



H TECHNICAL PROCEDURE

COMFORT AIR® Rear Air Suspensions for Hino Trucks

SUBJECT: Service Instructions

LIT NO: 17730-245

DATE: February 2026

REVISION: D

TABLE OF CONTENTS

Section 1	Introduction	2	Section 8	Component Replacement	
Section 2	Product Description	2		Fasteners	32
Section 3	Important Safety Notice	4		Height Control Valve & Linkage Assembly	32
Section 4	Parts Lists	8		Air Spring	34
Section 5	Special Tools	15		Shock Absorber	35
Section 6	Preventive Maintenance			Lower Shock Absorber Bracket (if equipped)	37
	Hendrickson Recommended Inspection Intervals	17		Cross Channel (if equipped)	38
	Component Inspection	17		Transverse Torque Rod	39
	Air Fittings	18		Inner Reinforcement Plate	41
	U-bolt Locknuts	19		ULTRA ROD Torque Rod Bushings	41
	QUIK-ALIGN Pivot Bushing	19		Main Support Member & Clamp Group	43
	Transverse Torque Rods	21		Frame Hanger	47
	Shock Absorbers	22		QUIK-ALIGN Pivot Bushing	49
Section 7	Alignments & Adjustments		Section 9	Torque Specifications	54
	Ride Height	24	Section 10	Troubleshooting Guide	60
	Drive Axle Alignment Inspection	27	Section 11	Plumbing Diagrams	61
	Axle Pinion Angle	28			
	Axle Lateral Alignment	29			
	Axle Alignment Adjustment	30			

SECTION 1 Introduction

This publication is intended to acquaint and assist maintenance personnel in the preventive maintenance, service, repair, and rebuild for the COMFORT AIR® air suspension system as installed on applicable Hino Trucks.

NOTE

Use only Hendrickson Genuine Parts for servicing this suspension system.

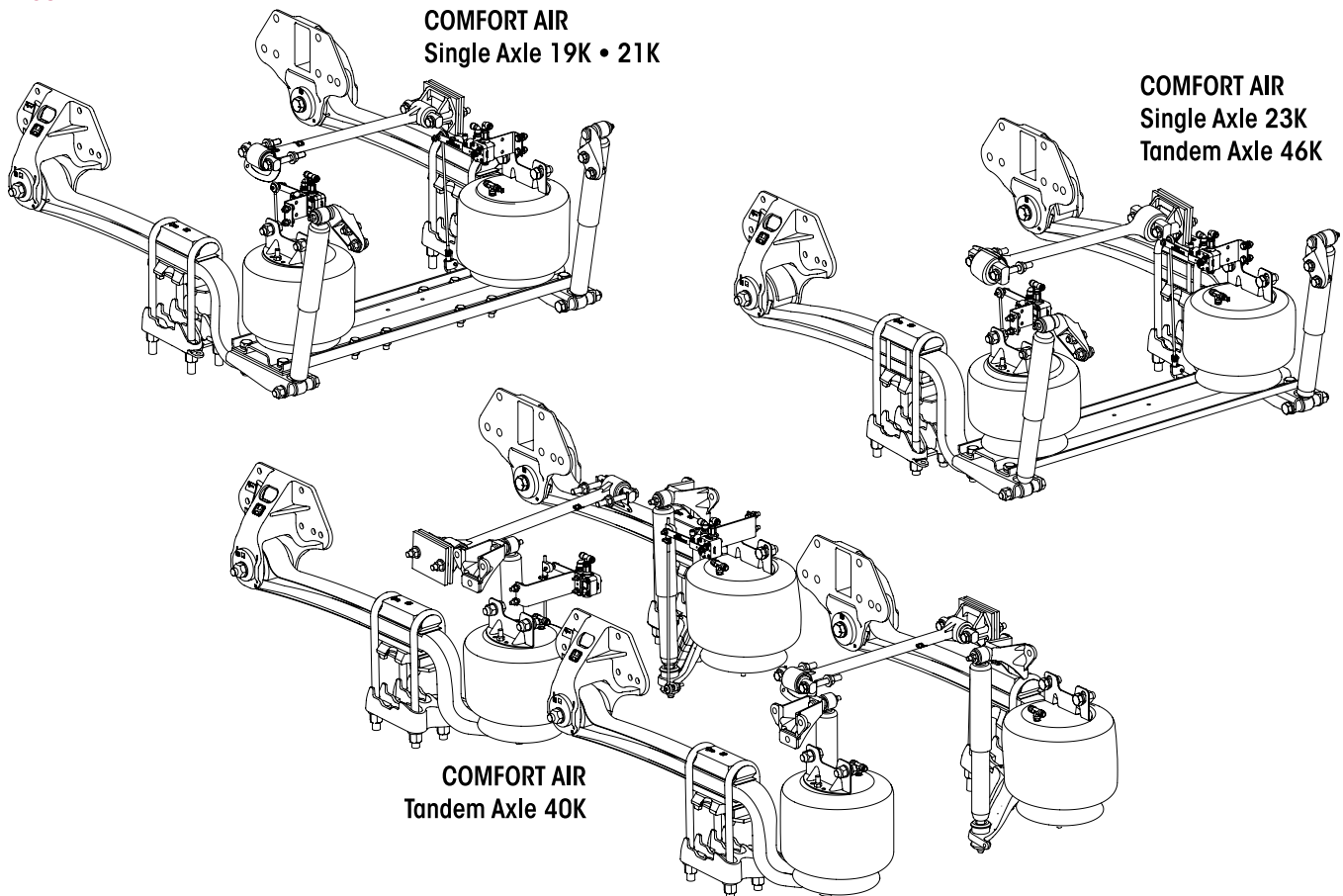
It is important to read and understand this entire Technical Procedure publication prior to performing any maintenance, service, repair, or rebuild of this product. The information in this publication contains parts lists, safety information, product specifications, features, proper maintenance, service,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

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

SECTION 2 Product Description

FIGURE 2-1





The **COMFORT AIR rear air suspension system** for applicable Hino Trucks delivers an innovative suspension solution for an truck chassis. A Hendrickson air suspension also helps to protect the vehicle from stress. The suspension mounting brackets use common frame hole locations with the mechanical suspension allowing relatively easy conversion to air ride. The system combines superior comfort, outstanding ride, improved handling, and reduced maintenance.

- **Air Springs** — Adjust to changing load conditions to deliver superior ride quality
- **Axle Connections** — No welding required for reduced maintenance
- **Frame Hanger** — Wide footprint distributes load over a larger area for reduced frame stress and help increase the life of the vehicle.
- **Height Control Valve** — Maintains precise ride height control through changing road surfaces, load, and driving conditions
- **Main Support Member** — Extended-length generates lower spring rate for optimized roll stiffness, providing a more comfortable and compliant ride. The kicked-in tail of the 40K lb capacity main support member eliminates the cross-channel, reducing weight and part complexity.
- **QUIK-ALIGN® pivot connection** — Reduces maintenance time by offering a fast and easy method to adjust and set alignment without shims
- **Shock Absorbers** — Tuned for optimum damping characteristics to help provide maximum driving comfort
- **Torque Rods** — Provide greater durability over conventional torque rods and enhance handling during cornering by controlling lateral forces to maintain axle position.

*COMFORT AIR Specifications for Hino Trucks

	SINGLE AXLE			TANDEM AXLE	
	19K	21K	23K	40K	46K
Capacity (lb)					
Suspension Rating (lb)	19,000	21,000	23,000	40,000	46,000
Suspension Weight ¹	460.50 lb (208.8 kg.)	461 lb (209 kg.)	530 lb (240 kg.)	865 lb (392 kg.)	1,098 lb (498 kg.)
Main Support Member	Single Leaf		Leaf & a Half	Single Kicked-In	Leaf & a Half
Ride Height ² (in)	8.5			8.5	9.5
Off-highway use (up to)	10%		25%	0%	25%

* All applications must comply with applicable Hendrickson specifications and must also be approved by the vehicle manufacturer with the vehicle in its original, as-built configuration. Contact Hendrickson and the vehicle manufacturer for approval of specific / additional applications.

1. The installed weight includes the complete suspension, torque rods, axle brackets, frame brackets, shock absorbers and brackets.
2. The suspension ride height measurements are taken from the centerline of the axle to the bottom of the truck frame.

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.



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



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



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, ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY, OR PROPERTY DAMAGE.

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

ALL COMFORT AIR FASTENERS FOR LION TRUCK VEHICLES ARE HENDRICKSON COATED. METRIC FASTENERS ARE CLASS 10.9 BOLTS AND CLASS 10 LOCKNUTS AND NON-METRIC FASTENERS ARE GRADE 8 BOLTS AND GRADE C LOCKNUTS. DO NOT ASSEMBLE WITHOUT THE PROPER FASTENERS. USE ONLY HENDRICKSON COATED FASTENERS TO SUSTAIN PROPER CLAMP FORCE. FAILURE TO DO SO CAN CAUSE ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE OR PERSONAL INJURY.

WARNING

QUIK-ALIGN FASTENERS

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

DO NOT ASSEMBLE THE QUIK-ALIGN JOINT WITHOUT THE PROPER FASTENERS. USE ONLY HENDRICKSON COATED GENUINE FASTENERS TO SUSTAIN PROPER CLAMP FORCE. ENSURE THAT THE QUIK-ALIGN FASTENER'S TORQUE VALUES ARE SUSTAINED AS RECOMMENDED IN THE TORQUE SPECIFICATIONS SECTION IN THIS PUBLICATION. FAILURE TO FOLLOW THE ABOVE ITEMS CAN CAUSE ADVERSE VEHICLE HANDLING RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE AND WILL VOID ANY APPLICABLE WARRANTIES. FOLLOW THE VEHICLE MANUFACTURER'S FASTENER ORIENTATION WHEN PERFORMING ANY MAINTENANCE, SERVICE, OR REPAIR.

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 CAN INCREASE THE SUSPENSION LOAD ABOVE ITS RATED AND APPROVED CAPACITIES, WHICH CAN RESULT IN COMPONENT DAMAGE AND ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY, OR PROPERTY DAMAGE.

WARNING

SUPPORT THE VEHICLE PRIOR TO SERVICING

PLACE THE VEHICLE ON A LEVEL FLOOR AND CHOCK THE WHEELS TO 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.

WARNING

WHEN LIFTING THE VEHICLE TO PERFORM ANY VEHICLE SERVICE, ENSURE THE REAR AIR SUSPENSION DOES NOT FREELY HANG IN AN UNSUPPORTED CONDITION. USE SAFETY STANDS OR BLOCKS AS NEEDED TO FULLY SUPPORT THE SUSPENSION. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE, MISALIGNMENT, PERSONAL INJURY, OR PROPERTY DAMAGE.

 **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 WILL ASSUME ALL RISKS OF CONSEQUENTIAL PERSONAL INJURY, OR DAMAGE TO THE 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, 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 ADVERSE VEHICLE HANDLING, 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 THE MAIN SUPPORT MEMBER ASSEMBLY AND CAUSE ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY, OR PROPERTY DAMAGE.

 **WARNING****SHOCK ABSORBERS**

THE SHOCK ABSORBERS ARE THE REBOUND TRAVEL STOPS FOR THE SUSPENSION. ANYTIME THE AXLE ON A COMFORT AIR 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****MAIN SUPPORT MEMBER**

FAILURE OF THE MAIN SUPPORT MEMBER BETWEEN THE U-BOLTS WILL REQUIRE THE REPLACEMENT OF THE MAIN SUPPORT MEMBER AND ALL CLAMP GROUP COMPONENTS. FAILURE TO DO SO CAN RESULT IN CLAMP GROUP FAILURE AND FURTHER FAILURE TO THE MAIN SUPPORT MEMBER, WHICH CAN CAUSE ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE OR SEVERE PERSONAL INJURY.

 **WARNING****CROSS CHANNEL**

IMPROPER JACKING METHODS CAN CAUSE STRUCTURAL DAMAGE WHICH CAN CAUSE ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE OR SEVERE PERSONAL INJURY AND WILL VOID HENDRICKSON'S WARRANTY.

- REPLACE ANY SAFETY DECALS THAT ARE FADED, TORN, MISSING, ILLEGIBLE, OR OTHERWISE DAMAGED. CONTACT HENDRICKSON TO ORDER REPLACEMENT LABELS
- DO NOT USE THE SUSPENSION CROSS CHANNEL AS A JACKING POINT TO LIFT THE VEHICLE
- REFER TO THE VEHICLE MANUFACTURER FOR PROPER JACKING INSTRUCTIONS



WARNING

TORQUE RODS

THIS HENDRICKSON SUSPENSION REQUIRES TORQUE RODS FOR SUSPENSION PERFORMANCE AND VEHICLE STABILITY. IF THESE TORQUE RODS ARE DISCONNECTED OR 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.

CAUTION

AIR SPRING LOWER MOUNTING STUDS

IF THE AIR SPRING IS BEING REMOVED FOR AN ALTERNATE REPAIR, IT IS MANDATORY TO LUBRICATE THE LOWER AIR SPRING FASTENERS WITH PENETRATING OIL AND REMOVE WITH HAND TOOLS TO PREVENT DAMAGE TO THE LOWER AIR SPRING MOUNTING STUD. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE AND VOID WARRANTY.

WARNING

FAILURE TO PRESS THE AIR SPRING AGAINST THE UNDERSIDE OF THE FRAME WHILE TIGHTENING THE UPPER AIR SPRING BRACKET CAN RESULT IN COMPONENT DAMAGE AND PERSONAL INJURY OR PROPERTY DAMAGE.

WARNING

AIR SPRING INFLATION AND DEFLATION

PRIOR TO THE DISASSEMBLY OF THE SUSPENSION, AIR SPRING ASSEMBLIES MUST BE DEFLATED. UNRESTRICTED AIR SPRING ASSEMBLIES CAN VIOLENTLY SHIFT. DO NOT INFLATE AIR SPRING ASSEMBLIES WHEN THEY ARE UNRESTRICTED. AIR SPRING ASSEMBLIES MUST BE RESTRICTED BY SUSPENSION OR OTHER ADEQUATE STRUCTURE. DO NOT INFLATE BEYOND PRESSURES RECOMMENDED BY THE AIR SPRING MANUFACTURER, CONTACT HENDRICKSON TECHNICAL SERVICES FOR DETAILS. IMPROPER USE OR OVER INFLATION MAY CAUSE AIR SPRING ASSEMBLIES TO BURST, CAUSING PROPERTY DAMAGE AND/OR SEVERE PERSONAL INJURY.

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

CAUTION

AIR SPRING INFLATION

INFLATE THE SUSPENSION SLOWLY AND MAKE SURE THE RUBBER BLADDER OF THE AIR SPRING INFLATES UNIFORMLY AND IS NOT BINDING. FAILURE TO DO SO CAN CAUSE DAMAGE TO THE AIR SPRING AND/OR MOUNTING BRACKETS AND VOID WARRANTY.

WARNING

AIR SPRING PRESSURE RETENTION

SOME VEHICLE APPLICATIONS, SUCH AS VEHICLES EQUIPPED WITH OUTRIGGERS, RETAIN SOME AIR PRESSURE IN THE AIR SPRINGS AT ALL TIMES. PRIOR TO PERFORMING ANY MAINTENANCE, SERVICE, OR REPAIR OF THE SUSPENSION, VERIFY EACH AIR SPRING IS COMPLETELY DEFLATED. FAILURE TO DO SO COULD RESULT SERIOUS PROPERTY DAMAGE AND/OR SEVERE PERSONAL INJURY.

WARNING

PARTS CLEANING

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

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

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

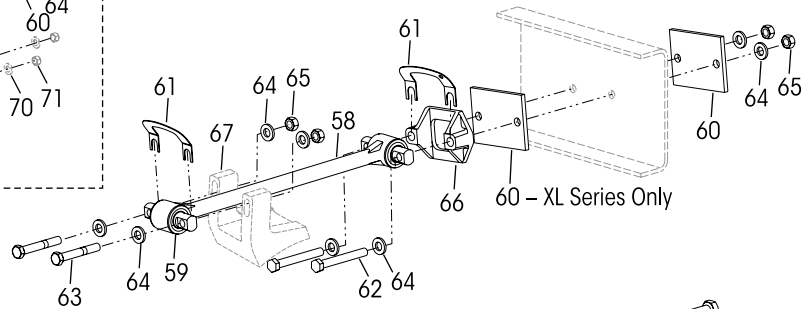
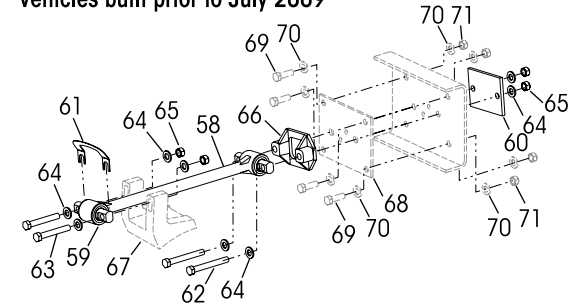


SECTION 4 Parts Lists

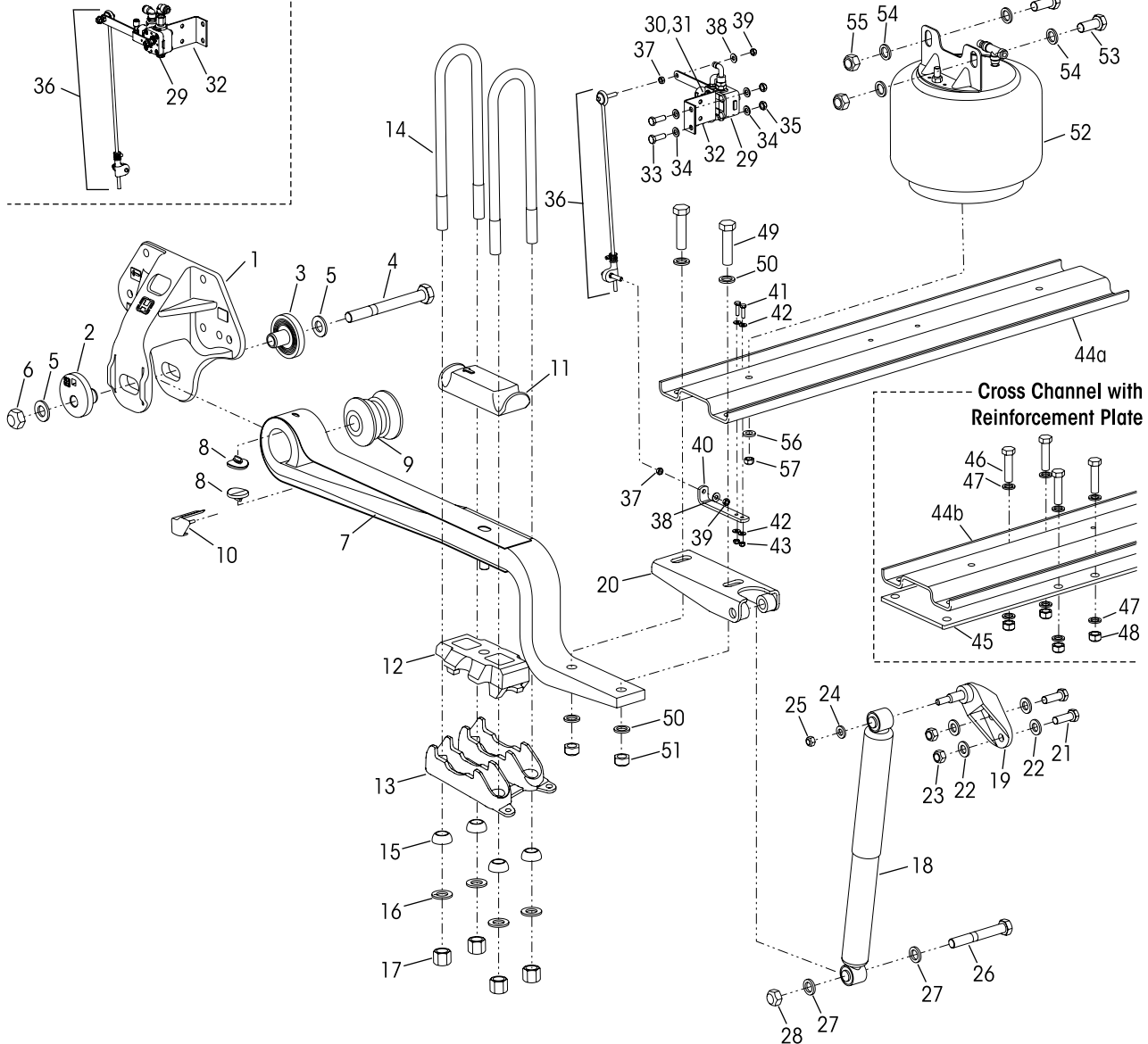
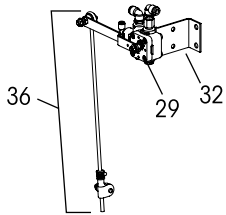
Single Axle 19K • 21K Pound Capacity

Hino L Series • XL Series

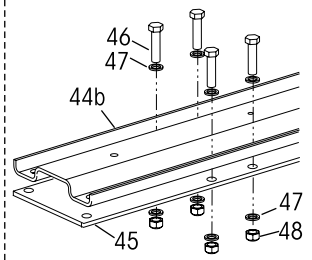
Vehicles built prior to July 2009



Right Side
21K Capacity only (if equipped)



Cross Channel with
Reinforcement Plate





COMFORT AIR® Single Axle 19K • 21K for Hino Trucks

KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
1		Spring Hanger	
	91330-001L	Left Hand, <i>Replaces 65081-001L</i>	1
	91330-002L	Right Hand, <i>Replaces 65081-002L</i>	1
		Spring Hanger with Reinforced Rail	
	65081-101L	Left Hand	1
	65081-102L	Right Hand	1
		QUIK-ALIGN® Collar Service Kit	
	65119-001	Left Hand, Includes Key Nos. 2-6	
	65119-002	Right Hand, Includes Key Nos. 3-6	
2	60662-000L	QUIK-ALIGN Eccentric Collar	1
3	60661-000L	QUIK-ALIGN Concentric Collar	3
4	58705-005	7/8"-9 UNC x 8" Coated Hex Bolt	2
5	22962-034	7/8" Coated Hardened Washer	4
6	60266-000	7/8"-9 UNC Coated Locknut	2
7		Main Support Member Assembly, Includes Key Nos. 8-10	2
	a 82504-000	Vehicles built after 02/2019	
	b 65106-001	Vehicles built prior to 02/2019	
	34013-464	Main Support Member Bushing Service Kit, One Side, Includes Key Nos. 8-10,72	
8		*Isolator Pad	4
9		*Main Support Member Bushing	2
10		*Spring Eye Clip	2
11	65071-000	Top Pad	2
12	56501-XXX	Spring Seat, <i>See Selection Guide on Page 14</i>	2
13	93302-000	Axle Bottom Cap, <i>Replaces 50216-000</i>	2
	91430-082	U-bolt Service Kit, One Wheel End Includes Key No. 14 and Kit No. 48718-508	
14	58184-001	M22 x 1.5 x 380 mm U-bolt	4
	48718-508	U-bolt Fastener Kit, One Wheel End Includes Key Nos. 15-17	
15		*Spherical Washer	8
16		*M22 Hardened Washer	8
17		*M22 x 1.5-6H High Nut	8
18		Shock Absorber	2
	60670-029L	19K, <i>Replaces 60670-014L</i>	
	60670-030L	21K, <i>Replaces 60670-013L, 60670-018L</i>	
	60670-031L	19K, <i>Replaces 60670-019L</i>	
19	58516-002P	Upper Shock Bracket Assembly	2
20	49324-002	Lower Shock Bracket, <i>Replaces 57355-000</i>	2
		Single Shock Absorber Fastener Service Kits	
	65118-002	Upper, Includes Key Nos. 21-25	
	34013-440	Upper and Lower, Includes Key Nos. 24-28	
21		*M16 x 2 x 50 mm Bolt	4
22		*M16 Hardened Washer	8
23		*M16 x 2 Locknut	4
24		*M12 Hardened Washer	2
25		*M12 x 1.75 Locknut	2
26		*M20 x 2.5 x 140 mm Bolt	2
27		*M20 Hardened Washer	4
28		*M20 x 2.5 Locknut	2
		Height Control Valve Assembly (as equipped), Includes Key Nos. 29-32	
	69030-000	Non-Dump Valve (Single)	1
	69031-001	Left Hand Dump Valve (for Dual equipped)	1
	69031-002	Right Hand Dump Valve (for Dual equipped)	1
	69031-000	Dump Valve, L Series (Single)	1
	69031-003	Dump Valve, XL Series (Single)	1
29		*Height Control Valve	
30		*1/4" HCV Washer	2

KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
31		*1/4" HCV Hex Nut	2
32		*HCV Mounting Bracket	1
33	58573-004	M10 x 1.5 x 30 mm Bolt	2
34	58246-008	M10 Hardened Washer	4
35	58581-000	M10 x 1.5 Locknut	2
36		Linkage Rod Assembly, Includes Key Nos. 37-39	
	58994-032	Left Hand, 19K • 21K	1
	58994-048	Right Hand, 21K (for Dual equipped)	1
37		*5/16"-18 UNC Jam Nut	
38		*5/16" Washer	
39		*5/16"-18 UNC Locknut	
40	65090-000	Lower Linkage Bracket	
41		M6 x 1-6G Bolt	2
	65091-001	30 mm, L Series	
	65091-003	35 mm, XL Series	
42	58246-016	M6 Hardened Washer	4
43	65092-000	M6 x 1-6H Locknut	2
44		Cross Channel	1
	a 57317-007	L Series	
	b 57317-012	XL Series, use with Key Nos. 45-48	
45	66676-001	Reinforcement Plate, XL Series Only	1
46	58244-002	M16 x 2-6G x 50 mm Bolt	8
47	58246-003	M16 Hardened Washer	16
48	58245-000	M16 x 2 Locknut	8
	57499-003	Cross Channel Fastener Service Kit, Axle Set, Includes Key Nos. 49-51	
49	58258-023	M20 x 2.5-6G x 90 mm Bolt, <i>Replaces 58258-001</i>	4
50	58246-007	M20 Hardened Washer	8
51	58259-000	M20 x 2.5-6H Locknut	4
52	65086-002L	Air Spring Assembly	2
	58820-005	Air Spring Fastener Service Kit, One Side, Includes Key Nos. 53-57	
53		*M20 x 2.5-6G x 50 mm Bolt	4
54		*M20 Hardened Washer	8
55		*M20 x 2.5-6H Locknut	4
56		*M12 Hardened Washer	2
57		*M12 x 1.25 Locknut, <i>Replaces 65089-000</i>	2
58	62000-595	ULTRA ROD® Transverse Torque Rod Assembly, 595 mm, Includes Key No. 59	1
59	47691-000L	Torque Rod Bar Pin Bushing	2
60	45045-010	Reinforcement Plate, <i>Replaces 65137-000</i> Outer Plate, L Series Inner and Outer Plate, XL Series	1, 2
61	49689-000L	Shim (1.5 mm)	As Req.
62		M16 x 2-6G Bolt	2
	58244-005	130 mm, L Series	
	58244-140	140 mm, XL Series	
63		M16 x 2-6G Bolt	2
	58244-009	110 mm, L Series	
	58244-005	130 mm, XL Series	
64	58246-003	M16 Hardened Washer	8
65	58245-000	M16 x 2-6H Locknut	4
66	22186-000	Transverse Torque Rod Frame Bracket	1
67		**Transverse Torque Rod Axle Bracket	1
68		****Inner Reinforcement Plate	1
69		****M16 x 2-6G x 50 mm Bolt	4
70		****M16 Hardened Washer	8
71		****M16 x 2-6H Locknut	4
72	70867-001	****P-80 Lubricant - 10 ml (Not Shown)	As Req.

NOTE: Quantities specified are shown for **single** axle suspension with single height control valve. Quantities of service kit components may vary from amount shown in list.



COMFORT AIR® Single Axle 23K • Tandem Axle 46K for Hino Trucks

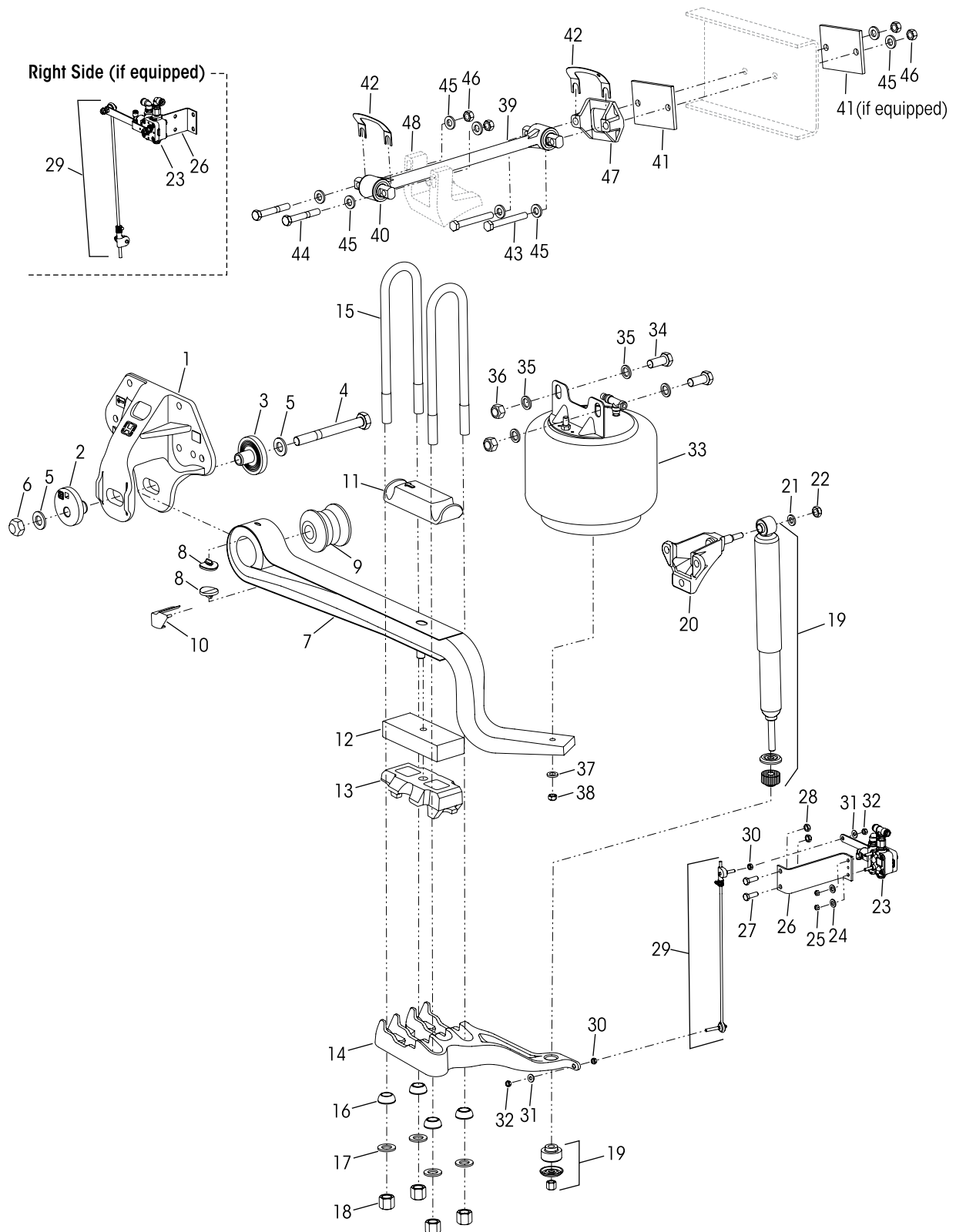
KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
1		Spring Hanger	
	91330-001L	Left Hand, <i>Replaces 65081-001L</i>	2
	91330-002L	Right Hand, <i>Replaces 65081-002L</i>	2
		Spring Hanger with Reinforced Rail	
	65081-101L	Left Hand	2
	65081-102L	Right Hand	2
		QUIK-ALIGN® Service Kit	
	60632-029	Left Hand, Includes Key Nos. 2-6	
	60632-030	Right Hand, Includes Key Nos. 3-6	
2	64632-000	QUIK-ALIGN Eccentric Collar	2
3	64633-000	QUIK-ALIGN Concentric Collar	6
4	68217-001	1"-14 UNF x 8" Coated Hex Bolt	4
5	68232-000	1" Coated Hardened Washer	8
6	68218-000	1"-14 UNF Coated Locknut	4
7	53443-000	Main Support Member Assembly, Includes Key Nos. 8-9	4
	34013-465	Main Support Member Bushing Service Kit, One Side , Includes Key Nos. 8-9,63	
8		*Main Support Member Bushing	4
9		*Spring Eye Clip	4
10	65071-000	Top Pad	4
11		Spring Seat Spacer, 46K Only	
	48531-020	31.28 mm Rear	
	48531-026	19.1 mm Front	
12		Spring Seat, <i>See Selection Guide on Page 14</i>	4
13		Axle Bottom Cap	
	a 93302-000	23K, 46K Front/Rear, <i>Replaces 50216-000</i>	2
	b 93315-000	46K Rear/Rear, <i>Replaces 50222-000</i>	2
		U-bolt Service Kit, One Wheel End	
	91430-082	23K, Includes 14a & Kit No. 48718-508	
	91430-083	46K Front, Includes 14b & Kit No. 48718-508	
	91430-084	46K Rear, Includes 14c & Kit No. 48718-508	
14		M22 x 1.5 U-bolt	
	a 58184-001	380 mm	4
	b 58184-010	410 mm	4
	c 58184-013	450 mm	4
	48718-508	U-bolt Fastener Kit, One Wheel End Includes Key Nos. 15-17	
15		*Spherical Washer	16
16		*M22 Hardened Washer	16
17		*M22 x 1.5-6H High Nut	16
18	60670-030L	Shock Absorber, <i>Replaces 60670-018L</i>	4
19	58516-002P	Upper Shock Bracket	4
20		Lower Shock Bracket	
	a 49324-002	Truck 23K, 46K Rear Axle only	2
	b 57124-000	Truck 46K Forward Axle only Tractor 23K and 46K	2 4
		Single Shock Absorber Fastener Service Kits	
	65118-002	Upper, Includes Key Nos. 21-25	
	34013-440	Upper and Lower, Includes Key Nos. 24-28	
21		*M16 x 2 x 50 mm Bolt	8
22		*M16 Hardened Washer	16
23		*M16 x 2 Locknut	8
24		*M12 Hardened Washer	4
25		*M12 x 1.75 Locknut	4

KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
26		*M20 x 2.5 x 140 mm Bolt	4
27		*M20 Hardened Washer	8
28		*M20 x 2.5 Locknut	4
		Height Control Valve Assembly, (as equipped) Includes Key Nos. 29-32	
	69030-000	Non-Dump Valve (Single)	1
	69031-001	Left Hand Dual, Dump Valve	1
	69031-002	Right Hand Dual, Dump Valve	1
	69031-000	Dump Valve, L Series (Single)	1
	69031-003	Dump Valve, XL Series (Single)	1
29		*Height Control Valve	
30		*1/4" HCV Washer (Not Shown)	
31		*1/4" HCV Hex Nut (Not Shown)	
32		*HCV Mounting Bracket	
33a	58573-004	M10 x 1.5 x 30 mm Bolt, L Series	4
	b 79256-035	M10 x 1.5 x 35 mm Flange Bolt, XL Series	
34	58246-008	M10 Hardened Washer, L Series	8
35a	58581-000	M10 x 1.5 Locknut, L Series	4
	b 79257-000	M10 x 1.5 Flange Locknut, XL Series	
36		Linkage Rod Assembly, Includes Key Nos. 37-39	
	58994-032	Left Hand	1
	58994-048	Right Hand (for Dual equipped)	1
37		*5/16"-18 UNC Jam Nut	
38		*5/16" Washer	
39		*5/16"-18 UNC Locknut	
40	65090-000	Lower Linkage Bracket	
41	65091-003	M6 x 1-6G x 35 mm Bolt	4
42	58246-016	M6 Hardened Washer	8
43	65092-000	M6 x 1-6H Locknut	4
44	57317-012	Cross Channel, <i>Replaces 57317-007</i>	2
	57499-003	Cross Channel Fastener Service Kit, Axle Set , Includes Key Nos. 45-47	
45	58258-023	M20 x 2.5-6G x 90 mm Bolt, <i>Replaces 58258-001</i>	8
46	58246-007	M20 Hardened Washer	16
47	58259-000	M20 x 2.5-6H Locknut	8
48	76942-002	Air Spring Assembly	4
	58820-005	Air Spring Fastener Service Kit, One Side , Includes Key Nos. 49-53	
49		*M20 x 2.5-6G x 50 mm Bolt	8
50		*M20 Hardened Washer	16
51		*M20 x 2.5-6H Locknut	8
52		*M12 Hardened Washer	2
53		*M12 x 1.25 Locknut with Nylon Insert	4
54	72000-595S	***ULTRA ROD PLUS Transverse Torque Rod	2
55	45045-010	Reinforcement Plate, <i>Replaces 65137-000</i>	
		Outer Plate, L Series	2
		Inner and Outer Plate, XL Series	4
56	49689-000L	Shim (1.5 mm)	As Req.
57	58244-140	M16 x 2-6G x 140 mm Hex Bolt	4
58	58244-005	M16 x 2-6G x 130 mm Hex Bolt	4
59	58246-003	M16 Hardened Washer	16
60	58245-000	M16 x 2-6H Locknut	8
61	22186-000	Transverse Torque Rod Frame Bracket	2
62		**Transverse Torque Rod Axle Bracket	2
63	70867-001	*****P-80 Lubricant - 10 ml Not Shown	As Req.

NOTE: Quantities specified are shown for **tandem** axle suspensions. Adjust quantities for your suspensions. Quantities of service kit components may vary from amount shown in list.

Tandem Axle 40K Pound Capacity

Hino XL Series





COMFORT AIR® Tandem Axle 40K for Hino Trucks

KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
1		Spring Hanger	
	91330-001L	Left Hand	2
	91330-002L	Right Hand	2
		Spring Hanger with Reinforced Rail	
	65081-101L	Left Hand	2
	65081-102L	Right Hand	2
		QUIK-ALIGN Collar Service Kit	
	65119-001	Left Hand, Includes Key Nos. 2-6	
	65119-002	Right Hand, Includes Key Nos. 3-6	
2	60662-000L	QUIK-ALIGN Eccentric Collar	2
3	60661-000L	QUIK-ALIGN Concentric Collar	6
4	58705-005	7/8"-9 UNC x 8" Coated Hex Bolt	4
5	22962-034	7/8" Coated Hardened Washer	8
6	60266-000	7/8"-9 UNC-2B Coated Locknut	4
7		Main Support Member Assembly, Includes Key Nos. 8-10	
	82400-000	Left Hand	2
	82401-000	Right Hand	2
	34013-464	Main Support Member Bushing Service Kit, One Side, Includes Key Nos. 8-10,50	
8		*Isolator Pad	8
9		*Main Support Member Bushing	4
10		*Spring Eye Clip	4
11	65071-000	Top Pad	4
12	48531-026	Spring Seat Spacer, 19.1 mm	2
13		Spring Seat, <i>See Selection Guide on Page 14</i>	4
14		Axle Bottom Cap / Lower Shock Bracket	
	79372-000	Left Hand	2
	79371-000	Right Hand	2
	91430-082	U-bolt Service Kit, One Wheel End Includes Key No. 15 and Kit No. 48718-508	
15	58184-001	M22 x 1.5 x 380 mm U-bolt	8
	48718-508	U-bolt Fastener Kit, One Wheel End Includes Key Nos. 16-18	
16		*Spherical Washer	16
17		*M22 Hardened Washer	16
18		*M22 x 1.5-6H High Nut	16
19	57241-008L	Shock Absorber	4
	58692-000	Upper Shock Bracket Assembly, Includes Key Nos. 20-22	4
20	58704-000	Upper Shock Bracket	4
21	22962-031	1/2" Flat Washer	4

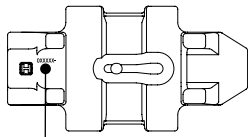
KEY NO.	PART NO.	DESCRIPTION	VEHICLE QTY.
22	49846-000	1/2"-13 UNC-2B Hex Locknut	4
		Height Control Valve Assembly, (as equipped) Includes Key Nos. 23-26	
	69030-100	Non-Dump Valve (Single)	1
	69031-300	Single, Dump Valve (Single)	1
	69031-100	Left Hand (Dual)	1
	69031-200	Right Hand (Dual)	1
23		*Height Control Valve (as equipped)	
24		*1/4" HCV Washer	
25		*1/4" HCV Hex Nut	
26		*HCV Mounting Bracket	
27	79256-035	M10 x 1.5-6G x 35 mm Flange Bolt	4
28	79257-000	M10 x 1.5-6H Flange Locknut	4
29		Linkage Rod Assembly, Includes Key Nos. 30-32	
	58994-052	Left Hand	1
	58994-051	Right Hand (if Dual equipped)	1
30		*5/16"-18 UNC Jam Nut	
31		*5/16" Washer	
32		*5/16"-18 UNC Locknut	
33	80760-002	Air Spring Assembly	4
	58820-005	Air Spring Fastener Service Kit, One Side, Includes Key Nos. 34-38	
34		*M20 x 2.5-6G x 50 mm Hex Bolt	8
35		*M20 Hardened Washer	16
36		*M20 x 2.5-6H Locknut	8
37		*M12 Hardened Washer	2
38		*M12 x 1.25-6H Locknut	4
39	62000-595	ULTRA ROD Transverse Torque Rod Assembly, 595 mm, Includes Key No. 40	2
40	47691-000L	Torque Rod Bar Pin Bushing	4
41	45045-010	Reinforcement Plate	4
42	49689-000L	Shim (1.5 mm)	As Req.
43	58819-012	Torque Rod Fastener Service Kit, Axle Set, Includes Key Nos. 44-47	
44	58244-140	M16 x 2-6G x 140 mm Hex Bolt	4
45	58244-005	M16 x 2-6G x 130 mm Hex Bolt	4
46	58246-003	M16 Hardened Washer	16
47	58245-000	M16 x 2-6H Locknut	8
48	22186-000	Transverse Torque Rod Frame Bracket	2
49		**Transverse Torque Rod Axle Bracket	2
50	70867-001	*****P-80 Lubricant - 10 ml Not Shown	As Req.

NOTES: Quantities specified are for **tandem** axle suspensions. Quantities of service kit components may vary from amount shown in list.



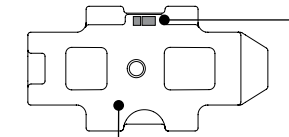
■ Spring Seat Selection Guide

Bottom View of Spring Seat



Location of Casting No.

Top View of Spring Seat



Location of Part No.

ID Letter = Base part number

Location of Engraved Identification (ID)

Last two digits of the finished part number

Total of two (2) spring seats required per single and four (4) spring seats required per tandem suspension. One of each located at the left / right front and left / right rear.

REAR SINGLE AXLE			TANDEM			REAR/REAR AXLE			
19K • 21K • 23K lb Capacity			40K • 46K lb Capacity			40K • 46K lb Capacity			
SPRING SEATS	Seat Angle	Part No.	ID	Seat Angle	Part No.	ID	Seat Angle	Part No.	ID
	1.0°	56501-039	D39	2.0°	80940-003	N03	5.0°	80297-009	P09
	2.0°	56501-035	D35	3.0°	80940-005	N05	6.0°	80297-011	P11
	3.0°	56501-028	D28				9.0°	80297-017	P17
	4.0°	56501-030	D30				10.0°	80297-019	P19
	5.0°	56501-032	D32				11.0°	80297-021	P21
	6.0°	56501-034	D34				12.0°	80297-023	P23

NOTES:* 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.

*** ULTRA ROD PLUS transverse torque rod bushings are non-serviceable, the entire torque rod assembly requires replacement.

**** Inner reinforcement plate is no longer available, see torque rod configuration for vehicles built after July 2009.

***** Used as a lubricant to install torque rod bushing and main support member pivot bushing.

Hendrickson COMFORT AIR ride height gauge for Hino Trucks can be obtained on-line at www.hendrickson-intl.com/Litform

• Literature number 45745-242 (not for use on 46K pound capacity tandem configuration).



SECTION 5 Special Tools

QUIK-ALIGN PIVOT BUSHING SERVICE TOOLS

PIN & BUSHING STARTER KIT

Tiger Tool Part No. 15000 - For use with Pin & Bushing Adapter Kit

Visit tigertool.com



PIN & BUSHING ADAPTER KIT

Tiger Tool Part No. 15042 - For use with Pin & Bushing Starter Kit

Visit tigertool.com



BUSHING KIT WITH PUMP

OTC Part No. 4247-FR

Visit otctools.com



BUSHING ADAPTER KIT

OTC Part No. 4254-FR - For use with OTC Part No. 4247-fr

Visit otctools.com



QUIK-ALIGN PIVOT BUSHING SERVICE TOOL

Hendrickson Part No. 66086-203L

Reference Hendrickson Literature No. 59310-061



QUIK-ALIGN SOCKET TOOL

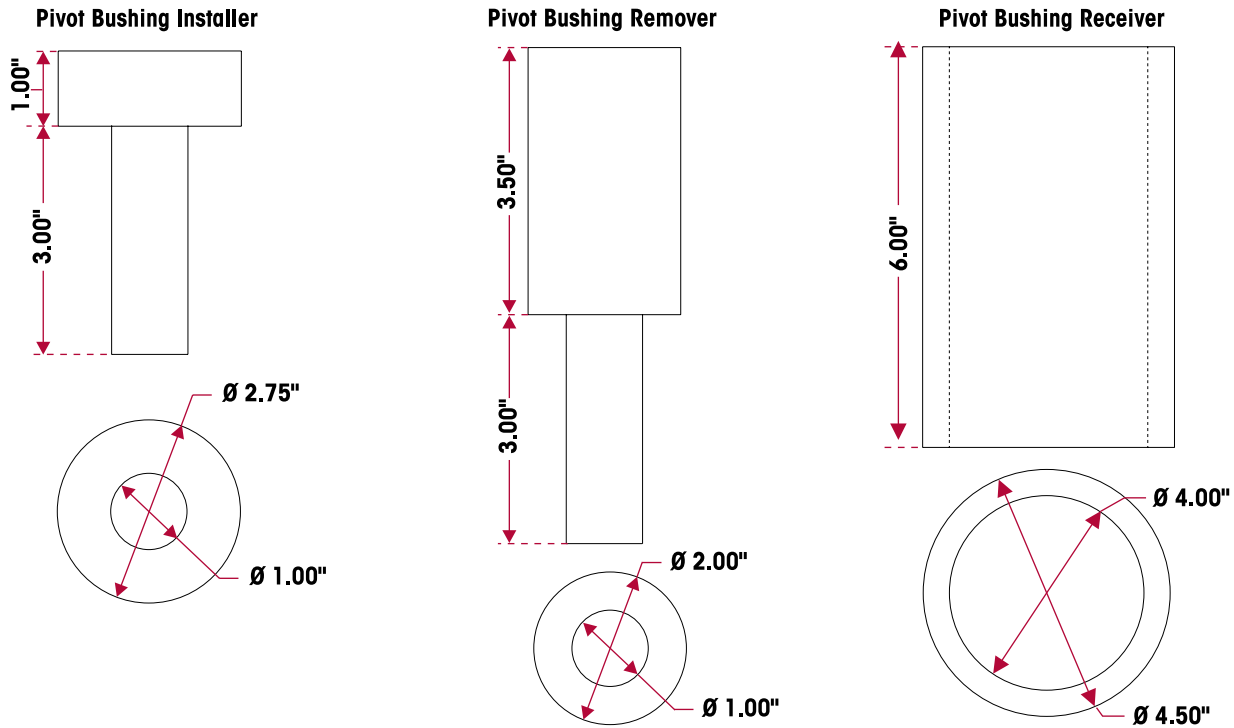
OTC Part No. 1767

Visit otctools.com



QUIK-ALIGN PIVOT BUSHING SERVICE TOOLS

These shop made tools are designed to service QUIK-ALIGN. These tools are made from cold rolled steel or equivalent. Drawings are for reference only. Hendrickson does not supply these tools.



TORQUE ROD BUSHING TOOLS

FUNNEL

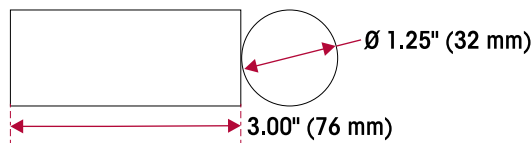
Hendrickson Part No. 66086-001L

ULTRA ROD®

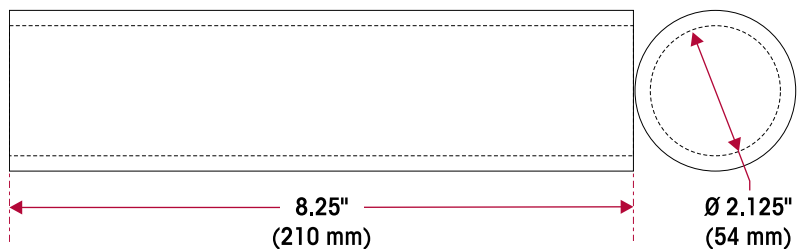


These shop made tools are designed to install and remove torque rod bushings. Bushing tools are made from cold rolled steel or equivalent. Drawings are for reference only. Hendrickson does not supply these tools.

INSTALLATION / REMOVAL TOOL



RECEIVING TOOL





SECTION 6 Preventive Maintenance

Following appropriate inspection procedures are important to help ensure the proper maintenance and operation of the COMFORT AIR rear air suspension system and components 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	25,000 miles (40,000 km), every 6 months or whichever comes first	50,000 miles (80,000 km), every 12 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.

Air Springs and Air Supply	■	■	■	
Clamp Group U-bolts	■	■		■
Cross Channel	■	■	■	
Fasteners	■	■		■
Frame Hangers	■	■	■	
Lateral Alignment	■	■		■
Main Support Member Assembly	■	■	■	
QUIK-ALIGN Connections	■	■		■
Ride Height	■	■		■
Shock Absorbers	■		■	
Spring Seat	■	■	■	
Tire Wear			■	
Top Pad	■	■	■	
Torque Rods	■	■	■	
Wear and Damage			■	

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

COMPONENT INSPECTION

- **Air springs** – Visually inspect the outer surface of the air springs for any chafing, uneven wear, cracks, or any signs of component damage. Ensure that the upper bead plate is tight against the underside of the frame. Check for any lateral slippage at the lower air spring bracket. A 1/8" of slippage in either direction is acceptable. Verify all mounting hardware have the proper torque values maintained. Refer to the Torque Specifications section in this publication.
- **Air supply (Pneumatic components)** — The air supply to the system plays a large role in the air springs’ performance. Inspect and clean any support products to the air springs, valves, regulators and air lines and replace as necessary. See Air Fittings in this section if an air leak is suspected.
- **Clamp group** – Visually inspect for any loose or damaged fasteners. Verify the U-bolt locknuts have the proper torque values maintained. See the U-bolt Locknuts in this section.
- **Cross channel** – Check for cracks, damage, metal shavings, or looseness at the main support member connection. Replace all worn or damaged parts.



- **Fasteners** – Visually inspect for any loose or damaged fasteners on the entire suspension. Ensure all fasteners are tightened to the specified torque range. See the Torque Specifications section of 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.

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.

- **Frame hangers** – Visually inspect for any signs of loose fasteners, movement, or damage. Verify the frame attaching fasteners have the proper torque values maintained. See the vehicle manufacturer for proper torque specifications.
- **Lateral alignment** – Verify the lateral alignment of the drive axles are within the vehicle manufacturer's tolerances.
- **Main support member assembly** – Look for any signs of looseness, cracks, or other damage. Inspect the cross channel connection for looseness or damage. Inspect the isolator puck for wear or damage. Check the torque on the pivot bushing connection and the clamp group. Correct the torque as necessary. Replace all worn or damaged parts.
- **QUIK-ALIGN connections** — Visually inspect the pivot bushing connections for any signs of looseness or movement. Refer to the QUIK-ALIGN Pivot Bushing in this section. Verify the connections have the proper torque values maintained, refer to the Torque Specifications section in this publication and refer to the QUIK-ALIGN warning in the Important Safety Notice section of this publication prior to QUIK-ALIGN installation.
- **Ride height** – Verify the ride height, refer to the Alignment & Adjustments section of this publication.
- **Shock absorbers** – Visually inspect for any signs of dents or leakage. Misting is not considered a leak, see Shock Absorber Inspection in this section.
- **Spring seat** – Check for cracks, damage or metal shavings. Verify the U-bolt locknuts have the proper torque values maintained. See the U-bolt Locknuts in this section. Replace all worn or damaged parts.
- **Tire wear** – Visually inspect the tires for any wear patterns that may indicate suspension damage or misalignment.
- **Top pad** – Check for cracks, damage or metal shavings. Verify the U-bolt locknuts have the proper torque values maintained. See the U-bolt Locknuts in this section. Replace all worn or damaged parts.
- **Torque rods** – All torque rods must be inspected for looseness, torn or shredded rubber, and proper fastener torque. See Transverse Torque Rod inspection in this section.
- **Wear and damage** – Visually inspect all parts of the suspension for wear and damage, and replace as necessary.

AIR FITTINGS

INSPECTION

1. If an air leak is suspected, begin by building up the air system to normal operating pressure.
2. Spray all nylon tube air fittings with a soapy water solution to detect the leak location.

NOTE

Air lines and fittings may be inspected for leaks using a soapy water solution. The height control valve, however, cannot be inspected using this method. All height control valves have an allowable leakage rate.

3. If an air leak is located, ensure the tubing end is clean and in good condition and the end is cut square. Check to see if the tubing is binding, bent, or being pulled upon.
4. Visually inspect the air fitting's O-ring seal for signs of damage or contamination.



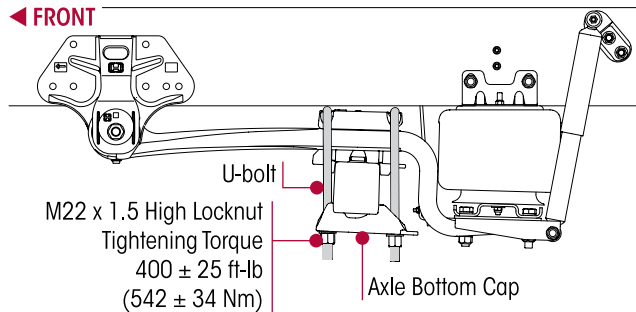
U-BOLT LOCKNUTS

NOTE

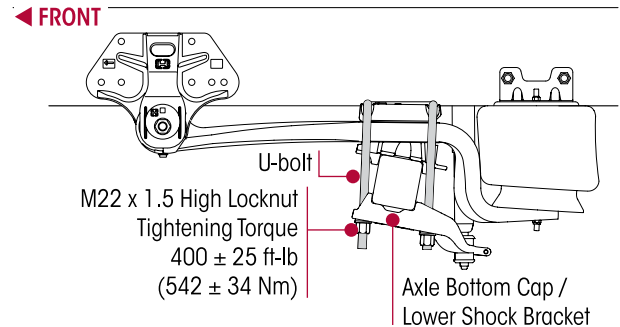
Hendrickson Truck Suspension Systems U-bolt clamp group hardware for the COMFORT AIR suspension are phosphate and oil coated 7/8"-14 UNF Grade C high locknuts and 7/8"-14 UNF Grade 8 U-bolts.

1. U-bolt locknuts must be torqued to specification at preparation for delivery.
2. U-bolt locknuts must be re-torqued at 1,000 miles.
3. Thereafter follow the 1-year / 50,000 miles (80,500 km), whichever comes first inspection re-torque interval.

FIGURE 6-1
19K • 21K • 23K • 46K lb Capacity



40K lb Capacity

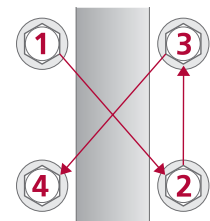


WARNING

THE U-BOLT CLAMP GROUP CONNECTION MUST BE PROPERLY ALIGNED AND HAVE THE PROPER TORQUE VALUES MAINTAINED. METAL SURFACES CAN WORK AND WEAR AGAINST OTHER RELATED CLAMP GROUP COMPONENTS IF NOT PROPERLY ALIGNED OR PROPERLY TIGHTENED TO MAINTAIN THE PROPER CLAMP FORCE. FAILURE TO DO SO CAN CAUSE PREMATURE COMPONENT WEAR, POSSIBLE SEPARATION OF THE CLAMP GROUP, CAUSING ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE, OR PERSONAL INJURY.

4. Tighten the U-bolt locknuts in the proper sequence, shown in Figure 6-2, evenly in 50 foot pounds increments to achieve uniform bolt tension to 400 ± 25 foot pounds torque.

FIGURE 6-2



QUIK-ALIGN PIVOT BUSHING

WARNING

THE QUIK-ALIGN PIVOT BUSHINGS ARE CRITICAL COMPONENTS OF THE COMFORT AIR SUSPENSIONS. IF THESE COMPONENTS APPEAR DAMAGED OR WORN THE COMPONENT MUST BE REPLACED. FAILURE TO REPLACE SUCH WORN OR DAMAGED COMPONENTS CAN RESULT IN THE DEFORMATION OF PARTS, LOSS OF CLAMP FORCE, BOLT FAILURE, LOSS OF THE AXLE ALIGNMENT, ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE, OR PERSONAL INJURY.

There are two types of QUIK-ALIGN pivot bushing inspections. The pivot bushing can be visually inspected by looking at the outer rubber flange(s) of the bushing. If the visual inspection warrants, a physical inspection can be conducted in which disassembly is required.

VISUAL INSPECTION

It is not necessary to disassemble the pivot bushing connection to perform the pivot bushing visual inspection. If the pivot bushing rubber flange(s) are intact and there are no signs of metal to metal contact the bushing does not require replacement.

- The main support member is designed with the pivot bushing centered in the end hub. If the pivot bushing is not centered in the end hub, it is an indication that the pivot bushing could be worn and a pivot bushing physical inspection is required.

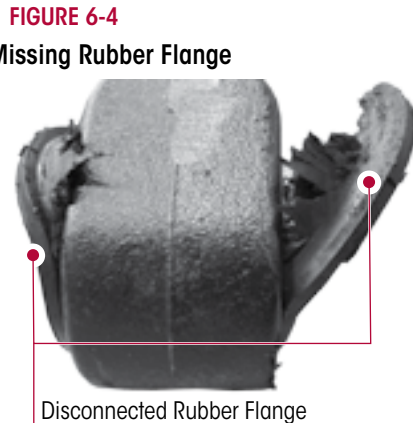
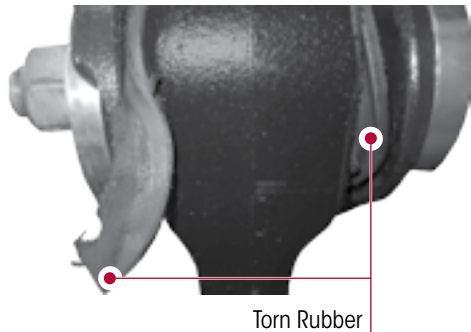


- If the pivot bushing shows signs of torn, separated, or disconnected rubber, see Figures 6-3 and 6-4, this could be a result of axle misalignment. If this condition is evident, a pivot bushing physical inspection is required.
- If the outer rubber flange(s) is missing, or there are shards of rubber visible, see Figure 6-5, this could be a result of axle misalignment. If this condition is evident, pivot bushing replacement is required.

PHYSICAL INSPECTION

1. Remove the main support assembly as detailed in the Component Replacement section of this publication.

FIGURE 6-3
VISUAL INSPECTION – Torn, Disconnected or Missing Rubber Flange



2. After removal, inspect the pivot bushing connection and examine the pivot bushing inner metal area.
 - **No replacement is needed** if the bushing exhibits a tight joint, see Figure 6-6. An imprinted two-line wear pattern on the bushing inner metal indicates the pivot bushing is securely clamped in the frame hanger.
 - **Replacement is necessary** if any indications of the following are apparent, see Figure 6-7. Signs of rust, distorted, separated or torn rubber, elongated or damaged bore. This could be a result of axle misalignment or loose fasteners.
3. Inspect the inside of the frame hanger legs and the QUIK-ALIGN collars. If any of the following are present, the pivot bushing and one or more of the mating components may require replacement:
 - Evidence of wear marks on the inside of the frame hanger legs indicating metal to metal contact or movement.
 - The snout of the QUIK-ALIGN concentric or eccentric collar is elongated or damaged.
4. Check the suspension alignment and adjust if necessary. Refer to the Alignment & Adjustments section of this publication.

FIGURE 6-6
PHYSICAL INSPECTION

GOOD JOINT – No Replacement Needed

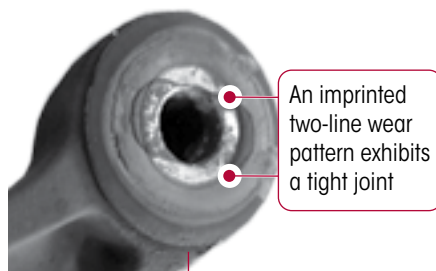
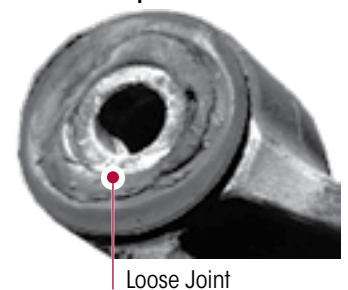
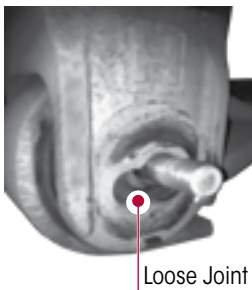


FIGURE 6-7

INDICATIONS OF A LOOSE JOINT – Replacement Needed





TRANSVERSE TORQUE RODS



WARNING

THIS HENDRICKSON SUSPENSION REQUIRES TORQUE RODS FOR SUSPENSION PERFORMANCE AND VEHICLE STABILITY. IF THESE TORQUE RODS ARE DISCONNECTED OR 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.

NOTE

Hendrickson recommends the use of Hendrickson coated, Class 10.9 bolts and Class 10 locknuts for all straddle mount torque rod attachments.

VISUAL INSPECTION

Visually inspect torque rod bushings for any torn or shredded rubber material interfaces or elongated oval shapes and inspect **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.

PHYSICAL INSPECTION

Inspect torque rod bushings for signs of looseness per the following method.

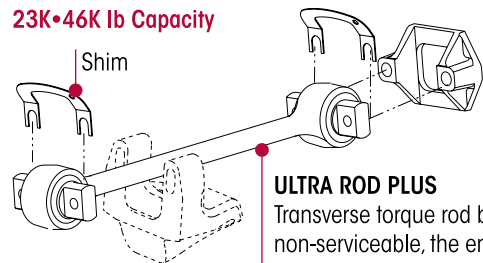
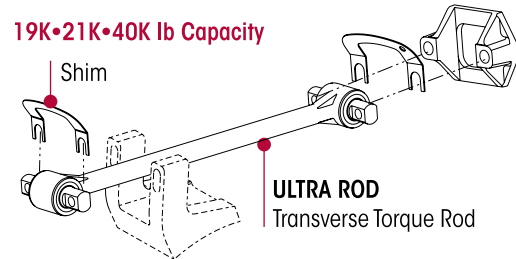
With the vehicle shut down perform a lever check. Place a long pry bar under each torque rod end and apply pressure to check for looseness.

Torque rod length is determined by the vehicle manufacturer to center the axles under the frame.

- If the lateral alignment of the axles is incorrect, it may be necessary to shim the transverse torque rod at the straddle mount end, see Figure 6-8. Refer to Axle Lateral Alignment in the Alignment & Adjustments section of this publication.
- The transverse torque rods also control axle walk-out during cornering. The mounting brackets at the axle housing end of the torque rods are furnished and welded into position on the axle housings by the axle or vehicle manufacturer, see Figure 6-8.

- **ULTRA ROD** bushings may be replaced by pressing out the worn bushings and installing new replacement bushings, see Torque Rod Bushings in the Component Replacement section of this publication.
- **ULTRA ROD PLUS** bushings are non-serviceable. The entire torque rod assembly must be replaced.

FIGURE 6-8



NOTE

Torque rod end attaching fasteners are furnished by the vehicle manufacturer. It is important that the **tightening torque** of the locknuts be checked during preventive maintenance service. Follow the tightening torque specifications and all applicable preventive maintenance, service and safety instructions issued by the respective vehicle manufacturers.

NOTE

If lateral alignment is out of specification by 1/4" (6 mm), remove or install a 1/8" (3 mm) shim as needed



SHOCK ABSORBERS

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 COMFORT AIR 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 in this publication.

FIGURE 6-9



HEAT TEST AND PHYSICAL INSPECTION

1. **Heat Test:** Drive the vehicle at moderate speeds on a rough road for a minimum of fifteen minutes.

WARNING

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

- 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 6-9. A shock absorber that is warm to the touch is acceptable, a cold shock absorber should be replaced.
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 6-10. Inspect the shock absorbers fully extended. Replace as necessary.

FIGURE 6-10

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

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 COMFORT AIR 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 6-11. These streams can easily be seen, underneath the main body (dust cover) of the shock absorber. Replace as necessary.

FIGURE 6-11



SECTION 7

Alignments & Adjustments

RIDE HEIGHT

INSPECTION

1. Drive the vehicle onto 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.
4. Chock front wheels of the vehicle.
5. Verify and maintain the vehicle's air system is at full operating pressure.

SERVICE HINT

It is very important that the height control valve is cycled completely before and after any ride height adjustments. The cycling of the height control valve will help to make the adjustment more accurate.

WARNING

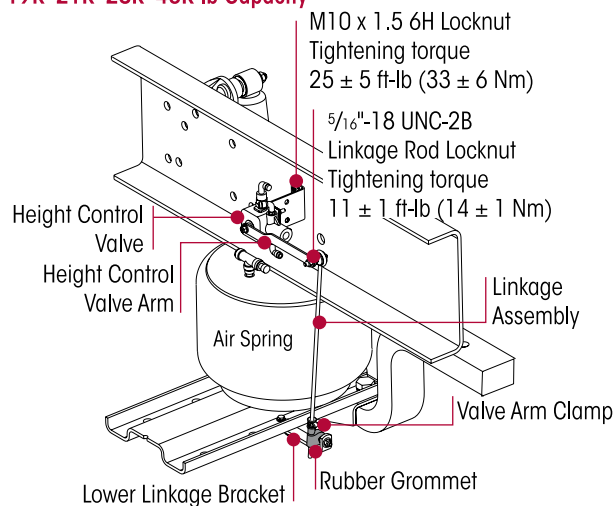
PRIOR TO AND DURING DEFLATION AND INFLATION OF THE AIR SUSPENSION SYSTEM, ENSURE THAT ALL PERSONNEL AND EQUIPMENT ARE CLEAR FROM UNDER THE VEHICLE AND AROUND THE SERVICE AREA, FAILURE TO DO SO CAN CAUSE SERIOUS PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE.

6. See Air Spring Safety Notice in the Important Safety Notice section of this publication prior to deflating or inflating the suspension system.

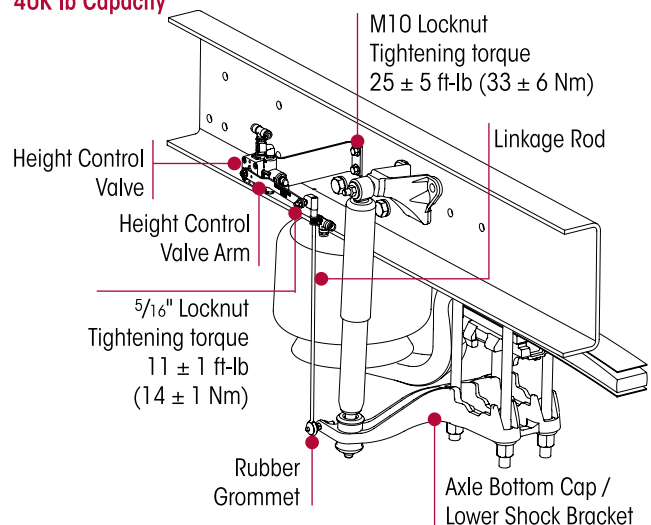
WARNING

SOME VEHICLE APPLICATIONS, SUCH AS VEHICLES EQUIPPED WITH OUTRIGGERS, RETAIN SOME AIR PRESSURE IN THE AIR SPRINGS AT ALL TIMES. PRIOR TO PERFORMING ANY MAINTENANCE, SERVICE, OR REPAIR OF THE SUSPENSION, VERIFY EACH AIR SPRING IS COMPLETELY DEFLATED. FAILURE TO DO SO COULD RESULT SERIOUS PROPERTY DAMAGE AND/OR SEVERE PERSONAL INJURY.

FIGURE 7-1
19K•21K•23K•46K lb Capacity



40K lb Capacity



7. Deflate the suspension by using one of the following appropriate methods:
 - a. If vehicle is equipped with a suspension dump system in the cab, deflate the suspension air system by using the cab dump valve control.
 - b. If not equipped with a suspension dump system, detach the upper rubber grommet of the height control valve linkage from the upper stud and exhaust the suspension system air by lowering the height control valve linkage arms, see Figure 7-1.

8. Inflate the suspension by using one of the following methods if the vehicle is equipped with:
 - A suspension dump system in the cab, inflate the suspension air system by using the cab dump valve control.
 - Not equipped with a suspension dump system, raise the height control valve arms and attach the upper rubber grommets of the height control valve linkage to the height control valve arms.
9. Allow the suspension system to inflate.
10. Re-attach the upper grommet of the height control valve linkages onto the upper studs to fill the suspension system with air. Wait until the airflow to the air springs has stopped.
11. Inflate the suspension.

NOTE A vehicle equipped with dual height control valves must measure the ride height at each height control valve location.

NOTE All ride heights are measured from the outboard side of the frame on the axle attached to the height control valve(s).

12. Measure the suspension ride height by using one of the following methods (**Not to be used for 46K capacity tandem configuration**, refer to Step 13 for ride height dimensions.)

Method A:

- a. Use a ride height gauge (Hendrickson Lit. No. 45745-242 available online at www.hendrickson-intl.com), see Figure 7-2, to simplify establishing the referenced ride height of $4.5" \pm \frac{1}{8}"$ dimension.
- b. Hold the ride height gauge vertically against the side of the frame rail and in contact with the bottom of the frame rail, see Figure 7-2. The bottom of the main support member must line up with the pointer of the ride height gauge ($\pm \frac{1}{8}"$).

FIGURE 7-2

METHOD A

19K•21K lb Capacity Shown

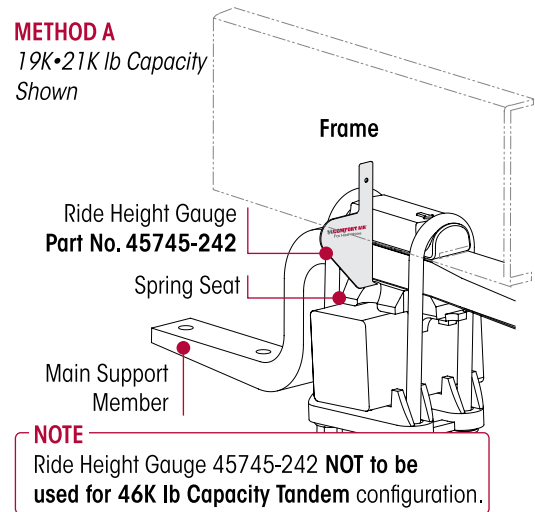
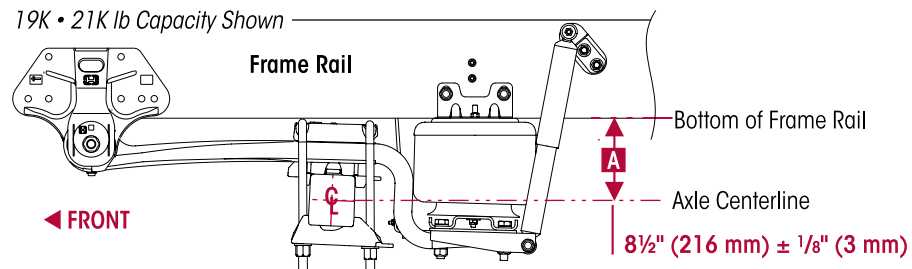


FIGURE 7-3

METHOD B

19K • 21K lb Capacity Shown

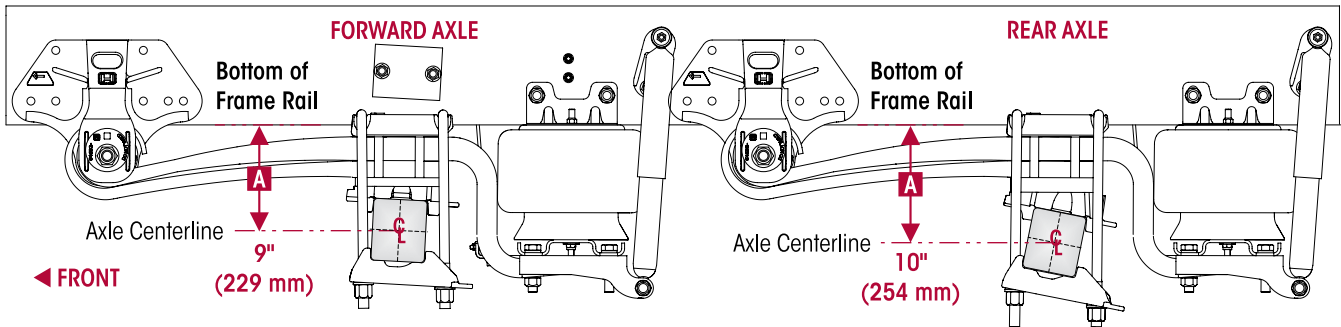


Method B: see **Dimension A** in Figure 7-3

- a. If a height gauge is not available, measure the actual vertical ride height from the bottom of the frame rail to the axle centerline, the acceptable ride height is $8.5" \pm \frac{1}{8}"$.
13. **46K Capacity Tandem Ride Height**, see **Dimension A** in Figure 7-4
 - a. **Forward Axle:** Measure the vertical ride height from the bottom of the frame rail to the axle centerline. The acceptable vertical ride height is $9" \pm \frac{1}{8}"$.
 - b. **Rear Axle:** Measure the vertical ride height from the bottom of the frame rail to the axle centerline. The acceptable vertical ride height is $10" \pm \frac{1}{8}"$.



FIGURE 7-4
46K lb Capacity Tandem



14. If the measured (Dimension A) ride height is:

- Within the specification, then a height control valve adjustment is not required.
- Out of specification, then a height control valve adjustment is required. Follow the Adjustment Procedure below.

ADJUSTMENT PROCEDURE

SERVICE HINT

When inspecting or setting ride height on a lightly loaded vehicle, such as a bobtail tractor, equipped with dual height control valves, it is necessary to have a load on the vehicle. Loading the vehicle to its normal operating condition, such as a tractor with a loaded trailer, increases ride height setting accuracy.

1. Drive the vehicle onto 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. Try to roll to a stop without the brakes being used.
3. **DO NOT** set the parking brake.
4. Chock the front wheels of the vehicle.
5. When checking or adjusting the ride height, verify and maintain the vehicle's air system at full operating pressure.

SERVICE HINT

It is very important that the height control valve is cycled completely before and after any ride height adjustments. The cycling of the height control valve will help to make the adjustment more accurate.

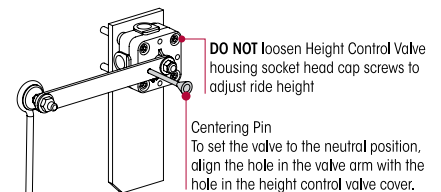
6. See the Air Spring Safety Notice in the Important Safety Notice section of this publication prior to deflating or inflating the suspension system.
7. Detach the upper rubber grommet of the linkage assembly from the height control valve arm
8. Lower the height control valve arm to exhaust the suspension system air.
9. Raise the height control valve arm to refill the suspension system air and to ensure the air springs are above the proper ride height.
10. Lower the height control valve arm to exhaust the suspension air system until the suspension reaches the proper ride height.

NOTE

Adjustments to one (1) height control valve may affect ride height setting on the other height control valve. Verify ride height is correct at both height control valves whenever an adjustment is made.

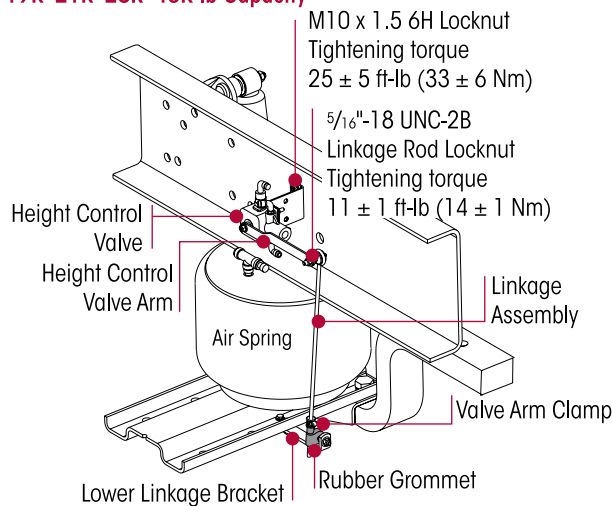
11. Use a 1/8" wooden dowel rod (golf tee) to set the neutral position for the height control valve by aligning the hole in the leveling arm with the hole in the height control valve cover, as shown in Figure 7-5. **DO NOT** use a metal rod or nail as this may cause damage to the height control valve.

FIGURE 7-5

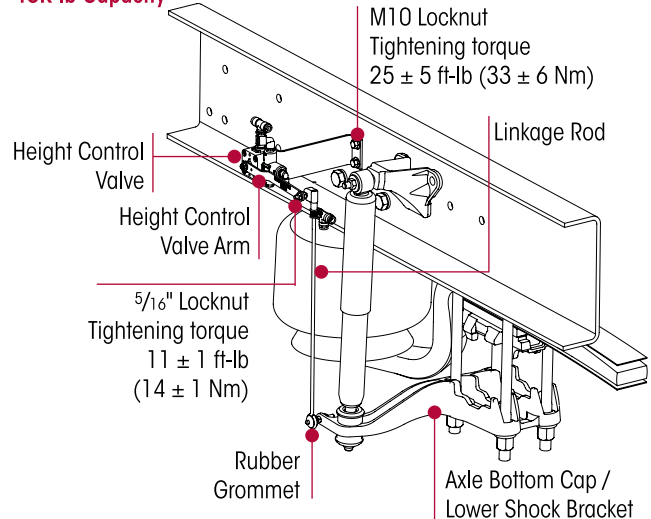


12. Steps 9 to 11 might need to be repeated using one (1) height control valve at a time.
13. Adjust the linkage assembly so the rubber grommet can be reconnected to the height control valve arm at the proper height. Visually inspect the rubber components for any tearing or damage, replace as necessary.
14. Reconnect the height control valve arm to the rubber grommet.
15. Tighten the clamp on the adjustable valve arm joint with a screwdriver until securely fastened, see Figure 7-6.

FIGURE 7-6
19K•21K•23K•46K lb Capacity



40K lb Capacity



16. Remove the wooden dowel from the height control valve.

SERVICE HINT

It is very important that the height control valve be cycled completely before and after any ride height adjustments. The cycling of the leveling valve will help make the adjustment more accurate. Be sure to maintain full system air pressure while setting or inspecting ride height. Note, during height control valve cycle operation it is normal to experience a limited amount of exhaust noise.

17. If equipped with a suspension dump system in the cab, cycle the suspension air system by using the cab dump valve control. If not equipped with a dump valve, cycle the height control valve arm as stated in Steps 5 through 14 in this section.
18. Verify the ride height.
19. Repeat Steps 7 through 16 until the ride height is within specification.
20. Remove the wheel chocks.

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, or any time the QUIK-ALIGN connection is loosened or removed.

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.
4. Chock the front wheels of the vehicle.
5. Verify and maintain the air system at full operating pressure.

6. Verify the vehicle is at the correct ride height. Refer to Ride Height Adjustment in this section. Correct as necessary.
7. Verify all suspension components are in good condition. Repair or replace any worn or damaged suspension components before proceeding with the alignment process.
8. Ensure all drive axle tires are the same size and inflated to the correct tire pressure.
9. 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.

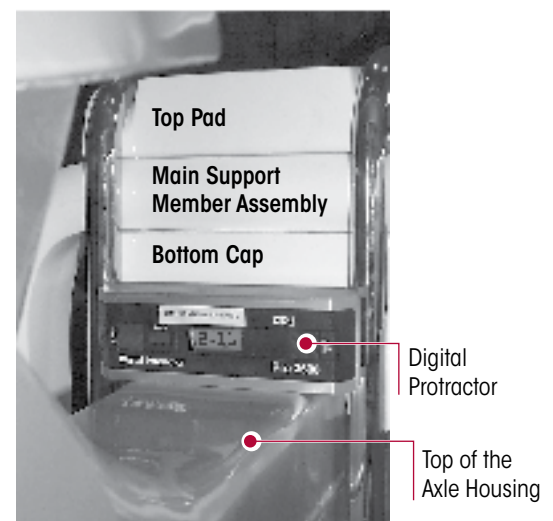
10. If the measurements are within the vehicle manufacturer's specifications, then the rear drive axle alignment is acceptable. Proceed to check the pinion angles of the drive axles (Step 11).
 - a. If the alignment of the rear drive axle **IS NOT** within the vehicle manufacturer's specifications, then the alignment of this axle **MUST** be corrected **BEFORE** checking the drive axle pinion angles.
 - b. Correct the alignment of this axle by following the Alignment Adjustment instructions as shown in this section.
11. After all drive axles are aligned, check the pinion angle of each drive axle with a digital protractor, see Figure 7-7. 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 12.
 - b. If any pinion angle is out of the vehicle manufacturer's specifications it must be corrected. Follow the Pinion Angle Adjustment procedure in this section.
12. Recheck measurements to confirm adjustments until the correct alignment and pinion angles are achieved.
13. When all drive axle alignments and pinion angles are within the vehicle manufacturer's specifications then the alignment procedure is complete.
14. Remove the wheel chocks.

AXLE PINION ANGLE

Drive axle pinion angles are established by the vehicle manufacturer.

To check the pinion angle:

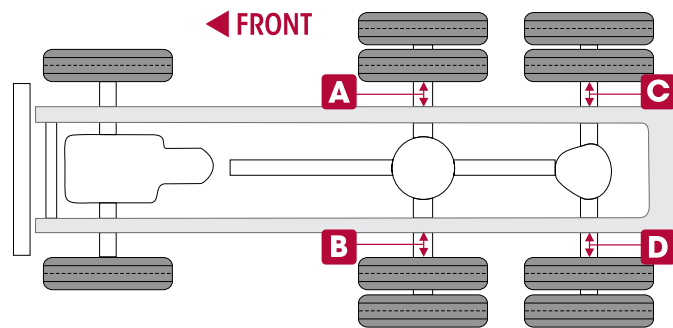
1. Verify the suspension is at the proper ride height (see the Ride Height in this section).
2. Place a digital protractor on the axle housing as shown in Figure 7-7.
3. Verify the pinion angle is within the range specified by the vehicle manufacturer.
4. Contact the vehicle manufacturer if it is necessary to fine-tune the pinion angle.

FIGURE 7-7

AXLE LATERAL ALIGNMENT

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. Try to roll to a stop without the brakes being used.
3. **DO NOT** set the parking brake.
4. Chock the front wheels of the vehicle.
5. Measure from the outside of the frame rail to the rim flange of the inner tire. Record the measurement **A** and **B**, see Figure 7-8.
6. Measure the same distance on the opposite side of the same axle. Record the measurement of **C** and **D**, see Figure 7-8.

FIGURE 7-8 Tandem Axle Shown



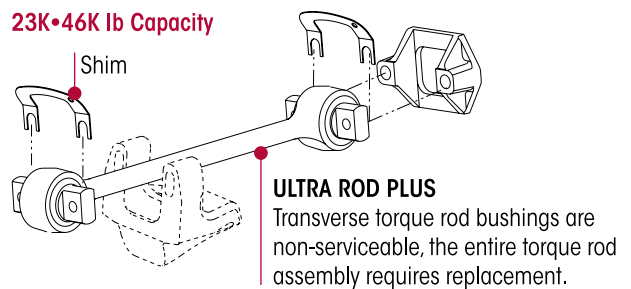
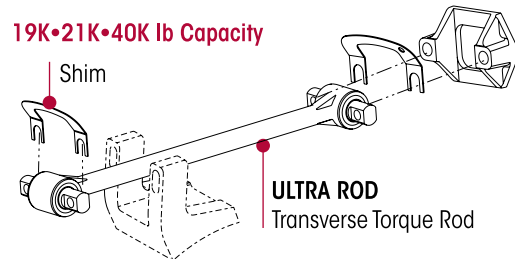
7. Verify the axle lateral alignment is within the vehicle manufacturer's specifications. Adding or removing shims that are located between the transverse torque rod and the frame rail will normally correct the axle lateral alignment.

- A general rule of thumb is to use a torque rod shim with a thickness that is half of the difference between the two measurements.

EXAMPLE

If the axle lateral alignment is out of specification by $\frac{1}{4}$ " (6 mm), remove or install a $\frac{1}{8}$ " (3 mm) torque rod shim between the transverse torque rod and frame rail as needed, see Figure 7-9.

FIGURE 7-9



NOTE

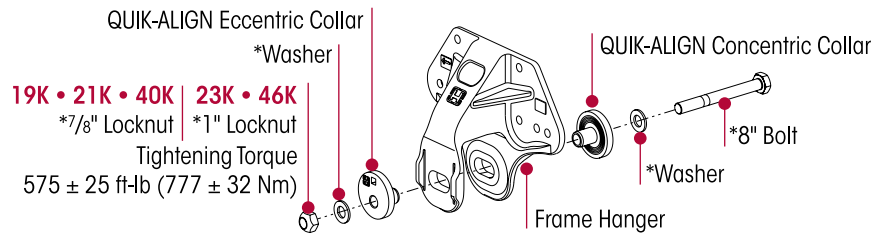
If lateral alignment is out of specification by $\frac{1}{4}$ " (6 mm), remove or install a $\frac{1}{8}$ " (3 mm) shim as needed

AXLE ALIGNMENT ADJUSTMENT

NOTE The eccentric collar with the square drive feature (one (1) per suspension) is located on the outside of the left frame hanger. The concentric collars (three (3) per suspension) are located on the inside of the left frame hanger and both outside and inside of the right frame hanger, see Figure 7-10.

NOTE Axle adjustment is applied to the **LEFT** side of the vehicle only. If adjustment to the right side of the vehicle is necessary, it will require replacement of the outside concentric collar with an eccentric collar and repeat Steps 1 to 4 on the right side of the vehicle.

FIGURE 7-10



*All fasteners are Hendrickson Coated to sustain proper clamp force.

WARNING

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

WARNING

DO NOT ASSEMBLE THE QUIK-ALIGN JOINT WITHOUT THE PROPER FASTENERS. USE ONLY HENDRICKSON COATED GENUINE FASTENERS TO SUSTAIN PROPER CLAMP FORCE. ENSURE THAT THE QUIK-ALIGN FASTENER'S TORQUE VALUES ARE SUSTAINED AS RECOMMENDED IN THE TORQUE SPECIFICATIONS SECTION IN THIS PUBLICATION. FAILURE TO FOLLOW THE ABOVE ITEMS CAN CAUSE ADVERSE VEHICLE HANDLING RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE AND WILL VOID ANY APPLICABLE WARRANTIES. FOLLOW THE VEHICLE MANUFACTURER'S FASTENER ORIENTATION WHEN PERFORMING ANY MAINTENANCE, SERVICE, OR REPAIR.

1. Support the frame at ride height with safety stands.


WARNING

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

2. See additional Air Spring Warnings and Instructions in the Important Safety Notice section of this publication prior to deflating or inflating the suspension system.
3. Disconnect the linkage assembly from the height control valve arm. Lower the height control valve arm to exhaust the air in the air springs and deflate the rear suspension.
4. Use the measurements from the **Drive Axle Alignment Inspection** procedure in this section to determine if an adjustment is necessary, if so correct the axle alignment.
5. Remove the existing **left side** QUIK-ALIGN fasteners and replace with a new left side QUIK-ALIGN service kit, see Parts List section of this publication. This will help ensure that the proper clamp load is applied to the connection and help prevent the joint to slip in service.
6. Tighten the QUIK-ALIGN locknut to 100 foot pounds. This will hold the eccentric flanged washer (see Figure 7-10) in place against the hanger face and within the adjustment guide, but loose enough to permit the eccentric flanged washer to rotate freely.
7. Use a QUIK-ALIGN socket tool (refer to Special Tools section of this publication) and an impact gun, or a 1/2" (13 mm) square drive breaker bar to rotate the QUIK-ALIGN eccentric collar to align the axle.
8. Clockwise rotation moves axle forward, counter clockwise rotation moves axle rearward. A 90° rotation of the QUIK-ALIGN collar will move axle fore and aft ± 1/2" (13 mm) from center.
9. 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.

10. If the measurements are:
 - a. Within the vehicle manufacturer's specifications, then the rear drive axle alignment is acceptable, proceed to Step 11.
 - b. If not within the vehicle manufacturer's specifications, repeat Steps 5 to 9 until alignment is achieved.
11. Once rear drive axle alignment is achieved, tighten the QUIK-ALIGN locknuts to  575 ± 25 foot pounds torque, see Figure 7-10.
12. After the drive axle is aligned, check the pinion angle of drive axle with a digital protractor, see Figure 7-7. Refer to the vehicle manufacturer specifications for the required pinion angles.
 - a. If the pinion angles are within the vehicle manufacturer's specifications then proceed to Step 13.
 - b. If any pinion angle is out of the vehicle manufacturer's specifications it must be corrected. Contact the vehicle manufacturer.
13. When all drive axle alignments and pinion angles are within the vehicle manufacturer's specifications then the alignment adjustment is complete.

SECTION 8

Component Replacement

FASTENERS

Hendrickson recommends when servicing the vehicle, replace 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 in this publication. If non-Hendrickson fasteners are used follow torque specifications listed in the vehicle manufacturer's service manual.

HEIGHT CONTROL VALVE & LINKAGE ASSEMBLY

DISASSEMBLY

1. Chock the wheels of the vehicle.



WARNING

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH SAFETY STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

2. Support the frame with safety stands.
3. Remove and discard the fasteners that connect the upper linkage assembly to the height control valve arm.



WARNING

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

4. See additional Air Spring Cautions and Warnings in the Important Safety Notice section of this publication prior to deflating or inflating the air system.
5. Lower the height control valve arm to exhaust the air from the air springs.

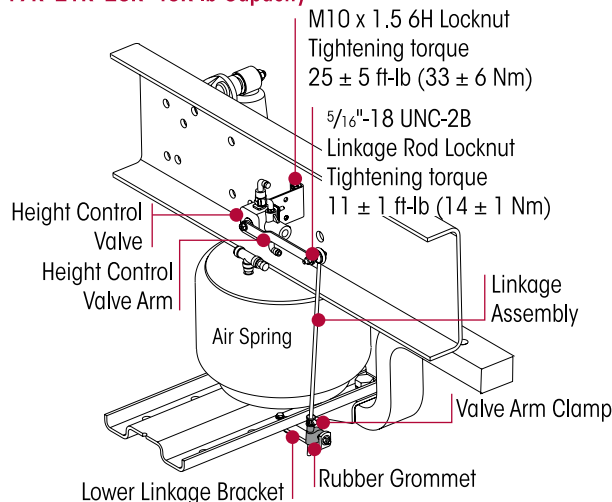


WARNING

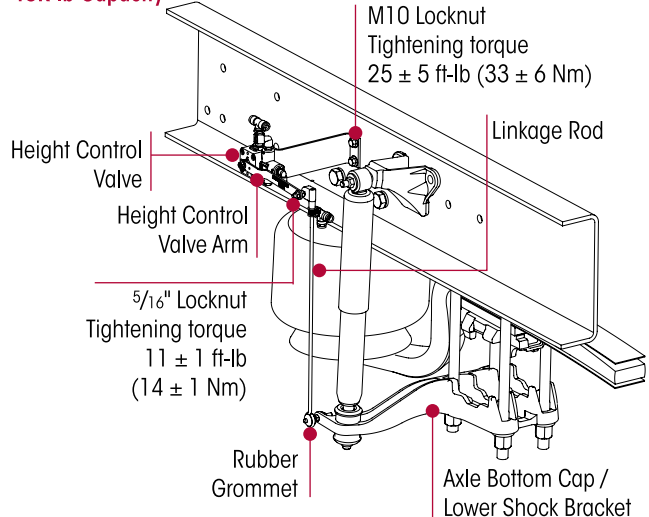
SOME VEHICLE APPLICATIONS, SUCH AS VEHICLES EQUIPPED WITH OUTRIGGERS, RETAIN SOME AIR PRESSURE IN THE AIR SPRINGS AT ALL TIMES. PRIOR TO PERFORMING ANY MAINTENANCE, SERVICE, OR REPAIR OF THE SUSPENSION, VERIFY EACH AIR SPRING IS COMPLETELY DEFLATED. FAILURE TO DO SO COULD RESULT SERIOUS PROPERTY DAMAGE AND/OR SEVERE PERSONAL INJURY.

6. Remove the air lines and air fittings from the height control valve.
7. Remove and discard the 1/4" height control valve fasteners to the frame mounting bracket.
8. Remove the height control valve, see Figure 8-1.

FIGURE 8-1
19K•21K•23K•46K lb Capacity



40K lb Capacity





- If replacement of the linkage assembly is necessary, remove lower mounting fasteners from the lower linkage bracket/ axle bottom cap/shock bracket, see Figure 8-1.

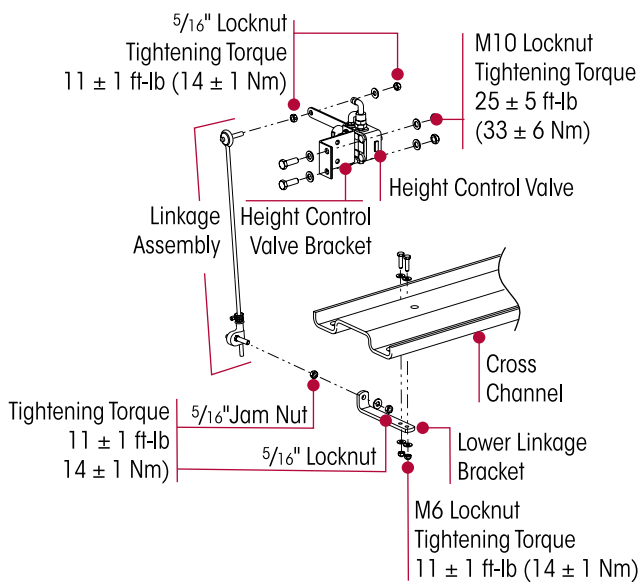
ASSEMBLY

NOTE

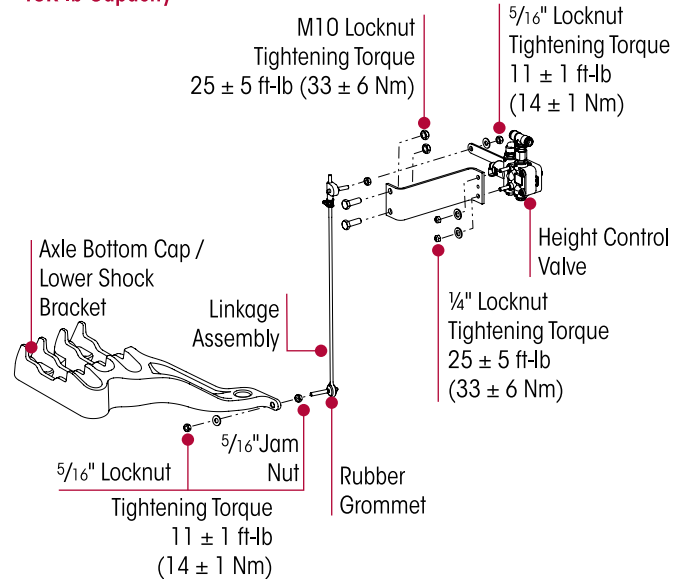
The replacement height control valve comes equipped with the frame bracket attached, refer to the Parts List Section of this publication.

- Attach the M10 fasteners and tighten to 25 ± 5 foot pounds torque, see Figure 8-2.
- Install the height control valve to the mounting bracket, see Figure 8-2.
- Install the air fittings into the height control valve. Ensure the Teflon® thread sealing ring is seated around the base of the fitting's hex shoulder. Tighten to 9 ± 6 foot pounds torque.
- Install the air lines to the height control valve. Refer to the Plumbing Diagram section of this publication.
- Install the upper linkage assembly to the height control valve arm by attaching the $\frac{5}{16}$ " fasteners. Tighten to 11 ± 1 foot pounds torque, see Figure 8-2.
- Install the lower linkage assembly and attach the $\frac{5}{16}$ " fasteners. Ensure the jam nut is properly installed, see Figure 8-2:
 - 19K•21K•23K•46K lb Capacity** – To the linkage bracket.
 - 40K lb Capacity** – To the axle bottom cap / lower shock bracket.
- Tighten $\frac{5}{16}$ " fasteners to 11 ± 1 foot pounds torque, see Figure 8-2.

FIGURE 8-2
19K • 21K • 23K • 46K lb Capacity



40K lb Capacity



- See additional Air Spring Cautions and Warnings in the Important Safety Notice section of this publication prior to deflating or inflating the air system.
- Inflate the suspension. Verify the air springs inflate uniformly without binding.
- Verify proper ride height. Refer to the Alignment & Adjustments section of this publication.
- Remove the frame safety stands.
- Remove the wheel chocks.

AIR SPRING

DISASSEMBLY

1. Chock the front wheels.

WARNING

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH SAFETY STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

2. Support the frame with safety stands.
3. Disconnect the height control valve arm(s) from the linkage assembly(s).

WARNING

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

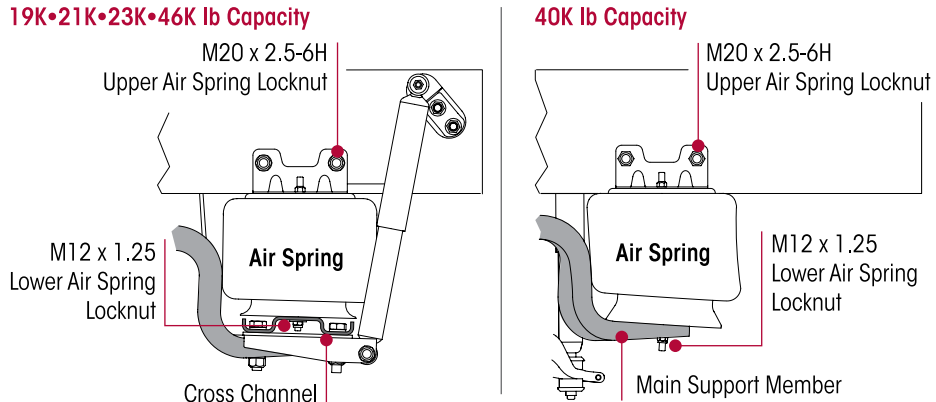
4. See additional Air Spring Cautions and Warnings in the Important Safety Notice section of this publication prior to deflating or inflating the air system.
5. Lower the height control valve arm(s) to exhaust the air in the air springs and deflate the rear suspension.
6. Remove the air line and air fittings from the air spring.

CAUTION

IF THE AIR SPRING IS BEING REMOVED FOR AN ALTERNATE REPAIR, IT IS MANDATORY TO LUBRICATE THE LOWER AIR SPRING FASTENERS WITH PENETRATING OIL AND REMOVE WITH HAND TOOLS TO PREVENT DAMAGE TO THE LOWER AIR SPRING MOUNTING STUD. FAILURE TO DO SO CAN CAUSE COMPONENT DAMAGE AND VOID WARRANTY.

7. If the air spring is being removed for an alternate repair, use **hand tools only**. It will be necessary to clean and lubricate the lower mounting fasteners with penetrating oil. This will help prevent the air spring mounting studs from breaking during the removal process.
8. Remove and discard the M12 lower air spring mounting locknut, see Figure 8-3.
9. Remove and discard the M20 air spring frame fasteners from the upper mounting bracket, see Figure 8-3.
10. Remove the air spring.

FIGURE 8-3
19K•21K•23K•46K lb Capacity



INSPECTION

Inspect the air spring mounting surfaces for any damage. Replace as necessary.

ASSEMBLY

1. Install the lower air spring stud **USING HAND TOOLS ONLY**:
 - **19K • 21K • 23K • 46K lb Capacity** – Pilot the lower air spring stud into the cross channel and the upper bracket onto the frame, see Figure 8-4.
 - **40K lb Capacity** – Pilot the lower air spring stud into the main support member and the upper air spring bracket on the frame, see Figure 8-5.

CAUTION

FAILURE TO PRESS THE UPPER AIR SPRING BRACKET ASSEMBLY AGAINST THE UNDERSIDE OF THE FRAME WHILE TIGHTENING THE UPPER AIR SPRING FASTENERS CAN RESULT IN COMPONENT DAMAGE AND PERSONAL INJURY OR PROPERTY DAMAGE.

2. Hold the air spring tight against the bottom frame flange and install the upper air spring M20 fasteners to the frame. Tighten fasteners to 170 ± 10 foot pounds torque, see Figures 8-4 and 8-5.
3. Install and tighten lower air spring fasteners to 25 ± 5 foot pounds torque, see Figures 8-4 and 8-5.

FIGURE 8-4
19K•21K•23K•46K lb Capacity

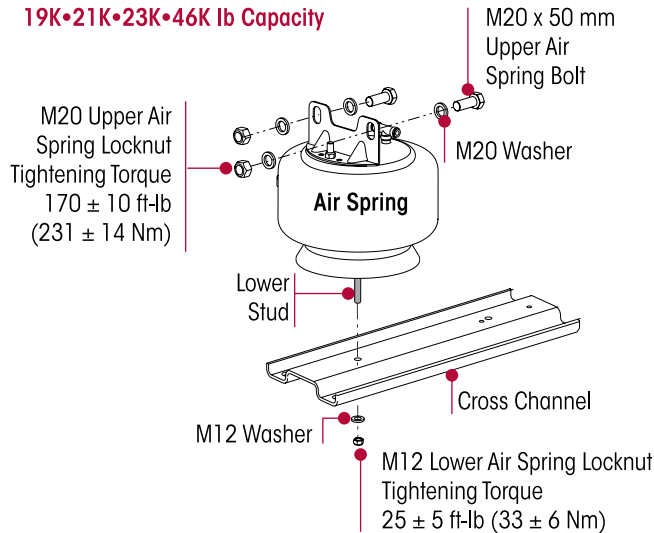
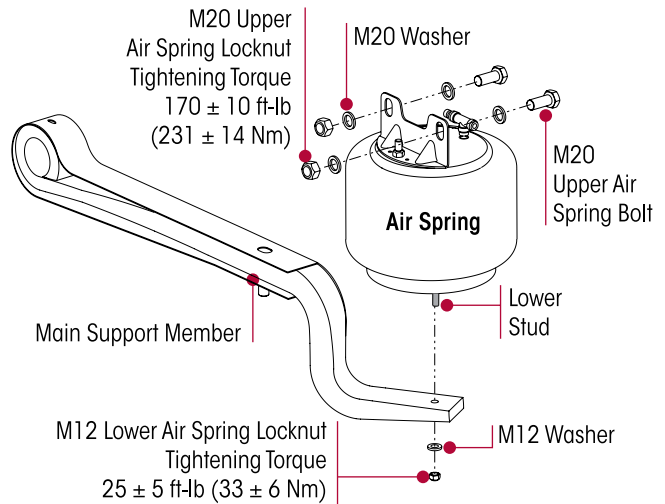


FIGURE 8-5
40K lb Capacity



4. Install the air line fitting to the air spring using Teflon (or equivalent) thread seal.
5. Reconnect the air line to the air spring.
6. See additional Air Spring Cautions and Warnings in the Important Safety Notice section of this publication prior to deflating or inflating the air system.
7. Reconnect the linkage assembly(s) to height control valve arm(s) to inflate the suspension.
8. Inflate the suspension slowly and verify that the air spring bladder inflates uniformly without binding.
9. Remove the frame safety stands.
10. Verify proper ride height. Refer to the Alignment & Adjustments section of this publication.
11. Remove the wheel chocks.

SHOCK ABSORBER

NOTE

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

WARNING

THE SHOCK ABSORBERS ARE THE REBOUND TRAVEL STOPS FOR THE SUSPENSION. ANYTIME THE AXLE ON A COMFORT AIR 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.

DISASSEMBLY

1. Chock the wheels of the vehicle.
2. To remove the shock absorber –
 - **19K • 21K • 23K • 46K lb Capacity**, see Figure 8-6
 - a. Remove and discard the M20 fasteners from the lower shock bracket.

- b. Slide the shock absorber out of the lower shock bracket.
- c. Remove and discard the M12 locknut from the upper shock absorber mounting stud.
- **40K lb Capacity**, see Figure 8-7
 - a. Remove the $\frac{5}{8}$ " lower shock nut and rubber bushing from the lower shock absorber stud from the lower axle cap bottom / lower shock bracket.
 - b. Slide the shock absorber out of the axle bottom cap / lower shock bracket.
 - c. Remove and discard the $\frac{1}{2}$ " locknut from the upper shock absorber mounting stud.
3. Remove the shock absorber from the upper shock bracket.
4. Inspect the shock absorber mounting bracket, axle bottom cap, and hardware for damage or wear, and replace as necessary, see the Preventive Maintenance section of this publication.

FIGURE 8-6
19K•21K•23K•46K lb Capacity

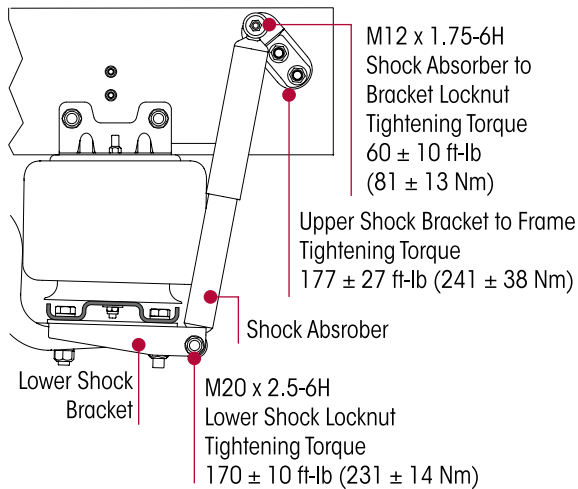
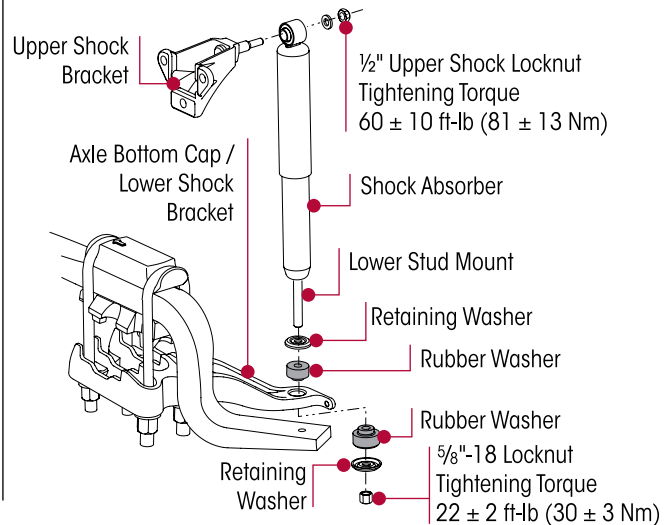


FIGURE 8-7
40K lb Capacity



ASSEMBLY

1. Install the shock absorber onto the upper mounting stud.
 - **19K • 21K • 23K • 46K lb Capacity**
 - a. Install the M12 fasteners on the upper shock absorber mounting stud.
 - b. Install the M20 fasteners through the lower shock mount and lower shock bracket. Tighten the locknut to \mathbb{R} 170 ± 10 foot pounds torque, see Figure 8-6.
 - c. Tighten the M12 upper shock absorber locknut to \mathbb{R} 60 ± 10 foot pounds torque, see Figure 8-6.
 - **40K lb Capacity**
 - a. Install the shock absorber into the upper shock absorber bracket. Install and snug the $\frac{1}{2}$ " fasteners, **DO NOT** tighten to torque at this time.
 - b. On the lower shock absorber stud, install the retaining washer and rubber washer, then place through the axle bottom cap/lower shock bracket, see Figure 8-7.
 - c. Below the axle bottom cap/lower shock bracket, on the shock absorber stud install the rubber washer, retaining washer and $\frac{5}{8}$ " locknut, see Figure 8-7. Tighten the $\frac{5}{8}$ " locknut to \mathbb{R} 22 ± 2 foot pounds torque, see Figure 8-7.
 - d. Tighten the $\frac{1}{2}$ " upper shock absorber fasteners to \mathbb{R} 60 ± 10 foot pounds torque, see Figure 8-7.
2. Verify the proper ride height. Refer to the Alignment & Adjustments section of this publication.
3. Remove the wheel chocks.

LOWER SHOCK ABSORBER BRACKET (if equipped)

■ 19K • 21K • 23K • 46K lb Capacity Only

DISASSEMBLY

1. Chock the front wheels.
2. Raise the frame of the vehicle at ride height and support with safety stands.

WARNING

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH SAFETY STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

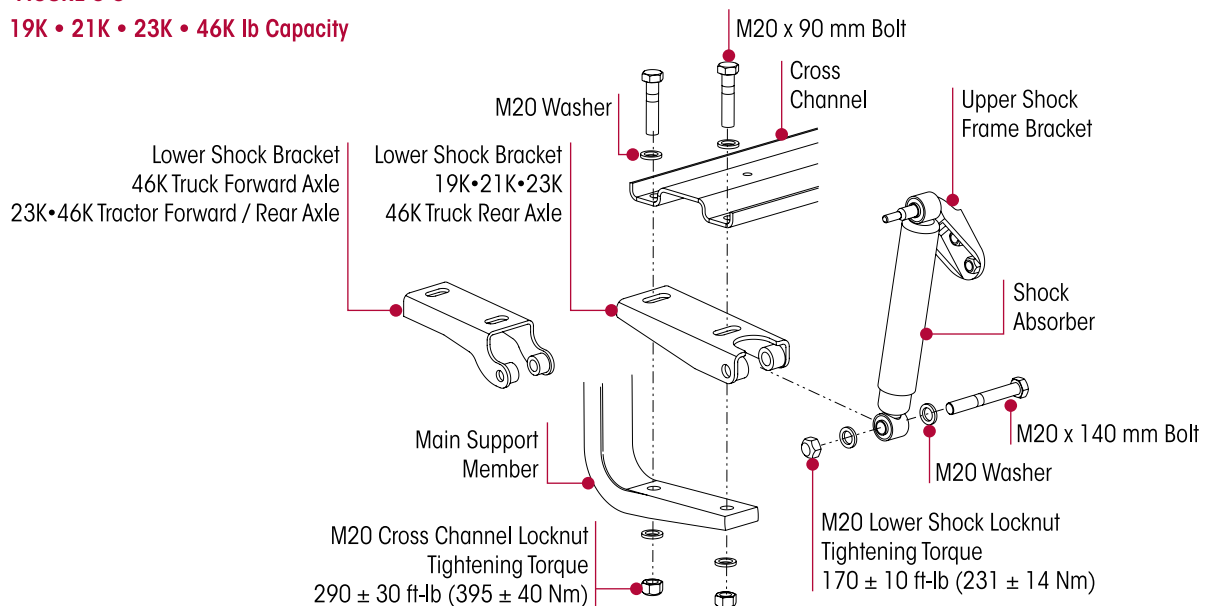
3. Disconnect the height control linkage assembly from the height control valve arm by sliding the rubber grommet from the stud.

WARNING

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

4. See additional Air Spring Cautions and Warnings in the Important Safety Notice section of this publication prior to deflating or inflating the air system.
5. Lower the height control valve arm to exhaust the air in the air springs and deflate the rear suspension.
6. On the side being serviced, remove the lower air spring fasteners.
7. Remove the M20 bolt from the lower shock absorber mount, see Figure 8-8.
8. Remove the air lines from the air springs and compress to facilitate removal of the lower shock bracket.
9. Slide the shock absorber out of the lower shock bracket.
10. Use a floor jack under the center of the cross channel and raise the cross channel slightly to facilitate removal of the lower shock bracket.
11. Remove and discard the M20 fasteners that connect the cross channel and lower shock bracket to the main support member assembly on the side being serviced.
12. Remove the lower shock bracket.

FIGURE 8-8
19K • 21K • 23K • 46K lb Capacity



**INSPECTION**

1. Inspect the shock absorber mounting brackets for damage or wear, and replace as necessary, see the Preventive Maintenance section of this publication.

ASSEMBLY

1. Install the lower shock absorber mounting bracket over the end of the main support member.
2. Lower the cross channel on top of the main support member and the lower shock absorber mounting bracket.
3. Loosely install the two (2) M20 bolt and washer through the cross channel holes, lower shock bracket and main support member on each end of the cross channel, see Figure 8-8.
4. Install M20 fasteners on the cross channel bolts. Tighten the cross channel fasteners to $\boxed{290 \pm 30}$ foot pounds torque.
5. Slide the shock absorber lower mount into the lower shock absorber mounting bracket.
6. Install the M20 fasteners through the lower shock absorber mount and lower shock bracket. Tighten the fasteners to $\boxed{170 \pm 10}$ foot pounds torque, see Figure 8-8.
7. Reconnect the air lines to the air springs.
8. See additional Air Spring Cautions and Warnings in the Important Safety Notice section of this publication prior to deflating or inflating the air system.
9. Inflate the suspension by connecting the height control valve linkage to the height control valve arm. Verify the air springs inflate uniformly without binding.
10. Remove the frame supports.
11. Verify proper ride height. Refer to the Alignment & Adjustments section of this publication.
12. Remove the wheel chocks.

CROSS CHANNEL (if equipped)**■ 19K • 21K • 23K • 46K lb Capacity Only****DISASSEMBLY**

1. Chock the front wheels.

**WARNING**

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH SAFETY STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

2. Raise and support the frame of the vehicle at ride height with safety stands.
3. Remove the air springs as detailed in the Air Spring in this section.
4. Remove the two (2) M6 height control valve lower linkage bracket fasteners to cross channel. Remove the bracket.
5. Remove and discard lower shock fasteners.
6. Remove and discard the four (4) M20 bolts from the cross channel to main support member, see Figure 8-9.
7. Remove the cross channel.

INSPECTION

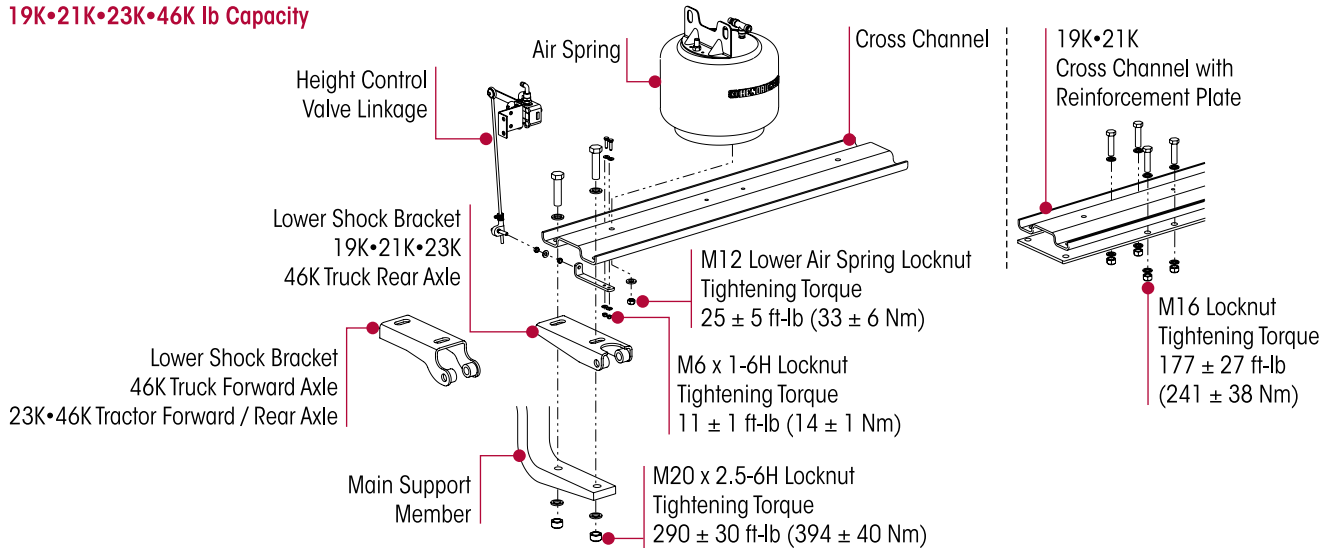
1. Inspect the mounting surfaces and lower air spring mount for any damage. Replace as necessary.

ASSEMBLY

1. Place cross channel on top of the lower shock bracket and main support member.
2. Loosely install the two (2) M20 bolts through the cross channel holes, lower shock bracket and main support member for each side of the cross channel, see Figure 8-9.



FIGURE 8-9
19K•21K•23K•46K lb Capacity



3. Install the lower shock absorber into the lower shock bracket. Refer to Lower Shock Absorber Bracket in this section.
4. Tighten the cross channel fasteners to 290 ± 30 foot pounds torque, see Figure 8-9.
5. Install the height control valve lower bracket to the cross channel. Refer to the Height Control Valve in this section.
6. Install the air spring between the frame and cross channel. Refer to the Air Springs in this section.
7. Connect the air line to the air spring.
8. See additional Air Spring Cautions and Warnings in the Important Safety Notice section of this publication prior to deflating or inflating the air system.
9. Inflate the suspension by connecting the height control valve linkage to the height control valve arm. Verify the air springs inflate uniformly without binding.
10. Remove the frame safety stands.
11. Verify proper ride height. Refer to the Alignment & Adjustments section of this publication.
12. Remove the wheel chocks.

TRANSVERSE TORQUE ROD



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.

DISASSEMBLY

1. Chock the wheels of the vehicle.



THE VEHICLE MUST BE FIRMLY SUPPORTED WITH SAFETY STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

SERVICE HINT

Note the quantity and location of shims removed during disassembly. The same quantity **MUST** be reinstalled in the same location in order to maintain the lateral alignment of the axle prior to disassembly. The lateral alignment procedure will need to be performed after assembly, see Alignment & Adjustments section of this publication.

2. Remove the two (2) M16 torque rod-to-axle bracket mounting fasteners, see Figures 8-10 through 8-12.
3. Remove the two (2) M16 torque rod-to-frame mounting fasteners, see Figures 8-10 through 8-12.
4. Remove the transverse torque rod.

FIGURE 8-10

19K•21K lb Capacity Vehicles built after July 2009

NOTE: All Locknuts shown are M16 x 2-6H

Tightening Torque 177 ± 27 ft-lb (241 ± 38 Nm)

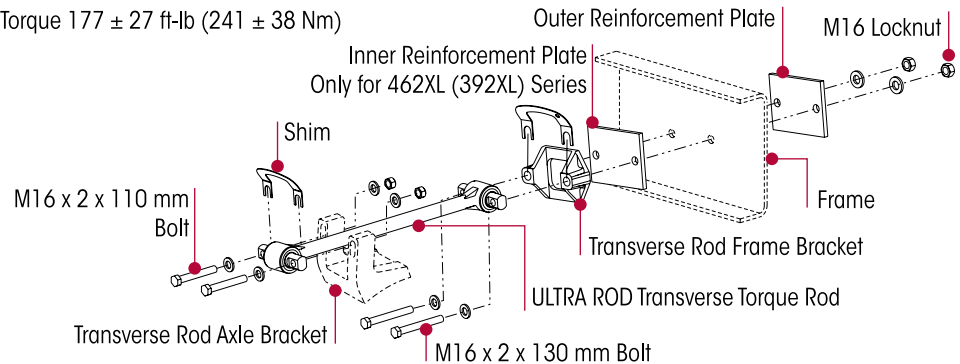


FIGURE 8-11

23K•46K lb Capacity

NOTE: All Locknuts shown are M16 x 2-6H

Tightening Torque 177 ± 27 ft-lb (241 ± 38 Nm)

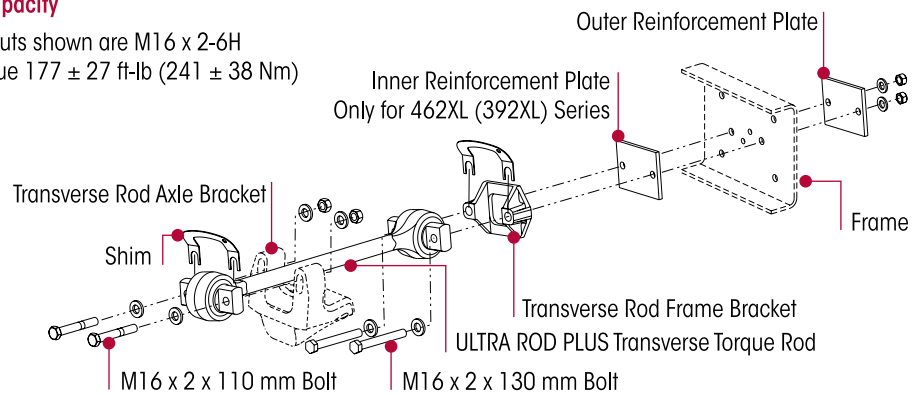
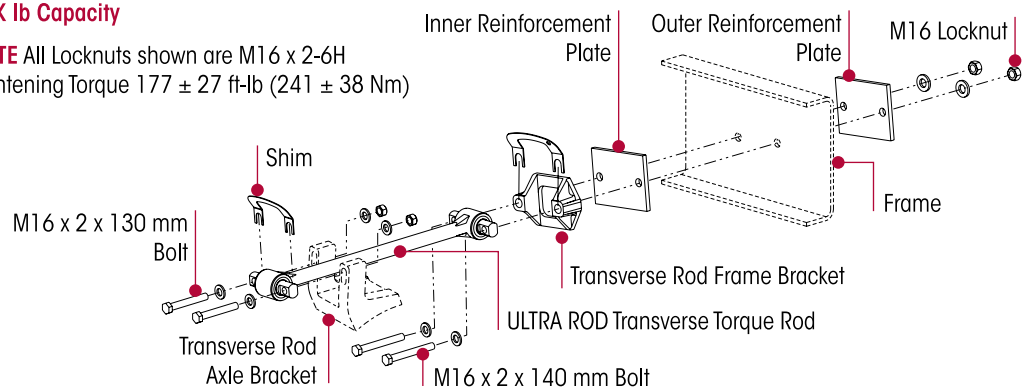


FIGURE 8-12

40K lb Capacity

NOTE: All Locknuts shown are M16 x 2-6H

Tightening Torque 177 ± 27 ft-lb (241 ± 38 Nm)



INSPECTION

1. Inspect the torque rod for straightness, wear, or cracks, replace as necessary.
2. Inspect the torque rod mating surfaces, rubber bushings, reinforcement plates, and the frame rail for wear or damage, repair or replace as necessary.

ASSEMBLY

NOTE

Hendrickson recommends the use of Hendrickson coated, Class 10.9 bolts and Class 10 locknuts for all straddle mount torque rod attachments.

1. Install the torque rod.
2. Install the two (2) M16 bolts and washers through the torque rod bar pin, any shims that were removed, transverse torque rod frame bracket, inner reinforcement plate (if equipped), frame, and outer reinforcement plate, see Figures 8-10 through 8-12.
3. Loosely install the two (2) M16 washers and locknuts.
4. Install the two (2) M16 bolts and washers through the torque rod bar pin and axle bracket. Re-install any shims that were removed.
5. Loosely install the two (2) M16 washers and locknuts.
6. Tighten the two (2) M16 torque rod-to-axle bracket mounting fasteners and the two (2) M16 torque rod-to-frame mounting fasteners to \mathbb{N} 177 ± 27 foot pounds torque, see Figures 8-10 through 8-12.
7. Perform the lateral alignment procedure, refer to the Alignment and Adjustments section of this publication.
8. Remove the wheel chocks.

INNER REINFORCEMENT PLATE

Vehicles built with the **COMFORT AIR 23K•46K and 40K lb capacity** are equipped with an inner reinforcement plate.

NOTE

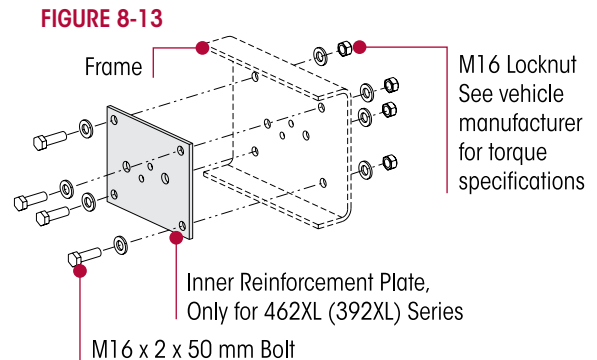
The COMFORT AIR 19K•21K lb capacity vehicles **built prior to July 2009** were also built with the Inner Reinforcement Plate (**no longer necessary after July 2009**). If damaged and replacement is necessary, use the configuration shown in Figure 8-13.

DISASSEMBLY

1. Remove transverse torque rod per as detailed in this section.
2. Remove and discard the four (4) M16 x 50 mm fasteners from the frame rails, see Figure 8-13.

ASSEMBLY

1. Install the new fasteners through the inner reinforcement plate and frame rail.
2. Tighten to the vehicle manufacturer's torque specifications.
3. Install transverse torque rod as detailed in this section.



ULTRA ROD TORQUE ROD BUSHINGS

NOTE

If equipped with ULTRA ROD PLUS transverse torque rods (Part No. 72000-595S) the bushings are non-serviceable, the entire torque rod assembly will require replacement, refer to the Part List section of this publication.

DISASSEMBLY

You will need:

- A vertical press with a capacity of at least 10 tons
- A receiving, installation and removal tool, see the Special Tools section of this publication.

CAUTION

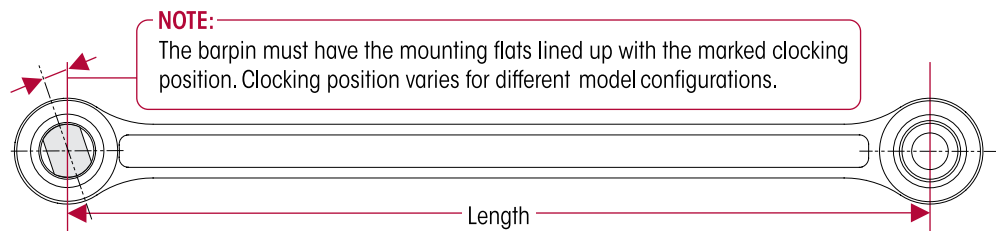
DO NOT USE HEAT OR USE A CUTTING TORCH TO REMOVE BUSHINGS FROM THE TORQUE ROD. THE USE OF HEAT WILL ADVERSELY AFFECT THE STRENGTH OF THE TORQUE ROD; HEAT CAN CHANGE THE MATERIAL PROPERTIES. A COMPONENT DAMAGED IN THIS MANNER CAN RESULT IN THE ADVERSE VEHICLE HANDLING, POSSIBLE PERSONAL INJURY OR PROPERTY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

1. Remove the torque rod as detailed in this section.

SERVICE HINT

When servicing a straddle mount bar pin type bushing, **mark the clocking position** of the straddle mount bar pin flats on the torque rod end hub before disassembly, see Figure 8-14. This clocking mark will serve as a guide when installing the new bushing assembly so the original clocking position can be retained.

2. Mark the clocking position of the straddle mount bar pin bushing flats with a paint stick on the torque rod end hub prior to disassembly, see Figure 8-14.
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 8-14

ASSEMBLY
NOTE

DO NOT use a petroleum or soap base 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 P-80 Lubricant (refer to the Parts List section of this publication) or light Naphthenic Base Oil, such as 60 SUS at 100°F, see Figure 8-15.
2. Support the torque rod end hub on the receiving tool with the end hub of the torque rod centered on the receiving tool.

SERVICE HINT

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. Verify the bar pin flats are clocked correctly.
4. Press directly on the inner metal of the bushing assembly.

FIGURE 8-15

FIGURE 8-16

FIGURE 8-17




5. When pressing in the new bushings overshoot the desired final position by approximately $\frac{3}{16}$ " , see Figure 8-16.
6. Press the inner metal of the bushing assembly again from opposite side to center the bushing and inner metal within the torque rod end hub, see Figure 8-17.
7. Wipe off excess lubricant. Allow the lubricant four (4) hours to dissipate before operating vehicle.

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.

8. Install the torque rod assembly as detailed in this section.

MAIN SUPPORT MEMBER & CLAMP GROUP

NOTE

The main support member assemblies come fully assembled with the pivot bushing, secondary leaf/Flexi-wrap, liners, and spring eye clip, refer to the Part List section of this publication.

WARNING

FAILURE OF THE MAIN SUPPORT MEMBER BETWEEN THE U-BOLTS WILL REQUIRE THE REPLACEMENT OF THE MAIN SUPPORT MEMBER AND ALL CLAMP GROUP COMPONENTS. FAILURE TO DO SO CAN RESULT IN CLAMP GROUP FAILURE AND FURTHER FAILURE TO THE MAIN SUPPORT MEMBER, WHICH CAN CAUSE ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE OR SEVERE PERSONAL INJURY.

DISASSEMBLY

CAUTION

THE PROCEDURE TO DISASSEMBLE THE MAIN SUPPORT MEMBER AND CLAMP GROUP IS DONE WITH THE OTHER MAIN SUPPORT MEMBER PROPERLY CONNECTED TO THE FRAME HANGER AND AXLE. FAILURE TO HAVE THE OTHER MAIN SUPPORT MEMBER 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.

1. Chock the front wheels.

WARNING

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH SAFETY STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

2. Raise and support the frame of the vehicle at ride height with safety stands.
3. Disconnect the linkage assembly from the height control valve arm by sliding the rubber grommet from the stud.

WARNING

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

4. See additional Air Spring Cautions and Warnings in the Important Safety Notice section of this publication prior to deflating or inflating the air system.
5. Lower the height control valve arm to exhaust the air in the air springs and deflate the rear suspension.
6. Remove the air spring, see Air Spring in this section.
7. Remove the shock absorber, see Shock Absorber in this section.
8. If equipped, remove the cross channel (if equipped), see Cross Channel in this section.

SERVICE HINT

Mark the position of the QUIK-ALIGN collar square drive will provide a starting point for the alignment procedure following assembly, see Figure 8-18.

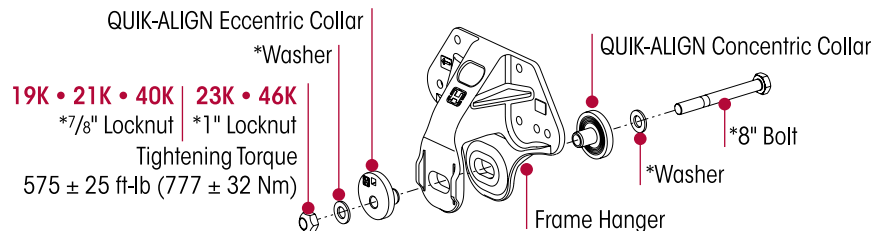
FIGURE 8-18

9. On the side being serviced, mark the position of the QUIK-ALIGN square drive collar relative to the frame hanger, see Figure 8-18.
10. On the side being serviced, remove and discard the U-bolts and fasteners.
11. Remove the axle bottom cap, spacer and top pad. Lift the back of the main support member assembly and remove the axle seat from under main support member. Lower the main support member onto the axle housing.
12. Support the main support member by placing a hydraulic jack under the pivot bushing.
13. Remove and discard the pivot bolt and fasteners.
14. Remove and discard the QUICK ALIGN collars that connect the main support member assembly to the frame hanger, see Figure 8-19.
15. Slide the pivot bushing down and out of the frame hanger.
16. Remove the main support assembly.



Square Drive
Prior to disassembly
Mark the position of
the square drive.

FIGURE 8-19



*All fasteners are Hendrickson Coated to sustain proper clamp force.

INSPECTION

WARNING

U-BOLTS THAT ARE FOUND TO BE LOOSE REQUIRE THAT MATING COMPONENTS BE INSPECTED FOR SIGNS OF WEAR OR FRETTING. 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.

1. Clean any dirt and debris from the QUIK-ALIGN slots in the hangers. Inspect the frame hanger for excessive wear, cracks and proper frame hanger fastener torque. Replace as necessary.
2. Inspect the cross channel (if equipped) for straightness, excessive wear and cracks. Replace as necessary.
3. Inspect the air spring for damage. Inspect the lower piston, upper and lower air spring mount for cracks. Inspect the shock absorber, refer to the Preventive Maintenance section in this publication. Replace as necessary.
4. Inspect the top pad, spring seat and axle bottom cap for excessive wear and cracks or fretting. Replace as necessary.
5. Inspect the axle housing for any cracks or wear. Repair or replace as necessary per the axle manufacturer and/or the vehicle manufacturer.

ASSEMBLY

WARNING

DO NOT STRIKE SUSPENSION COMPONENTS WITH A HAMMER. DO NOT NICK OR GOUGE THE MAIN SUPPORT MEMBER. SUCH IMPROPER ACTIONS CAN CAUSE DAMAGE; THE MAIN SUPPORT MEMBER ASSEMBLY COULD FAIL AND CAUSE ADVERSE VEHICLE HANDLING AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

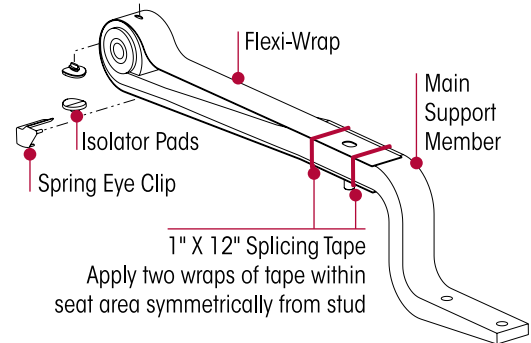

WARNING

WHEN SERVICING THE MAIN SUPPORT MEMBER DO NOT DETACH THE FLEXI-WRAP FROM THE MAIN SUPPORT MEMBER. REPLACE COMPONENT WITH ONLY A NEW MAIN SUPPORT MEMBER ASSEMBLY, THAT INCLUDES THE FLEXI-WRAP. A MAIN SUPPORT MEMBER MAY FAIL WHEN REPLACED IMPROPERLY, CAUSING POSSIBLE ADVERSE VEHICLE HANDLING, PERSONAL INJURY, AND/OR PROPERTY DAMAGE.

SERVICE HINT

Ensure the Flexi-wrap (if equipped) is installed and centered on the main support member assembly. A strip of splicing tape for and aft of the alignment dowel pin will assist in keeping the assembly intact during installation. Verify the two (2) rubber isolator pads are installed in the Flexi-wrap, see Figure 8-20.

1. Install the spring seat and spacer on top of the axle housing. Verify the thicker end of the spring seat is to the rear of the vehicle.
2. Lower the main support member assembly on the spacer and spring seat.
3. Ensure the main support member assembly engages both the secondary leaf / Flexi-wrap and spring seat locator holes.
4. Position the main support member assembly with the center locator piloting into hole in spring seat and spacer.
5. Ensure to engage the alignment locator on the axle housing with the hole in the bottom of the spring seat.
6. Install the top pad on the top of the secondary leaf / Flexi-wrap of the main support member, see Figure 8-21.
7. Ensure the locator hole on the bottom of the top pad engages the secondary leaf / Flexi-wrap and main support locator holes. Verify the galvanized steel liner is positioned on the top of the main support member assembly.
8. Align the pivot bushing of the main support member assembly under the opening of the frame hanger and jack into place.

FIGURE 8-20

WARNING

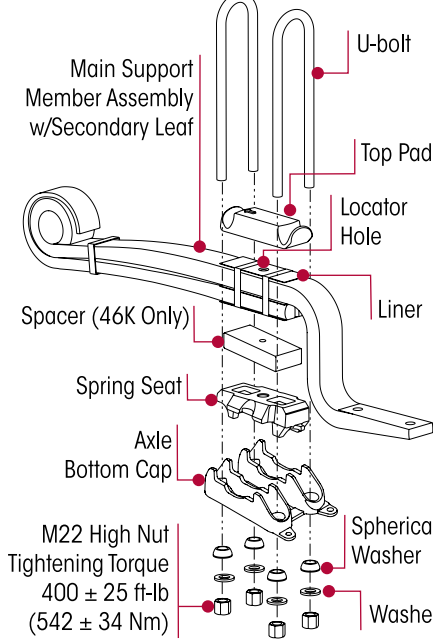
DO NOT ASSEMBLE THE QUIK-ALIGN JOINT WITHOUT THE PROPER FASTENERS. USE ONLY HENDRICKSON COATED GENUINE FASTENERS TO SUSTAIN PROPER CLAMP FORCE. ENSURE THAT THE QUIK-ALIGN FASTENER'S TORQUE VALUES ARE SUSTAINED AS RECOMMENDED IN THE TORQUE SPECIFICATIONS SECTION IN THIS PUBLICATION. FAILURE TO FOLLOW THE ABOVE ITEMS CAN CAUSE ADVERSE VEHICLE HANDLING RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE AND WILL VOID ANY APPLICABLE WARRANTIES. FOLLOW VEHICLE MANUFACTURER'S FASTENER ORIENTATION WHEN PERFORMING ANY MAINTENANCE, SERVICE, OR REPAIR.

NOTE

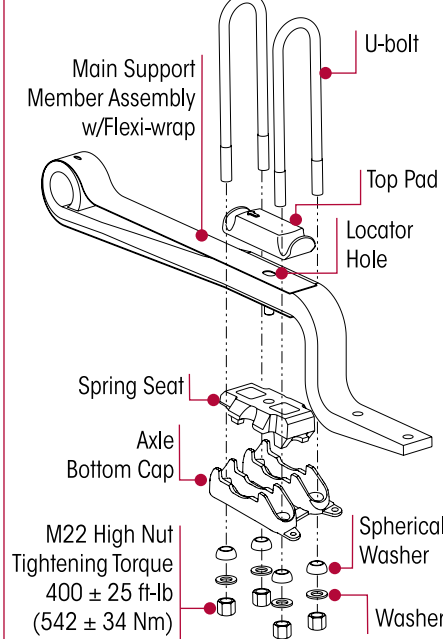
Ensure that QUIK-ALIGN eccentric collar is on the outboard side of the frame hanger. Verify that the nose of each QUIK-ALIGN collar is installed correctly into bushing sleeve, and the flanged side is flat against the frame hanger face within the alignment guides, see Figure 8-19.



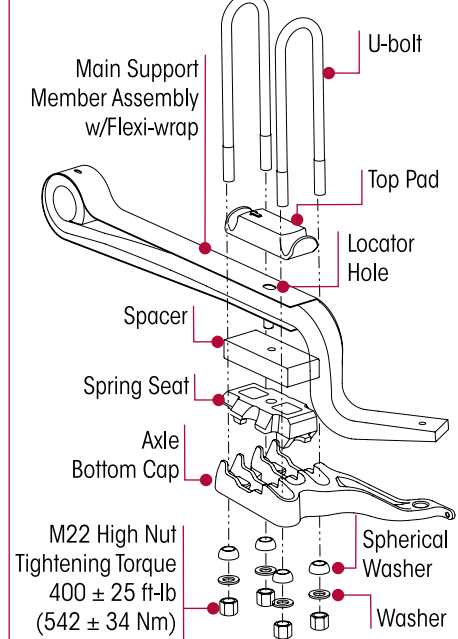
FIGURE 8-21
23K•46K lb Capacity



19K•23K lb Capacity



40K lb Capacity



9. Install the QUIK-ALIGN collars and fasteners and tighten to $\boxed{100}$ foot pounds of torque.
10. Install the **NEW** U-bolts and fasteners.
11. Verify that the top pad and bottom cap are aligned and installed properly.
12. Install the shock absorber as detailed in the Shock Absorber in this section.
13. Install the cross channel (if equipped) as detailed in the Cross Channel in this section.
14. Loosely install the clamp group fasteners. **DO NOT** tighten at this time.
15. Verify that the U-bolts are seated properly in the channels of the top pad, see Figure 8-21.
16. Verify the secondary leaf / Flexi-wrap and main support member are centered in the frame hanger.
17. Snug the U-bolts prior to tightening using a crisscross pattern, (approximately $\boxed{100}$ foot pounds tightening torque), see Figure 8-22.
18. Tighten the cross channel (if equipped) fasteners to $\boxed{290 \pm 30}$ foot pounds torque.

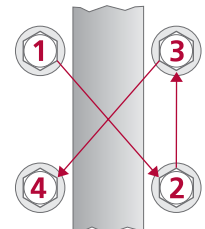


WARNING

IT IS IMPORTANT THAT THE U-BOLT CLAMP GROUP CONNECTION BE PROPERLY ALIGNED AND HAVE THE PROPER TIGHTENING TORQUE VALUES MAINTAINED. METAL SURFACES CAN WORK AND WEAR AGAINST OTHER RELATED CLAMP GROUP COMPONENTS IF NOT PROPERLY ALIGNED OR PROPERLY TIGHTENED TO MAINTAIN THE PROPER CLAMP FORCE. FAILURE TO DO SO CAN CAUSE PREMATURE COMPONENT WEAR, POSSIBLE SEPARATION OF THE CLAMP GROUP, CAUSING ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE, OR PERSONAL INJURY.

19. Tighten the U-bolt locknuts evenly in 100 pound increments to $\boxed{400 \pm 25}$ foot pounds torque in the crisscross pattern to achieve uniform bolt tension, see Figure 8-22. Rap the top of the U-bolts with a dead blow mallet, and retighten to specified torque. **DO NOT** exceed specified torque on U-bolt locknuts.
20. See additional Air Spring Cautions and Warnings in the Important Safety Notice section of this publication prior to deflating or inflating the air system.
21. Inflate the suspension by connecting the height control valve linkage to the height control valve arm. Verify the air springs inflate uniformly without binding.
22. Remove the frame supports.

FIGURE 8-22



23. Verify the vehicle's ride height is within specifications and adjust as necessary, see Ride Height in the Alignment & Adjustments section of this publication.
24. Align the vehicle. Alignment is necessary anytime the main support member is removed to complete the repair, see Alignment & Adjustments section in this publication.

NOTE

Prior to tightening the QUIK-ALIGN fasteners, U-bolts, or lower shock bracket fasteners to specifications, it is mandatory that the vehicle be positioned at the proper ride height.

25. After the correct alignment of the axle is verified, tighten the QUIK-ALIGN fasteners to 550 ± 25 foot pounds torque.
26. Remove the wheel chocks.

FRAME HANGER

DISASSEMBLY

1. Chock the front wheels.

WARNING

THE VEHICLE MUST BE FIRMLY SUPPORTED WITH SAFETY STANDS PRIOR TO SERVICING. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

2. Raise and support the frame of the vehicle at ride height and support with safety stands.

WARNING

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

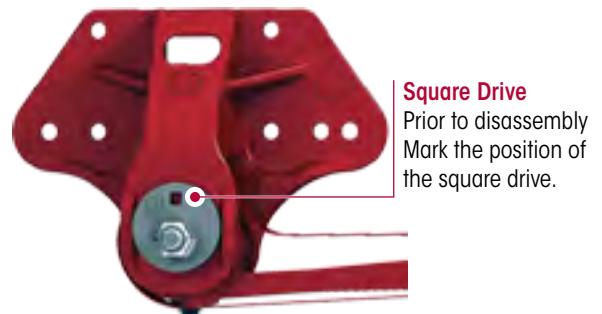
3. See additional Air Spring Cautions and Warnings of the Important Safety Notice section in this publication prior to deflating or inflating the air system.
4. Disconnect the linkage assembly from the height control valve arm by sliding the rubber grommet from the stud.
5. Lower the height control valve arm to exhaust the air in the air springs and deflate the rear suspension.

SERVICE HINT

Mark the position of the QUIK-ALIGN collar square drive prior to the removal of QUIK-ALIGN fasteners, this will facilitate the axle alignment process after the repair is complete, see Figure 8-23.

6. On the side being serviced, mark the position of the QUIK-ALIGN collar **square drive** in relation to the frame hanger and note the **orientation of the fasteners** prior to loosening the QUIK-ALIGN connection, see Figure 8-23.

FIGURE 8-23



7. Remove and discard the QUIK-ALIGN fastener:

- **19K • 21K • 40K lb Capacity** — $\frac{7}{8}$ "x9", see Figure 8-24.
- **23K • 46K lb Capacity** — 1"x9" see Figure 8-25.

8. Remove and discard the QUIK-ALIGN collars that connect the main support member to the frame hanger.
9. Remove the fasteners that attach the frame hanger to the frame rail per the vehicle manufacturer's instructions.
10. Remove the frame hanger.

INSPECTION

1. Inspect mounting surface of hanger and frame for any damage or wear. Repair or replace as necessary.
2. Inspect the main support member assembly and bushing for wear or damage. Replace as necessary.

FIGURE 8-24
19K•21K•40K lb Capacity

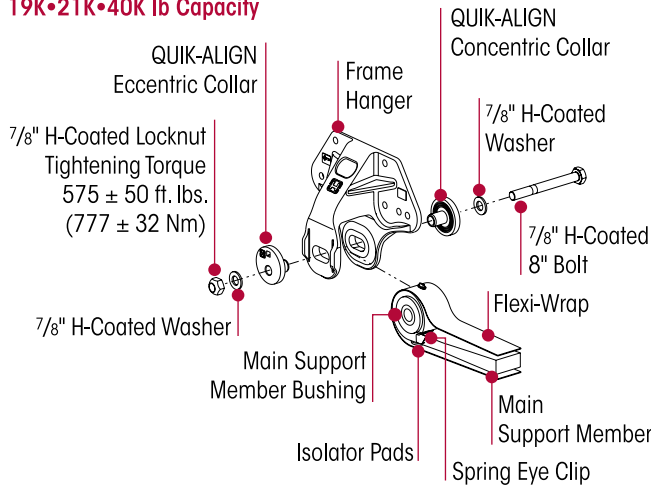
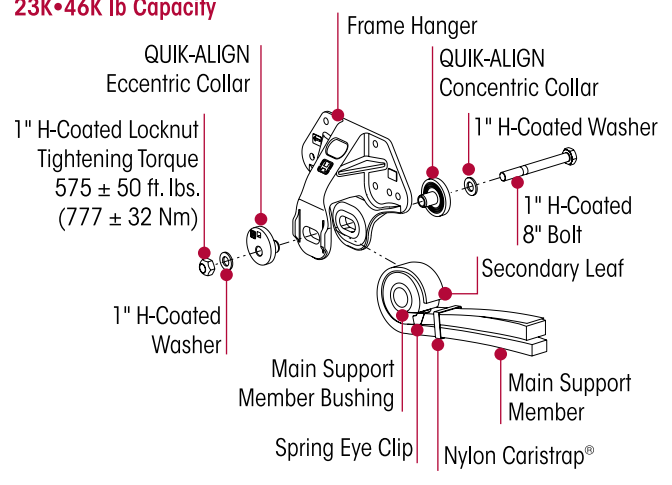


FIGURE 8-25
23K•46K lb Capacity



ASSEMBLY

1. Slide the frame hanger over the main support member's bushing. Make sure the arrow on the frame hanger points towards the front of the vehicle, see Figures 8-24 and 8-25.
2. Install new hanger to frame rail fasteners as detailed by the vehicle manufacturer.

WARNING

DO NOT ASSEMBLE THE QUIK-ALIGN JOINT WITHOUT THE PROPER FASTENERS. USE ONLY HENDRICKSON COATED GENUINE FASTENERS TO SUSTAIN PROPER CLAMP FORCE. ENSURE THAT THE QUIK-ALIGN FASTENER'S TORQUE VALUES ARE SUSTAINED AS RECOMMENDED IN THE TORQUE SPECIFICATIONS SECTION IN THIS PUBLICATION. FAILURE TO FOLLOW THE ABOVE ITEMS CAN CAUSE ADVERSE VEHICLE HANDLING RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE AND WILL VOID ANY APPLICABLE WARRANTIES. FOLLOW THE VEHICLE MANUFACTURER'S FASTENER ORIENTATION WHEN PERFORMING ANY MAINTENANCE, SERVICE, OR REPAIR.

NOTE

Use a new QUIK-ALIGN Kit (see Parts Lists section of this publication) for any axle alignment or disassembly of the QUIK-ALIGN connection. This ensures that the proper clamp load is applied to the connections, so that the joints will not slip in service.

3. Install NEW QUIK-ALIGN collars and fasteners.

NOTE

Ensure that QUIK-ALIGN eccentric collar is on the outboard side of the LEFT frame hanger. Verify that the nose of each QUIK-ALIGN collar is installed correctly into the sleeve of the bushing, and the flanged side is flat against the frame hanger face and within the alignment guides.

4. Align the QUIK-ALIGN collar with the marks made on the frame hanger prior to disassembly.
5. Snug the pivot bolt locknut to approximately 100 foot pounds of torque. **DO NOT** tighten to specified torque at this time.
6. See additional Air Spring Cautions and Warnings in the Important Safety Notice section in this publication prior to deflating or inflating the air system.
7. Inflate the suspension by connecting the height control valve linkage to the height control valve arm. Verify the air springs inflate uniformly without binding.
8. Remove the frame supports.

9. Verify the vehicle's ride height is within specifications and adjust as necessary, see Ride Height in the Alignment & Adjustments section of this publication.
10. Verify that the axle is in proper alignment, see the Alignment & Adjustments section in this publication.

NOTE

Prior to tightening the QUIK-ALIGN locknuts to final torque specifications, it is mandatory that the vehicle be positioned at the proper ride height and alignment.

11. After alignment of the axle is verified, tighten the QUIK-ALIGN fasteners to 575 ± 50 foot pounds torque, see Figures 8-24 and 8-25.
12. Remove the wheel chocks.

QUIK-ALIGN PIVOT BUSHING

NOTE

There are two methods to replace the QUIK-ALIGN bushing.

METHOD A – USING A SHOP PRESS

You will need:

- A vertical shop press with a capacity of at least 10 tons.
- A receiving tool and push out tool, see the Special Tools section of this publication.

DISASSEMBLY

1. Remove the main support member from the vehicle, see Main Support Member & Clamp Group in this section.
2. Note the main support components location and orientation prior to disassembly. Disassemble the secondary leaf / Flexi-wrap from the main support member assembly. Inspect the main support member attaching components for wear and replace as necessary (clip bolt spacer, spring clip sleeve, spring eye clip, isolator pad, see Figure 8-31). Refer to the Part List section for replacement components.
3. Place the main support member in the shop press.
4. Squarely support the main support member on the receiving tool with the end hub centered on the tool, see Figure 8-26.

FIGURE 8-26



NOTE

At the time of manufacture, a spring eye clip was used to insert the bushing into the spring eye of the main support member, see Figures 8-27 and 8-28. If the spring eye clip is equipped on the main support member you have the option to carefully press out the bushing from the opposite side of the spring eye (where the spring eye clip is NOT visible). If the spring eye clip is not damaged, it can be used again to facilitate the pressing in of the bushing into the spring eye. If clip is damaged and a replacement (part number 60392-000) is not available the alternative method is to use the tape option as shown in Figure 8-29.

FIGURE 8-27

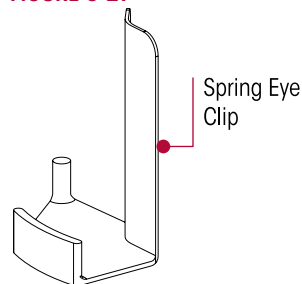
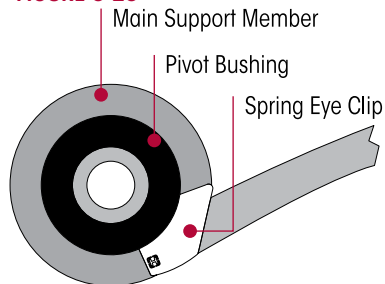


FIGURE 8-28



- Center the push out tool on inner sleeve and press out the old bushing. (These bushings are not cartridge type bushings. They do not have outer metals).
- Clean and inspect the inner diameter of the main support member eye.

ASSEMBLY

- Assemble the main support member assembly secondary leaf/ Flexi-wrap and components as prior to disassembly.
- Insert the spring eye clip into the gap of the main support member eye, (see note above). If spring eye clip is damaged and a replacement (Part No. 60392-000) is not available the alternative method is to cut a strip of 3M Scotch #890T black fiber tape, or heavy bodied duct tape 1" x 6" long.
- Feed the tape into the spring eye, adhesive side facing gap in the eye. Center the tape equally around each end.
- Pull the tape tight, and wrap it around the outside of the eye. Additional tape may be required depending on gap size. Ensure that the gap is completely covered, see Figure 8-29.

FIGURE 8-29

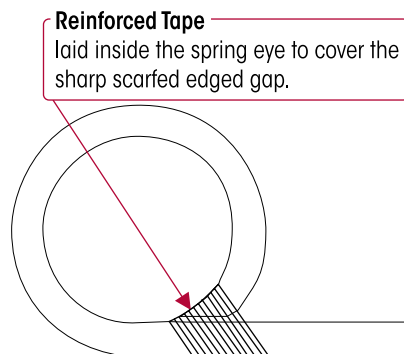


FIGURE 8-30



- Use P-80 Lubricant or light Naphthenic Base Oil, such as 60 SUS at 100°F to lubricate the inner diameter of leaf spring bore and the new rubber bushing (refer to Parts List section of this publication). **DO NOT** use petroleum or soap base lubricant, it can cause an adverse reaction with the bushing material, such as deterioration.
- Place the main support member on the press on top of the receiving tool.
- Center the main support member end hub centered on the receiving tool. Ensure the main support member is squarely supported on the press bed.
- Locate the machined pilot of the push-out tool on the inner sleeve, and press in the new bushing. Bushings must be centered within the spring eye.
- When pressing in the new bushings, over-shoot the desired final position by $\frac{3}{16}$ " and press again from the opposite side to center the bushing within the main support member assembly, see Figure 8-30.
- Trim all protruding tape from the underside of the spring eye. Wipe off the excess lubricant. Allow the lubricant four (4) hours to dissipate before operating the vehicle.
- Install the two (2) new isolator pads inside the secondary leaf / Flexi-wrap-eye, see Figure 8-31.
- Slide the secondary leaf/ Flexi-wrap around the main support member and rotate into position, see Figure 8-31.
- If equipped with a secondary leaf, install the spring eye clip sleeve, clip bolt spacer. Install clip bolt spacer fasteners and tighten to \mathbb{N} 32 ± 2 foot pounds torque, see Figure 8-31.

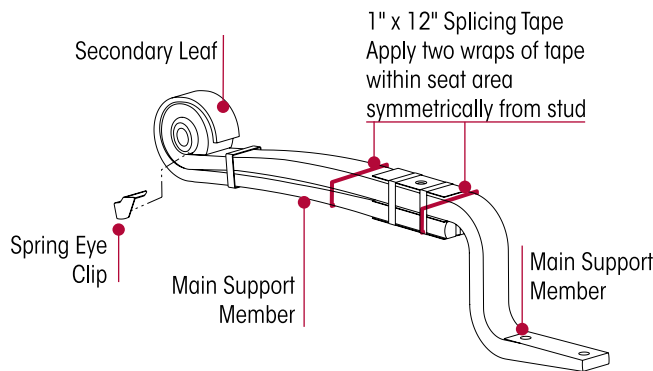
CAUTION

DO NOT WRAP TAPE AROUND THE MAIN SUPPORT MEMBER ASSEMBLY MORE THAN TWICE, AS THIS WOULD CREATE HIGH SPOTS IN THE CLAMP GROUP. FAILURE TO DO SO CAN CAUSE PREMATURE WEAR OR DAMAGE TO THE MAIN SUPPORT MEMBER ASSEMBLY.

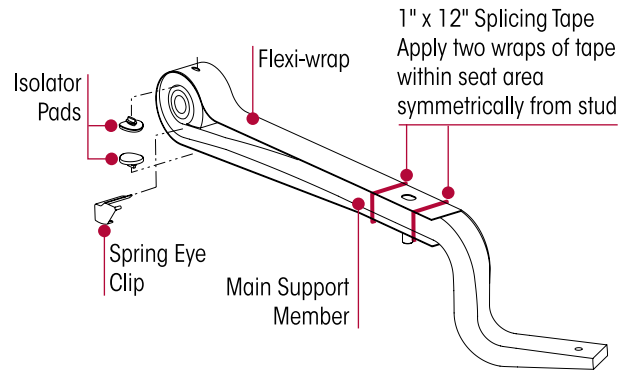


- Use two (2) 1" x 12" long strips of splicing tape to keep main support member components together, see Figure 8-31.
- Install the main support member assembly as detailed in this section.

FIGURE 8-31
23K•46K lb Capacity
Main Support Member Assembly with Secondary Leaf



19K•21K•40K lb Capacity
Main Support Member Assembly with Flexi-wrap



METHOD B – Using Tool No. 66086-203L

SERVICE HINT

Use the QUIK-ALIGN Pivot Bushing Tool No. 66086-203L to help with the installation and removal of QUIK-ALIGN pivot bushings. The tool allows the existing pivot bushing to be pushed out from the main support member assembly into the receiving cylinder. Then follow a similar procedure to push in the replacement pivot bushing, see Figure 8-32.



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 WILL ASSUME ALL RISKS OF CONSEQUENTIAL PERSONAL INJURY OR DAMAGE TO EQUIPMENT INVOLVED.

MAIN SUPPORT MEMBER ASSEMBLY REMOVAL

- Remove the main support member assembly from the vehicle per the Main Support Member & Clamp Group procedure in this section.
- After removal, place the main support member assembly on the floor or suitable work area.

PIVOT BUSHING

To replace the QUIK-ALIGN pivot bushing you will need:

- QUIK-ALIGN pivot bushing service tool (Part No. 66086-203L), see Figure 8-32
- ¾" Impact wrench (impact gun), some ½" impact wrenches may work

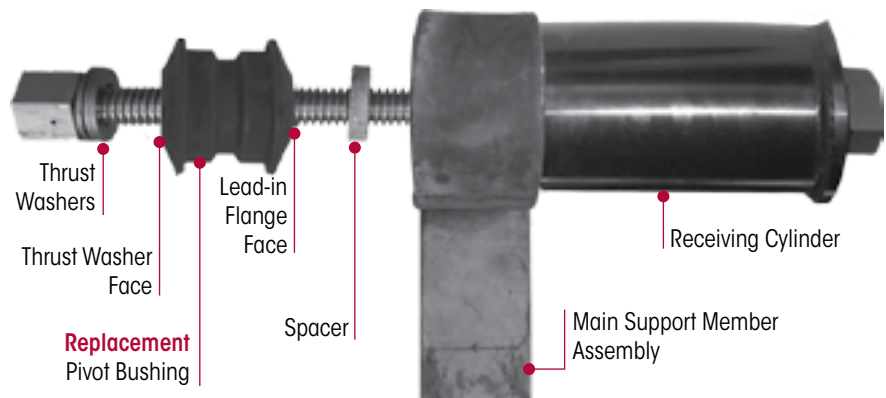
FIGURE 8-32

QUIK-ALIGN Pivot Bushing Tool
Part No. 66086-203L

NOTE

Apply NLGI #2-EP chassis lubricant to each face of the thrust washers and to the drive screw that will engage through the receiving cylinder.

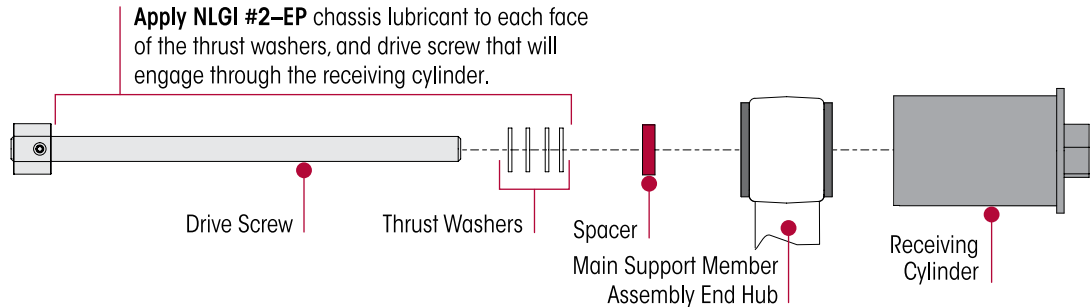
Apply P80 lubricant to the face of the lead-in flange and the outer diameter of NEW pivot bushing



REMOVAL

1. Install the pivot bushing tool as shown in Figure 8-33.
2. Remove and discard thrust washers (if equipped) and any loose rubber or debris from the existing pivot bushing.
3. Apply NLGI #2-EP (Extreme Pressure) chassis lubricant to each face of the thrust washers and to the drive screw that will engage through the receiving cylinder, see Figure 8-33.

FIGURE 8-33



4. Snug the threaded drive screw to hold the thrust washers, spacer, main support member assembly with the existing pivot bushing and the receiving cylinder in place, see Figure 8-34.
5. Using a $\frac{3}{4}$ " impact wrench, rotate the drive screw in a continuous motion without stopping until the pivot bushing is removed from the end hub. The existing pivot bushing will enter into the receiving cylinder, see Figure 8-35.
6. Remove and discard pivot bushing.
7. Repeat steps 1 through 6 for other side of the main support member assembly, as recommended.

FIGURE 8-34

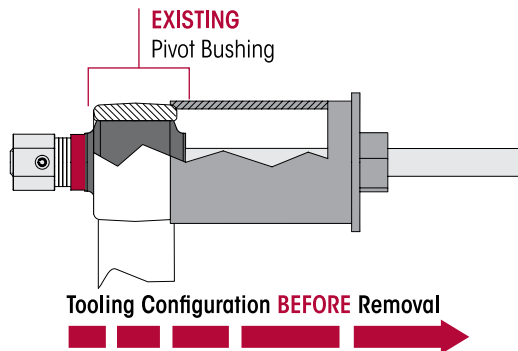
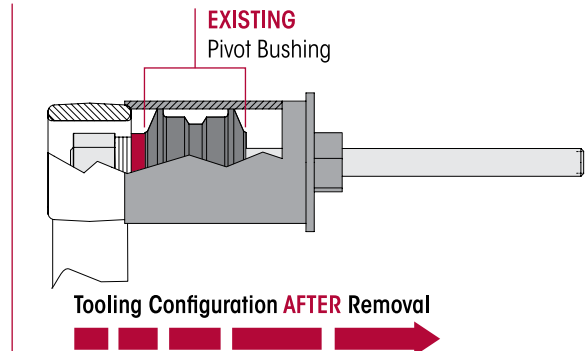


FIGURE 8-35



END HUB INSPECTION

1. Inspect the inner bore of the main support member assembly end hub and remove any loose debris or rubber residue from the bushing mating surface.

INSTALLATION

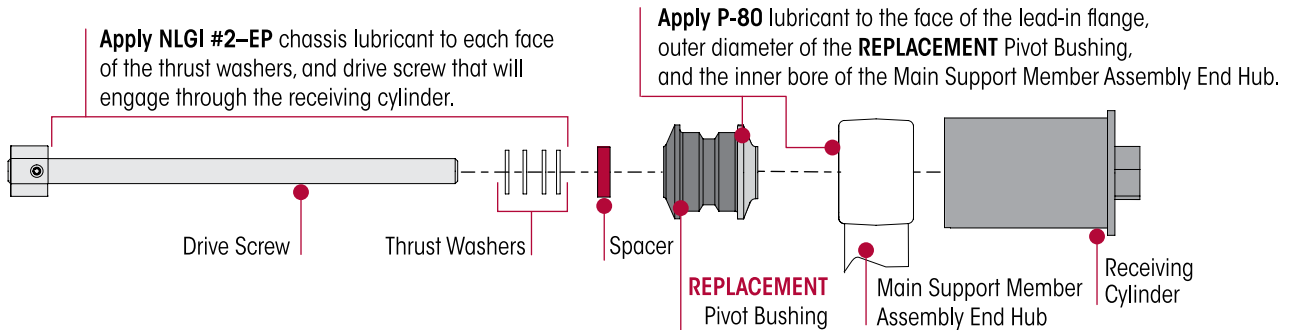
1. Clean the inner diameter of the main support member assembly end hub with brake cleaner.
2. Apply NLGI #2-EP (Extreme Pressure) chassis lubricant to each face of the thrust washers and to the drive screw that will engage through the receiving cylinder, see Figure 8-36.

NOTE

DO NOT use petroleum or soap base lubricant, it can cause an adverse reaction with the bushing material, such as deterioration. P-80 lubricant is supplied in the QUIK-ALIGN Pivot Bushing Kits.

3. Apply P-80 lubricant to the face of the lead-in flange, to the outer diameter of the replacement pivot bushing and to the inner diameter of the main support member assembly end hub, see Figure 8-36.

FIGURE 8-36



4. Snug the threaded drive screw to hold the thrust washers, spacer, pivot bushing, and main support member assembly with the receiving cylinder in place, see Figure 8-37.
5. Using a $\frac{3}{4}$ " impact wrench, rotate the drive screw in a continuous motion without stopping until the pivot bushing is seated in the hub and slightly overshoots the opposite end of the hub. It is necessary to overshoot the desired final position, see Figure 8-38.
6. Remove and reverse the installation tool, then from opposite side of the hub press the pivot bushing again to center the bushing within the beam end hub, see Figure 8-39. Center the pivot bushing to help prevent bulging and bushing preload. This is known as the "Bump Back" procedure.

FIGURE 8-37

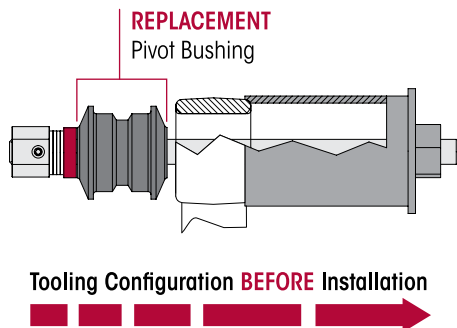


FIGURE 8-38

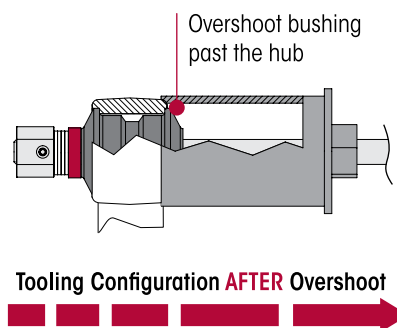
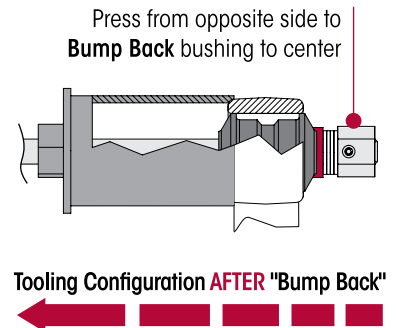


FIGURE 8-39



7. Repeat for the other main support member assembly.
8. Allow the lubricant four (4) hours to dissipate before fully operating the vehicle.
9. Install the main support member assembly, follow the procedure as detailed in this section.

MAIN SUPPORT MEMBER ASSEMBLY INSTALLATION

1. Follow the Main Support Member & Clamp Group procedure in this section.

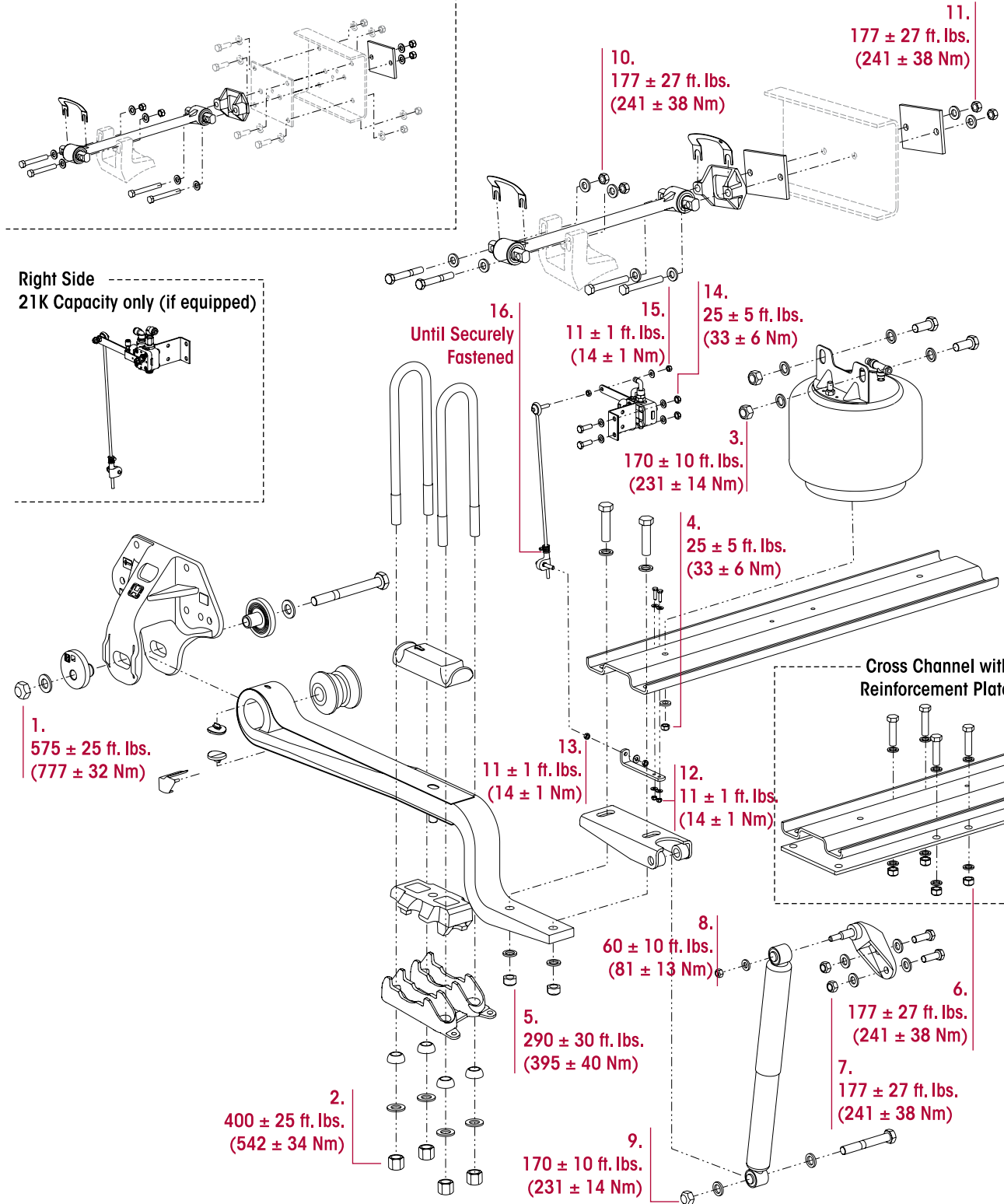


SECTION 9 Torque Specifications

Hendrickson Recommended Torque Values
Provided in Foot Pounds and in Newton Meters

Single Axle 19K • 21K Pound Capacity



Vehicles built prior to July 2009





COMFORT AIR 19K • 21K Pound Capacity for Hino Trucks

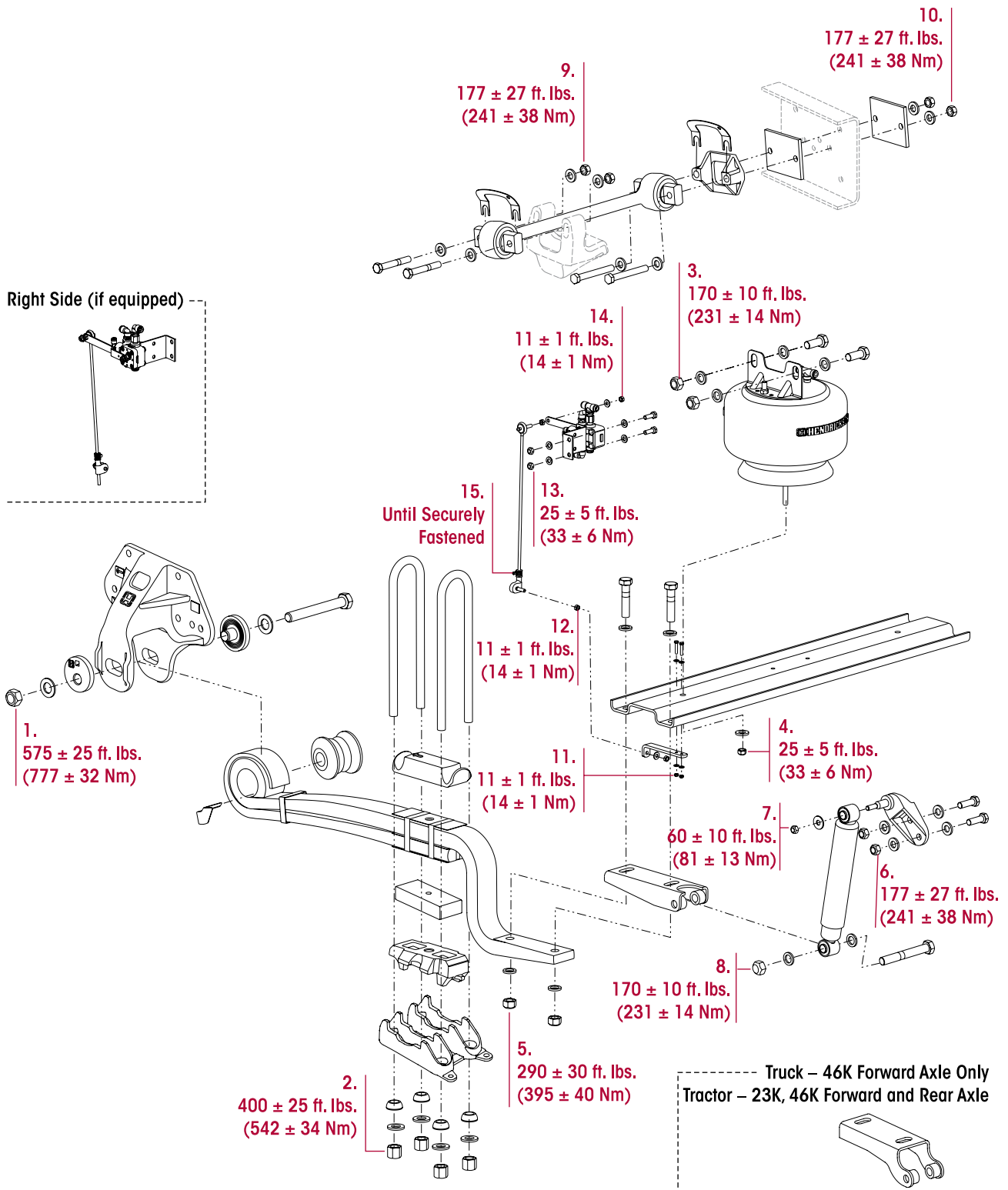
HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS

NO	COMPONENT	FASTENER		*TORQUE VALUE	
		QUANTITY	SIZE	Foot Pounds	Nm
1	QUIK-ALIGN (See Warning below) Hendrickson coated Bolt (Grade 8 with a minimum tensile strength of 160,000 psi) Hendrickson coated Locknut (Grade C)	2	7/8"-9 UNC	575 ± 25	777 ± 32
	 WARNING ENSURE THAT THE QUIK-ALIGN FASTENER TORQUE VALUES ARE SUSTAINED AS RECOMMENDED. FAILURE TO DO SO CAN CAUSE ADVERSE VEHICLE HANDLING RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE.				
2	U-bolts	4	**M22	400 ± 25	542 ± 34
3	Air Spring to Frame	4	M20	170 ± 10	231 ± 14
4	Air Spring to Cross Channel	2	M12	25 ± 5	33 ± 6
5	Cross Channel to Main Support Member	4	M20	290 ± 30	395 ± 40
6	Cross Channel Reinforcement Plate	8	M16	177 ± 27	241 ± 38
7	Upper Shock Bracket to Frame	4	M16	177 ± 27	241 ± 38
8	Shock Absorber to Upper Shock Bracket	2	M12	60 ± 10	81 ± 13
9	Shock Absorber to Lower Shock Bracket	2	M20	170 ± 10	231 ± 14
10	Transverse Torque Rod to Axle Bracket	2	M16	177 ± 27	241 ± 38
11	Transverse Torque Rod to Frame Bracket	2	M16	177 ± 27	241 ± 38
12	Linkage Rod Bracket to Cross Channel	2	M6	11 ± 1	14 ± 1
13	Lower Linkage Rod to Bracket Hendrickson Coated Locknut (Grade C)	1	5/16"	11 ± 1	14 ± 1
	14				
15	Linkage Rod to Height Control Valve Arm Hendrickson coated Locknut (Grade C)	1	5/16"	11 ± 1	14 ± 1
16	Linkage Rod Clamp	2		Until Securely Fastened	
<p>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.</p> <p>** Tighten clamp group fasteners to torque uniformly.</p>					
 WARNING ALL COMFORT AIR FASTENERS FOR HINO TRUCKS ARE HENDRICKSON COATED. METRIC BOLTS ARE CLASS 10.9 AND USE CLASS 10.0 LOCKNUTS. NON-METRIC FASTENERS ARE DETAILED AS SPECIFIED ABOVE. DO NOT ASSEMBLE WITHOUT THE PROPER FASTENERS. USE ONLY HENDRICKSON COATED FASTENERS TO SUSTAIN PROPER CLAMP FORCE. FAILURE TO DO SO CAN CAUSE ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE OR PERSONAL INJURY.					



Single Axle 23K Pound • Tandem Axle 46K Pound Capacity

Hendrickson Recommended Torque Values
Provided in Foot Pounds and in Newton Meters





COMFORT AIR 23K•46K Pound Capacity for Hino Trucks

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS

NO	COMPONENT	FASTENER		**TORQUE VALUE	
		*QUANTITY	SIZE	Foot Pounds	Nm
1	QUIK-ALIGN (See Warning below) Hendrickson coated Bolt (Grade 8 with a minimum tensile strength of 160,000 psi) Hendrickson coated Locknut (Grade C)	2	1"-14 UNF	575 ± 25	777 ± 32
	⚠ WARNING ENSURE THAT THE QUIK-ALIGN FASTENER TORQUE VALUES ARE SUSTAINED AS RECOMMENDED. FAILURE TO DO SO CAN CAUSE ADVERSE VEHICLE HANDLING RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE.				
2	U-bolts	4	***M22	400 ± 25	542 ± 34
3	Air Spring to Frame	4	M20	170 ± 10	231 ± 14
4	Air Spring to Cross Channel	2	M12	25 ± 5	33 ± 6
5	Cross Channel to Main Support Member	4	M20	290 ± 30	395 ± 40
6	Upper Shock Bracket to Frame	4	M16	177 ± 27	241 ± 38
7	Shock Absorber to Upper Shock Bracket	2	M12	60 ± 10	81 ± 13
8	Shock Absorber to Lower Shock Bracket	2	M20	170 ± 10	231 ± 14
9	Transverse Torque Rod to Axle Bracket	2	M16	177 ± 27	241 ± 38
10	Transverse Torque Rod to Frame Bracket	2	M16	177 ± 27	241 ± 38
11	Linkage Rod Bracket to Cross Channel	2	M6	11 ± 1	14 ± 1
12	Lower Linkage Rod to Bracket Hendrickson Coated Locknut (Grade C)	1	5/16"	11 ± 1	14 ± 1
13	Height Control Valve Bracket to Frame	2	M10	25 ± 5	33 ± 6
14	Linkage Rod to Height Control Valve Arm Hendrickson coated Locknut (Grade C)	1	5/16"	11 ± 1	14 ± 1
15	Linkage Rod Clamp	2		Until Securely Fastened	

NOTE: * Quantities specified are shown for a single axle.

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

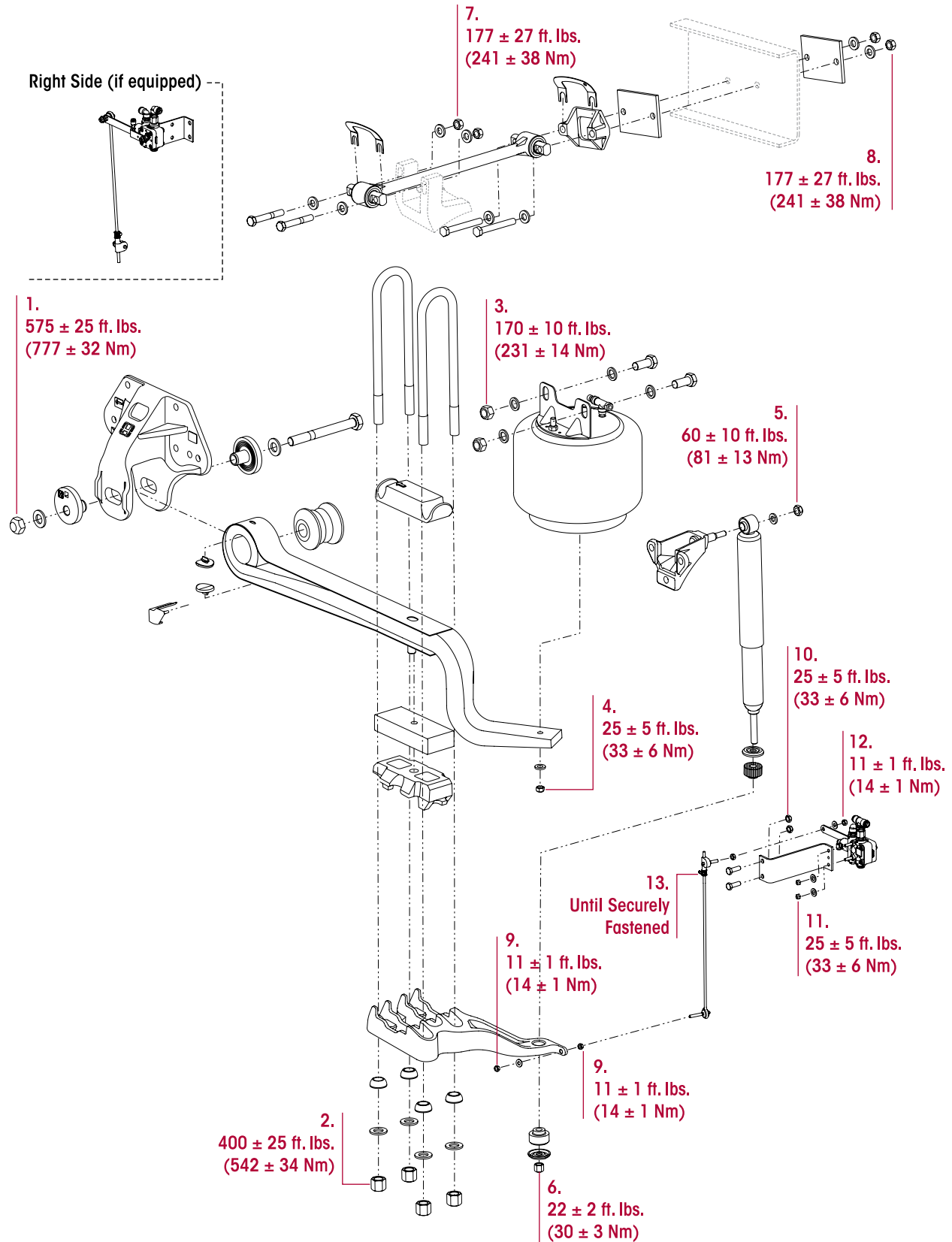
*** Tighten clamp group fasteners to torque uniformly.

⚠ WARNING ALL COMFORT AIR FASTENERS FOR HINO TRUCKS ARE HENDRICKSON COATED. METRIC BOLTS ARE CLASS 10.9 AND USE CLASS 10.0 LOCKNUTS. NON-METRIC FASTENERS ARE DETAILED AS SPECIFIED ABOVE. DO NOT ASSEMBLE WITHOUT THE PROPER FASTENERS. USE ONLY HENDRICKSON COATED FASTENERS TO SUSTAIN PROPER CLAMP FORCE. FAILURE TO DO SO CAN CAUSE ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE OR PERSONAL INJURY.



Tandem Axle 40K Pound Capacity



Hendrickson Recommended Torque Values
Provided in Foot Pounds and in Newton Meters





COMFORT AIR 40K Pound Capacity for Hino Trucks

HENDRICKSON RECOMMENDED TORQUE SPECIFICATIONS

NO	COMPONENT	FASTENER		*TORQUE VALUE	
		QUANTITY	SIZE	Foot Pounds	Nm
1	QUIK-ALIGN (See Warning below) Hendrickson coated Bolt (Grade 8 with a minimum tensile strength of 160,000 psi) Hendrickson coated Locknut (Grade C)	4	7/8"-9 UNC	575 ± 25	777 ± 32
	 WARNING ENSURE THAT THE QUIK-ALIGN FASTENER TORQUE VALUES ARE SUSTAINED AS RECOMMENDED. FAILURE TO DO SO CAN CAUSE ADVERSE VEHICLE HANDLING RESULTING IN PERSONAL INJURY OR PROPERTY DAMAGE.				
2	U-bolts	16	**M22	400 ± 25	542 ± 34
3	Air Spring to Frame	8	M20	170 ± 10	231 ± 14
4	Air Spring to Main Support Member	4	M12	25 ± 5	33 ± 6
5	Upper Shock Bracket to Shock Absorber	4	1/2"	60 ± 10	81 ± 13
6	Axle Bottom Cap to Shock Absorber	4	5/8"	22 ± 2	30 ± 3
7	Transverse Torque Rod to Axle Bracket	4	M16	177 ± 27	241 ± 38
8	Transverse Torque Rod to Frame Bracket	4	M16	177 ± 27	241 ± 38
9	Lower Linkage Rod to Bracket Hendrickson Coated Locknut (Grade C)	2	5/16"	11 ± 1	14 ± 1
10	Height Control Valve Bracket to Frame	4	M10	25 ± 5	33 ± 6
11	Height Control Bracket to Height Control Valve	4	1/4"	25 ± 5	33 ± 6
12	Linkage Rod to Height Control Valve Arm Hendrickson coated Locknut (Grade C)	2	5/16"	11 ± 1	14 ± 1
13	Linkage Rod Clamp	2		Until Securely Fastened	
<p>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.</p> <p>** Tighten clamp group fasteners to torque uniformly.</p>					
 WARNING ALL COMFORT AIR FASTENERS FOR HINO TRUCKS ARE HENDRICKSON COATED. METRIC BOLTS ARE CLASS 10.9 AND USE CLASS 10.0 LOCKNUTS. NON-METRIC FASTENERS ARE DETAILED AS SPECIFIED ABOVE. DO NOT ASSEMBLE WITHOUT THE PROPER FASTENERS. USE ONLY HENDRICKSON COATED FASTENERS TO SUSTAIN PROPER CLAMP FORCE. FAILURE TO DO SO CAN CAUSE ADVERSE VEHICLE HANDLING, PROPERTY DAMAGE OR PERSONAL INJURY.					



SECTION 10

Troubleshooting Guide

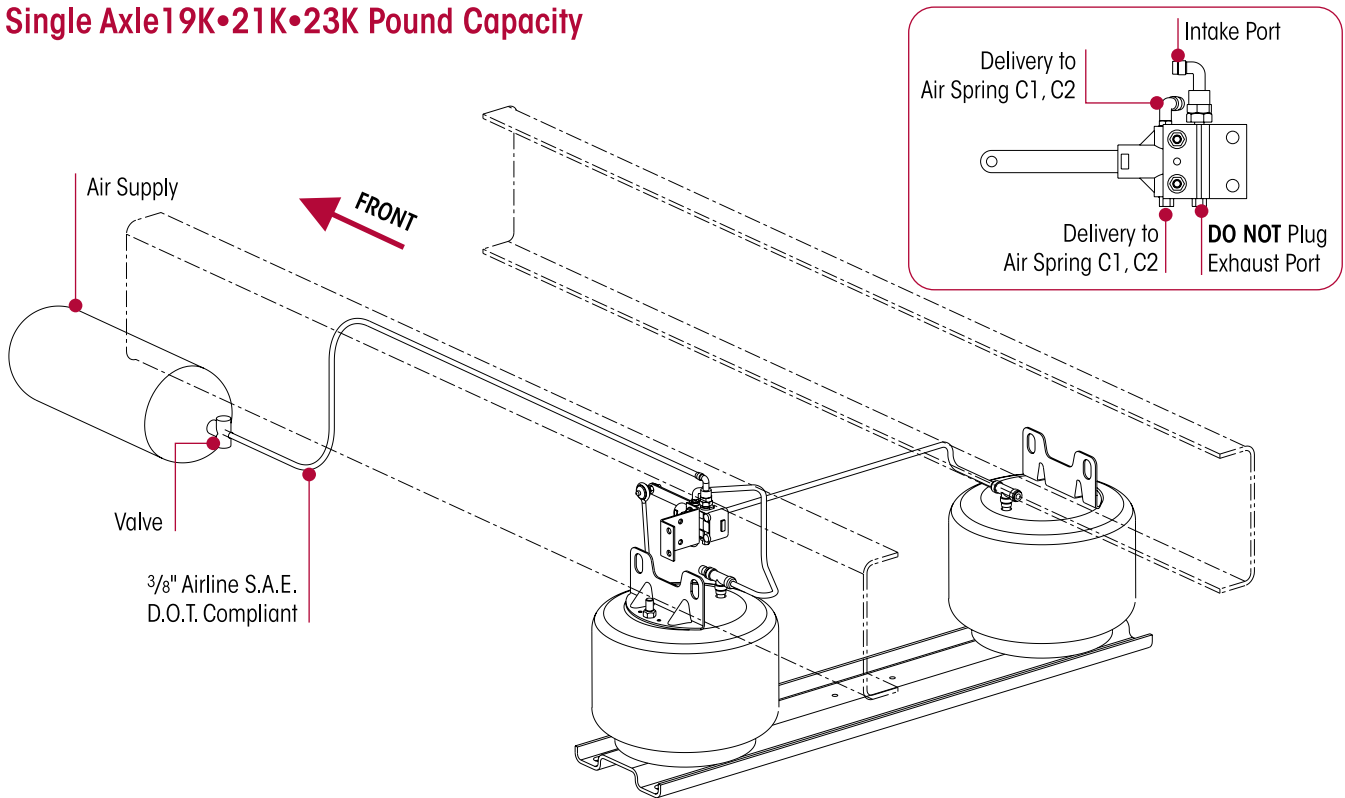
COMFORT AIR for Hino Trucks

TROUBLESHOOTING GUIDE		
CONDITION	POSSIBLE CAUSE	CORRECTION
Vehicle bouncing excessively	Leaking or damaged shock absorber	Replace the shock absorber.
	Air spring(s) not inflated	Check the air supply to air spring, repair as necessary.
	Incorrect ride height	Adjust the ride height to proper setting. See Ride Height Adjustment in the Alignment & Adjustments section of this publication.
Suspension has harsh or bumpy ride	Broken main support member assembly	Replace the main support member assembly.
	Damaged height control valve	Replace the height control valve.
	Incorrect ride height	Adjust the ride height to proper setting. See Ride Height Adjustment in the Alignment & Adjustments section of this publication.
Excessive driveline vibration	Incorrect ride height	Adjust the ride height to proper setting. See Ride Height Adjustment in the Alignment & Adjustments section of this publication.
	Broken main support member assembly	Replace the main support member assembly.
	Air spring(s) not inflated	Check the air supply to air spring, repair as necessary.
Vehicle leans	Broken main support member assembly	Replace the main support member assembly.
	Axle connection not torqued correctly	Perform a U-bolt retorque procedure. See Torque Specification section of this publication.
	Worn main support member bushing	Replace the main support member bushing.
	Air spring(s) not inflated	Check the air supply to air spring, repair as necessary.
Suspension is noisy	Loose QUIK-ALIGN® attachment	Replace the QUIK-ALIGN connection and check suspension alignment. Check the frame hanger for wear around QUIK-ALIGN assembly and fasteners and replace as necessary.
	Loose U-bolts	Perform a U-bolt re-torque procedure. See Torque Specification section of this publication.
	Worn main support member isolator pads (if equipped)	Replace the worn isolator pads (if equipped).
Irregular tire wear	Worn main support member bushing	Replace the main support member bushing.
	Loose QUIK-ALIGN attachment	Replace the QUIK-ALIGN connection and check suspension alignment. Check frame hanger for wear around QUIK-ALIGN assembly and fasteners and replace as necessary.
Main support member broken between U-bolts	Loose U-bolts	Replace the main support assembly and all mating parts.
QUIK-ALIGN or frame hanger worn	Loose fasteners and/or the re-use of old fasteners	Replace all worn parts and replace fasteners with new Hendrickson coated fasteners.

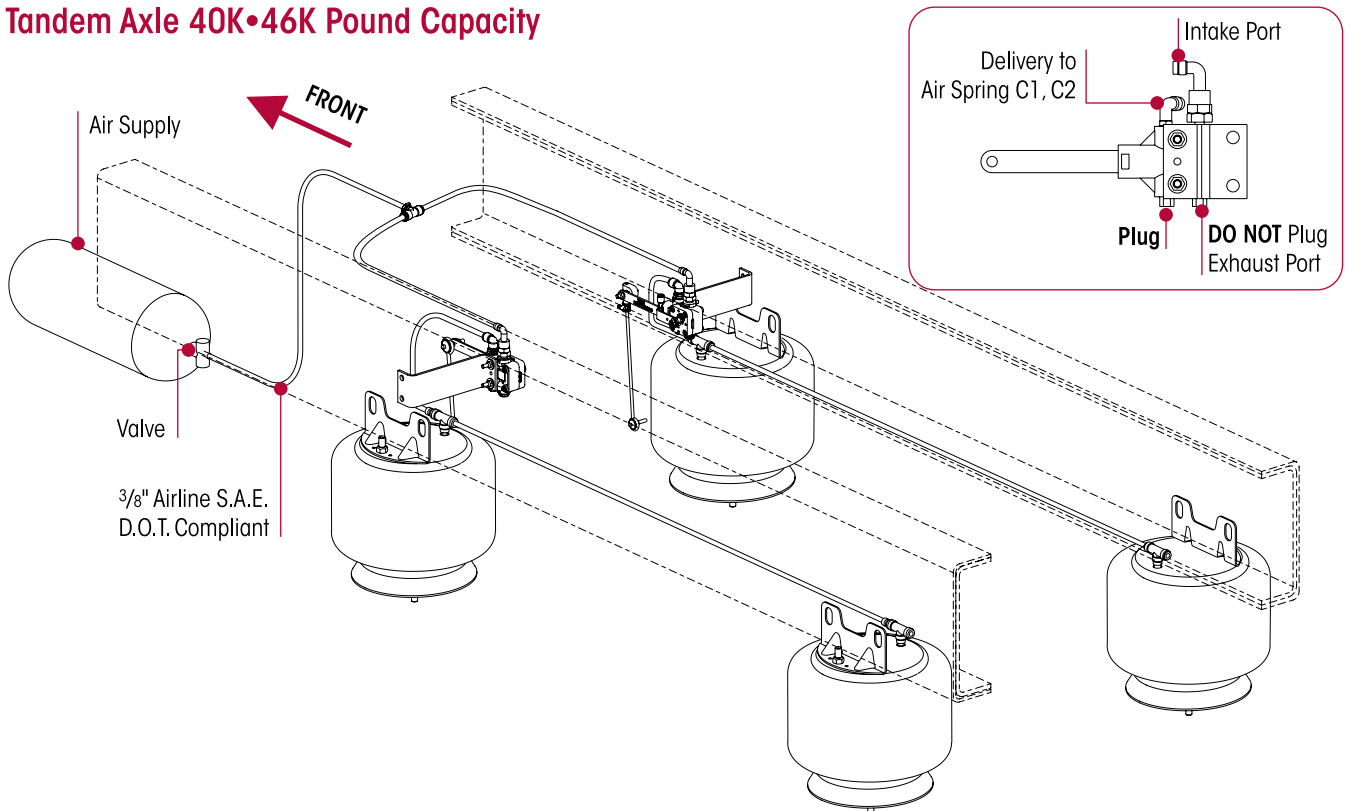


SECTION 11 Plumbing Diagrams

Single Axle 19K•21K•23K Pound Capacity



Tandem Axle 40K•46K Pound Capacity







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.*



www.hendrickson-intl.com

TRUCK COMMERCIAL VEHICLE SYSTEMS
800 South Frontage Road
Woodridge, IL 60517-4904 USA
855.743.3733 (Toll-free U.S. and Canada)
630.910.2800 (Outside U.S. and Canada)
Fax 630.910.2899

17730-245 Rev D 02-26

© 2004 – 2026 Hendrickson USA, L.L.C. All Rights Reserved. All trademarks shown are owned by Hendrickson USA, L.L.C., or one of the affiliates, in one or more countries.
Information contained in this literature was accurate at the time of publication. Product changes may have been made after the copyright date that are not reflected.

Printed in United States of America