HTECHNICAL PROCEDURE

HLK SERIES

SUBJECT: HLK Installation Procedure

LIT NO: H605

DATE: April 2006 REVISION: C







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INTRODUCTION

The following instructions are intended for the installation of Hendrickson HLK air kits on vehicles equipped with Hendrickson auxiliary suspensions.

NOTE: Read the entire installation instructions thoroughly before proceeding with an air kit installation.

For additional information concerning air kit selection, contact the Hendrickson Customer Service Department at 800-660-2829.

Alteration of an air kit or other suspesion components is not permitted.

Any installation deviations must be approved, in writing, by Hendrickson's Product Engineering Department. Failure to comply with any of the above will void warranty.

STANDARD COMPONENTS

All air kits come standard with (1) pressure protection valve and (2) quick release valves for a single lift axle application, (4) quick release valves for dual application, or (6) quick release valves for triple application.

OPTIONAL COMPONENTS

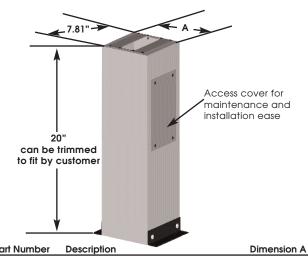
The following options will facilitate or enhance the installation and the operation of your air kit:

BRAKE DEACTIVATION VALVE

A pilot valve used to allow auxiliary axle brakes to normally apply when the suspension is in the "DOWN" position. However, when the auxiliary axle is in the "UP" position, the brakes are released to eliminate hang-ups during high centering and to conserve system air pressure.

CENTER CONSOLE BOXES

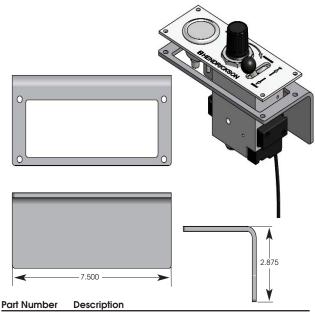
A console box designed to accompany the single, dual, triple and quad inside mount air kits. These boxes are made of steel and contain the tapped holes to mate with the control panel. They are 20" deep for between the seat installation placement, and can be trimmed to any height for convenient operation. See picture below.



I dii Nuilibei	Description	DITTETISION
	Single Panel control box	
004351	Triple Panel control box	10 15/18″
004352	Quad Panel control box (2 Dual Panels)	13 7/16"

MOUNTING BRACKET

A mounting bracket designed to accompany the single panel air kits. The bracket can be mounted on the side of the center console box. See picture below.



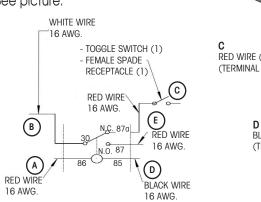
005771 "L" shape bracket that allows you to mount the control panel on the side of the center console box (single panel application only).

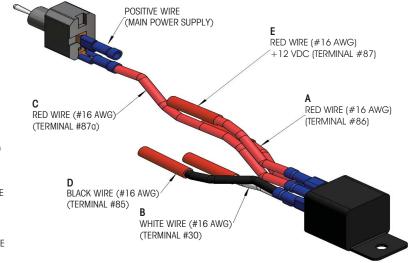


OPTIONAL COMPONENTS (continued)



An electrical relay switch that allows the operator to control an "outside mounted" kit from inside. See picture.





Part Number Description

005880 Relay Switch Assembly - Allows the customer to raise and lower suspension from inside the cab. Comes standard with all frame mounted controls.

Connections: A. From Reverse Signal D. Ground
B. To Solenoid Valve E. +12 VDC

C. +12VDC

PRE-INSTALLATION SAFETY PRECAUTIONS

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

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

- WARNING: ELECTRICAL ENERGY CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. DISCONNECT THE VEHICLE'S BATTERY BEFORE CONDUCTING WORK ON ANY PART OF THE VEHICLE'S ELECTRICAL SYSTEM.
- WARNING: STORED AIR PRESSURE CAN CAUSE SEVERE PERSONAL INJURY AND COMPONENT DAMAGE. RELEASE ALL PRESSURE FROM AIR SPRINGS, AIR LINES AND OTHER APPLICABLE COMPONENTS BEFORE CONDUCTING WORK ON ANY PART OF THE VEHICLE'S AIR SYSTEM. WEAR PROPER EYE PROTECTION AT ALL TIMES.
- WARNING: DO NOT MODIFY OR REWORK PARTS. DO NOT USE SUBSTITUTE PARTS OF THE SUSPENSION OR AXLE COMPONENTS. USE OF A MODIFIED OR REPLACEMENT PARTS NOT AUTHORIZED BY HENDRICKSON MAY NOT MEET HENDRICKSON'S SPECIFICATIONS, AND CAN RESULT IN FAILURE OF THE PART, LOSS OF VEHICLE CONTROL, AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE. USE ONLY HENDRICKSON AUTHORIZED REPLACEMENT PARTS DO NOT MODIFY PARTS WITHOUT AUTHORIZATION FROM HENDRICKSON.
- **WARNING: PERSONAL PROTECTIVE EQUIPMENT: ALWAYS WEAR PROPER EYE PROTECTION AND OTHER REQUIRED PERSONAL PROTECTIVE EQUIPMENT TO HELP PREVENT PERSONAL INJURY WHEN YOU PERFORM VEHICLE MAINTENANCE, REPAIR OR SERVICE.



INSTALLATION INSTRUCTIONS

- 1. Follow installation schematic for your air control.
- 2. Connect the gage light red wire to a power source that turns on with the running lights circuit.
- 3. Connect the gage light black wire to a good vehicle ground.
- 4. Connect solenoid black wire to a power source that is on, only with the backup lights.
- 5. Connect solenoid black (non-polarized) wire to a good vehicle ground.

Green fittings connect to the supply tank.

Blue fittings connect to the lift springs

Red fittings connect to the ride springs.

Yellow fittings connect to the exhaust ports (for lift bags).

Violet fittings connect the auxiliary components.

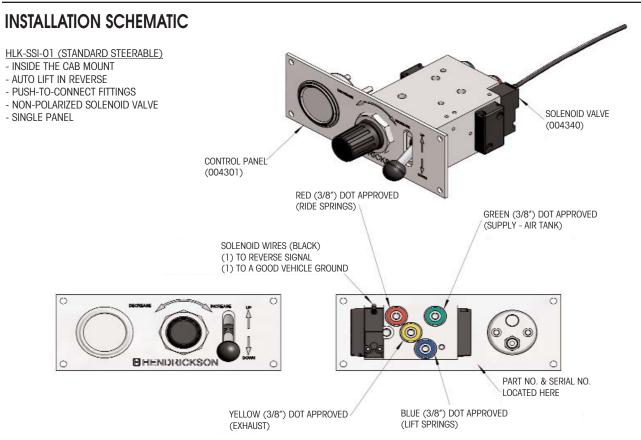
INSTALLATION TIPS

⚠ CAUTION: Use a filter rated to at least 40 micron. Anything less could be detrimental to the air control panel.

- 1. Use only air brake tubes that conform to S.A.E. J844 and ensure all tubes are free from kinks.
- 2. Ensure that the minimum bend radii are achieved on all tubes prior to assembly. Recommended minimum radii: 1/4" Tube 1,000 inches

3/8" Tube - 1, 500 inches

- 3. Use only dedicated tube cutters when preparing tube ends for insertion into push-in fittings.
- 4. Ensure tube ends are square, free from all damage, and clean.
- 5. Ensure tube is fully inserted into fittings (tube ends are pushed past both the grip ring and the sealing O-ring).
- 6. Ensure fitted panels have enough free length of tube to ensure the tube in the fittings is not under any tension.
- 7. Crimp wires for all electrical connections into the butt connectors provided using an appropriate crimp tool.
- 8. Ensure there is sufficient free electrical cable to prevent wires and connections from being under tension.



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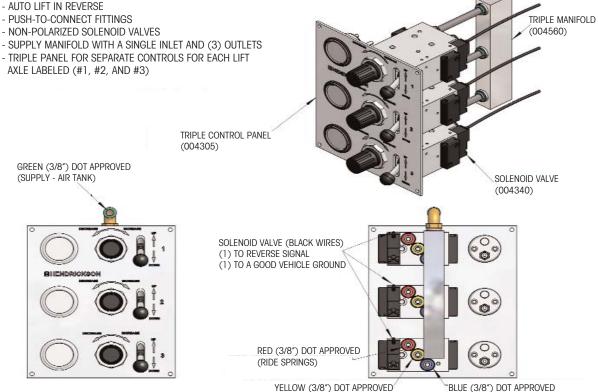


INSTALLATION SCHEMATIC (continued) HLK-SDI-01 (STANDARD STEERABLE) - INSIDE THE CAB MOUNT - AUTO LIFT IN REVERSE - PUSH-TO-CONNECT FITTINGS - NON-POLARIZED SOLENOID VALVES - SUPPLY MANIFOLD WITH A SINGLE INLET AND A DUAL OUTLET - DUAL PANEL FOR SEPARATE CONTROLS FOR EACH LIFT AXLE LABELED (#1 AND #2) DUAL MANIFOLD (SUPPLY) (004559)DUAL CONTROL PANEL (004303) GREEN (3/8") DOT APPROVED SOLENOID WIRES (BLACK) (SUPPLY - AIR TANK) (1) TO REVERSE SIGNAL (1) TO A GOOD VEHICLE GROUND RED (3/8") DOT APPROVED (RIDE SPRINGS) YELLOW (3/8") DOT APPROVED BLUE (3/8") DOT APPROVED (EXHAUST) (LIFT SPRINGS)

HLK-STI-01 (STANDARD STEERABLE)

- INSIDE THE CAB MOUNT

- TRIPLE PANEL FOR SEPARATE CONTROLS FOR EACH LIFT AXLE LABELED (#1, #2, AND #3)

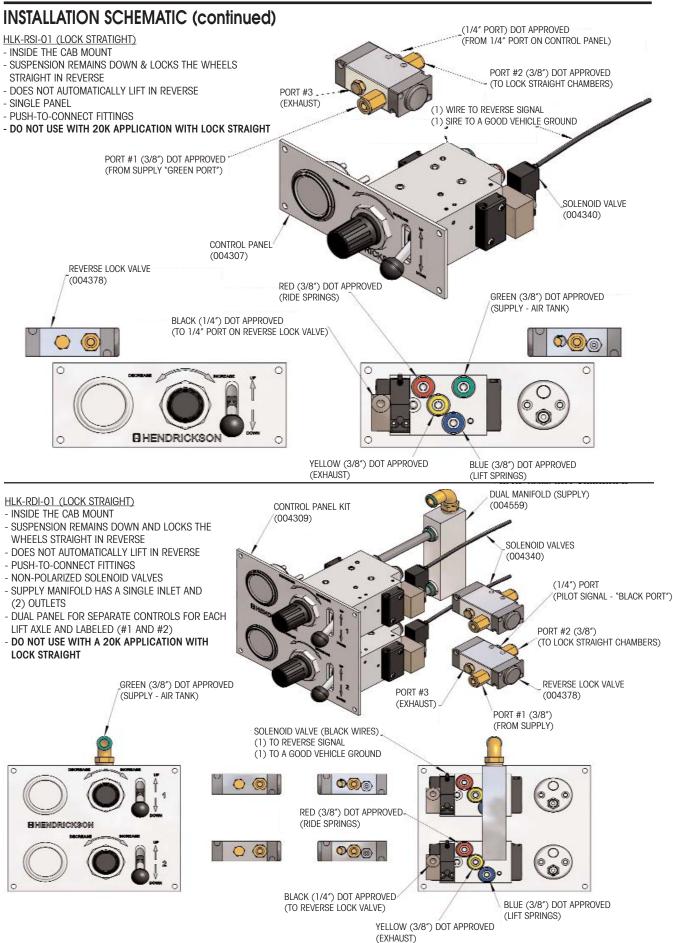


H605 C

(EXHAUST)

(LIFT SPRINGS)





(1/4") PORT

PORT #2 (3/8")

(FROM PILOT SIGNAL "BLACK PORT")

(TO LOCK STRAIGHT CHAMBERS)

REVERSE LOCK VALVE

(004378)

INSTALLATION SCHEMATIC (continued)

HLK-RTI-01 (LOCK STRAIGHT)

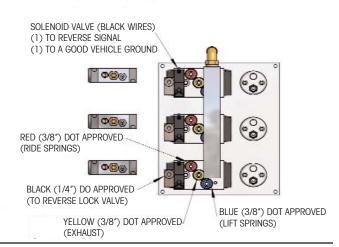
- INSIDE THE CAB MOUNT
- SUSPENSION REMAINS DOWN AND LOCKS THE WHEELS STRAIGHT IN REVERSE
- DOES NOT AUTOMATICALLY LIFT IN REVERSE
- PUSH-TO-CONNECT FITTINGS
- NON-POLARIZED SOLENOID VALVES
- SUPPY MANIFOLD HAS A SINGLE INLET AND (3) OUTLETS
- TRIPLE PANEL FOR SEPARATE CONTROLS FOR EACH LIFT AXLE AND LABELED (#1, #2, AND #3)
- DO NO USE WITH 20K APPLICATION WITH LOCK STRAIGHT

CONTROL PANEL KIT (004311) PORT #3 PORT #1 (3/8") (EXHAUST) (FROM SUPPLY "GREEN PORT")

TRIPLE MANIFOLD (SUPPLY)

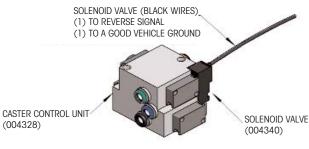
(004560)

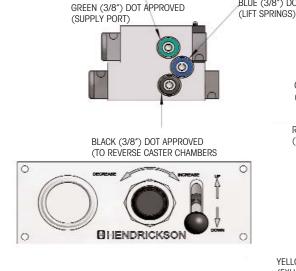


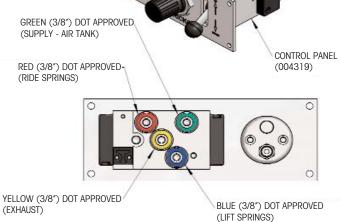


HLK-ASI-01 (REVERSE CASTER)

- INSIDE THE CAB MOUNT
- SHIFTS CASTER ANGLE TO ALLOW SUSPENSION TO STEER IN REVERSE
- DOES NOT AUTOMATICALLY LIFT IN REVERSE
- PUSH-TO-CONNECT FITTINGS
- NON-POLARIZED SOLENOID VALVE
- SINGLE PANEL
- SUSPENSION WILL NOT SHIFT (CASTER) IN THE "RAISED" POSITION







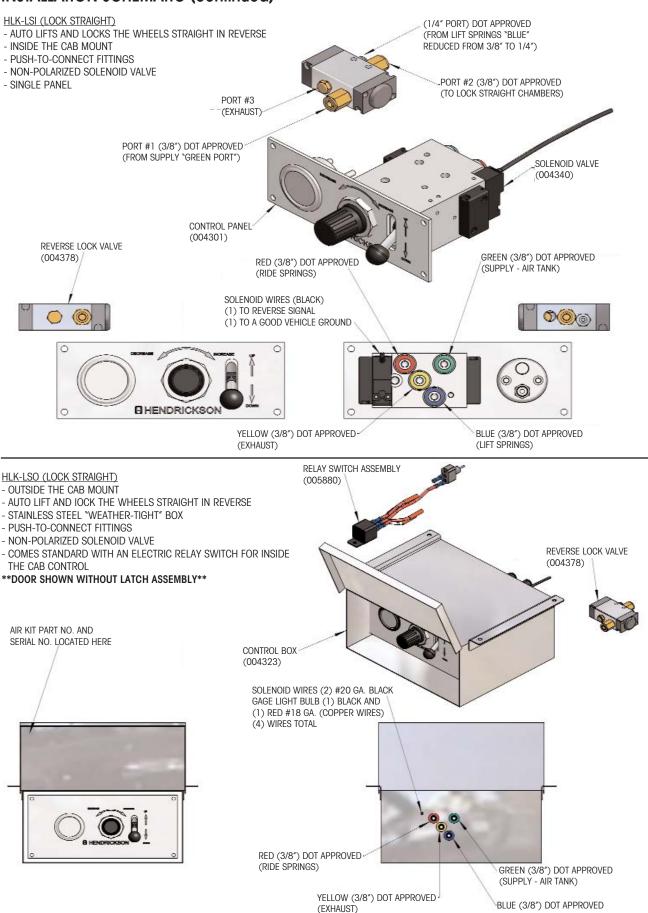
THIS AIR KIT IS AVAILABLE IN DUAL AND TRIPLE PANELS

(EXHAUST)

BLUE (3/8") DOT APPROVED

H

INSTALLATION SCHEMATIC (continued)



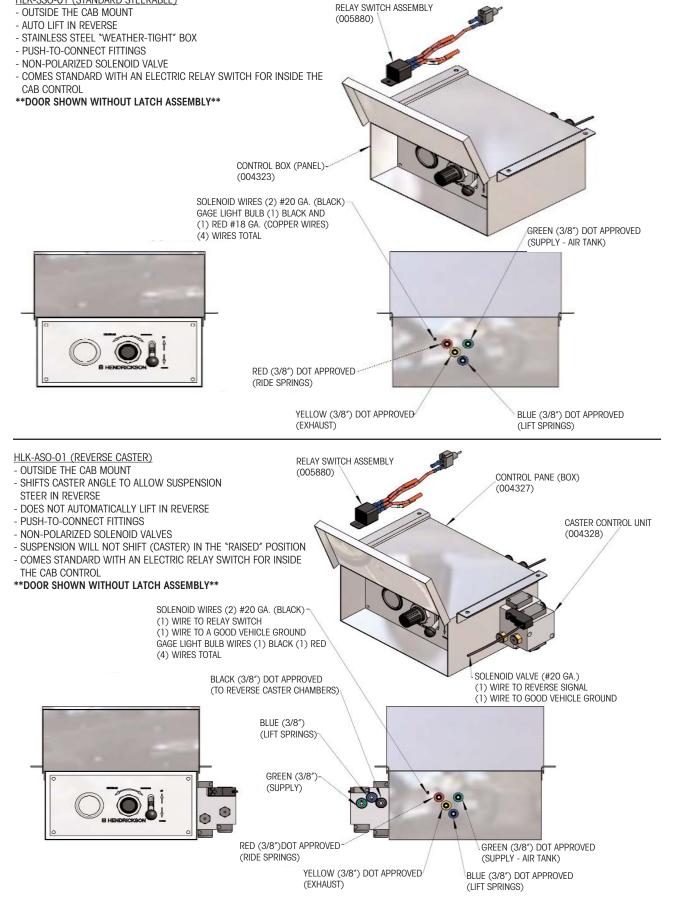
H605 C

(LIFT SPRINGS)

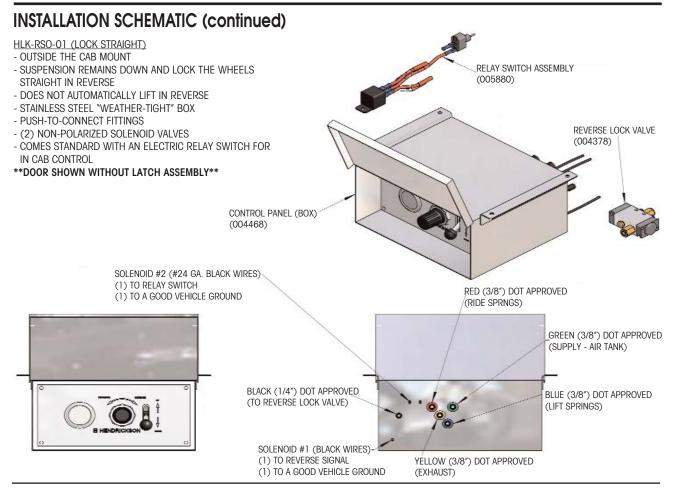


INSTALLATION SCHEMATIC (continued)

HLK-SSO-01 (STANDARD STEERABLE)

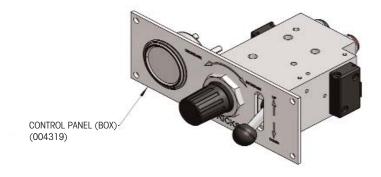


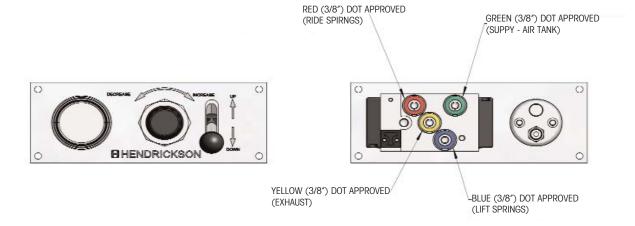




HLK-NSI-01 (NON-STEER APPLICATION)

- INSIDE THE CAB MOUNT
- MANUAL RAISE/LOWER
- PUSH-TO-CONNECT FITTINGS
- SINGLE PANEL





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INSTALLATION SCHEMATIC (continued) HLK-NDI-01 (NON-STEER) - INSIDE THE CAB MOUNT - MANUAL RAISE/LOWER - PUSH-TO-CONNECT FITTINGS - SUPPLY MANIFOLD WITH A SINGLE INLET AND DUAL OUTLETS - DUAL PANEL FOR SEPARATE CONTROLS FOR EACH LIFT AXLE LABELED (#1 AND #2) DUAL MANIFOLD (SUPPLY) (004559)DUAL CONTROL PANEL (004385)GREEN (3/8") DOT APPROVED (SUPPLY - AIR TANK) RED (3/8") DOT APPROVED (RIDE SPRINGS) YELLOW (3/8") DOT APPROVED BLUE (3/8") DOT APPROVED (EXHAUST) (LIFT SPRINGS) RELAY SWITCH ASSEMBLY HLK-NSO-02 (NON-STEER) - OUTSIDE THE CAB MOUNT (005880)- "OVER-RIDE" FEATURE - STAINLESS STEEL "WEATHER-TIGHT" BOX - PUSH-TO-CONNECT FITTINGS - NON-POLARIZED SOLENOID VALVE - COMES STANDARD WITH AN ELECTRIC RELAY SWITCH FOR INSIDE THE CAB CONTROL ***DO NOT CONNECT SOLENOID VALVE TO REVERSE SIGNAL*** **DOOR SHOWN WITHOUT LATCH ASSEMBLEY** CONTROL PANEL (BOX)-(004325)SOLENOID WIRES (2) #20 GA. (BLACK) (1) WIRE TO RELAY SWITCH (1) WIRE TO GOOD VEHICLE GROUND GAGE LIGHT BULB (1) BLACK (1) RED (4) WIRES TOTAL RED (3/8") DOT APPROVED (RIDE SPRINGS) GREEN (3/8") DOT APPROVED (SUPPLY - AIR TANK)

(EXHAUST)

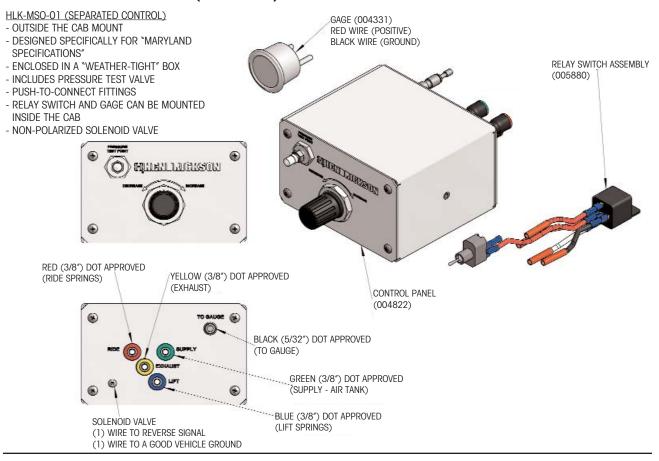
YELLOW (3/8") DOT APPROVED

BLUE (3/8") DOT APPROVED

(LIFT SPRINGS)



INSTALLATION SCHEMATIC (continued)



INSTRUCTIONS FOR SUSPENSION OPERATION

Raising Your Lift Axle

- 1. If vehicle is already running, please proceed to #6.
- 2. Set parking brake of truck.
- 3. Turn your vehicle ignition to on position.
- 4. Press start switch and release when engine is started.
- 5. Allow truck to idle until the air pressure has reached compressor cut-out pressure (usually 120 psi).
- 6. If controls are **inside mounted**, move the Hendrickson air control panel's lever to the UP position. If controls are **outside mounted**, assure vehicle is stopped and parking brake is set. Exit vehicle, go to air control enclosure and open it. Move the control valve's lever to the up position.

MARNING: DO NOT RAISE OR LOWER YOUR LIFT AXLE IF TRUCK IS MOVING IN EXCESS OF 15 MPH. ASSURE AREA SURROUNDING LIFT AXLE IS CLEAR OF ANY OBSTRUCTIONS.

7. Visually confirm the axle is lifting.

NOTE: Air pressure may drop during suspension lifting process.

- 8. Axle should be completely lifted when truck's air pressure returns to the air compressor cut-out point (usually 120 psi).
- 9. It is recommended to raise the lift axle when not in use.

Lowering Your Lift Axle

- 1. If vehicle is already running, please proceed to #6.
- 2. Set parking brake of truck.
- 3. Turn your vehicle ignition to on position.
- 4. Press start switch and release when engine has started.



Lowering Your Lift Axle (continued)

- 5. Allow truck to idle until the air pressure has reached compressor cut-out (usually 120 psi).
- 6. If controls are inside mounted, move the control valve's lever to DOWN position. If controls are outside mounted, assure vehicle is stopped and parking brake is set. Exit vehicle, go to air control enclosure and open it. Move the control valve's lever to the down position.

*WARNING: DO NOT RAISE OR LOWER YOUR LIFT AXLE IF TRUCK IS MOVING IN EXCESS OF 15 MPH. ASSURE AREA SURROUNDING LIFT AXLE IS CLEAR OF ANY OBSTRUCTIONS.

7. Using the regulator, adjust air pressure on gauge to appropriate air pressure for vehicle load conditions. See performance charts in the suspension owners manual (H642).

NOTE: Air system pressure may drop during suspension lowering process.

8. Axle should be completely lowered and supporting pre-determined load when system air compressor cut-out point is reached (usually at 120 psi).

FREQUENTLY ASKED QUESTIONS

NOTE: All brake plumbing installations must adhere to FMVSS-121 regulations. Modification to a vehicle's pneumatic system may alter it's compliance to FMVSS-121 regulations.

1. WHERE DO I INSTALL MY HENDRICKSON AIR KIT CONTROL PANEL?

The Hendrickson air kit product line is available for inside-the-cab and outside-the-cab mounting. Your particular application will be dictated by regulations in your state(s) of operation.

2. CAN I PLUMB MY AIR KIT IN-LINE WITH MY RIDE HEIGHT CONTROL VALVE?

This type of plumbing is not recommended for auxiliary axle applications due to differences in load variation requirements, suspension geometry and air spring characteristics.

3. AT WHAT PRESSURE SHOULD THE REGULATOR BE SET?

All new suspension and air control installations should be verified at a certified scale to determine correct air pressures vehicle loading. An average performance chart for each suspension is in the owners manual (H642). Improper vehicle loading can cause handling irregularities.

4. HOW DO I IDENTIFY MY AIR KIT?

For inside mounted air kits, the identification tag should be located on the backside of the face plate (see page 4). For outside mounted air kits, the identification tag should be located on the inside of the door panel (see page 8).

5. WHY DO STEERABLE SUSPENSIONS NEED AN ADDITIONAL AIR KIT?

Due to the positive caster angle built into Hendrickson steerable auxiliary axles, our air kits designed for steerable applications will automatically lift the auxiliary axle while in reverse, unless a reverse locking option is specified.

6. HOW DOES THE REVERSE LOCKING OPTION ENGAGE?

When utilizing the reverse locking option, the air kit automatically engages the lock feature when the vehicle is operated in reverse gear.

7. HOW DOES MY PARAREV™ REVERSE CASTERING SUSPENSION STEER IN REVERSE?

The air kit will automatically change caster orientation as the vehicle alternates between forward and reverse gears.

8. HOW DO I DIRECT REGULATED PRESSURE?

With Hendrickson air kits you can direct regulated pressure (0-120 psi) through the control panel and into the auxiliary axle ride springs. Since suspension capacity, load distribution and bridge laws command the flexibility in distributing load, the versatility of the air regulator allows application needs to be met, while meeting the load distribution laws in your area of operation.



TROUBLE SHOOTING GUIDE

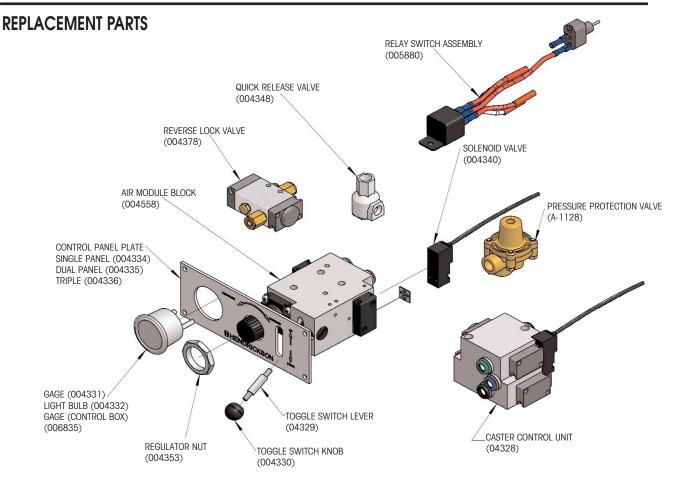
PROBLEM	POSSIBLE CAUSE	REMEDY
Automatic lift does not function	Solenoid on air kit control panel is not being energized	Connect black wire to vehicle ground and black wire to backup light power wire
	Kinked, pinched, or broken air line between air kit control panel and lift springs	Replace pinched, kinked or broken air lines
	Kinked, pinched, or broken air line between air kit control panel and supply tank	Replace pinched, kinked or broken air lines
	Supply air pressure insufficient to operate lift mechanism	Verify that you are receiving 100 psi mini- mum at the lift axle control panel. Use calabrated gage at supply line inlet
	Non-functioning quick exaust valve on ride springs	Replace non-functioning quick exhaust valve
	Exhaust port on back of air kit control panel plugged	Remove obstruction to exhaust port on back of air control panel
	Air kit control panel not properly plumbed	Confirm that the air kit control panel is plumbed per the appropriate diagram in this book
	Non-functioning air kit control panel	Call Hendrickson warranty department at 1-800-660-2829
Does not manually lift with lever on air kit control panel	Kinked or broken air line between air kit control panel and air springs	Replace pinched, kinked or broken air lines
	Kinked or broken air line between air kit control panel and supply tank	Replace pinched, kinked or broken air lines
	Supply air pressure insufficient to operate lift mechanism	Verify that you are receiving 100 psi mini- mum at the lift axle control panel. Use calabrated gage at supply line inlet
	Non-functioning quick exhaust valves between ride springs	Replace non-functioning quick exaust valve
	Exhaust port on back of air kit control panel plugged	Remove obstruction to exhaust line on back of air control panel
	Air kit control panel not properly plumbed	Confirm that the air kit control panel is plumbed per diagram in this book
	Non-functioning air kit control panel	Call Hendrickson warranty department at 1-800-660-2829
Gauge light does not function	No power to light bulb	Attach black wire to vehicle ground, Attach red wire to running light circuit
	Non-functioning light bulb	Replace light bulb



TROUBLE SHOOTING GUIDE (continued)

PROBLEM	POSSIBLE CAUSE	REMEDY
Does not lower with lever on air kit control panel	Regulator turned down too low	Increase air pressure at regulator until desired load is carried at wheels
	Truck in reverse gear	Place transmission in forward gear or neutral
	Solenoid valve on back of air kit control panel energized	Place transmission in forward gear or neutral
	Kinked, pinched, or broken air line between air kit control panel and ride springs	Replace pinched, kinked or broken air lines
	Kinked, pinched, or broken air line between air kit control panel and supply tank	Replace pinched, kinked or broken air lines
	Supply air pressure insufficient to operate lower mechanism	Verify that you are receiving 100 psi minimum at the lift axle control panel. Use calabrated gage at supply line inlet
	Exhaust port on back of air kit control panel plugged	Remove obstruction to exhaust port on back of air control panel
	Air kit control panel not properly plumbed	Confirm that the air kit control panel is plumbed per diagram in this book
	Non-functioning air kit control panel	Call Hendrickson warranty department at 1-800-660-2829
Slow lift or lower times	Insufficient air flow or volume being delivered to air kit control panel	Increase incoming air line size or Increase air reservoir capacity
	Insufficient air flow or volume being delivered to the air springs	Increase air line size going to air springs
Quick release valve failure	Clogged or plugged quick exhaust valves	Remove obstruction or replace defec- tive quick exhaust valve
Suspension does not carry rated load	Insufficient air pressure in ride springs	Increase pressure in ride springs by increasing regulator setting. Check pressure in ride springs at air spring inlet
	Supply air pressure insufficient to carry rated load	Verify that you are receiving 100 psi mini- mum at the lift axle control panel. Use calibrated gage at supply line inlet
	Kinked, pinched or broken hose between air kit control panel and ride springs	Replace pinched, kinked or broken air lines
	Kinked, pinched or broken hose between air kit control panel and supply tank	Replace pinched, kinked or broken air lines
	Non-functioning air kit control panel	Call Hendrickson warranty department at 1-800-660-2829
	Incorrect ride height	Call Hendrickson Technical Service Department at 1-800-660-2829





REPLACEMENT CONTROL PANEL CROSS REFERENCE

AIR KIT	CROSS REFERENCE
HLK-SSI-01	004301
HLK-SDI-01	004303
HLK-STI-01	004305
HLK-RSI-01	004307
HLK-RDI-01	004309
HLK-RTI-01	004311
HLK-ASI-01	004313
HLK-ADI-01	004315
HLK-ATI-01	004317

AIR KIT	CROSS REFERENCE
HLK-NSI-01	004319
HLK-NDI-01	004321
HLK-SSO-02	004323
HLK-NSO-02	004325
HLK-ASO-01	004327
HLK-RSO-01	004468
HLK-MSO-01	004822
HLK-LSI	004301
HLK-LSO	004323

www.hendrickson-intl.com



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