



AD SERIES

MAINTENANCE AND PARTS LIST

AD Series

Heavy-Duty Drive Axle Air Suspension
Maintenance and Parts List Manual



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INTRODUCTION

This manual provides you information necessary for the care, maintenance, inspection, and safe operation of Holland Neway's AD Series drive axle air suspension models.

The Holland Neway Air Suspension is designed and engineered to provide trouble-free service. In the event of minor breakdown, such as a loss of air in the air springs, there are safety features designed into the suspension that will allow the vehicle to be driven CAUTIOUSLY at slow speed, to the nearest service facility.

This suspension uses air delivered from the truck/tractor air system to pressurize the air springs. The height control valve regulates the air pressure required for varying loads and maintains the design ride height. This suspension can provide a cushioned ride throughout the load range, from empty to fully loaded.

WARRANTY

Refer to the complete warranty for the country in which the product will be used. A copy of the written warranty is included with the product as well as in the suspension catalogs and the SAF-HOLLAND Group Web Site (www.safholland.us)

It may also be ordered directly from the address shown on the back cover.

NOTES, CAUTIONS, AND WARNINGS

You must read and understand all of the safety procedures presented in this manual before starting any work on the suspension.

Proper tools must be used to perform the maintenance and repair procedures described in this manual. Many of these procedures require special tools.

Failure to use the proper equipment could result in personal injury and/or damage to the suspension.

Safety glasses must be worn at all times when performing the procedures covered in this manual.

Throughout this manual, you will notice the terms "NOTE," "IMPORTANT," "CAUTION" and "WARNING" followed by important product information. So that you may better understand the manual, those terms are as follows:

NOTE: Includes additional information to enable accurate and easy performance of procedures.

IMPORTANT: Includes additional information that if not followed could lead to hindered product performance.

CAUTION Used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, may result in property damage.

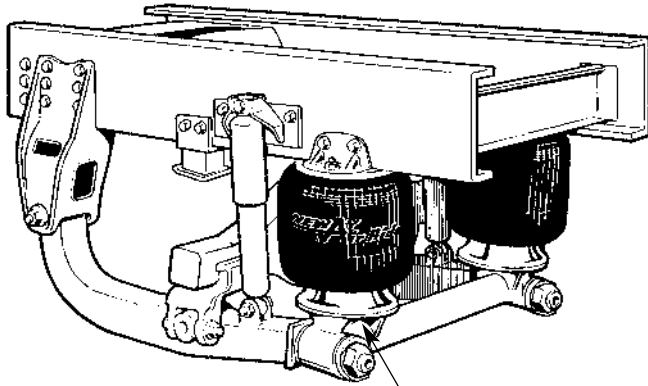
⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

MODEL IDENTIFICATION

A serial number tag is attached to the underside of the transverse beam air spring mounting plate for identification purposes. This tag supplies valuable information regarding the exact components used to manufacture the suspension.

FIGURE 1
Installed AD Series Suspension



Serial Number Tag location
(underside of plate)

Depending upon chassis builder configuration, the serial number tag may not call out the exact kit or parts list number. If so, the vehicle chassis builder should be able to identify the suspension model and its components using the vehicle's VIN number. Page 9 of this manual supplies a dimensional view of the various AD Series equalizing beams to aid in identifying equalizing beams to a particular series (i.e., AD-123, AD-126, AD-130).

IMPORTANT: Due to the custom built nature of each AD application, having the exact parts list used by the chassis builder is critical in determining proper replacement components.

It is recommended that you determine your specific model number, write that information below, and refer to it when obtaining information or replacement parts.

Model Number _____
 Serial Number _____
 Parts List Number _____
 In Service Date _____

MODEL NOMENCLATURE

AIR DRIVE

NO. OF AXLES

- 1 - SINGLE
- 2 - TANDEM
- 3 - TRIDEM

RATED CAPACITY (X 1,000 LBS.)

RIDE HEIGHT (INCHES)

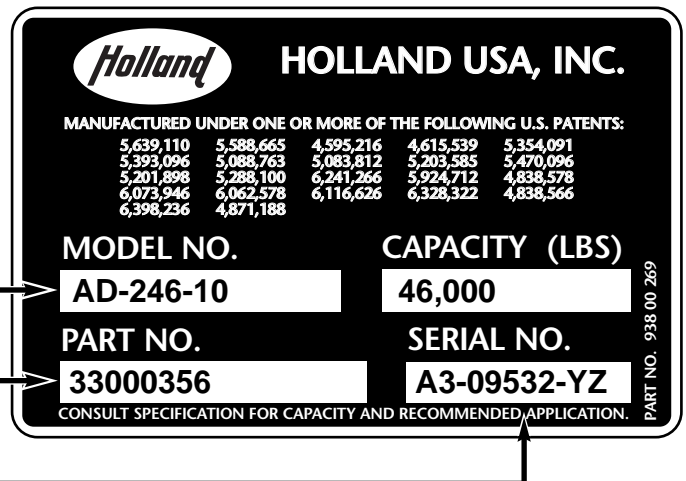
AD - 2 46 - 10

IMPORTANT: This manual applies to the suspension models or series listed below and for special orders of the same. It is very important to determine your specific model number, serial number, and parts list number. Record those numbers on this page, and refer to them when obtaining information or replacement parts.

Single Axle:	Tandem Axle:	Tridem Axle:
AD-123 AD-124*	AD-246 AD-248*	AD-369
AD-126 AD-127*	AD-252 AD-254*	AD-378
AD-130 AD-132*	AD-260 AD-264*	AD-390

* Denotes special uprating for fire apparatus applications only with SAF-HOLLAND Engineering approvals.

FIGURE 2
Serial Number Tag



OPERATING AND MAINTENANCE INSTRUCTIONS

In typical straight truck applications, the AD Series Suspension is controlled by dual height control valves.

In typical tractor applications, the AD Series suspension may be controlled by either a single or dual height control valve.

Buses and motor homes, depending on chassis builder specification, may use either single or dual height control valve.

When properly adjusted, the height control valve(s) will automatically maintain the desired ride height throughout the unloaded to loaded range. The height control valve automatically adds air to (or exhaust air from) the air suspension, to maintain a constant ride height.

Before putting the vehicle in operation, build air pressure in excess of 70 PS.I.G. This will open the pressure protection valve, and allow air flow to the height control valves.

IMPORTANT:

ROUTINE MAINTENANCE AND DAILY INSPECTION

Daily Inspection

Daily or before each trip, check the suspension to be sure it is fully operational and visually free of any obvious signs of failure in any major component. Visually inspect air springs for sufficient and equal pressure and to see that suspension is set at proper ride height. See page 10 for ride height measurement and re-setting instructions. Service as necessary.

Initial 5,000 Mile (8,000 KM) or 100 Hours of Service Inspection

1. Suspension ride height (underside of frame to centerline of axle) **MUST BE WITHIN $\pm 1/4$ " OF RECOMMENDED DESIGN HEIGHT.** See page 10 for instructions on measuring ride height.

CAUTION An improperly set ride height could result in suspension component damage and/or poor vehicle ride performance.

2. After initial 5,000 miles (8,000 KM) or 100 hours of service, inspect bolts and nuts at the pivot connections, transverse beam connections, and axle connections to assure they are properly torqued. Check all other nuts and bolts for proper torque. Re-torque as necessary thereafter.
3. With vehicle on level surface and air pressure in excess of 70 PS.I.G., all air springs should be of sufficient and equal firmness.

NOTE: Height control valves control all air springs. Check all fittings for air leaks, by applying a soapy water solution and checking for bubbles at all air connections and fittings.

Routine Maintenance – 50,000 Miles (80,000 KM) or 1,000 Hours of Service or as Needed

At 50,000 miles or 1,000 hours of service, or when servicing vehicle brake system, inspect suspension components per 5,000 mile inspection. Also check all other suspension components for any sign of damage, looseness, wear or cracks. Replace any damaged parts to prevent equipment breakdown.

TORQUE CHART

SIZE	ITEM	TORQUE IN FT. LBS. AD MODELS	NM
1/2" and 3/4"	Air Spring	30-35	40-47
1 1/8"	Pivot	600	813
1 1/4"	Pivot (AD-130 only)	700	949
3/4"	Shock Absorber	150	203
2 1/4"	Transverse Beam	500-1000	677-1356
1"-8x6"	Bar Pin Bolt	680	922
3/4"-10x7-1/2"	Thru Bolt	135	183

TORQUE NOTE:

Torque specifications are with **clean** threads.

IMPORTANT:

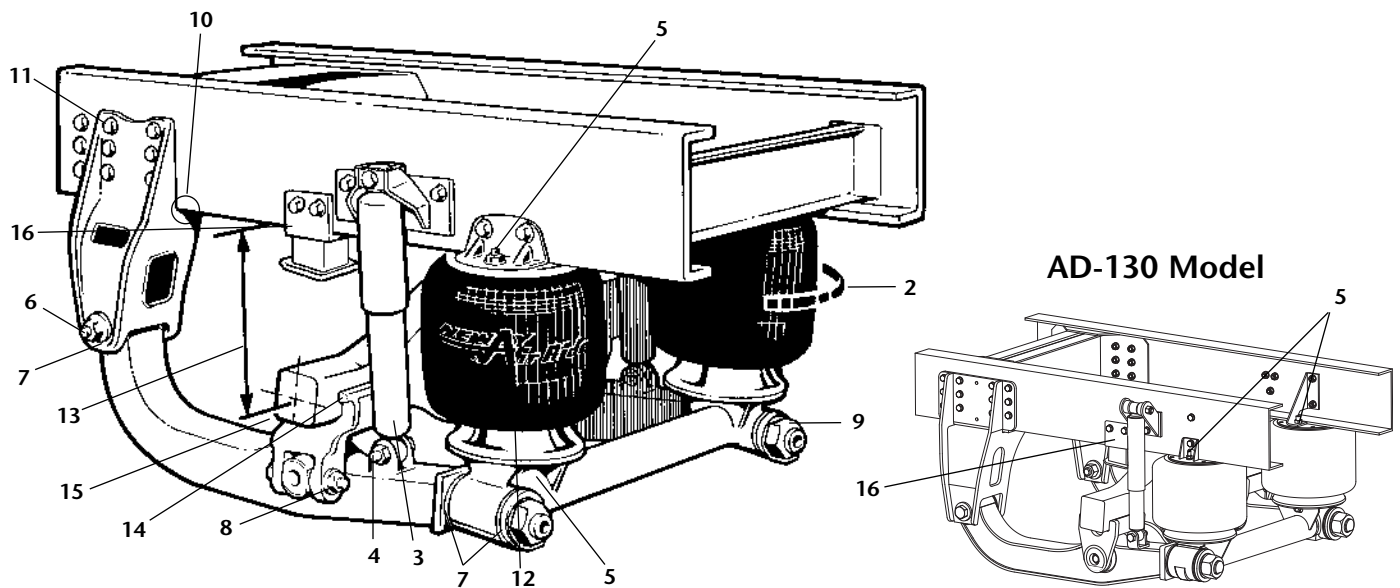
Use of special lubricants with friction modifiers, such as Anti-Seize or Never-Seize, without written approval from Holland Engineering, will void warranty and could lead to bolt failure or other component issues.

TRANSVERSE BEAM:

AD Models: Torque to specification, then bend the tab washer over the heavy hex nut. Use a hammer to pound the tab against a flat or edge of the nut.

PRE-OPERATIONAL CHECKLIST

FIGURE 3
AD-123/126 Models



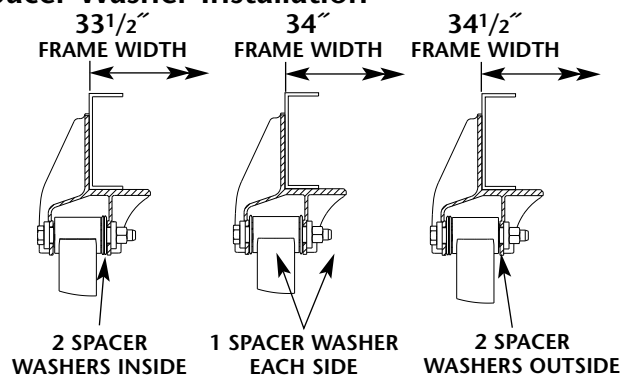
Prior to placing unit in service, check the following items:

1. Build the vehicle's air pressure above 70 P.S.I.G. With the vehicle shut off, check the system for air leaks.
2. Minimum clearance around air springs must be $1\frac{1}{2}$ " when fully laden, 2.0" when unladen.
3. Check the shock absorbers for proper installation.
4. $\frac{3}{4}$ " Shock absorber hardware must be torqued to the specifications found in the Torque Chart on page 4.
5. $\frac{1}{2}$ " and $\frac{3}{4}$ " Air spring mounting hardware must be torqued to the specifications found in the Torque Chart on page 4.
6. A $\frac{1}{8}$ " pivot nut ($\frac{1}{4}$ " pivot nut for AD-130 Series) must be torqued to the specifications found in the Torque Chart on page 4.

NOTE: As of June 2002, all pivot bolts supplied by SAF-HOLLAND will have a pre-applied coating (silver in color) that will provide thread lubrication throughout the expected service life of the bolts. See page 17 for additional information.

7. Check for proper installation of the spacer washers at the transverse beam and pivot connection.

FIGURE 4
Spacer Washer Installation

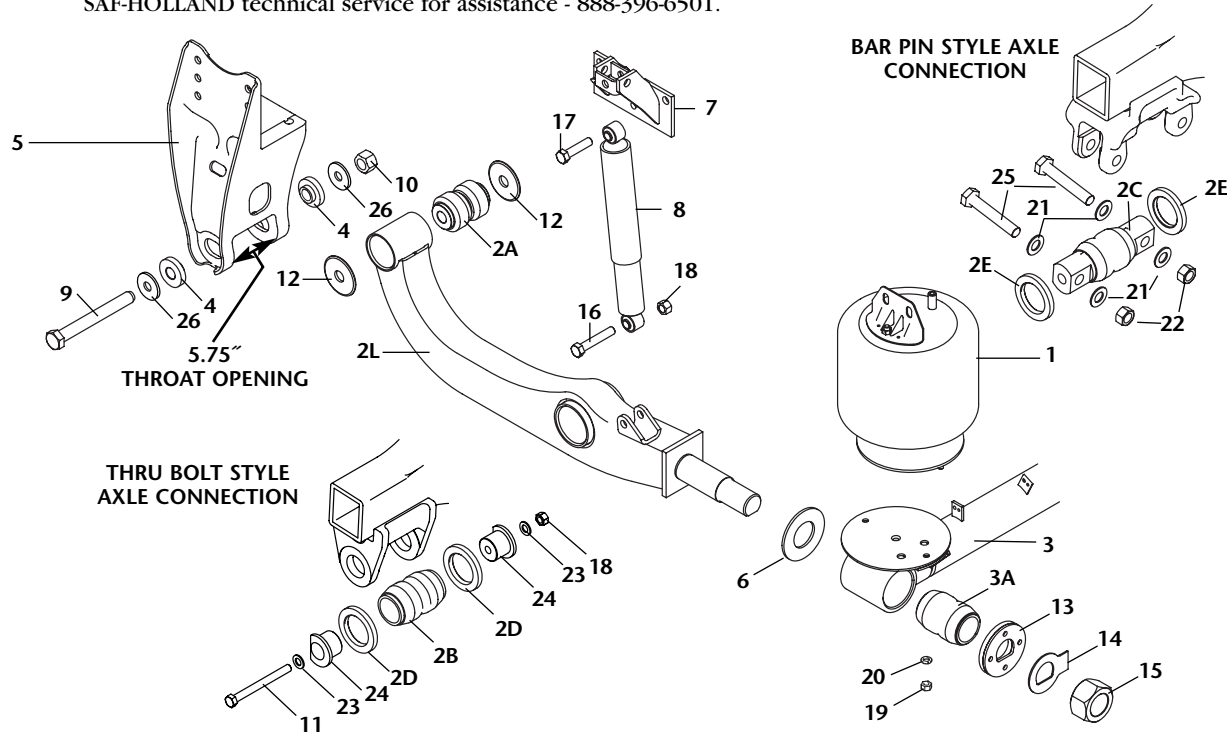


NOTE: Different frame widths require various spacer washer placement at the pivot connection.

8. Axle hanger bracket connection nuts must be torqued, see Torque Chart on page 4.
9. The transverse beam connection nut ($2\frac{1}{4}$ ") must be torqued to the specifications found in the Torque Chart on page 4. Bend the tab over after the nut is torqued.
10. The lower flange of the frame bracket must be securely attached by fasteners to the bottom of the crossmember.
11. $\frac{3}{4}$ " Frame bracket mounting bolts must be torqued to chassis builder specifications. chassis builder-supplied spacers must be used between the frame bracket and crossmember.
12. With the vehicle on a level surface, and the air supply pressure in excess of 70 P.S.I.G., check all the air springs for equal firmness.
13. The suspension ride height should be within $\pm \frac{1}{4}$ " of the recommended design height. See Height Control Valve Adjustment for the proper setting, page 10.
14. Welds connecting the adapters to the axle must be per axle manufacturer's specifications.
15. The pinion angle should be within chassis builder specifications.
16. Be sure that functional axle stops are present. The axle stop design should be adequate for the capacity and proper height; and should distribute the vertical forces sufficiently on the axle housing to prevent damage to the vehicle frame and/or axle. Unless supplied by SAF-HOLLAND, the axle stop is the responsibility of the vehicle chassis builder.

PARTS LIST – AD-123/246/369 SERIES

IMPORTANT: AD Series Suspension components vary by assembly part number and OEM/Chassis builder specifications. To ensure proper part number identification before placing order, refer to OEM/Chassis builder's specifications or visually check component to be replaced for part number. If part number can not be identified or confirmed please contact SAF-HOLLAND technical service for assistance - 888-396-6501.



ITEM #	AD-123/246/369 PART NO.	DESCRIPTION	AXLE GROUPINGS		
			SINGLE QTY.	TANDEM QTY.	TRIDEM QTY.
1	**	Air Spring with mounting bracket	2	4	6
2L	**	Eq. Beam Assembly - Left Hand - Thru Bolt Design	1	2	3
2R	**	Eq. Beam Assembly - Right Hand - Thru Bolt Design	1	2	3
2L	**	Eq. Beam Assembly - Left Hand - Bar Pin Design	1	2	3
2R	**	Eq. Beam Assembly - Right Hand - Bar Pin Design	1	2	3
2A	900 08 252	Rubber Bushing - Front Pivot	2	4	6
2B	900 08 008	Bushing - Beam Center - Thru Bolt style	2	4	6
2C	900 08 175	Bushing - Beam Center - Bar Pin style	2	4	6
2D	900 01 065	Washer for Thru Bolt style connection	4	8	12
2E	900 01 205	Washer for Bar Pin style connection	4	8	12
3	**	Transverse Beam Assembly	1	2	3
3A	900 08 219	Bushing - Transverse Beam	2	4	6
4	900 08 120****	Alignment Bushing (Qty. per adjustable bracket)**	2	4	6
5	**	Frame Bracket - LH adjustable (requires item 4)	1	2	3
	**	Frame Bracket - RH fixed	1	2	3
6	936 00 498	Spacer Washer	2	4	6
7	**	Upper Shock Bracket	2	4	6
8	**	Shock Absorber	2	4	6
9	932 01 055	Hex Bolt 1-1/8" - 7 x 9.53"	2	4	6
10	934 00 506	Hex Nut 1-1/8" - 7	2	4	6
11	930 03 693	Hex Bolt 3/4" - 10 x 7-1/2" (Thru Bolt Design only)	2	4	6
12	936 00 502	Washer - Pivot Spacer	4	8	12
13	905 36 006	Locking Spacer Assembly	2	4	6
14	936 00 533	Lock Tab Washer	2	4	6
15	934 00 607	Heavy Hex Nut 2-1/4" - 8	2	4	6
16	930 03 615	Cap Screw 3/4" - 10 x 4.25"	2	4	6
17	930 03 591	Cap Screw 3/4" - 10 x 3.25"	2	4	6
18	934 00 492	Hex Nut 3/4"	2***	4***	6***
19	934 00 136	Hex Nut 1/2"	2	4	6
20	936 00 072	Lock Washer 1/2"	2	4	6
21	936 00 168	Washer Flat Narrow 1"	8	16	24
22	934 00 502	Hex Nut Lock 1"-8	4	8	12
23	936 00 156	Washer Flat Narrow (Thru) 3/4"	4	8	12
24	900 01 002	Bushing Adapter (Thru)	4	8	12
25	930 04 301	Cap Screw - 1" - 8 x 6" Gr. 8 (Bar Pin Only)	4	8	12
26	936 00 174	Washer Flat Narrow 1.12" (Hardened)	4	8	12

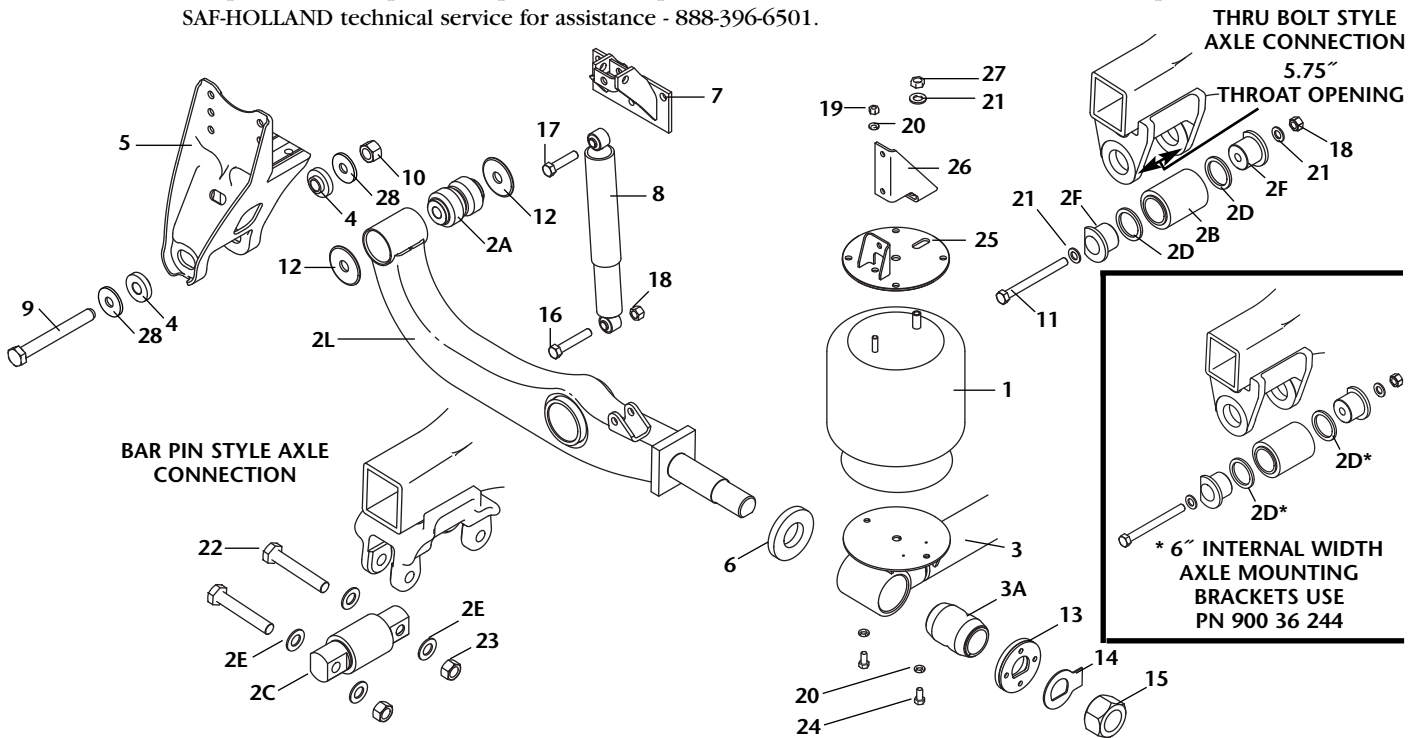
** Refer to the chassis builder specifications to properly identify the Holland part numbers for the components noted with " ** ". A serial tag may be affixed to the transverse beam that also denotes the Holland kit number that will provide the individual component numbers needed.

*** The quantity shown is for a bar pin style unit. If a thru bolt style is used, increase the quantity by two per axle.

**** Fabricated frame brackets may use a different alignment bushing. Part number shown is for cast hanger. Provide kit # from serial tag or frame bracket part number from OEM build (VIN) to SAF-HOLLAND service for applicable part number.

PARTS LIST – AD-126/252/378 SERIES

IMPORTANT: AD Series Suspension components vary by assembly part number and OEM/Chassis builder specifications. To ensure proper part number identification before placing order, refer to OEM/Chassis builder's specifications or visually check component to be replaced for part number. If part number can not be identified or confirmed please contact SAF-HOLLAND technical service for assistance - 888-396-6501.



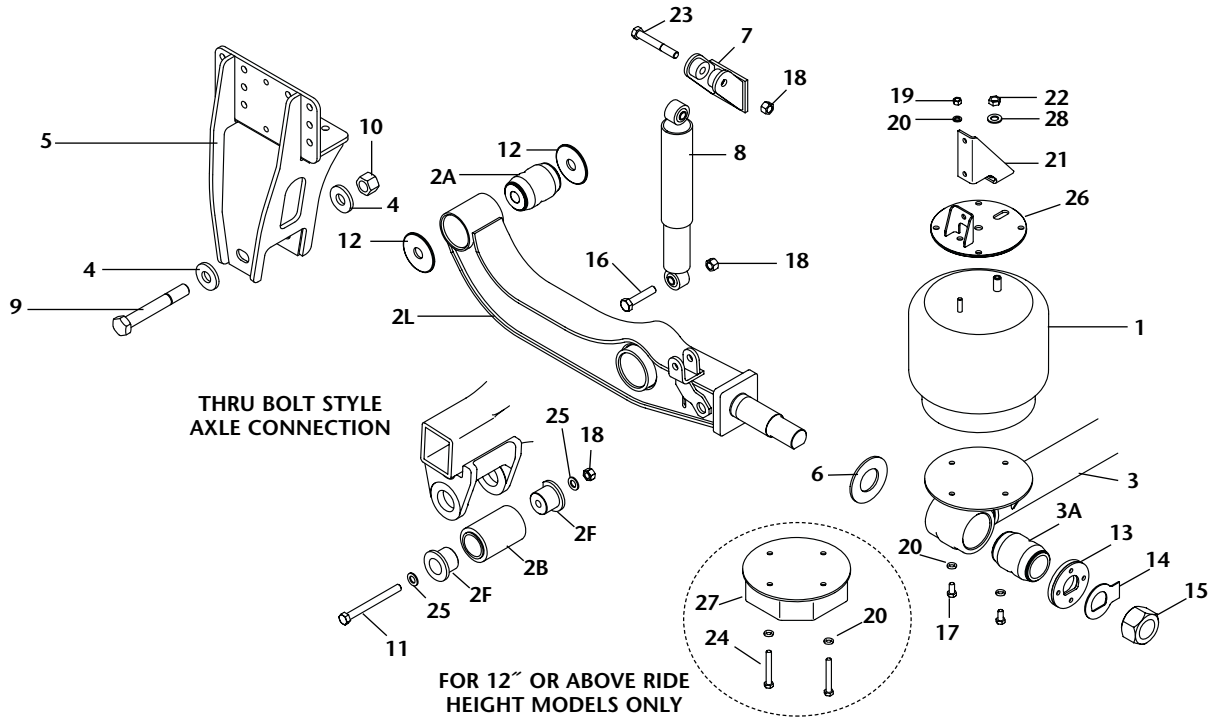
ITEM #	AD-126/252/378 PART NO.	DESCRIPTION	AXLE GROUPINGS		
			SINGLE QTY.	TANDEM QTY.	TRIDEM QTY.
1	**	Air Spring	2	4	6
2L	**	Eq. Beam Assembly - Left Hand - Thru Bolt Design (shown)	1	2	3
2R	**	Eq. Beam Assembly - Right Hand - Thru Bolt Design	1	2	3
2L	**	Eq. Beam Assembly - LH - Bar Pin Design (side view)	1	2	3
2R	**	Eq. Beam Assembly - Right Hand - Bar Pin Design	1	2	3
2A	900 08 252	Bushing - Front Pivot	2	4	6
2B	900 08 195	Bushing - Beam Center - Thru Bolt style	2	4	6
2C	905 08 012	Bushing - Beam Center - Bar Pin style	2	4	6
2D	900 36 210	Washer for Thru Bolt style connection (see inset diagram)	4	8	12
2E	936 00 168	Washer for Bar Pin style connection	8	16	24
2F	900 01 002	Adapter Bushing	4	8	12
3	**	Transverse Beam Assembly	1	2	3
3A	900 08 219	Bushing - Transverse Beam	2	4	6
4	900 08 120****	Alignment Bushing (qty. per Adj. bracket)**	2	4	6
5	**	Frame Bracket - LH adjustable (Shown) (Requires Item 4)	1	2	3
	**	Frame Bracket - RH fixed	1	2	3
6	900 36 209	Washer	2	4	6
7	**	Upper Shock Bracket	2	4	6
8	**	Shock Absorber	2	4	6
9	932 01 055	Cap Screw 1.12" - 7 x 9.53"	2	4	6
10	934 00 506	Lock Nut 1.12" - 7	2	4	6
11	930 03 693	Cap Screw 3/4" - 10 x 7 1/2" (Thru Bolt Design only)	2	4	6
12	936 00 502	Washer - Pivot Spacer	4	8	12
13	905 36 006	Locking Spacer Assembly	2	4	6
14	936 00 533	Tab Washer	2	4	6
15	934 00 607	Heavy Hex Nut 2 1/4" - 8	2	4	6
16	930 03 615	Cap Screw 3/4" - 10 x 4.25"	2	4	6
17	930 03 591	Cap Screw 3/4" - 10 x 3.25"	2	4	6
18	934 00 492	Lock Nut 3/4"	2 ***	4 ***	6 ***
19	934 00 136	Hex Nut 1/2"	2	4	6
20	936 00 072	Lock Washer 1/2"	6	12	18
21	936 00 156	Washer Flat Narrow 0.75"	2	4	6
22	930 04 301	Bolt Hex 1" - 8x6" Gr 8	4	8	12
23	934 00 502	Nut Hex Lock 1" - 8	4	8	12
24	930 02 893	Bolt Hex 0.5" - 13x1" Gr 2	4	8	12
25	905 31 001	Air Spring Mounting Plate	2	4	6
26	900 23 131	Brace	2	4	6
27	934 00 417	Nut Hex Lock Thin .75" - 16 Gr A	2	4	6
28	936 00 174	Washer Flat Narrow 1.12" (Hardened)	4	8	12

** Refer to the chassis builder specifications to properly identify the Holland part numbers for the components noted with " ** ". A serial tag may be affixed to the transverse beam that also denotes the Holland kit number that will provide the individual component numbers needed. *** The quantity shown is for a bar pin style unit. If a thru bolt style is used, increase the quantity by two per axle.

**** Fabricated frame brackets may use a different alignment bushing. Part number shown is for cast hanger. Provide kit # from serial tag or frame bracket part number from OEM build (VIN) to SAF-HOLLAND service for applicable part number.

PARTS LIST – AD-130/260/390 SERIES

IMPORTANT: AD Series Suspension components vary by assembly part number and OEM/Chassis builder specifications. To ensure proper part number identification before placing order, refer to OEM/Chassis builder's specifications or visually check component to be replaced for part number. If part number can not be identified or confirmed please contact SAF-HOLLAND technical service for assistance - 888-396-6501.



ITEM #	AD-130/260/390 PART NO.	DESCRIPTION	AXLE GROUPINGS		
			SINGLE QTY.	TANDEM QTY.	TRIDEM QTY.
1	**	Air Spring with mounting bracket	2	4	6
2L	**	Eq. Beam Assembly - Left Hand - Thru Bolt Design (shown)	1	2	3
2R	**	Eq. Beam Assembly - Right Hand - Thru Bolt Design	1	2	3
2A	900 08 256	Bushing - Front Pivot	2	4	6
2B	900 08 225	Bushing - Beam Center - Thru Bolt style	2	4	6
2F	900 01 349	Adapter Bushing	4	8	12
3	**	Transverse Beam Assembly	1	2	3
3A	900 08 135	Bushing - Transverse Beam	2	4	6
4	900 08 232	Alignment Bushing (qty. per Adj. Bracket)	2	4	6
5	**	Frame Bracket - LH adjustable (Shown, requires Item 4)	1	2	3
6	**	Frame Bracket - RH fixed	1	2	3
6	936 00 498	Washer	2	4	6
7	**	Upper Shock Bracket	2	4	6
8	**	Shock Absorber	2	4	6
9	932 01 068	Cap Screw 1.25" - 7 x 9"	2	4	6
10	934 00 510	Lock Nut 1.25" - 7	2	4	6
11	930 03 705	Cap Screw 3/4" - 10 x 8.00" (Thru Bolt Design only)	2	4	6
12	936 00 546	Washer - Pivot Spacer	4	8	12
13	905 36 006	Locking Spacer Assembly	2	4	6
14	936 00 533	Tab Washer	2	4	6
15	934 00 607	Heavy Hex Nut 2 1/4" - 8	2	4	6
16	930 03 603	Cap Screw 3/4" - 10 x 3.75"	2	4	6
17	930 02 893	Cap Screw 1/2" - 13 x 1"	4	8	12
18	934 00 492	Lock Nut 3/4"	6	12	18
19	934 00 136	Hex Nut 1/2"	2	4	6
20	936 00 072***	Lock Washer 1/2"	6	12	18
21	900 23 131	Brace Angle	2	4	6
22	934 00 417	Hex Nut Thin - 0.75" - 16 Gr A	2	4	6
23	930 03 645	Cap Screw 3/4" - 10 x 5.5"	2	4	6
24	930 02 961	Bolt Hex 0.5"-13 x 4" Long Gr 5 - for 12" ride height models only	4	8	12
25	936 00 156	Washer Flat Narrow 0.75"	4	8	12
26	905 31 001	Plate Air Spring Mounting Upper	2	4	6
27	905 36 009	Spacer Air Spring Assembly - for 12" or above ride height models only	2	4	6

** Refer to the chassis builder specifications to properly identify the Holland part numbers for the components noted with " ** ". A serial tag maybe affixed to the transverse beam that also denotes the Holland kit number that will provide the individual component numbers needed.

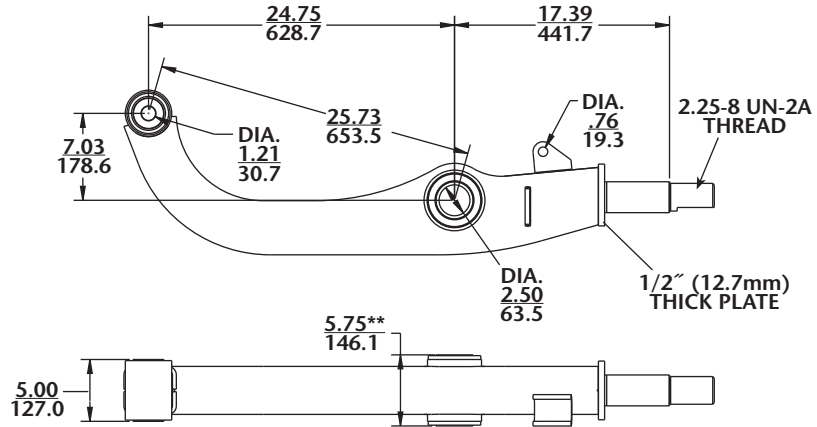
***For 12" ride height models, increase quantity by 4 per axle.

EQUALIZING BEAM MODEL IDENTIFICATION

(Left Hand/Road Side Beams Shown)

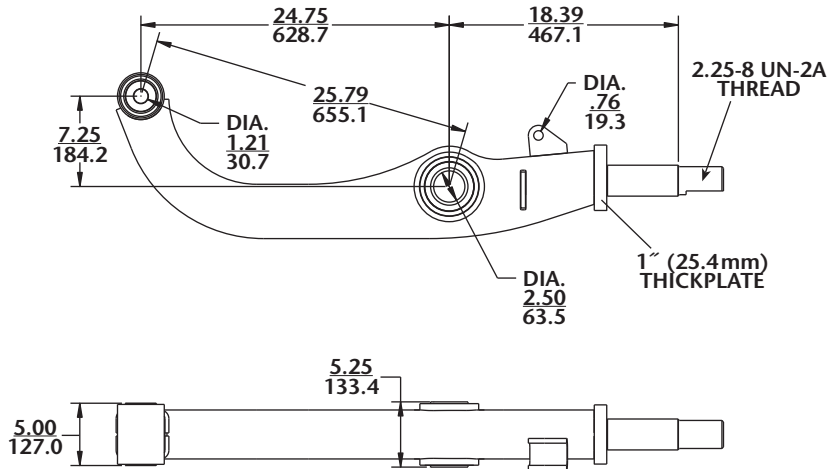
Measurements on this page show $\frac{\text{INCHES}}{\text{MILLIMETERS}}$

MODEL: AD-123 / 246 / 369

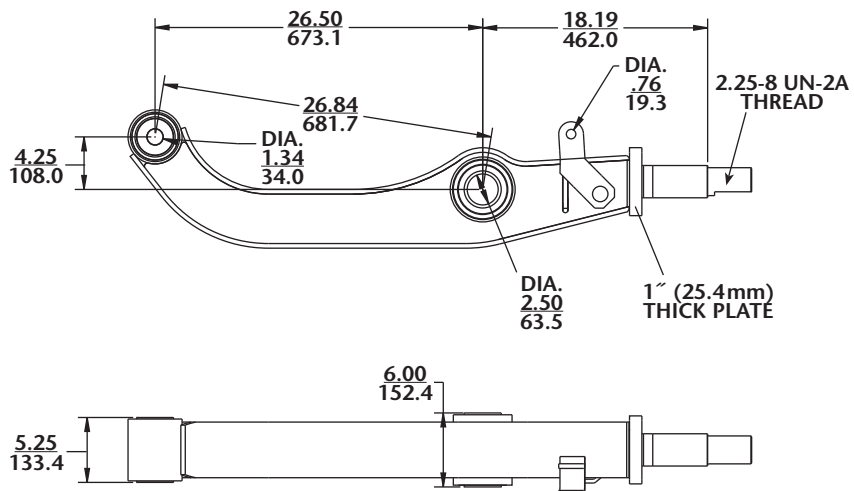


** Dimension includes spacer washer. Dimension is 5.25" (133.4mm) without spacers included.

MODEL: AD-126 / 252 / 378



MODEL: AD-130 / 260 / 390



HEIGHT CONTROL VALVE ADJUSTMENT

Procedure

1. Prior to adjustment, drive the vehicle in a straight line for at least 2 vehicle lengths to release any possible bushing wind up. The vehicle must be on level ground and in an unladen condition. Chock the front tires to prevent the vehicle from rolling forward or backward. If vehicle is equipped with only one height control valve go to Step 3.

⚠ WARNING Failure to properly support suspension during maintenance may allow suspension to fall which, if not avoided, could result in death or serious injury.

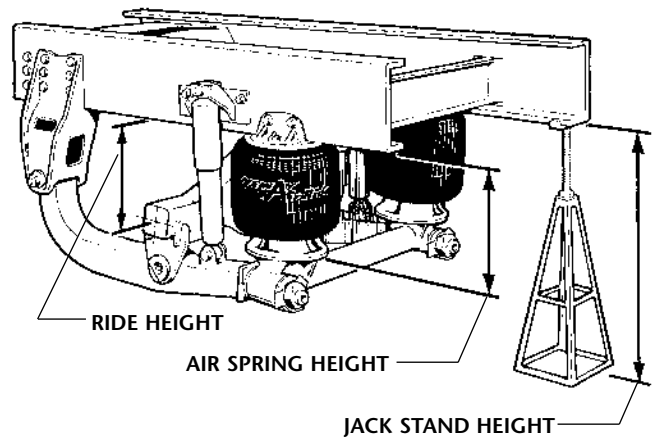
2. Disconnect linkages at lower brackets, push control arms to “up” position, and raise vehicle. Then position jack stands (one each side) at proper ride height between the vehicle frame and the ground. With jack stands in position, push control arms to “down” position lowering vehicle and deflating all air from air springs and vehicle system.

NOTE: It may be necessary to shim jack stands to achieve proper ride height.

NOTE: It is not necessary to use air system for jacking; hydraulic or other shop lift devices may be used to raise vehicle provided they are of adequate size.

3. Move height control arms to 45° down position for 10 - 15 seconds.
4. Loosen the 1/4” adjusting lock nuts on the height control valves, reconnect linkage at lower brackets, tighten to 4 - 5 ft. lbs.
5. Tighten the 1/4” adjusting lock nut on the height control valves 2 - 4 ft. lbs. (lubricated) torque. Remove the locating pin.

FIGURE 5
AD-123/126 Models

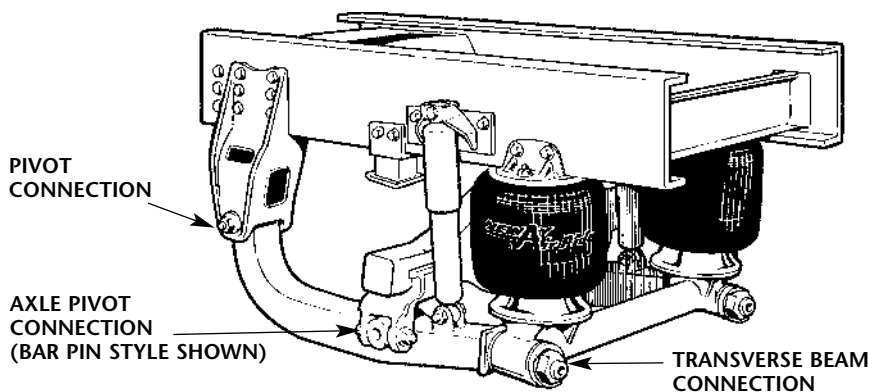


6. Pressurize the air system with a constant supply of air in excess of 70 PS.I.G. All air springs should inflate and the suspension should be at a proper ride height. Inspect the air system and eliminate any air leaks. The height control valve may have a built-in time delay feature, therefore, several seconds may elapse prior to air flow.

NOTE: If proper ride height is not obtained or air springs do not inflate properly, check air pressure, check for proper piping and repeat above steps. Then, if not functioning properly, contact SAF-HOLLAND Technical Service for assistance.

CAUTION Do not overload the axle or suspension. If overloaded, suspension component damage may occur.

SERVICE REPAIR KITS (SRK)



When servicing your AD Series suspension, use the convenient service repair kits noted below. Descriptions are found on the following pages.

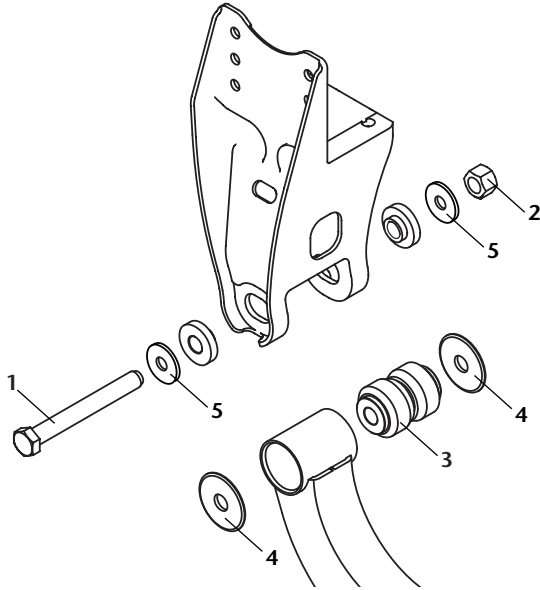
NOTE: One (1) SRK Required per axle.

Model	Front Pivot Connection	Axle thru bolt Connection	Axle Bar Pin Connection	Transverse Beam Connection
AD-123/246/369	SRK-563	SRK-80	SRK-452	SRK-214
AD-126/252/378	SRK-563	SRK-471	SRK-450	SRK-472
AD-130/260/390	SRK-565	SRK-498	N/A	SRK-500

SERVICE REPAIR KITS *continued*

NOTE: New alignment bushings recommended when alignment bushing surface become deformed. Refer to parts list.

NOTE: Item 4 is not used on former Ford production units.



Pivot Connection — Heavy Duty AD-123/-126 Series SRK-563: 481 00 427 (Replaces SRK-200)

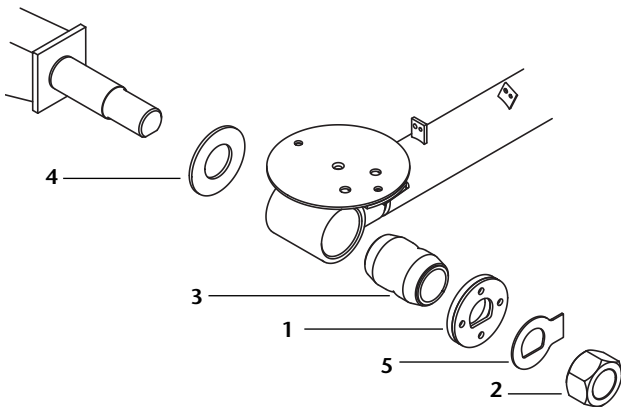
ITEM	PART NO.	DESCRIPTION	QTY.
1	932 01 055	Rod Bolt 1 ¹ / ₈ " -7 x 9.53"	2
2	934 00 506	Lock Nut 1 ¹ / ₈ " - 7	2
3	900 08 252	Bushing	2
4	936 00 502	Spacer Washer 1 ¹ / ₈ "	4
5	936 00 174	Washer Flat Narrow 1.12" (Hardened)	4
	XL-AK399-01	Torque Specification Decal	1
	XL-AK424	AD Service Repair Kits Literature	1

Pivot Connection — Heavy Duty AD-130 Series SRK-565: 481 00 429 (Replaces SRK-499)

ITEM	PART NO.	DESCRIPTION	QTY.
1	932 01 068	Rod Bolt 1 ¹ / ₄ " -7 x 9.00"	2
2	934 00 510	Lock Nut 1 ¹ / ₄ " - 7	2
3	900 08 256	Bushing	2
4	936 00 546	Spacer Washer	4
	XL-AK399-01	Torque Specification Decal	1
	XL-AK424	AD Service Repair Kits Literature	1

Transverse Beam Connection — AD-123 Series SRK-214: 481 00 276

ITEM	PART NO.	DESCRIPTION	QTY.
1	905 36 006	Lock Spacer	2
2	934 00 607	Heavy Nut 2 ¹ / ₄ "-8	2
3	900 08 219	Bushing	2
4	936 00 498	Washer – Spacer	2
5	936 00 533	Tab Washer	2



Transverse Beam Connection — AD-126 Series SRK-472: 481 00 335

ITEM	PART NO.	DESCRIPTION	QTY.
1	905 36 006	Lock Spacer	2
2	934 00 607	Heavy Nut 2 ¹ / ₄ "-8	2
3	900 08 219	Bushing	2
4	900 36 209	Washer – Spacer	2
5	936 00 533	Tab Washer	2

Transverse Beam Connection — AD-130 Series SRK-500: 481 00 364

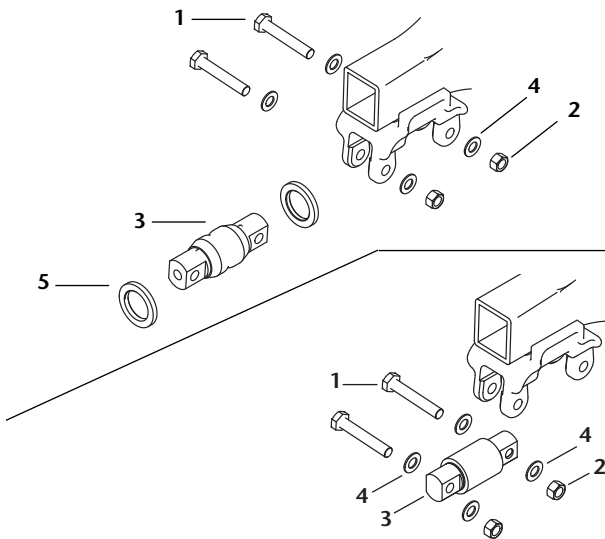
ITEM	PART NO.	DESCRIPTION	QTY.
1	905 36 006	Lock Spacer	2
2	934 00 607	Heavy Nut 2 ¹ / ₄ "-8	2
3	900 08 135	Bushing	2
4	936 00 498	Washer – Spacer	2
5	936 00 533	Tab Washer	2

Transverse Beam Connection — AD-130 Series

SRK-564: 481 00 428

ITEM	PART NO.	DESCRIPTION	QTY.
4	900 36 165	Spacer Washer	2
5	936 00 533	Tab Washer	2

NOTE: See illustration at bottom of page 14.



Axle Bar Pin Connection — AD-123 Series

SRK-452: 481 00 315

ITEM	PART NO.	DESCRIPTION	QTY.
1	930 04 301	Cap Screw - Bar Pin Only 1" - 8 x 6" Gr. 8	4
2	934 00 502	Hex Nut Lock 1"-8	4
3	905 08 175	Bushing - Beam Center	2
4	936 00 168	Washer Flat Narrow 1"	8
5	900 01 205	Spacer Washer	4

Axle Bar Pin Connection — AD-126 Series

SRK-450: 481 00 313

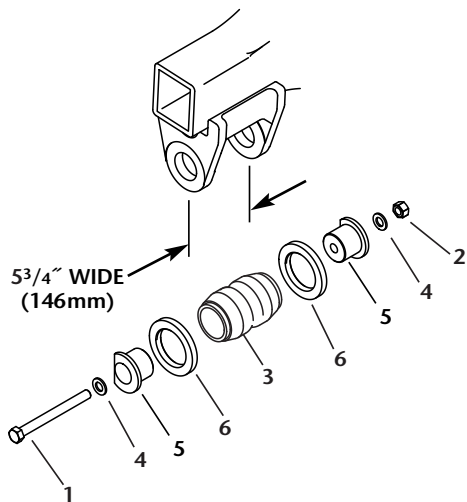
ITEM	PART NO.	DESCRIPTION	QTY.
1	930 04 301	Cap Screw - Bar Pin Only 1" - 8 x 6" Gr. 8	4
2	934 00 502	Nut Hex Lock 1" - 8	4
3	905 08 012	Bushing - Beam Center	2
4	936 00 168	Washer Flat Narrow 1"	8

NOTE: The AD-130 Series does not utilize the bar pin connection.

Axle Thru Bolt Connection — AD-123 Series

SRK-80: 481 00 124

ITEM	PART NO.	DESCRIPTION	QTY.
1	930 03 693	Hex Bolt 3/4" - 10 x 7 1/2"	2
2	934 00 492	Hex Nut 3/4"	2
3	900 08 008	Bushing - Beam Center	2
4	936 00 156	Washer Flat Narrow 3/4"	4
5	900 01 002	Adapter Bushing	4
6	900 01 065	Spacer Washer	4



Axle Thru Bolt Connection — AD-126 Series

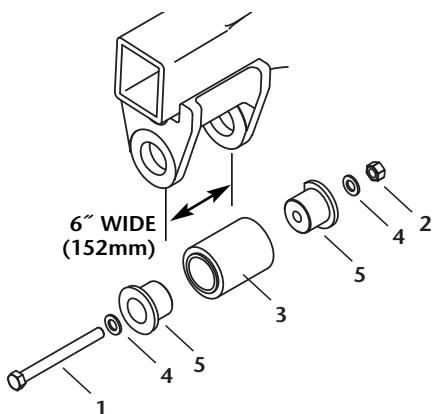
SRK-471: 481 00 334

ITEM	PART NO.	DESCRIPTION	QTY.
1	930 03 693	Hex Bolt 3/4" - 10 x 7 1/2"	2
2	934 00 492	Hex Nut 3/4"	2
3	900 08 195	Bushing - Beam Center	2
4	936 00 156	Washer Flat Narrow 3/4"	4
5	900 01 002	Adapter Bushing	4
6	900 36 210	Spacer Washer	4

Axle Thru Bolt Connection — AD-130 Series

SRK-498: 481 00 362

ITEM	PART NO.	DESCRIPTION	QTY.
1	930 03 705	Hex Bolt 3/4" - 10 x 8"	2
2	934 00 492	Hex Nut 3/4"	2
3	900 08 225	Bushing - Beam Center	2
4	936 00 156	Washer Flat Narrow 3/4"	4
5	900 01 349	Adapter Bushing	4



REPLACEMENT INSTRUCTIONS

Shock Absorbers

NOTE: If an oil mist covers a shock absorber, this condition is normal; therefore, it is not necessary to replace the shock absorber. A certain degree of vapor is normal and actually necessary for lubrication of the rod. To check to see if a shock is working properly, drive the vehicle at moderate speed for a approximately 10 minutes. Return and lightly touch the shock below the dust cover. If shock is hot or warm to the touch, the valving inside the shock is working.

IMPORTANT: DO NOT touch shock or injury could occur.

1. It is recommended the vehicle be unloaded. Block vehicle to prevent rolling. Vehicle must be at approximate ride height to assure that tension is relieved on shocks.
2. Remove upper and lower mounting bolts and shock absorber.

CAUTION Physical contact with hot shock absorbers may result in minor or moderate burns to the skin.

3. Replace with correct shock absorber, and reinstall bolts.
4. Torque nuts. See page 4 for torque specifications.

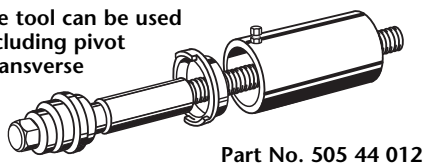
Bushings – Equalizing Beam – Replacement

The rubber bushings in the equalizing beam may be replaced using a hydraulic press with a capacity of 10,000 lbs. or greater. There is a 30,000 lb. minimum for the metal sleeved AD-126 and the AD-130 axle beam hanger bushing or use a Bushing Service Tool.

NOTE: SAF-HOLLAND Bushing Service Tool, Part No. 505 44 012 (FIGURE 6), is available to ease removal and replacement of bushings. Contact your OEM Service Center for details.

FIGURE 6 Bushing Service Tool

The bushing service tool can be used on all bushings, including pivot connections and transverse beam connections.



To replace the bushings in an equalizing beam, first remove the beam from the vehicle. The following procedure is recommended:

1. It is recommended the vehicle be unloaded. Block the vehicle to prevent rolling. Raise vehicle frame 2" above ride height and support with adequate jack stands. The height control valve(s) may be used to raise vehicle.

WARNING Failure to properly support suspension during maintenance may allow suspension to fall which, if not avoided, could result in death or serious injury.

2. Exhaust air by:
 - A. Using the height control valve – disconnect link at lower connection, then rotate control arm to exhaust (approx. 45° down) position. Drain all air from air reservoir, or
 - B. Disconnecting air supply line from air spring.

3. Disconnect shock absorbers, and air springs at lower connections.
4. Disconnect transverse beam, axle connection and pivot connection.

NOTE the position of the following:

- Pivot: Note spacer placement (see Step 7 on page 5).
- Axle: Note the pinion angle.
- Transverse beam: Note spacer position and orientation.

5. Support the beam. Press out old bushings with a hydraulic press.

CAUTION During the pressing operation, the beam support fixture must be securely mounted to the hydraulic press to prevent the beam from shifting abruptly which, if not avoided, may result in minor or moderate injury.

6. Clean out bushing receptacles in beam of all foreign material before pressing new bushings into the beam.

NOTE: DO NOT use an open flame or other heat source to remove the bushings.

7. Inspect all parts for wear, cracks or field welds – repair or replace.

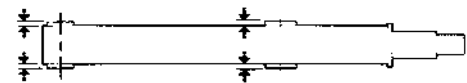
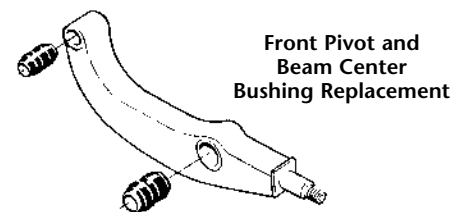
IMPORTANT: NEVER repair a cracked equalizing beam. DO NOT weld cracks. Secondary weld failures during use may cause loss of vehicle control.

WARNING Failure to replace a cracked equalizing beam may cause loss of vehicle control which, if not avoided, could result in death or serious injury.

8. Lubricate the new replacement bushing with an approved rubber lubricant.

NOTE: DO NOT use an oil-based lubricant, soap or brake fluid, as it can cause damage to the rubber. With the beam supported, press the new bushing into the beam. (Refer to Step #9.)

FIGURE 7 Bushing Centered in Beam



9. **NOTE:** Bushings are to be centered in the equalizing beam and bar pin bushings should match prior orientation for pinion angles.
10. Reassemble new or rebushed equalizing beam to frame bracket. Install spacer washers same as prior configuration.
11. Reassemble axle connection and the transverse beam.
12. Reconnect air springs, shock absorbers, height control valve link.

REPLACEMENT INSTRUCTIONS *continued*

Bushings – Equalizing Beam – Replacement *cont.*

13. Re-install, if necessary, wheels, camshafts and tires. Remove jacks and stands, and build air reservoir pressure in excess of 70 P.S.I.G.. Check for proper ride height, page 10.

Bushings – Transverse Beam – Replacement

1. **NOTE:** Refer to and perform procedure 1 and 2 of *Bushings – Equalizing Beam – Replacement* (this page) before proceeding.

2. Disconnect air springs at the lower connections.

3. Remove transverse beam.

NOTE the position of the following:

- Transverse beam: Note spacer position and orientation.

4. Support the beam. Press out the old bushings with a hydraulic press capable of 10,000 lb. force.

NOTE: The transverse beam bushing may feature a split core to enhance removal. The split core allows the bushing to be pried apart after cutting through the rubber.

CAUTION During the pressing operation, the beam support fixture must be securely mounted to the hydraulic press to prevent the beam from shifting abruptly which, if not avoided, may result in minor or moderate injury.

NOTE: DO NOT use an open flame or other heat source to remove the bushings.

5. Clean out bushing receptacles in beam of all foreign material before pressing new bushings into the beam. Inspect all parts for wear, cracks or failed welds – replace.

IMPORTANT: NEVER repair a cracked transverse beam. DO NOT weld cracks. Secondary weld failures during use may cause loss of vehicle control.

WARNING Failure to replace a cracked transverse beam may cause loss of vehicle control which, if not avoided, could result in death or serious injury.

6. Lubricate the new replacement bushing with an approved rubber lubricant.

NOTE: DO NOT use an oil-based lubricant, soap or brake fluid, as it can cause damage to the rubber.

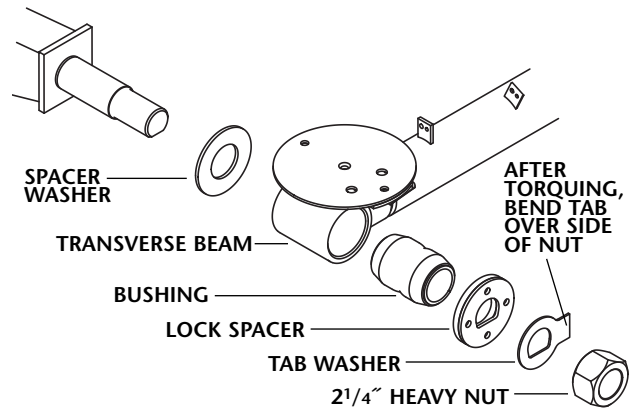
With the beam supported, press the new bushing into the beam until it is centered in the bushing receptacle.

7. Reassemble the rebushed transverse beam on the equalizing beam. Install spacer washers same as prior configuration.

Bushings – Transverse Beam – Replacement *cont.*

FIGURE 8

Transverse Beam Bushing Replacement



8. After the nut is torqued (see the Torque Chart on page 4), bend the tab of the washer over side of the T-beam nut.
9. Reconnect air springs.
10. Re-install, if necessary, wheels, camshafts and tires. Remove the jack stands and build air reservoir pressure in excess of 70 P.S.I.G. Check for proper ride height.

Suspension Air Springs

IMPORTANT: Air springs must be replaced with the proper air spring for your application. Check the top metal plate for the part number. If the part number is unidentifiable, reference the chassis builder vehicle build specifications.

NOTE: For further assistance with air spring part number identification contact SAF-HOLLAND technical assistance at 888-396-6501.

1. Prior to removing the air spring, the vehicle must be unloaded. Support the vehicle frame with adequate jack stands at the approximate ride height.

WARNING Failure to properly support suspension during maintenance may allow suspension to fall which, if not avoided, could result in death or serious injury.

2. Exhaust the air from the suspension system. Exhaust air by:
 - A. Use height control valve – disconnect link at lower connection, then rotate control arm to exhaust (Approx. 45° down position). Drain all air from reservoir, or
 - B. Disconnect the air supply line from the air spring.
3. Disconnect and remove old air spring assembly.
4. Install new air spring assembly and properly torque fasteners. See Torque Chart on page 4.

NOTE: AD-123 air springs require a nut on the rear stud only on the lower connection.

REPLACEMENT INSTRUCTIONS *continued*

Suspension Air Springs *cont.*

5. Reconnect air supply line and link connections.
6. Remove jacks or stands.

Suspension Air Springs *cont.*

7. Build suspension air supply system in excess of 70 PS.I.G. check for leaks.
8. If ride adjustment is necessary, refer to page 10 for the proper procedure.

Frame Brackets

The original orientation of the frame bracket must be maintained when replacing the frame bracket. Frame brackets for the AD-123/246/369 and the AD-126/252/378 models may be installed by the chassis builder in reverse orientation (e.g.: a Left Hand [LH] or roadside frame bracket installed on the Right Hand [RH] or curbside vehicle frame rail; or a RH frame bracket installed on the LH vehicle frame rail.) Examples below depict a typical and a reverse frame bracket installation. The AD-130/260/390 models utilize a symmetrical frame bracket that can be used for both left- and right-hand orientations.

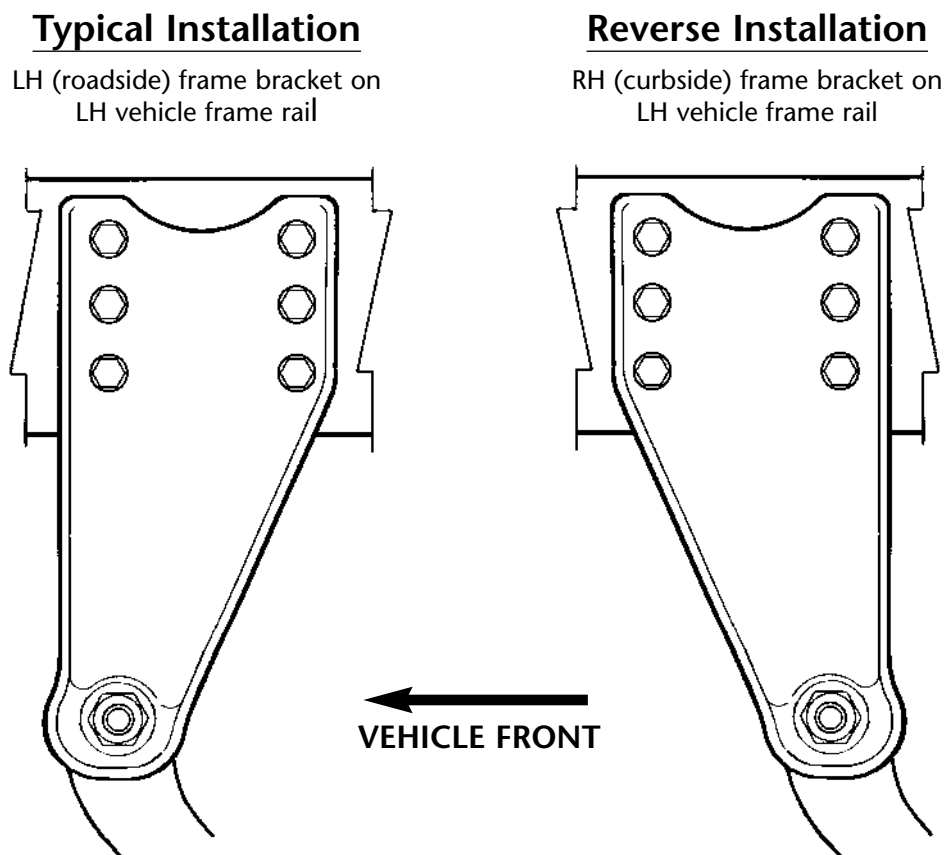
Original chassis builder installed frame brackets are drilled to chassis builder specifications and have a unique 8-digit part number. This part number can be determined by using the chassis builder Service Network. Identify the vehicle's Vehicle Identification Number (VIN) or obtain kit number from the serial number tag located on the transverse beam under the air spring plate (see page 3).

A universal (UNDRILLED) - LH (900 18 578) or RH (900 18 579) frame bracket is available for AD-123/246/369 and AD-126/252/378 models. These universal (undrilled) frame brackets provide the flexibility required to replace a variety of frame brackets. These frame brackets require one Service Repair Kit (SRK-563) and (2) 900 08 252 Alignment Bushings per frame bracket. Universal frame brackets are less pre-drilled mounting holes and will require back drilling at installation. Position the new undrilled frame brackets in the proper mounting location and use the existing frame bolt holes as a drill pattern.

The AD-130/260/390 models utilize a symmetrical, drilled frame bracket and cannot be ordered as undrilled.

The axle alignment feature will allow approximately $\pm 1/4"$ (6.35mm) of axle alignment fore and aft for a $1/2"$ (12.7mm) total.

FIGURE 9
Frame Bracket Installation



REPLACEMENT INSTRUCTIONS *continued*

Frame Bracket *continued*

FRAME BRACKET INSTALLATION

1. Prior to removing the frame bracket, the vehicle must be unloaded. Support the vehicle frame with adequate jack stands at the approximate ride height.

⚠ WARNING Failure to properly support suspension during maintenance may allow suspension to fall which, if not avoided, could result in death or serious injury.

2. Exhaust the air from the suspension system.
Exhaust air by:
 - A. Use height control valve – disconnect link at lower connection, then rotate control arm to exhaust (Approx. 45° down position), or
 - B. Disconnect the air supply line from the air spring.
3. Disconnect frame bracket and remove. Make note of the spacer washer placement for proper re-assembly. Refer to Step 7 on page 5.
4. Replace pivot bushing if necessary.
5. Clamp new frame brackets in proper position. Back drill mounting holes, use existing frame mounting holes as pattern. (This applies to undrilled replacement frame brackets.)

NOTE: 5/8" min. mounting bolts required. If holes in frame are worn, drill to next larger size necessary. Fasten frame bracket to frame with Grade 8 min. bolts and torque to specifications. Use a hardened washer under the head of the bolt and nut.

6. Reassemble pivot connection. Position spacer washers as previously noted in Step 3.

AXLE ALIGNMENT PROCEDURES

NOTE: The following steps assumes that the pivot connection is assembled with the proper hardware based on the frame width and frame bracket type specified for the application.

Perform the following procedures for each axle.

1. Determine whether the frame bracket is "fixed" (alignment block centered and welded to the frame bracket by SAF-HOLLAND) or "adjustable" (alignment block shipped loose by SAF-HOLLAND) (see **FIGURE 11**).

NOTE: Typically, suspension kits are shipped to the chassis builder with one frame bracket "fixed" and one frame bracket "adjustable". Some chassis builder's however specify both frame brackets as "adjustable".

2. SAF-HOLLAND recommends that the chassis be set at the specified Ride Height prior to axle alignment (see **FIGURE 10**).
3. "Fixed" frame bracket - torque pivot connection to the specifications listed in Torque Chart on page 4.

4. "Adjustable" frame brackets - adjust axle alignment by sliding alignment blocks fore/aft (see **FIGURE 2**). Torque to specifications listed in Torque Chart on page 4.
5. Weld alignment blocks on both sides of the adjustable frame bracket (see **FIGURE 2**).

IMPORTANT: A minimum 3-minute cool down period is required after welding connection before re-applying torque to pivot bolt nut.

6. Re-torque the cooled down pivot connection on the "Adjustable" frame bracket to the specifications listed in Torque Chart on page 4.

FIGURE 10
Installed AD Series Suspension

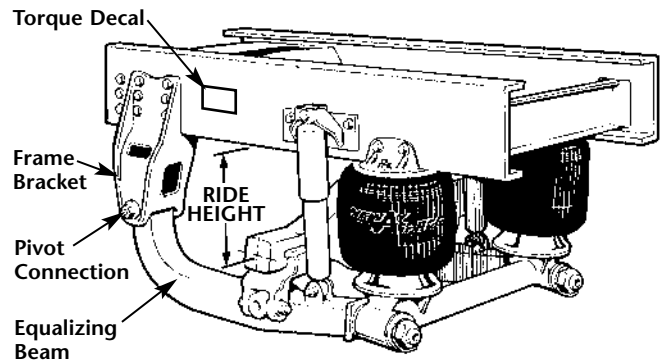
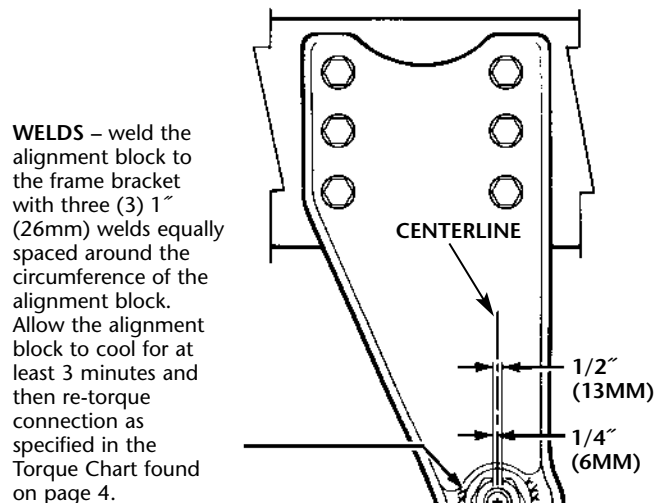


FIGURE 11
"Adjustable" Frame Bracket




ALIGNMENT BLOCK – 1/2" (13mm) total travel for alignment (1/4" fore and 1/4" aft travel from alignment slot centerline).

AD SERIES SUSPENSION TORQUE AND LUBRICATION IDENTIFICATION

FIGURE 12

New AD Series Torque Specification Decal (XL-AK399-01)




AD SERIES SUSPENSION TORQUE SPECIFICATIONS


Fastener Size	Pivot Connection*		Transverse Beam**	Shock Absorber	Air Spring Attachments
	AD-123/126	AD-130			
	1 - 1/8"	1 - 1/4"	2 - 1/4"	3/4"	3/4"
Torque Ft. Lbs. (Nm)	600 (813)	700 (949)	525 (711)	150 (203)	35 (47)

ALL TORQUE SPECIFICATIONS ARE ± 5%. TORQUES ARE WITH CLEAN, LUBRICATED THREADS. ALWAYS APPLY TORQUE TO NUT IF POSSIBLE.

*** IMPORTANT: SEE PIVOT BOLT HEAD**



Pivot Bolt Head marked "NEWAY" REQUIRES lubrication.




Pivot Bolt Head marked "HOLLAND NEWAY" DOES NOT REQUIRE lubrication.

**** AFTER APPLYING PROPER TORQUE TO THE TRANSVERSE BEAM NUT, FOLD THE WASHER TAB OVER A FLAT SIDE OF THE NUT.**

REQUIRED RE-TORQUING SCHEDULE:

- ALL FASTENERS AFTER FIRST 100 HOURS OF SERVICE OR 5,000 MILES.
- 50,000 MILE INTERVALS, ROUTINE P.M., OR BRAKE RELINING.



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TROUBLESHOOTING

Problem	Possible Cause and Remedy
All air springs flat (no air).	<p>Insufficient air pressure in the vehicle air system. Check the air pressure gauge on instrument panel. If air pressure is low, run the engine until a minimum pressure of 70 P.S.I.G. is indicated on the gauge. If air pressure is 70 P.S.I.G. or above and the air spring is not inflated, check the pressure protection valve.</p> <p>Air leakage from the suspension air system or the air brake system. Test for air leakage due to loose fittings or damaged air lines, air springs, brake actuators or control valve. Tighten loose fittings to stop leakage and/or replace worn or damaged parts.</p>
Air springs deflate rapidly when vehicle is parked.	<p>Air leakage from the suspension air system. Test for air leakage due to loose fittings between air tank and air suspension or damaged air lines, air springs or height control valve. Apply a soapy solution to connections and air springs if necessary to check for bubbles (leaks). Tighten loose fittings to stop leakage and/or replace worn or damaged parts with new ones.</p>
Ride height too high or too low.	<p>Height control valve out of adjustment. Re-adjust the height control valve.</p>
Air springs ruptured.	<p>Tires, rims, chains or other objects are rubbing the air spring. Check the clearance between the air spring and the tire. If the tire, rim, chains or other objects contact the inflated air spring when the vehicle is loaded, change to narrower tires and rims to provide clearance for tires with chains (contact your vehicle manufacturer for recommendations).</p>
Air spring failed.	<p>Continual or repeated over-extension of the air spring. Check for proper shock part number. Visually inspect for broken or loose shock absorber or shock absorber mounting bracket. Reconnect loose parts and replace any defective parts. Check the adjustment of the height control valves.</p> <p>Air spring(s) worn out. Replace.</p>
Air spring(s) fail to fully deflate when all weight is removed from the suspension.	<p>Restricted air line(s) between the height control valve and the air spring(s). Disconnect the height control valve linkage and rotate the actuating lever to the 45° down position. If the air spring(s) remain inflated, check for pinched or blocked line(s).</p>
Front pivot connection worn and loose.	<p>Check pivot connection for worn bushings or looseness by inserting a 2´ pry bar between the frame bracket and nose of the equalizing beam. Visually check for movement while moving the bar back and forth. If .25" or more movement is detected, disassemble the connection and visually inspect the rubber bushing. Replace the bushing if wear is detected. If the bushing appears to be okay, reassemble the connection and—with the suspension set at the proper ride height—torque the connection to proper specification.</p> <p>Worn out due to length of service. Replace pivot connection.</p> <p>Axle alignment block not welded properly. Replace worn parts, realign, torque and weld to specifications.</p>
Shock absorber failures.	<p>Elongated eyes/over-extension. Mis-located shock brackets. Improper length shocks installed.</p>
Excessive tire wear.	<p>Axles mis-aligned. Re-align axles per vehicle manufacturer's recommendations. Suspension has alignment blocks located on the frame bracket pivot connections for axle alignment. Alignment blocks are welded in position, weld must be removed prior to re-alignment. Reweld after alignment.</p> <p>Worn pivot or axle bushings. Rebush with proper bushing, refer to replacement instructions.</p>

continued

TROUBLESHOOTING *continued*

Problem	Possible Cause and Remedy
Vehicle unstable or handles poorly.	<p>Loose frame bolts or attachments. Tighten frame bolts and attaching parts to proper specifications.</p> <p>Cracked or loose frame crossmembers. Repair or replace damaged frame members and torque all nuts and bolts to proper torque specifications.</p> <p>Check the ride height. Readjust if necessary.</p> <p>Loose transverse beam connection. Replace worn bushings, retorque to specifications. Refer to replacement instructions.</p> <p>Wrong bushings.</p> <p>Loose or worn pivot connection. Check pivot connection for worn bushings or looseness by inserting a 2´ pry bar between the frame bracket and nose of the equalizing beam. Visually check for movement while moving the bar back and forth. If .25´´ or more movement is detected, disassemble the connection and visually inspect the rubber bushing. Replace the bushing if wear is detected. If the bushing appears to be fine, reassemble the connection and—with the suspension set at the proper ride height—torque the connection to proper specification.</p> <p>Loose or worn bar pin axle connection (rubber wear). Check axle connection for worn bushings or looseness by inserting a 2´ pry bar between the top of the equalizing beam and bottom of the axle adapter. Visually check for movement while moving the bar back and forth. If .25´´ or more movement is detected, disassemble the connection and visually inspect the rubber bushing. Replace the bushing if wear is detected. If the bushing appears to be fine, reassemble the connection and—with the suspension set at the proper ride height—torque the connection to proper specification.</p> <p>Loose or worn bar pin axle connection (bar pin wear). The bar pin subassembly freely rotates within the bore of the bushing core. New bar pin bushing assemblies have a “total” gap of 0.085´´ (gaps exist at both ends of the bushing core). If the sum of the two gaps is greater than 0.140´´, replace the bushing.</p>

Contact your chassis builder for recommendations if these possible causes and effects do not solve the vehicle handling problem.



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