

Powered Vehicle Suspensions Owner's Manual

AirMaster - Electronic Air Control Kit



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REV	ECR #	DATE	CHANGE DESCRIPTION	BY	CHK	APV
OR	21039	6/8/17	RELEASED FOR PRODUCTION	JCR	-	-
A	21189	1/17/18	ADDED CHECK VALVE ADAPTER 0122 TO DRAWING 714393; MADE MINOR CORRECTIONS TO MANUAL	JCR	-	-
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INTRODUCTION

Company Profile

Reyco Granning Suspensions was formed by the merger and acquisition of two well-known names in the heavy duty vehicle suspension industry—Reyco and Granning.

Reyco grew out of the Reynolds Mfg. Co and was first known as a major supplier of brake drums for heavy duty vehicles and later developed a full line of air and steel-spring suspensions for trucks, buses, trailers and motorhomes.

Granning Air Suspensions was founded in 1949 in Detroit, Michigan as a manufacturer of auxiliary lift axle suspensions. Granning later became an innovator of independent front air suspensions for the motorhome industry.

Reyco Granning LLC was formed in early 2011 through a partnering of senior managers and MAT Capital, a private investment group headquartered in Long Grove, Illinois.

Congratulations on your purchase of a ReycoGranning® product. Founded in 1948 by one of the pioneers of air suspensions, ReycoGranning® Air Suspensions supplies drive and tag axle air suspension systems to a variety of original equipment manufacturers as well as to the aftermarket industry. The R-Series products, are utilized by OEM customers in applications such as recreational vehicles, shuttle bus, trailer, chassis builders, Type I and III ambulances and class 3 through 8 truck applications. This product line now exceeds 25 models that cover all major chassis utilized in the above applications.

INTRODUCTION

About This Manual

This publication is intended to assist in the operation and service of your Reyco Granning[®] product. It is important to read and understand the entire Technical Procedure publication prior to performing any operation of or service to this product.

Reyco Granning[®] Air Suspensions reserves the right to modify the products and/or procedures and to change specifications at any time without notice and without incurring obligation. Contact customer service at 1-800-753-0050 for information on the latest version of this manual.

You must follow your company safety procedures when you service the product. Be sure you read and understand all the procedures and instructions before you begin work on the product.

Some procedures require the use of special tools for safe and correct service. Failure to use these special tools when required can cause personal injury or damage to suspension/air control components.

The latest revision of this manual is available online at

<http://www.ReycoGranning.com/>

Reyco Granning[®] Air Suspensions has developed this manual to aid in the installation of Reyco Granning[®]'s AirMaster Electronic Height Control System.

PRODUCT OVERVIEW

The electronic ride height and kneeling system controls the rear air suspension for ride control when traveling. At vehicle speeds less than 10 mph, it can lower the rear of the vehicle on command to provide increased accessibility.

The driver/operator can activate the rocker switch or door switch to toggle between Kneel and Ride heights. An indicator provides system status and fault codes.

The system is comprised of pneumatic valves that control the air supply to the two rear suspension air bags. A single electronic control unit (ECU) monitors the rocker and door switches and sets the suspension to either ride or kneel height. Two electronic ride height sensors send their analog height readings to the ECU to accurately determine the height of the rear of the vehicle.

The electronic control unit monitors the CAN bus network to obtain vehicle speed.

A transducer measures the vehicle's air pressure. The ECU activates a 'compressor run' signal to ensure sufficient air supply to maintain or restore ride height. The compressor air pressure output feeds directly into an air dryer which is periodically purged by the ECU to regenerate the desiccant or briefly unload the compressor head pressure when the compressor starts.

This manual explains the features of the electronic ride height and kneeling system.

Compressor

The ignition must be on for the compressor to operate.

The compressor turns on when the vehicle air suspension pressure falls below a low set-point and turns off when the high set-point has been achieved.

To improve ride height recovery time, the low set-point is typically higher while kneeling. Depending on the current air pressure, the compressor may turn on while deflating the air bags to lower the rear of the vehicle.

Air Dryer

The output of the compressor feeds directly to an air dryer which uses desiccant to reduce the moisture content of air being supplied to the main air tank.

Each time the compressor is turned off, the air dryer is purged to regenerate the desiccant.

SAFETY INSTRUCTIONS

WARNING

DO NOT USE THE VEHICLE'S SUSPENSION TO SUPPORT THE VEHICLE FOR SERVICING OR INSPECTION. INSTEAD, INSTALL ADEQUATE BLOCKING BEFORE WORKING UNDER ANY VEHICLE. THE SYSTEM IS DESIGNED AS A 'HEIGHT CONTROL' SYSTEM ONLY.

KEEP CLEAR OF PINCH POINTS WHEN ADJUSTING THE RIDE HEIGHT SENSORS AS THE SUSPENSION AIR BAGS WILL ADJUST IN RESPONSE TO A LEVER ADJUSTMENT.

KEEP PEOPLE CLEAR OF VEHICLE WHILE RAISING OR LOWERING.

CAUTION

READ AND UNDERSTAND THE ENTIRE OPERATOR'S MANUAL BEFORE USING OR SERVICING YOUR ELECTRONIC RIDE CONTROL SYSTEM.

THIS SYSTEM SHOULD BE SERVICED ONLY BY QUALIFIED PERSONNEL.

LEAKS IN A VEHICLE'S AIR SYSTEM CAN CAUSE THE VEHICLE TO LOWER OVER TIME WHEN THE SYSTEM IS OFF.

CONNECT THE SUSPENSION CONTROL SYSTEM TO THE VEHICLE BATTERY ONLY AFTER ALL OTHER ELECTRICAL AND PNEUMATIC COMPONENTS HAVE FIRST BEEN INSTALLED.

OPERATION

Ride Height

The height of the rear of the vehicle is at the factory set ride height anytime the ignition is on and the system is not in kneeled. The system monitors the height from the two rear ride height sensors and maintains the height based on the output of those sensors.

The system will normally adjust the height and make corrections if the height is outside the tolerance band for a period of time. When the vehicle is subject to excess acceleration such as when braking or cornering, the system will delay ride height adjustments for an additional period of time. At vehicle speeds less than 5 mph, no ride height adjustments will be made. However, immediate height corrections will always be done if outside the limits of normal ride height.

Kneeling with Door Switch

The ignition must be on and the vehicle speed must be less than 10mph.

When door is opened (door switch input transitions to 'on'), the system will lower the rear of the vehicle until the kneeled set-point is reached. Once the set-point is reached and the ignition remains on, the system will automatically re-lower anytime the rear of the vehicle rises above the set-point as a result of weight removal.

The vehicle will remain kneeled after the ignition is turned off and when the ignition is turned back on again.

Ride height is automatically restored if the vehicle speed exceeds 10 mph.

Door Mode 1: Return to ride height when door closed (default)

This is the default mode. Each time the door is closed, the vehicle will return to ride height.

Door Mode 2: Stay kneeled when door is closed (temporary)

With the ignition on, this mode allows a stationary vehicle to remain kneeled while the door is repeatedly opened and closed.

With the door open and the vehicle kneeled, activate mode 2 by momentarily pressing the rocker switch for at least one (1) second and release. The rocker switch status indicator will rapidly flash. To switch back to mode 1, momentarily press the rocker switch again.

If the door is closed while the vehicle is moving, while less than 10 mph, ride height will be immediately restored.

OPERATION

Door Kneel Override

The ignition must be on, with the door open and the vehicle kneeled. Press and hold the rocker switch 30 seconds, at which point the status indicator will flash. Release the switch within 15 seconds to restore ride height.

Kneeling with Rocker Switch

The ignition must be on, with the door closed and the vehicle speed less than 10 mph.

When the rocker kneel switch is activated, the system will lower the rear of the vehicle until the kneeled set-point is reached. Once the set-point is reached and the ignition remains on, the system will automatically re-lower anytime the rear of the vehicle rises above the set-point as a result of weight removal.

The vehicle will remain kneeled after the ignition is turned off and when the ignition is turned back on again.

Ride height is restored when the rocker switch is pressed with the door closed or the vehicle speed exceeds 10 mph.

STATUS INDICATOR

The status indicator output provides the operator with information as to how the system is operating and whether or not there are any fault conditions within the system.

When the ignition is turned on, the status indicator will turn on for 5 seconds to indicate the system is operational. Once 5 seconds elapses, the indicator will either turn off when at ride height or remain on if the vehicle is kneeled.

During kneeling, the indicator will blink rapidly while lowering and remain on solid when kneeled. While raising to ride height, the indicator will blink rapidly and turn off once ride height has been achieved.

Off	The vehicle is at ride height.
Rapid Blink	The vehicle is either lowering or raising
Solid	The vehicle is kneeled.

When a fault is detected within the system, the status indicator will blink a number of times and then pause for 2 seconds before blinking again to indicate the cause of the fault. This will continue until the fault condition is corrected and the system is reset (ignition off and on). When a fault occurs, the system will stop using the faulted component but will continue operating the other components. If multiple faults exist in the system, only a single fault will be displayed by the status indicator, prioritized as shown below (fewer blinks indicates higher priority).

Note: Refer to the diagnostics section on page 41 for advanced fault indications.

Basic Fault Indications

1 blink	Ride height sensor signal high or low, or arm angle rotated more than 40 degrees.
2 blinks	Output fault for Valve, Compressor Run or Compressor Unload/Purge.
3 blinks	System below low ride height limit for an extended period of time, when not kneeling.
4 blinks	Compressor running continually for an extended period of time, pressure transducer faulted, accelerometer failure, pressure not building, or excessive pressure.
5 blinks	Vehicle CAN bus data not detected, or missing transmission gear or vehicle speed.
6 blinks	Ride Height sensor orientation not set.

INTERFACE

CAN bus

The electronic control unit communicates with the vehicle network.

The electronic control unit polls the vehicle network for vehicle speed. If no communication is detected, a fault will occur and kneeling will be unavailable.

Kneeling is only available at speeds less than 10 mph.

Motion Warning

The vehicle may have a factory installed option to provide a motion warning. This feature may activate an audible annunciator or visual indicator.

The motion warning is activated during the following conditions:

- While the rear of the vehicle is lowering from ride height to kneel height.
- When the rear of the vehicle is below the factory set lower warning limit while raising from kneel height to ride height.

Low Pressure Warning

The vehicle may have a factory installed option to provide a low pressure warning. This feature may activate an audible annunciator or visual indicator.

The low pressure warning is activated during the following conditions:

- When a ride height sensor is below the factory set lower warning limit height for an extended period of time. This situation also results in a fault indication.
- When the compressor has been running for an extended period of time. This situation also results in a fault indication.

DIAGNOSTICS

Warning : Do not attempt to troubleshoot or view fault information while the vehicle is in motion. Stop the vehicle and make sure the vehicle is clear before performing the following as the vehicle may raise or lower when the rocker or door switches are activated.

To view more specific information about a fault, hold the rocker switch*, and continue holding the switch while watching the status indicator. The status indicator will blink depending on the cause of the fault. If multiple faults exist in the system, only the first fault will be displayed according to the following list.

*Note: The vehicle may kneel while viewing the advance codes; this is normal.

Advanced Fault Indications - Kneel Switch Held

Output Faults - 1 blink (pause) followed by:

2 short blinks Compressor Unload Output (open or short circuit).

3 short blinks Compressor Run Output (open or short circuit).

4 short blinks Motion Warning Output (short circuit).

5 short blinks Low Pressure Output (short circuit).

Valve Faults - 2 blinks (pause) followed by:

1 short blink Left Raise Valve (open or short circuit).

2 short blinks Left Lower Valve (open or short circuit).

3 short blinks Right Raise Valve (open or short circuit).

4 short blinks Right Lower Valve (open or short circuit).

Height Sensor and Tilt Sensor Faults - 3 blinks (pause) followed by:

1 short blink Left Ride Height Sensor.

2 short blinks Right Ride Height Sensor.

3 short blinks Accelerometer Fault.

4 short blinks Vehicle CAN bus not detected.

5 short blinks Transmission Gear CAN bus data not received.

6 short blinks Vehicle Speed CAN bus data not received.

7 short blinks Ride Height sensor orientation not set.

Compressor Faults - 4 blinks (pause) followed by:

1 short blink Pressure Transducer Signal Low.

2 short blinks Pressure Transducer Signal High.

3 short blinks Compressor running continually for an extended period.

4 short blinks System below low ride height limit for an extended period of time, when not kneeling.

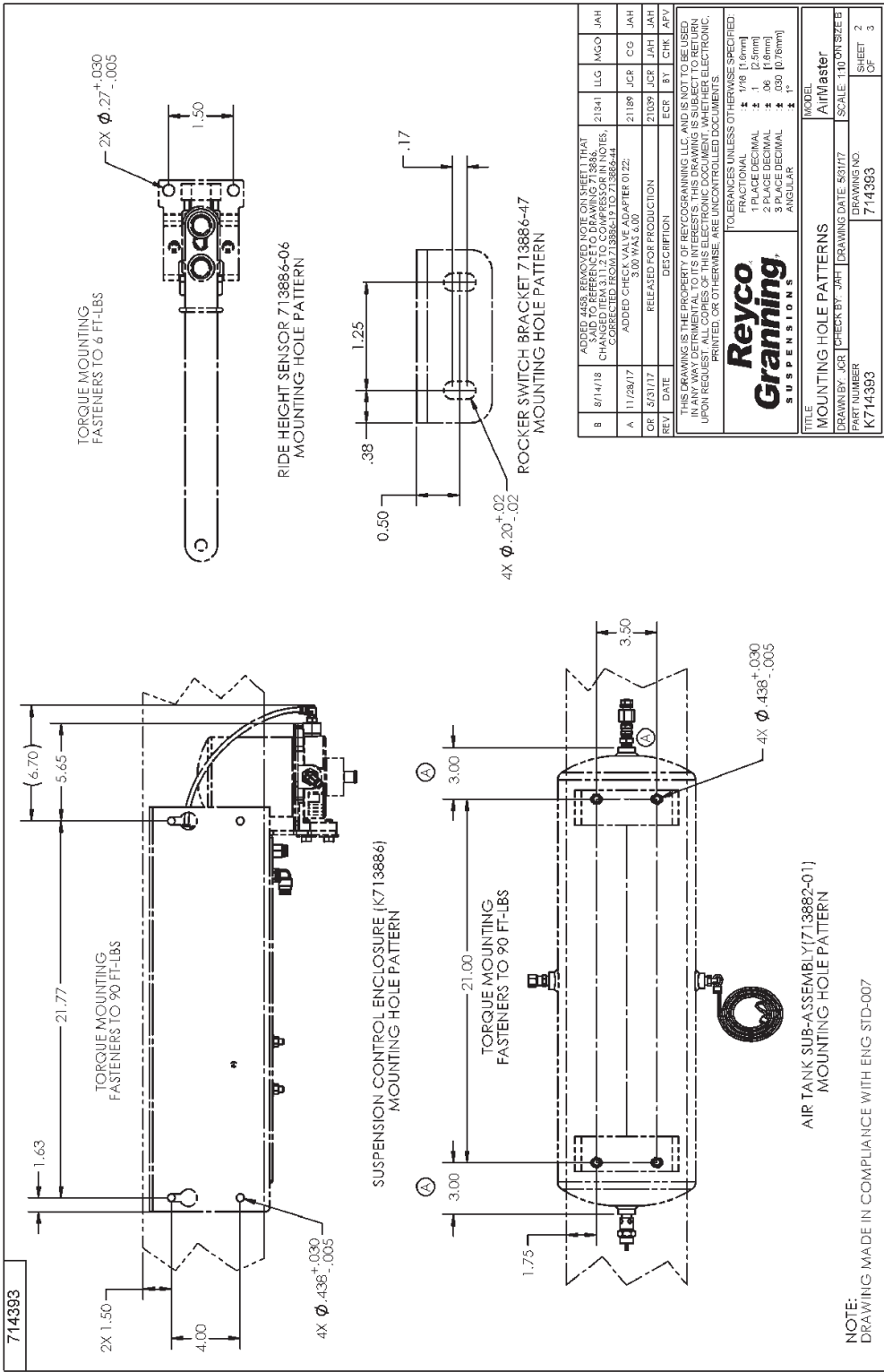
5 short blinks Compressor is not building system pressure.

6 short blinks Excessive air pressure.



COMPONENTS

AirMaster Height Control System K714393, Sheet 2 of 3



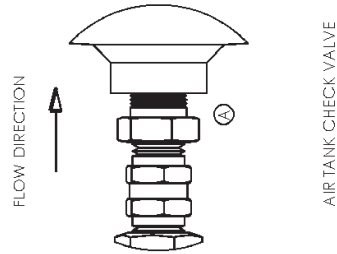
COMPONENTS

AirMaster Height Control System K714393, Sheet 3 of 3

714393

NOTES:

1. TUBING TO BE 1/4" D.O.T. PLASTIC AIR BRAKE TUBING. TUBING MUST BE CUT SQUARELY AND INSERTED FULL DEPTH INTO FITTINGS. CHECK FOR AIR LEAKS.
2. THE AIR TANK ASSEMBLY (71-3882-011) MUST BE MOUNTED SO THAT THE PULL CORD DRAIN VALVE (714206-011) IS ORIENTED TO THE BOTTOM.
3. VERIFY THAT CHECK VALVE (4017) IS INSTALLED ON THE TANK (6467) SO THAT THE ARROW POINTS TOWARD THE TANK.
4. THE AIR KIT ENCLOSURE MUST BE MOUNTED IN A WELL VENTILATED AREA THAT IS FREE FROM THE ELEMENTS (RAIN, SNOW, ICE, ETC.)
5. ALL AIR LINES TO BE ROUTED IN SUCH A WAY AS TO PREVENT KINKING OR ABRASION. PROTECTIVE LOOM, GROMMETS AND WIRE TIES ARE RECOMMENDED.
6. INSPECT ALL AIR LINES, FITTINGS AND AIR SPRINGS FOR LEAKS WITH A SOAPY WATER SOLUTION.
7. AIR KIT ENCLOSURE IS TO BE MOUNTED WITH THE LID SIDE FACING UP.

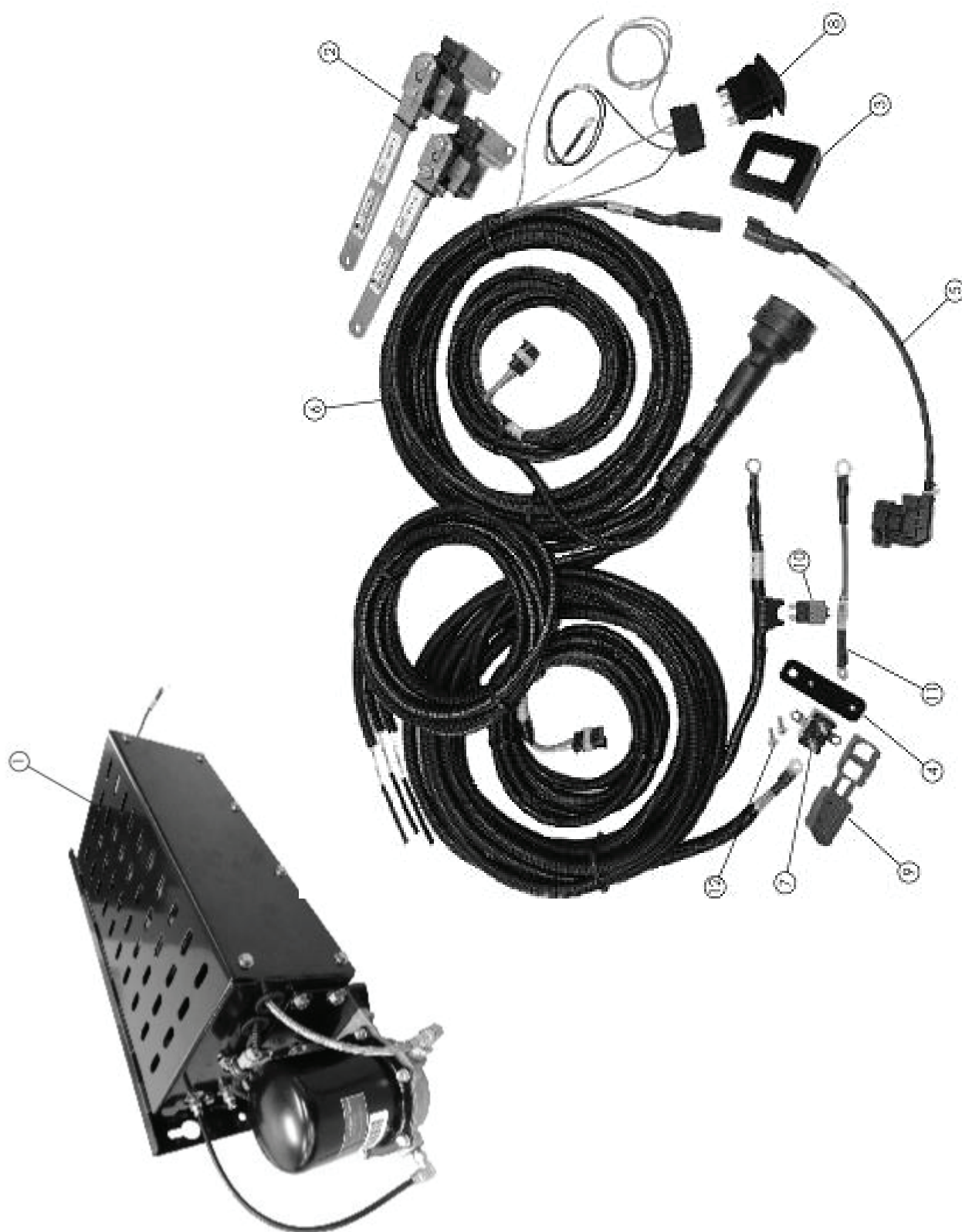


B	8/14/18		ADDED 4855, REVISED NOTE ON SHEET 1 THAT SAID TO REFERENCE TO DRAWING 717.393. CHANGED ITEM 3.11.7 TO COMPRESSOR IN NOTES. 5.00 WAS 4.00	21341	LLG	MCO	JAH										
A	1/126/17		RELEASED CHECK VALVE ADAPTER 0122. 3.00 WAS 4.00	21189	JCR	CG	JAH										
OR	5/31/17			21039	JCR	JAH	JAH										
REV	DATE		DESCRIPTION	ECR	BY	CHK	APV										
Reyco Granning S U S P E N S I O N S THIS DRAWING IS THE PROPERTY OF REYCO GRANNING, LLC, AND IS NOT TO BE USED IN ANY WAY. PERMENTAL TO ITS INTERESTS THIS DRAWING IS SUBJECT TO RETURN UPON REQUEST. PRINTED, OR OTHERWISE, ARE UNCONTROLLED DOCUMENTS. TOLERANCES UNLESS OTHERWISE SPECIFIED <table><tr><td>FRACTIONAL</td><td>1/8" 1/16" (1.6mm)</td></tr><tr><td>1 PLACE DECIMAL</td><td>1 1/2 (25mm)</td></tr><tr><td>2 PLACE DECIMAL</td><td>1/32 (1.6mm)</td></tr><tr><td>3 PLACE DECIMAL</td><td>1/100 (1.0mm)</td></tr><tr><td>ANGULAR</td><td>1°</td></tr></table>								FRACTIONAL	1/8" 1/16" (1.6mm)	1 PLACE DECIMAL	1 1/2 (25mm)	2 PLACE DECIMAL	1/32 (1.6mm)	3 PLACE DECIMAL	1/100 (1.0mm)	ANGULAR	1°
FRACTIONAL	1/8" 1/16" (1.6mm)																
1 PLACE DECIMAL	1 1/2 (25mm)																
2 PLACE DECIMAL	1/32 (1.6mm)																
3 PLACE DECIMAL	1/100 (1.0mm)																
ANGULAR	1°																
TITLE				MODEL		AIRMaster											
DESIGNED BY	JCR	CHECK BY	JAH	DRAWING DATE	5/31/17	SCALE	1/4" ON 1" SIZE B										
PART NUMBER	K7143.393	DRAWING NO.	7143.393	SHEET	3												

NOTE:
DRAWING MADE IN COMPLIANCE WITH ENG STD-007

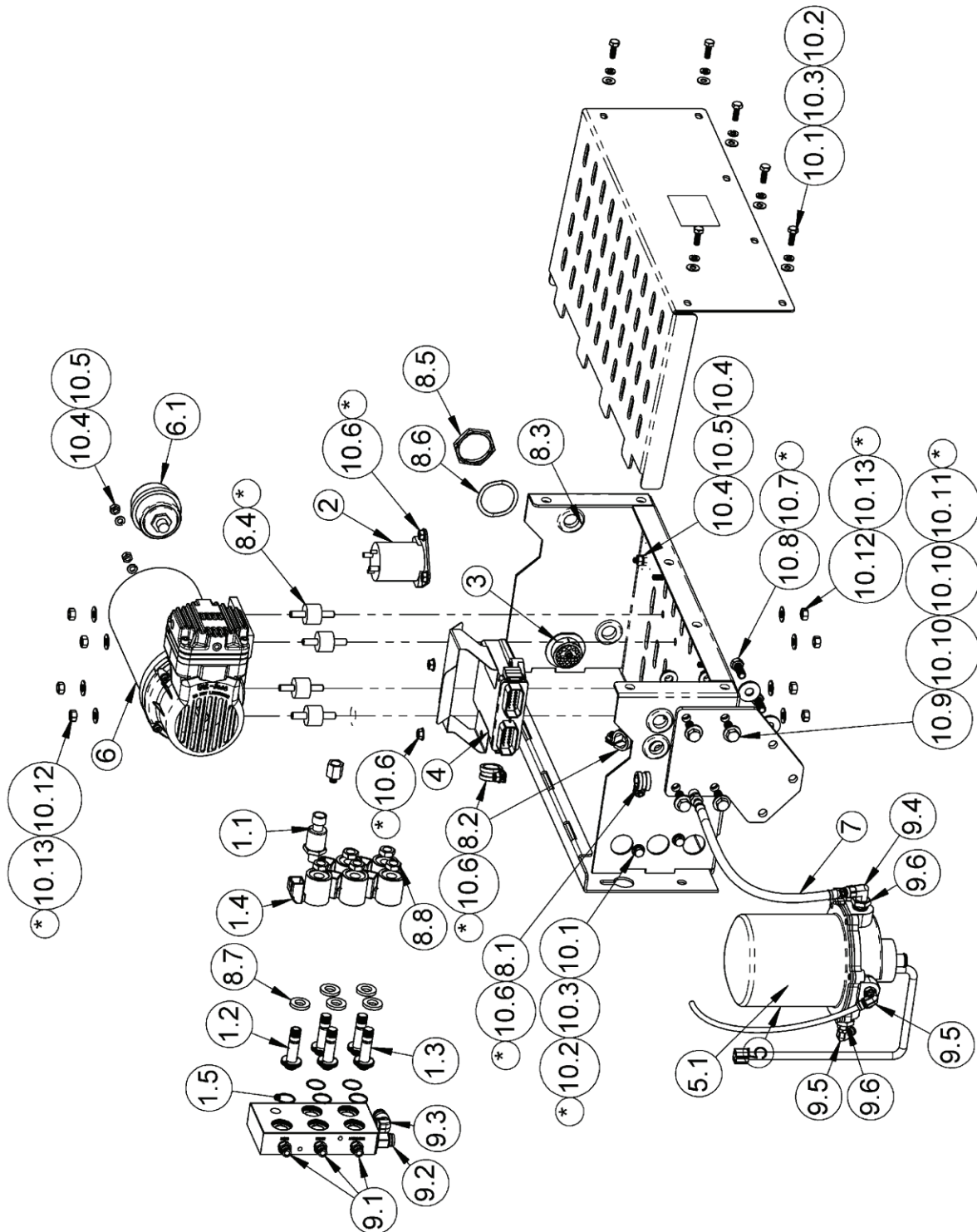
COMPONENTS

AirMaster Enclosure Kit K713886



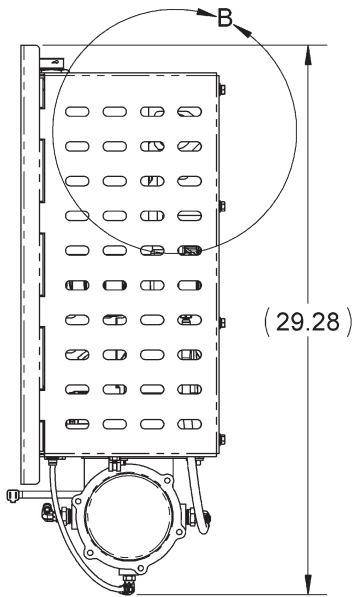
COMPONENTS

AirMaster Enclosure Assembly 713886-01



COMPONENTS

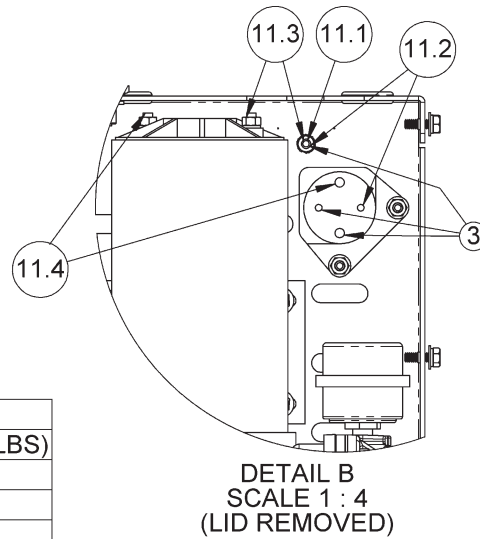
Additional Information for 713886-01



1. LIQUID TAPE APPLIED TO ALL ELECTRICAL FASTENERS ONCE ASSEMBLED

LOCTITE:

2. LOCTITE 545 ON ALL BRASS FITTING THREADS
3. LOCTITE 222MS ON VALVE SPOOLS
4. LOCTITE LB 8023 MARINE GRADE ANTI-SEIZE ON ENCLOSURE LID FASTENERS
- *5. LOCTITE 243 ON FASTENERS AS NOTED
6. FASTENER TORQUE PER TABLE



FASTENER TORQUE TABLE		
FASTENER	TORQUE (FT-LBS)	TORQUE (IN-LBS)
1/4-20	-	84
5/16-18	-	144
3/8-16	21	-
M10	29	-
1/4 NPT, 3/8 NPT	-	120
1/2 NPT	32	-

COMPONENTS

AirMaster Service Components – Item Numbers Correspond to View for K714393

ITEM NO.	PART NUMBER	DESCRIPTION	K713886/ QTY.
1	713886-01	AIRMASTER ELECTRONIC HEIGHT CONTROL ENCLOSURE ASSEMBLY	1
2	713886-06	HEIGHT CONTROL SENSOR	2
3	713886-47	ROCKER SWITCH MOUNT BRACKET	1
4	713886-48	BRKT, CIRCUIT BREAKER, MNT	1
5	713886-10	HARNESS, OBDII TO J1939-15, 1'	1
6	713886-08	HARNESS, REAR SUSPENSION INTERFACE	1
7	713886-32	SHORT STOP CIRCUIT BREAKER 50A METAL BRKT KEPS NUTS	1
8	713886-12	SWITCH, ROCKER SPST MOM	1
9	713886-68	BOOT, CIRCUIT BREAKER INSULATOR, SERIES 12X SHORTSTOP	1
10	713886-13	BREAKER, TYPE 3 MAN RESET, 12V 10A, ATC, CB227 SERIES	1
11	713886-69	HARNESS, COMPRESSOR POWER BATT-CB JUMPER	1
12	713886-70	SCREW, PAN HEAD, PHIL, 10-32 X .375 IN	2

COMPONENTS

AirMaster Service Components – Item Numbers Correspond to View for 713886-01

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	713886-05	MANIFOLD ASSY, REAR SUSPENSION	1
1.1	713886-26	PRESSURE TRANSDUCER, 0-150PSIG, 1/4NPT	1
1.2	713886-34	VALVE, 3-WAY	1
1.3	713886-33	VALVE, 2-WAY	4
1.4	713886-25	COIL, HYDRAFORCE, 12VDC	5
1.5	713886-46	O-RING, .9375 OD x .8125 ID, BUNA N	5
2	713886-14	SOLENOID, 12VDC, 100A CONTINUOUS DUTY	1
3	713886-09	HARNESS, REAR SUSP CONTROL ENCL, RG	1
4	713886-07	CONTROL MODULE	1
5	710852-01	AIR DRYER AASSEMBLY	1
5.1	711015-01	DESICCANT CARTRIDGE	1
6	713886-44	AIR COMPRESSOR TA-4101-DC 12VDC, ASSY	1
6.1	713886-53	FILTER, AIR COMPRESSOR	1
7	713886-03	HOSE, SS BRAIDED, 1/4 MNPT TO 1/4 JIC, 16" LG	1
8	K713886-40	HARDWARE KIT - AIRMASTER	1
8.1	713886-30	CLAMP, CUSHIONED, 5/8IN ID, .27IN HOLE, SS	1
8.2	713886-17	CLAMP, CUSHIONED, 3/4in ID, .27in HOLE, SS	2
8.3	713886-02	GROMMET, 3/4in ID, 1 1/8in OD, 3/8in THK	4
8.4	5392	VIBRATION ISOLATOR	4
8.5	713886-16	CONN, PANEL NUT HDP-24	1
8.6	713886-15	CONN, LOCK WASHER HDP-24	1
8.7	713886-23	SPACER, HYDRAFORCE	5
8.8	713886-27	NUT, HEX, JAM, 1/2-20 PLATED	5
9	K713886-41	KIT, FITTINGS - AIRMASTER	1
9.1	713886-29	FITTING, BRASS, STAIGHT, 1/4" PTC X 1/4" MPT	3
9.2	713886-24	FITTING, BRASS, STRAIGHT, 3/8" PTC X 1/4 MPT	1
9.3	713886-28	FITTING, BRASS, 90 DEG, 3/8" PUSH-ON X 1/4 MPT SWIVEL	1
9.4	713886-04	FITTING, BRASS, 1/4 MALE JIC TO 1/4 MPT, 90 DEG ELBOW	1
9.5	713886-18	FITTING, WG, BRASS, 90 DEG, 1/4" PUSH-ON x 1/4" MNPT, DOT	2
9.6	0123	REDUCER - 1/2MPT-1/4FPT	2
10	K713886-54	KIT, FASTENERS, ENCLOSURE ASSEMBLY	1
10.1	713886-67	CAPSCREW, HEXHD, 1/4-20 x 3/4in, SS	8
10.2	713886-66	WASHER, FLAT 1/4in BS SS	8
10.3	713886-65	WASHER, HELICAL LOCK 1/4in SS	8
10.4	713886-62	NUT, HEX 1/4-20 PLATED	4
10.5	713886-63	WASHER, HELICAL LOCK, 1/4in PLATED MED	3
10.6	713886-64	NUT, HEX, FLANGE, SERRATED, 1/4-20, SS	7
10.7	701785-05	WASHER 7/16 ID	3
10.8	711013-02	HHB M10X1.25 X 25 10.9 ZN	3
10.9	713886-37	CAPSCREW, HEXHD 3/8-16 x 1in SS	4
10.10	713886-38	WASHER, FLAT, 3/8in, SS	8
10.11	713886-39	NUT, HEX 3/8-16 SS	4
10.12	713886-61	NUT, HEX, 5/16-18-SS	8
10.13	713886-60	WASHER, FLAT 5/16 SS	8
11	K713886-55	KIT, HARNESS JUMPERS FOR SOLENOID	1
11.1	713886-56	HARNESS, GND STRAP, REAR SUSP CONTROL ENCL	1
11.2	713886-57	HARNESS, GND JUMPER, REAR SUSP CONTROL ENCL	1
11.3	713886-58	HARNESS, COMPRESSOR GND JUMPER	1
11.4	713886-59	HARNESS, COMPRESSOR POWER JUMPER	1

COMPONENTS

AirMaster Optional Components – Item Numbers are for Reference Only

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	713886-35	TOOL ASSY, MANIFOLD VALVE	1
2	K713886-52	PROGRAMMING AND DIAGNOSTIC INTERFACE GEAR	1
2.1	713886-45	USB TO CAN DATA BRIDGE, DUAL PORT	1
2.2	713886-49	HARNESS, CANBUS (J1939-15) RECEPTACLE TO DATA BRIDGE, 2'	1
2.3	713886-50	HARNESS, DATA BRIDGE J1939-15 PLUG	1
2.4	713886-51	CABLE ASSY, USB A-B MALE 3M 2.0 VERS	1
3	713886-105	HARNESS EXTENSION, REAR SUSP CONTROL 5 FEET	1
4	713886-110	HARNESS EXTENSION, REAR SUSP CONTROL 10 FEET	1
5	713886-115	HARNESS EXTENSION, REAR SUSP CONTROL 15 FEET	1
6	713886-120	HARNESS EXTENSION, REAR SUSP CONTROL 20 FEET	1

SYSTEM SET UP

Introduction

The system requires setup to establish ride height sensor orientation, travel ride height, accelerometer references and kneel height:

- a) Ride Height Sensor Setup - Each time, it automatically detects and records the ride height sensor orientation and then it performs fast and precise travel height adjustments for manual adjustment of sensor levers.
- b) Travel Zero-Set - Travel acceleration zero reference.
- c) Kneel Height Setup - Disable kneeling, or set the height of the rear of the vehicle when Kneeled.

Setup mode is a dependent series of sequential of steps. For example, in order to enter 'Kneel Height Setup', it is first required to enter 'Ride Height Setup' and then do a 'Travel Zero-Set'.

The Ride Height Sensor orientation will be undefined for a brand new control module, or if a firmware update is applied to an existing module.

Proper setup of the height reference is important to achieve the required clearances and optimal rear suspension height when driving the vehicle.

The system uses the travel zero-set values to determine if the vehicle is cornering or breaking and it will not perform rear suspension ride height correction as quickly when the vehicle is in these states.

In Kneel mode, the configured height of the rear of the vehicle can be adjusted as required.

Step 1 – Move the vehicle to a drive-on service pit or hoist

Setup and configuration requires the vehicle to be supported by all of the wheels, so that it uses its own air suspension; no external jacks or blocks must be underneath the vehicle.

Before you start this setup and configuration, read the Safety Instructions section to understand the risks.

It is always unsafe to go under a vehicle with minimal ground clearance. The vehicle must be moved to a service pit or drive-on hoist.

SYSTEM SET UP

Step 2a – Select Ride Height Sensor Set up Mode

1. The ignition must be off. The door can be open or closed.
2. Press and hold the rocker switch.
3. Continue to hold the rocker switch and turn the ignition on.
4. After 30 seconds, the Status indicator should start to flash.
5. Within 15 seconds, release the rocker switch.
6. The indicator will rapidly flash and the system will automatically detect the orientation by:
 - a. Lowering the suspension for up to four degrees on the ride height sensors for five (5) seconds.
 - b. Raising the suspension for up to four degrees on the ride height sensors or 10 minutes.
7. Once complete, the Status indicator should now be on solid and the system will be in Ride Height Setup Mode. The Ride Height Setup procedure can be performed.

The ignition must remain on while in Ride Height Setup Mode.

Full vehicle air pressure is required: Start the vehicle or connect to an external air supply which can provide a continuous pressure of at least 120PSI, but no more than 150PSI.

SYSTEM SET UP

Step 2b – Adjust height sensor levers

In 'ride height sensor setup mode' the system automatically activates the raise and lower valves quickly and precisely to move the ride-height sensor levers perpendicular to their body.

Upon entering 'ride height sensor setup mode' it may take a moment for the vehicle to finish adjusting the height. Wait until the height has stopped moving up or down (the valves will have stopped “clicking”).

With a suitable measurement device, verify the height of the rear of the vehicle to determine the amount and direction of adjustment required. Loosen the lever bolts and adjust the lever rotation to achieve normal ride height.

NOTE: While adjusting the ride height levers, the system will attempt to re-adjust the suspension (like an ordinary ride height valve). It is important to wait until the adjustment is complete (valves stop clicking) before confirming a measurement.

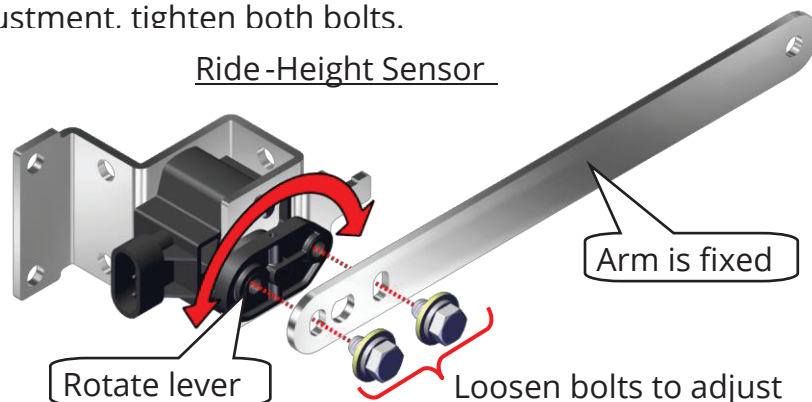


AS YOU ROTATE THE LEVER THE SUSPENSION WILL RAISE OR LOWER - KEEP CLEAR OF MECHANICAL PINCH POINTS.

1. Loosen (do not remove) both bolts securing the arm to the lever.
2. Rotate the black plastic lever to adjust the height.

The sensor orientation will determine if a clockwise or counter-clockwise rotation will raise the vehicle. Try rotating one way to confirm which direction the height adjusts.

3. After adjustment, tighten both bolts.



SYSTEM SETUP

Step 2c – Optionally exit Setup Mode

If it is not required to perform a Travel Zero-Set, turn off the ignition to exit Ride Height Sensor Setup Mode.

Step 2d – Perform Travel Zero -Set

While in Ride Height Sensor Setup Mode (refer to System Setup, step 2a):

1. Press the rocker switch for at least 1 second, until the indicator goes off, and release.
2. The Status indicator should remain off for a few seconds, then turn back on solid to indicate completion.

'Travel Zero-Set' resets the accelerometer reference used when the vehicle is in TRAVE L mode. This allows the system to make air bag adjustments to keep the vehicle at ride height while traveling, but delays adjustments during braking, accelerating or cornering.

Step 2e – Optionally exit Setup Mode

By default, the kneeling feature is disabled. If it is not required to adjust the Kneel-Height setting, turn off the ignition to exit Setup Mode.

Step 2f – Enter Kneel Height Setup Mode

After performing a Travel Zero-Set (refer to System Setup, step 2d):

1. Press the rocker switch for at least 3 seconds ^{Note 1} until the indicator turns off, and release.

Note 1 : To disable the kneeling feature, press and hold for at least 1 second, but less than 3 seconds. This will then exit Setup Mode and turn off the Status indicator.

2. If the rocker switch was pressed for at least 3 seconds, the system will dump to the suspension mechanical stops (or for up to 10 seconds). The Status indicator will be on solid while dumping, then slow flash when finished. The system will record the dump height

and add 0.25 inch (configurable) to conserve air during normal operation.

3. Press the rocker switch for at least 1 second to exit Setup Mode and lift the vehicle back to ride height, or turn off the ignition to leave the vehicle dumped.

SYSTEM SETUP

Step 3 – Finishing the installation

You should now have a vehicle in which the rear suspension goes to normal ride height when the ignition is turned.

If the kneeling feature is enabled, selecting the rocker switch, or opening the door, will lower the rear of the vehicle to the kneel set-point. Selecting the switch again, or closing the door, or exceeding a vehicle speed of 10 mph, will restore the rear of the vehicle to normal ride height.

The system is supplied with factory default configuration parameters. However, there may be situations where these parameters require adjustment, in which case please contact Reyco Granning Suspensions to discuss. Refer to contact information section.

FAULT DIAGNOSTICS

Fault indications and system reset

Fault codes are indicated with a 'Blink' code on the Status Indicator. Refer to the listing of the fault codes.

Fault indications are reset by turning off the ignition. Turn the ignition back on to see if the fault indication persists.

Ride height sensor

The ride height sensors measure the height of the rear vehicle body as it sits on the chassis. They are powered with 5V DC and provide a SIGNAL output which is 2.5VDC at ride height, corresponding to its middle position. The normal range of movement is between 0.5 and 4.5V DC.

A signal 'high' fault will be indicated if the voltage is greater than 4.5V DC or the arm rotation angle is greater than 40 degrees, clockwise or counter-clockwise. A signal 'low' fault will be indicated if the voltage is less than 0.5V DC.

Fault Indication:

Left Ride Height Sensor signal high or outside normal operating angle

Right Ride Height Sensor signal high or outside normal operating angle

Left Ride Height Sensor signal low

Right Ride Height Sensor signal low

Effect:

If only one ride height sensor fails the other one will be used to operate both the left and right air bags to allow continued use of Kneel and Travel modes. However the fault indication will remain.

The vehicle should be taken to an authorized service facility at the earliest opportunity.

If both ride height sensors fail, the pressure in the air bags will not be adjusted. Walk around the vehicle to perform a visual inspection to confirm there is sufficient clearance between the body and chassis to safely drive to an authorized service facility.

If the vehicle cannot achieve ride height, it may not be safe to drive because the vehicle body is too low on the chassis.

FAULT DIAGNOSTICS

Ride Height Sensor continued...

Troubleshooting:

Low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

Check that the harness connector is fully inserted into the ride height sensor. An electrically disconnected ride height sensor will result in a signal 'low' fault.

Check to ensure the ride height sensor mounting and linkages are secure.

Check voltage at ride height connector. Refer to 44

Check the ride height sensor wiring harness for open or short circuits.

Replace Ride Height Sensor or control module.

FAULT DIAGNOSTICS

Compressor unload output (open or short circuit)

The compressor unload output operates a valve coil on a 3-way valve for a pilot air line used to activate the air dryer purge function.

When energized, the pilot air line is pressurized to purge the air dryer.

When not energized, the pilot line is vented to atmosphere to allow the air dryer to pass air through to the main air tank.

Fault Indication

Compressor Unload Output (open or short circuit).

Effect:

This output is automatically disabled when this fault is detected. However the compressor will continue to operate as normal.

The air dryer will never be purged. This may result in excessive moisture in the air system.

The vehicle should be taken to an authorized service facility at the earliest opportunity.

Both Travel and Kneel modes remain available.

Trouble shooting:

Low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

Check integrity of harness between the air manifold and control module and ensure the connectors are plugged in all the way.

Check valve solenoid for open or short circuit (solenoid should read approx. 9 to 11 ohms at room temperature). Refer to page 46.

Visually inspect the control module and connector contacts for damage or corrosion.

FAULT DIAGNOSTICS

Compressor Run Output (open or short circuit)

The Compressor Run Output operates a solenoid to turn on the air compressor.

Fault Indication

Compressor Unload Output (short circuit).

Effect:

This output is automatically disabled when this fault is detected.

The system will attempt to maintain ride height. However, the compressor is disabled when this fault occurs, so there is no guarantee that there will be sufficient air pressure in the tank.

Park and walk around the vehicle to perform a visual inspection to confirm there is sufficient clearance between the body and chassis to safely drive to an authorized service facility.

Both Travel and Kneel modes remain available.

Troubleshooting:

Low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

Check integrity of harness between the solenoid and control module and ensure the connectors are plugged in all the way.

Check the solenoid for a short or open circuit.

Visually inspect the control module and connector contacts for damage or corrosion.

FAULT DIAGNOSTICS

Motion Warning Output (short circuit)

The Motion Warning Output is used to indicate when the rear of the vehicle is being lowered or raised between kneel and ride heights.

This output would typically be connected to a relay, or an indicator and or audible annunciator.

The control module detects short circuits and turns off the output. This works well to protect the control module with an absolute short circuit. However, a resistive component may factor into the situation where the current is just below the detection threshold.

Fault Indication

Motion Warning Output (short circuit).

Effect:

This output is automatically disabled when this fault is detected.

The vehicle should be taken to an authorized service facility at the earliest opportunity.

Both Travel and Kneel modes remain available.

Troubleshooting:

Low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

Check integrity of harness between the motion warning device and control module and ensure the connectors are plugged in all the way.

Check the warning device (buzzer) for a short circuit.

Visually inspect the control module and connector contacts for damage or corrosion.

FAULT DIAGNOSTICS

Low Pressure Output (short circuit)

This fault relates to the 'Low Pressure' warning which occurs when the suspension air pressure is below a predetermined set point, when not in Kneel mode. The output also indicates if the compressor has run for an extended period of time.

This output would typically be connected to a relay, or an indicator and or audible annunciator.

The control module detects short circuits and turns off the output. This works well to protect the control module with an absolute short circuit. However, a resistive component may factor into the situation where the current is just below the detection threshold.

Fault Indication

Low Pressure Output (short circuit).

Effect:

This output is automatically disabled when this fault is detected.

The fact that this output tried to turn on, indicates that there was low system pressure. The system will attempt to maintain ride height. However, there is no guarantee that there will be sufficient air pressure in the tank.

Park and walk around the vehicle to perform a visual inspection to confirm there is sufficient clearance between the body and chassis to safely drive to an authorized service facility.

Both Travel and Kneel modes remain available.

Troubleshooting:

Low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

Check integrity of harness between the 'Low Pressure' warning device and control module and ensure the connectors are plugged in all the way.

Check the warning device for a short circuit.

Visually inspect the control module and connector contacts for damage or corrosion.

FAULT DIAGNOSTICS

Air Valve Coil Open or Short Circuit

Air valve coils are used to inflate (raise) or deflate (lower) the rear suspension air bags.

Fault Indication

Rear Left Raise Open or Short Circuit

Rear Left Lower Open or Short Circuit

Rear Right Raise Open or Short Circuit

Rear Right Lower Open or Short Circuit

Effect:

Park and walk around the vehicle to perform a visual inspection to confirm there is sufficient clearance between the body and chassis to safely drive to a vehicle repair facility.

In Travel mode the system will attempt to operate the functioning components to maintain ride height. However, there is no guarantee that this is possible.

Kneel mode is disabled.

Troubleshooting:

Low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

Check integrity of harness between the air manifold and the control module and ensure the connectors are plugged in all the way.

Check valve solenoid for open or short circuit (solenoid should read approx. 9 to 11 ohms at room temperature). Refer to page 46.

Visually inspect the control module and connector contacts for damage or corrosion.

FAULT DIAGNOSTICS

Accelerometer fault

The control module has an accelerometer which operates as an electronic “bubble level.” This is used to delay ride height adjustments while driving around corners, braking or accelerating when in travel mode.

This fault indicates the accelerometer is not producing output data.

Fault Indication:

Accelerometer Fault

Effect:

Accelerometer data will be disabled. Thus, during travel mode ride height adjustments will not be delayed while driving around corners, braking or accelerating

The vehicle should be taken to an authorized service facility at the earliest opportunity.

Both Travel and Kneel modes remain available.

Troubleshooting:

It should be noted that low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault.

If the fault persists, replace the control module.

FAULT DIAGNOSTICS

Vehicle CAN bus not detected

There should be a CAN bus connection between the suspension control module and the vehicle. With the ignition on, the CAN bus is expected to have a certain level of communication traffic. This fault indicates that no CAN bus communication messages have been detected.

Fault Indication

Vehicle CAN bus not detected.

Effect:

The vehicle should be taken to an authorized service facility at the earliest opportunity.

Kneel mode is disabled.

Troubleshooting:

Low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

Check integrity of harness between the CAN bus and the control module and ensure the connectors are plugged in all the way.

Visually inspect the control module and connector contacts for damage or corrosion.

FAULT DIAGNOSTICS

Transmission Gear CAN bus data not received

With the ignition on, the vehicle should be sending CAN bus messages indicating the current Transmission Gear. This message is used by the control module to determine if the vehicle is in forward, neutral or reverse gear.

Fault Indication

Transmission Gear CAN bus data not received.

Effect:

The vehicle should be taken to an authorized service facility at the earliest opportunity.

Kneel mode is disabled.

Troubleshooting:

Low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

The fact that this fault occurs, indicates that regular CAN bus messages are being received. Otherwise the fault would indicate 'Vehicle CAN bus not detected'.

Check integrity of harness between the CAN bus and the control module and ensure the connectors are plugged in all the way.

Visually inspect the control module and connector contacts for damage or corrosion.

Use a network diagnostic tool to determine the presence of the Transmission Gear message on the CAN bus.

FAULT DIAGNOSTICS

Vehicle Speed CAN bus data not received

With the ignition on, the vehicle should be sending CAN bus messages indicating the current vehicle speed. This message is used by the control module to determine the vehicle speed since Kneel mode is not allowed at speeds in excess of 10 mph.

Fault Indication

Vehicle speed CAN bus data not received.

Effect:

The vehicle should be taken to an authorized service facility at the earliest opportunity.

Kneel mode is disabled.

Troubleshooting:

Low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

The fact that this fault occurs, indicates that regular CAN bus messages are being received. Otherwise the fault would indicate 'Vehicle CAN bus not detected'.

Check integrity of harness between the CAN bus and the control module and ensure the connectors are plugged in all the way.

Visually inspect the control module and connector contacts for damage or corrosion.

Use a network diagnostic tool to determine the presence of the Vehicle Speed message on the CAN bus.

FAULT DIAGNOSTICS

Ride height sensor orientation not set

The mounting orientation of the ride height sensors is currently undefined. This will typically result from a new control module, or an existing control module that has just received a firmware update.

Fault Indication

Ride Height sensor orientation not set.

Effect:

Height control of the rear suspension is totally inoperative.

Troubleshooting:

The vehicle should not be driven until this situation is resolved.

Contact an authorized service facility for assistance.

If there have been no hardware or configuration changes on a working system, then this fault likely indicates an issue with the control module.

If new hardware has been installed or a firmware update was applied, perform a 'Ride Height Sensor Setup' which is part of the System Setup, described on page 21.

FAULT DIAGNOSTICS

Pressure transducer signal high or low

The system has an air pressure transducer which is used to monitor system pressure so the compressor can be turned on as required.

The pressure transducer is powered with 5V DC and provide a SIGNAL output which is normally between 0.5 and 4.5V DC. If the voltage is greater than 4.5V DC a SIGNAL HIGH fault will be indicated. If the voltage is less than 0.5V DC a SIGNAL LOW fault will be indicated.

If the connector is unplugged or the 5V dc or signal wire is not connected, a SIGNAL LOW reading will occur.

If the 0V DC common wire is not connected, the transducer signal output will be in the normal range from 0.5 V DC to 4.5V DC, therefore a 'Pressure Transducer Signal High or Low' fault will not occur. However, it is likely the compressor never turns on, or is on continually.

Fault Indication

Pressure Transducer Signal High or Low.

Effect:

Park and walk around the vehicle to perform a visual inspection to confirm there is sufficient clearance between the body and chassis to safely drive to a vehicle repair facility.

The system will attempt to maintain ride height. However, the compressor is disabled when this fault occurs, so there is no guarantee that there will be sufficient air pressure in the tank.

Both Travel and Kneel modes remain available.

Troubleshooting:

It should be noted that low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

Check that the pressure transducer connector is properly connected.

FAULT DIAGNOSTICS

Check the voltage at the pressure transducer connector.

Check the pressure transducer wiring harness for open or short circuits.

Replace the pressure transducer.

FAULT DIAGNOSTICS

Compressor running continually for an extended period

This fault will occur if the 'Compressor Run' output signal has been energized for an extended period of time. The output will immediately turn off for a short period of time, to stop the compressor and prevent it from overheating, to minimize failure. After the cool down period, the fault will automatically clear and the compressor is available to run again.

Fault Indication

Compressor running continually for an extended period.

Effect:

The pressure relief valve may start "popping" if the pressure transducer is incorrectly reading low and the air tank is over-pressurized.

If low air pressure exists, it is likely that ride height is not achievable and it may not be safe to drive because the vehicle body is too low on the chassis.

Park and walk around the vehicle to perform a visual inspection to confirm there is sufficient clearance between the body and chassis to safely drive to a vehicle repair facility.

Both Travel and Kneel modes remain available.

Troubleshooting:

It should be noted that low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

The 'Compressor Run' output energizes a solenoid to turn on the vehicle air compressor.

The 'Compressor Run' output should be ON whenever the pressure transducer measures the vehicle's air pressure less the low set-point. This is typically 110 psi during normal travel and 115 psi when Kneel mode is active. The 'Compressor Run' output should turn off as soon as the pressure reaches 120 psi.

Note 1: Can be different to stated values Application dependent.

Excessive compressor run time may be the result of an air leak, a kinked or restricted air line, a bad compressor, or a poorly seated connector on the pressure transducer.

FAULT DIAGNOSTICS

Below ride height for an extended period, when not kneeling

This fault will occur if the rear of the vehicle is below the factory configured low ride height warning limit for an extended period of time. This limit is specifically selected during the design of the vehicle.

Fault Indication

Below ride height for an extended period, when not kneeling.

Effect:

Park and walk around the vehicle to perform a visual inspection to confirm there is sufficient clearance between the body and chassis to safely drive to a vehicle repair facility.

If the vehicle cannot achieve ride height, it may not be safe to drive because the vehicle body is too low on the chassis.

Both Travel and Kneel modes remain available.

Troubleshooting:

It should be noted that low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

Low air pressure may prevent the vehicle from achieving ride height.

Travel mode ride height is achieved when the lever on the ride height sensor is in parallel with its electrical connector. Check to ensure the ride height sensor mounting and linkages are secure and the harness is properly connected.

FAULT DIAGNOSTICS

Compressor is not building system pressure

This fault is generated if the pressure transducer is reading less than 5 psi when the compressor turns on, and if the pressure doesn't increase by at least 3 psi within 20 seconds.

Fault Indication

Compressor is not building system pressure.

Effect:

Park and walk around the vehicle to perform a visual inspection to confirm there is sufficient clearance between the body and chassis to safely drive to a vehicle repair facility.

If the vehicle cannot achieve ride height, it may not be safe to drive because the vehicle body is too low on the chassis.

Both Travel and Kneel modes remain available.

Troubleshooting:

It should be noted that low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

Visually inspect the check-valve between the air dryer and the air tank to confirm it has been installed in the correct orientation. If installed backwards, system pressure in the air tank will never fill.

An air leak could cause this. Visually inspect all air fittings and air lines to ensure they are properly connected.

Check the air dryer to confirm that it is erroneously 'purging'. Place your hand underneath the air dryer. No air should be coming out of the purge port

FAULT DIAGNOSTICS

Excessive air pressure

This fault will occur if air compressor does not turn off and continues to build system pressure.

Fault Indication

Excessive air pressure.

Effect:

With the ignition on, if the system pressure reaches or exceeds 135 psi, the control module will initiate a protective air dryer purge for 30 seconds, followed by a 20 second pause. This cycle will repeat until the pressure falls below the low pressure turn-on threshold (110 psi or pre-fill 115 psi), at which point the fault indication is also cleared.

If the ignition is turned off and the air compressor continues to operate, turn the ignition back on to resume the purge cycles and disconnect the 50 amp automatic reset fuse battery connection in the engine compartment.

Walk around the vehicle to perform a visual inspection to confirm there is sufficient clearance between the body and chassis to safely drive to a vehicle repair facility.

If the vehicle cannot achieve ride height, it may not be safe to drive because the vehicle body is too low on the chassis.

Both Travel and Kneel modes remain available.

Troubleshooting:

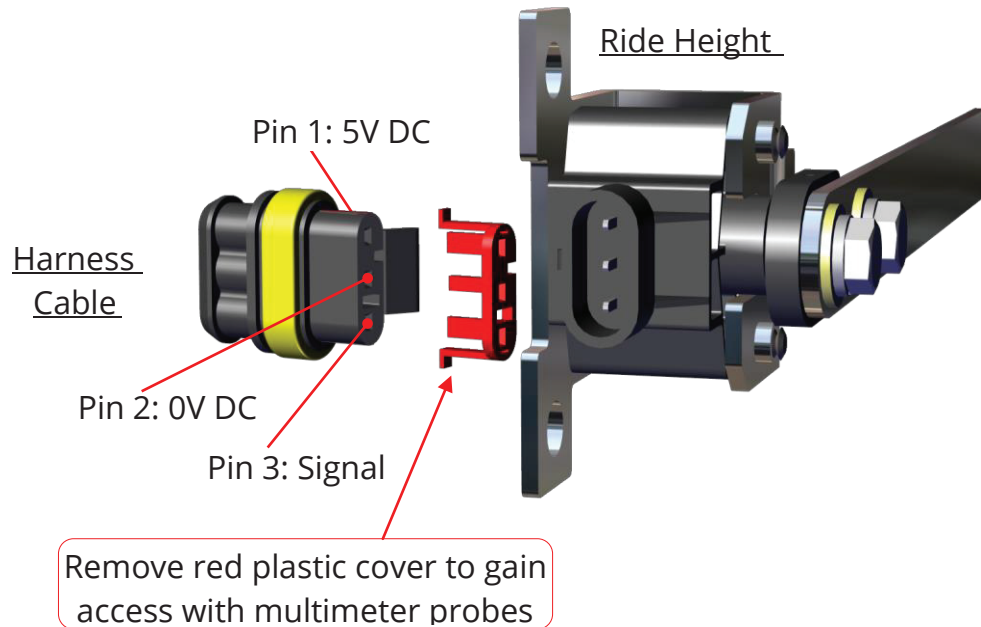
It should be noted that low battery voltage can result in indeterminate system operation and phantom fault indication. Make sure the vehicle battery voltage is adequate before troubleshooting.

Turn off the ignition to reset the system. Turn the ignition back on to confirm the current fault status. This is useful to determine if there is an intermittent fault and can assist with identifying a specific location on the harness or connector with a 'wiggle' test.

The compressor may run continually if there is a fault in the compressor power solenoid. With the battery disconnected, check the resistance between the solenoid contacts; there should be no continuity between them.

DIAGNOSTICS PROCEDURES

Electronic ride height faults



With the ignition turned on, disconnect the ride height sensor.

Measure the voltage between the pins on the harness connector:

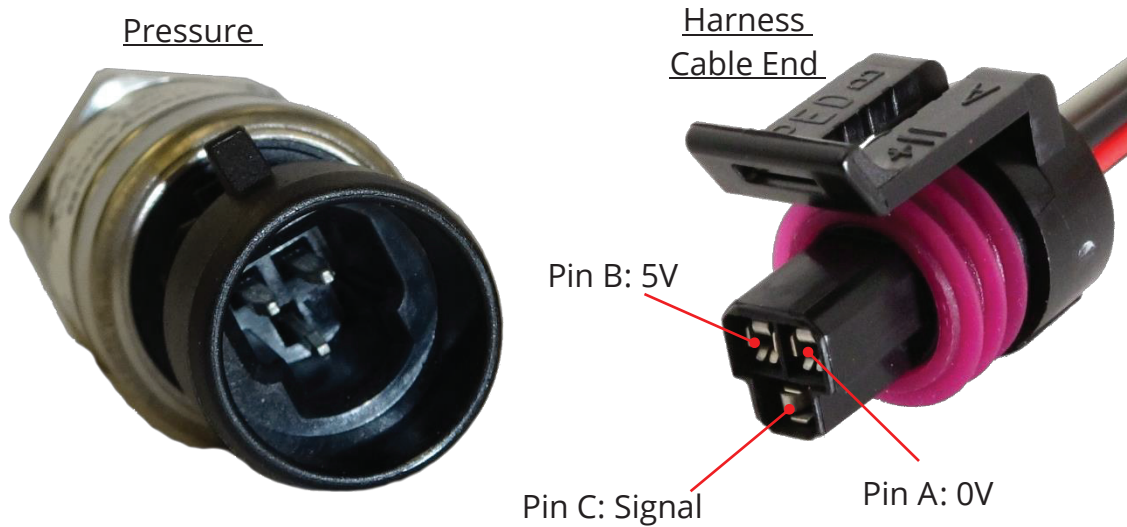
Between Pins 1 & 2 should be 4.8 to 5.2 VDC

Between Pins 1 & 3 should be 2.5 to 4.7 VDC (depends on multi-meter)

Between Pins 2 & 3 should be 0.0 to 0.2 VDC

DIAGNOSTICS PROCEDURES

Pressure transducer faults



Confirm the vehicle is safe to work on. Refer to the safety notes on page 6.

With the ignition turned off, disconnect the pressure transducer and then turn on the ignition.

Measure the voltage between the pins on the harness connector:

Between Pins A & B should be 4.8 to 5.2 VDC

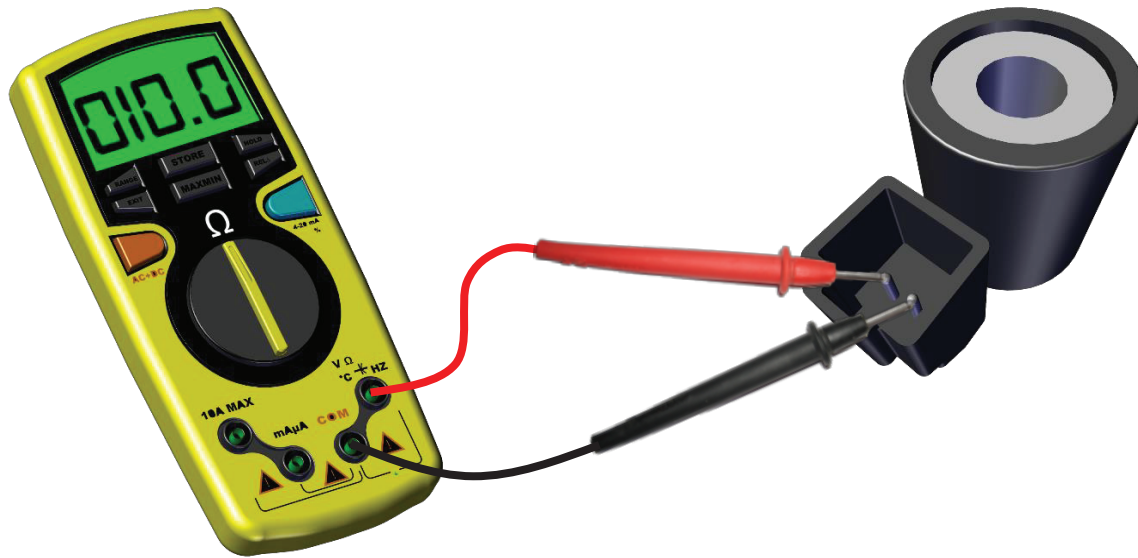
Between Pins B & C should be 2.5 to 4.7 VDC (depending on multi-meter)

Between Pins A & C should be 0.0 to 0.2 VDC

DIAGNOSTICS PROCEDURES

Valve Coil Resistance

Locate associated valve coil on manifold:



Unplug harness from coil and test continuity of coil.



The air manifold location often has restricted access. Plug a short 'pigtail' test cable into the coil to facilitate

The continuity should be close to the continuity measured through the wire. If it is not, there may be an open or short circuit in the harness between the valve and control module.

Valve coils should be tested at room temperature, and reference specifications are given based on an approximate temperature of 20° C (~70° F). Warmer coils will tend to have higher than spec resistance; cold coils will tend to have less resistance.

A coil measured at room temperature with a deviation of more than $\pm 10\%$ from the published specification should be replaced.

	Part Number	Nominal Resistance	Normal Range
Pneumatic Valve	4301512	10 Ω	9 Ω to 11 Ω

Warning: Continued use of low impedance air coils (less than approximately 5 Ohms) will result in damage to the output circuit of the control module.

FAILSAFE OPERATION

When a fault occurs, the system will stop using the faulted component but will continue operating the other components. The type of failure will determine if kneeling is allowed.

Condition	Failsafe Operation	Outcome
Faulty Pressure Transducer	Compressor only runs when a raise valve has been on for 5 seconds, and then stays on for an additional 5 seconds after all raise valves have turned off.	System fully operational but operates at a reduced pressure. Eventually the pressure in the tank will match the pressure in the air bags.
Faulty ride height sensor, or bad wiring, or linkage falls off, or angle over 40 Degrees	The system will use the remaining good ride height sensor as the suspension height and adjust both sides at the same time.	System fully operational but uses a single ride height sensor to measure the height. Depending on the weight of each side of the vehicle, the vehicle may not stay perfectly at ride height on the faulted side.
Both ride height sensors faulty	System will not adjust the height of the vehicle on either side. System will not allow kneeling.	The suspension would stay at the height it was at when the fault occurred unless the payload changed or the suspension loses air.
Faulty raise or lower valve or wiring	The system will not adjust the height of the faulty side. The vehicle may not maintain ride height on the faulty side. The system will not allow kneeling .	If the vehicle was at ride height when the fault occurred, it will stay at ride height, unless the payload changes or the suspension loses air.
Communication loss to vehicle CAN bus, or loss of speed or gear message	The system will not allow kneeling.	The system will maintain ride height as normal but will not kneel when the door is opened or the Rocker switch is triggered.
Compressor runs for extended period (8 minutes)	The system will operate as normal but would turn off the compressor for 2 minutes before allowing it to start again and run for another 8 minutes.	The system may not have air as the compressor may not be working or there may be an air leak, etc.
Excessive system air pressure	The system will operate as normal but it will cycle the air dryer purge to limit air pressure as long as necessary.	This can only be caused if the compressor continues to run due to an electrical failure. It may be necessary to disconnect the battery to stop the compressor.

MAINTENANCE SCHEDULE

The maintenance interval is stated in miles and elapsed time, whichever comes first.

GENERAL MAINTENANCE	SERVICE TO BE PERFORMED	INTERVAL
Dryer Desiccant	Replace desiccant cartridge inside air dryer.	12,000 miles or every 12 months.
Compressor Air Filter	Inspect and clean or replace the air filter as required. The air filter may be mounted directly onto the air compressor, in which case access is gained by removing the enclosure cover. Alternatively it may be mounted elsewhere in a dry location.	6000 miles or every 6 months.
Motor Brushes	Remove the enclosure cover and compressor to visually inspect brushes and commutator. Replace brushes as required.	12,000 miles or every 12 months.
Valve Coil Test	Test the resistance of each of the valve coils. Replace if not within normal range of 10 Ω to 10.5 Ω with the coil at room temperature.	6000 miles or every 6 months.
Ride Height Sensor	Inspect for any indication of damage or binding. Confirm linkage is securely attached while still allowing for freedom of motion through operating range.	3,000 miles or every 3 months.
Air Compressor	Check air compressor compartment or enclosure for proper airflow and venting.	3,000 miles or every 3 months.
Air Fittings and Air Lines	Inspect for air leaks.	After first 1000 miles or first month of operation
	Inspect for signs of chafing, cracking, or wear.	3,000 miles or every 3 months.
Battery Connections & Circuit Breakers	Inspect for corrosion and confirm tight battery connections for the 50 Amp and 10 Amp circuit breakers	3,000 miles or every 3 months.

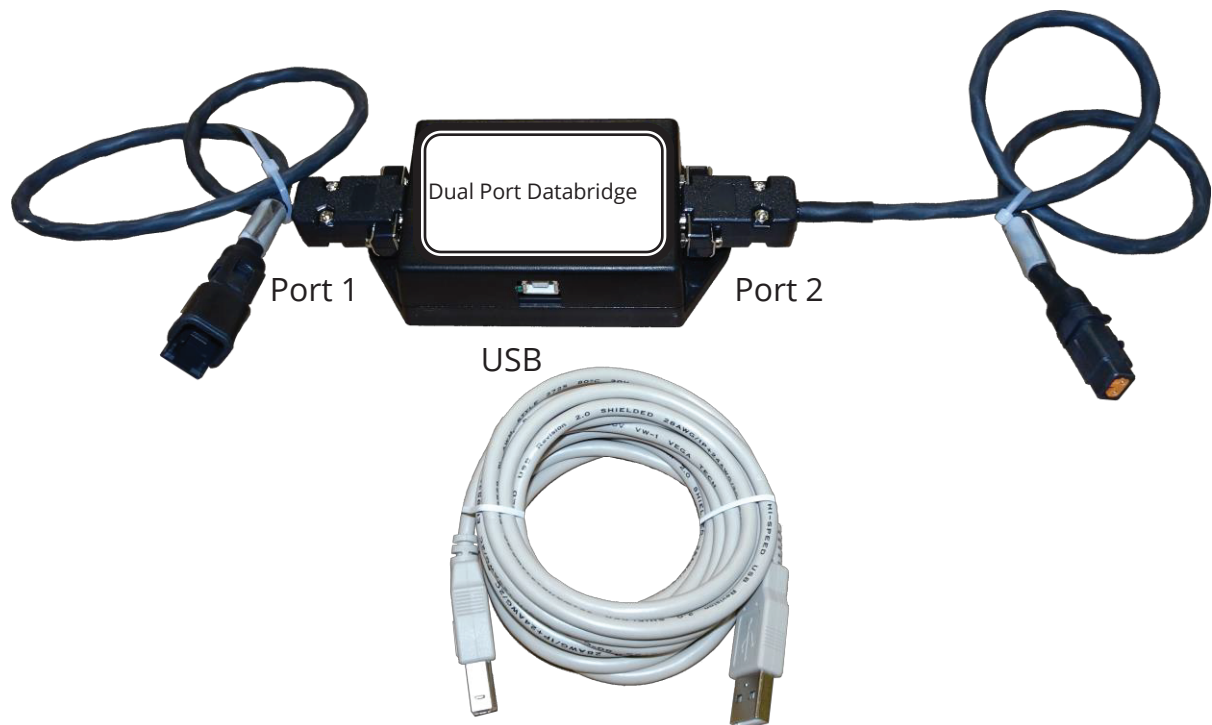
OPTIONAL DUAL PORT DATABRIDGE

The purpose of the optional dual port databridge is to pass-through standard CAN bus messages between port 1 and port 2 as well as support the System Setup Utility communicating to the control module through port 1, using J1939 protocol.

This allows System Setup Utility to be used on a 'live' kneeling system. The control module is simultaneously communicating to the vehicle CAN bus network to obtain vehicle speed and transmission gear data while also communicating to the System Setup Utility diagnostics.

Port 1	Connected directly to the control module.
Port 2	Connected to the vehicle CAN bus network.
USB	Connected to a Windows PC computer running the System Setup Utility.

Contact Reyco Granning to obtain a dual port databridge kit. Refer to Support Contact information.



SYSTEM SETUP – QUICK REFERENCE

Overview

The firmware in the AirMaster must be configured before the system can be used. The AirMaster will make no height adjustments until the system setup procedure has been completed.

System Setup Procedure

Note: For more detailed instructions, refer to page 50

1. With the ignition off, press and hold the Rocker switch.
2. Continue to hold the Rocker switch and turn the ignition on.
3. After 30 seconds, the Status indicator will start to flash.
4. Within 15 seconds, release the Rocker switch. The status indicator will rapidly flash.
5. The system will detect the ride height sensor orientation by:
 - a) Lowering the suspension for up to four degrees on the ride height sensors for 5s.
 - b) Raising the suspension for up to four degrees on the ride height sensors or 10min.
6. Once complete, the Status indicator will turn solid and the system will enter Ride Height Setup Mode. The Ride Height Setup procedure can be performed.
7. To exit Setup, turn off the ignition. Or, to proceed to the next function...
8. To initiate Travel Zero Set, press the Rocker switch for at least 1 second, until the indicator turns off, and release.
9. The Status indicator should go off for a few seconds, then turn back on to indicate completion.
10. To exit Setup, turn off the ignition. Or, to proceed to the next function...
11. To Set Kneel Height, press and hold the Rocker switch for at least 3 seconds, until the indicator turns off, and release. Pressing the rocker switch for less than 3s will skip setting the kneel height and the kneeling feature will be disabled.
 The system will dump to the stops (for up to 10 seconds). The Status indicator will be solid while dumping, then the indicator flash slowly when finished. The system will record the dump height and add 0.25 inch (configurable) to conserve air during normal operation.
12. Press the Rocker switch for at least 1 second to return to ride height or turn off the ignition to leave the vehicle dumped (if it was dumped above).

SUPPORT CONTACT

For service support, contact Reyco Granning Suspensions.

Reyco Granning Suspensions
1205 Industrial Park Drive
Mt Vernon, MO 65712

Phone: 1-800-753-0050

WARRANTY

AirMaster

Replacement Instructions

NOTE: Due to the nature of service to be performed it is recommended that a qualified mechanic do the work.

Limited Warranty

ReycoGranning® warrants its AirMaster Electronic Height Control System to be free from defects in material and workmanship under normal use and service in the U.S. and Canada.

AirMaster Enclosure Kit -- 36 months or 36,000 miles, whichever occurs first. Defined as: the components included as part of the AirMaster Enclosure Kit (K713886), such as electronics and valves, with the exception of the Air Compressor and the Air Dryer.

Other AirMaster Components -- 12 months or 24,000 miles, whichever occurs first. Defined as: other components of the AirMaster system (K714393), not included as part of K713886, such as valves, fasteners, bushings, and other components not stated specifically (when provided by ReycoGranning®), and other fabricated metal components. ReycoGranning® provides no warranties on components such as, the Air Compressor and the Air Dryer, except to the extent of any warranty provided to ReycoGranning® Suspensions by the manufacturer of such components.

Labor -- 6 months or 12,000 miles whichever comes first. Labor will be allowed on ReycoGranning® Suspensions estimated time to make repairs at a maximum rate of \$50.00 per hour. As used herein, the term "normal use and service" means that the ReycoGranning® Suspensions supplied products will be installed, operated, inspected and maintained in accordance with the applicable ReycoGranning® Suspensions documentation, and any applicable vehicle owner's manual or instructions.

Adjustments

The starting date for the above warranty period is the date of purchase of the product by the first end user. Proof of such date is the responsibility of the first end user. If the purchase date is not established to ReycoGranning® Suspensions satisfaction, the date of manufacture determined from the product's serial number shall be used as the effective starting date. When adjustment is sought under this warranty, a claim should be made by contacting the distributor or manufacturer who installed the product, who will coordinate the fix, documentation, parts shipment, etc. directly with ReycoGranning® Suspensions.

NOTE ReycoGranning® Suspensions must be notified in writing using a warranty claim form promptly upon claimed defect.

INSTALLER AND END USER RESPONSIBILITIES

The Distributor/Installer is responsible for installing the product according to ReycoGranning® Suspensions approved procedures, the installer is also responsible (either directly or through its agent/dealer) for providing a copy of ReycoGranning® Suspensions warranty and owner's manual to the end user, and for advising the end user of proper use, service and maintenance required for the product. The end user is responsible for operating, inspecting and maintaining the suspension according to the instructions in the ReycoGranning® Suspensions owner's manual and any applicable vehicle owner's manual, and for properly instructing all operators and maintenance personnel.

NOTE Warranty may be denied for improper installation.

LIMITATIONS AND EXCLUSIONS

No warranty applies in the event of: use of components, parts and/or accessories not obtained from or approved by ReycoGranning® Suspensions or which do not meet ReycoGranning® Suspensions quality and performance specifications; improper installation, maintenance or repair; misuse or abuse including but not limited to overloading; or unauthorized alterations or modifications.

THE ABOVE WARRANTIES ARE SUBJECT TO THE "WARRANTY LIMITATIONS" AND "REMEDIES" SECTIONS OR REYCOGRANNING® SUSPENSIONS INVOICE TERMS AND CONDITIONS.

This policy supersedes any previous warranty statements.

06/2018



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S U S P E N S I O N S

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