# Chassis Suspensions



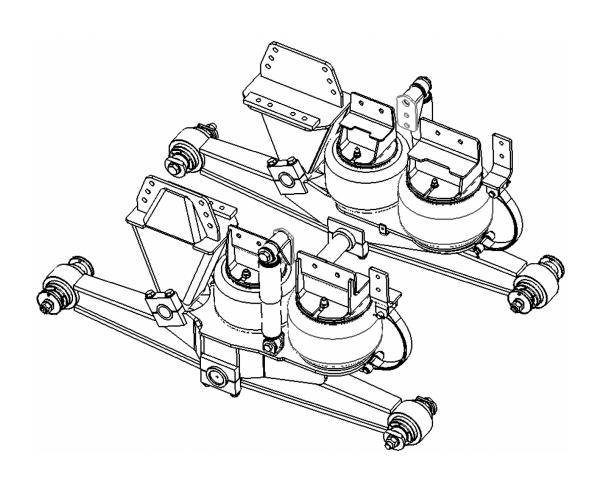
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> QUESTIONS? CALL CUSTOMER SERVICE 1-888-472-9326

# INSTALLATION INSTRUCTIONS

AIR LINK®
TANDEM DRIVE SUSPENSION

**RETROFIT** 



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## 1. INTRODUCTION

**IMPORTANT!** It is important that the entire installation instructions be read thoroughly before proceeding with suspension installation.

**WARNING!** A correct installation must result in the suspension and axle being "loaded" within the range specified by axle and suspension manufacturers. Please check vehicle specifications and intended usage to insure axle will be within Gross Axle Weight Rating (GAWR). No alteration of any suspension component is permitted. Link Suspensions of Canada is not responsible for damages from improper installation or operations beyond design capability. Link Suspensions of Canada in its sole discretion shall determine whether or not any product is defective or otherwise covered by warranty.

#### PRODUCT INSTALLER RESPONSIBILITIES

- Installer is responsible for installing the product in accordance with Link Suspensions of Canada specifications and installation instructions.
- □ Installer is responsible for providing proper vehicle components and attachments as well as required or necessary clearance for suspension components, axles, wheels, tires, and other vehicle components to ensure a safe and sound installation and operation.
- Installer is responsible for advising the owner of proper use, service and maintenance required by the product and for supplying maintenance and other instruction as readily available from Link Suspensions of Canada.

#### SAFETY SYMBOLS, TORQUE SYMBOL, and NOTES

cates a potentially hazard-

ous situation which, if not

avoided, may result in property damage.

safety alert symbol indi-

CAUTION

Λ	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.		The torque symbol alerts you to tighten fasteners to a specified torque value.
		NOTE:	A Note provides information or suggestions that help you correctly perform a task.
<b>≜</b> WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.	A	The electrical symbol indicates the presence of electric shock hazards which, if not avoided, may result in injury
٨	CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.		to personnel or damage to equipment.
CAUTION		Proper tightening of all bolts and nuts are required for proper operation. Need for proper torque value	
	CAUTION used without the	is indicated by wrench symbol and values	

these instructions.

will be found in Maintenance section of

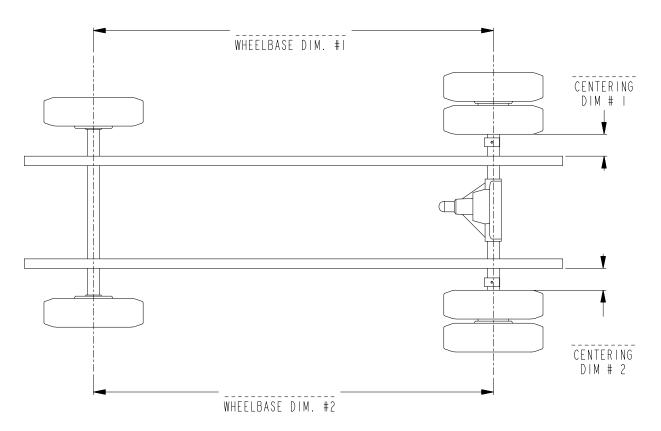
proper torque can cause component failure

resulting in accident with consequent injury.

Failure to maintain

# PRE-INSTALLATION CHECKLIST

- □ Check the vehicle wheel alignment prior to installation to insure no precondition already exists; record the information for verification.
- □ Remove the attached body, if applicable. Remember to disconnect all electrical connections to the body, and fuel filler tube, before removing the body. The installation can also be completed using a lift to raise the vehicle. If using a lift, chassis body removal may not be necessary but removal of rear wheels will aid in installation.
- □ If not using a lift, block the front wheels and apply the emergency brake so the vehicle cannot roll.
- Jack up the rear frame of the truck in order to unload the rear leaf springs (or use an overhead hoist). Do not lift the wheels off the ground (if not using a lift to install the suspension). Do not jack on the axle itself.
- Install the suspension in the listed sequence. Install one side of the suspension at a time. First, install the driver side completely, then install the passenger side. Removal of the rear wheels may aid in installation, but it is not necessary.
- □ Measure & record the wheelbase and centering dims before beginning installation.



#### \*\*READ FIRST\*\*

To ensure that you have ordered the correct model of suspension, please review this ordering guide and attached flow chart, prior to installation.

#### **ORDERING GUIDE**

When specifying an Air Link suspension for a retrofit application, please review the following items:

1) Two transverse (top of differential to side of frame) torque rods must be in place prior to suspension installation. The part number for the torque rod assembly is:

AL800007 For Rockwell/Meritor and Eaton axles

AL800013 For Mack axles

There also must be two torque rods from the differentials to the center cross-member.

2) The walking beam center bushings must be rubber, urethane\*, or steel\*. Bronze bushings must be replaced with rubber or urethane. Bronze center bushings should not be used with transverse rods as they will prematurely wear. The part number for the replacement rubber center bushing is:

AL800073 For 40,000 to 52,000 lb axles

- 3) Walking beams must be 52" or longer (54" with Mack differentials). Please consult Link Suspensions of Canada before installation into a truck with 50" walking beams.
- 4) An external Eaton CTD (control traction differential) box will restrict suspension installation. Please consult Link Suspensions of Canada before installation into this application.

The following points refer to the "Ordering Guide Flow Chart"
This chart will determine which Air Link suspension is best suited for the application.

- 5) If the center bushing of the shaft diameter is 2 3/4 ", then the Air Link suspension required is: AL834010 34,000 lb Air Link
- 6) A two speed Eaton differential or a Mack differential with 54" or shorter walking beams requires a two speed Eaton model Air Link. Two speed Eaton differentials with 60" or longer walking beams, Mack differentials with 60" or longer beams and single speed differentials require a standard Air Link suspension.
- 7) The AL-340 model Air Link has a weight capacity of 34,000 lb with a site capacity of 38,000 lb. The AL-460 model Air Link has a weight capacity of 46,000 lb with a site capacity of 50,000 lb. The AL-520 model Air Link has a weight capacity of 52,000 lb with a site capacity of 56,000 lb. The AL-750\*\* model Air Link has a weight capacity of 75,000 lb with a site capacity of 80,000 lb.
- 8) The unloaded ride height from the bottom of the frame to the center of the walking beam (center bushing) must be measured. Unloaded is defined as the bare frame rails (i.e. no mixer drum or box).
  - The standard Air Link ride height of 17 1/2" will retrofit unloaded ride heights of 18 1/2" or less.
  - The Air Link is also available with an optional ride height of 19 ½" & 21" to retrofit unloaded ride heights from 18 ½" to 20" and 20" to 22" respectively.

#### **Air Link Options**

- A) Air & Fastener Assembly Includes all bolts and fittings required for a complete retrofit.
- B) *Shock Absorbers* The Air Link, like any walking beam suspension, uses shocks when required to assist in preventing wheel hop and axle kick. Shock assemblies are available for the Air Link suspension (for the smoothest possible ride) and for either differential (traction purposes, to prevent wheel hop).
- C) Dual Needle Pressure Gauge Assembly This option allows the operator to determine axle loading from bag pressures.
- D) *Dump Valve Assembly* This option allows the operator to dump the air from the bags. This is not normally used as the Air Link has higher roll stability than any other air suspension available.

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<sup>\*</sup>Requires shims \*\*Requires 60" walking beams

#### AL-340 / AL-460 INSTALLATION

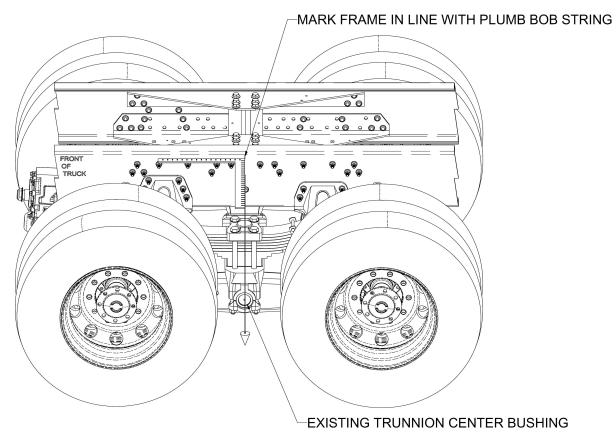
#### Link Suspensions of Canada recommends installation by qualified suspension specialist.

#### 1. BEFORE INSTALLATION CHECKLIST

- A) \*\*ONLY USE THE INSTRUCTIONS SUPPLIED WITH THIS SUSPENSION. DO NOT USE AN OLD SET OF INSTRUCTIONS. OLD INSTRUCTIONS MAY BE OBSOLETE.\*\* ALSO ENSURE THAT YOU HAVE THE CORRECT INSTRUCTIONS FOR YOUR MODEL.
- B) \*\*Two transverse torque rods (from top of the differential to the side of the frame) must be in place.\*\* If not, install them prior to removing the old suspension. There also must be two torque rods from the differentials to the center cross-member.
- C) Check all existing torque rod bushings for wear. Check walking beam center and end bushings for wear. Replace any worn bushings. Bronze center bushings cannot be used with transverse rods as they will prematurely wear.
- D) If in doubt of rear alignment, have it checked before removing the old suspension. If the existing suspension is out of alignment and it is not corrected, then the Air Link will also be out of alignment. (See Appendix A)
- E) Measure drive line angels before and after installation to ensure that they are within manufacturer's specifications. Record these values in Appendix D.

#### 2. MARKING OLD SUSPENSION CENTERLINE LOCATION ON FRAME (Refer to Fig. 2)

- A) Leave the old suspension in place.
- B) Raise the truck rear wheels by jacking up the frame of the truck. This will allow the rear wheels to align without loading. Lower the truck back onto the floor.
- C) Ensure the frame is level.
- D) Place square against the side of the frame (near top) and drop a plumb bob from the square to the centerline of the trunnion shaft. Mark the centerline of the trunnion bushing (shaft floats) on the frame (Fig. 2). Put the mark near the top of the frame so that I will not be covered by the Air Link hangers during installation.
- E) Repeat D) for the other side of the frame.



#### 3. REMOVING OLD SUSPENSION

- A) Block up truck from each end of rear axles to approximately the same height. Remove wheels. Remove fenders if they appear to be in the way.
- B) Support frame and remove old suspension, leaving walking beams in place.

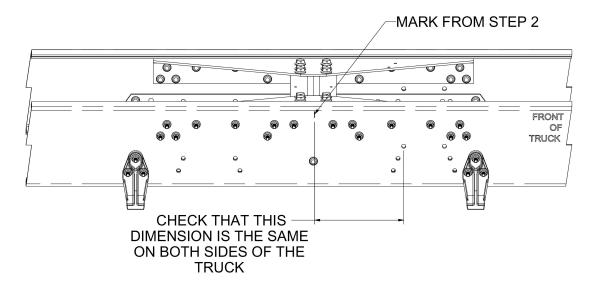
C) Clean rust and debris from frame rails. Check for cracks in frame rails and cross members and repair if necessary.

#### 4. CHECK TRUNNION SHAFT LOCATION (Refer to Fig 4, next page)

\*\*In order to maintain drive line angles etc., it is very important that the location of the trunnion shaft be unchanged after suspension installation. These next steps ensure that the frame marks are in the correct locations.\*\*

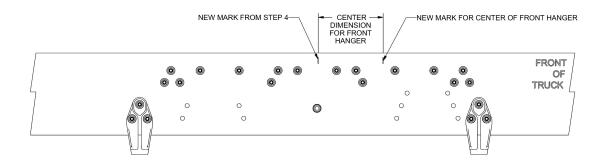
- A) Measure from the mark you put on the frame (in step 2D) ahead to a reliable reference point such as a suspension hole or cross member. Do the same for the other side. (Measure to the corresponding reference point.)
- B) Compare these two measurements. If they are not equal, then split the difference and re-mark both sides of the frame this new distance from each reference point

For example: If the measurement from the trunnion shaft mark to a bolt hole is 10" on one side and 10 1/8" on the other side, then remark both sides of the frame 10 1/16" back from the suspension bolt holes.



#### 5. MARKING THE LOCATION OF THE FRONT HANGER (Refer to Fig. 5)

- A) Measure 11" ahead from the mark in 4B. Mark the frame at that point. Repeat for the other side. This is where the middle of the Air Link front hanger will be positioned.
- B) Re-check that these new marks are correct by measuring from each to a reliable reference point such as a suspension bolt hole or cross member. The measurements should be equal.
- C) It is at this point that certain existing problems can be corrected. If you are making an alignment correction, proceed to Appendix A before going any further.



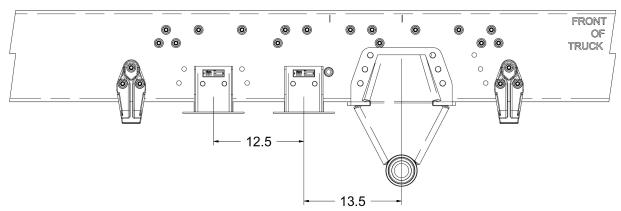
#### 6. POSITIONING THE FRONT HANGERS (Refer to Fig. 6, next page)

A) Ensure that the frame rails are cleaned of rust, etc. Lightly clamp the large Air Link front hanger against the frame so that the middle of the front hanger is in line with the mark at 11 inches. The middle of the front hanger is center punched near the top. Repeat for the other side.

- B) Measure from the center punched marks of the front hangers to a reliable reference point such as an old suspension bolt hole or cross member.
- C) Position air spring hanger "A" 13 1/2" back from the front hanger. (Fig. 6)
- D) Position rear air spring hanger "B" 12 1/2" back from the air spring hanger "A". (Fig. 6)

  Note: A two speed Eaton model Air Link has a special left rear spring hanger (shown below)
- E) Tighten the clamps. All hangers must be tight at the bottom and the side of the frame.

#### CHECK THAT BOTH MEASUREMENTS TO A RELIABLE REFERENCE POINT ARE STILL EQUAL

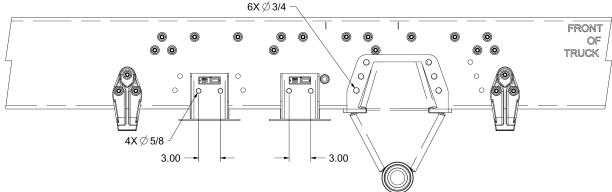


#### CLAMP ALL HANGERS AND BRACKETS TIGHTLY TO BOTTOM AND SIDE OF FRAME

#### 7. DRILLING BOLT HOLES (Refer to Fig. 7)

- A) It is recommended that new frame holes be drilled. If old holes are used, ensure that the frame hole and the hole drilled in the hanger align perfectly.
  - Note: When using old bolt holes, the front hanger must have a minimum of six 3/4" fasteners per hanger.
- B) Clamp hangers to bottom and side of frame or use the height of the truck to hold hangers tight to frame. Bolts must not carry weight
- C) Drill six new 3/4" holes and four new 5/8" holes through the hangers and frame as shown. Drill holes square to the frame and as close to shown locations as possible. Drilling 1/4" pilot holes may speed drilling of the 3/4" and 5/8" holes (Fig. 7)
- D) Install six new 3/4" x 2 1/2", shouldered frame bolts and torque to 375 ft•lb (508 N•m) without anti-seize or 225 ft•lb (305 N•m) with anti-seize. Over-torqueing will cause frame bolts to stretch and work loose. Undertorqueing will cause bolts to break. Torque the nuts, not the bolts. If necessary, install the nuts on the outside of the frame.

CLAMP HANGERS AND BRACKETS TIGHTLY TO BOTTOM AND SIDE OF FRAME BEFORE DRILLING

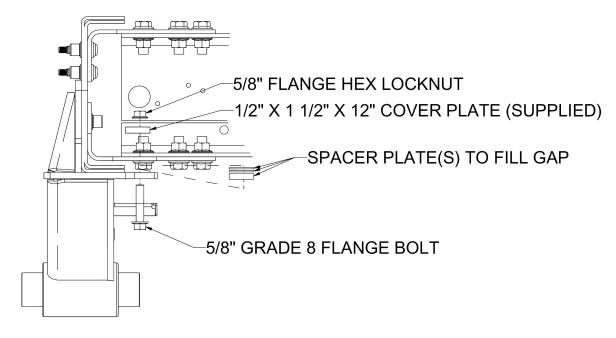


NOTE: WHEN USING OLD BOLT HOLES, THE FRONT HANGERS MUST HAVE EACH A MINIMUM OF SIX 3/4" FASTENERS. THE AIR SPRING BRACKETS MUST HAVE A MINIMUM OF ONE 5/8" FASTENER PER BRACKET.

#### 8. CROSS MEMBER BOLTING (Refer to Fig. 8, next page)

A) Reuse the two spacers from the old suspension; which were installed between the old hanger and cross-member bow-tie. If necessary, cut the spacer in half and make two.

- B) Additional plates (1/8", 1/2", & 3/4") are provided in the Installation and Accessory kit; stack in between the top hanger and bow-tie. Use as many as required to fill the gap as shown in Fig. 8.
- C) Drill through the cross member bow tie using the holes in the front hanger as a guide. Bolt each top spacer in place as shown in Fig. 8.
- D) It is recommended to use the largest spacers possible to maximize contact between the cross member and the front hanger.



#### 9. INSTALLING PRESSURE PROTECTION VALVES & AIR LINES

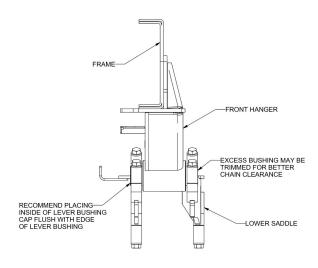
- A) It is easiest to perform the rough plumbing of the air lines now, while the truck is in the air and the lower saddles are not installed.
- B) Install the pressure protection valve and fitting on the dry tank.
- C) Drill a hole through the frame cross member to accept a frame terminal. Install a frame terminal, 90 degree fitting and tee on the cross member.

**Note:** Due to space restrictions and thickness of some cross members, the frame may be unable to penetrate cross member. It is possible to fabricate a bracket to accept the frame terminal, as shown in Fig. 13.

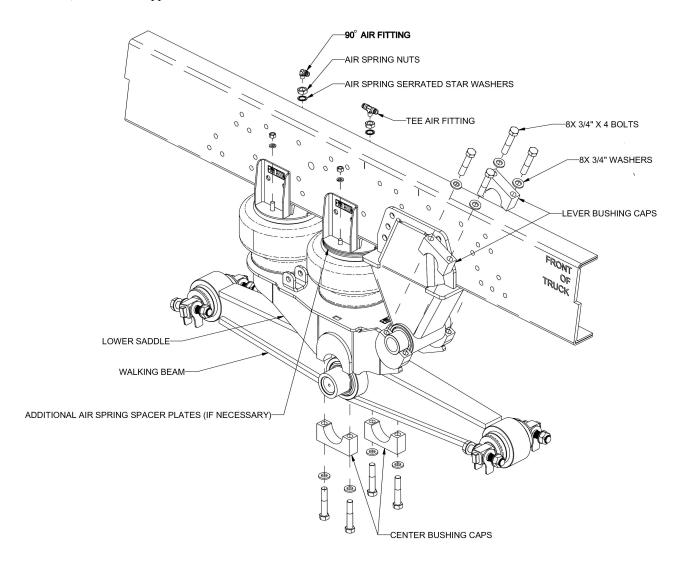
D) Run line from cross member tee to each height control valve location.

#### 10. LOWER SADDLE AND AIR SPRING INSTALLATION (Refer to Fig. 10, next page)

- A) Loosely attach each of the air springs to the lower saddle. Bolt the air springs on hand tighten, using the 3" bolts provided.
- B) The serial number plate attached to each saddle should be facing the side of the frame.
- C) Place each lower saddle on the walking beam center bushing as shown in Figure 10. Caps are identified by numbers – match the numbers correctly!
- D) Lower the truck so that the lever bushing fits into the lower saddle. Bolt the lever bushing caps on hand tight. Caps are identified by numbers – match the number on the cap to the number on the lower saddle.
- E) Bolt the center bushing caps on hand tight.
- F) Attach the air-springs to the air spring hangers as shown in Fig. 10.



- G) If maximum chain clearance is required, slide the lower saddle inwards until the inside lever bushing cap is flush with the bushing edge (Fig. 10D). The excess bushing can be trimmed if it interferes with chain clearance.
- H) Ensure that the walking beam can still articulate up into the Air Link lower saddle without contacting the lever bushing caps.
- I) If chain clearance is not an issue, just center the lower saddle over the center bushing. The lever bushing does not have to be centered in the lower saddle.
- J) Refers to Appendix B for shock installation.

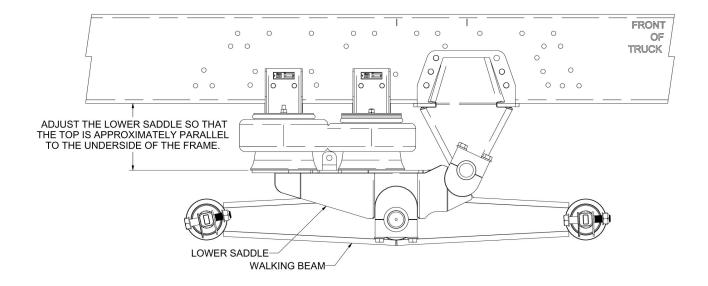


#### 11. TIGHTENING CAP BOLTS AND ADJUSTING AIR SPRINGS (Refer to Fig. 11)

- A) Ensure that the center bushings are protruding through the caps exactly the same distance on both sides of the truck.
- B) Adjust the lower saddle so that the top of it is parallel to the underside of the frame, prior to torqueing the cap bolts (Fig. 11). This will automatically adjust your ride height to the correct measurement. Place a block in between the rear air spring hanger and lower saddle to maintain this height.
- C) Apply blue Loctite to all the cap bolts and torque to 250 ft•lb (339 N•m).
- D) Apply blue Loctite to the 3" x 1/2" bolt holding the air spring in place. Using the 1/2" flat washer, lock washer, and bolt, fasten the air spring base to the lower saddle. Tighten the bolts to 30 ft•lb (41 N•m).

#### 12. HEIGHT CONTROL VALVE INSTALLATION

- A) See below and enclosed height control valve instructions for installation guidelines.
- B) The two height control valves are mounted on each side of the middle cross member bow tie or frame wall directly above the inside of each lower saddle. A height control tab is located on the side of each lower sad-



dle, between the air springs.

Note: Both height control valves provided must be used.

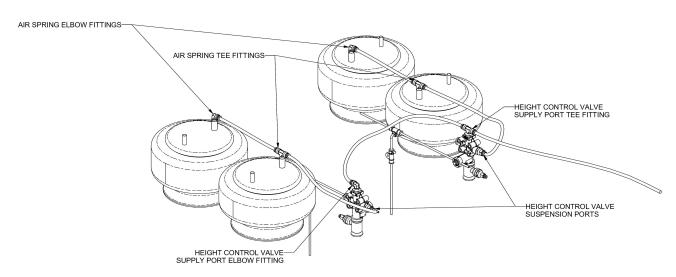
- C) Assemble the linkage rod to the height control valve. Position the assembly near the cross member bow tie or frame wall so that the linkage can be attached to the height control tab in an upright position.
- D) Included are adjustable brackets and arms to attach to the height control valves. The brackets have many different holes to allow for various mounting positions. The arms are varying lengths. Attach the bracket to the height control valves so that it can be attached to the frame cross member bow tie or frame wall. The height control valve arm must be able to swing up and down 45 degrees unobstructed and the linkage should be as vertical as possible. Weld or bolt the brackets to the cross member bow tie or frame wall.

**Note:** It is recommended that the longest possible arm be used to prevent valves from overreacting. Long or medium arms are preferred.

E) Attach the linkage rod to the height control tab on the lower saddle, with blocks still in place, center valve with wooden dowel provided. Tighten the hose clamp around the base of the linkage rod, remove centering dowel. The rod must be flush or protrude slightly through rubber. WARNING: Over tightening the hose clamps will cause them to strip and fail.

#### 13. PLUMBING THE AIR SYSTEM (Refer to Fig. 13)

**Note:** If you are also installing the optional dump valve kit with the air kit, proceed to Appendix C and follow the Air System Instructions instead of these.



A) Install a 90 degree fitting on each front air spring.

Note: If installing a 2 speed Eaton Air Link, use a tee fitting on the driver's side front air spring and a 90

degree fitting on the driver's side rear air spring.

- B) Install a tee fitting on each rear air spring.
- C) Run an air line from the pressure protection valve to the cross member frame terminal.
- D) Run air lines from each height control valve bottom port to the tee on the rear spring.

**Note:** If installing a 2-speed Eaton Air Link, run the driver's side air line from the valve to the left front air spring then the rear air spring.

- E) Run air lines from each rear air spring tee to each front air spring.
- F) Tie wrap all air lines underneath the frame so that they will not be accidentally damaged.

#### 14. ADJUSTING THE RIDE HEIGHT

- A) Adjust the height control valve linkage rod so that the lower saddle is parallel with the frame, as shown in Fig. 11
- B) At the operating ride height, rotate the walking beam so that the front axle touches the axle stop. Check that the top of the walking beam does not contact the bottom of the front hanger. Adjust axle stops if necessary.
- C) Install the wheels and lower the truck to the ground. Air up the system and re-adjust the height control valve to maintain the correct ride height as shown in Fig. 11. System pressure may be minimal due to bushing preload.
- D) Measure the drive angles and compare with the original measurements and manufacturer's specifications. Adjust angles with torque rods if necessary. Record these corrected values in Appendix D. Save this sheet for your records.
- E) Road test and re-adjust ride height if necessary. If possible, adjust the ride height with a loaded tractor.
- F) Load the tractor to expected full load and check clearances between all components. There should be a minimum of 3/4" of clearance with the vehicle fully loaded. Articulate the walking beam to ensure clearances are maintained.
- G) Perform a wheel alignment to check for any misalignment

#### 15. SHOCK KIT INSTALLATION

A) See Appendix B for shock kit installation instructions.

#### 16. FOLLOW UP

A) After a two week break in period, check all bolts for tightness and re-torque to required specifications with a torque wrench. See the Air Link Maintenance on following page for further details. Over-torqueing will cause frame bolts to stretch and work loose. Under torqueing will cause bolts to break.

#### **OPTIONS AVAILABLE**

- Dual needle air pressure gauge kit for monitoring spring pressure and determining axle loading.
  - Part number AL800005.
- Dump valve kit for deflating the air springs quickly.
  - Part number AL800004.
- Shock kit for damping the saddle in severe traction applications and for the smoothest ride possible.
  - Part number AL800001.
- Differential shock kit for damping the walking beam in severe traction applications.
  - Part number AL800002.

#### Call Link Suspensions of Canada for further information

1-888-472-9326

#### AIR LINK MAINTENANCE

The Air Link suspension has proven itself to be virtually maintenance free in all applications. Like any equipment, the Air Link should be checked regularly. The following items should be examined:

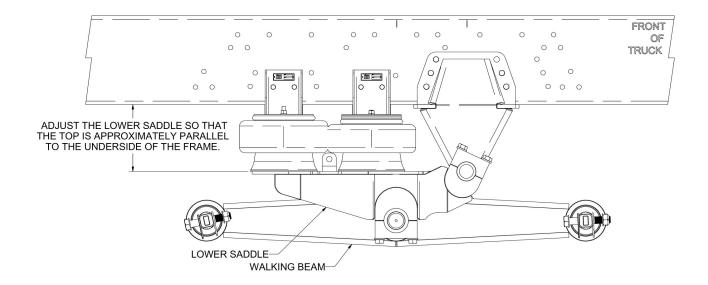
#### Monthly

- All bolts should be checked for tightness.
- Air springs should be checked for wear or road damage.
- Check that the saddle is level (Fig.11).

#### **Every 6 Months**

- Air spring mounting nuts and bolts (top and bottom) should be tight. Torque all nuts and bolts to 30 ft•lb (41 N•m).
- Transverse rods and brackets should be checked for cracks and wear.
- Bushings should be checked for wear.
- A lever bushing is due for replacement if there is greater than 3/8" of rubber missing from the outside edge. Normal wear is evidence by rubber shredding from each end of the bushings.
- Walking beam bushings are worn when the bogie assembly experiences lateral movement greater than 3" (as per Hendrickson guidelines). Normal wear is evidence by rubber shredding from each end of the bushings.
- · Height control valves, air lines and connections should be examined for leaks. Repair or replace as required.
- Shocks should be checked for leakage and wear.

#### Every year



• Re-torque all bolts to values specified in the installation instructions.

3/4" frame bolts
5/8" frame bolts
375 ft•lb (508 N•m) or 225 ft•lb (305 N•m) with anti-seize
5/8" frame bolts
212 ft•lb (287 N•m) or 128 ft•lb (174 N•m) with anti-seize
3/4" suspension cap bolts
250 ft•lb (339 N•m)
Air spring nuts and bolts
30 ft•lb (41 N•m)

# PLEASE RETAIN FOR REFERENCE Call Link Suspensions of Canada for further information. 1-888-472-9326

#### APPENDIX A

#### 1. CORRECTABLE PROBLEMS

- A) If both drive axles have a thrust angle in excess of the recommended maximum, the Air Link front hangers can be moved ahead or back to return the axles to their proper position.
- B) If one drive axle has an excessive thrust angle, then the axle can be moved ahead or back by replacing the end bushing adapter kit with an alignment adapter assembly such as Euclid's E-4844.
- C) If the axles have adjustable style bar pin end bushings, then either or both axles can be corrected by using shims available from the manufacturer.

#### 2. ADJUSTMENT PROCEDURE (For problem A above only)

- A) Determine from the alignment facility exactly how much the Air Link front hanger should be moved in order to move the wheels the required amount.
- B) Deduct or add this amount to the front hanger placement measurement referred to on page 4 (11" for the AL-460 or 10" for the AL-520 model).

#### **EXAMPLE**

The alignment sheet indicated a thrust angle of  $0.5^{\circ}$  for both axles. The corrective measure for this is to move the right wheels ahead or the left wheels back. The amount the Air Link front hanger should be moved can be calculated by the alignment shop.

### APPENDIX B OPTIONAL SHOCK ASSEMBLY – INSTALLATION INSTRUCTIONS

- A) Install the Air Link as per instructions.
- B) Deflate the air springs so that the suspension is completely closed. I.e. The top rear air spring hangers are resting on the rubber blocks inside the rear air springs.

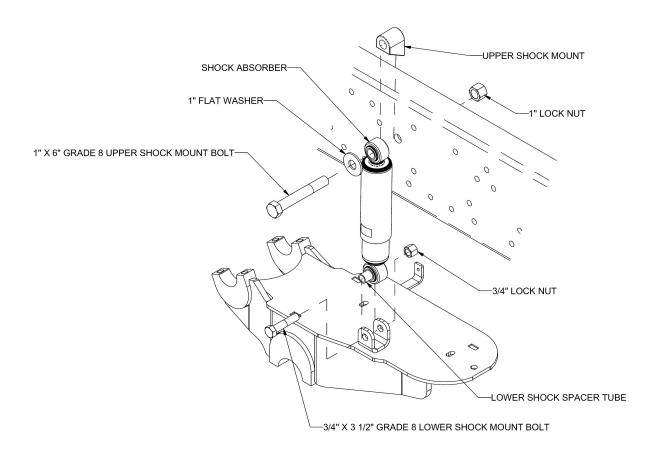
**Note:** The suspension may not close completely; this is because the lever bushing is new and stiff. The bolts on the lever bushing caps may have to be loosened to allow the suspension to close completely.

- C) Close the shock completely. Open it 3/4" from the closed position. Scribe the inner shock housing so that you can find this position again.
- D) The shock is installed in between the air springs on the outside of the frame. Temporarily bolt the shock bracket tightly on the outside bottom eye of the shock as shown in Fig. B. Insert the top bolt through the top eye of the shock and through the 2 1/8" spacer bracket but not any further.
- E) If the lower shock bracket is pre-installed, proceed to step G. Otherwise, hold the top of the shock and spacer against the frame and shock bracket against the top of the saddle. Position the shock bracket half way in between the air springs such that the shock is vertical when viewed from the side and end. Mark the position of the shock bracket on the saddle.

**Note:** The shock should be at least 3/4" away from an inflated air spring.

**Note:** If installing a 2-speed Eaton Air Link, the shock may have to be moved out farther from the frame than the 2 1/8" spacer block provided. This is in order for the shock to clear the air springs. Use 3" square steel plates to move the spacer block outwards.

- F) Disassemble the shock bracket from the shock and weld the lower bracket to the saddle. Protect the air springs from the welding procedure.
- G) Bolt the shock to the lower bracket using the shock tube and washer.
- H) Ensure that the suspension is still completely closed.
- I) Close the shock to the line scribed on the inner housing. Keeping the shock vertical, mark the location of the upper eye on the frame. The center of this location is generally 2" from the top of the frame. Check for interference on bow-tie frame before drilling hole.
- J) Drill 3/4" hole (or 1" hole for Koni shocks) at the marked location and install the shock using the bolt, spacer bracket, shock tube (for Monroe shocks only), washer, and nut.



### APPENDIX C OPTIONAL DUMP VALVE ASSEMBLY AND AIR KIT – INSTALLATION INSTRUCTIONS

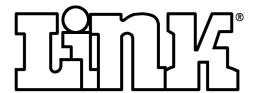
- A) Install the pressure protection valve and fitting on the dry tank.
- B) Drill a hole through the frame cross member for the frame terminal. Install a frame terminal, 90 degree fitting, and a tee on the cross member.
- C) Install a 90 degree fitting on each front air spring.

**Note:** If installing a 2-speed Eaton Air Link, use a tee fitting on the driver's side front air spring and a 90 degree fitting on the driver's side rear air spring.

- D) Install a tee fitting in each back air spring.
- E) Run an air line from the pressure protection valve to tee fitting.
- F) Run an air line from the tee fitting to the cab location where the toggle valve will be located.
- G) Mount the toggle valve in the cab and attach the air line to the inlet of the valve.
- H) Run an air line from the outlet of the toggle valve to the rear of the truck near the air springs. Install a tee on the end of this line. The air lines off of this tee will run to the top of each height control valve.
- I) Run the lines from the tee in H) above to the top (removing the existing elbow) of each height control valve.
- J) Run an air line from the tee near the pressure protection valve to the cross member frame terminal.
- K) Run air lines from the cross member tee to each height control valve.
- L) Run the lines from each height control valve bottom port to the tee on each rear air spring

**Note:** If installing a 2-speed Eaton Air Link, run the air line from the outlet to the front air spring then the rear spring on the driver's side only.

- M) Run air lines from each rear air spring to each front air spring elbow.
- N) Tie wrap off all air lines underneath the frame so that they will not be accidentally damaged.



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