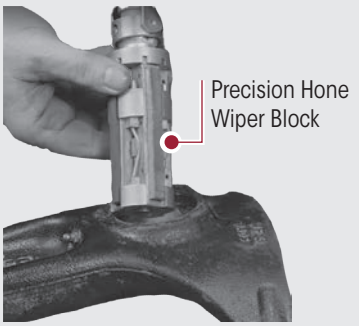
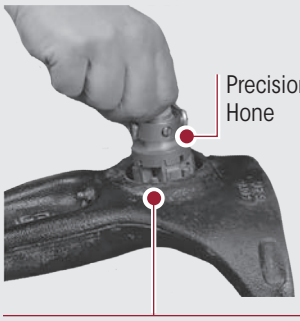


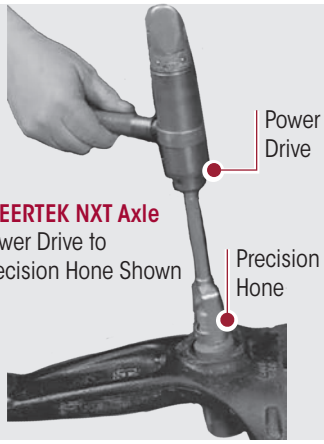
FIGURE 9-42

STEERTEK NXT Axle
Precision Hone in Kingpin Bushing Shown



Kingpin Bushing in Upper Steering Knuckle

FIGURE 9-43



STEERTEK NXT Axle
Power Drive to
Precision Hone Shown

KINGPIN SEAL INSTALLATION

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. Place the steering knuckle assembly in a vise with brass jaws (soft jaws), see Figures 9-38 and 9-39, or place on a suitable workbench. The steering knuckle will have the **machined surface** facing up (axle side up).
2. Lay the kingpin seal into the bore of the steering knuckle. The seal lip should face outward or toward the axle, see Figure 9-44.
3. Use the seal installer tool (see tools specifications of this publication) and press seal firmly into the steering knuckle assembly.
4. Install the kingpin seal until it bottoms out in the kingpin bore, see Figure 9-45.

FIGURE 9-44

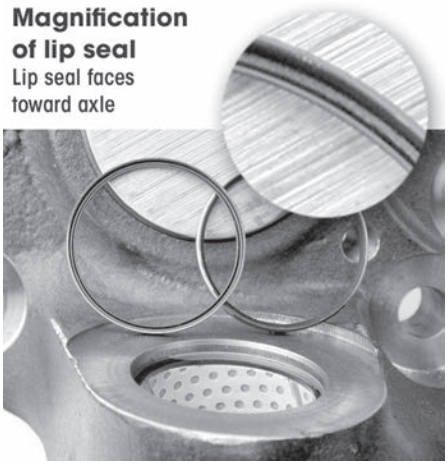


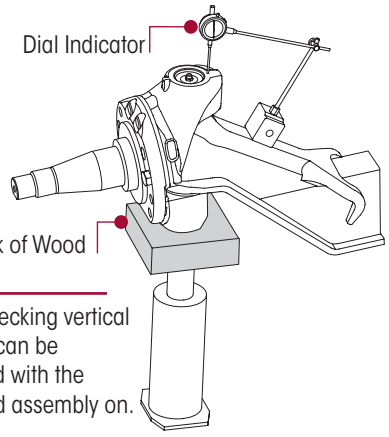
FIGURE 9-45

STEERING KNUCKLE ASSEMBLY

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

1. Install the roller thrust bearing with the seal facing up toward axle (the black seal will designate the top side).
2. Pack the bushing dimples on the upper and lower steering knuckles with multi purpose Lithium based grease (NLGI Grade 2) before installation.
3. Install the upper steering knuckle on the upper kingpin.
4. Install the lower steering knuckle on the lower kingpin and install (temporarily) the old socket head cap screws loose into the top two (2) threaded holes.
5. Install a bottle jack under the lower knuckle and slightly raise the knuckle until it is possible to thread in the three (3) brake backing plate bolts by hand. These are for guide purposes only.
6. Snug the two (2) socket head cap screws.
7. Lower the bottle jack so that all the vertical end play is on the underside of the axle.
8. 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 9-46.
9. Zero the dial indicator.
10. Raise the bottle jack until there is **NO CLEARANCE** between the knuckle assembly and the bottom of the axle, slightly lifting the axle.
11. Check the reading on the dial indicator. The specification for vertical travel on the steering knuckle during assembly is 0.008" to 0.011".

FIGURE 9-46



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

12. If vertical 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
    - **Below 0.008"**, loosen the two (2) socket head cap screws and **pull up** on the knuckle assembly until the proper vertical end play is achieved

⚠ 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.

NOTE The Hendrickson Genuine parts, socket head cap screw comes with a pre-applied Loctite compound.

13. Remove one (1) old socket head cap screw and replace with new socket head cap screw.
14. Remove second socket head cap screw and replace with new socket head cap screw. Tighten both socket head cap screws to 188 ± 12 foot pounds torque.
15. Recheck the vertical end play with the dial indicator, see Figure 9-46 or a 0.010" feeler gauge.
16. Remove the brake spider bolts, they should thread out freely.
17. Remove the bottle jack and continue assembling the wheel ends.

IMPORTANT NOTE It is critical to apply Loctite to the three (3) brake spider bolts to ensure that these bolts sustain the proper torque requirement of steering knuckle assembly.

18. Apply Loctite to the three (3) brake spider bolts prior to installation into the brake spider. Tighten bolts to 188 ± 12 foot pounds torque.

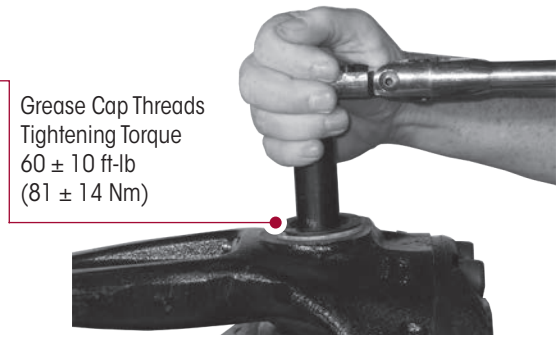
WARNING

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

19. Install the tie rod end into the lower steering knuckle arm.
20. Tighten the castle nuts to 185 foot pounds torque then advance the castle nut to the next hex face to install the cotter pin. **DO NOT** back off the castle nut to install cotter pin.
21. Install the drag link into the steering arm and tighten to the vehicle manufacturer's specifications.
22. Install the new threaded grease caps and tighten to 60 ± 10 foot pounds torque, see Figures 9-47 and 9-48. **Allow 30 minutes** for thread sealant to cure before greasing.

FIGURE 9-47

FIGURE 9-48



23. Ensure the kingpin bushing is installed properly below the kingpin seal. Push kingpin seal up against the machined bore face to minimum 0.25 mm, see Figure 9-49.
24. Install new grease zerk and thread until it bottoms out to: within a 1.2 mm maximum gap between hex and steering knuckle surface, see Figure 9-50.
25. Install the brakes, drums, wheels and tires per the vehicle manufacturer's instructions.
26. Raise the vehicle and remove the safety stands.
27. Lower the vehicle.
28. Grease steering knuckles with the vehicle on the floor.
29. Remove the wheel chocks from the vehicle.

FIGURE 9-49

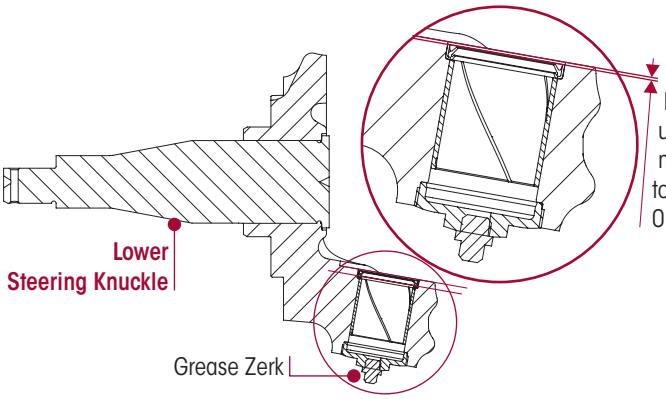
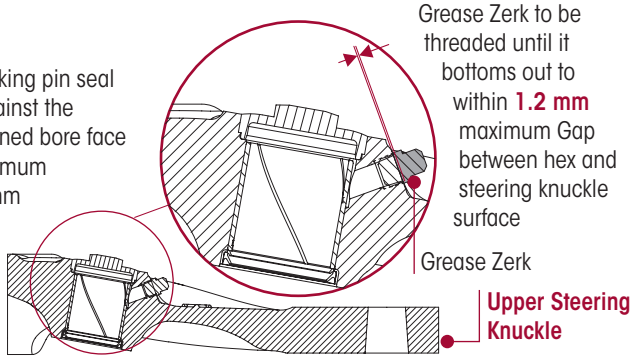


FIGURE 9-50



TIE ROD END AND CROSS TUBE

You will need:

- 7/8" -14 tie rod end removal tool (see Figure 9-52)

DISASSEMBLY

1. Chock the wheels.
2. Position the steer axle tires straight ahead.
3. Remove the cotter pin and castle nut, see Figure 9-51.

FIGURE 9-51

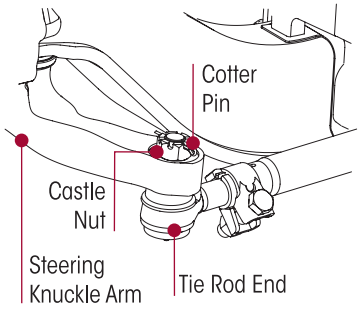


FIGURE 9-52
7/8" -14 Tie Rod End Removal Tool

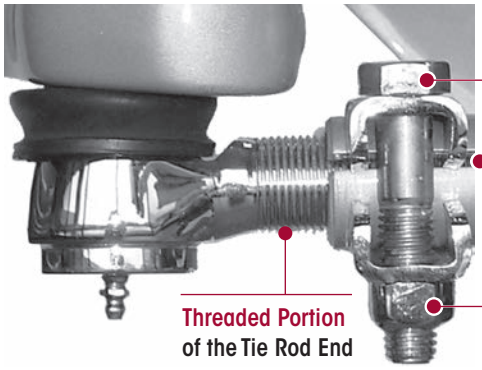
4. Use a 7/8"-14 tie rod end removal tool (see Figure 9-52) to separate the tie rod end from the steering knuckle arm.
5. Repeat Steps 3 and 4 to remove the other tie rod end to remove the tie rod assembly.
6. Remove the tie rod assembly from the vehicle.
7. Mount the cross tube in a soft jaw vice.
8. Remove the tie rod clamp hardware from the cross tube.
9. Count the exposed threads on the tie rod end being replaced, see Figure 9-53.

⚠ 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.

10. Remove the tie rod end from the cross tube.
11. If the opposing tie rod end is being replaced repeat Steps 8 through 10.
12. Visually inspect the cross tube for dents, cracks, or thread damage, replace as necessary.

FIGURE 9-53



5/8" Tie Rod Clamp Bolt
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.

Tie Rod Cross Tube Slots
It is critical to have the threaded portion of the tie rod end extend past the slots in the tie rod cross tube.

5/8" Tie Rod Clamp Locknut
Tightening Torque
68 ± 7 ft-lb (92 ± 9 Nm)

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 tie rod arm.
- A left hand threaded tie rod end will be installed into the left side tie rod arm.

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

WARNING

THE THREADED PORTION OF THE TIE ROD END MUST EXTEND PAST THE SLOTS INTO THE TIE ROD CROSS TUBE, SEE FIGURE 9-53. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE, LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

3. If replacing the opposing tie rod end is not necessary, it is critical that the ball and socket are free to rotate in the opposing tie rod end.
4. Replace the opposing tie rod end if necessary, by repeating Steps 1 and 2.
5. Install both tie rod ends into the lower steering knuckles.
6. Install the tie rod assembly by placing both tie rod ends into the lower steering knuckles.
7. Tighten the castle nuts to 185 foot pounds torque, then rotate the castle nut to the next castle slot and install the cotter pin. **DO NOT** back off the castle nut to install 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.

8. Grease the tie rod ends with the specified lubricant, see lubrication specifications and procedure in the Preventive Maintenance section of this publication.
9. Set the toe, refer to Toe Adjustment in the Alignment & Adjustments section of this publication.
10. After the alignment is acceptable, tighten the tie rod to tie rod tube fasteners to 68 ± 7 foot pounds tightening torque, see Figure 9-53.
11. Remove the wheel chocks.

SECTION 10
Front Wheel Alignment Specifications

SOFTEK with STEERTEK NXT Axle for Peterbilt Vehicles

FRONT SYSTEM SUSPENSION ALIGNMENT SPECIFICATION

CAMBER[1]	DESIGN SPECIFICATION	RANGE		CASTER[2,3]	DESIGN SPECIFICATION	RANGE	
		MINIMUM	MAXIMUM			MINIMUM	MAXIMUM
LEFT	0.00° ± 1.0°	-1.0°	+1.0°	LEFT	3.50° ± 1.0°	+2.5°	+4.5°
RIGHT	- 0.25° ± 1.0°	-1.25°	+0.75°	RIGHT	3.50° ± 1.0°	+2.5°	+4.5°
CROSS	0.0°	—	+2.0°	CROSS[4,5]	0.0°	—	+1.5°

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 NOTES:

2. 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.
3. 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.
4. **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 (2) different angle caster shims will not correct cross caster.**
5. **Example of caster adjustment:** 4.5° Right Hand/5° Left Hand would require one (1), 1.0 shim on each side to increase caster and achieve 5.50° Right Hand / 6.00° Left Hand, which is in specification. **DO NOT** attempt to use uneven shims.

Hendrickson recommends following practices:

	DESIGN SPECIFICATION[6]	RANGE	
		MINIMUM	MAXIMUM
TOTAL TOE[7]	1/16" ± 1/32" (0.06" ± 0.03")	1/32" (0.03")	3/32" (0.09")

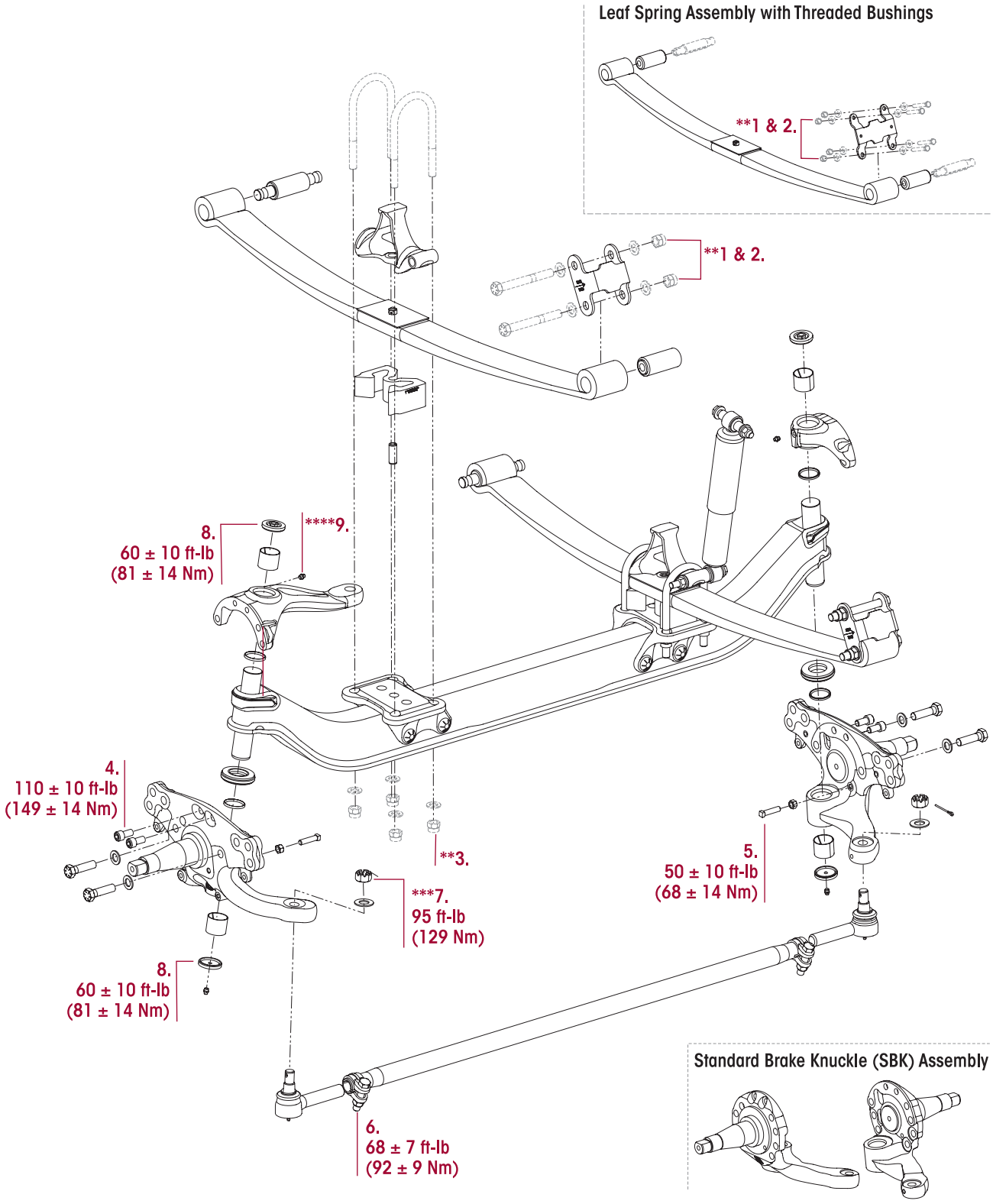
TOE-IN NOTES:

6. Toe-in is to be set and adjusted in the normal vehicle unladen 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.
7. In most instances total toe is set by the vehicle manufacturer or body builder. Consult the vehicle manufacturer for specifications.

SECTION 11

Torque Specifications

HENDRICKSON RECOMMENDED TORQUE VALUES
Provided in Foot Pounds and in Newton Meters



SOFTEK with STEERTEK NXT Axle for Peterbilt Vehicles

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS					
NO.	COMPONENT	FASTENERS		*TORQUE VALUE	
		QTY.	SIZE	FOOT POUNDS	NEWTON METER
1	Rear Shackle Bracket to Shackle Plate	2	**	**	**
2	Rear Shackle Bracket to Spring Eye	2			
	⚠ 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.				
3	Clamp Group Hardware	8	**	**	**
4	Knuckle Attachment Bolt (Socket Head Cap Screw)	4	5/8"	110 ± 10	149 ± 14
5	Knuckle / Axle Wheel Stop Bolt	2	1/2"	50 ± 10	68 ± 14
6	Tie Rod Tube to Tie Rod Ends	2	1/2"	68 ± 7	92 ± 9
7	Tie Rod Ends to Lower Steering Knuckle	2	3/4" Castle Nut	***95	***129
8	Grease Cap Assembly, Upper and Lower	4	1/2"	60 ± 10	81 ± 14
9	Grease zerk	2		****	****
• All hardware 1/4" and greater is Grade 8 with no additional lubrication. Frame mount hardware in most cases are Huck style fasteners supplied by the vehicle manufacturer.					

NOTE: * All hardware information in the matrix denotes recommended torques for fasteners originally supplied by Hendrickson.

** Not supplied by Hendrickson. Follow torque specifications listed in the vehicle manufacturer's service manual. Hendrickson is not responsible for maintaining vehicle manufacturer's torque values.

*** Torque to 95 foot pounds (129 Nm), advance castle nut to next hex face to install the cotter pin. **DO NOT** back off the nut for cotter pin installation.

**** Thread until it bottoms out to within 1.2 mm maximum gap between hex and steering arm surface.

SECTION 12
Troubleshooting Guide

SOFTEK with STEERTEK NXT Axle for Peterbilt Vehicles

TROUBLESHOOTING GUIDE		
CONDITION	**POSSIBLE CAUSE**	**CORRECTION**
Vibration or shimmy of front axle during operation	Caster out of specification	Verify the rear air suspension(if equipped) is at the proper ride height if equipped, then adjust caster to specification.
	Wheels and/or tires out of balance	Balance or replace the wheels and/or tires.
	Worn shock absorbers	Replace the shock absorbers.
	Worn thrust washers (if equipped) and rear hanger clamps	Replace the thrust washers (if equipped) and rear hanger clamps.
	Wheel bearing adjustment	Adjust the wheel bearing to the manufacturer's specifications.
Excessive wear on tires or uneven tire tread wear	Tires have incorrect air pressure	Adjust the tire pressure to vehicle manufacturer's specification.
	Tires out of balance	Balance or replace the tires.
	Incorrect toe setting	Adjust the toe-in to Hendrickson's specification.
	Incorrect steering arm geometry	Repair the steering system as necessary.
	Worn kingpin bushings	Replace the kingpin bushings.
	Excessive wheel bearing end play	Check the specified wheel nut torque, replace worn or damaged wheel bearings.
	Wheel bearing adjustment	Adjust the wheel bearing to the manufacturers specifications.
Vehicle is hard to steer	Low pressure in the power steering system	Repair the power steering system.
	Steering linkage needs lubrication	Lubricate the steering linkage.
	Steering knuckles are binding	Check the vertical clearance.
	Incorrect steering arm geometry	Repair the steering system as necessary.
	Caster out of specification	Adjust the caster to specification applicable.
	Tie rod ends hard to move	Replace the tie rod ends.
	Worn thrust bearing	Replace the thrust bearing.
	Steering gear box internal problem	Perform the steering gear troubleshooting procedures per steering gear manufacturer's guidelines.

SOFTEK with STEERTEK NXT Axle for Peterbilt Vehicles

TROUBLESHOOTING GUIDE (CONTD.)		
CONDITION	**POSSIBLE CAUSE**	**CORRECTION**
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 the 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 the axle stops to vehicle manufacturer's specifications.
	Severe duty cycle service	Increase the frequency of inspection and lubrication intervals.
Worn or broken steering ball stud	Drag link fasteners tightened past specified torque	Tighten the drag link fasteners to the specified torque.
	Lack of lubrication or incorrect lubricant	Lubricate the linkage with specified lubricant.
	Power steering stops out of adjustment	Adjust the steering stops to Hendrickson's specifications.
Suspension has harsh or bumpy ride	Broken or worn leaf spring	Replace the leaf spring assembly.
	Front suspension overloaded	Redistribute the steer axle load.
	Broken shock absorber	Replace the shock absorber.
Restricted steering radius	Steering stops not adjusted correctly	Adjust the steering stops to achieve correct wheel cut.
Vehicle leans	Suspension is not torqued correctly at installation	Perform a spring eye re-torque procedure, refer to the Alignment & Adjustment section of this publication.
	Leaf spring broken	Replace the leaf spring assembly.
	Excessive weight bias	Contact the vehicle manufacturer or Hendrickson Tech Services.
Vehicle wanders	Caster out of specifications	Adjust the caster to specification applicable.
	Incorrect toe setting	Adjust the toe to specification.
	Air in the power steering system	Remove the air form the power steering systems.

SECTION 13
Reference Material

This technical publication covers Hendrickson Truck Commercial Vehicle 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 TMC and Hendrickson supports these recommendations.

To obtain copies of TMC's Recommended Practices Manual at:

TMC / ATA Headquarters
950 North Glebe Road, Suite 210
Arlington, VA 22203-4181

Phone: 703-838-1763
website: tmc.trucking.org
online ordering: atabusinessolutions.com/Shopping

Actual product performance may vary depending upon vehicle configuration, operation, service and other factors.
All applications must comply with applicable Hendrickson specifications and must be approved by the respective vehicle manufacturer with the vehicle in its original, as-built configuration.
Contact Hendrickson for additional details regarding specifications, applications, capacities, and operation, service and maintenance instructions.

*Call Hendrickson at **630.910.2800** or **855.RIDERED (855.743.3733)** for additional information.*

HENDRICKSON

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