INSTALLATOIN MANUAL

LiNK® **UltraRide®**
Chassis Air Suspension

ELECTRONIC AIR CONTROL KIT
Model # 800M2143

INSTALLATION INSTRUCTIONS INDEX

1. INTRODUCTION

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

The ULTRARIDE® ELECTRONIC AIR CONTROL KIT is intended ONLY to provide a pressurized air supply for Link ULTRARIDE® Chassis Suspensions and control the dump action of the suspension.

Any other use of these Air Control Products is not authorized. Link accepts no warranty responsibility for damage resulting from misuse.

Items included with the air kit (See Fig. 1-1)

❑ **Compressor Box.** Contains the compressor, manifold, ECU, relays, pressure switches, and all other components necessary for the operation of the air kit.

❑ **Air Tank.** Provides a reserve source of pressurized air to manage compressor run time and dump recovery time.

❑ **5 Wiring Harnesses.** The wiring harnesses connect the Main Air Control Unit the battery to power the compressor, the cab controls to control the function of the air kit, the height sensors, and the brake system.

❑ **Airline, Air Filter, Corrugated Loom, & Cable Ties & Mounting Hardware.** Extra airline and corrugated loom is included with this kit to connect it to the UltraRide® suspension system and protect the airline from wear. Cable ties are also included to properly secure all loose wires and airline.

❑ This Installation Manual & a separate Owner's Manual.

Items NOT included with the air kit

❑ **Height Sensors.** The height sensors are included separately pre-assembled to the appropriate brackets for your model of UltraRide® Suspension.

❑ **Cab Control Panel.** Many custom installers wish to use their own custom cab switches and lights. For this reason, the UltraRide® air kit does not contain the Link Control Panel. It can be ordered separately as Link PN: 800M1074. Contact your Link representative for availability.

❑ **Utility remote control unit.** Used to set dump height. It can be ordered separately as Link PN: 800M2155. Contact your Link representative for availability.

❑ **Air Dryer Kit.** The 800M1073 air dryer kit is offered as an option to reduce the amount of moisture collected in the air tank, reducing maintenance requirements and improving system reliability.
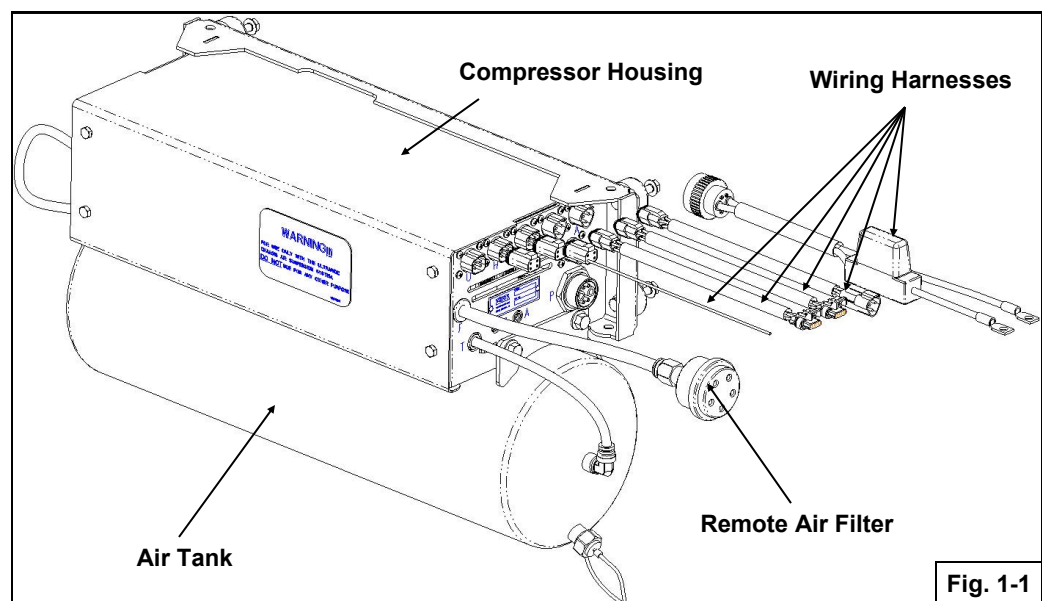

Compressor Housing

Wiring Harnesses

Air Tank

Remote Air Filter

Fig. 1-1

PRODUCT INSTALLER RESPONSIBILITIES

❑ Installer is responsible for installing the product in accordance with Link Mfg. 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 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 Mfg..

SAFETY SYMBOLS, TORQUE SYMBOL, and NOTES

⚠	**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.**
⚠ **WARNING**	**WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**	**NOTE:**	**A Note provides information or suggestions that help you correctly perform a task.**
⚠ **CAUTION**	**CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.**	⚡	**The electrical symbol indicates the presence of electric shock hazards which, if not avoided, may result in injury to personnel or damage to equipment.**
CAUTION	**CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.**		

Proper tightening of mounting nuts are required for proper operation. The need for proper Torque requirements is indicated by wrench symbol. Failure to maintain proper torque can cause component failure resulting in accident with consequent injury.

Air & Electrical Connections Overview

The UltraRide® Electronic Air Kit provides a number of quick connect air fittings and electrical connectors to easily and reliably interface with UltraRide suspension systems and vehicle controls.

Carefully review figures 1-2 and 1-3 to familiarize yourself with all the various connectors and ports on the UltraRide® Electronic Air Kit as well as their purpose and function.
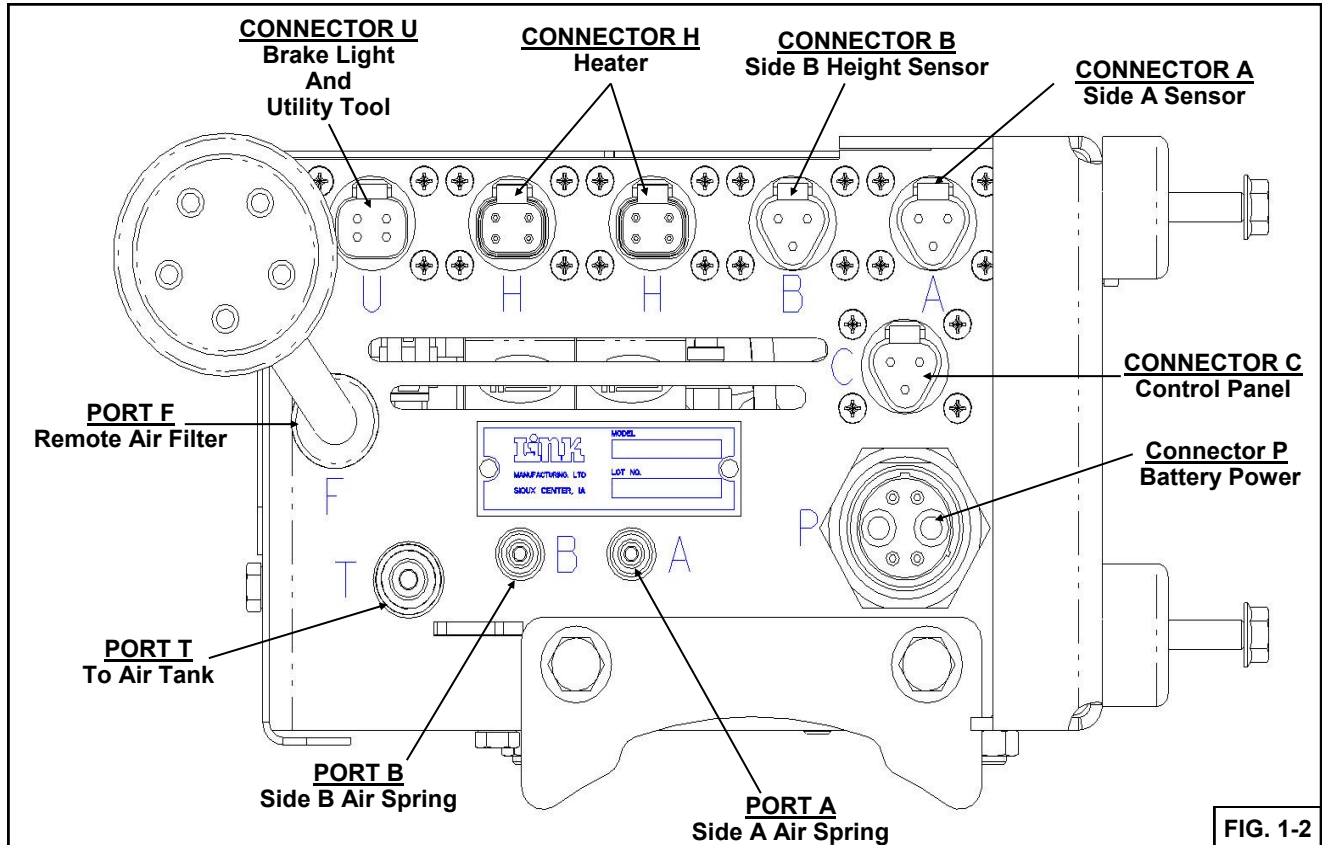

FIG. 1-2

❑ Connector A: Side A height sensor—connects to the A side height sensor to monitor side A suspension height

❑ Connector B: Side B height sensor—connects to the B side height sensor to monitor side B suspension height

❑ Connector C: Control Panel—connects to the control panel to provide on/off power, +12V dump signal, & warning light signal.

❑ Connector P: Battery Power—connects system directly to the battery via a high amperage connector and cables.

❑ Connector H: Heater (2 connectors)—Provides a convenient power connection location to supply +12 power and ground to auxiliary air kit options that include a heater to prevent freeze-ups.

❑ Connector U: Brake Light & Utility Tool—Connects the air kit to a brake light signal during normal operation. Also used to connect the UltraRide Height Set Utility Tool (sold separately) to set the suspension dump height.

❑ Port F: Remote Air Filter—Compressor air intake tube connected to the air filter.

❑ Port T: To Air Tank—Connects the system with a single 3/8" airline to the reservoir air tank.

❑ Port A: Side A Air Spring—Connects to the side A air spring with a 1/4" airline.

❑ Port B: Side B Air Spring—Connects to the side B air spring with a 1/4" airline.

NOTE: Thread sealant should be used on all pipe-thread fittings without pre-applied thread sealant. Failure to properly apply thread sealant will result in air system leaks and reduced system performance and/or failure.

OUT PORT
COMPRESSOR OUTPUT

OUT

PILOT   IN

PILOT PORT

IN PORT
AIR KIT COMPRESSED AIR INLET

FIG. 1-3
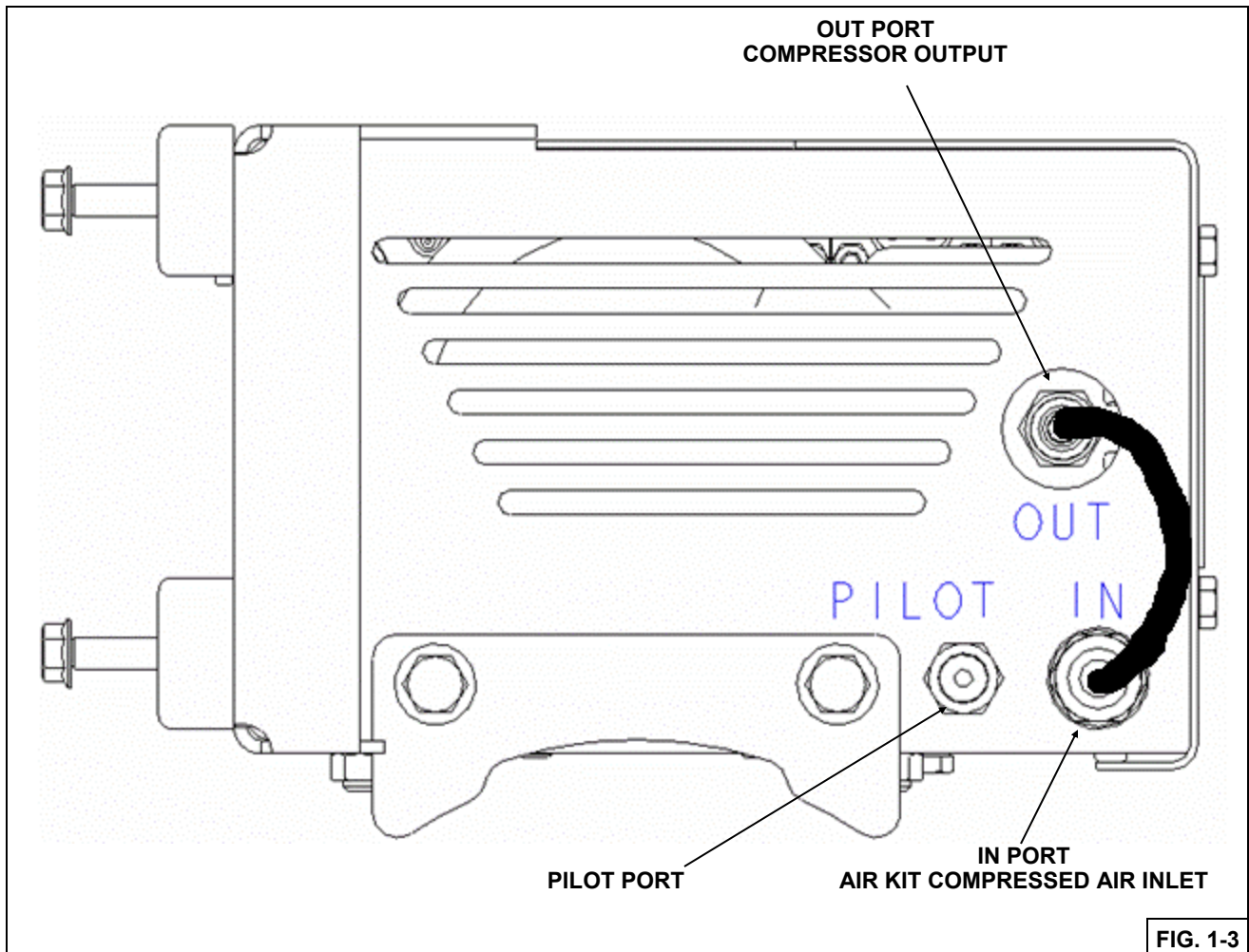
❑ OUT Port: Compressor Output—Compressed air exiting the compressor. Connects to either the IN Port on the air kit or the IN Port on the Air Dryer accessory if used.

❑ IN Port: Air Kit compressed air inlet—Compressed air inlet for the Air Kit. Connects to either the OUT Port on the air kit or the OUT Port on the Air Dryer accessory if used.

❑ PILOT Port: Not used and plugged in normal operation. When installed with the Air Dryer accessory kit, this port connects to the Air Dryer Control Port to control the charge and regenerate cycles of the Air dryer.

2. MOUNTING THE AIR SYSTEM

The UltraRide® Air Kits have been designed for maximum mounting flexibility and ease of installation, allowing them to be used in a variety of applications and body styles. They can be mounted as a complete, one-piece unit OR the compressor box and air tank can be separated and mounted separately where mounting space is limited.

Standard Mounting

❑ The UltraRide® Air Kit is assembled and shipped as a one-piece unit ready for mounting to the vehicle.

❑ Mount the air kit to the side of the frame or any other suitable location as shown in Fig 2-1. Use the supplied rubber isolators and 5/16 nuts and bolts to fasten the kit. (Torque to 15-20 FT-LBS). Some drilling may be required. **Do not over tighten the fasteners** to ensure proper clearance and isolation from the rubber isolators.
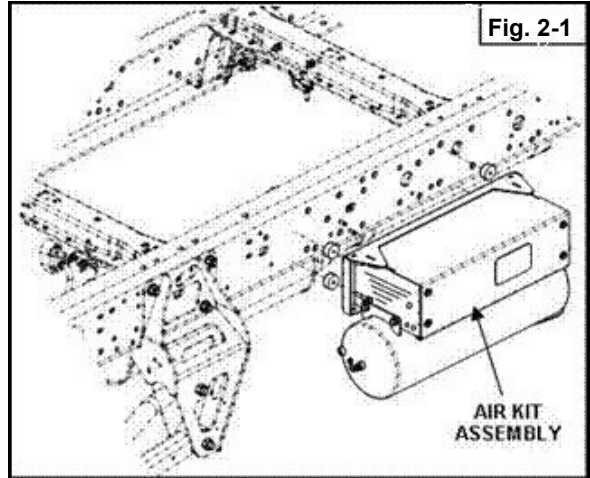

Fig. 2-1
AIR KIT ASSEMBLY

Separating the Air Kit

❑ The UltraRide® Electronic Air Kit can also be separated to mount the compressor box and air tank in different locations.

❑ Separate the compressor box and air tank by removing the 4 - 3/8" bolts attaching them.

❑ Mount the compressor box and air tank in any convenient location on the chassis, using the supplied rubber isolators and 5/16 nuts and bolts (Torque to 15-20 FT-LBS). Either the 4 mount holes on the rear of the compressor box, or the 3 holes on the bottom of the compressor box can be used, depending on your preferred mounting configuration and orientation.

❑ Connect the compressor box and air tank with 3/8" DOT airline (see Fig 2-2).

❑ The compressor box and air tank can be mounted in any orientation (up, down , sideways, etc.), so long as the drain valve on the air tank is at the bottom to allow proper drainage of moisture in the tank.

COMPRESSOR BOX
FIG. 2-2
AIR TANK
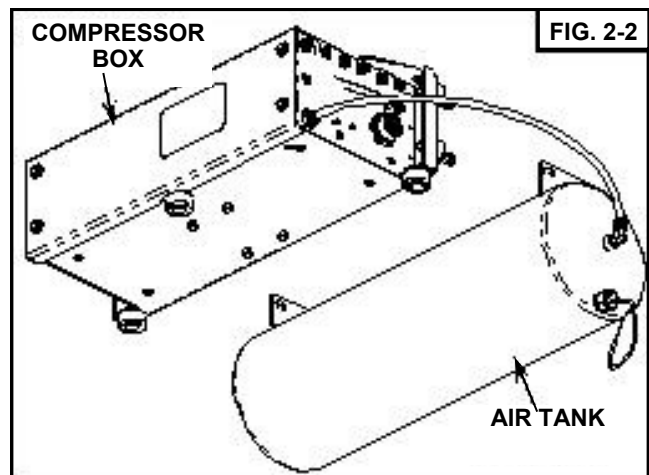
Mounting Inside Frame Rail

❑ With the use of the 80001615 adapter bracket, the UltraRide® Air Kit can be mounted inside the frame rail, providing even more flexibility in mounting options to accommodate a variety of installs (see Fig 2-3). The 80001615 adapter bracket is not included with the UltraRide® Electronic Air Kit. Contact your Link Suspension representative for availability.

FIG. 2-3
ADAPTER BRACKET
AIR KIT ASSEMBLY
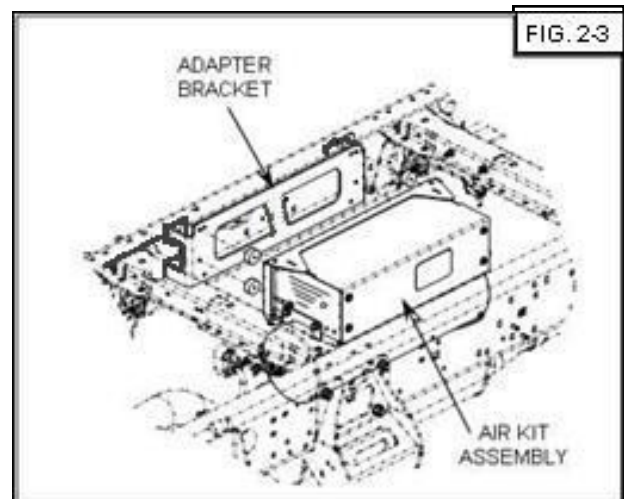
Remote mounting the Air Filter (Fig 2-4)

❑ The air kit is shipped from the factory with fittings, airline, and filter installed for remote air filter location. This allows the air filter to be located in a body or cab compartment for ease of serviceability and to provide a dust-free environment, increasing durability and life of the filter and compressor.

⚠ **!!! NEVER PLACE THE FILTER UNDER THE CHASSIS** where it will be directly exposed to moisture, dust, and debris!!! The Air Filter should be located within a protected area such as inside the cab, or within a body compartment.

1/2" AIRLINE

Fig. 2-4

AIR FILTER

COMPRESSOR

CONNECTOR FOR AIRLINE TO FILTER
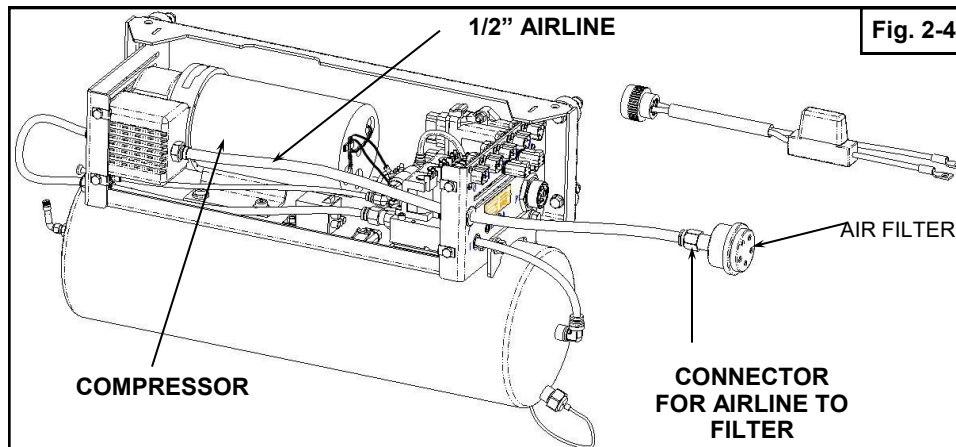
⚠ **NOTE: NEVER USE THREAD SEALANT ANYWHERE ON THE INTAKE PATH OF THE COMPRESSOR!** Doing so may lead to premature compressor failure due to sealant ingestion.

Mounting the Height Sensors

❑ The Electronic Height Sensors (see fig. 2-5) used with this air kit are sold separately as part of the Height Control Kit for each UltraRide Suspension.

❑ Refer to the Ultra Ride Suspension installation manual for details on mounting the height sensors on the UltraRide® Suspension System.

Fig. 2-5
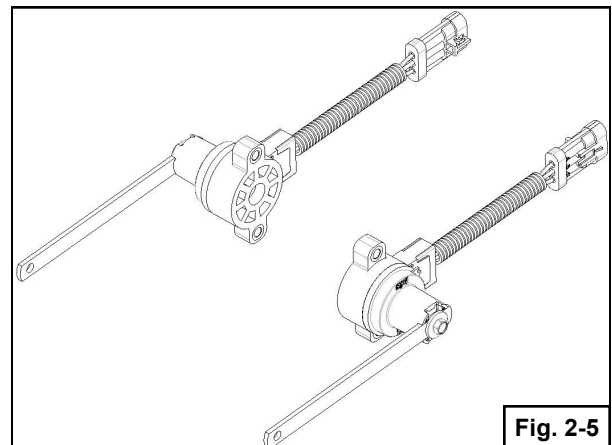
3. CONNECTING THE AIR KIT

⚠️ **CAUTION!** All wiring and air lines should be routed and secured neatly to avoid any functional or visual issues. Under hood and under-body wire and airline routings should be clear of sharp edges (3/4 inches minimum) and direct sources of heat (4 inches minimum). They should not be routed through wheel well areas where it may be damaged by tire or road debris, and it should not be routed over the exhaust system. They should not contact the brake lines or fuel lines. Always disconnect the battery cables before servicing any electrical components.

The included wiring harnesses for the UltraRide® Electronic Air Kit uses heavy gauge wiring and industry standard, sealed connectors, allowing great flexibility in routing and placement options. The use of industry standard connectors allows these harnesses to be customized to fit your application by modifying the length of the harnesses or even making your own harnesses. See the electrical specifications on pages 26-29 for harness specifications and details to customize your own harnesses.

Connecting the Air Springs and Height Sensors

The height sensors and air springs must be connected to the correct harness on the air kit for proper performance (see figure 3-1).

First, determine how the sensors are oriented as mounted on the vehicle. Determine which Sensor Orientation (see Fig. 3-3 through 3-6) applies and connect the Driver and Passenger side sensors and air springs as directed below.

Use 1/4" nylon air line (extra is supplied with the air kit) to connect the air springs to the proper port on the air kit.

Use the height sensor extension harnesses (part number 15050045) to connect the height sensors to the proper connector on the air kit.

FIG. 3-1
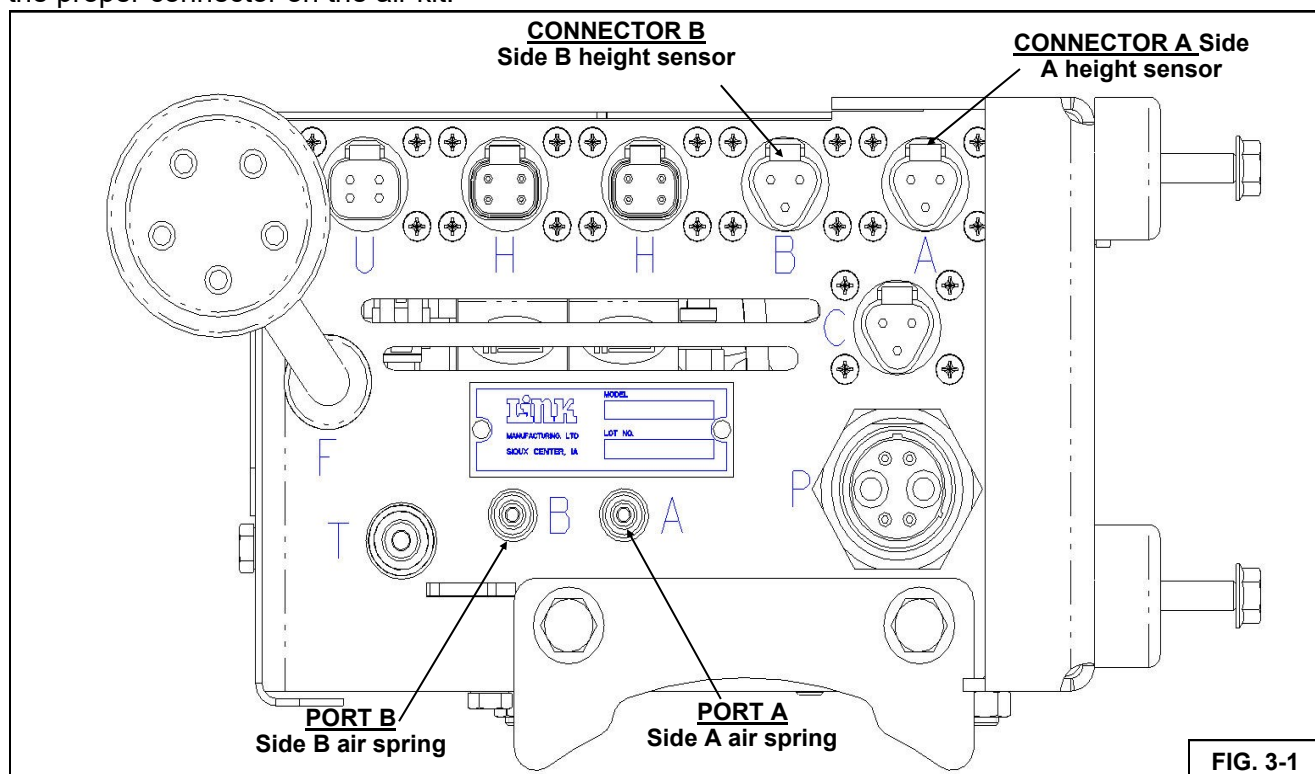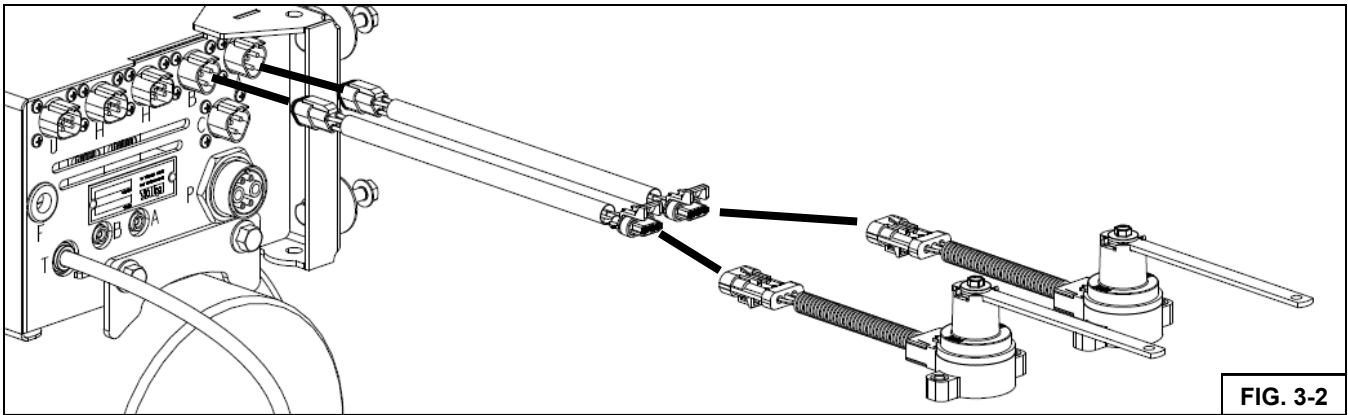
FIG. 3-2

❑ **For sensor orientations #1 or #2**
Driver side height sensor to connector A; Driver side air spring to port A
Passenger side height sensor to connector B; Passenger side air spring to port B

Sensor Orientation #1

Driver side
FRONT OF VEHICLE
VEHICLE CENTER LINE
To A
Passenger side
REAR OF VEHICLE
To B
Fig. 3-3

Sensor Orientation #2

To A
FRONT OF VEHICLE
Driver side
VEHICLE CENTER LINE
To B
REAR OF VEHICLE
Passenger side
Fig. 3-4

❑ **For sensor orientations #3 or #4**
Driver side height sensor to connector B; Driver side air spring to port B
Passenger side height sensor to connector A; Passenger side air spring to port A

Sensor Orientation #3

To B
Driver side
FRONT OF VEHICLE
VEHICLE CENTER LINE
To A
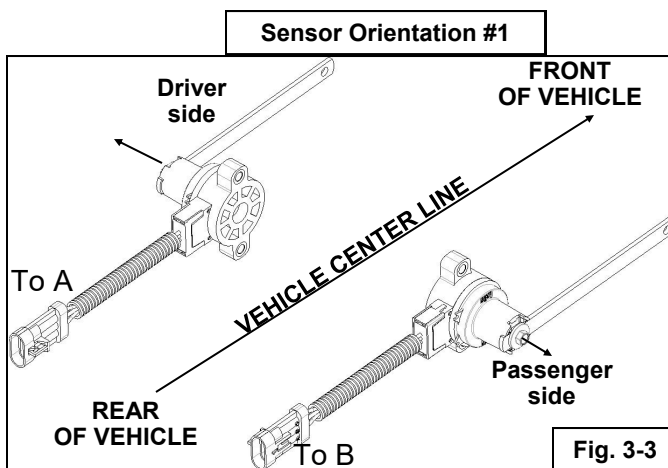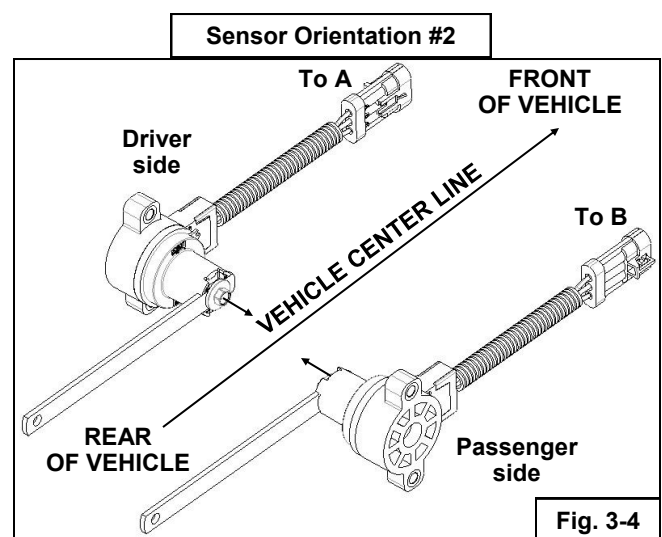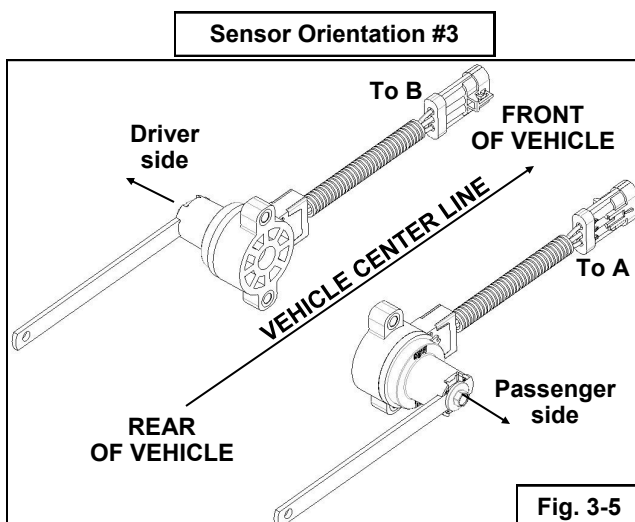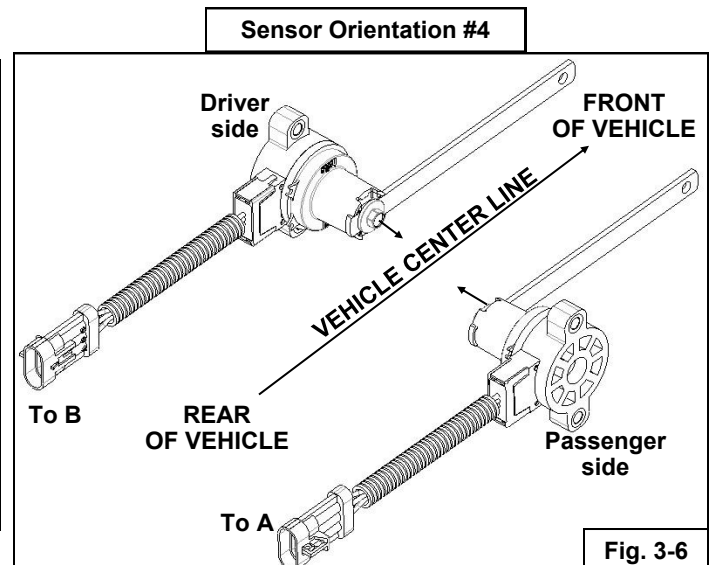Passenger side
REAR OF VEHICLE
Fig. 3-5

Sensor Orientation #4

Driver side
FRONT OF VEHICLE
VEHICLE CENTER LINE
To B
REAR OF VEHICLE
Passenger side
To A
Fig. 3-6

11

Connecting the Control Panel and Harness

❑ Route the Control Harness into the cab, where it can be connected to the air kit controls for easy, in-cab operator control. Route the harness to the driver side of the bulkhead, either passing through an existing grommeted hole behind the dash, or drilling an appropriate hole in the bulkhead to pass the harness through. **NOTE:** use a grommet around the harness and in the bulkhead to reduce noise transmission, keep the harness away from the sharp edges, and seal the cab area against dirt and moisture. For more detailed control harness routing options, see Appendix A for Ford vehicles or Appendix B for GMC vehicles or Appendix C for Dodge/Sterling vehicles.
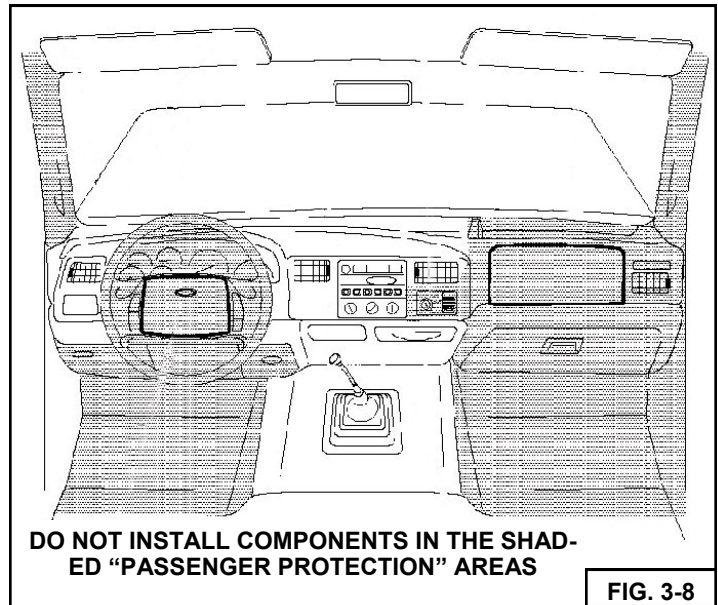
Using the optional 800M1074 Control Panel (sold separately):

❑ The Control Panel should be mounted somewhere between the driver and passenger seating areas to keep it out of the Passenger Protection Zone (fig. 3-8).

❑ Connect the Control Harness to the Control Panel pigtail (fig 3-9 & 3-10)

❑ The **white wire** on the Control Panel must be connected to a "key hot" signal wire so that it only receives +12V power when the ignition key is in the "RUN" position to ensure that the Air Kit only runs when the key is on, preventing the batteries from draining. For more details on locating a suitable "key hot" wire for your application, see Appendix A for Ford vehicles, Appendix B for GMC vehicles, or Appendix C for Dodge/Sterling vehicles.
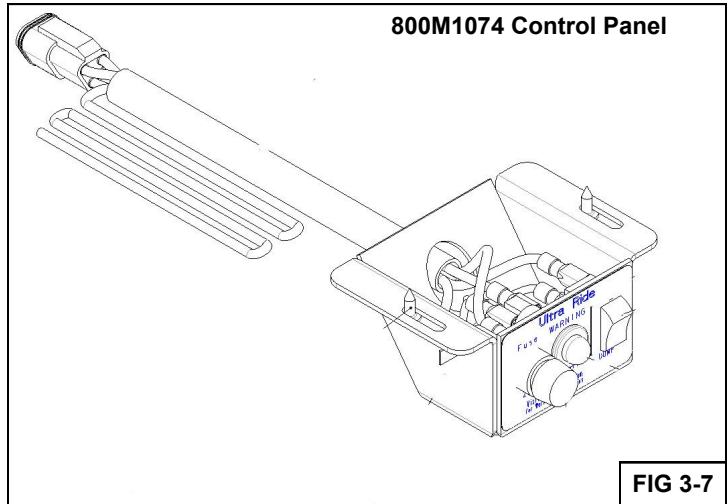
Using your own, custom control panel switches and lights:

❑ A 2A fuse, warning indicator light, and dump switch must be installed to complete the control harness circuit. See fig. 3-11. **Note: the use of a warning indicator device (such as a warning light), is REQUIRED** and should be included in any custom control interface design. Failure to do so may result in damages not covered by warranty.

❑ **NOTE:** The warning indicator light MUST be a LED type light with a maximum current draw of **30 milliamps**. An incandescent light or any light exceeding a current draw of 30 milliamps will not function properly.

800M1074 Control Panel

FIG 3-7

DO NOT INSTALL COMPONENTS IN THE SHAD-ED "PASSENGER PROTECTION" AREAS

FIG. 3-8

Custom dump applications

❑ Auxiliary dump switches and locations can be installed to serve special dumping needs of the application (e.g. using a door switch to dump the suspension when the rear doors are opened in an ambulance application).

❑ To dump the suspension, simply supply a +12V signal to the yellow wire of the 15050041 control harness. See pages 26-29 for electrical harness & connector specifications including pinout functions & descriptions.

FIG. 3-9

15050041 Harness

**Optional 800M1074
Controll Panel**

**White wire to +12V
"Key Hot"**

U   H   H   B   A

C

**CONNECTOR C
Control Panel**

F

P

T   B   A
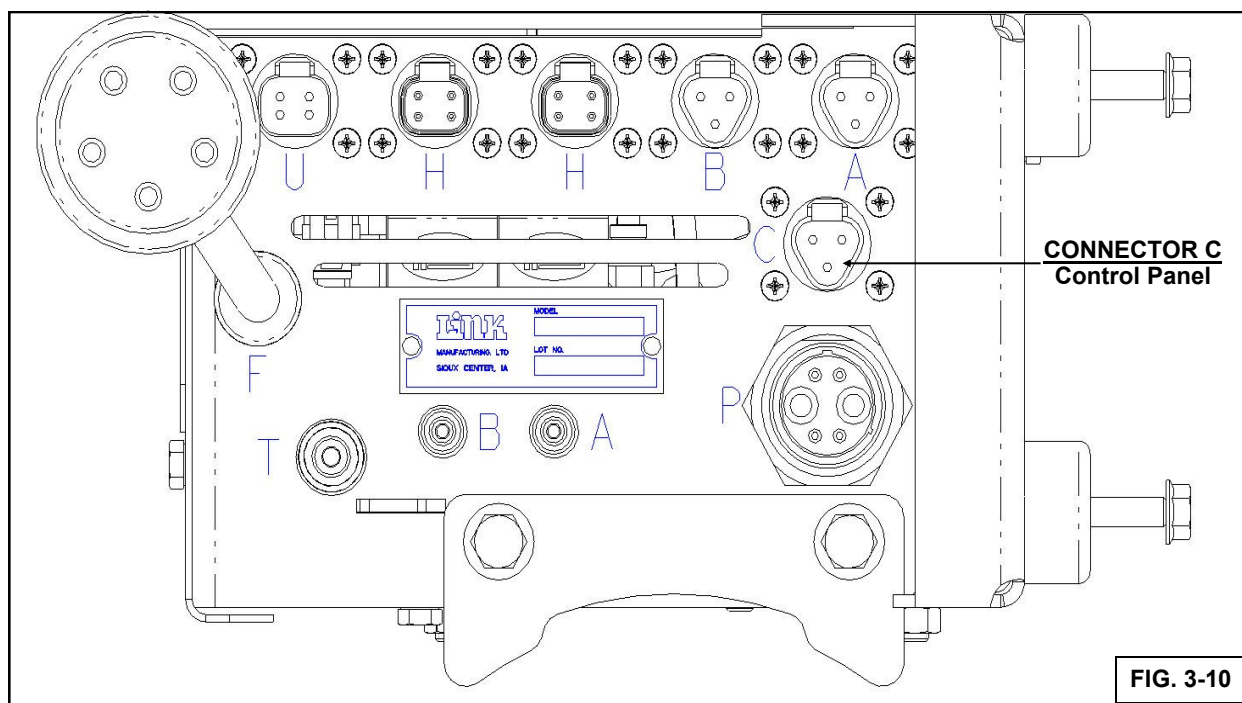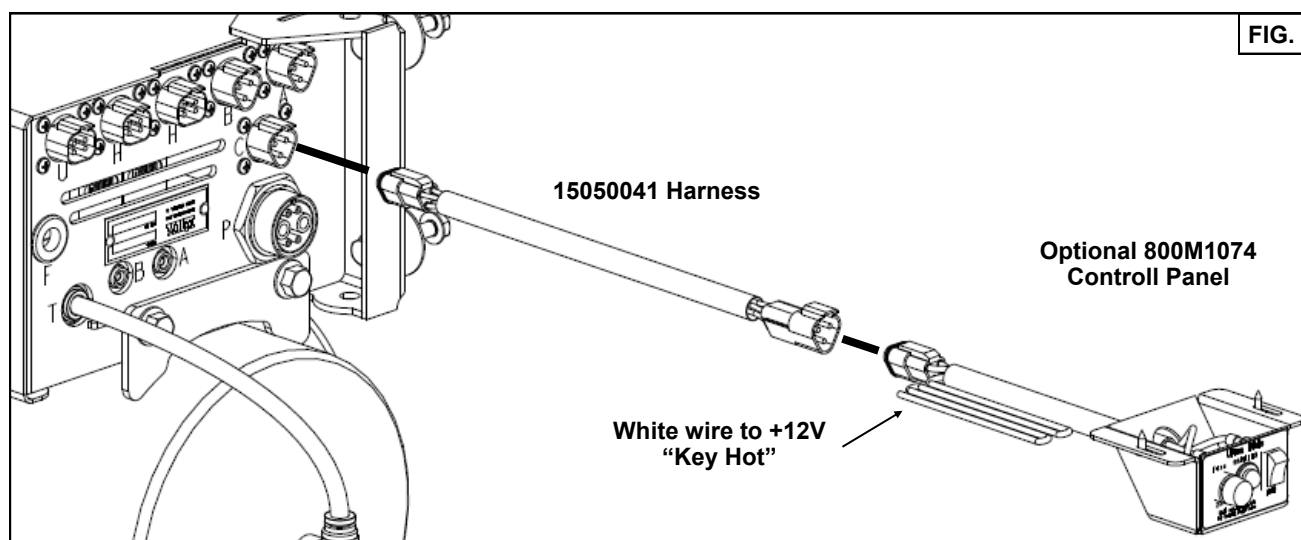
FIG. 3-10

UltraRide Air Kit Control Schematic

Duetcsh Series DT Connector

Housing: DT06-3S (QTY 1)

Socket: 1062-16-0122 (QTY 3)

Wedgelock: W3S

Pin 1(A) - +12V Ignition Power

Pin 2(B) - Warning Light

Pin 3(C) - Dump Switch

30 MA LED Light

Dump Switch

2A Fuse

+12V Ignition
Power

2

3

1

Fig. 3-11

13
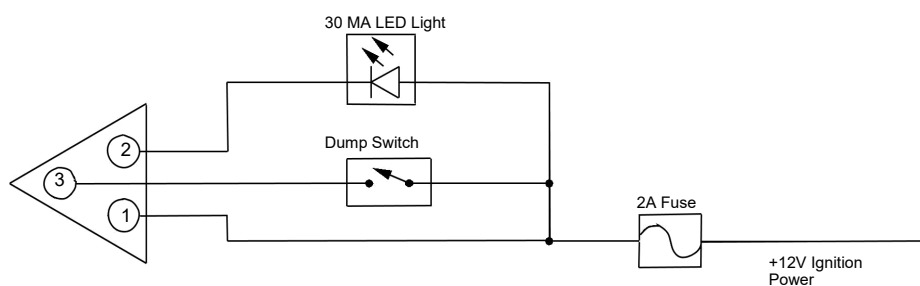
Connecting the Brake Wire Harness

The UltraRide Electronic Air Kit is equipped with a brake signal input so that it can sense when the brake pedal is being depressed. When the brake pedal is depressed, the air kit reduces its sensitivity so that unnecessary height adjustments are reduced, conserving air and reducing compressor run-time.

NOTE: The Brake Harness connector on the Air Kit Box is shared with the Utility Tool Connector. The utility tool is used to program the dump height of the suspension. When the using the Utility tool, disconnect the brake harness. During normal operation, the brake harness should always be connected.

❑ Locate a suitable brake signal wire. Consult the body builder's guide and electrical manuals of your vehicle to best locate a brake signal wire. Possible wires to use are tail-light wires or trailer brake light wires.

❑ Connect the brake signal wire to the Brake Wire harness (PN 15050048) such that with the brakes applied, a +12V signal is sent to the air kit through the Brake Wire Harness (see fig. 3-12 & 3-13).

Fig. 3-12

This end to brake signal wire

CONNECTOR U
Brake light and Utility tool

FIG. 3-13

14
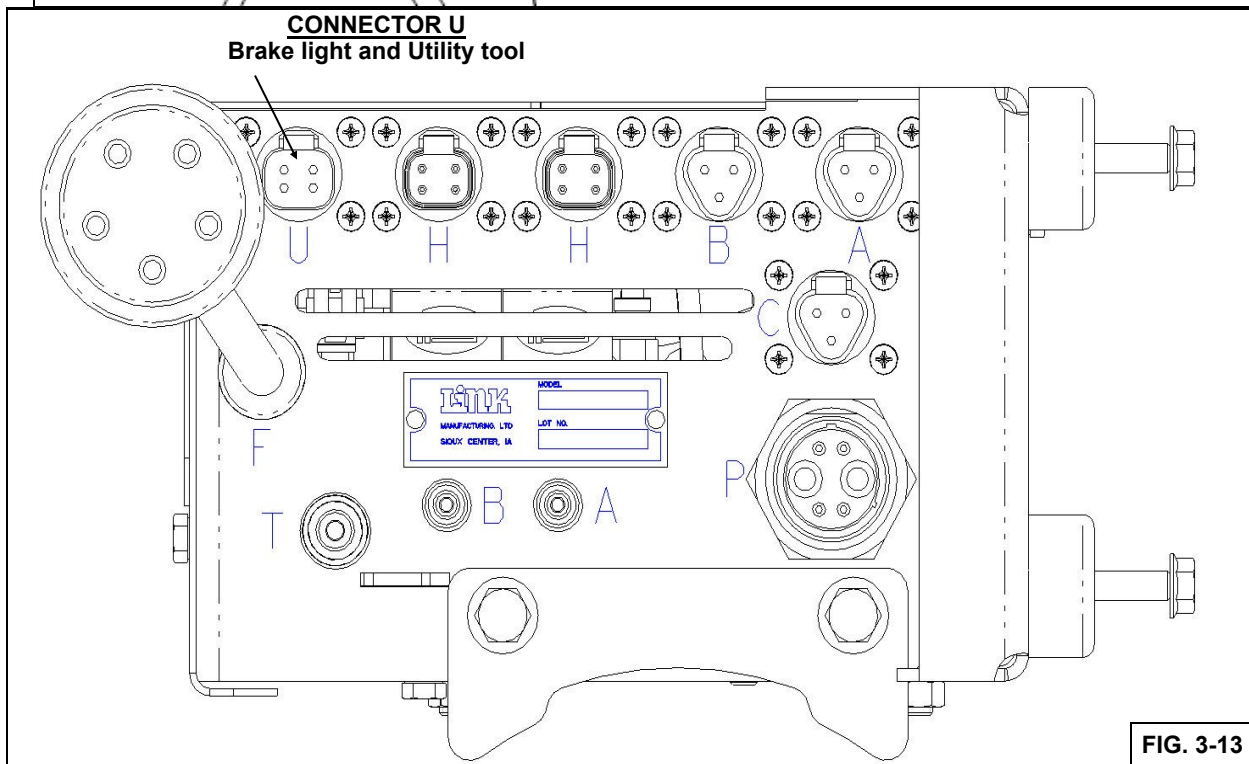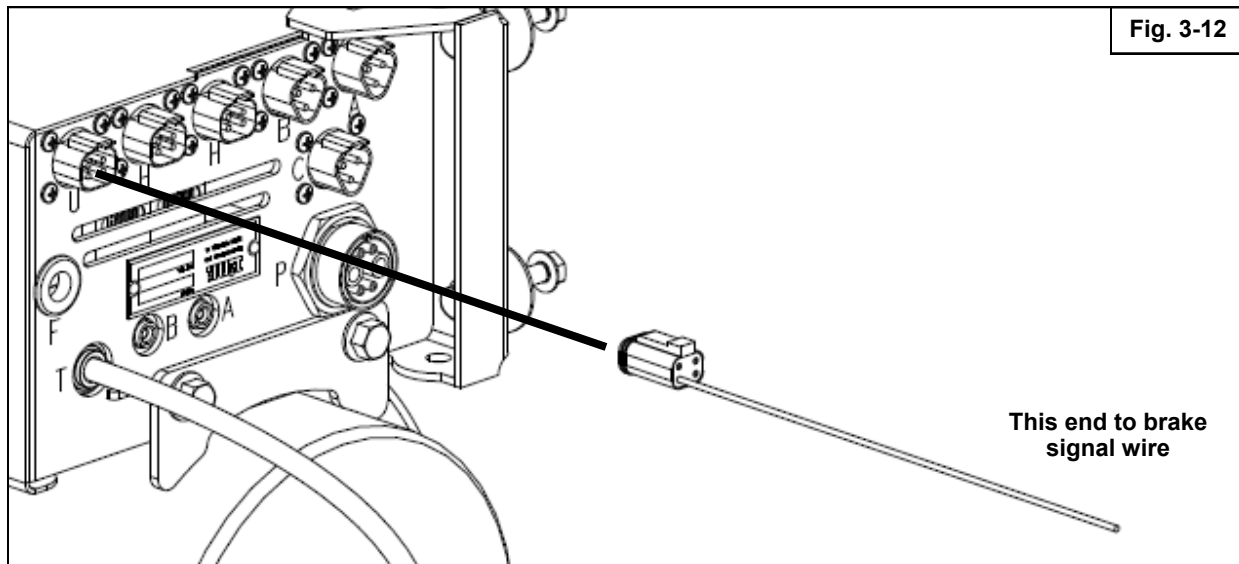
Connecting the Battery Wire Harness

Attach the Power Harness to the Air Control Box routing it along the frame to the battery. See Figure 3-15 for details.

Connector P battery power

FIG. 3-14

50A FUSE

Black wire to battery Neg (-)

Red wire to battery pos (+)

FIG. 3-15
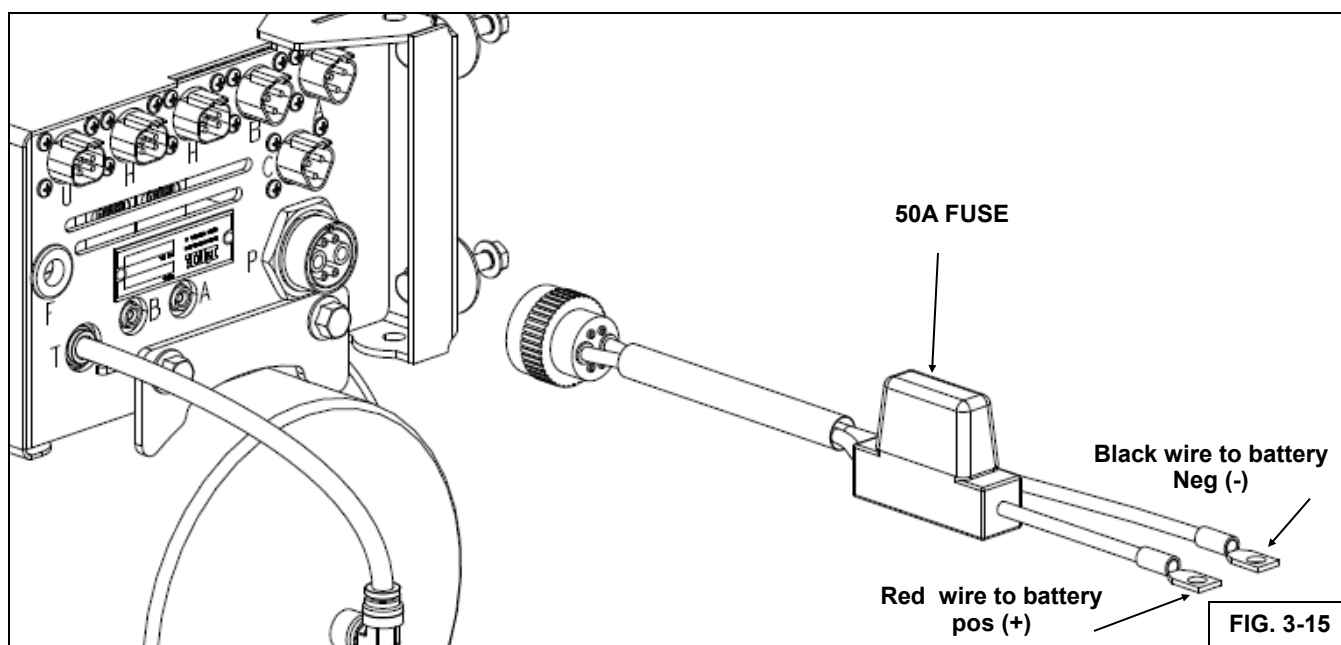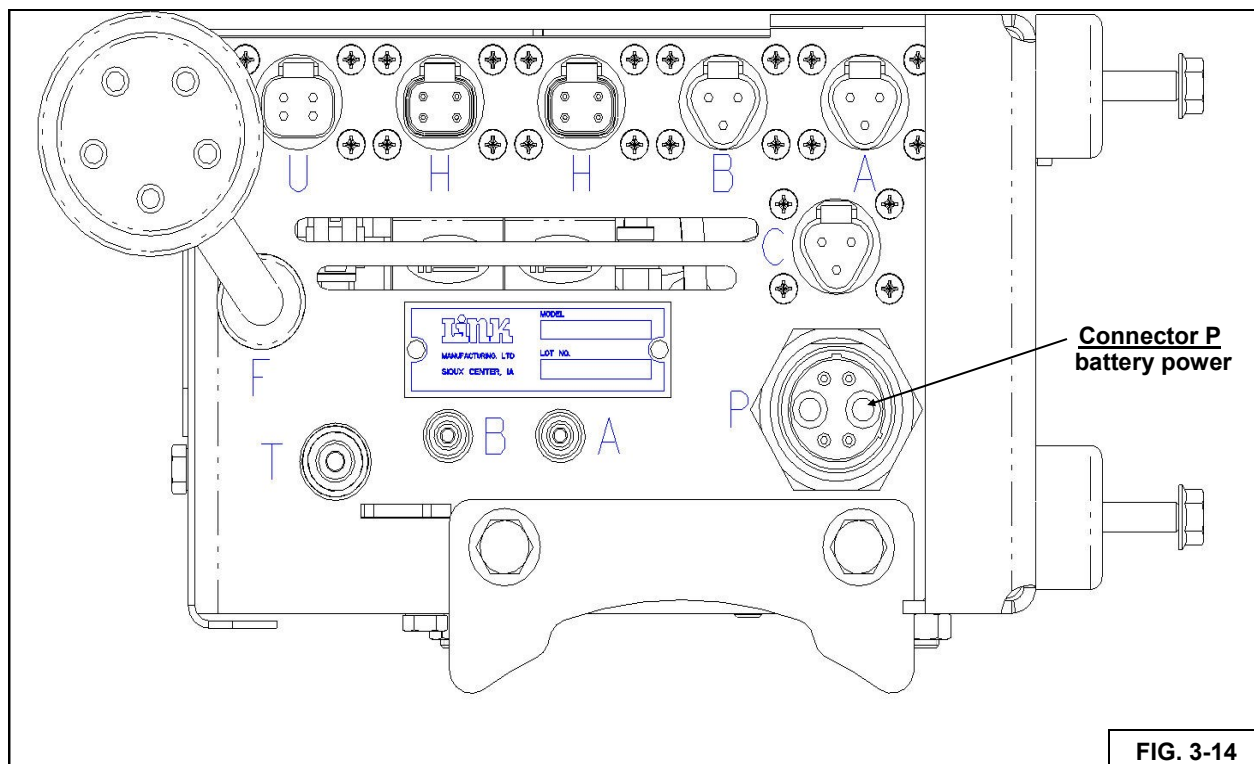
Connecting Optional Automatic Drain Valves

Automatic drain valve kits serve to reduce drain service intervals by automatically draining moisture from the air tank on a periodic basis.

There are non-heated and heated drain valves available to reduce valve freeze-ups in cold weather.

Please contact your Link representative for availability.

CONNECTOR H
Heater

FIG. 3-16
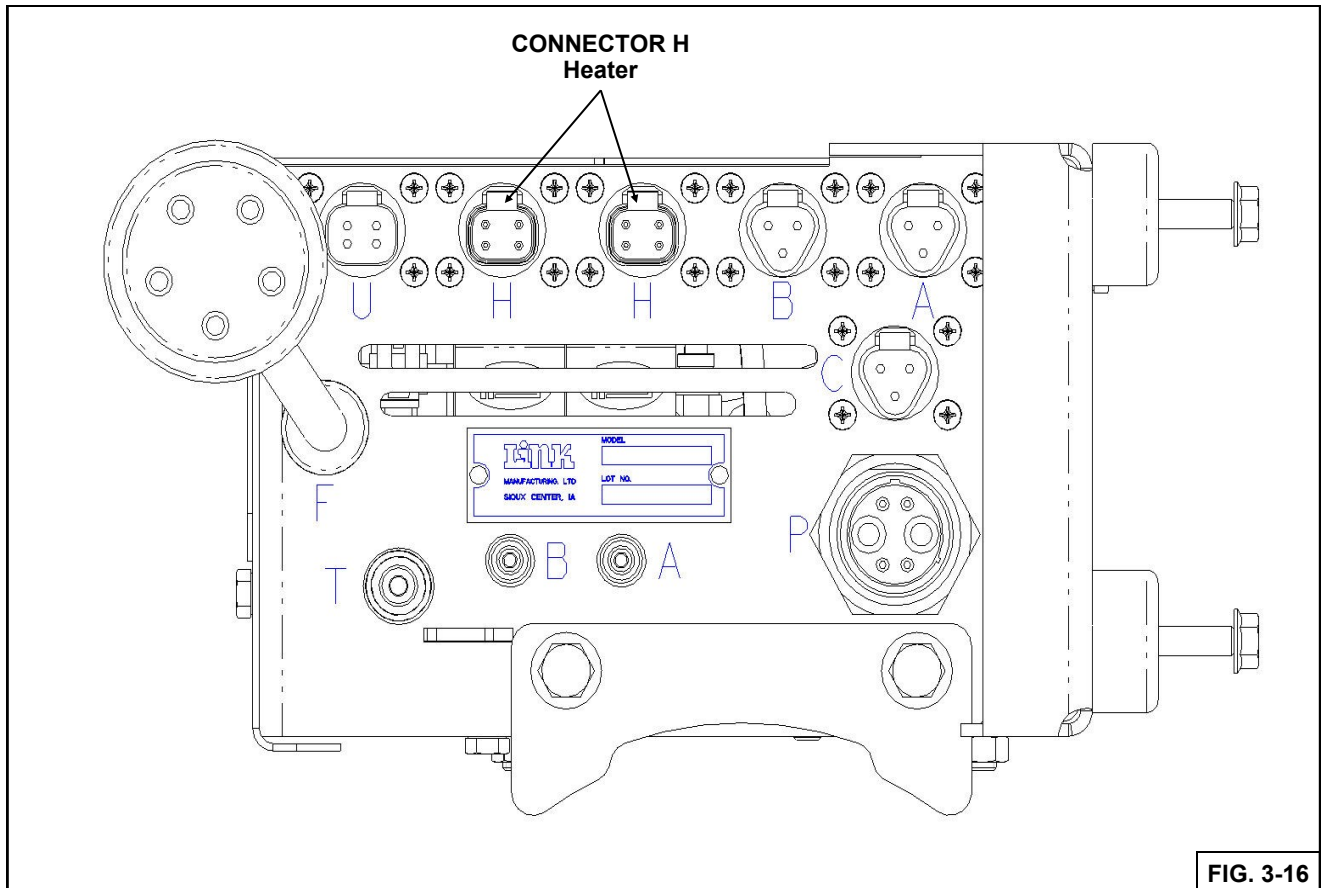
Drain Valve Maintenance

Even with an automatic drain valve installed, the tank should be manually drained of moisture on a weekly basis.

The automatic drain valve must be replaced or rebuilt every 60,000 miles or 12 months, whichever comes first.

Connecting The Air Dryer Kit (800M1073)

The Link Air Dryer Kit reduces drain service intervals and improves system reliability by removing moisture and contamination from the compressed air supply.

Please contact your Link representative for availability.

❑ Release all pressure from the air tank.

❑ Mount the Air Dryer either directly to the frame or use the included mounting bracket to mount the dryer to the frame.
IMPORTANT!!!! The dryer MUST be mounted in an upright position with the plastic exhaust port pointing down! Failure to mount the dryer properly will cause the dryer to malfunction.

❑ Remove the 3/8" tube loop from the OUT & IN Ports on the air kit housing

❑ Remove the 1/4" plug from the PILOT port on the air kit housing

❑ Using 3/8" tube, connect the OUT port from the air kit housing to the IN port on the air dryer

❑ Using 3/8" tube, connect the IN port from the air kit housing to the OUT port on the air dryer

❑ Using 1/4" tube, connect the PILOT port from the air kit housing to the CONTROL port on the air dryer.

DRYER CONNECTIONS DIAGRAM

If dryer is not present, plug the PILOT Port

Dryer OUT Port

Air Dryer

Pilot Port

Dryer IN Port

FIG. 3-17

Air Dryer Operation

The Air Dryer removes excess moisture from the compressed air supply leaving the compressor. It is a desiccant style air dryer, absorbing moisture while the compressor runs. When the compressor is not running, the air dryer enters a purge mode in which a small portion of dry air is fed back through the desiccant, where it expands and carries the moisture away.

Air Dryer Maintenance

Even with an air dryer installed, the tank should be manually checked for moisture on a weekly basis.

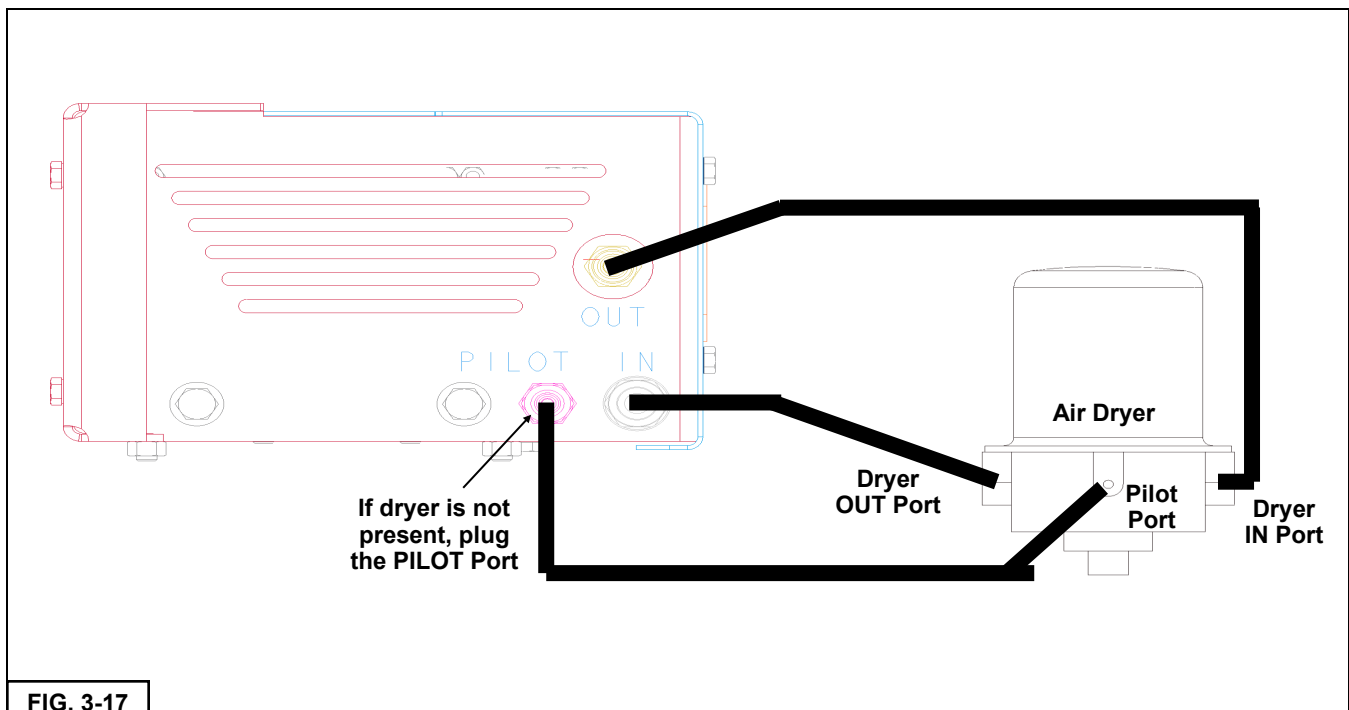The air dryer unit must be replaced or rebuilt every 60,000 miles or 12 months, whichever comes first.

4. AIR SYSTEM OPERATION

NOTE: Before operating the UltraRide® Air Kit, be sure it has been properly connected to the UltraRide® Chassis Suspension. Make sure the dump switch is OFF.

Powering the system up for the first time

❑ Using a shop air supply, fill the air tank using the schraeder valve to a pressure of 80-100 psi. This helps keep air compressor run-time to a minimum when the tank is empty

❑ Turn the ignition key to the "RUN" position. (You may wish to actually start the vehicle, to prevent draining the batteries while operating the air control kit.)

❑ The control panel warning light should turn on for a few seconds while the ECU is powering up, then turn off.

❑ After a few seconds, the compressor in the air control kit should turn on, pressurizing the air tank. After a few minutes, the air compressor will automatically turn off when the air tank reaches full pressure. Using a soapy water solution, check the air tank, air lines, and any connections for leaks.

❑ Check the Dump function by switching the Dump switch to ON. The suspension will immediately begin to exhaust air from the air springs and begin to drop. The Warning Light will blink once every 2 seconds indicating that the suspension is dumped. With the dump switch ON, the air tank should not lose any pressure.

❑ Turn the Dump switch OFF. The suspension will fill the air springs and return to its set design height. The compressor may engage to replenish the lost pressure in the air tank.

Setting Suspension Design Height

❑ Suspension design height is set by adjusting the length of the linkage between the height sensor and the suspension, just as with a traditional mechanical height control valve.

❑ Power up the air kit and allow the air tank to reach full pressure (the compressor is off).

❑ Measure design height as specified in your UltraRide suspension installation manual and adjust the linkage on each side of the suspension, shortening the linkage to reduce design height and lengthening it to increase design height.

❑ Between adjustments wait until the suspension has settled down and recheck the design height settings.

❑ After design height for both sides has been set, activate the suspension dump, deactivate the dump, and recheck the design height. Repeat the above steps until the correct design height has been achieved.

Height Sensor

Linkage

FIG. 4-1
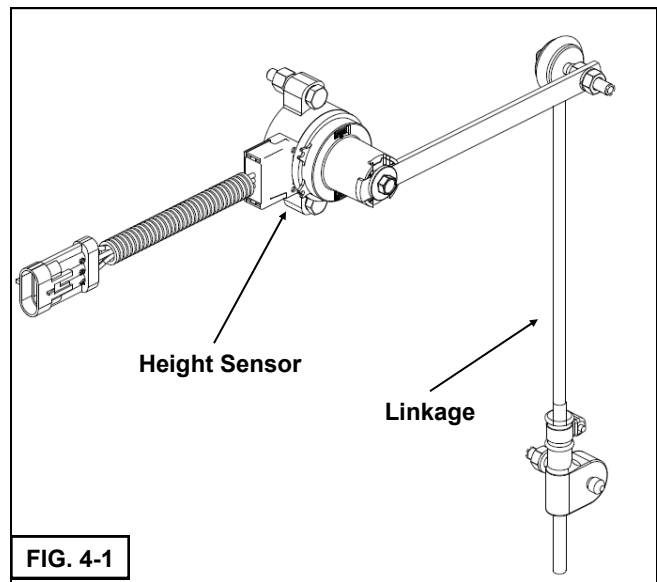
Programming Suspension Dump Height

A key feature of the Electronic Air Kit is the ability to dump to a programmed height instead of completely exhausting all air from the air springs. By dumping only to a programmed height (not all the way), some air pressure is retained in the air springs. This both speeds dump recovery time up and decreases air consumption and compressor run time.

After setting the suspension design height, the Air Kit ECU (Electronic Control Unit, or computer) needs to be programmed to set the appropriate dump height for each installation.

FIG. 4-2

❑ First, make sure the suspension design height has been properly adjusted and set.

❑ Disconnect the Brake harness from connector U and plug in the Utility Tool (Part number 800M2155 sold separately)

❑ Power up the system and wait until the air tank has reached full pressure (the compressor is not running)

❑ Dump the suspension

❑ Using the toggle switch on the Utility Tool, increase or decrease the air suspension dumped height. (Pushing the switch up will increase the dumped height and pushing the switch down with decrease the dumped height).

❑ Return the suspension to its normal operating ride height.

❑ Power Down the system

❑ Remove the height set utility tool from connector U and reconnect the brake signal harness.
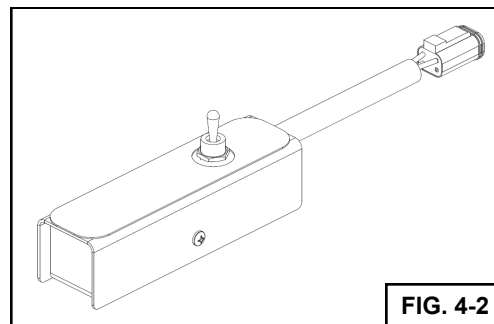
Warning Light Error Codes

The Warning light on the UltraRide Air kit control panel displays status indicators and error codes for the UltraRide Electronic Air Kit.

CONTROL PANEL LAYOUT

FIG. 4-3

	LED Blink Code	Description	Effect
System Status Indicators	Steady On	System is booting, or Low Tank Pressure, or ECU Failure	No effect, Indication only
	1 sec. on - 1 sec. off	System is in Setup mode	Fast response mode for adjusting sensors
	¼ sec. per 2 seconds	System is in Dump mode	Vehicle is lowered
Sensor Errors	11: 1 blink, 1 blink	Side A Sensor Fault	One side: other sensor used for both, Both sides: operation inhibited
	12: 1 blink, 2 blinks	Side B Sensor Fault	
	13: 1 blink, 3 blinks	Pressure Sensor Fault	Compressor and other modes inhibited.
Air System Errors	21: 2 blinks, 1 blink	Compressor Run Timeout	Compressor inhibited for 10 minutes
	22: 2 blinks, 2 blinks	Compressor Duty Cycle	Compressor inhibited for 2 minutes
	23: 2 blinks, 3 blinks	Leak Detect	No effect, Fault indication only
Run Time Limit Exceeded	31: 3 blinks, 1 blink	Side A Valve Time Exceeded	Affected solenoid operatoin inhibited (turned off) until cleared.
	32: 3 blinks, 2 blinks	Side B Valve Time Exceeded	
	33: 3 blinks, 3 blinks	Reservoir Valve Time Exceeded	
	34: 3 blinks, 4 blinks	Compressor Time Exceeded	

5. SERVICE & MAINTENANCE

The UltraRide® Air Control Kit needs no lubrication and little maintenance. The following components should be checked at the time the truck is being serviced. However, immediate corrective action should be taken if a serious malfunction occurs. See Exploded Assembly on the following pages for details.

> ⚠️ **CAUTION!** If maintenance or service is to be done on the air system, be sure to drain **all** air from system. Serious injury could occur if components are removed while system is full of air.

It is important to release any moisture contained within the air reservoir weekly!

Even with the advanced features of the electronic air kit system along with accessories like automatic drain valves and air dryers, moisture can build up in the air tank and should be checked.

This can be done by pulling on the cable attached to the drain valve. See Figure 5-1. Not releasing the moisture on a regular basis will cause the drain valve to not operate properly, and may cause the air kit to malfunction. Excess moisture in the system can also cause premature failure of other components including the tank itself.

FIG. 5-1   DRAIN RELEASE CABLE →
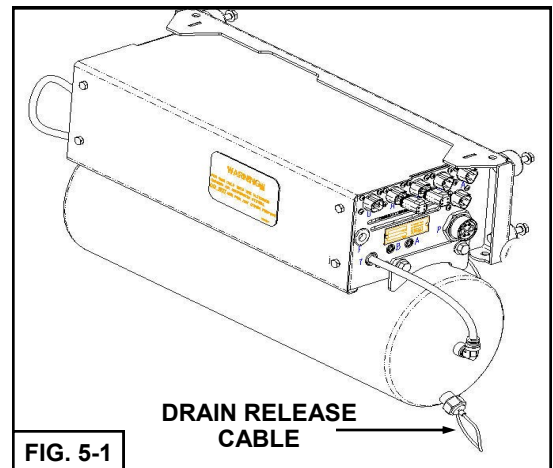
Operational Notes:

❑ The Warning light can indicate system errors resulting from possible system leaks, electrical failures, and/or mechanical failures

❑ If the Warning light is flashing an error code, refer to the error code guide on page 19 to determine the fault and take corrective action immediately.

EVERY Week

❑ Manually drain excess moisture form tank.

EVERY 3,000 miles or every oil change:

❑ Check for air leaks around fittings

❑ Check air filter; replace if necessary

EVERY 30,000 miles or 6 months, whichever comes first:

❑ Replace the air filter

Every 60,000 miles or 12 months, whichever comes first:

❑ Replace or rebuild air dryer, if so equipped

OWNER GUIDELINES

The UltraRide® Electronic Air Control Kits need no lubrication and little maintenance. However, immediate corrective action should be taken if a serious malfunction occurs.

PRODUCT OWNER RESPONSIBILITIES

❑ Owner is solely responsible for pre-operation inspection, periodic inspections, maintenance, and

⚠ **CAUTION!** If maintenance or service is to be done on the air system, be sure to drain **all** air from the system. Serious injury could occur if components are removed while system is full of air.

use of the product as specified in the particular LINK MFG. instructions available by product model, except as provided in this warranty, and for maintenance of other vehicle components. (see Owner's manual)

❑ Owner is responsible for "down time" expenses, cargo damage, and all business costs and losses resulting from a warrantable failure.

ULTRARIDE® - 800M2143 PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QTY
1	1301-0537	VALVE-DRAIN, 20" CABLE	1
2	13010065	MANIFOLD-AIR, ELECTRONIC AIR KIT	1
3	1302-0090	AIRLINE-NYLON, .250 O.D., BULK	16IN
4	1302-2014	REDUCER, 1/8 F-NPT 1/4 M-NPT	1
5	1302-2077	AIR FTG / PLUG (1/4 NPT)	1
6	1302-5049	CONNECTOR-MALE, 3/8 TB, 1/4 NPT	1
7	1302-5104	ELBOW-3/8 TB, 1/4 M-NPT	1
8	13025020	UNION-BULKHEAD, 1/4 TB	1
9	13025021	UNION-BULKHEAD, 3/8 TB	1
10	13025029	CONNECTOR-FEMALE, 1/2 TB, 1/4 F-NPT	1
11	13025051	CONNECTOR-MALE, 1/2 TB, 1/4 NPT	1
12	13025180	PLUG-PTC, 1/4	1
13	1303-4000	AIRLINE-NYLON, .375 O.D., BULK	34.75IN
14	1303-5000	AIRLINE-NYLON, .500 O.D., BULK	10FT
15	13033D55	AIRLINE-0.25 O.D., (40 FT)	1
16	1401-0804	1/4 X 1/2 UNC HEX CAP SCR (GR 5)	1
17	1401-0806	1/4 X 3/4 UNC HEX CAP SCR (GR 5)	4
18	141A-1014	5/16 X 1 3/4 UNC FLANGE BOLT (GRADE 8) O&P	4
19	141A-1208	3/8 X 1 UNC FLANGE BOLT (GRADE 8) O&P	4
20	1426-0804	1/4 X 1/2 UNC SOCKET HEAD CAP SCREW (GRADE 8)	3
21	1426-0814	1/4 X 1 3/4 UNC SOCKET HEAD CAP SCREW (GRADE 8)	4
22	14301203	.375 X .375 SHOULDER BOLT	4
23	14420C04	#8 X .500 CR PAN HEAD MACHINE SCREW	25
24	1455-0404	#4 X 1/4 DRIVE SCREW	2
25	1470-0800	1/4 UNC HEX NUT (GR B)	3
26	1470-0C00	8-32 UNC HEX NUT (GR B)	25
27	1480-1004	5/16 UNC TOP LOCK FL NUT (GR G) O&P	8
28	1485-0800	1/4 LOCK WASHER	1
29	1487-0800	1/4 TYPE A PLAIN WASHER	6
30	1500-0078	BUMPER-RUBBER	4
31	1500-0193	FILTER-AIR	1
32	1500-1305	TAG-SERIAL, CABMATE	1
33	15000195	COMPRESSOR-AIR, THOMAS	1
34	15000312	GROMMET-RUBBER, 1/2	1
35	15000324	GROMMET-RUBBER, 3/8	4
36	15001331	LABEL-AIR KIT, WARNING	1
37	1505-0627	TERMINAL-RING, 5/16 STUD, 12-10	2
38	15050026	RELAY-SAMS	1
39	15050037	HARNESS-POWER, PANEL, AIR KIT	1
40	15050038	HARNESS-POWER, AIR KIT	1
41	15050041	HARNESS-CONTROL, AIR KIT, ULTRARIDE	1
42	15050044	HARNESS-WIRE, MAIN	1
43	15050045	HARNESS-SENSOR, AIR KIT, ULTRARIDE	2
44	15050048	HARNESS-BRAKE, AIR KIT, ULTRARIDE	1
45	15050049	ECU-KIT, AIR	1
46	15050051	PLUG-DEUTSCH, DT06-4S	2
47	1506-0081	NYLON CABLE TIE, 11" LONG	15
48	1506-0411	U-NUT, 1/4-20	4
49	6000-2019A	FITTING-INLET, AIR	1
50	80001495	TANK-AIR, WELDMENT	1
51	80001498	COVER-KIT, AIR, ULTRARIDE	1
52	800M2146	HOUSING-AIR KIT, ULTRARIDE, SPLIT	1
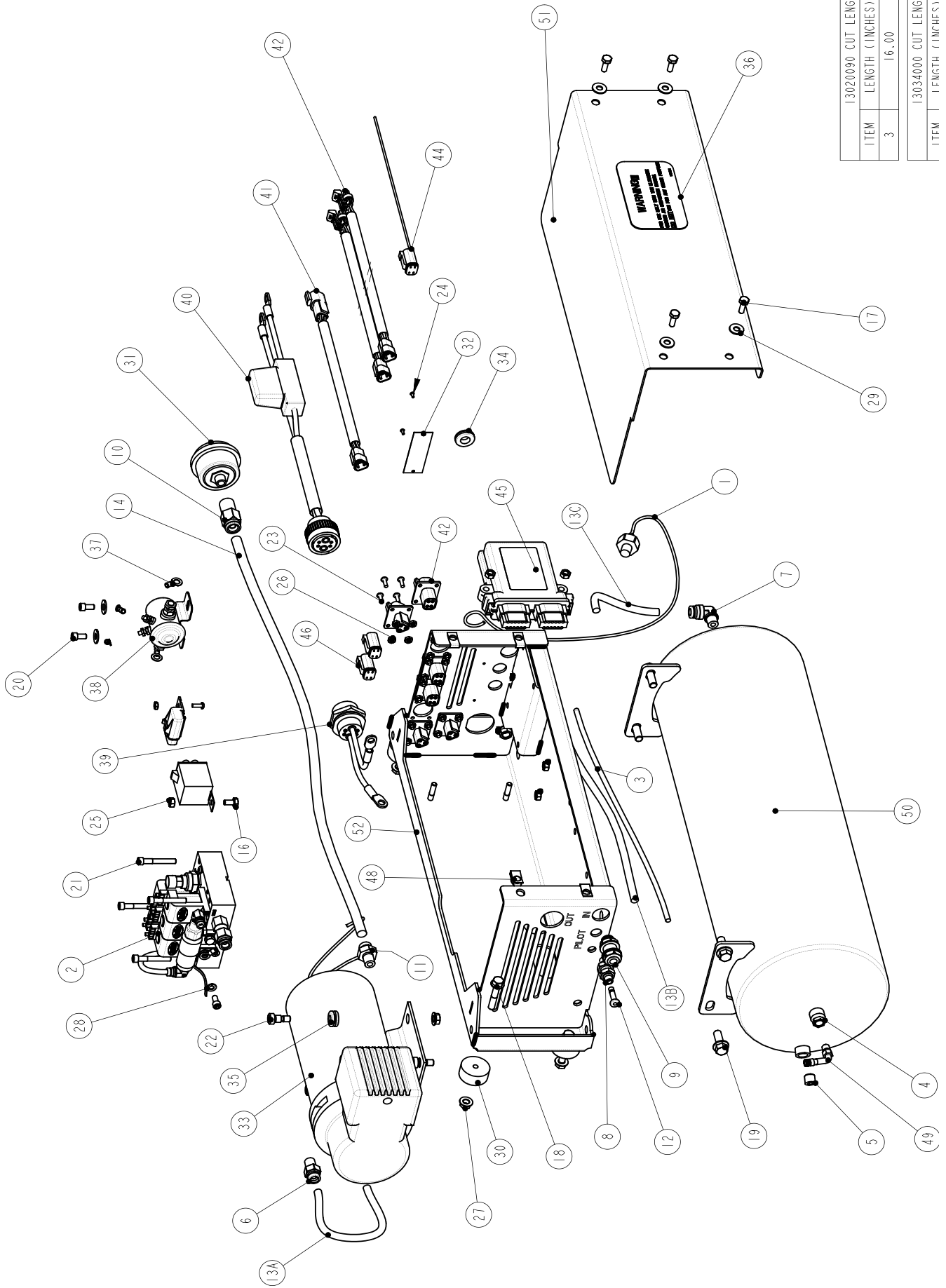
ULTRARIDE® - 800M1074
OPTIONAL CONTROL PANEL PARTS LIST
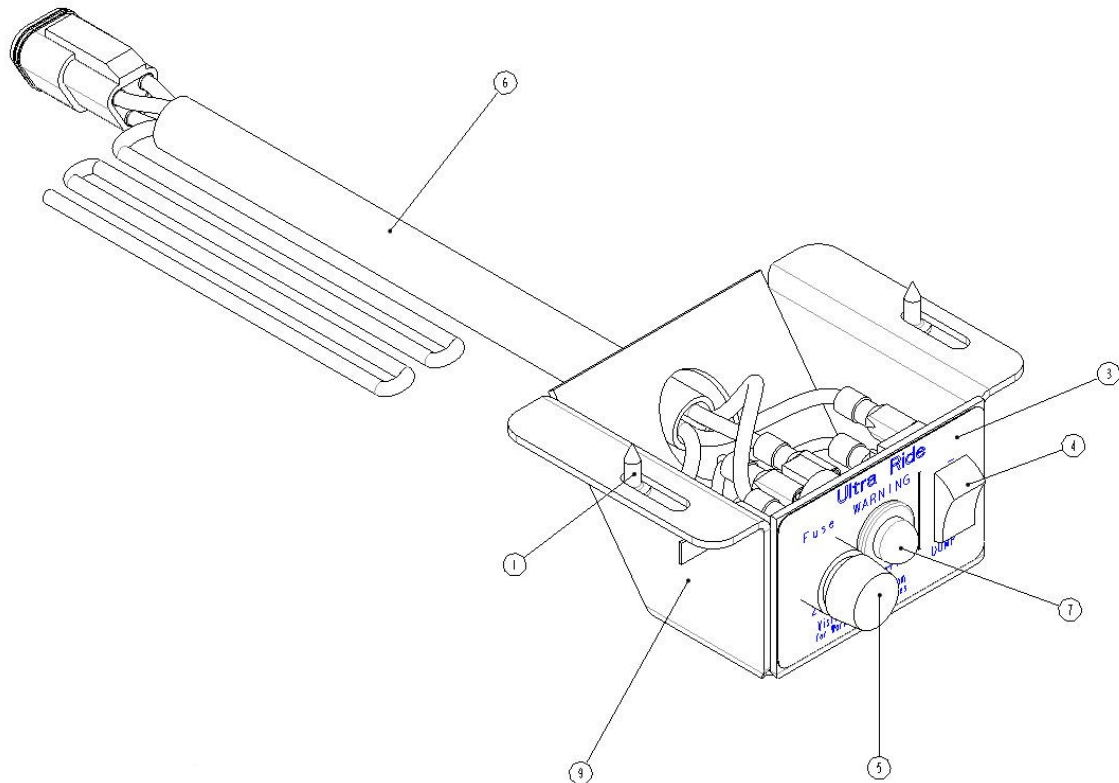
ITEM	PART NUMBER	DESCRIPTION	QTY
1	1459-0C07	NO. 8 X .438 PHIL-PAN SHEET	2
2	1500-1255	BOX(4.25 X 2.5 X 8.00)	1
3	15001828	LABEL-AIR CONTROL, ULTRARIDE	1
4	1505-0207	SWITCH-ROCKER	1
5	1505-1883	FUSE HOLDER,PANEL STYLE	1
6	15050040	HARNESS-CONTROL, ULTRARIDE	1
7	15050053	LIGHT-LED, 12V	1
8	15051872	2 AMP FUSE	1
9	80002161	PANEL-MOUNT, SWITCH	1

UltraRide® - 80001615

OPTIONAL INSIDE FRAME MOUNTING ADAPTER BRACKET
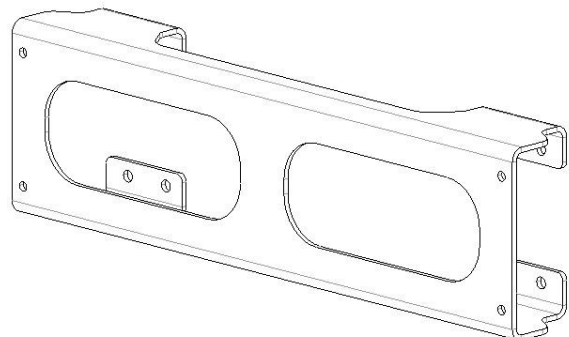
ULTRARIDE® - 800M1073
OPTIONAL AIR DRYER ACCESSORY KIT
PARTS LIST
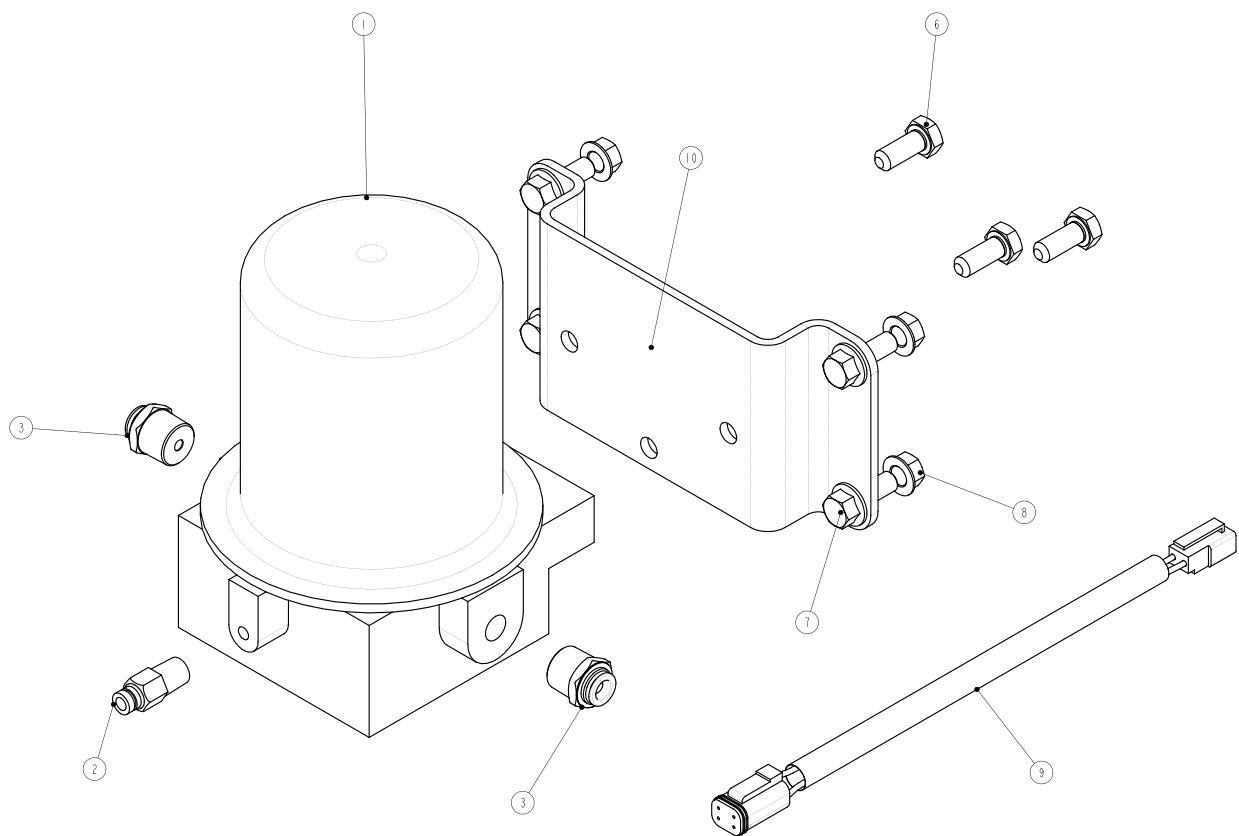
ITEM	PART NUMBER	DESCRIPTION	QTY
1	13010574	DRYER-AIR, WITHOUT GOVERNOR	1
2	13025046	CONNECTOR, 1/4 TB 1/4 M-NPT	1
3	13025056	CONNECTOR-MALE, 3/8 TB, 1/2 NPT	2
4	1303-4000	AIRLINE-NYLON, .375 O.D., BULK	32.5FT
5	13033D55	AIRLINE-0.25 O.D., (40 FT)	1
6	14071005	HEX CAP SCR, M10 X 1.25 X 25, CLASS 8.8	3
7	141A-1208	3/8 X 1 UNC FLANGE BOLT (GRADE 8) O&P	4
8	1480-1204	3/8 UNC TOP LOCK FL NUT (GR G) O&P	4
9	15050047	HARNESS-HEATER, AIR KIT, ULTRARIDE	1
10	80002145	BRACKET - MOUNT, DRYER	1

ULTRARIDE® - 800M0209 PARTS
OPTIONAL AUTOMATIC DRAIN KIT
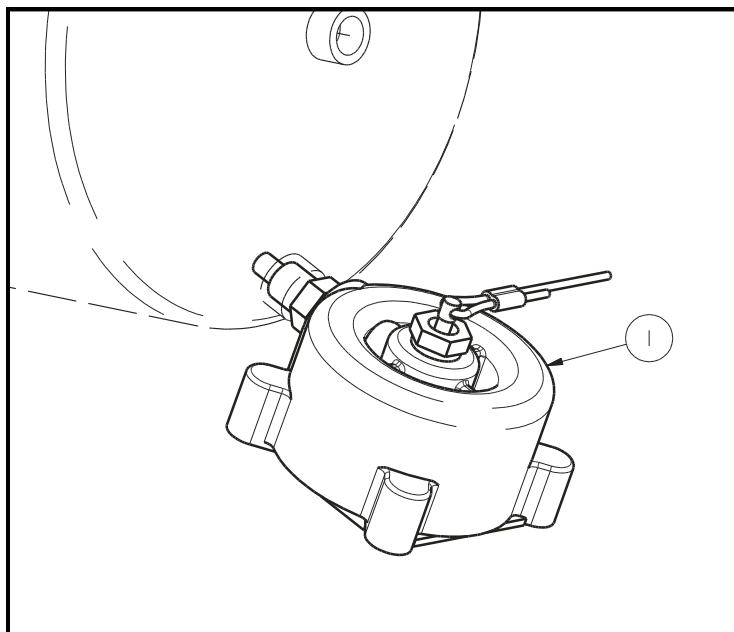
ITEM	PART NUMBER	DESCRIPTION	QTY
1	13010558	VALVE-DRAIN, AUTOMATIC	1

ULTRARIDE® - 800M0210 PARTS
OPTIONAL HEATED AUTOMATIC DRAIN KIT
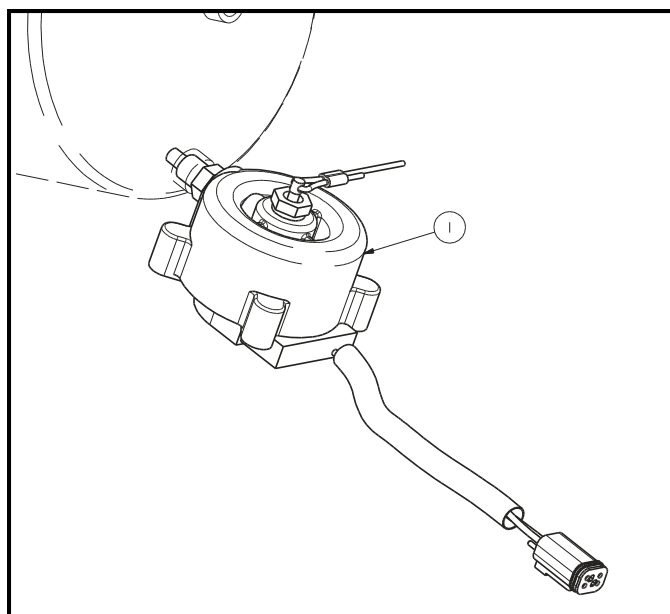
ITEM	PART NUMBER	DESCRIPTION	QTY
1	13010559	VALVE-DRAIN, AUTOMATIC, HEATED	1

ULTRARIDE® - 800M0202
ELECTRONIC HEIGHT CONTROL KIT
PARTS LIST
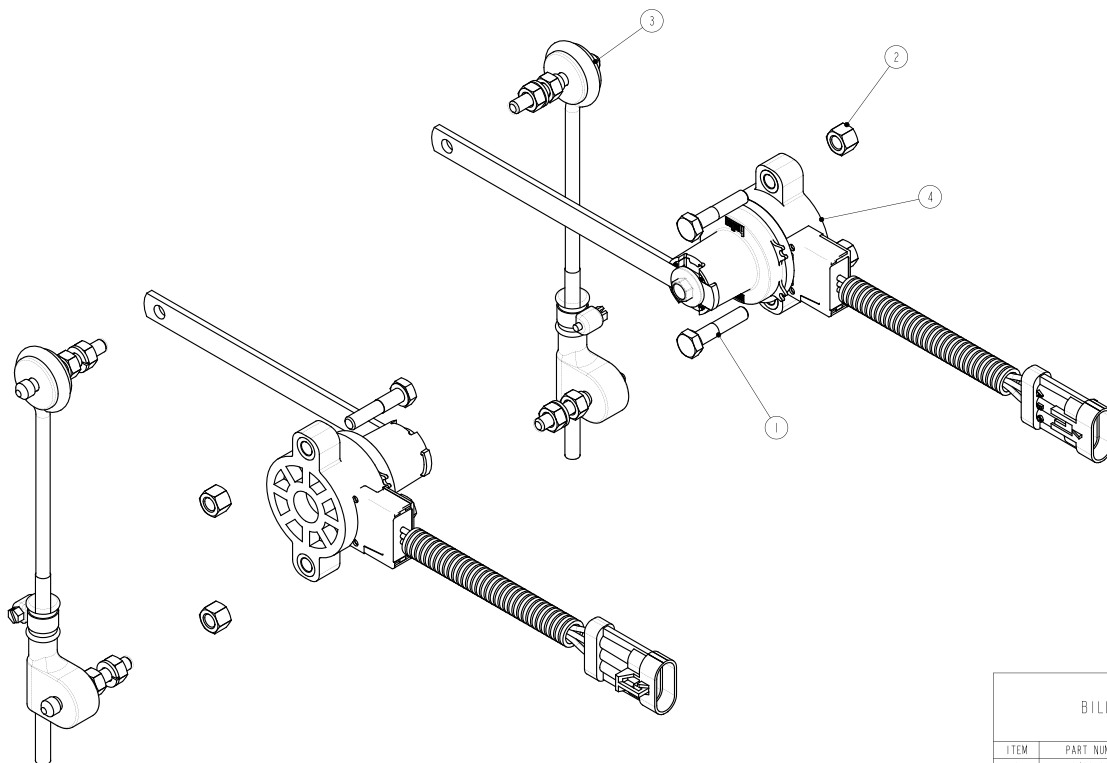
BILL OF M

ITEM	PART NUMBER
1	1401-0810
2	1478-0800
3	15000327

ITEM	PART NUMBER	DESCRIPTION	QTY
1	1401-0810	1/4 X 1 1/4 UNC HEX CAP SCR (GR 5)	4
2	1478-0800	1/4 UNC HEX NYLOCK NUT (GR B)	4
3	SEE TABLE	LINKAGE-VALVE, HEIGHT CONTROL, BARKSDALE	2
4	15050050	SENSOR-HEIGHT	2

Linkage Chart		
Vehicle	Linkage	Length
Dodge/Sterling	15000326	12"
Ford	15000326	12"
GM	15000327	8.188"

ELECTRICAL HARNESS & CONNECTOR SPECIFICATIONS

15050038—Battery Power Harness—192"

Air Kit End
Deutsch HDP Series Connector
Connector Body: HDP26-18-6SN (1)
Terminals: 0462-203-04141 (2)
Plugs: 114017 (4)
Pin 1(A) - Not Used—Plugged
Pin 2(B) - Not Used—Plugged
Pin 3(C) - +12V Battery Power
Pin 4(D) - Battery Ground
Pin 5(E) - Not Used—Plugged
Pin 6(F) - Not Used—Plugged

Battery End
3/8" Ring terminals for both +12V
Battery Power and Battery
Ground.
+12V Power cable includes 50A
Fuse.

15050041—Control Harness—240"

Air Kit End
Deutsch DT Series Connector
Connector Body: DT06-3S (1)
Terminals: 1062-16-0122 (3)
Wedge Lock: W3S (1)
Pin 1(A) - +12V Ignition Power
Pin 2(B) - Warning Light ground signal
Pin 3(C) - +12V Dump Signal

Control Panel End
Deutsch DT Series Connector
Connector Body: DT04-3P (1)
Terminals: 1060-16-0122 (3)
Wedge Lock: W3P (1)
Pin 1(A) - +12V Ignition Power
Pin 2(B) - Warning Light ground signal
Pin 3(C) - +12V Dump Signal

15050045—Height Sensor Harness—120"

Air Kit End
Deutsch DT Series Connector
Connector Body: DT06-3S (1)
Terminals: 1062-16-0122 (3)
Wedge Lock: W3S-1939 (1)
Pin 1(A) - 5VDC sensor power
Pin 2(B) - Sensor Signal
Pin 3(C) - Ground

Sensor End
Packard WeatherPack Connector
Connector Body: 12110293 (1)
Terminals: 12048074 (3)
Cable Seals: 12048086 (3)
Lock: 12052845 (1)
Pin 1(A) - 5VDC sensor power
Pin 2(B) - Sensor Signal
Pin 3(C) - Ground

15050046—Utility Tool Harness—240"

Air Kit End
Deutsch DT Series Connector
Connector Body: DT06-4S (1)
Terminals: 1062-16-0122 (3)
Wedge Lock: W4SB (1)
Plug: 114017 (1)
Pin 1(A) - Increase height
Pin 2(B) - Decrease height
Pin 3(C) - Ground
Pin 4(D) - Not used—plugged

15050047—Heater Harness—60"

Air Kit End
Deutsch DT Series Connector
Connector Body: DT06-4S (1)
Terminals: 1062-16-0122 (2)
Wedge Lock: W4SA (1)
Key Pin: 0413-215-1605 (1)
Plug: 114017 (1)
Pin 1(A) - +12V Ignition
Pin 2(B) - Not used—plugged
Pin 3(C) - Ground
Pin 4(D) - Not used—Key pinned

Heater End
Deutsch DT Series Connector
Connector Body: DT06-2S (1)
Terminals: 1062-16-0122 (2)
Wedge Lock: W2S (1)
Pin 1(A) - +12V Ignition
Pin 2(B) - Ground

15050048—Brake Harness—240"

Air Kit End
Deutsch DT Series Connector
Connector Body: DT06-4S (1)
Terminals: 1062-16-0122 (1)
Wedge Lock: W4SB (1)
Plug: 114017 (3)
Pin 1(A) - Not used—plugged
Pin 2(B) - Not used—plugged
Pin 3(C) - Not used—plugged
Pin 4(D) - +12V Brake Signal

Brake connection End
Bare wire

ELECTRICAL SYSTEM DIAGRAMS

CONNECTOR PIN-OUTS

(U) Utility Tool / Brake
(H) Heater

(C) Control Harness
(B)-(A) Height Sensor Harness

(P) Battery power harness
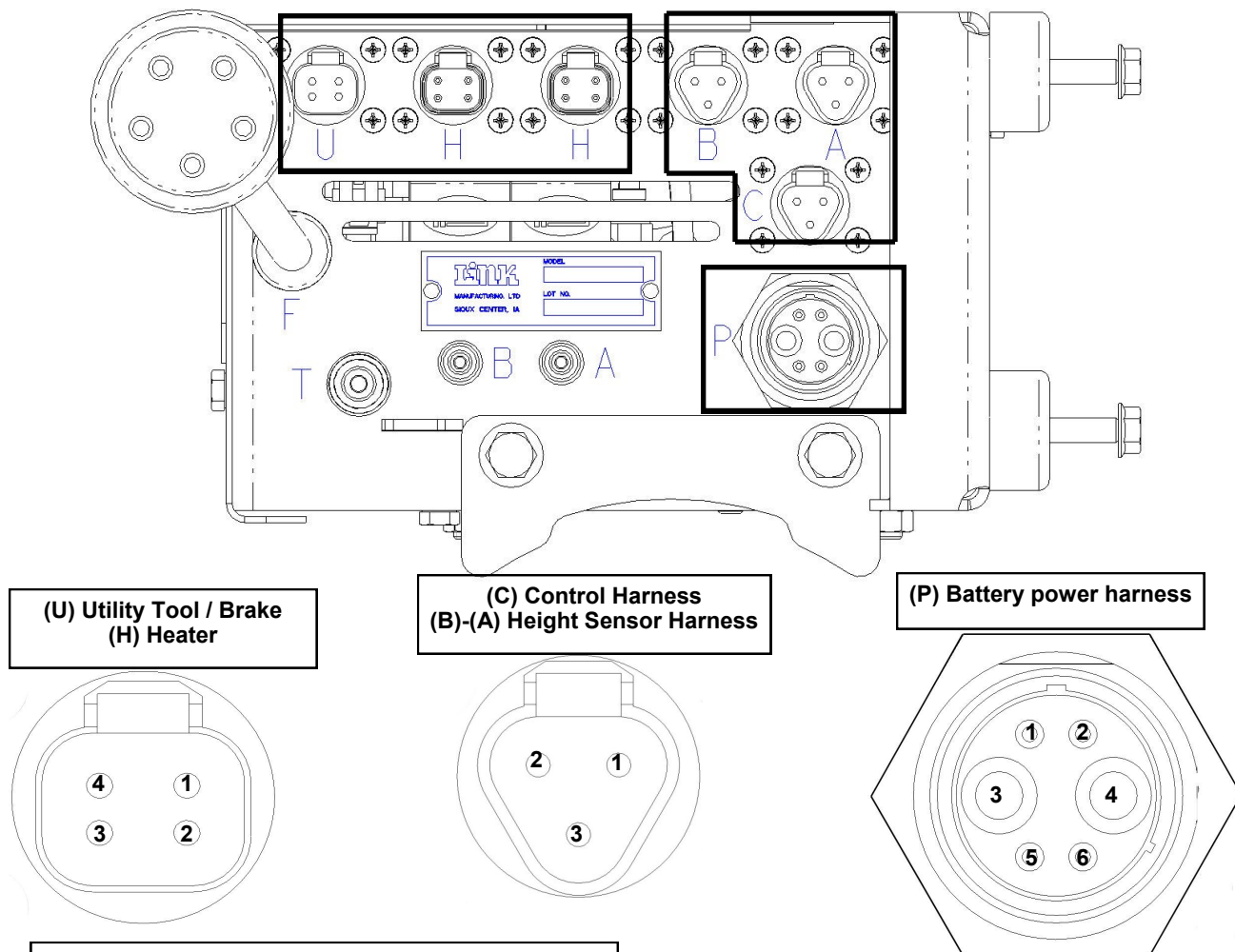
ELECTRICAL COMPONENT LOCATIONS

COMPRESSOR

COMPRESSOR
RELAY

ECU

IGNITION POW-
ER RELAY

20 AMP FUSE

15050048 BRAKE SIGNAL HARNESS

Toggle Switch

ADJUST HEIGHT SET POINT UP

ADJUST HEIGHT SET POINT DOWN

GROUND

TO +12V BRAKE LIGHT SIGNAL

800M2155 UTILITY BOX

800M1074 CONTROL PANEL

+12V Ignition Power Signal

2A Fuse

Dump Switch

30 mA LED Light

POS (+) BATTERY TERMINAL

NEG (-) BATTERY TERMINAL

50A Fuse

15050038 BATTERY POWER HARNESS

NOT USED

OR

ADJUST UP

ADJUST DOWN

BRAKE SIGNAL

DUMP SIGNAL

WARNING LIGHT

+12V BATTERY POWER

COMPRESSOR RELAY

ECU

SENSOR A SIGNAL

5VDC SENSOR POWER

SENSOR B SIGNAL

HEIGHT SENSOR CONNECTORS

PRESSURE SENSOR SIGNAL

SIDE A EXHAUST VALVE

SIDE B EXHAUST VALVE

TANK FILL VALVE

SIDE B FILL VALVE

SIDE A FILL VALVE

COMPRESSOR RUN SIGNAL

IGNITION POWER

IGNITION POWER SIGNAL

+12V BATTERY POWER

20A Fuse

PRESSURE SENSOR (ON VALVE BLOCK)

VALVE BLOCK CONNECTOR

HEATER CONNECTORS (PIN 4 NOT USED)

IGNITION POWER RELAY

+12V COMPRESSOR POWER

COMPRESSOR

DRYER
PILOT

TO
OPTIONAL
DRYER
(PLUGGED
IF DRYER
IS NOT
INSTALLED)

DRIVER
FILL
VALVE

DRIVER
EXH
VALVE

CURB
EXH
VALVE

DRIVER SIDE
AIR SPIRNG

CURB
FILL
VALVE

CURB SIDE
AIR SPIRNG

COMPRESSOR

TANK
FILL
VALVE

PRESSURE
SENSOR

AIR
TANK

CHECK
VALVE

32

UltraRide® - TROUBLESHOOTING GUIDE

Symptom	Possible Causes	CORRECTIVE ACTIONS
Air Tank Leaks down*	**A.** Fittings on air tank leaking **B.** Damaged Airline between tank & housing **C.** Faulty Valve manifold	**A.** Tighten or replace fittings **B.** Replace Damaged Airline **C.** Replace valve manifold
Air Spring(s) Leak down*	**A.** Fittings on Air Spring Leaking **B.** Damaged Air Spring **C.** Damaged airline between housing & air spring **D.** Faulty Valve manifold	**A.** Tighten or replace fittings **B.** Replace air spring **C.** Replace damaged airline **D.** Replace valve manifold
Compressor does not run	**A.** Ignition Key is not on **B.** Fuse is blown **C.** Tank is full	**A.** Turn on the ignition key to power the system **B.** Check and replace fuses. **C.** Nothing wrong, normal opeartion
Compressor runs too much	**A.** Leak in system **B.** Plugged Air Filter **C.** Faulty Compressor	**A.** Find and stop leak **B.** Replace Air Filter **C.** Replace Compressor
Suspension does not dump	**A.** Ignition Key is not on **B.** Improper height settings **C.** Loose connections	**A.** Turn on the ignition key to power the system **B.** See manual to program the height settings **C.** Check all electrical connections.
Warning Light is on	**A.** System is starting up **B.** Low pressure in air tank **C.** System malfunction	**A.** Nothing wrong, normal operation. **B.** Check for leaks and check compressor operation. **C.** Consult your Link Service representative
Warning light is blinking **1 second on & 1 second off**	**A.** System is in setup mode	**A.** Remove the Height Set Utility Tool and un-dump the suspension.
Warning light is blinking **1/4 second on & 2 seconds off**	**A.** Suspension is Dumped	**A.** Nothing wrong, normal operation. Undump the suspension to stop warning light from blinking.
Warning light is blinking **Other codes**	**A.** Fault error detected. See Warning Light Error Codes (below).	**A.** Take action to correct the indicated fault.

* NOTE: All air systems will always have some inherent leaks and will, over a long period of time, leak down.

	LED Blink Code	Description	Effect
System Status Indicators	Steady On	System is booting, or Low Tank Pressure, or ECU Failure	No effect, Indication only
	1 sec. on - 1 sec. off	System is in Setup mode	Fast response mode for adjusting sensors
	¼ sec. per 2 seconds	System is in Dump mode	Vehicle is lowered
Sensor Errors	11: 1 blink, 1 blink	Side A Sensor Fault	One side: other sensor used for both, Both sides: operation inhibited
	12: 1 blink, 2 blinks	Side B Sensor Fault	
	13: 1 blink, 3 blinks	Pressure Sensor Fault	Compressor and other modes inhibited.
Air System Errors	21: 2 blinks, 1 blink	Compressor Run Timeout	Compressor inhibited for 10 minutes
	22: 2 blinks, 2 blinks	Compressor Duty Cycle	Compressor inhibited for 2 minutes
	23: 2 blinks, 3 blinks	Leak Detect	No effect, Fault indication only
Run Time Limit Exceeded	31: 3 blinks, 1 blink	Side A Valve Time Exceeded	Affected solenoid operatoin inhibited (turned off) until cleared.
	32: 3 blinks, 2 blinks	Side B Valve Time Exceeded	
	33: 3 blinks, 3 blinks	Reservoir Valve Time Exceeded	
	34: 3 blinks, 4 blinks	Compressor Time Exceeded	

APPENDIX A
WIRING DETAIL FOR F-SERIES FORD VEHICLES

Harness Routing:

One option in routing the harness is to run the harness under the floorpan of the passenger's side,
and through the grommet in the passenger side floor, if available. The harness can then run under the floor covering and behind the dash. See Figure A-1.

Key Hot Wire Selection:

For '99 and newer **Ford** vehicles, the PTO 12-volt power source wire provides an adequate "key hot" wire for the UltraRide® Air Kit. This wire does not have any terminals attached to it, and is part of the OE supplied Power Take-Off Circuits. To verify the correct wire, use a test light or multimeter. The selected wire should only be "hot" when the ignition switch is on.

FIG. A-1

For **pre-2002** model year vehicles, the wire is Circuit Number **295** and has a wire color of **light blue and pink**.

For **2002—2007** model year vehicles, the wire is Circuit Number **294** and has a wire color of **white and light blue**. This wire can be found blunt-cut & taped, on the harness behind the Diagnostic Link Connector (below and to the RIGHT of the steering wheel). See Figures A-2 and A-3.

For **2008 and newer** model year vehicles, the wire is Circuit Number **CBP44** and has a wire color of **purple**. This wire can be found blunt-cut & taped, on the harness behind the Diagnostic Link Connector (below and to the LEFT of the steering wheel).
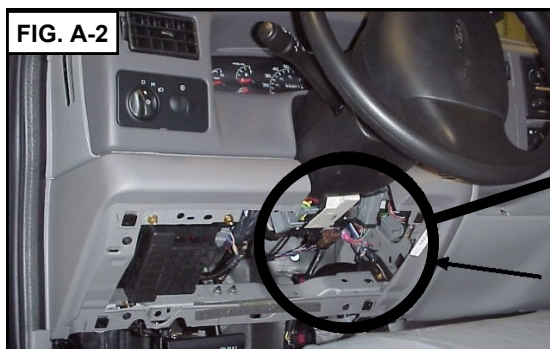

FIG. A-2

1999-2001:
Circuit 295
Light Blue
and Pink

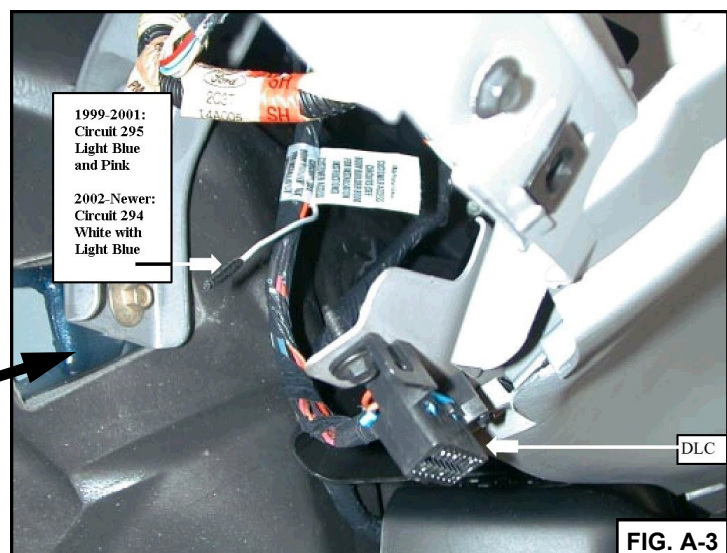2002-Newer:
Circuit 294
White with
Light Blue

DLC

FIG. A-3

APPENDIX B

WIRING DETAIL FOR GMC VEHICLES

Harness Routing:

Another option in routing the harness is to run the harness from the battery, up through the grommeted hole in the passenger side bulkhead. The harness can then run under the floor covering and behind the dash.
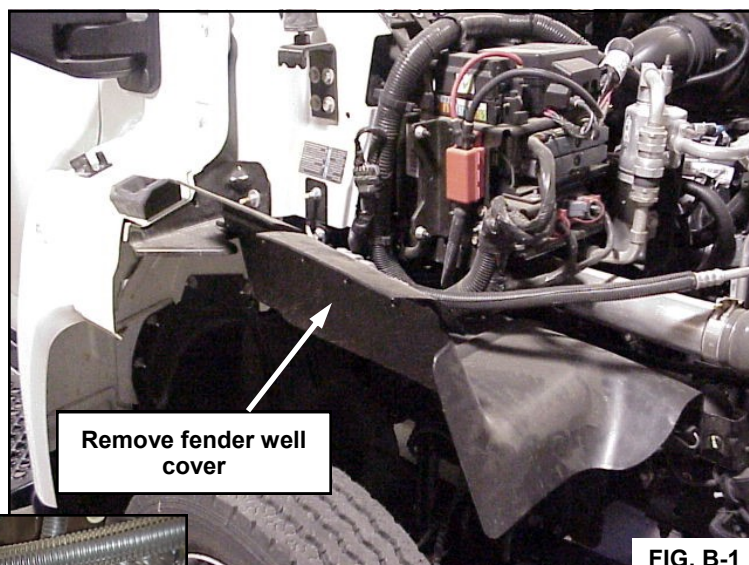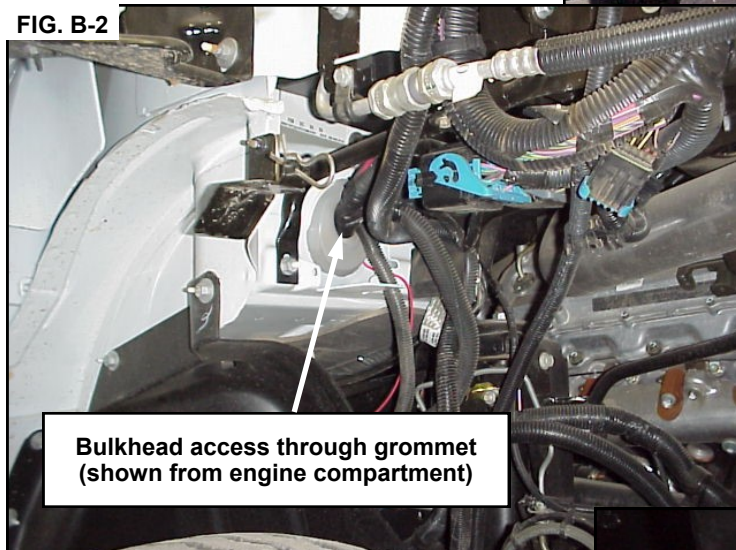
See Figures B-1, B-2, & B-3.

Remove fender well cover

FIG. B-1

FIG. B-2

Bulkhead access through grommet (shown from engine compartment)

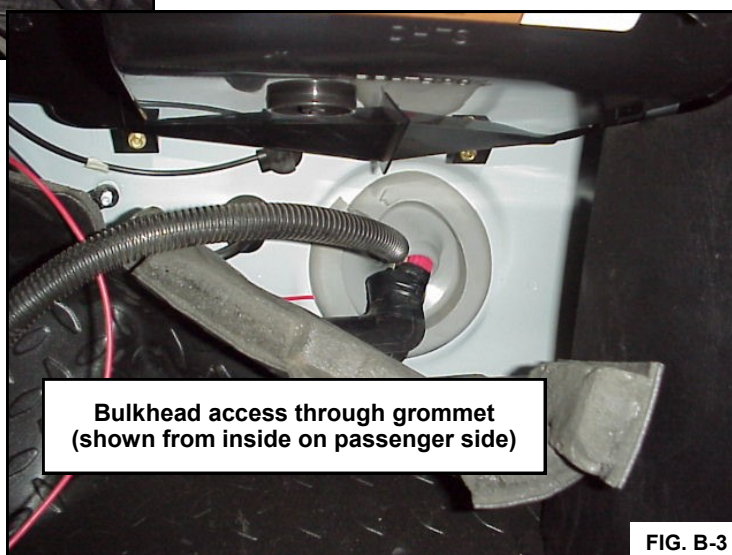**Bulkhead access through grommet (shown from inside on passenger side)**

FIG. B-3

Key Hot Wire Selection:

For GMC vehicles, any wire connected to IGN4 provides an adequate "key hot" wire for the UltraRide® Air Kit. One such wire that can be used is connected to the Clutch Pedal Position Switch located behind the left front kick panel. This wire is hot and fused with the ignition key in the "RUN" position. It may be necessary to remove the kick panel to access this connector. See Figures B-4 and B-5.

To verify the correct wire, use a test light or multimeter. The selected wire should only be "hot" when the ignition switch is on.
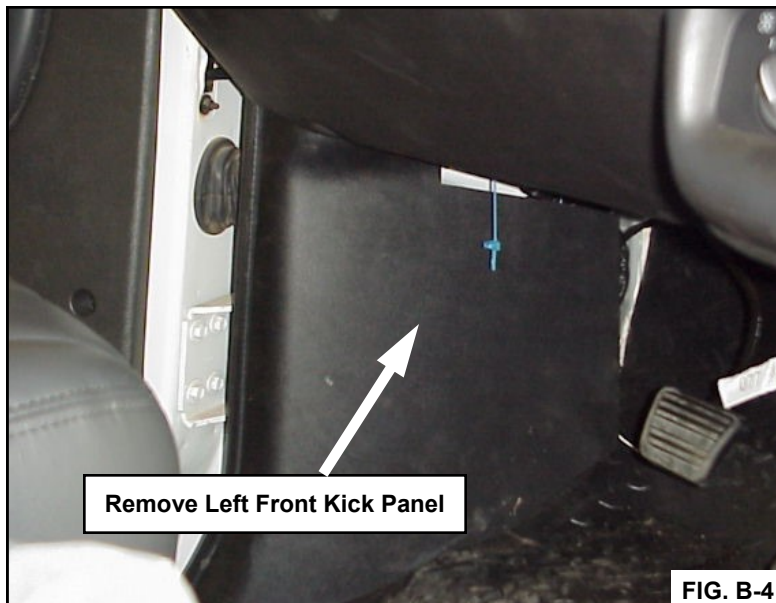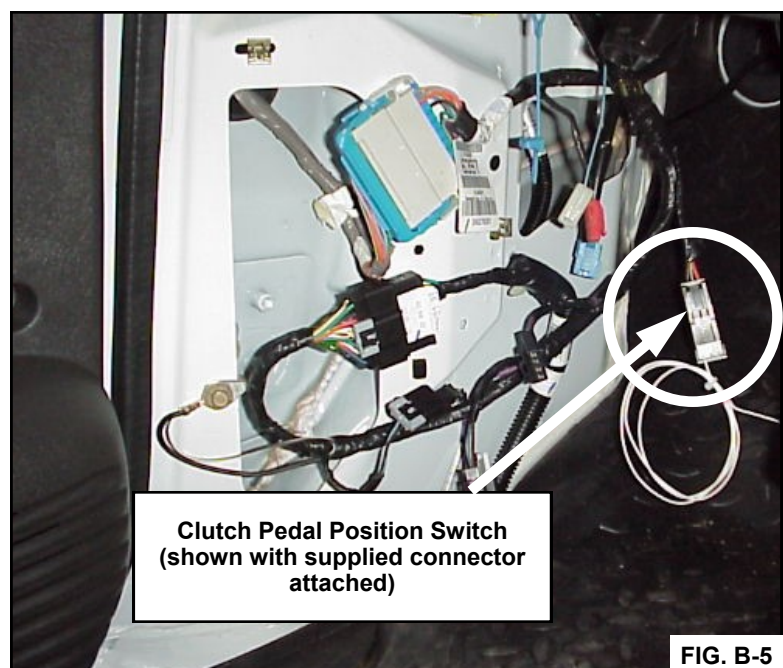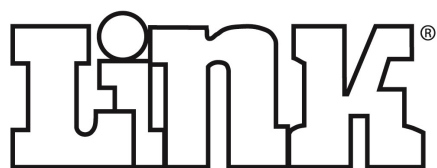

Remove Left Front Kick Panel

FIG. B-4

**Clutch Pedal Position Switch
(shown with supplied connector
attached)**

FIG. B-5

APPENDIX C

WIRING DETAIL FOR DODGE/STERLING VEHICLES

This section not yet complete.

Link