



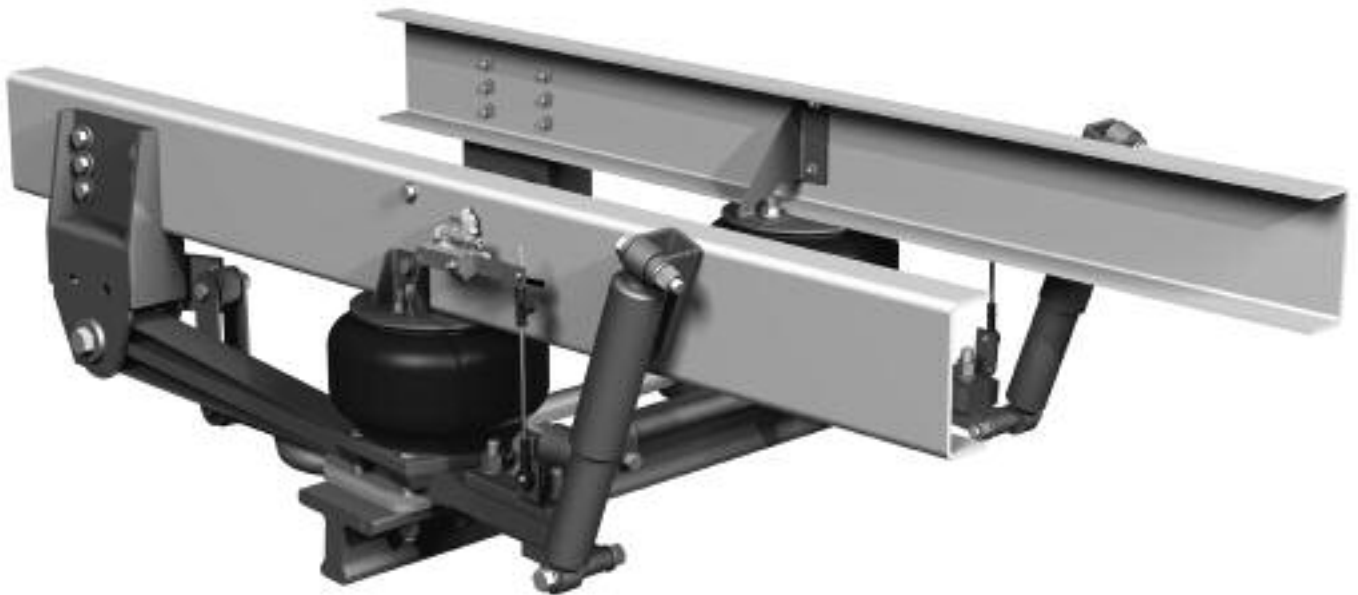
AS/ASB SERIES

MAINTENANCE AND PARTS LIST



Steer Axle Air Suspensions

AS-090	ASB-110
AS-120	ASB-120
AS-140	ASB-140



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INTRODUCTION

This manual provides you information necessary for the care, maintenance, inspection, and safe operation of the Holland AS Series steer axle air suspension models specified.

The Holland AS Series steer axle 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. Be sure tires are not rubbing against any object.

This suspension uses air drawn from the vehicle air system to pressurize the air springs. The height control valve regulates the air pressure required for varying loads. A feature of this suspension is the ability to provide a cushioned ride throughout the load range, from empty to rated capacity.

The suspension also provides a traction control feature by reducing the air pressure in the air springs when needed.

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 on the Holland Group Web Site (www.thehollandgroupinc.com)

A warranty certificate may also be ordered by calling 1-888-396-6501.

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.

SERIAL NUMBER TAG INFORMATION

Model Identification

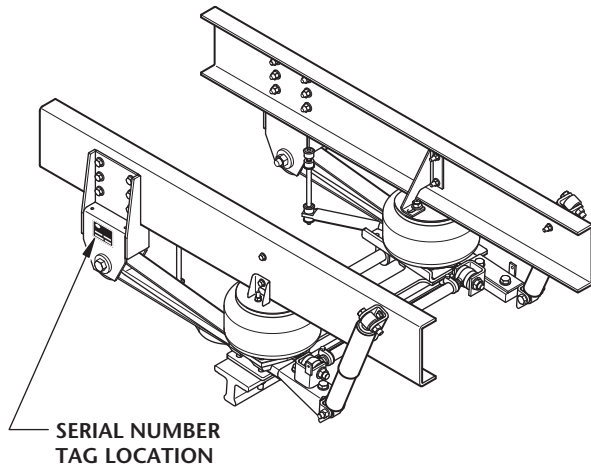
The AS Series Suspension Serial Tag is normally located on the roadside frame bracket (**FIGURE 1**).

NOTE: This manual applies to the suspension series or the models listed on the front cover. However, we urge you to determine your specific model number, write that information below and refer to it when obtaining information or replacement parts.

NOTE: Refer to the serial number tag attached to the frame bracket for information.

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

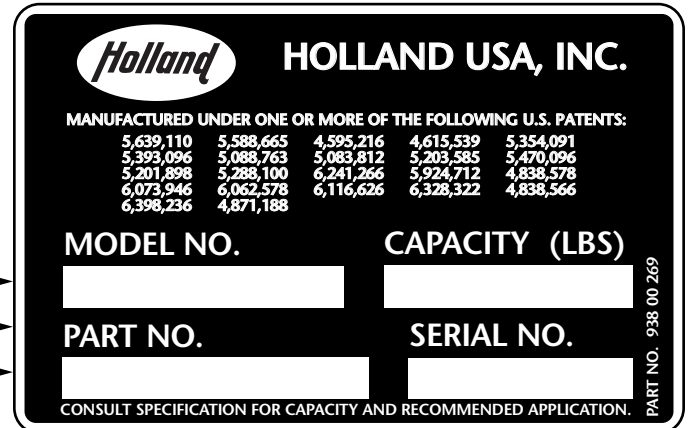
FIGURE 1
Serial Number Tag Location



Model Nomenclature

The sample tag shown below will help you interpret the information on the Holland USA, Inc. serial number tag. The model number is on the first line along with the suspension capacity. The second line contains the parts list number and serial number (**FIGURE 2**).

FIGURE 2 Serial Number Tag



NOTE: Some models have an additional designation after the ride height.
 Example: RL-230-16-HMS (see below)

AS - 120

Axle Capacity & Suspension Series
 9,000 lbs. – AS-090
 12,000 lbs. – AS-120
 14,000 lbs. – AS-140

Air Steer Suspension

ASB - 110

Axle Capacity & Suspension Series
 11,000 lbs. – ASB-110
 14,000 lbs. – ASB-140

Air Steer Bus Suspension for bus application with Bar Pin Bushing Style Track Bar

OPERATING AND MAINTENANCE INSTRUCTIONS

Holland Steer Axle Air Suspension Operation

The Holland Steer Axle Air Suspension is controlled by height control valves. Properly adjusted, they will maintain the desired ride height throughout the unloaded to loaded range automatically. The height control valves automatically add air to, or exhaust air from the air springs to maintain a constant ride height.

Before putting the vehicle in operation, build air pressure in excess of 100 psig. This will open the pressure protection valve and allow air flow to the height control valves.

NOTE: Be sure tires are not rubbing the underside of vehicle or any other object with the suspension at full up position.

IMPORTANT

ROUTINE MAINTENANCE AND DAILY INSPECTION

Daily Inspection

Daily or before each trip, check the suspension to be sure it is fully operational. Visually inspect air springs for sufficient and equal pressure and to see that suspension is set at proper ride height. See page 8 for ride height measurement and resetting instructions. Service as necessary.

Initial 5,000 Mile (8,000 km) Service Inspection

1. After initial 5,000 miles (8,000 km) of service, inspect bolts and nuts at the pivot and axle connections to assure they are properly torqued. Check all other nuts and bolts for proper torque. Retorque as necessary thereafter.
2. With vehicle on level surface and air pressure in excess of 100 psig, all air springs should be of sufficient and equal firmness to maintain the suspension ride height.

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

3. Suspension ride height (underside of frame to top of axle) **MUST BE WITHIN $\pm 1/4"$ OF RECOMMENDED DESIGN HEIGHT.** Improper ride height could result in a poor ride or damage to the suspension and erratic vehicle handling. See page 8 for instruction on measuring ride height.

Routine Physical Inspections

Every 50,000 Miles (80,000 km) or 1 year minimum or as needed

At 50,000 miles (80,000 km) or 1 year, or when servicing vehicle brake system, inspect suspension components per 5,000 mile (8,000 km) inspection. Also check all other suspension components for any sign of damage, looseness, torque loss, wear or cracks. Repair, tighten or replace damaged part(s) to prevent equipment breakdown.

Visual Inspection Procedure

IMPORTANT: A schedule for physical and visual inspections should be established by the operator based on severity of operation or damage to the vehicle could occur.

IMPORTANT: During each pre-trip and safety inspection of the vehicle, a visual inspection of the suspension should be done or damage to the vehicle could occur.

Visually check for:

- **Bolt movement** - loose dirt, rust or metal wear around bolt head and nut.
- **Air springs** - wear damage and proper inflation.
- **Shock absorbers** - leaking or damaged.
- **Cracked parts or welds.**

TABLE 1

AS SERIES TORQUE CHART

SIZE	ITEM	TORQUE IN FT. LBS.	NM
1/2" GrB	Air Spring Nuts Top	35	47
3/4" GrA	Air Spring Nuts Bottom	35	47
3/4" GrC	Shock Absorber Upper & Lower	110	149
5/8" GrB	Clamp, Track Bar	50	67
7/8" GrB	Track Bar, Etc.	200	271
3/4" GrC	Bracket Control Arm at Spring Beam	200	271
3/4" GrC	Axle Connection	280	379
1" GrB	Pivot Connection	480	650

TABLE 2

ASB SERIES TORQUE CHART

SIZE	ITEM	TORQUE IN FT. LBS.	NM
1" - 8 GrC	Spring Beam Connection	580	786
3/4" - 10 GrC	Axle, Upper Shock Brkt. & Link Assy	210	285
3/4" - 10 GrB	Air Spring Piston	35	47
1/2" - 13 GrB	Upper Air Spring	35	47
3/4" - 16 GrA	Upper Air Spring	35	47
5/8" - GrB	Clamp, Track Bar	90	122
5/8" - 11 GrC	Track Bar	160	220
3/4" - 10 GrC	Lower Shock Bracket	150	203
5/8" - 11 GrC	Sway Bar Link Plate & Bushing Clamp	160	220

NOTE: Torque specifications are with clean threads lubricated with oil.

NOTE: Torque values are $\pm 5\%$.

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.

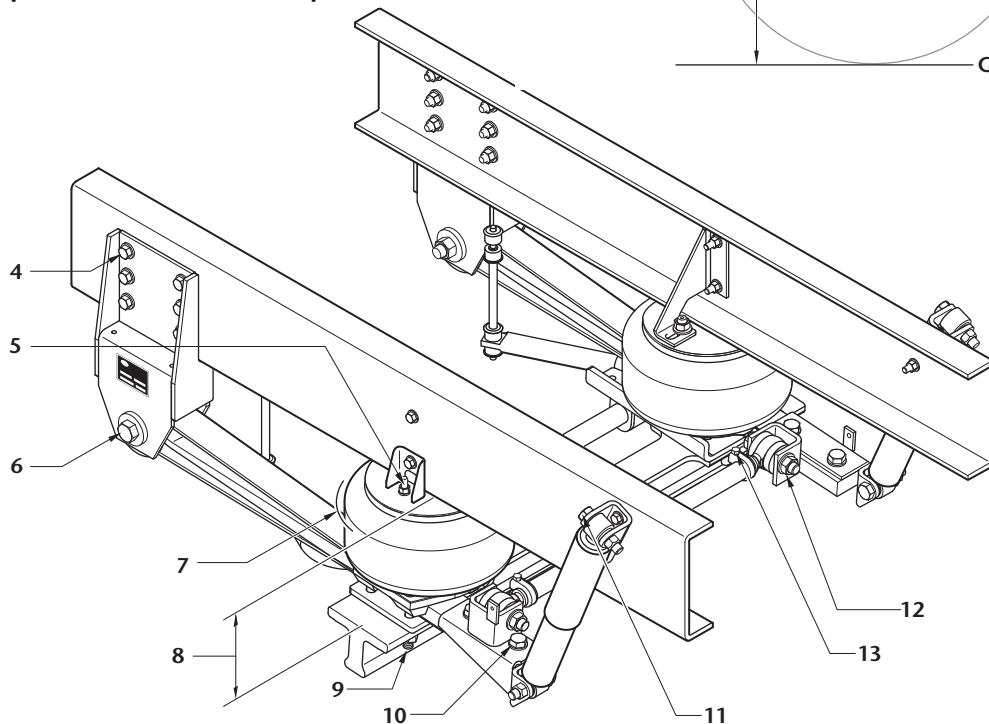
PRE-OPERATIONAL CHECKLIST

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

NOTE: For AS Series and ASB Series torque values, see TABLES 1 and 2 on page 4. Torque values $\pm 5\%$.

1. Build system air pressure above 100 psig (6.9 bar). With vehicle shut off, check system for air leaks.
2. With vehicle on level surface, air supply pressure in excess of 100 psig (6.9 bar), both Air Springs should be of equal firmness.
3. Check Shock Absorbers for proper installation.
4. Check all frame fasteners per vehicle manufacturers recommended torque (see TABLE 1 Torque Chart or TABLE 2 Torque Chart on page 4).
5. 1/2" or 3/4" nut air spring mounting hardware (top and bottom) - torque to value on page 4.
6. 1"-8 pivot nut - torque to value on page 4 and FIGURE 3.
7. Minimum air spring clearance 1-3/4" and FIGURE 3.
8. Air spring mounting height should be within $\pm 1/4$ " measured from bottom of frame to top of axle as shown (see TABLE 3 Air Spring Mounting Height on page 5).
9. 3/4" nut - torque to value on page 4 and FIGURE 3.
10. 3/4" nut - torque to value on page 4 and FIGURE 3.
11. 3/4" nut - torque top and bottom to value on page 4 and FIGURE 3.
12. 7/8" nut - torque to value on page 4 and FIGURE 3.
13. Track bar (double adjustable) adjusting nut - torque to value on page 4 (FIGURE 3).

FIGURE 3
Suspension Torque Locations and Pre-Operational Checklist



NOTE: Torque specifications are with clean threads lubricated with oil.

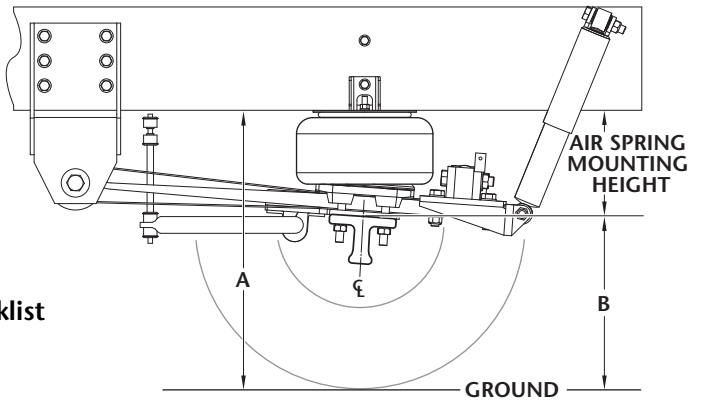
IMPORTANT: Use of special lubricants with friction modifiers, such as Anti-Seize or Never-Seize, without written approval from Holland Engineering, will void warranty and could lead to bolt failure or other component issues.

TABLE 3
TYPICAL AIR SPRING MOUNTING HEIGHT

MODEL NO.	AIR SPRING MOUNTING HEIGHT
AS-090	9.5"
AS-120	10.31"
AS-140	10.31"
ASB-110	9.5"
ASB-120	9.5"
ASB-140	10.31", 11.5"

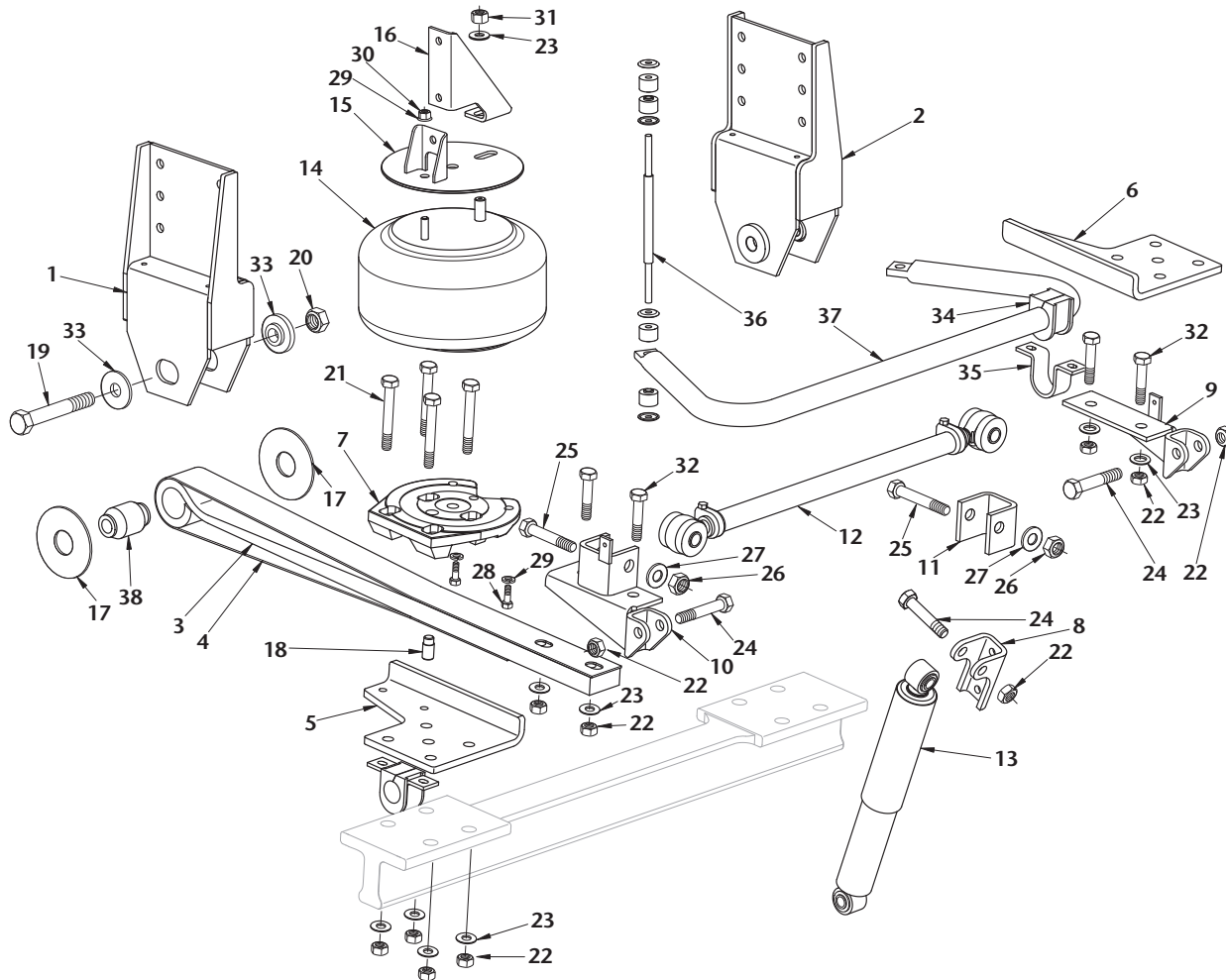
IMPORTANT: Contact vehicle OEM or Holland to determine correct mounting height for your specific suspension. Have your model and part number from the suspension serial tag available.

FIGURE 4
Air Spring Mounting Height Measurement



AS SERIES PARTS LIST

FIGURE 5 AS Series Parts List



AS Suspension Components

ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	Bracket Frame Adjustable Painted	*	1
2	Bracket Frame Fixed Painted	*	1
3	Straight Spring Beam Assembly	905 16 696	2
4	Strap Restraining	900 45 226	2
5	Plate Spacer LH Painted	*	1
6	Plate Spacer RH Painted	*	1
7	Plate Air Spring Mounting	900 33 845	2
8	Bracket Shock Upper Painted	900 18 542	2
9	Bracket Shock RH	905 20 673	1
10	Bracket Control Arm	905 20 672	1
11	Bracket	900 33 472	1
12	Track Bar Double Adjustable	900 45 385	1
13	Shock Absorber	*	2
14	Spring Air	*	2
15	Plate Air Spring Mounting	905 31 273	2
16	Brace Angle (where applicable)	900 23 131	2
17	Shim Pivot	900 36 192	4
18	Pin	900 45 233	2
19	Bolt Hex 1" x 8 x 6.5" Gr5	939 00 174	2

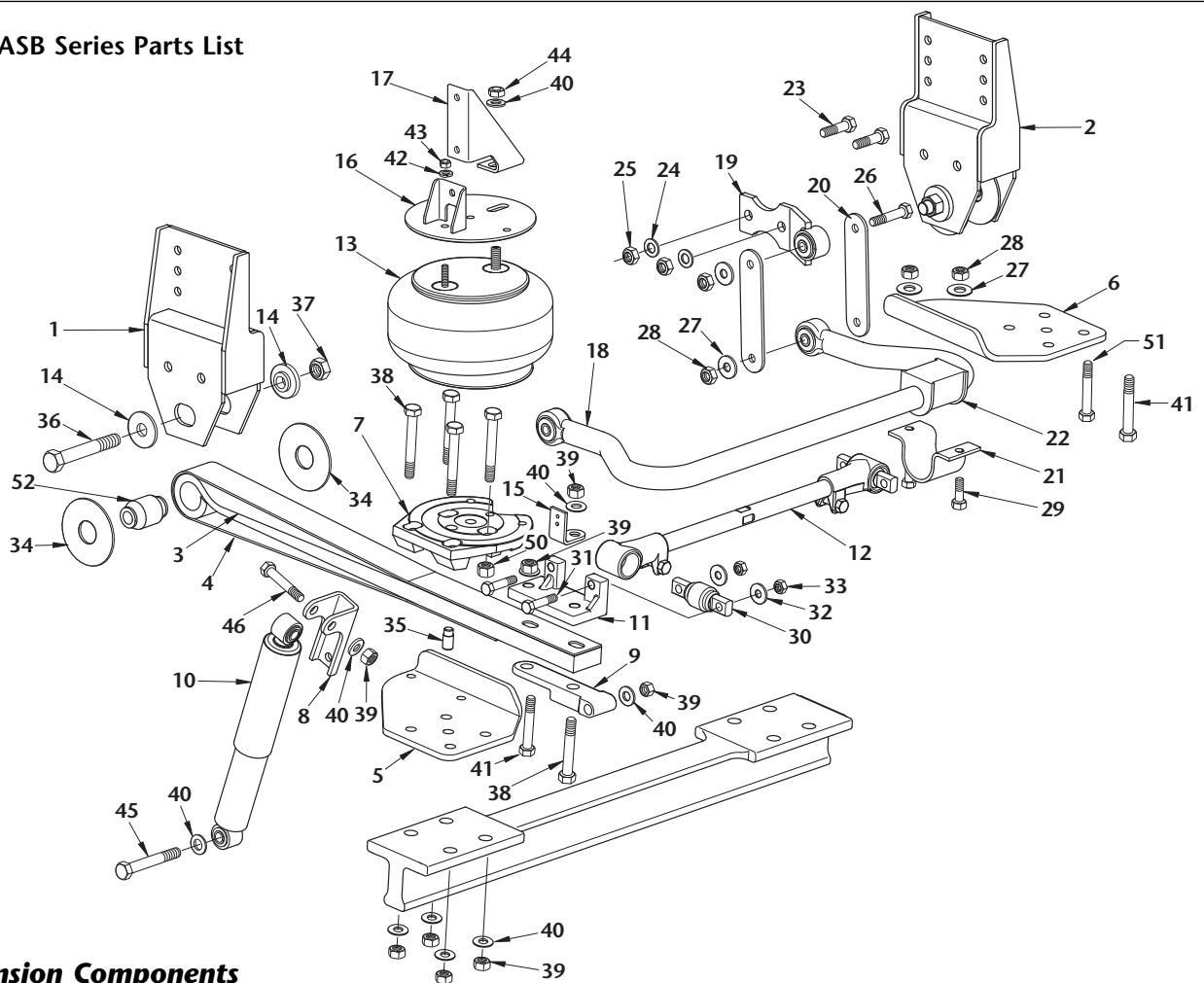
ITEM NO.	DESCRIPTION	PART NO.	QTY.
20	Nut Hex Lock 1" x 8 GrB	934 00 500	2
21	Bolt Hex 0.75" - 10 x 5" Gr8	930 03 635	8
22	Nut Hex Lock 0.75" - 10 GrC	934 00 494	16
23	Washer Flat Narrow 0.75"	936 00 156	14
24	Bolt Hex 0.75" - 10 x 3.75" Gr5	930 03 603	4
25	Bolt Hex 0.875" - 9 x 4.5" Gr5	930 03 831	2
26	Nut Hex Lock 0.875" - 9 GrB	934 00 496	2
27	Washer Flat Narrow 0.88"	936 00 162	4
28	Bolt Hex 0.5" - 13 x 1.25" Gr5	930 02 901	4
29	Washer Lock 0.53"	936 00 072	6
30	Nut Hex 0.5" - 13 GrB	934 00 136	2
31	Nut Hex Lock Thin 0.75" - 16 GrA	934 00 417	2
32	Bolt Hex 0.75" - 10 x 3" GrB	930 03 585	4
33	Alignment Block With Rust INHB	900 08 126	2
34	Bushing	900 08 194	2
35	Bracket	900 25 497	2
36	Link Assembly	905 45 761	2
37	Bar Stabilizer	900 45 212	1
38	Bushing	900 08 125	2

* Refer to the chassis builder specifications to properly identify the Holland part number for this component. A suspension serial tag denotes the Holland kit number that will provide the individual component number needed.

NOTES: When ordering parts be sure to specify Item No., Part No., Serial No., and Model No. Service Repair Kits (SRKs) are available for servicing the suspension. Refer to pages 8 and 9.

ASB SERIES PARTS LIST

FIGURE 6 ASB Series Parts List



ASB Suspension Components

ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	Bracket Frame Adj Painted	*	1
2	Bracket Frame Fixed Painted	*	1
3	Bent or Straight Spring Beam Assembly	*	2
4	Strap	*	2
5	Plate Bent LH Painted	*	1
6	Plate Bent RH Painted	*	1
7	Plate Air Spring Mounting	900 33 845	2
8	Bracket Upper Shock Painted	900 18 542	2
9	Shock Bracket Lower (Machined Painted)	M00 18 038	2
10	Shock Absorber	*	2
11	Bracket Track Rod	M00 18 041	1
12	Track Rod Assembly Adjustable	905 47 903	1
13	Air Spring Assembly	*	2
14	Alignment Block	*	2
15	Tab Bent	900 26 187	2
16	ASMP Upper Assembly Painted	905 31 273	2
17	Brace Painted	900 23 131	2
18	Sway Bar Assembly	905 06 028	1
19	Link Assembly With Bushing	905 21 624	2
20	Link Plate Painted	900 34 436	4
21	Bushing Clamp	900 26 040	2
22	Bushing	900 08 240	2
23	Bolt Hex 0.75" - 10 x 2.5" Gr8	930 03 575	4
24	Washer Flat Narrow 0.75"	936 00 156	4
25	Nut Hex Lock 0.75" - 10 GrC	934 00 494	4

ITEM NO.	DESCRIPTION	PART NO.	QTY.
26	Bolt Hex 0.62" - 11 x 3.25" Gr8	930 03 377	4
27	Washer Flat 0.65"	936 00 150	8
28	Nut Hex Lock 0.625" - 11 GrC	934 00 490	8
29	Bolt Hex 0.62" - 11 x 2" Gr8	930 03 347	4
30	Bushing	900 08 246	2
31	Bolt Hex 0.62" - 11 x 2.75" Gr8	930 03 365	4
32	Washer Flat 0.65"	936 00 150	4
33	Nut Hex Lock 0.625" - 11 GrC	934 00 490	4
34	Shim Pivot	900 36 192	4
35	Pin	900 45 233	2
36	Bolt Hex 1" - 8 x 6.5" Gr8	930 04 313	2
37	Nut Hex Lock 1" - 8 GrC	934 00 502	2
38	Bolt Hex 0.75" - 10 x 4.75" Gr8	930 03 629	9
39	Nut Hex Lock 0.75" - 10 GrC	934 00 494	16
40	Washer Flat Narrow 0.75"	936 00 156	20
41	Bolt Hex 0.75" - 10 x 4.25" Gr8	930 03 617	2
42	Washer Lock 0.53"	936 00 072	2
43	Nut Hex 0.5" - 13 GrB	934 00 136	2
44	Nut Hex Lock Thin 0.75" - 16 GrA	934 00 417	2
45	Bolt Hex 0.75" - 10 x 5.5" Gr8	930 03 647	2
46	Bolt Hex .75" - 10 x 3.75" Gr8	930 03 605	2
50	Nut Hex 0.75" - 10 GrB	934 00 492	2
51	Bolt Hex 0.75" - 10 x 3.25" Gr8	930 03 593	1
52	Bushing	900 08 125	2

* Refer to the chassis builder specifications to properly identify the Holland part number for this component. A suspension serial tag denotes the Holland kit number that will provide the individual component number needed.

AIR SPRING MOUNTING HEIGHT ADJUSTMENT INSTRUCTIONS

Air Spring Mounting Height

1. Before beginning to check the air spring mounting height, park the vehicle on a level floor. Block the front tires to prevent the vehicle from rolling forward or backward.

⚠ WARNING Always chock tires to prevent rollaway — serious injury or death may occur.

2. Pressurize the air system with a constant supply of air in excess of 100 psig (6.9 bars). All air springs should inflate and locate suspension at proper air spring mounting height.

IMPORTANT: See chassis or vehicle chassis builder for proper AS/ASB suspension air spring mounting height. The suspension air spring mounting height depends on the specific AS/ASB suspension kit installed by the chassis or vehicle OEM.

3. If air spring mounting height is not within ± 0.25 " (6mm) of the specified air spring mounting height, adjust the height control valve in accordance with the instructions in Height Control Valve manual or the chassis builder's manual. To accurately measure air spring mounting height, perform Steps 4 - 6 (FIGURE 7).
4. Measure the distance from the bottom of the frame rail to the ground (FIGURE 7).
5. Measure the distance from the top of the I-beam axle where the spring beam seats down to the ground (FIGURE 7).

6. To determine air spring mounting height, subtract the value measured in Step 5 from the value measured in Step 4.

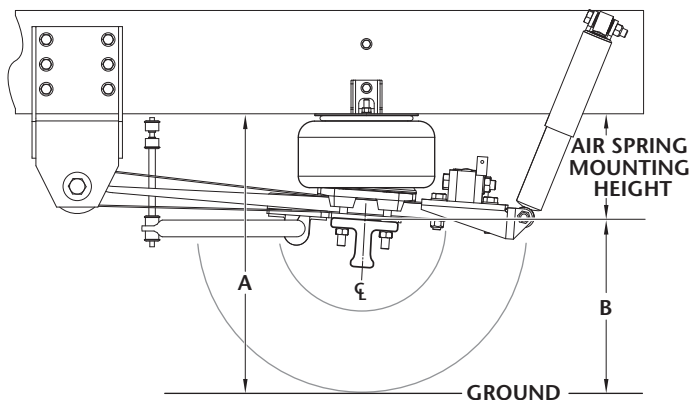
EXAMPLE: The bottom of the frame rail to the ground measures 30.81" (783mm) (A); the center of the wheel to the ground measures 20.5" (521mm) (B).

A - B = AIR SPRING MOUNTING HEIGHT, therefore:
30.81" minus 20.5" = 10.31" (262mm)

AIR SPRING MOUNTING HEIGHT is 10.31" (262mm)

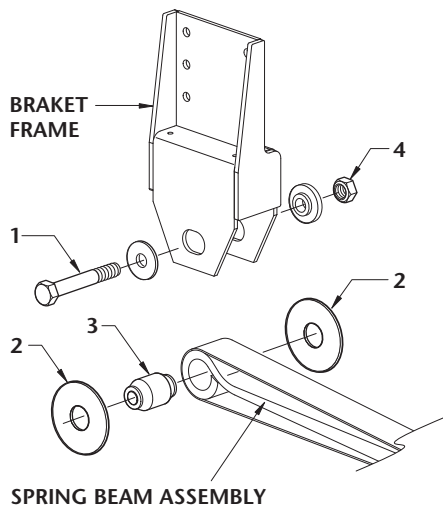
7. If air spring mounting height is out of the specification, see the Height Control Valve manual for instructions on how to adjust.

FIGURE 7 Air Spring Mounting Height Measurement



SERVICE REPAIR KITS

NOTE: One (1) SRK required per axle.

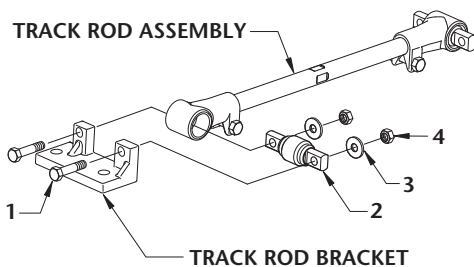


AS Front Pivot Connection

SRK-502 Holland part number 481 00 366

ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	Bolt Hex 1" - 8 x 6.5" GR 5	939 00 174	2
2	Shim Pivot	900 36 192	4
3	Bushing	900 08 125	2
4	Nut Hex Lock 1" - 8 GR B	934 00 500	2

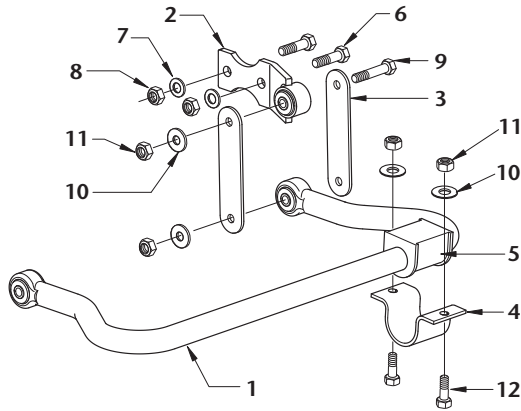
NOTE: Use Grade 8 and C hardware for ASB applications.



ASB Track Bar Kit

SRK-617 Holland part number 481 00 483

ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	Bolt Hex 0.625" - 11 x 2.75" GR 8	930 03 365	2
2	Bushing	900 08 246	2
3	Washer Flat 0.65"	936 00 150	2
4	Nut Hex Lock 0.62" - 11 GR C	934 00 490	2



ASB Sway Bar Kit*

SRK-616 Holland part number 481 00 480

ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	Sway Bar Assembly	905 06 028	1
2	Link Assembly With Bushing	905 21 624	2
3	Link Plate Painted	900 34 436	4
4	Bushing Clamp	900 26 040	2
5	Bushing	900 08 240	2
6	Bolt Hex 0.75" - 10 x 2.5" GR 8	930 03 575	4
7	Washer Flat Narrow 0.75"	936 00 156	4
8	Nut Hex Lock 0.75" - 10 GR C	934 00 494	4
9	Bolt Hex 0.62" - 11 x 3.25" GR 8	930 03 377	4
10	Washer Flat 0.65"	936 00 150	8
11	Nut Hex Lock 0.625" - 11 GR C	934 00 490	8
12	Bolt Hex 0.62" - 11 x 2" GR 8	930 03 347	4

*To order AS sway bar parts, refer to page 6, items 34 - 37.

PART REPLACEMENT INSTRUCTIONS

Frame Bracket Installation

⚠ WARNING Always chock tires to prevent rollaway – serious injury or death may occur.

1. Support vehicle frame with adequate jacks or stands, and exhaust air from air springs.

⚠ WARNING Always use jack stands of sufficient strength and position them according to chassis builder recommendations. Failure to do so may cause the vehicle to fall, resulting in vehicle damage and/or personal injury.

2. Disconnect frame bracket and remove. (Make note of alignment block position for re-assembly).
3. Replace pivot rubber bushing if necessary.
4. Reassemble pivot connection, hardware and position alignment blocks as previously noted in Step 2. **DO NOT** weld alignment blocks at this time.

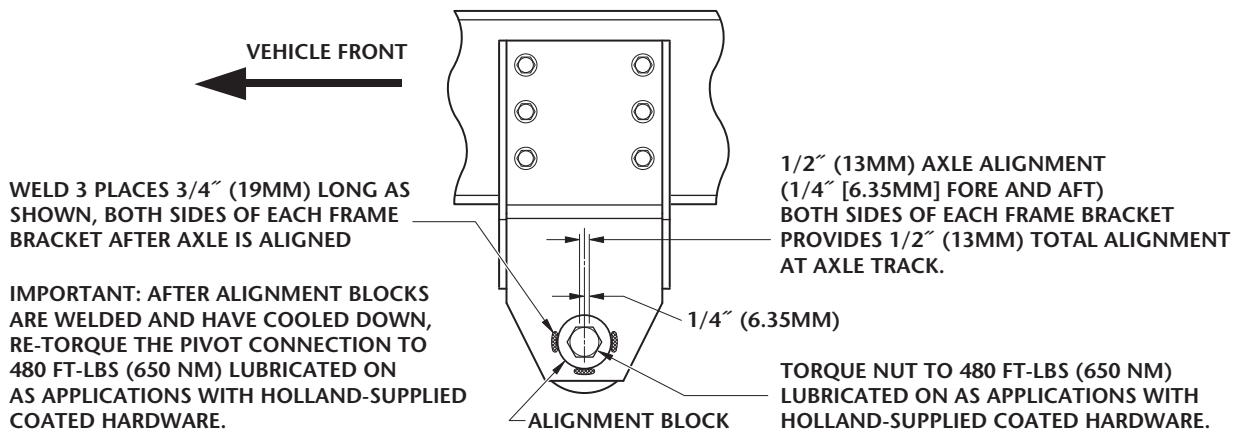
5. With suspension set at its proper air spring mounting height, make sure the axle is setting squarely under the frame, then align axle per vehicle manufacturer recommendation.
6. Torque connection to 480 ft. lbs. (650 Nm) lubricated. Then recheck alignment.

NOTE: Torque specifications are with clean threads lubricated with oil.

IMPORTANT: Torque specs do not include threads lubricated with anti-seize.

7. Weld alignment blocks on both sides of each frame bracket. Make three 1/4" welds – 3/4" long using welding rod E-7028 or equivalent (**FIGURE 8**). (Optional: 1/4" weld all around each frame bracket.)
8. After alignment blocks are welded and have cooled down, re-torque the pivot connection to 480 ft. lbs. (650 Nm) lubricated.

FIGURE 8 Frame Bracket Installation



NOTE: Use Grade 8 and C hardware for ASB pivot connection at 580 ft. lbs. (786 NM).

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.

CAUTION SHOCK MAY BE HOT! Do not grab shock or an injury could occur.

IMPORTANT: It is recommended that the vehicle be unloaded and on a level surface. Block vehicle to prevent rolling.

WARNING Always chock tires to prevent rollaway – serious injury or death may occur.

1. Remove upper and lower mounting bolts and shock absorber.
2. Replace with correct shock absorber.
3. See **TABLE 1 Torque Chart** page 4.

Bushings – Spring Beam

The rubber bushings in the spring beam may be replaced using a hydraulic press with a capacity of 10,000 lbs. or greater.

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

IMPORTANT: It is recommended that the vehicle be unloaded and on a level surface. Block vehicle to prevent rolling.

WARNING Always chock tires to prevent rollaway – serious injury or death may occur.

1. Support vehicle frame with adequate jacks or stands. Remove tires.

WARNING Always use jack stands of sufficient strength and position them according to chassis builder recommendations. Failure to do so may cause the vehicle to fall, resulting in vehicle damage and/or personal injury.
2. Exhaust air by:
 - A. Automatic, Height Control Valve – disconnect link at lower connection, then rotate control arm down to exhaust (approx. 45° down for Type CR HCV), (approx. 20° down for Type IR HCV).

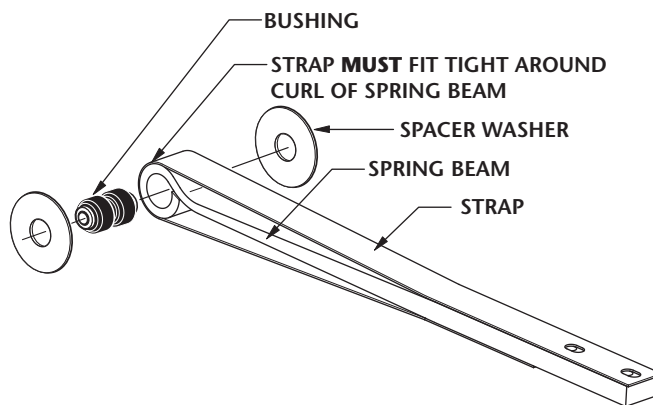
Drain all air from air reservoir.
 - B. Disconnect air supply line from air springs.
3. Disconnect shock absorbers, pan hard rod, air springs at lower end and axle bolts. Remove beam.
4. Support beam, and press out old bushings with a hydraulic press (**FIGURE 9**).

CAUTION The Beam support fixture must be securely mounted to the hydraulic press, otherwise the beam may abruptly shift and personal injury could occur.

5. Clean out bushing receptacles in beam of all foreign material before pressing in new bushings.
6. Lubricate new replacement bushing and tube receptacle with an approved rubber lubricant.

NOTE: Do not use an oil-based lubrication, soap or brake fluid, as it can cause damage to the rubber.

FIGURE 9
Beam Bushing Location



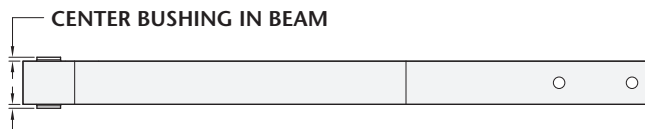
With the beam supported press the new bushing into the beam. (Refer to Step 7 and **FIGURE 10**).

7. Inspect all parts for wear, cracks or failed welds — repair or replace if necessary.

WARNING Do not repair a cracked equalizing beam – replace it. Secondary welding may create a stress concentration leading to a potential for premature component failure and loss of vehicle control and could cause serious injury or death.

NOTE: Bushings are to be centered in the equalizing beam.

FIGURE 10



8. Reassemble new or re-bushed spring beam to frame bracket.
9. Reassemble axle connections.

NOTE: Before torquing Front Pivot Bolt, set Suspension at proper air spring mounting height.

10. Reconnect air springs, shock absorbers, height control valve link and pan hard rod (torque to proper specifications).
11. Reinstall wheels and tires. Remove jacks and/or stands, and build air reservoir pressure in excess of 100 psig (6.9 bar). Check for proper air spring mounting height, page 8.

PART REPLACEMENT INSTRUCTIONS *continued*

CAUTION While vehicle air system pressure capabilities may be in excess of 120 psig (8.3 bar), the air spring pressure must not be set above 100 psig (6.9 bar) for normal operating/driving conditions.

Suspension Air Springs

NOTE: A deflated air spring is not necessarily an indication that the air spring has failed. This could also mean that there is a leak in the air supply. Before replacing air springs, check all fittings and air springs for leaks using a soap and water solution. Confirm whether the leak is occurring on the air spring itself or in the air supply.

IMPORTANT: Air springs must be replaced with the proper OEM air spring for your vehicle installation. Check the flexible member and piston for the part number. If the part number is unidentifiable, contact your vehicle OEM for assistance.

CAUTION Be sure to use proper air spring replacement.

IMPORTANT: It is recommended that the vehicle be unloaded and on a level surface. Block vehicle to prevent rolling.

WARNING Always chock tires to prevent rollaway – serious injury or death may occur.

1. Support vehicle frame with adequate jacks or stands. Remove tires.

WARNING Always use jack stands of sufficient strength and position them according to chassis builder recommendations. Failure to do so may cause the vehicle to fall, resulting in vehicle damage and/or personal injury.

2. Exhaust air from suspension system. Exhaust air by:
 - A. Automatic Control, Height Control Valve – disconnect link at lower connection, then rotate control arm down to exhaust (approx. 45° down for Type CR HCV)/(approx. 20° down for Type IR HCV).
 - B. Disconnect air supply line from air spring.
3. Disconnect and remove old air spring assembly.
4. Install new air spring assembly and properly torque fasteners. See *Torque Charts* page 4.
5. Reconnect air supply line and link connections.
6. Remove jacks and or stands.
7. Build air supply system to compressor. Cut-off pressure, check for leaks.

CAUTION While vehicle air system pressure capabilities may be in excess of 120 psig (8.3 bar), the air spring pressure must not be set above 100 psig (6.9 bar) for normal operating/driving conditions.

TROUBLESHOOTING

Problem	Possible Cause and Remedy
Air spring related problems.	<p>Insufficient air pressure to suspension. Build vehicle air pressure in excess of 75 psig (5 bars). Malfunctioning air pressure protection valve. Test the valve using instructions from OEM or HCV manufacturer; replace if necessary, check air compressor. HCV control valve not working, follow HCV inspection procedure per OEM manual.</p> <p>Air leak or damaged line. Locate and repair.</p> <p>Air spring punctured or leaking. Replace with proper air spring, then check for proper clearance around air spring. 1-3/4" minimum. Also check shock absorbers.</p> <p>Tire, tire rim or brake component rubbing air spring. Check inside to inside tire dimension. There must be 1-3/4" minimum clearance around air spring, if not it may be necessary to reinstall suspension. Use tire rim back spacers to provide more clearance.</p> <p>Air brake chamber rubbing air cell. Relocate chamber or rotate clamp ring for more clearance (consult chamber manufacturer's instructions).</p> <p>Over-extension of air spring. Suspension riding too high. Re-adjust height control valve(s) to attain proper vehicle air spring mounting height, see page 8. Shock absorbers and/or connections broken, replace. Wrong length shock absorbers, replace. Mislocation of upper shock bracket, relocate. Air spring improperly installed, reinstall with proper installation instructions.</p> <p> "Temporary Operation:" If air loss occurs in the air suspension system and after attempts to repair have failed to correct the problem, it is recommended that the Height Control Valve Linkage be disconnected and all air exhausted from the system. There is an internal rubber bumper built into the air spring which makes it possible to operate the vehicle cautiously at a reduced speed to the nearest place of repair.</p>

Problem	Possible Cause and Remedy
*Air spring related problems. <i>continued</i>	⚠️ WARNING Do not overload the axle or the suspension or suspension component damage may occur, resulting in loss of vehicle control. Vehicle damage and/or serious personal injury or death may occur. Maximum suspension capacity: Contact vehicle OEM.
Front pivot bushings worn prematurely.	Alignment bushing(s) not welded or worn. (Front Pivot) Weld per installation instructions. If worn, replace and realign axles. Front pivot bolt loose. Connection not properly tightened, refer to page 9 for tightening procedure. Excessive lateral axle walk. (3/4" maximum). Axle connection bolts loose, properly tighten. Refer to proper Holland specifications for applicable model. Front pivot connection bushings worn, replace with proper SRK.
Repeated shock absorber failures.	Over-extending shock absorbers. Suspension set at improper air spring mounting height, re-adjust height control valve(s). Wrong length or improper replacement shock absorber(s), replace if necessary. Mislocation of upper shock bracket. Relocate, refer to installation instructions.
Rattling from front suspension.	Retainer strap loose. By design, the retainer strap must fit tight against top and bottom of spring beam at bushing end. If loose, retainer strap can be removed (<i>FIGURE 9</i>) and fit adjusted by pressing end together to close up any gap.
Axle misaligned.	Alignment bushing not welded or out of alignment. Realign and weld to specifications. Pivot bushing worn. Replace and torque to proper specifications.
Axles off tracking.	Alignment bushing(s) not welded or worn. If worn, replace. If not welded properly, weld alignment bushing(s) after axle is aligned. Axle misaligned. Align axle by removing weld from alignment bushing, loosen pivot connection, shift axle, torque pivot nut (see page 5). Check alignment if correct, reweld alignment bushing as described on page 9. Loose or worn bushings at pivot. If loose, tighten connection. Then check axle alignment and realign if necessary. Suspension not properly installed. Check suspension installation, correct where necessary.

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