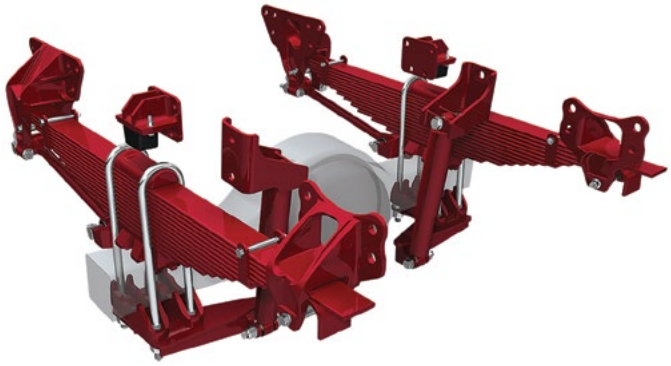


TECHNICAL PROCEDURE

HTS™ Rear Suspension for Autocar Vehicles

SUBJECT: Service Instructions
LIT NO: 17730-277
DATE: September 2023 **REVISION:** C

TABLE OF CONTENTS

SECTION 1
Introduction

This publication is intended to acquaint and assist maintenance personnel in the preventive maintenance, service, repair, and rebuild of the HTS™ rear suspension system as installed on applicable Autocar vehicles.

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

It is important to read and understand this entire Technical Procedure publication 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 HTS suspension.

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

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

SECTION 2
Product Description

Hendrickson's HTS suspension for Autocar is a mechanical suspension designed to achieve enhanced durability with limited maintenance requirements. The system utilizes advanced spring technology to achieve extended service life with excellent ride characteristics.

The HTS for Autocar is approved for the following straight truck applications: city delivery, tanker, paint striper, sweeper, utility, and small service crane.

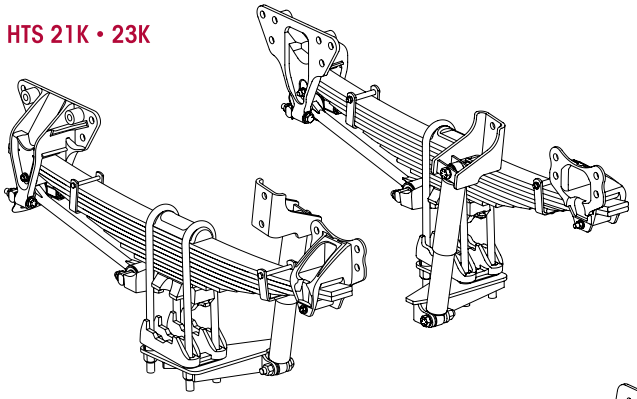
Proper suspension selection should be based on the amount of carrying capacity required for the specific vehicle operation.

The HTS suspension design features include:

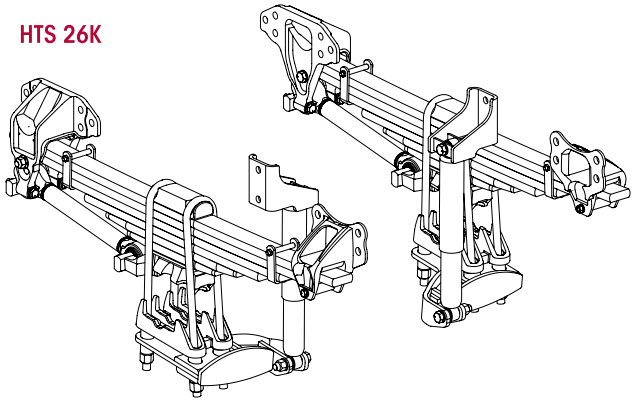
- **Axle Connection** — Wide seats with heavy-duty U-bolts for secure connection.
- **Leaf spring assemblies** — Hendrickson quality springs are made from high-strength steel. Heat treated and shot peened for exceptional fatigue life.
- **Longitudinal torque rods** — Premium rubber bushings are used for the longitudinal torque rods.
- **Shims** — Drop-in shims used for ease of alignment.
- **Shock Absorbers** — Positioned and tuned for optimum dumping characteristics.
- **Spring Hanger** — Designed for lightweight and enhanced durability.

FIGURE 2-1

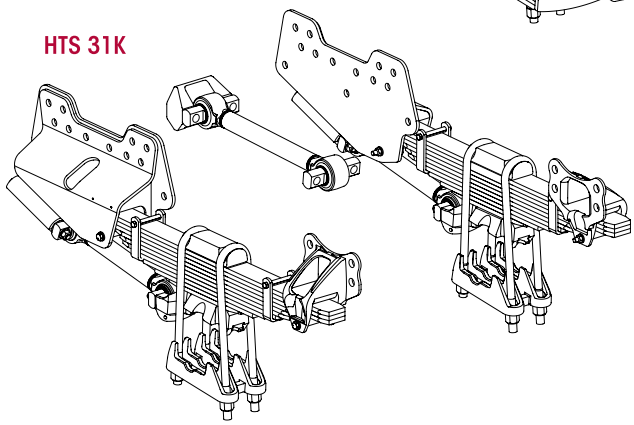
HTS 21K • 23K



HTS 26K



HTS 31K



HTS for Autocar Specifications

	21K	23K	26K	31K
Suspension Installed Weight[1]	600 lbs.	615 lbs.	745 lbs.	630 lbs.
Suspension Rating	21,000 lbs.	23,000 lbs.	26,000 lbs.	31,000 lbs.
Gross Vehicle Weight (GVW) Approval	33,000 lbs.	33,000 lbs.	40,600 lbs.	49,000 lbs.
Gross Combination Weight (GCW) Approval	33,000 lbs.	33,000 lbs.	58,000 lbs.	58,000 lbs.
Diagonal Articulation	8 in.			
Lift Axles	Not Approved			
Ride Height (loaded)[2]	9.0"			

* All applications require approval from Hendrickson Engineering.

1. Installed weight includes complete suspension, axle brackets, shock absorbers, shock absorber brackets, and frame brackets.
2. Suspension ride height measurements are taken from the centerline of the axle to the bottom of the vehicle frame.

SECTION 3
Important Safety Notice

Proper maintenance, service and repair are important to the reliable operation of the suspension. The procedures recommended by Hendrickson and described in this technical publication are methods of performing such maintenance, service and repair.

The warnings and cautions should be read carefully to help prevent personal injury and to assure that proper methods are used. Improper maintenance, service or repair may damage the vehicle, cause personal injury, render the vehicle unsafe in operation, or void the manufacturer's warranty.

Failure to follow the safety precautions in this manual can result in personal injury and/or property damage. Carefully read and understand all safety related information within this publication, on all decals and in all such materials provided by the vehicle manufacturer before conducting any maintenance, service or repair.

EXPLANATION OF SIGNAL WORDS

Hazard "Signal Words" (Danger-Warning-Caution) appear in various locations throughout this publication. Information accented by one of these signal words must be observed to help minimize the risk of personal injury to service personnel, or possibility of improper service methods which may damage the vehicle or render it unsafe.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

Additional 'Notes' or 'Service Hints' are utilized to emphasize areas of procedural importance and provide suggestions for ease of repair. The following definitions indicate the use of these signal words as they appear throughout the publication.

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

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

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

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

SERVICE HINT — A helpful suggestion that will make the service 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, ADVERSE VEHICLE HANDLING, PERSONAL INJURY, OR PROPERTY DAMAGE.

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

WARNING

U-BOLT FASTENERS

U-BOLTS THAT ARE FOUND TO BE LOOSE REQUIRE THAT MATING COMPONENTS BE INSPECTED FOR SIGNS OF WEAR. ANY WORN COMPONENTS MUST BE REPLACED. FAILURE TO DO SO CAN CAUSE PREMATURE CLAMP GROUP FAILURE, COMPONENT DAMAGE, ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE, OR SEVERE PERSONAL INJURY. MAINTAIN CORRECT TORQUE VALUES AT ALL TIMES. CHECK TORQUE VALUES ON A REGULAR BASIS AS SPECIFIED.

WARNING

LOAD CAPACITY

ADHERE TO THE PUBLISHED CAPACITY RATINGS FOR THE SUSPENSION. ADD-ON AXLE ATTACHMENTS AND OTHER LOAD TRANSFERRING DEVICES, SUCH AS LIFTABLE AXLES, CAN INCREASE THE SUSPENSION LOAD ABOVE ITS RATED AND APPROVED CAPACITIES, WHICH CAN RESULT IN COMPONENT DAMAGE AND ADVERSE VEHICLE HANDLING, 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 THEMSELF 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 WILL ASSUME ALL RISKS OF CONSEQUENTIAL PERSONAL INJURY, OR DAMAGE TO THE EQUIPMENT INVOLVED.

WARNING

PERSONAL PROTECTIVE EQUIPMENT

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

WARNING

MODIFYING COMPONENTS

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

⚠ WARNING

TORCH/WELDING

DO NOT USE A CUTTING TORCH TO REMOVE ANY FASTENERS. THE USE OF HEAT ON SUSPENSION COMPONENTS WILL ADVERSELY AFFECT THE STRENGTH OF THESE PARTS. A COMPONENT DAMAGED IN THIS MANNER CAN RESULT IN THE ADVERSE VEHICLE HANDLING AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

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

⚠ WARNING

TORQUE RODS

THIS HENDRICKSON SUSPENSION REQUIRES TORQUE RODS FOR SUSPENSION PERFORMANCE AND VEHICLE STABILITY. IF THESE TORQUE RODS ARE DISCONNECTED OR ARE NON-FUNCTIONAL, DO NOT OPERATE THE VEHICLE. OPERATING A VEHICLE WITH DISCONNECTED OR NON-FUNCTIONAL TORQUE RODS CAN RESULT IN ADVERSE VEHICLE HANDLING, COMPONENT DAMAGE, SUSPENSION/VEHICLE DAMAGE, AND/OR SEVERE PERSONAL INJURY.

⚠ WARNING

LEAF SPRING ASSEMBLY

A LEAF SPRING ASSEMBLY THAT HAS A MISSING, CRACKED OR DAMAGED LEAF OR SPRING CLIP WILL REQUIRE COMPLETE LEAF SPRING ASSEMBLY REPLACEMENT AND A THOROUGH INSPECTION OF THE ENTIRE SUSPENSION. IF ANY SUSPENSION COMPONENT APPEARS DAMAGED, REPLACEMENT IS REQUIRED. FAILURE TO REPLACE ANY DAMAGED COMPONENTS CAN CAUSE ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE AND WILL VOID ANY APPLICABLE WARRANTIES.

⚠ CAUTION

LEAF SPRING ASSEMBLY SHIMS

FAILURE TO INSTALL THE HTS LEAF SPRING ASSEMBLY SHIMS IN THE SAME ORIENTATION AND LOCATION WILL REQUIRE A VEHICLE ALIGNMENT. IMPROPER VEHICLE ALIGNMENT CAN INCREASE TIRE WEAR.

⚠ CAUTION

SHOCK ABSORBERS

THE SHOCK ABSORBERS ARE THE REBOUND TRAVEL STOPS FOR THE SUSPENSION. ANYTIME THE AXLE ON HTS SUSPENSION IS SUSPENDED IT IS MANDATORY THAT THE SHOCK ABSORBERS REMAIN CONNECTED. REPLACEMENT OF SHOCK ABSORBERS WITH NON-HENDRICKSON PARTS CAN ALTER THE REBOUND TRAVEL OF THE SUSPENSION.

⚠ WARNING

PARTS CLEANING

SOLVENT CLEANERS CAN BE FLAMMABLE, POISONOUS, AND CAUSE BURNS. TO HELP AVOID SERIOUS PERSONAL INJURY, CAREFULLY FOLLOW THE MANUFACTURER'S PRODUCT INSTRUCTIONS AND GUIDELINES AND THE FOLLOWING PROCEDURES:

1. WEAR PROPER EYE PROTECTION
2. WEAR CLOTHING THAT PROTECTS YOUR SKIN
3. WORK IN A WELL VENTILATED AREA
4. DO NOT USE GASOLINE, OR SOLVENTS THAT CONTAIN GASOLINE. GASOLINE CAN EXPLODE
5. HOT SOLUTION TANKS OR ALKALINE SOLUTIONS MUST BE USED CORRECTLY. FOLLOW THE MANUFACTURER'S RECOMMENDED INSTRUCTIONS AND GUIDELINES CAREFULLY TO HELP PREVENT PERSONAL ACCIDENT OR INJURY

DO NOT USE HOT SOLUTION TANKS OR WATER AND ALKALINE SOLUTIONS TO CLEAN GROUND OR POLISHED PARTS. DOING SO WILL CAUSE DAMAGE TO THE PARTS AND VOID WARRANTY.

SECTION 4
Special Tools

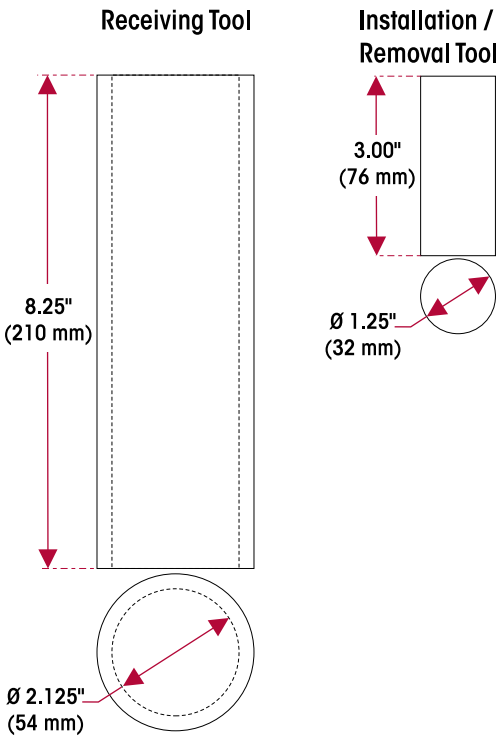
*TORQUE ROD BUSHING TOOLS

ULTRA ROD FUNNEL TOOL

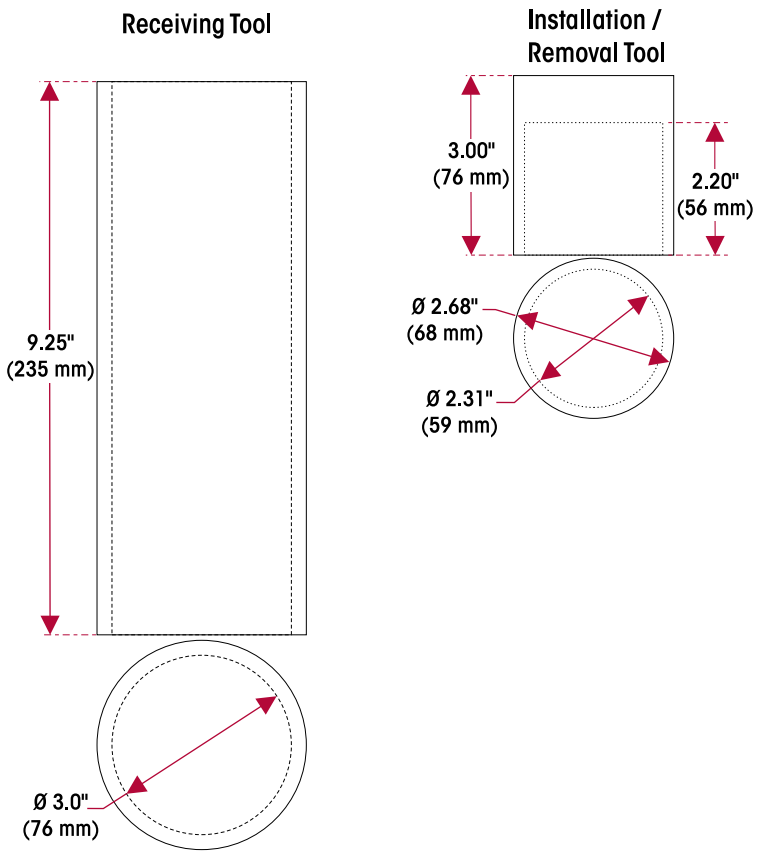
Hendrickson Part No. 66086-001L

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

ULTRA ROD BUSHING



XTRB BUSHING

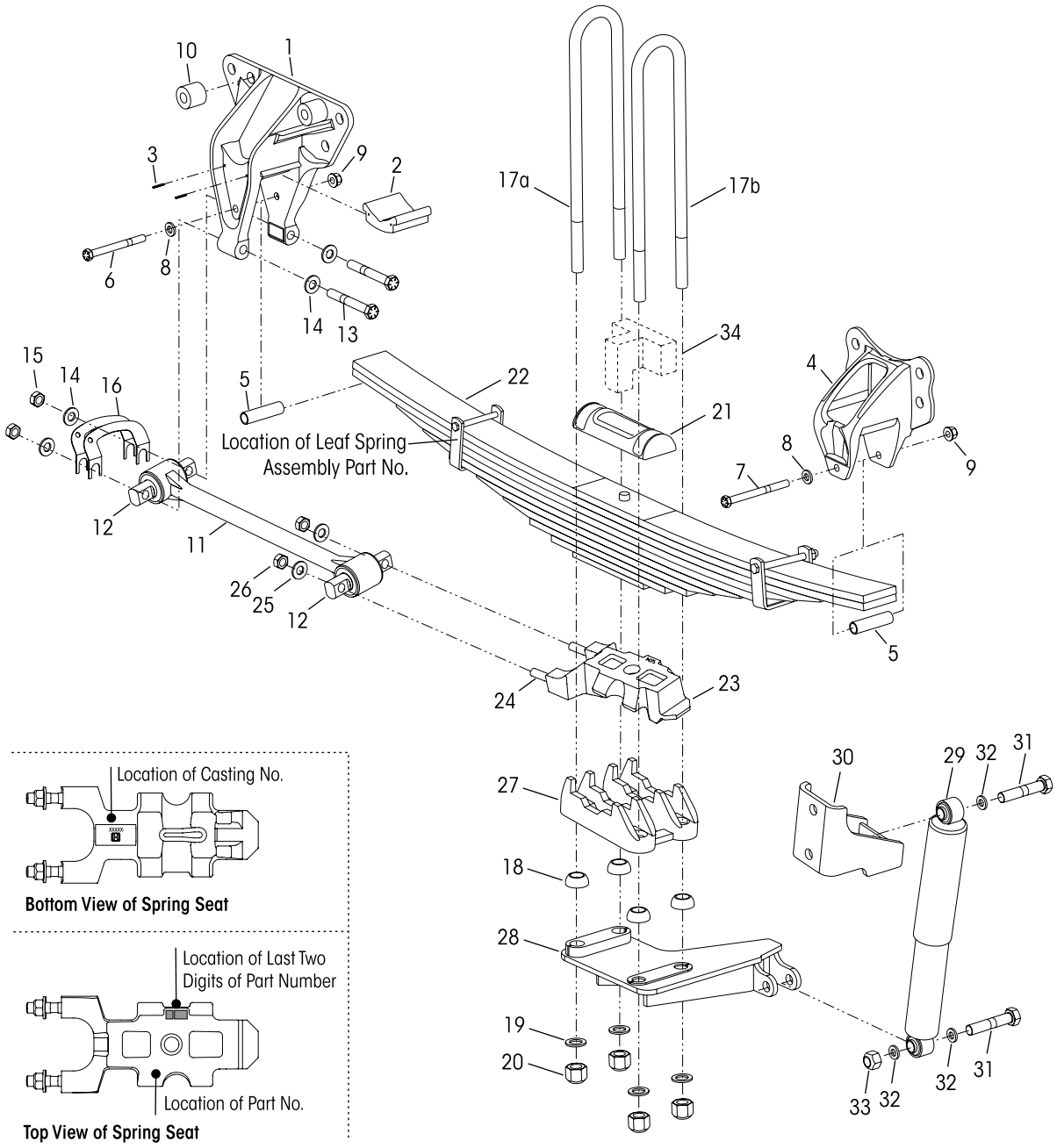


NOTE: *TRAAX ROD bushings are non-serviceable, the entire torque rod assembly requires replacement. Visit TRAAX ROD website www.traaxrods.com for more information.

SECTION 5

Parts Lists

■ 21K • 23K



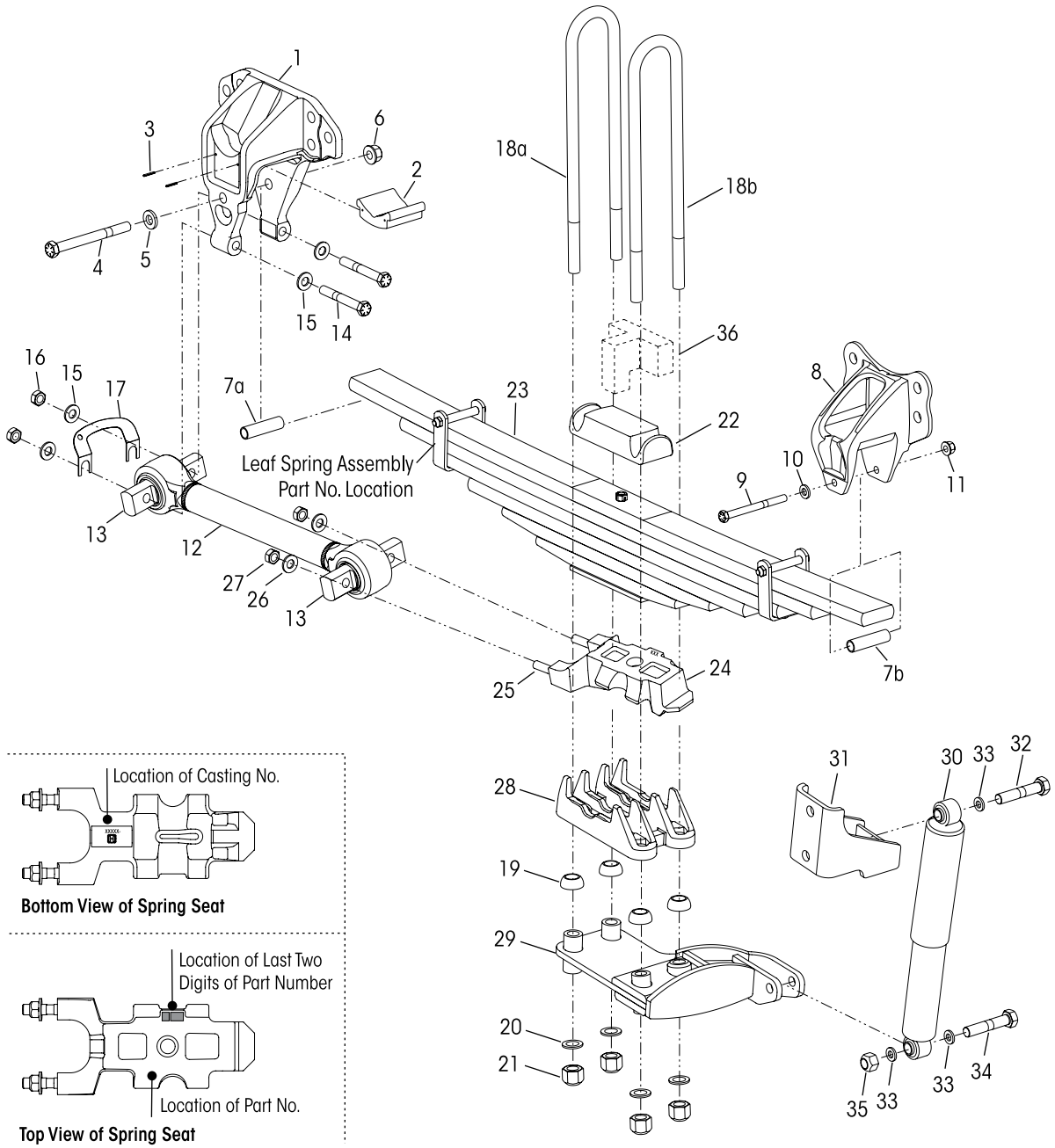
KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
1	58425-001	Front Hanger Assembly, Includes Key Nos. 2-3	2
	56557-005	**Slipper Pad Service Kit, One Hanger,** Includes Key Nos. 2-3	
2	56929-000	Slipper Pad	2
3	58287-001	Retainer Lock Pin	4
4	50028-001	Rear Hanger	2
	49175-032	**Front and Rear Rebound Roller Service Kit, Axle Set,** Includes Key Nos. 5-9	
5	58631-000	Rebound Roller	4
6	24531-014	½"-13 UNC-2B x 5" Hex Bolt	2
7	24531-015	½"-13 UNC-2B x 5½" Hex Bolt	2
8	22962-014	½" Flat Washer	4
9	60819-000	½"-13 UNC-2B Flange Nut	4
10	59946-001	Spacer	4
11	62044-505	ULTRA ROD® Longitudinal Torque Rod Assembly, Includes Key No. 12	2
12	47691-000L	ULTRA ROD Torque Rod Bushing	4
	49176-007	**Longitudinal Torque Rod Fastener Service Kit, Axle Set,** Includes Key Nos. 13-15, 24-26	
	50754-023	**Front Hanger Fastener Service Kit, One Hanger,** Includes Key Nos. 13-15	
13		*⅝"-11 UNC x 4½" Hex Bolt	4
14		*⅝" Flat Washer	8
15		*⅝"-11 UNC Locknut	4
16	49689-000	Torque Rod Shim	As Req.
17		⅞"-14 UNF- 2A U-bolt	
a	47417-010	19" Length - Front	2
b	47417-014	22½" Length - Rear	2

KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
	48718-157	**U-bolt Fastener Service Kit, Per Side,** Includes Key Nos. 18-20	
18		*⅞" Spherical Washer	8
19		*⅞" Flat Washer	8
20		*⅞"-14 UNF-2B Nut	8
21	48797-000	Top Pad	2
22		Leaf Spring Assembly	2
	53292-000	HTS 21K	
	53692-000	HTS 23K Sweeper	
	53693-000	HTS 23K Refuse	
23	50970-005	Spring Seat Assembly, 4°, ID No. A05 Includes Key Nos. 24-26	2
24	50918-000	⅝"-11 UNC Stud	4
25	22962-004	⅝" Flat Washer	4
26	47764-000	⅝"-11 UNC Locknut	4
27	93302-000	Axle Bottom Cap, *Replaces 50216-000*	2
28		Lower Shock Bracket	
	67556-003	HTS 21K Left Hand	1
	67556-004	HTS 21K Right Hand	1
	67556-005	HTS 23K Left Hand	1
	67556-006	HTS 23K Right Hand	1
29	60665-025L	Shock Absorber	2
30	67530-000	Upper Shock Bracket	2
	69588-004	**Upper and Lower Shock Absorber Fastener Service Kit, Axle Set,** Includes Key Nos. 31-33	
31		*¾"-10 UNC x 3¾" Hex Bolt	4
32		*¾" Washer	6
33		*¾"-10 UNC Locknut	2
34		**Axle Stop	2

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

** Not supplied by Hendrickson, used for reference only. Hendrickson is not responsible for components supplied by the vehicle manufacturer. For assistance with maintenance and rebuild instructions on these components see vehicle manufacturer.

■ 26K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18a
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7a
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11
Leaf Spring Assembly
Part No. Location
13
12
27
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25
24
7b
28
31
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33
32
19
29
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21
35
33
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34
Location of Casting No.
Bottom View of Spring Seat
Location of Last Two
Digits of Part Number
Location of Part No.
Top View of Spring Seat

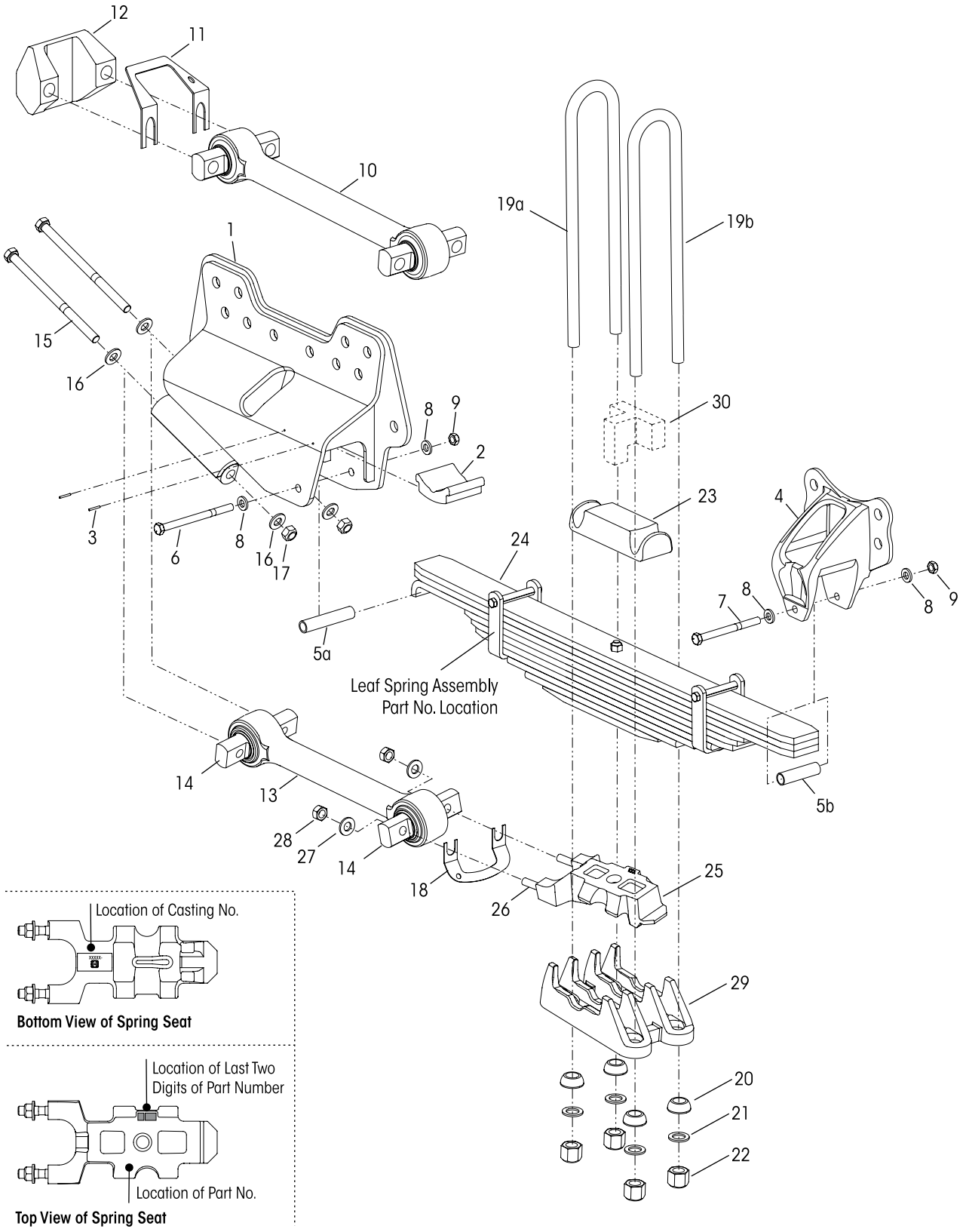
KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
1	58425-008	Front Hanger Assembly, Includes Key Nos. 2-3	2
	56557-005	**Slipper Pad Service Kit, One Hanger** Includes Key Nos. 2-3	
2	56929-000	Slipper Pad	2
3	58287-001	Retainer Lock Pin	4
		Rebound Roller Service Kits, Axle Set,	
a	49175-037	Front Hanger, Includes Key Nos. 4-6, 7a	
b	49175-038	Rear Hanger, Includes Key Nos. 7b, 9-11	
4	58917-008	¾"-10 UNC-2B x 6" Hex Bolt	2
5	22962-001	¾" Flat Washer	2
6	66137-000	¾"-10 UNC Flange Nut	2
7		Rebound Roller	
a	59598-000	Front Hanger	2
b	58631-000	Rear Hanger	2
8	50028-002	Rear Hanger	2
9	24531-014	½"-13 UNC x 5" Hex Bolt	2
10	22962-014	½" Flat Washer	2
11	60819-000	½"-13 UNC-2B Flange Nut	2
12	92407-500	Longitudinal Torque Rod Assembly, Includes Key No. 13	2
13	66649-002L	XTRB Torque Rod Bushing	4
14	32043-005	⅝"-11 UNC x 4½" Hex Bolt	4
15	22962-004	⅝" Flat Washer	8
16	47764-000	⅝"-11 UNC Locknut	4
17	49689-000	Torque Rod Shim	As Req.
18		⅞"-14 UNF- 2A U-bolt	
a	47417-015	22" Length - Front	2
b	47417-014	22½" Length - Rear	2

KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
	48718-157	**U-bolt Fastener Service Kit, Per Side,** Includes Key Nos. 19-21	
19		*⅞" Spherical Washer	8
20		*⅞" Flat Washer	8
21		*⅞"-14 UNF-2B Nut	8
22	56805-002	Top Pad	2
23	53793-000	Leaf Spring Assembly	2
24		Spring Seat Assembly, Includes Key Nos. 25-27	2
	50988-026	Left Hand 5°, ID No. K26	
	50988-027	Right Hand 5°, ID No. K27	
25	50918-000	⅝"-11 UNC Stud	4
26	22962-004	⅝" Flat Washer	4
27	47764-000	⅝"-11 UNC Locknut	4
28		Axle Bottom Cap	2
	58424-002	Left Hand	
	58424-001	Right Hand	
29		Lower Shock Bracket	
	78018-001	Left Hand	1
	78018-002	Right Hand	1
30	60665-025L	Shock Absorber	2
31	67530-000	Upper Shock Bracket	2
	65118-005	**Shock Absorber Fastener Service Kit, Axle Set** Includes Key Nos. 32-35	
32		*¾"-10 UNC x 3¾" Hex Bolt	2
33		*¾" Washer	6
34		*¾"-10 UNC x 4¼" Hex Bolt	2
35		*¾"-10 UNC Locknut	2
36		**Axle Stop	2

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

** Not supplied by Hendrickson, used for reference only. Hendrickson is not responsible for components supplied by the vehicle manufacturer. For assistance with maintenance and rebuild instructions on these components see vehicle manufacturer.

■ 31K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19a
19b
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24
7
8
8
9
5a
Leaf Spring Assembly
Part No. Location
5b
14
13
28
27
14
18
26
25
29
20
21
22
Location of Casting No.
Bottom View of Spring Seat
Location of Last Two
Digits of Part Number
Location of Part No.
Top View of Spring Seat

KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
1		Front Hanger Assembly, Includes Key Nos. 2-3	
	70628-001	Left Hand	1
	70628-002	Right Hand	1
	56557-005	**Slipper Pad Service Kit, One Hanger,** Includes Key Nos. 2-3	
2	56929-000	Slipper Pad	2
3	58287-001	Retainer Lock Pin	4
4	50028-002	Rear Hanger	2
		Rebound Roller Service Kits, Axle Set	
	49175-035	Front Hanger, Includes Key Nos. 5a, 6, 8-9	
	49175-036	Rear Hanger, Includes Key Nos. 5b, 7-9	
5		Rebound Roller	
a	77852-001	Front Hanger	2
b	57988-000	Rear Hanger	2
6	24531-005	½"-13 UNC-2B x 6½" Hex Bolt	2
7	24531-015	½"-13 UNC-2B x 5½" Hex Bolt	2
8	22962-014	½" Flat Washer	8
9	49846-000	½"-13 UNC-2B Flange Nut	4
10	8232-0000-XXX	***Upper Torque Rod Assembly, TRAAX ROD® *Replaces 72100-535*	1
11	67779-002	Upper Torque Rod Shim	As Req.
12	46015-000	Upper Torque Rod Bracket	1
13	92446-430	Lower Torque Rod Assembly, Includes Key No. 14	2
14	66649-002L	XTRB Torque Rod Bushing	4

KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
15	32043-013	⅝"-11 UNC x 10" Hex Bolt	4
16	22962-004	⅝" Flat Washer	8
17	47764-000	⅝"-11 UNC Locknut	4
18	49689-000	Lower Torque Rod Shim	As Req.
19		⅞"-14 UNF-2A U-bolt	
a	47417-003	17½" Length - Front	2
b	47417-010	19" Length - Rear	2
	48718-157	**U-bolt Fastener Service Kit, Per Side** Includes Key Nos. 20-22	
20		*⅞" Spherical Washer	8
21		*⅞" Flat Washer	8
22		*⅞"-14 UNF-2B Nut	8
23	56805-002	Top Pad	2
24	53134-000	Leaf Spring Assembly	2
25		Spring Seat Assembly, Includes Key Nos. 26-28	2
	50988-025	Left Hand 6°, ID No. K25	
	50988-024	Right Hand 6°, ID No. K24	
26	50918-000	⅝"-11 UNC Stud	4
27	22962-004	⅝" Flat Washer	4
28	47764-000	⅝"-11 UNC Locknut	4
29		Axle Bottom Cap	
	58424-004	Left Hand	1
	58424-000	Right Hand	1
30		*Axle Stop	2

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

** Not supplied by Hendrickson, used for reference only. Hendrickson is not responsible for components supplied by the vehicle manufacturer. For assistance with maintenance and rebuild instructions on these components see vehicle manufacturer.

*** TRAAX ROD bushings are non-serviceable, the entire torque rod assembly requires replacement. Visit TRAAX ROD website www.traaxrods.com for more information.

SECTION 6
Preventive Maintenance

Following appropriate inspection procedures is important to help ensure the proper maintenance and operation of the HTS rear suspension system and components function to their highest efficiency.

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

HENDRICKSON RECOMMENDED INSPECTION INTERVALS

	PRE-DELIVERY INSPECTION	FIRST IN-SERVICE INSPECTION	PREVENTIVE MAINTENANCE
Visually inspect for proper assembly and function. Check for all of the following and replace components as necessary: • Signs of unusual movement, loose or missing components • Signs of abrasive or adverse contact with other components • Damaged, bent or cracked parts • Proper suspension function, alignment • Front frame hanger to longitudinal torque rod • Rear frame hanger to leaf spring assembly	Within the first 100 Miles / (150 km)	Within the first 1,000 Miles (1,600 km) or 100 Hours	Every 12 Months or 50,000 Miles
Inspect fasteners for proper torque as recommended in the Torque Specifications Section of this publication with special attention to the following suspension connection: • Clamp group (U-bolts), refer to the U-bolt Connection in this section			Not to exceed 25,000 Miles
Verify the lateral alignment of axles are within the vehicle manufacturer's tolerances.			Every 12 Months or 50,000 Miles
Inspect the leaf spring assembly (missing, cracked or damaged spring leaf(s)			

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

COMPONENT INSPECTION

Following the appropriate inspection procedures is important to help ensure the proper maintenance and operation of the HTS suspension system and component parts. Look for and replace worn, damaged, bent or cracked parts.

- **Clamp group** — Visually inspect for any loose or damaged fasteners. Verify the U-bolt locknuts have the proper torque values maintained, see U-bolt Connection in this section.
- **Fasteners —** Visually inspect for any loose or damaged fasteners on the entire suspension. Make sure all fasteners are tightened to a torque value within the specified torque range. See Torque Specifications section in this publication for recommended torque requirements. Use a calibrated torque wrench to check torque in a tightening direction. As soon as the fastener starts to move, record the torque and correct the torque if necessary.
- **Leaf spring assembly** — See Leaf Spring Assembly in this section.
- **Longitudinal torque rods** — See Longitudinal Torque Rod inspection in this section.
- **Shock absorbers** — Look for any signs of dents or leakage, see Shock Absorbers in this section.
- **Spring hangers** — Visually inspect for any signs of loose fasteners, movement, damage or excessive wear on the inside of hanger legs. Verify the frame attaching fasteners have the proper torque values maintained, refer to the vehicle manufacturer for proper torque specifications. Refer to Front Spring Hanger Slipper Pads in this section.
- **Tire wear** — Visually inspect the tires for wear patterns that may indicate suspension damage or misalignment.
- **Wear and damage** — Visually inspect all parts of the suspension for wear and damage. Look for bent or cracked parts. Replace as necessary.

LEAF SPRING ASSEMBLY

VISUAL INSPECTION

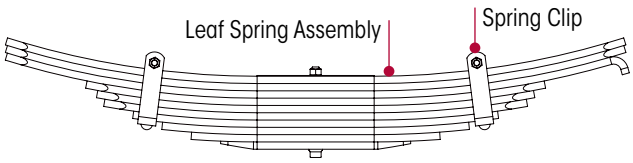
WARNING

A LEAF SPRING ASSEMBLY THAT HAS A MISSING, CRACKED OR DAMAGED LEAF OR SPRING CLIP WILL REQUIRE COMPLETE LEAF SPRING ASSEMBLY REPLACEMENT AND A THOROUGH INSPECTION OF THE ENTIRE SUSPENSION. IF ANY SUSPENSION COMPONENT APPEARS DAMAGED, REPLACEMENT IS REQUIRED. FAILURE TO REPLACE ANY DAMAGED COMPONENTS CAN CAUSE ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE AND WILL VOID ANY APPLICABLE WARRANTIES.

The leaf spring assembly part number is stamped on the spring clip. Hendrickson recommends for high mileage springs that both leaf spring assemblies on the suspension be replaced to ensure even spring deflection. All Hendrickson leaf springs are made to rigid specifications and each leaf is shot peened for long life. To assure the compatibility and functionality of the suspension system, Hendrickson recommends genuine leaf springs be specified.

- Inspect the entire leaf spring assembly (Figure 6-1), replacement is required if any leaf spring or spring clip is damaged, cracked, or missing.
- In the unloaded condition, replacement is required if more than 50% of the first leaf is worn at the spring hanger contact area, regardless of mileage.

FIGURE 6-1



U-BOLT CONNECTION

NOTE

Hendrickson recommends the use of phosphate and oil coated Grade 8 bolts, hardened washers and Grade C locknuts for the U-bolt connection. All threads should be lubricated with SAE 20 oil before assembly to obtain the correct relationship of torque and fastener tension.

Maintaining the correct U-bolt torque is important to help ensure proper suspension component performance.

1. Inspect the U-bolts for proper seating of components, i.e. no gaps, etc., see Figure 6-2.
2. **DO NOT** exceed the specified torque on U-bolt locknuts, refer to the Torque Specifications section of this publication. U-bolt locknuts **MUST** be torqued as specified:
   - At pre-delivery and at any U-bolt service
   - First 1,000 miles, thereafter, follow the inspection and re-torque intervals, every 25,000 miles

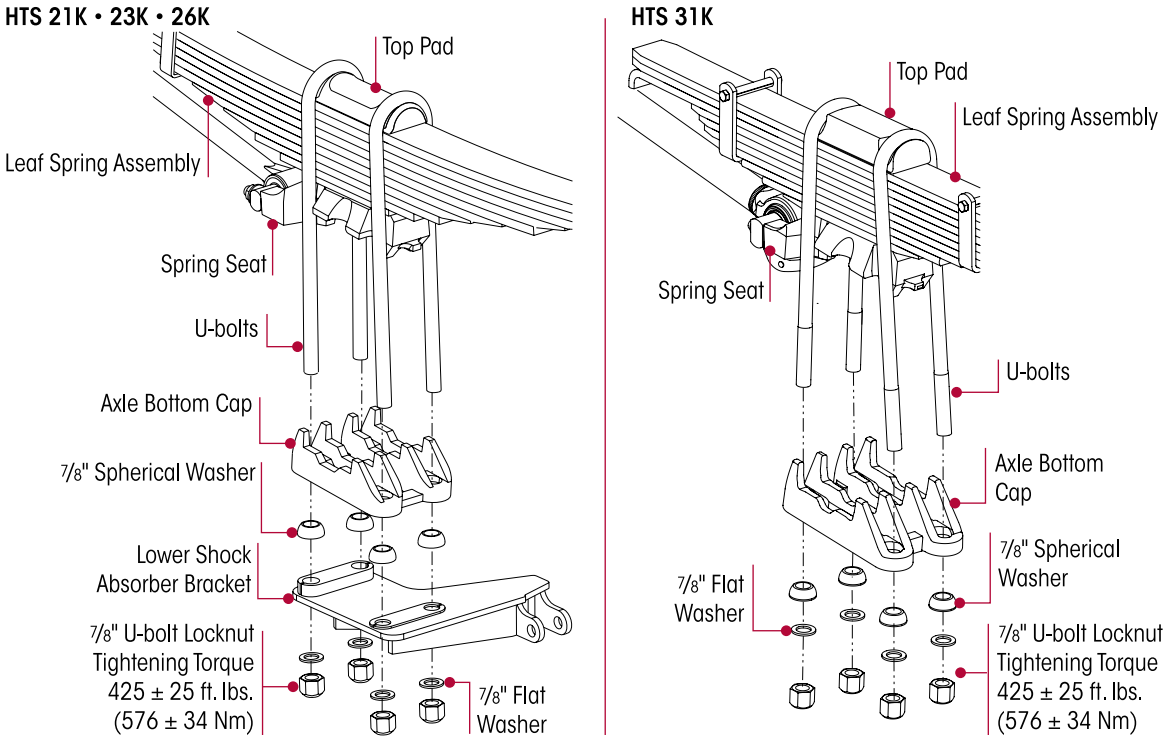
WARNING

IT IS IMPORTANT THAT THE U-BOLT CONNECTION BE PROPERLY ALIGNED AND HAVE THE PROPER TORQUE VALUES MAINTAINED. METAL SURFACES CAN WORK AND WEAR THE SPRING SEATS, AXLE BOTTOM CAPS AND POSSIBLY OTHER COMPONENTS RELATED IN THE TOTAL ASSEMBLY. U-BOLT LOCKNUTS HELP PREVENT EXCESSIVE REPAIRS, DOWNTIME AND POSSIBLE SEPARATION OF COMPONENTS, ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE, OR PERSONAL INJURY.

EXAMPLE

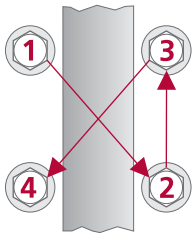
A fleet may determine its own torque inspection interval by inspecting the U-bolt torque on a more frequent basis (for example at 5,000 miles, or 10,000 miles). If during the torque inspection the U-bolt torque is found to be below torque specifications, correct the U-bolt torque and decrease the interval of the torque inspections. If the U-bolt torque is found within torque specifications, inspection intervals may be increased. **DO NOT exceed 25,000 miles between U-bolt torque inspection intervals.**

FIGURE 6-2



3. Tighten the U-bolt locknuts evenly in 50 foot pounds increments to 425 ± 25 foot pounds torque in the proper pattern to achieve uniform bolt tension, see Figure 6-3.

FIGURE 6-3



SHOCK ABSORBERS (if equipped)

NOTE It is not necessary to replace shock absorbers in pairs if only one (1) shock absorber requires replacement.

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

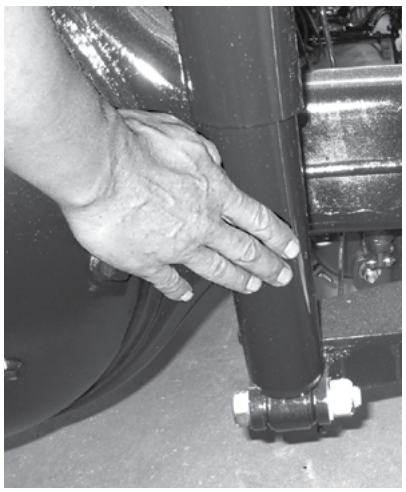
Inspection of the shock absorber can be performed by doing a heat test, and a visual inspection. Replace as necessary, refer to the Component Replacement section of this publication.

HEAT TEST AND PHYSICAL INSPECTION

⚠ WARNING DO NOT GRAB THE SHOCK ABSORBER AS IT COULD POSSIBLY BE HOT AND CAUSE PERSONAL INJURY.

1. **Heat Test:** Drive the vehicle at moderate speeds on a rough road for a minimum of fifteen minutes.
   a. Perform a heat test by carefully touching or placing a hand near the shock absorber body below the dust cover. Touch the frame to get an ambient reference, see Figure 6-4. A shock absorber that is warm to the touch is acceptable, a cold shock absorber should be replaced.

FIGURE 6-4



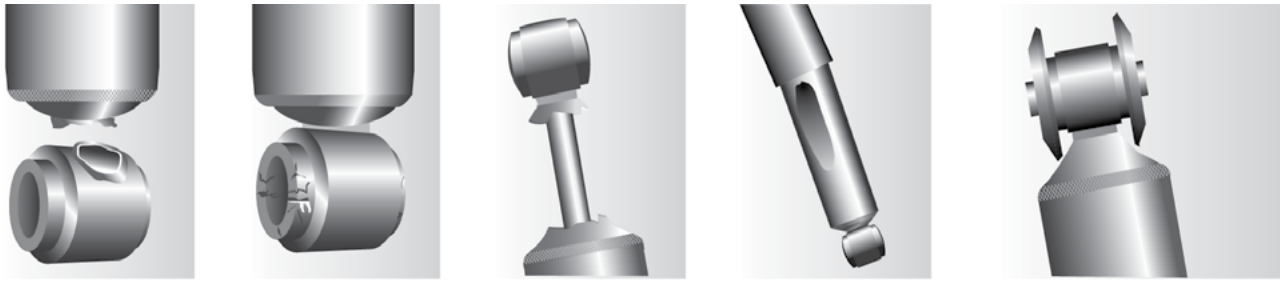
2. **Physical Inspection:** To inspect for an internal failure, remove and shake the suspected shock absorber. Listen for the sound of metal parts rattling inside. The rattling of metal parts can indicate that the shock absorber has an internal failure and the shock absorber should be replaced.

VISUAL INSPECTION

Look for these potential problems when doing a visual inspection, see Figure 6-5. Inspect the shock absorbers fully extended. Replace as necessary.

FIGURE 6-5

SHOCK ABSORBER VISUAL INSPECTION – UNACCEPTABLE CONDITIONS



Damaged upper or lower mount

Damaged upper or lower bushing

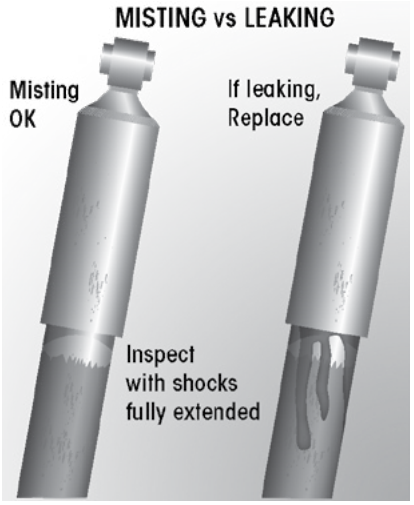
Damaged dust cover and / or shock body

Bent or dented shock absorber

Improper installation Example: washer (if equipped) installed backwards

LEAKING VS. MISTING SHOCK ABSORBER INSPECTION

FIGURE 6-6



The inspection must not be conducted after driving in wet weather or a vehicle wash. The shock absorber needs to be free from water.

Many shock absorbers are often misdiagnosed as failures. Misting is the process whereby very small amounts of shock absorber fluid evaporate at a high operating temperature through the upper seal of the shock absorber. When the "mist" reaches the cooler outside air, it condenses and forms a film on the outside of the shock absorber body. Misting is perfectly normal and a necessary function of the shock absorber. The fluid which evaporates through the seal area helps to lubricate and prolong the life of the seal.

NOTE

The HTS system is equipped with a premium seal on the shock absorber, however, this seal will allow for misting to appear on the shock absorber body (misting is not a leak and is considered acceptable).

Inspect the shock absorber fully extended. **A shock absorber that is truly leaking** will show signs of fluid **leaking in streams from the upper seal**, see Figure 6-6. These streams can easily be seen, underneath the main body (dust cover) of the shock absorber. Replace as necessary.

LONGITUDINAL TORQUE RODS

WARNING

THIS HENDRICKSON SUSPENSION REQUIRES TORQUE RODS FOR SUSPENSION PERFORMANCE AND VEHICLE STABILITY. IF THESE TORQUE RODS ARE DISCONNECTED OR ARE NON-FUNCTIONAL, DO NOT OPERATE THE VEHICLE. OPERATING A VEHICLE WITH DISCONNECTED OR NON-FUNCTIONAL TORQUE RODS CAN RESULT IN ADVERSE VEHICLE HANDLING, COMPONENT DAMAGE, SUSPENSION/VEHICLE DAMAGE, AND/OR SEVERE PERSONAL INJURY.

VISUAL INSPECTION

All torque rods equipped on the HTS suspensions need to be inspected during preventive maintenance and service for looseness by one of the following methods.

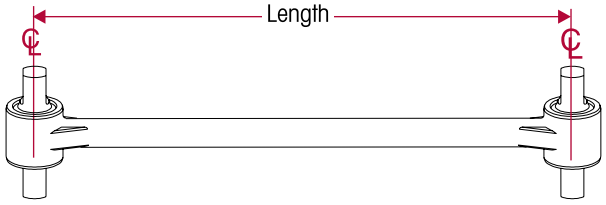
Torque rod looseness inspection is necessary, per the following method.

1. With the vehicle shut down, a lever check can be made with a long pry bar placed under each rod end and pressure applied.

Visually inspect **(1) torque rod bushings** for any torn or shredded rubber material interfaces or elongated oval shapes and **(2) torque rods** for any metal-to-metal contact, bent, cracked, or broken components. The torque rod and/or the torque rod bushings will require replacement if any of these conditions are encountered.

Longitudinal torque rod length is determined by the original vehicle manufacturer, see Figure 6-8,. The longitudinal torque rods along with the spring seat maintain the control of acceleration and brake forces.

FIGURE 6-8



If the lateral alignment of the axles is incorrect, it may be necessary to shim the torque rod at the straddle mount end. Shims can be installed between the torque rod and the front spring. Refer to the vehicle manufacturer for proper shim location; also see Lateral Alignment in the Alignment & Adjustments section of this publication.

ULTRA ROD — torque rod bushings can be replaced by pressing out the worn end, and installing a replacement bushing. See Component Replacement section of this publication.

TRAAX ROD — torque rods are equipped with non-rebushable**.** The entire torque rod assembly must be replaced. This feature provides superior bushing retention in the torque rod end hub.

NOTE

It is important that the **tightening torque** of the locknuts be checked during preventive maintenance and service. Follow the tightening torque specifications and all applicable preventive maintenance, service, and safety instructions issued by the respective vehicle and suspension manufacturers.

NOTE

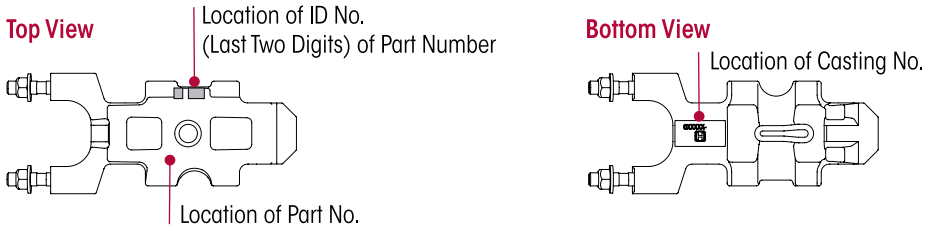
Hendrickson recommends the use of Grade 8 bolts and Grade C locknuts for all straddle mount torque rod attachments.

SECTION 7
Alignment & Adjustments

AXLE PINION ANGLE

Pinion angle is set by the spring seat assembly. Pinion angle should be checked in the loaded condition, and is set by the vehicle manufacturer. If a new spring seat is required, see the location of the ID No. (last two digits) of the Part Number as shown in Figure 7-1 top view, also refer to the Parts Lists section of this publication.

FIGURE 7-1



DRIVE AXLE ALIGNMENT INSPECTION

Proper alignment is essential for maximum ride quality, performance, and tire service life, the recommended alignment procedure is described below. This procedure should be performed if excessive or irregular tire wear is observed.

1. Use a work bay with a level surface.
2. Relax the suspension by slowly moving the vehicle back and forth several times in a straight line without using the brakes. This will slacken or loosen the suspension as the vehicle is positioned. End with all wheels positioned straight ahead.
3. **DO NOT** set the parking brake. Chock the front wheels of the vehicle.
4. Verify all suspension components are in good condition. Repair or replace any worn or damaged suspension components before proceeding with the alignment process.
5. Ensure all drive axle tires are the same size and inflated to the correct tire pressure.
6. Use an alignment machine to calculate the drive axle readings.

NOTE

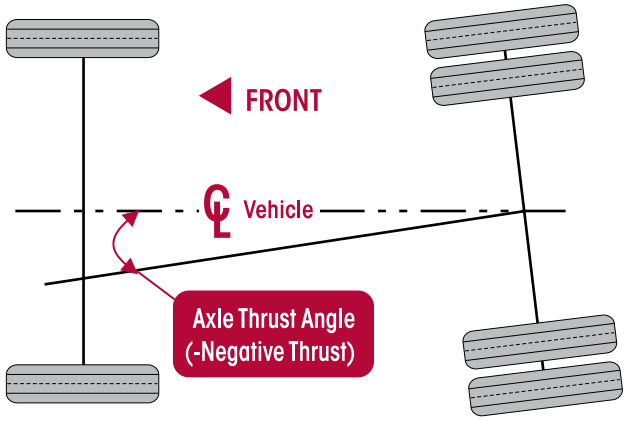
Depending on your alignment equipment, enter the vehicle year, make, model and design into the system's computer to determine the vehicle manufacturer's alignment specifications per the alignment equipment instructions. That data will be compared to the vehicle's actual alignment status to determine necessary corrections. Some systems allow you to simply scan the VIN to recall specs. Vehicle manufacturers have set specific alignment specifications.

7. If the measurements are within the vehicle manufacturer's specifications, then the rear drive axle alignment **is acceptable**. Proceed to check the pinion angles of the drive axles (Step 9).
   a. If the alignment of the rear drive axle **IS NOT** within the vehicle manufacturer's specifications, then the alignment of this axle **MUST** be corrected **BEFORE** checking the drive axle pinion angles. Correct the alignment of this axle by following the Alignment Adjustment Instructions as shown in this section.
8. After all drive axles are aligned, check the pinion angle of each drive axle with a digital protractor. Refer to the vehicle manufacturer specifications for the required pinion angles.
   a. If all pinion angles are within the vehicle manufacturer's specifications then proceed to Step 10.
   b. If any pinion angle is out of the vehicle manufacturer's specifications it must be corrected. Follow the Alignment Adjustment procedure in this section.
9. Recheck measurements to confirm adjustments until the correct alignment and pinion angles are achieved.

10. When all drive axle alignments and pinion angles are within the vehicle manufacturer's specifications then the alignment procedure is complete.
11. Remove the wheel chocks.

ALIGNMENT ADJUSTMENT

FIGURE 7-3



If alignment of the drive axle is required, as determined by the alignment inspection procedure, the following steps will need to be performed.

1. Determine the direction of axle thrust angle. Figure 7-3 illustrates the drive axle with a thrust angle to the left (-negative thrust).
2. Chock the wheels of the front axles to prevent vehicle movement during service.
3. Loosen **DO NOT REMOVE** the longitudinal torque rod fasteners from the front hanger.

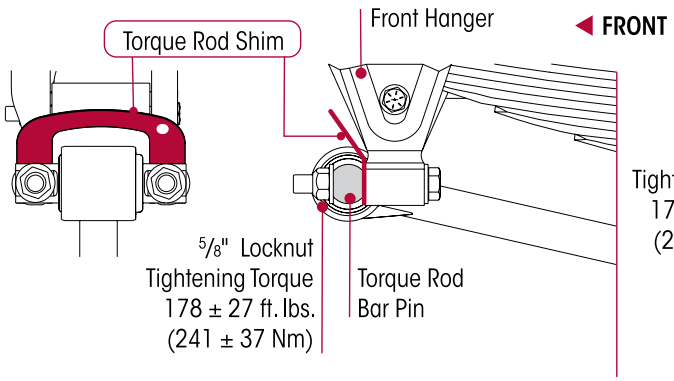
SERVICE HINT Axle thrust angle may be adjusted at either wheel end on an axle. If insufficient adjustment is available at one wheel end, the opposing wheel end will also need to be adjusted, but in the opposite direction.

EXAMPLE: The alignment equipment shows the front drive axle to have a 0.35° thrust angle to the left. This will require a ¼" shim thickness increase to the front side of the left front leaf spring assembly bar pin. If there is less then ¼" of adjustment available at this location then some of the adjustment will have to be made at the right front bar pin. In this case a ⅛" shim thickness increase at the left side bar pin and a ⅛" shim thickness decrease at the right side bar pin will correct the 0.35° thrust angle.

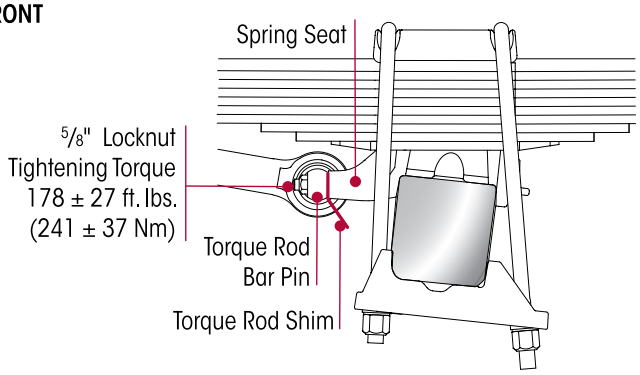
4. Adjust shim thickness to move the axle in the desired direction, see Figure 7-4.

FIGURE 7-4

HTS 21K • 23K • 26K



HTS 31K



5. If more adjustment is needed, up to 4 shims may be installed at the longitudinal torque rod ends.
6. Once the vehicle is aligned, tighten the longitudinal torque rod fasteners to 178 ± 27 foot pounds torque.
7. Remove the wheel chocks.

SECTION 8
Component Replacement

FASTENERS

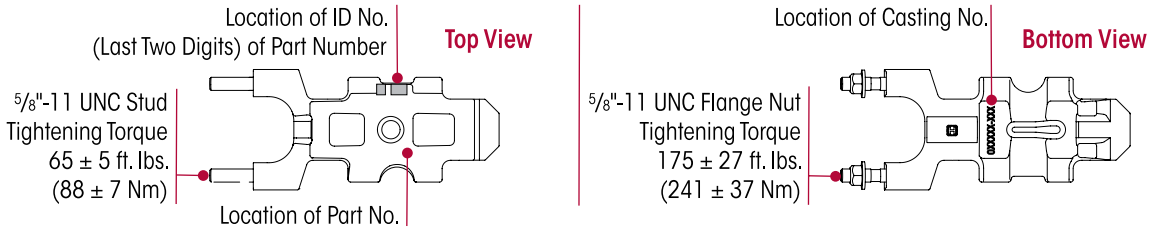
When servicing a HTS suspension, Hendrickson recommends replacing all removed fasteners with new equivalent fasteners. Maintain correct torque values at all times. Check torque values as specified, see Hendrickson's Torque Specifications Section of this publication. If non-Hendrickson fasteners are used,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

SPRING SEATS

The following instructions apply if the spring seat or mounting bolts for the torque rod attachment require replacement. Figure 8-1 shows a view of the spring seat and studs that are used to connect the torque rod to the spring seat.

NOTE If a new spring seat is required, locate the ID No. (Last Two Digits) of the Part Number as shown in Figure 8-1 top view, also refer to the Parts Lists section of this publication.

FIGURE 8-1



DISASSEMBLY

1. Chock the wheels.
2. Raise and support the axle with safety stands.
3. Remove the tires per the vehicle manufacturer's instructions.
4. Raise the frame to remove the load from the suspension.
5. Support the frame with safety stands.
6. Loosen the rebound bolt flange nut in the front hanger.

NOTE It might be necessary to raise or lower the frame in order to remove the torque rod fasteners.

SERVICE HINT Prior to disassembly of the HTS longitudinal torque rod fasteners, note the location, orientation and quantity of torque rod shim(s). It is required that the longitudinal torque rod shims be installed in the same orientation and location as removed to preserve the existing alignment.

7. Remove and discard the longitudinal torque rod fasteners connected to the front spring hanger. Remove the alignment shim(s).
8. Remove and discard the longitudinal torque rod fasteners connected to the spring seat stud.
9. Remove the longitudinal torque rod, see Figure 8-2.
10. If equipped, remove and discard the lower shock absorber fasteners.
11. Remove and discard the U-bolt fasteners, spherical washers, and U-bolts, see Figure 8-3.
12. Remove the bottom cap and lower the shock absorber bracket.
13. Lower the axle or raise the frame enough to allow clearance to remove the spring seat.

FIGURE 8-2

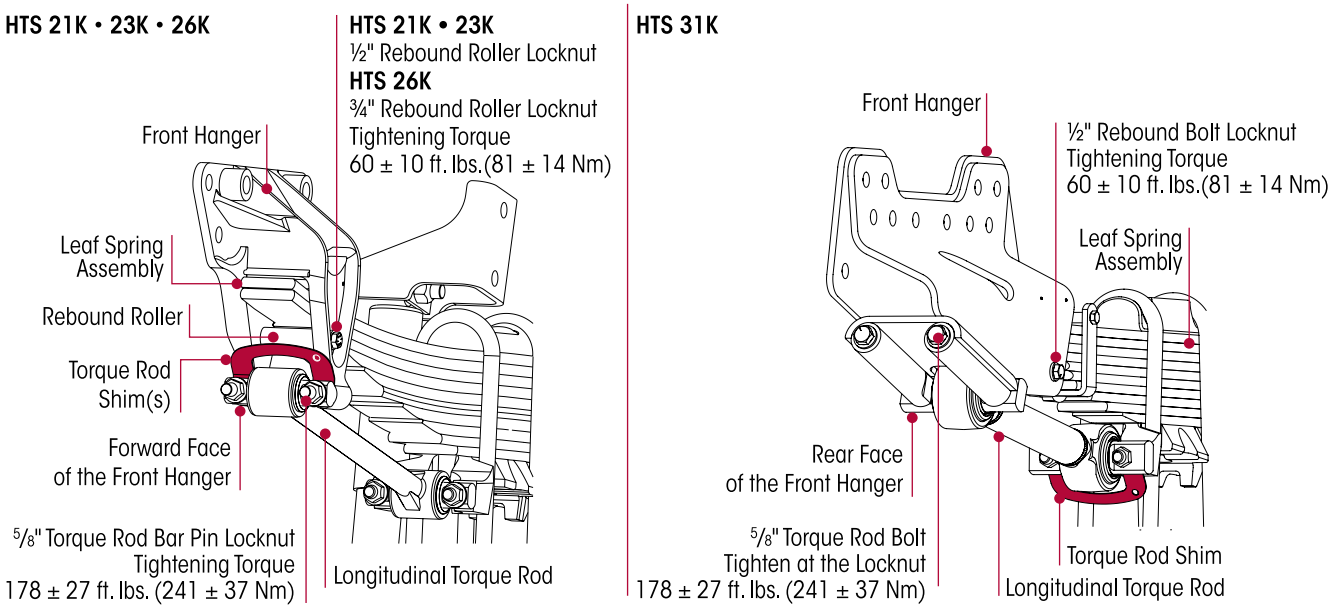
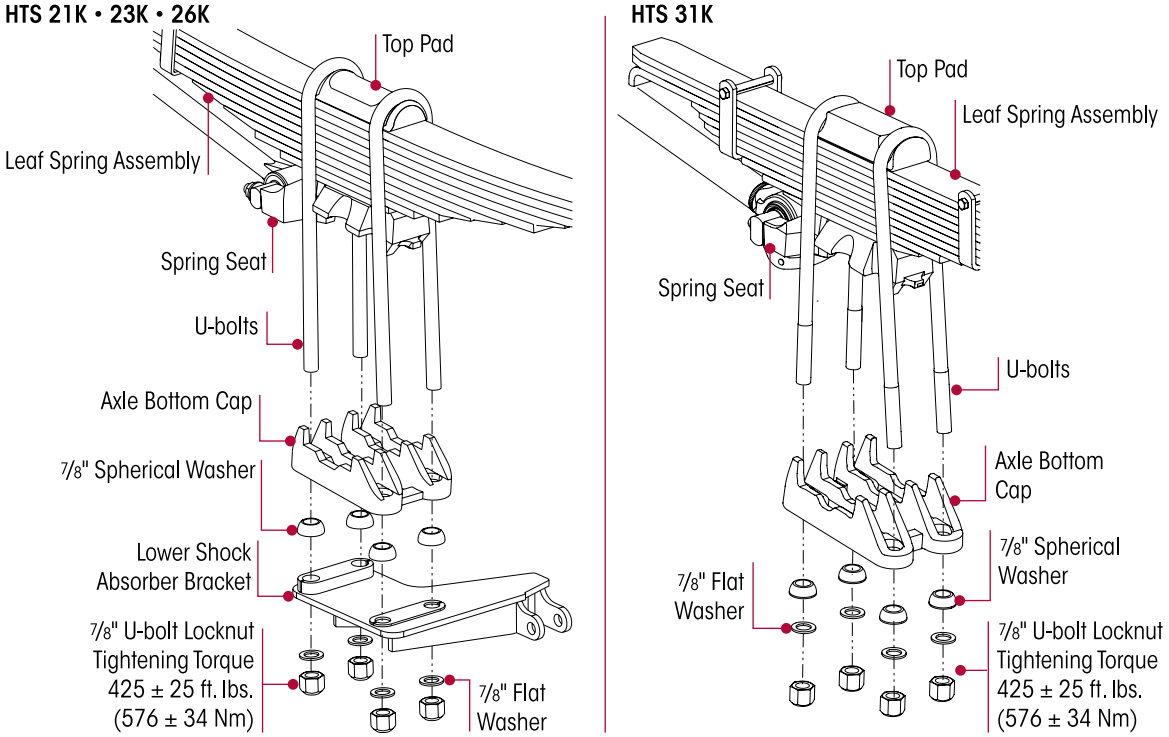


FIGURE 8-3



INSPECTION

⚠ WARNING

FAILURE OF THE LEAF SPRING ASSEMBLY BETWEEN THE U-BOLTS WILL REQUIRE THE REPLACEMENT OF ALL CLAMP GROUP COMPONENTS. FAILURE TO DO SO CAN RESULT IN PREMATURE LEAF SPRING ASSEMBLY OR CLAMP GROUP FAILURE, WHICH MAY RESULT IN ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE AND/OR PERSONAL INJURY.

1. Inspect the leaf spring assembly for cracks, broken or missing leafs, or damage, see Preventive Maintenance section of this publication. Replace as necessary.
2. Inspect the spring seat and axle bottom cap for excessive wear and cracks. Replace as necessary.
3. Inspect the axle housing for any cracks or wear. Repair or replace as necessary per vehicle manufacturer's specifications.

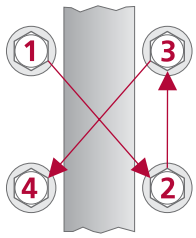
⚠ WARNING

U-BOLTS THAT ARE FOUND TO BE LOOSE WILL REQUIRE THAT THE MATING COMPONENTS BE INSPECTED FOR SIGNS OF WEAR. ANY COMPONENTS WORN MUST BE REPLACED. FAILURE TO DO SO CAN CAUSE PREMATURE CLAMP GROUP FAILURE, COMPONENT DAMAGE, ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE, OR SEVERE PERSONAL INJURY. MAINTAIN CORRECT TORQUE VALUE AT ALL TIMES. CHECK TORQUE VALUES ON A REGULAR BASIS AS SPECIFIED.

ASSEMBLY

1. Install the spring seat with the studs mounted forward. Ensure the spring seat is engaged on the axle dowel pin.
2. Raise the axle or lower the frame until the spring center bolt engages into the spring seat alignment hole.
3. Install the U-bolts, top pad, spring seat, axle bottom cap, lower shock absorber bracket (if equipped), washers, and locknuts as shown in Figure 8-3. **DO NOT** tighten the U-bolt locknuts at this time.

FIGURE 8-4



4. Tighten the U-bolt locknuts evenly in 50 foot pounds increments in the proper pattern, see Figure 8-4, to achieve uniform bolt tension to 425 ± 25 foot pounds.
5. Tap the top of the U-bolts with a dead blow mallet, and retighten to 425 ± 25 foot pounds. **DO NOT** exceed specified torque on U-bolt locknuts.
6. Install the longitudinal torque rod.

NOTE

U-bolt locknuts must be retightened to 425 ± 25 foot pounds torque after the first 1,000 miles of service and at regular service intervals thereafter as experience dictates, not to exceed 25,000 miles. **DO NOT** exceed specified torque on U-bolt locknuts.

⚠ CAUTION

FAILURE TO INSTALL THE LONGITUDINAL TORQUE ROD SHIMS IN THE SAME ORIENTATION AND LOCATION WILL REQUIRE A VEHICLE ALIGNMENT. IMPROPER VEHICLE ALIGNMENT CAN INCREASE TIRE WEAR.

NOTE

Prior to assembly of the longitudinal torque rod fasteners, note the location, orientation and quantity of torque rod shim(s). It is required that the longitudinal torque rod shims be installed in the same orientation and location as removed to preserve the existing alignment.

7. Install the longitudinal torque rod fasteners and alignment shim(s) that were removed, see Figure 8-2.
8. Tighten the torque rod fasteners to 178 ± 27 foot pounds torque, see Figure 8-2.
9. If equipped, install the shock absorber into upper and lower shock brackets. Install fasteners and tighten the upper shock bracket at the bolt head and lower fastener locknuts to 60 ± 10 foot pounds torque, refer to Shock Absorber Assembly in this section.
10. Tighten rebound roller flange nut to 60 ± 10 foot pounds torque, see Figure 8-2.
11. Remove the axle safety stands and lower the axle.
12. Install the tires per the vehicle manufacturer's instructions.
13. Lower the frame and remove the safety stands.

NOTE

Axle alignment is necessary anytime the leaf spring assembly is serviced, which includes removal of the U-bolts.

14. Verify axle alignment, refer to Alignment & Adjustments Section of this publication.
15. Remove the wheel chocks.

SPRING SEAT STUDS

SERVICE HINT It is not necessary to disassemble the clamp group to replace the torque rod mounting studs.

DISASSEMBLY

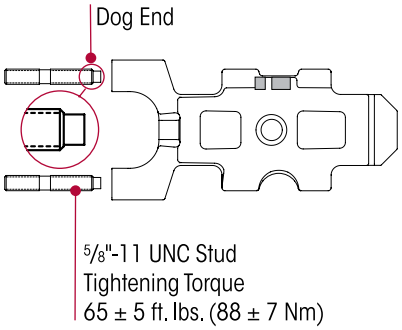
1. Chock the front wheels of the vehicle.
2. Support the frame with safety stands.
3. Loosen the rebound bolt flange locknut in the front hanger.

SERVICE HINT It may be necessary to raise or lower the frame to remove the torque rod fasteners.

NOTE Note the location, orientation and quantity of the torque rod shim(s) **prior** to disassembly. It is required that the torque rod shims be installed in the same orientation and location as removed to preserve the existing alignment.

4. Remove the torque rod to front hanger fasteners and torque rod shims, see Figure 8-7.
5. Remove and discard the longitudinal torque rod to spring seat stud fasteners, see Figure 8-6.
6. Remove the longitudinal torque rod.
7. Remove the spring seat mounting studs.

FIGURE 8-5



ASSEMBLY

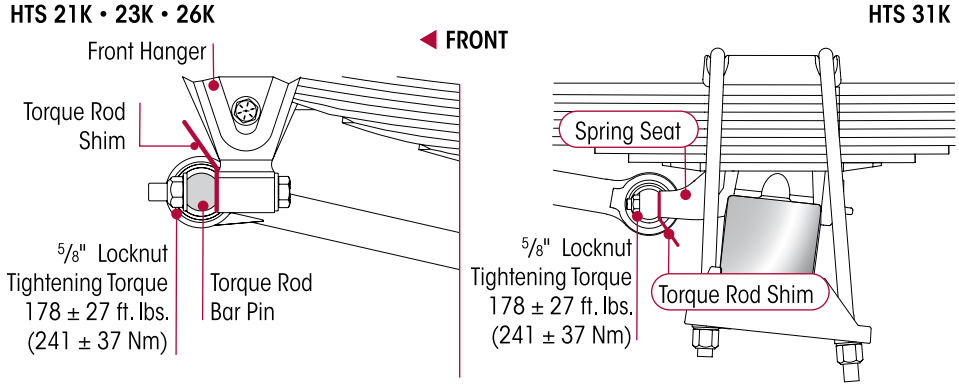
1. Screw in the new stud with the dog end first (see Figure 8-5) into the spring seat until it bottoms out in the spring seat. Tighten the stud to 65 ± 5 foot pounds torque.

CAUTION

FAILURE TO INSTALL THE LONGITUDINAL TORQUE ROD SHIMS IN THE SAME ORIENTATION AND LOCATION WILL REQUIRE A VEHICLE ALIGNMENT. IMPROPER VEHICLE ALIGNMENT CAN INCREASE TIRE WEAR.

2. Install the longitudinal torque rod.

FIGURE 8-6



NOTE It is required that the longitudinal torque rod shim(s) be installed in the same location, orientation and quantity as removed to preserve the existing alignment.

3. Install the torque rod shim(s) in the same location as prior to removal.
4. Install the torque rod mounting fasteners and tighten to 178 ± 27 foot pounds torque, see Figure 8-6.
5. Tighten the rebound roller fastener to 60 ± 10 foot pounds torque, see Figure 8-7.
6. Return position of the frame if lowered or raised.
7. Remove the frame safety stands.
8. Remove the wheel chocks.

LEAF SPRING ASSEMBLY

⚠ CAUTION

THE PROCEDURE TO DISASSEMBLE THE LEAF SPRING ASSEMBLY AND CLAMP GROUP IS DONE WITH THE OTHER LEAF SPRING ASSEMBLY PROPERLY CONNECTED TO THE FRAME HANGER AND AXLE. FAILURE TO HAVE THE OTHER LEAF SPRING ASSEMBLY CONNECTED PROPERLY COULD ALLOW THE AXLE TO SHIFT RESULTING IN POSSIBLE DAMAGE TO COMPONENTS AND/OR PERSONAL INJURY. IF BOTH MAIN SUPPORT MEMBERS REQUIRE REPLACEMENT, IT WILL BE NECESSARY TO SUPPORT THE AXLE PINION TO PREVENT THE AXLE FROM SHIFTING.

DISASSEMBLY

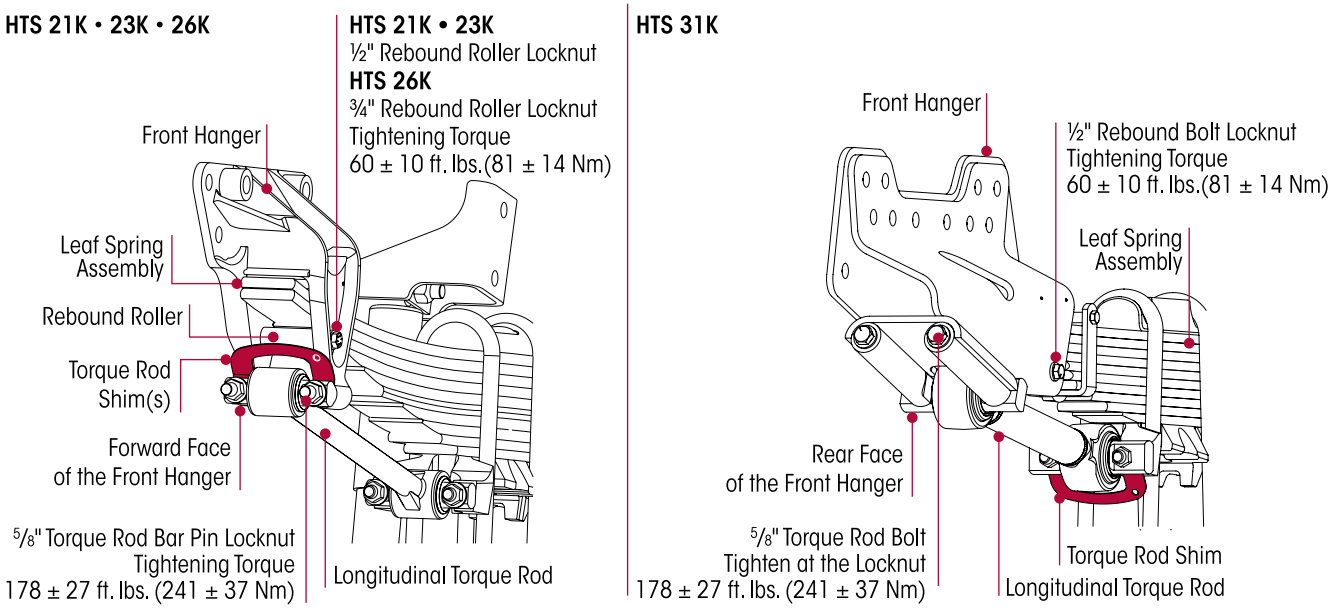
1. Chock the wheels.
2. Raise the frame to remove the load from the suspension.
3. Support the frame with safety stands.
4. Raise and support the axle with safety stands.
5. On the side being serviced, remove the tires per the vehicle manufacturer's instructions.
6. Remove the rebound bolt fasteners, and roller from both front and rear hangers, see Figure 8-7.

SERVICE HINT It might be necessary to raise or lower the frame in order to remove the torque rod fasteners.

NOTE Prior to the disassembly of the longitudinal torque rod fasteners, note the location, orientation and quantity of torque rod shim(s). It is required that the longitudinal torque rod shims be installed in the same orientation and location as removed to preserve the existing alignment.

7. Remove the longitudinal torque rod to front hanger fasteners and torque rod shims, see Figure 8-7.

FIGURE 8-7



8. Remove and discard the longitudinal torque rod to spring seat stud fasteners.
9. Remove the longitudinal torque rod.
10. If equipped, remove and discard shock absorber fasteners, then remove the shock absorber.
11. Remove and discard the U-bolts and fasteners.
12. Remove the bottom cap, spherical washers, and lower shock bracket.
13. Remove and discard U-bolts.
14. Lower the axle enough to allow clearance to remove the leaf spring.
15. Remove the leaf spring assembly.

INSPECTION

1. Inspect the slipper pad and the rebound roller for damage, replace as necessary.
2. Inspect the spring seat and axle bottom cap for excessive wear and damage. Replace as necessary.
3. Inspect the axle housing for any cracks or wear. Repair or replace as necessary per vehicle manufacturer's specifications.

ASSEMBLY

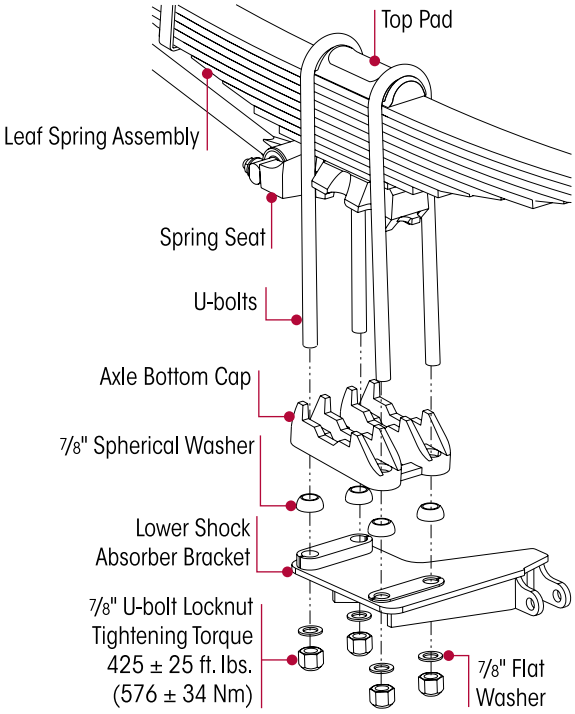
1. Install new leaf spring assembly on the spring seat.
2. Raise the axle and center the spring through the legs of the hangers with the spring center bolt piloting into the hole in the spring seat.
3. Install the U-bolts, top pad, bottom cap, spherical washers, lower shock bracket (if equipped), washers, and locknuts as shown in Figure 8-8. Snug, **DO NOT** tighten the U-bolt locknuts at this time.
4. Continue to raise the axle so the front and rear hangers engage into the leaf spring assembly.

⚠ WARNING

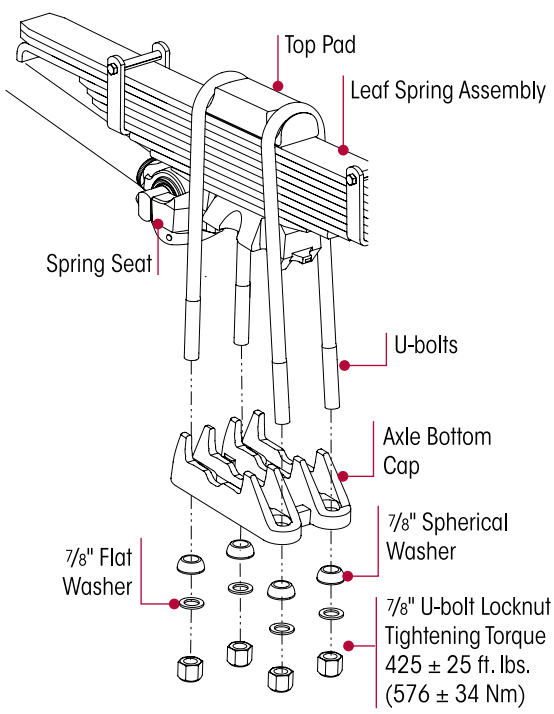
IT IS IMPORTANT THAT THE U-BOLT CONNECTION BE PROPERLY ALIGNED AND HAVE THE PROPER TORQUE VALUES MAINTAINED. METAL SURFACES CAN WORK AND WEAR THE SPRING SEATS, AXLE BOTTOM CAPS AND POSSIBLY OTHER COMPONENTS RELATED IN THE TOTAL ASSEMBLY. MAINTAIN CORRECT TORQUE VALUE AT ALL TIMES FOR U-BOLT LOCKNUTS TO HELP PREVENT EXCESSIVE REPAIRS, DOWNTIME AND POSSIBLE SEPARATION OF COMPONENTS AND ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE OR PERSONAL INJURY.

FIGURE 8-8

HTS 21K • 23K • 26K

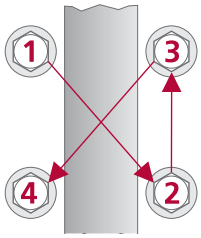


HTS 31K



5. Tighten the U-bolt locknuts evenly in 50 foot pounds increments in the proper pattern, see Figure 8-9, to achieve uniform bolt tension to 425 ± 25 foot pounds.
6. Tap the top of the U-bolts with a dead blow mallet, and retighten to 425 ± 25 foot pounds. **DO NOT** exceed specified torque on U-bolt locknuts.

FIGURE 8-9



NOTE U-bolt locknuts must be retightened to 425 ± 25 foot pounds to torque specifications after the first 1,000 miles of service and at regular intervals thereafter as experience dictates, not to exceed 25,000 miles. **DO NOT** exceed specified torque on U-bolt locknuts, see Preventive Maintenance Section for more information.

7. Install the longitudinal torque rod, see Figure 8-7.

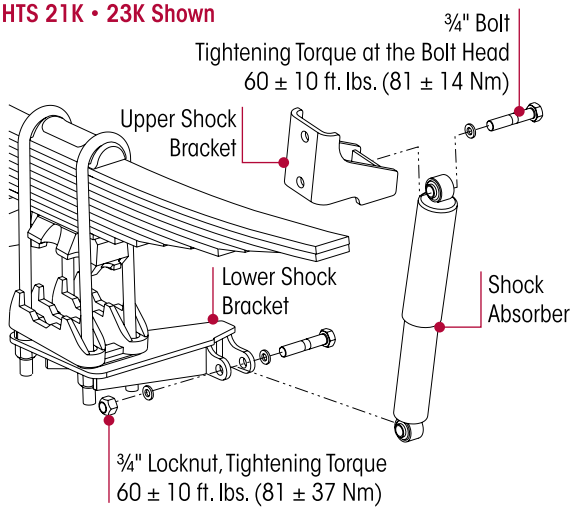
CAUTION

FAILURE TO INSTALL THE HTS LONGITUDINAL TORQUE ROD SHIMS IN THE SAME ORIENTATION AND LOCATION WILL REQUIRE A VEHICLE ALIGNMENT. IMPROPER VEHICLE ALIGNMENT CAN INCREASE TIRE WEAR.

NOTE It is required that the longitudinal torque rod shim(s) be installed in the same location, orientation and quantity as removed to preserve the existing alignment.

8. Install the longitudinal torque rod fasteners and any torque rod shims that were removed.
9. Tighten the torque rod fasteners to 178 ± 27 foot pounds torque see Figure 8-7.
10. If equipped, install the shock absorber into upper and lower shock brackets.
11. Install shock absorber fasteners and tighten the upper shock bracket at the bolt head and lower fastener at the locknut to 60 ± 10 foot pounds torque see Figure 8-10.
12. Install the rebound bolt, rebound roller, washer and flange nut on the front hangers shown in Figure 8-11 and tighten to 60 ± 10 foot pounds torque.
13. Install the tires per the vehicle manufacturer's instructions.

FIGURE 8-10
HTS 21K • 23K Shown

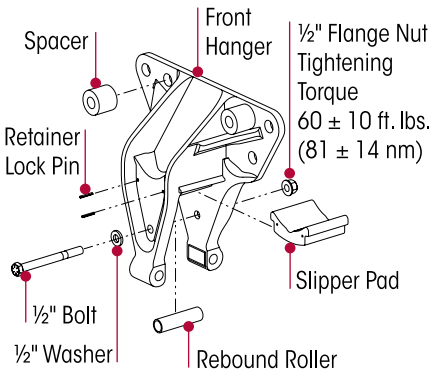


NOTE Alignment is necessary anytime the leaf spring assembly is serviced, which includes removal of the U-bolts.

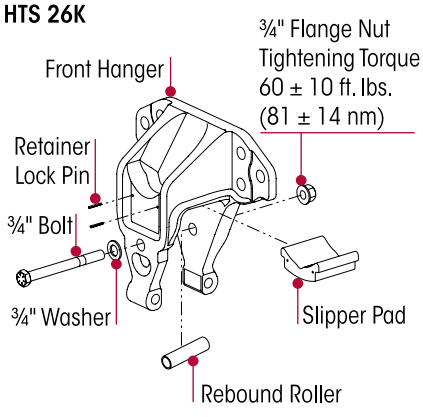
14. Remove the frame safety stands.
15. Verify the axle alignment, see Alignment & Adjustments Section of this publication.
16. Remove the wheel chocks.

FIGURE 8-11

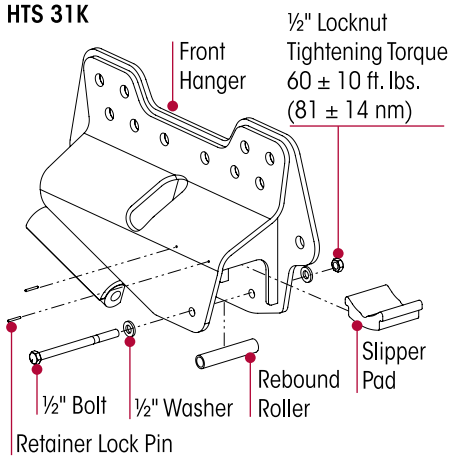
HTS 21K • 23K



HTS 26K



HTS 31K



LONGITUDINAL TORQUE RODS

Hendrickson offers fixed length torque rods and the drop-in torque rod shims for HTS suspension.

DISASSEMBLY

1. Chock wheels of drive axle.
2. Loosen rebound bolt flange nut in the front hanger.

NOTE It might be necessary to raise or lower the frame in order to remove the torque rod fasteners.

SERVICE HINT Prior to disassembly of the HTS longitudinal torque rod fasteners, note the location, orientation and quantity of torque rod shim(s). It is required that the longitudinal torque rod shims be installed in the same orientation and location as removed to preserve the existing alignment.

3. Remove the longitudinal torque rod to front hanger fasteners and torque rod shims.
4. Remove and discard the longitudinal torque rod to spring seat stud fasteners.
5. Remove the longitudinal torque rod.
6. Inspect the mounting surfaces for any wear or damage, replace if necessary.
7. To replace bushings, refer to Torque Rod Bushing in this section.

ASSEMBLY

1. Position the new or re-bushed torque rod on the spring seat and install fasteners. Hand tighten locknuts. **DO NOT** tighten at this time.
2. Position the longitudinal torque rod bar pin:
   - 21K•23K•26K on the forward face of the front hanger legs, see Figure 8-12.
   - 31K the torque rod bar pin is mounted rear face of the front hanger, see Figure 8-13.

⚠ CAUTION FAILURE TO INSTALL THE HTS LONGITUDINAL TORQUE ROD SHIMS IN THE SAME ORIENTATION AND LOCATION WILL REQUIRE A VEHICLE ALIGNMENT. IMPROPER VEHICLE ALIGNMENT CAN INCREASE TIRE WEAR.

NOTE Prior to assembly of the HTS longitudinal torque rod fasteners, note the location, orientation and quantity of torque rod shim(s). It is required that the longitudinal torque rod shims be installed in the same orientation and location as removed to preserve the existing alignment.

3. Install torque rod shims in same quantity and location as prior to removal.
4. Install the torque rod to front hanger fasteners.

FIGURE 8-12

HTS 21K • 23K • 26K

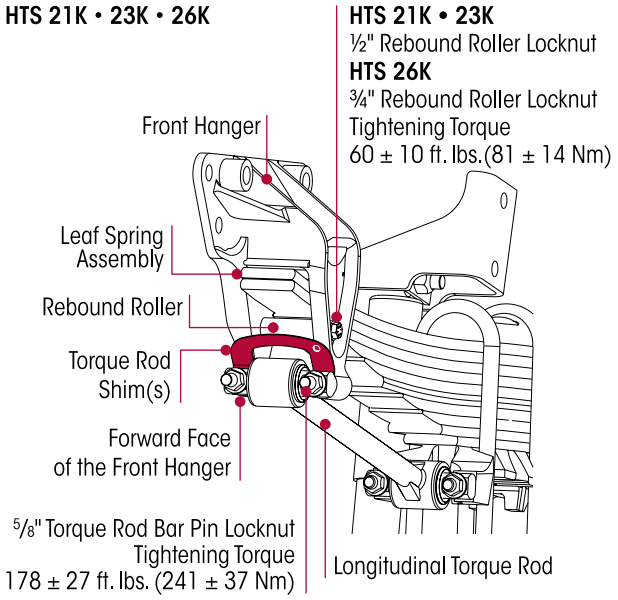
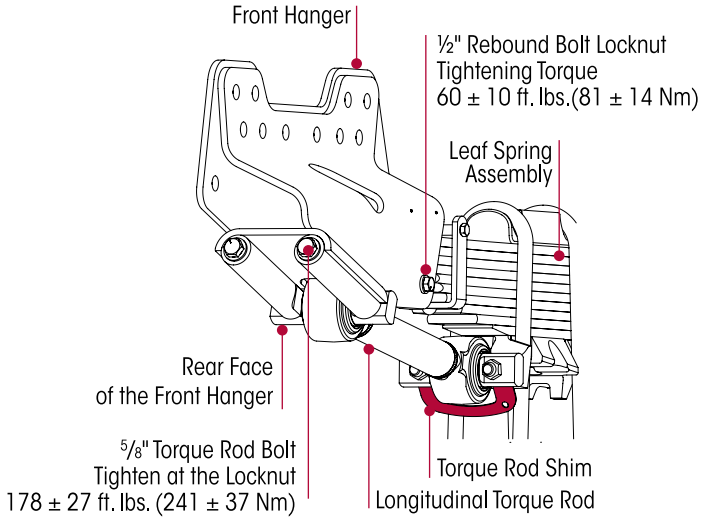


FIGURE 8-13

HTS 31K



5. Tighten both front and rear torque rod fasteners to 178 ± 27 foot pounds torque as shown in Figures 8-12 and 8-13.
6. Tighten the rebound bolt flange nuts to 60 ± 10 foot pounds torque as shown in Figures 8-12 and 8-13.
7. Verify the axle alignment, see Alignment & Adjustments Section of this publication.
8. Remove the wheel chocks.

ULTRA ROD TORQUE ROD BUSHINGS

You will need:

- A vertical press with a minimum capacity of 10 tons
- Shop made receiving tool and installation/removal tool, refer to the Special Tools Section of this publication for more information.
- Funnel Tool Part No. 66086-001

DISASSEMBLY

CAUTION

DO NOT USE HEAT OR USE A CUTTING TORCH TO REMOVE THE BUSHINGS FROM THE TORQUE ROD. THE USE OF HEAT WILL ADVERSELY AFFECT THE STRENGTH OF THE TORQUE ROD; HEAT CAN CHANGE THE MATERIAL PROPERTIES. A COMPONENT DAMAGED IN THIS MANNER CAN RESULT IN THE ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE AND VOID WARRANTY.

1. Remove the torque rods as detailed in Longitudinal Torque Rods in this section.

FIGURE 8-14

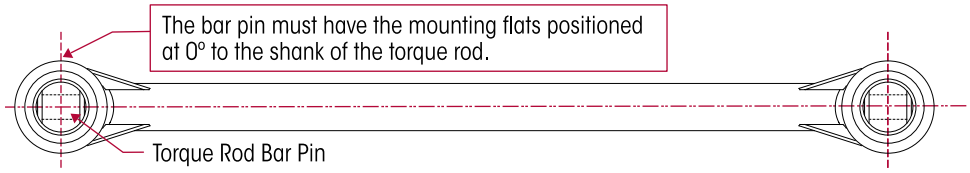
Straddle Bar Pin Bushing

SERVICE HINT

When servicing a straddle mount bar pin type bushing assembly, mark the clocking position of the straddle mount bar pin flats on the torque rod end hub before disassembly. This clocking mark will serve as a guide when installing the new bushing assembly so the original clocking position can be retained.

2. When replacing a straddle mount bar pin type bushing assembly, mark the clocking position of the bushing assembly's bar pin flats with a paint stick on the torque rod end hub prior to disassembly. Clocking varies for different model configurations, see Figure 8-15.
3. Install the torque rod in the press. Support the torque rod end on the receiving tool with the end of the torque rod centered on the tool. Be sure the torque rod is squarely supported on the press bed.
4. Push directly on the inner metal of the bushing assembly until the bushing assembly clears the torque rod end tube.
5. Clean and inspect the inner diameter of the torque rod ends.

FIGURE 8-15



ASSEMBLY

NOTE

DO NOT use a petroleum or soap based lubricant. Such lubricants can cause adverse reactions with the bushing, such as deterioration of the rubber, causing premature failure.

1. Lubricate the inner diameter of the torque rod end hub and the new rubber bushing with light Naphthenic Base Oil, such as 60 SUS at 100°F, see Figure 8-16.

2. Support the torque rod end tube on the receiving tool with the end tube of the torque rod centered on the receiving tool.

NOTE When replacing a straddle mount bar pin type bushing assembly, verify the correct clocking position of the straddle mount bar pin flats prior to installing the bushing assembly in the torque rod end hub.

3. Center the new bushing assembly on the torque rod end hub. When installing a straddle mount type bushing assembly, verify the bushing assembly's bar pin flats are clocked correctly.
4. Press directly on the inner metal of the bushing assembly. The rubber bushings of the bar pin must be centered within the torque rod end tubes.
5. When pressing in the new bushings overshoot the desired final position by approximately 3⁄16", see Figure 8-17.
6. Press the inner metal of the bushing assembly again from the opposite side to center the bushing and inner metal within the torque rod end tube, see Figure 8-18.

FIGURE 8-16

FIGURE 8-17

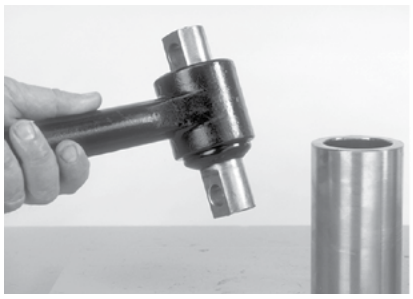
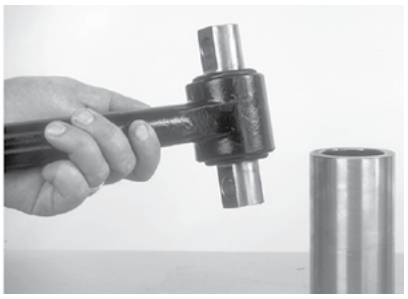


FIGURE 8-18



⚠ CAUTION IF THE TORQUE ROD ASSEMBLY IS NOT ALLOWED THE ALLOTTED TIME FOR THE LUBRICANT TO DISSIPATE, THE BUSHING MAY SLIDE FROM THE TORQUE ROD END TUBE. THE BUSHING WILL THEN NEED TO BE REMOVED AND A NEW BUSHING RE-INSTALLED.

7. Wipe off excess lubricant. Allow the lubricant four hours to dissipate before operating the vehicle.
8. Install the torque rod assembly as detailed in this section.

XTRB TORQUE ROD BUSHING

FIGURE 8-19

You Will Need

- A vertical press with a capacity of at least 10 tons
- Shop made receiving tool and installation / removal tool, see the Special Tools section of this publication for more information

⚠ CAUTION DO NOT USE HEAT OR USE A CUTTING TORCH TO REMOVE THE BUSHINGS FROM THE TORQUE ROD. THE USE OF HEAT WILL ADVERSELY AFFECT THE STRENGTH OF THE TORQUE ROD; HEAT CAN CHANGE THE MATERIAL PROPERTIES. A COMPONENT DAMAGED IN THIS MANNER CAN RESULT IN THE ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE AND VOID WARRANTY.

DISASSEMBLY

1. Remove the longitudinal torque rods as detailed in Longitudinal Torque Rod in this section.
2. When servicing a straddle mount bar pin bushing assembly on a longitudinal torque rod, mark the clocking position of the straddle mount bar pin flats with a paint stick on the torque rod end hub prior to disassembly, see Figure 8-20. This marking will serve as a guide when installing the new bushing assembly so the original clocking position can be retained, see Figure 8-15 for longitudinal torque rod bar pin flats clocking angle.
3. Support the torque rod end tube centered on the receiving tool. Be sure the torque rod is squarely supported on the press bed for safety.

4. Push directly on the straddle mount bar pin, until the top of the bar pin is level with the top of torque rod end hub, see Figure 8-21.
5. Place the shop made removal tool on the bar pin and press until the bushing clears the torque rod hub, see Figure 8-22.
6. Support the torque rod hub on the receiving tool with the torque rod squarely supported on the press bed for safety.

FIGURE 8-20

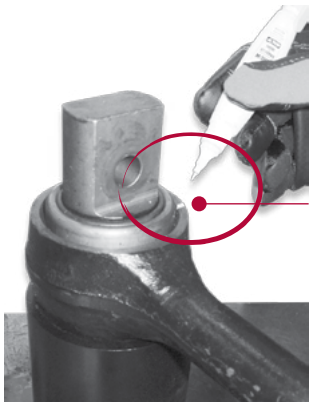


FIGURE 8-21

FIGURE 8-22

ASSEMBLY

1. Clean and inspect the inner diameter of the torque rod end hubs, see Figure 8-23.

SERVICE HINT

DO NOT use a paraffinic oil, or soap base lubricant. Such lubricants can cause adverse reactions with the bushing, causing premature failure.

2. Lubricate the inner diameter of the torque rod end hubs and the new bushings with NLGI#2 – EP (Extreme Pressure) lithium base grease, see Figure 8-24.

FIGURE 8-23

Inspect and clean the inner diameter of torque rod end hubs

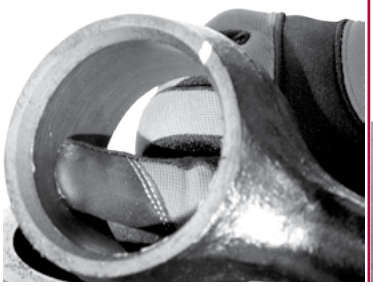
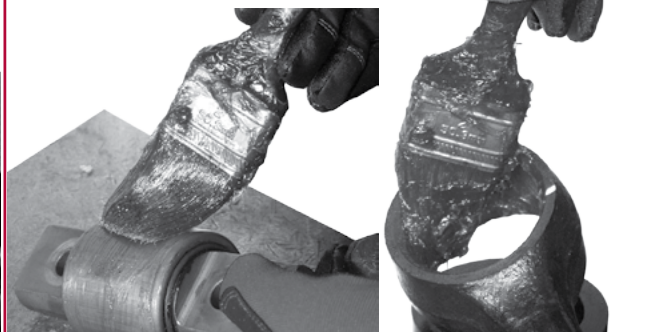


FIGURE 8-24

Apply NLGI #2-EP (Extreme Pressure) lubricant to the inner diameter of torque rod end hub and bushings



3. Support the torque rod end hub centered on the receiving tool. Be sure the torque rod is squarely supported on the press bed for safety.
4. Re-align the bar pin bushings to the mark made before removal as shown in Figure 8-20.
5. Using the shop made tool, place the installer tool on the bushing and press in. The bushing must be centered within the hub of the torque rod.
6. Wipe off the excess lubricant.
7. Replace the torque rod assembly as detailed in the Longitudinal Torque Rod in this section.

FRONT SPRING HANGER ASSEMBLY

NOTE: The frame hanger assemblies (Part Nos. 58425-001, 58425-008 ,70628-001, 70628-002) come equipped with the slipper pad and lock pins. Refer to the Parts List section in this publication.

DISASSEMBLY

1. Chock the wheels.
2. Remove and discard the rebound roller fasteners.
3. Remove the spacer (if equipped) and rebound roller from the front hanger, see Figures 8-25 and 8-26.

NOTE It might be necessary to raise or lower the frame in order to remove the torque rod fasteners.

SERVICE HINT Prior to disassembly of the HTS longitudinal torque rod fasteners, note the location, orientation and quantity of torque rod shim(s). It is required that the longitudinal torque rod shims be installed in the same orientation and location as removed to preserve the existing alignment.

⚠ CAUTION

FAILURE TO INSTALL THE HTS LONGITUDINAL TORQUE ROD SHIMS IN THE SAME ORIENTATION AND LOCATION WILL REQUIRE A VEHICLE ALIGNMENT. IMPROPER VEHICLE ALIGNMENT CAN INCREASE TIRE WEAR.

4. Remove the longitudinal torque rod to hanger fasteners and torque rod shims.
5. Remove and discard the longitudinal torque rod to spring seat stud fasteners.
6. Remove the longitudinal torque rod.
7. Raise the frame of the vehicle high enough to remove the load from the leaf spring assembly.
8. Remove the front hanger to frame fasteners per vehicle manufacturer's specifications.
9. Remove the entire front hanger assembly with the slipper pad and retainer lock pins.

FIGURE 8-25
HTS 21K • 23K • 26K

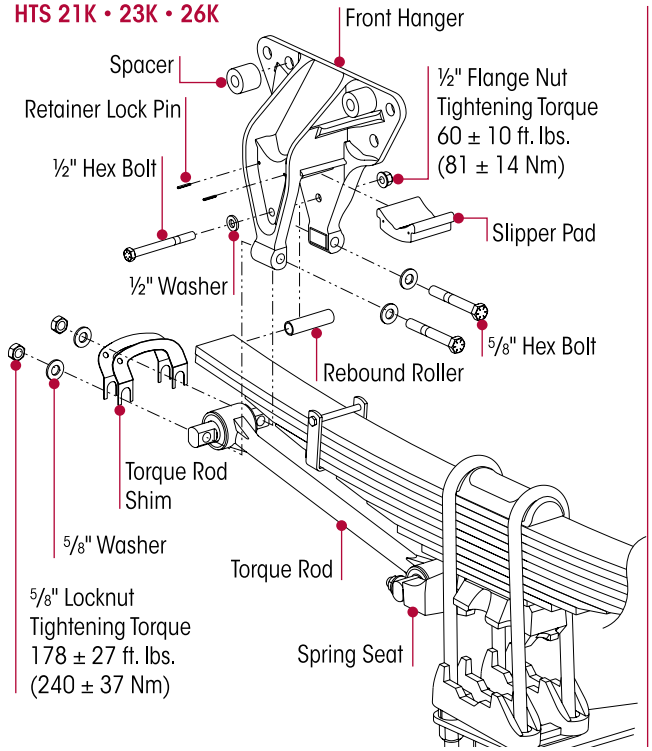
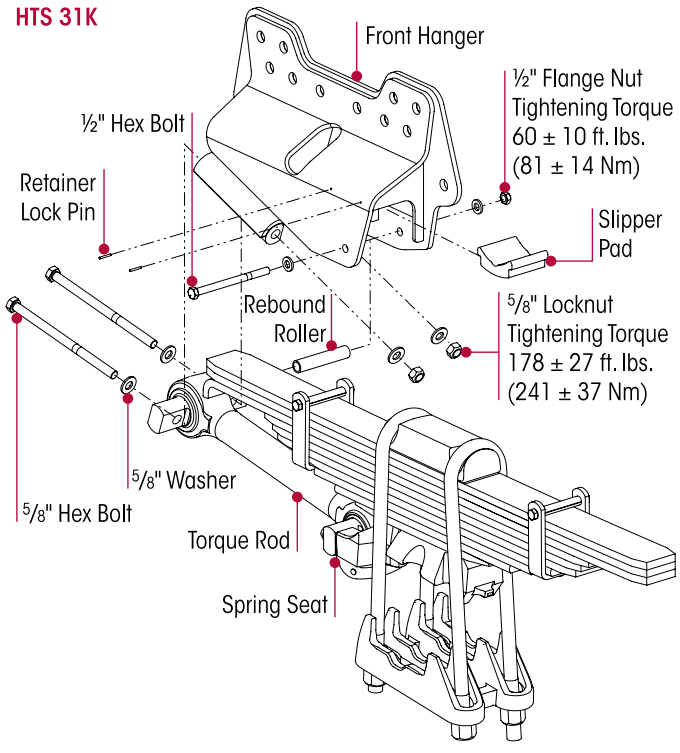


FIGURE 8-26
HTS 31K



ASSEMBLY

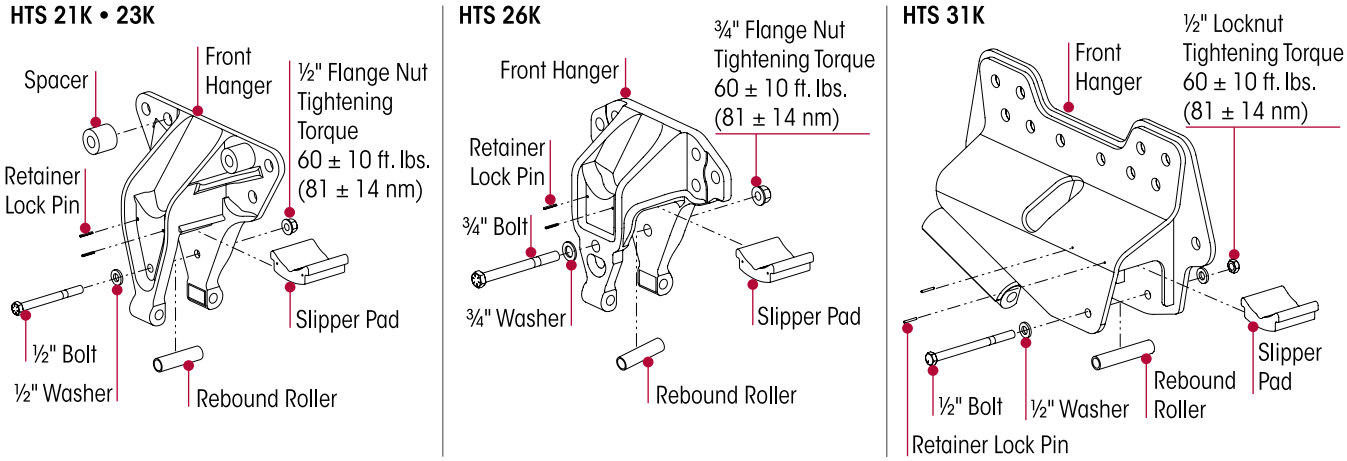
1. Position the front hanger assembly (equipped with the slipper pad and retainer lock pins) over the leaf spring assembly.
2. Install new frame fasteners in the front hanger per the vehicle manufacturer's instructions and tighten to the vehicle manufacturer's specifications.
3. Lower the frame.
4. Position the longitudinal torque rod bar pin:
   - 21K•23K•26K on the forward face of the hanger legs, see Figure 8-25.
   - 31K the torque rod bar pin is mounted rear face of the front hanger, see Figure 8-26.
5. Install torque rod shims in same quantity and location as prior to removal.
6. Install the torque rod to front hanger fasteners.
7. Tighten the torque rod fasteners to 178 ± 27 foot pounds torque.
8. Install the rebound roller in the proper location under the front leaf spring assembly.
9. Install the front hanger rebound roller, bolt and fasteners. Tighten fasteners to 60 ± 10 foot pounds torque, see Figures 8-25 and 8-26.
10. Verify the axle alignment, see Alignment & Adjustments Section of this publication.
11. Remove the wheel chocks.

FRONT SPRING HANGER SLIPPER PAD

DISASSEMBLY

1. Chock the wheels.
2. Remove the rebound fastener and roller.
3. With a blunt end ⅛" punch drive in current lock pins until it has passed through the front hanger.
4. Raise the frame just high enough to access the slipper pad.
5. Remove slipper pad with a screwdriver.

FIGURE 8-27

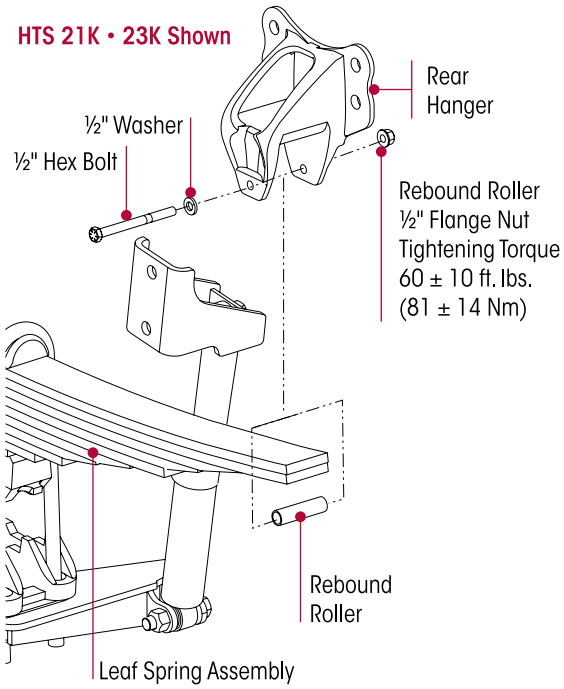


ASSEMBLY

1. Insert new slipper pad.
2. Lower the frame to secure the slipper pad in place against the leaf spring assembly.
3. Drive new retainer lock pins in place with punch until flush with front of hanger, see Figure 8-27.
4. Install rebound fastener and roller and tighten to 60 ± 10 foot pounds torque, see Figure 8-27.
5. Remove wheel chocks.

REAR SPRING HANGERS

FIGURE 8-28
HTS 21K • 23K Shown



DISASSEMBLY

1. Chock the wheels.
2. Remove and discard the rebound fasteners.
3. Remove the roller from the rear hanger, see Figure 8-28.
4. Raise the vehicle frame high enough to remove the load from the leaf spring assembly.
5. Remove the rear hanger frame fasteners per vehicle manufacturer's specifications.
6. Remove the rear hanger.

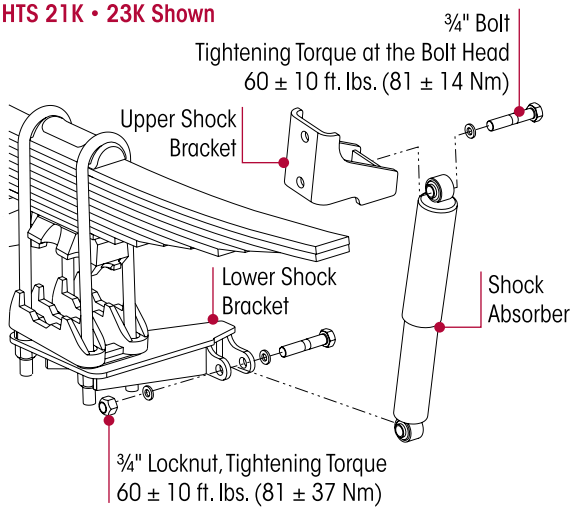
ASSEMBLY

1. Position the rear hanger over the leaf spring assembly, see Figure 8-28.
2. Install the new frame hanger to frame fasteners per the vehicle manufacturer's instructions and tighten to vehicle manufacturer's specifications.
3. Lower the vehicle frame.
4. Position the rebound roller below the leaf spring assembly, see Figure 8-28.
5. Install the new rebound roller fasteners into the hanger and tighten to 60 ± 10 foot pounds torque, see Figure 8-28.
6. Remove the wheel chocks.

SHOCK ABSORBER (if equipped)

NOTE It is not necessary to replace shock absorbers in pairs if only one (1) shock absorber requires replacement.

FIGURE 8-29
HTS 21K • 23K Shown



DISASSEMBLY

1. Chock the wheels of the vehicle.
2. Remove and discard the lower shock absorber mounting fasteners, see Figure 8-29.
3. Remove and discard the upper shock absorber mounting fasteners see Figure 8-29.
4. Slide the shock absorber out of the mounting brackets.
5. Inspect the shock absorber mounting brackets for damage or wear. Replace if necessary.

ASSEMBLY

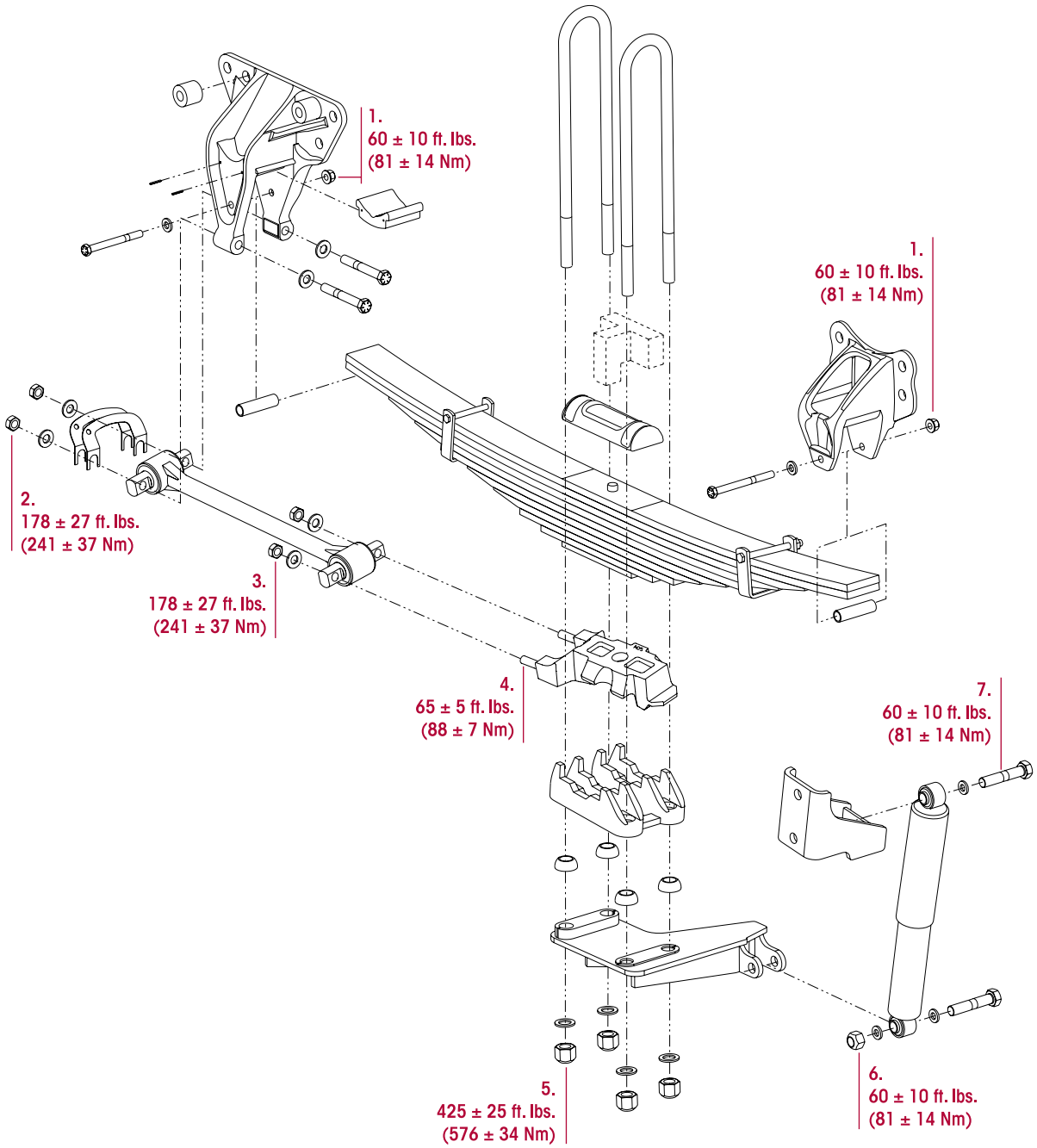
1. Install the shock absorber into the upper mounting bracket and mounting fasteners.
2. Slide the lower shock absorber mount into the lower shock bracket and install lower mounting fasteners.
3. Install and tighten the upper shock absorber fasteners at the bolt head to 60 ± 10 foot pounds torque, see Figure 8-29.
4. Install and tighten the lower shock absorber fasteners to 60 ± 10 foot pounds torque, see Figure 8-29.
5. Remove the wheel chocks.

SECTION 9

Torque Specifications

HTS 21K • 23K

Hendrickson Recommended Torque Values
Provided in Foot Pounds and in Nm



HTS 21K • 23K for Autocar Vehicles

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS					
NO.	COMPONENT	FASTENER		*TORQUE VALUE	
		QTY.	***SIZE	FOOT POUNDS	NM
Frame Hanger to Vehicle Frame Fasteners Furnished & Installed by Vehicle Manufacturer					
1	Rebound Roller Fastener	4	½"-11 UNC	60 ± 10	81 ± 14
2	Torque Rod Bar Pin to Frame Hanger	4	⅝"-11 UNC	178 ± 27	241 ± 37
3	Torque Rod Bar Pin to Spring Seat	4	⅝"-11 UNC	178 ± 27	241 ± 37
4	Spring Seat Stud	4	⅝"-11 UNC	65 ± 5	88 ± 7
5	U-bolt Locknut	8	⅞"-14 UNF	**425 ± 25	567 ± 34
6	Shock Absorber to Lower Shock Bracket	2	¾"-10 UNC	60 ± 10	81 ± 14
7	Shock Absorber to Upper Shock Bracket (at bolt head)	2	¾"-10 UNC	60 ± 10	81 ± 14

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

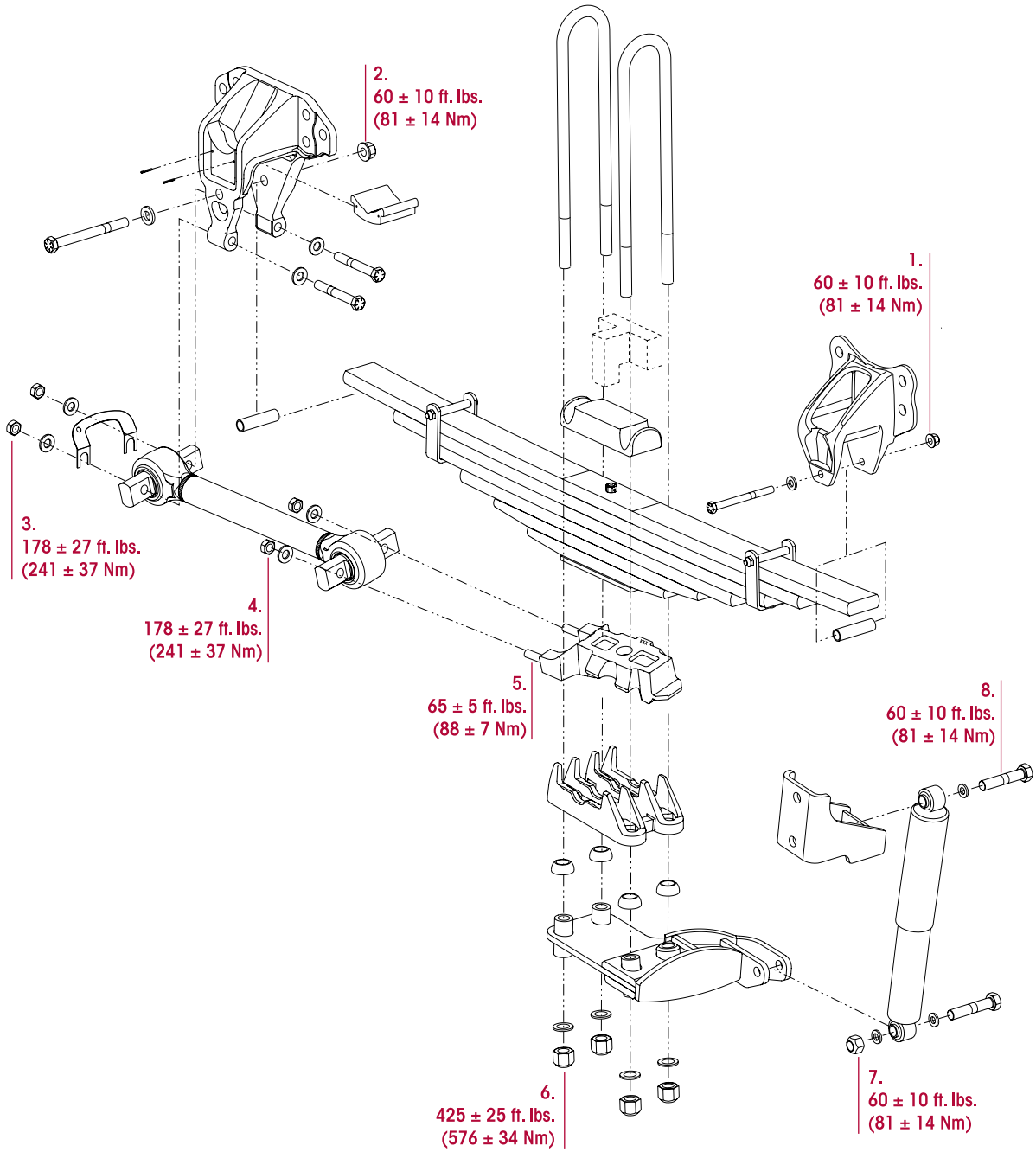
** **DO NOT** exceed torque on U-bolt locknuts.

*** All threads must be clean and lubricated with SAE 20 oil before assembly to obtain the correct relationship of torque and fastener tension.

NOTE After initial break-in period (up to 1,000 miles) all bolts and nuts should be checked to ensure recommended torque is being maintained. To obtain maximum service life from the suspension system, mounting fasteners should be checked at least once a year and tightened to specified torque.

HTS 26K

Hendrickson Recommended Torque Values
Provided in Foot Pounds and in Nm



HTS 26K for Autocar Vehicles

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS					
NO.	COMPONENT	FASTENER		*TORQUE VALUE	
		QTY.	***SIZE	FOOT POUNDS	NM
Frame Hanger to Vehicle Frame Fasteners Furnished & Installed by Vehicle Manufacturer					
1	Rebound Roller Fastener (Rear)	4	½"-11 UNC	60 ± 10	81 ± 14
2	Rebound Roller Fastener (Front)	4	¾"-10 UNC	60 ± 10	81 ± 14
3	Torque Rod Bar Pin to Frame Hanger	4	⅝"-11 UNC	178 ± 27	241 ± 37
4	Torque Rod Bar Pin to Spring Seat	4	⅝"-11 UNC	178 ± 27	241 ± 37
5	Spring Seat Stud	4	⅝"-11 UNC	65 ± 5	88 ± 7
6	U-bolt Locknut	8	⅞"-14 UNF	**425 ± 25	576 ± 34
7	Shock Absorber to Lower Shock Bracket	2	¾"-10 UNC	60 ± 10	81 ± 14
8	Shock Absorber to Upper Shock Bracket (at bolt head)	2	¾"-10 UNC	60 ± 10	81 ± 14

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

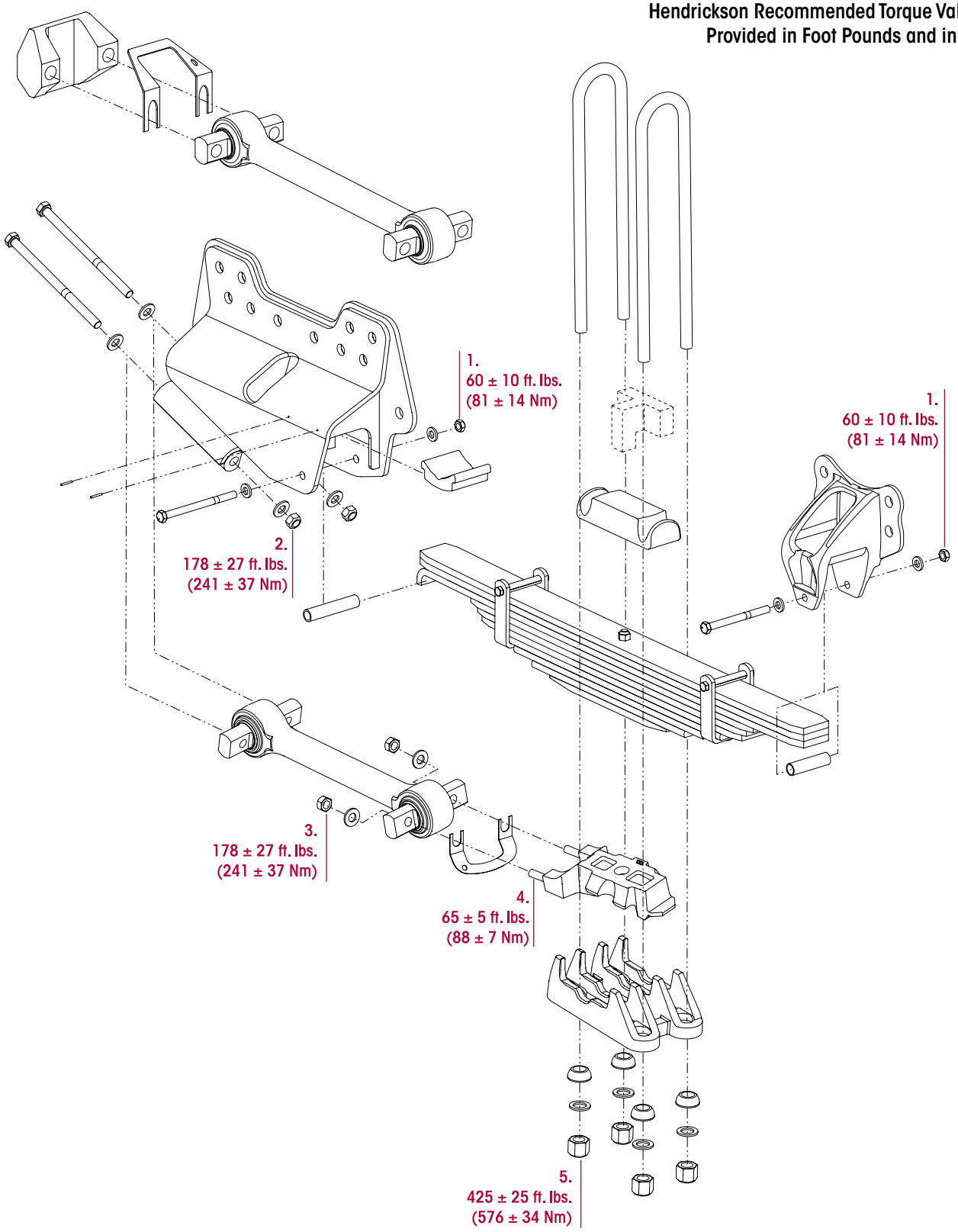
** **DO NOT** exceed torque on U-bolt locknuts.

*** All threads must be clean and lubricated with SAE 20 oil before assembly to obtain the correct relationship of torque and fastener tension.

NOTE After initial break-in period (up to 1,000 miles) all bolts and nuts should be checked to ensure recommended torque is being maintained. To obtain maximum service life from the suspension system, mounting fasteners should be checked at least once a year and tightened to specified torque.

HTS 31K

Hendrickson Recommended Torque Values
Provided in Foot Pounds and in Nm



HTS 31K for Autocar Vehicles

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS					
NO.	COMPONENT	FASTENER		*TORQUE VALUE	
		QTY.	***SIZE	FOOT POUNDS	NM
Frame Hanger to Vehicle Frame Fasteners Furnished & Installed by Vehicle Manufacturer					
1	Rebound Roller Fastener	4	½"-13 UNC	60 ± 10	81 ± 14
2	Torque Rod Bar Pin to Frame Hanger	4	⅝"-11 UNC	178 ± 27	241 ± 37
3	Torque Rod Bar Pin to Spring Seat	4	⅝"-11 UNC	178 ± 27	241 ± 37
4	Spring Seat Stud	4	⅝"-11 UNC	65 ± 5	88 ± 7
5	U-bolt Locknut	8	⅞"-14 UNF	**425 ± 25	576 ± 34

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

** **DO NOT** exceed torque on U-bolt locknuts.

*** All threads must be clean and lubricated with SAE 20 oil before assembly to obtain the correct relationship of torque and fastener tension.

NOTE After initial break-in period (up to 1,000 miles) all bolts and nuts should be checked to ensure recommended torque is being maintained. To obtain maximum service life from the suspension system, mounting fasteners should be checked at least once a year and tightened to specified torque.

SECTION 10
Troubleshooting Guide

HTS for Autocar Vehicles

TROUBLESHOOTING GUIDE		
CONDITION	**POSSIBLE CAUSE**	**CORRECTION**
Suspension has harsh or bumpy ride	Suspension is overloaded	Redistribute the load to correct weight.
	Damaged or leaking shock absorber	Replace the shock absorber.
Irregular tire wear	Incorrect tire inflation pressure	Correct the tire pressure per the vehicle manufacturer and tire manufacturer specifications.
	Incorrect alignment	Adjust the alignment, see the Alignment & Adjustments Section.
	Worn torque rod bushings	Replace the torque rod bushings as necessary.
Excessive driveline vibration	Incorrect pinion angle(s)	Adjust the pinion angle(s), refer to the vehicle manufacturer for specifications.
Suspension is noisy	Loose U-bolts	Tighten the U-bolts to specifications, see the Torque Specifications Section.
	Worn torque rod bushings	Replace the torque rod bushings as necessary.
Vehicle leaning	Load not centered	Redistribute the load.
	Frame twisted	Straighten the frame per vehicle the manufacturer's guidelines.
	Axle housing bent or broken	Replace the axle housing per vehicle manufacturer's guidelines and align the vehicle.
	Loose U-bolts	Tighten the U-bolts to specifications, see the Torque Specifications Section.
	Front suspension	Inspect and repair the front suspension.
	Broken leaf in spring assembly	Replace the leaf spring assembly.
Vehicle bouncing excessively	Damaged or leaking shock absorber	Replace the shock absorber.
	Incorrect ride height or broken leaf in the spring assembly	Replace the leaf spring assembly.
Excessive frame slope	Incorrect ride height or broken leaf in spring assembly	Replace the leaf spring assembly.
	Suspension overloaded	Redistribute the load / reduce load to correct weight.

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 **1.866.755.5968** (toll-free) or **1.630.910.2800** for additional information.*

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