

***PLEASE READ THIS DOCUMENT
BEFORE ATTEMPTING TO INSTALL!***

Thank you for purchasing a Smart Ride Air Management System.

This system will meet all of your custom and utility needs and will provide you years of trouble free service. Please read the installation instructions and tips thoroughly before installing this system. Any deviation from these instructions can cause damage to the Relay Module and LCD Controller. You are installing a computer system onto your vehicle and it must be isolated from voltage spikes and feed back as much as today's computer man-aged vehicles are. The power, ground and ignition wires need to be solid clean mounts with out any relays in their paths. Electrical Relays are a source of voltage feedback that can damage and or short out the CPU of the Relay Module (the brain) of the Smart Ride system. The pre-built system comes with a Diode protected relay for the compressor. The system has the option of disabling the compressor when the ignition is off so no cut-off relay in the power circuit will be necessary. We recommend that a disconnect or pull-able fuse be installed in the +12 volt power supply to the Relay Module. Any time that further electrical work needs to be done on the vehicle, disconnect the power to the Relay Module before disconnecting the battery. When starting the vehicle, please allow the system to fully boot up (20 to 30 seconds). Pushing any buttons before the boot process is finished may cause the system to freeze up (as with any computer). In this case, you will have to 'reboot' by disconnecting the LCD at the barrel connector for at least 10 seconds. We also recommend that you:

Do not run the Smart Ride with the vehicle connected to a battery charger

Do not jump start the vehicle without disconnecting the Smart Ride first

Do not 'splice' into any wire harnesses, we have extensions for the pressure senders, height sensors and LCD connectors

Do isolate the power supply from other high power systems such as Stereos and Alarms

If you are upgrading from a Plug'N'Play or using your own compressor set up and will be using our system to control the compressor, you will need to upgrade to our relay or install a Diode (1 amp) in the compressor control line (yellow wire)

The tank pressure sending unit must be installed for proper unit and compressor operation

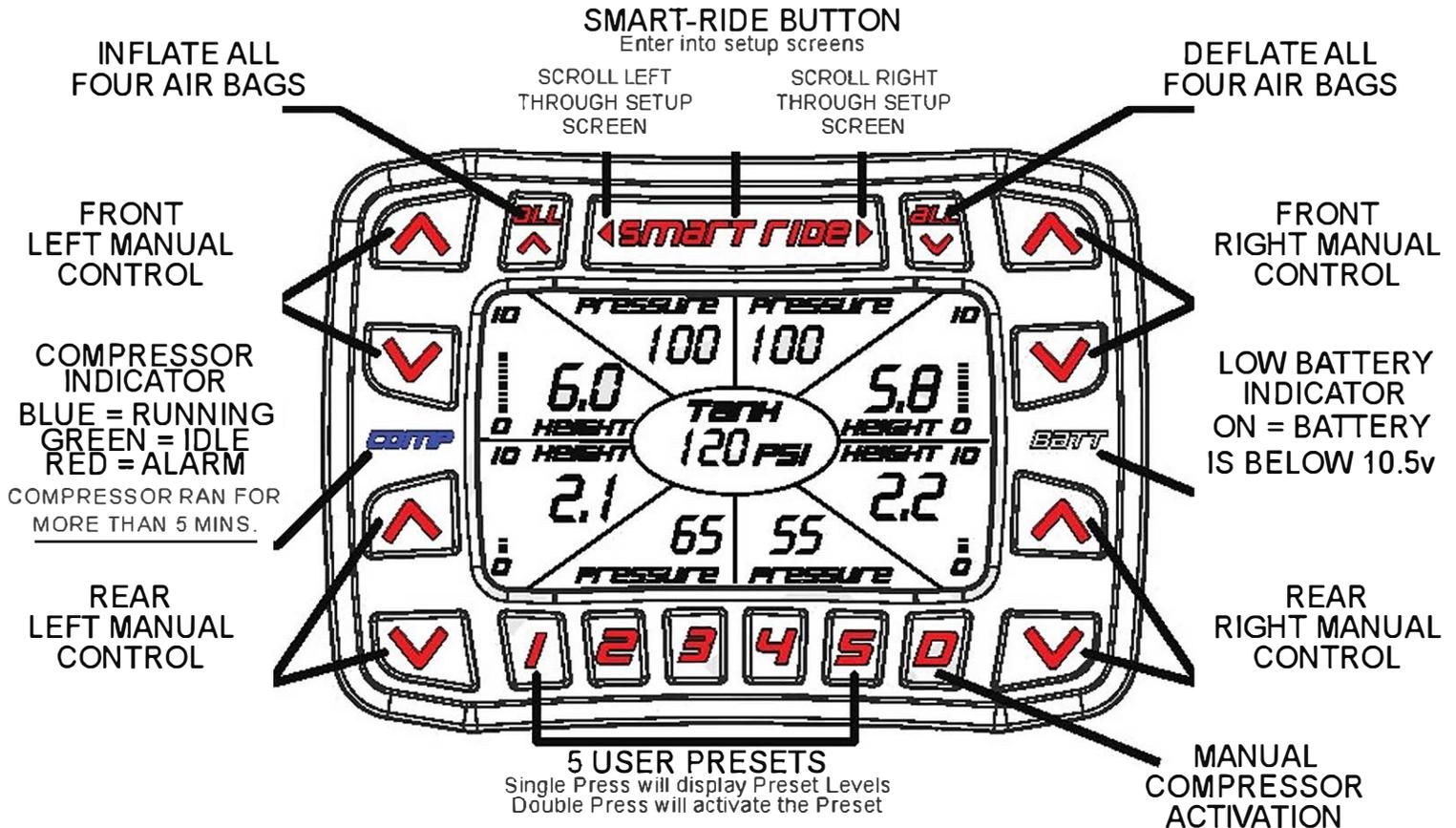
Occasionally the LCD unit may go blank or read all Zeros (even if you don't have Height Sensors). If this is the case, you may have tried to activate the system before boot was complete or you have electrical interference problems. Rebooting is your first option. If the problem persists, check all of your connections thoroughly. If you have any questions before installation or problems after installation, please contact us and we will be glad to assist you.

INSTALLATION AND OPERATING INSTRUCTIONS

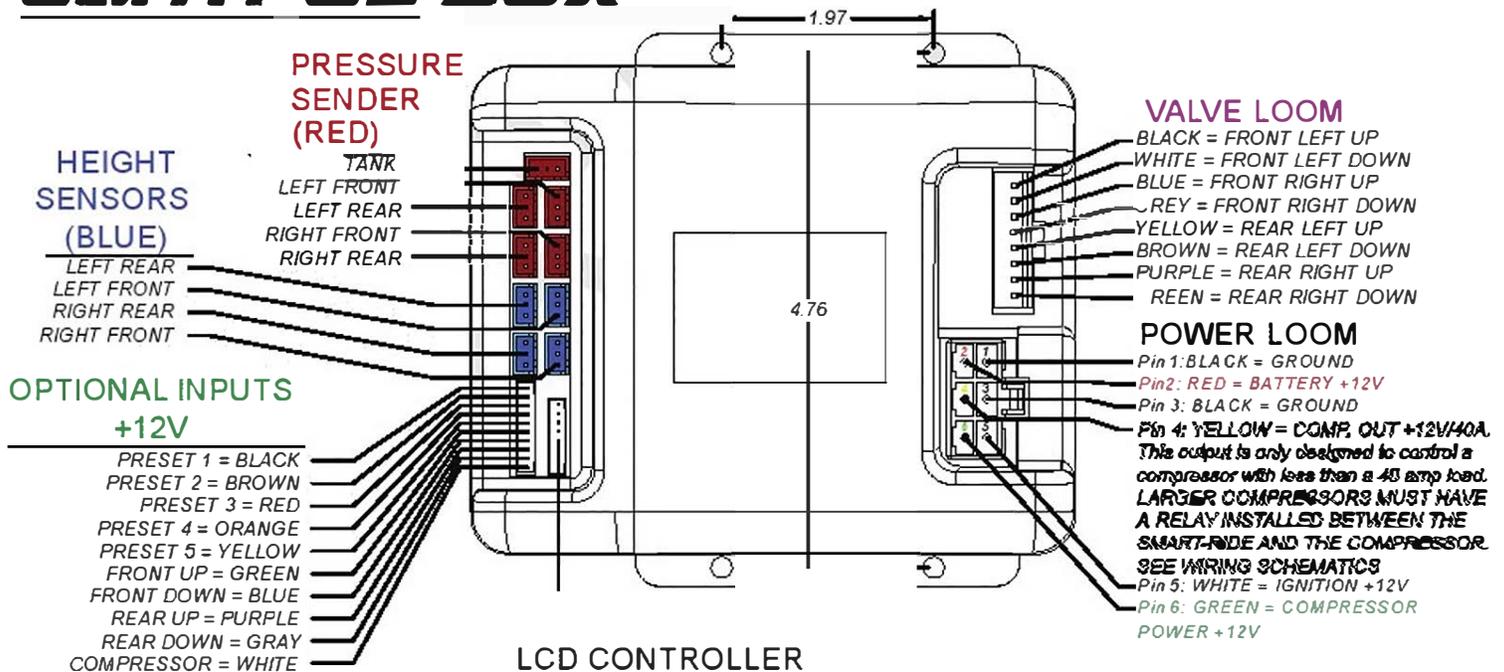
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The System Includes	Smart-Ride Standard	QTY
		1
LCD Controller		1
Relay Control Box		1
Power Loom		1
Valve Loom	Smart-Ride P and Smart-Ride HP	
300 PSI Digital Pressure Sender w/18" Loom (Optional 240" Loom)		5
Spanner Wrench		1
	Smart-Ride H and Smart-Ride HP	
Height Sensors w/240" Looms		4
Smart-Ride HP Hardware Pack		1
Ball Joints		8
1/4-28 x 12" Threaded Rod		4
1/4-28 Hex Nuts		8
1/4-28 Nyloc Nuts		8

LCD CONTROLLER



RELAY CONTROL BOX



* * * * *DEPRECIATED* * * * *

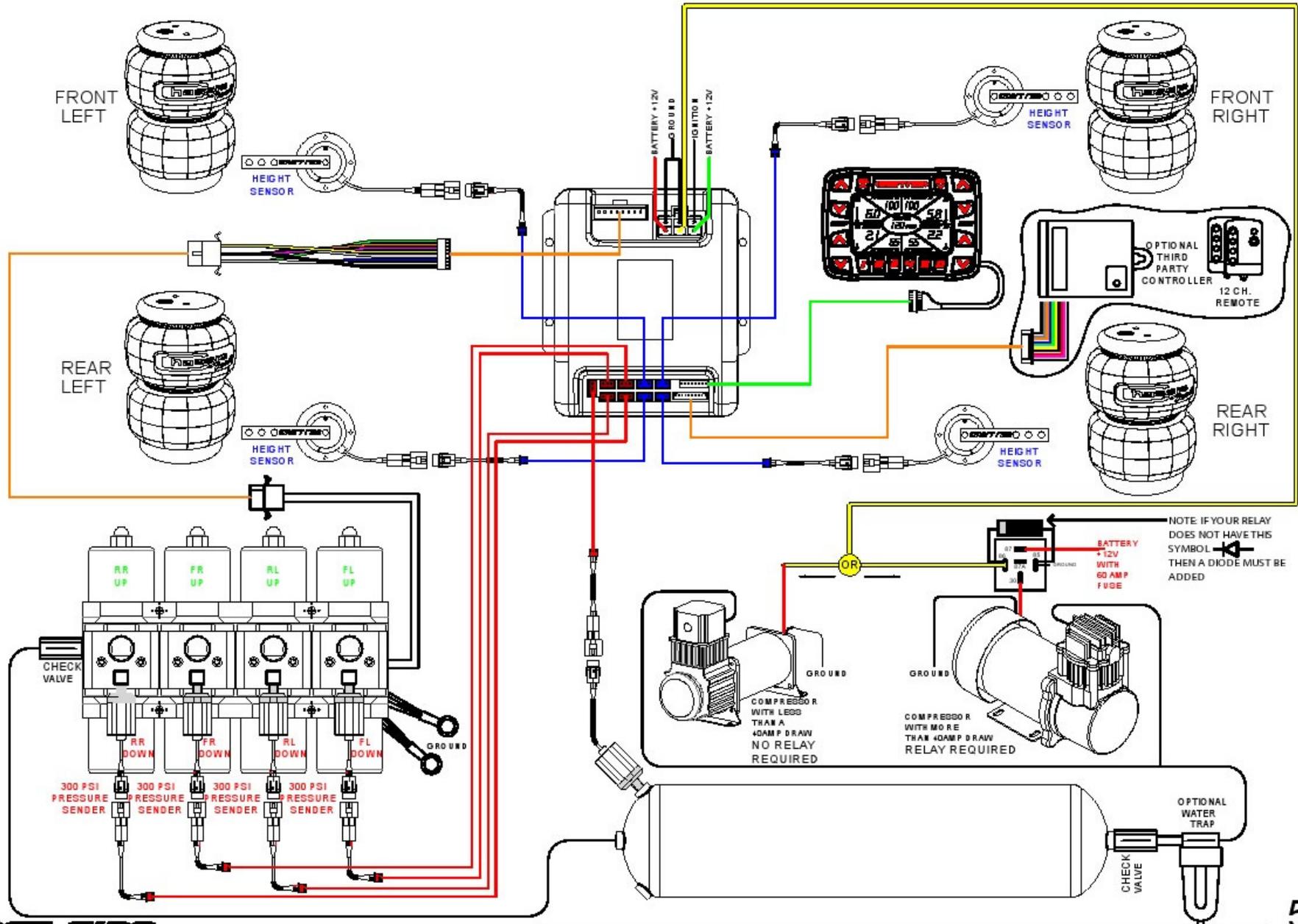
PNP BOX NO LONGER AVAILABLE!

Plug n Play **INSTALLATION**

negative battery terminal.

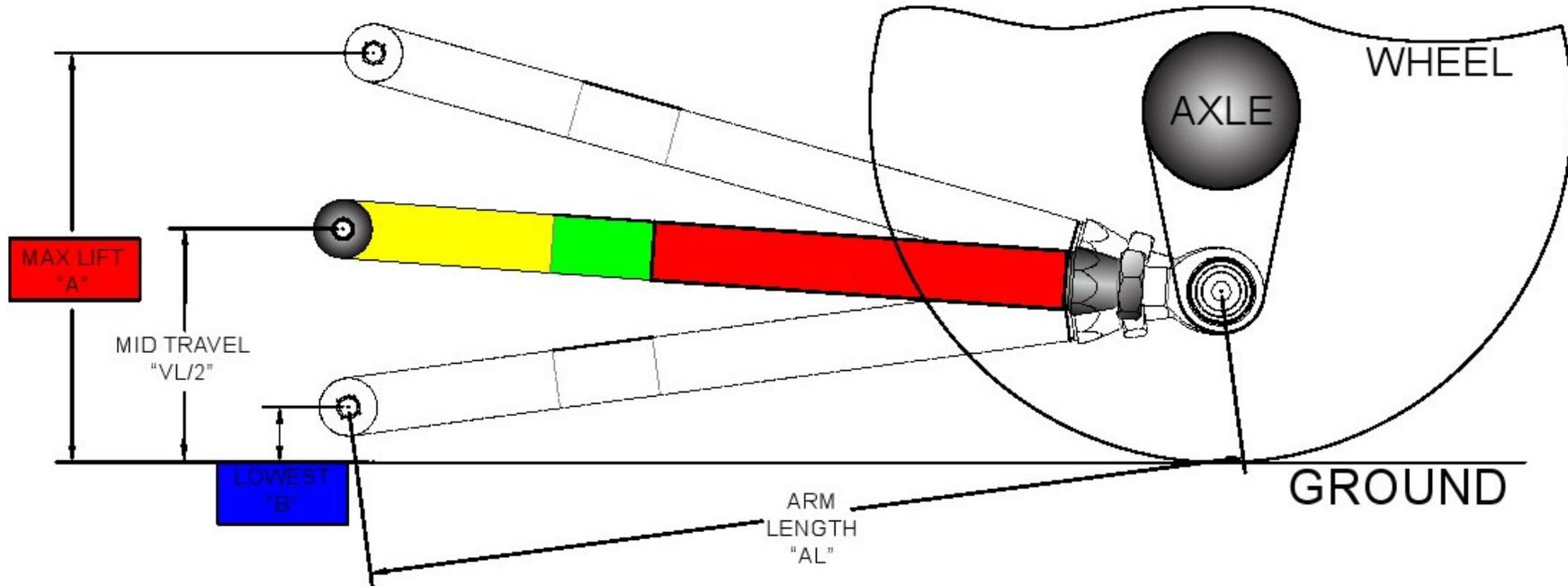
1. Disconnect the
2. Remove top of Plug n Play by removing external screws with supplied bit.
3. Mount the Plug n Play in a dry location. It is recommended that you leave 5.5"-6" of room free in front of the PnP for valve removal.
4. Install tank and connect a line to the tank from the compressor and a second line back to checked inlet of the PnP
5. Install tank pressure sender. Use the supplied Spanner Wrench to tighten the sender. Do not Overtighten.
6. Route the sender wire from the sender through the Plastic Grommit and into the PnP. Plug the connector in.(See Figure below)
7. Route Airbag airlines through the large grommet and connect to the valves. See figure below for valve assignments.
8. Run the 8 gauge power wire to the battery and connect through the supplied 60Amp breaker. A so, make sure the ground wire is connected to a clean part of the frame.
9. Route a seperate power wire from the battery to Red and Green Power wire of the Smart Ride.
10. Route the 2 Smart-Ride ground wires out of the PnP Box and connect them to the same ground point as the PnP Ground.
11. Connect the Smart-Ride's White wire to the cars ignition
12. Locate a safe position for the LCD controller to be mounted. The controller can also remain loose and be handheld. Make sure the controller isn't in a position where it can be accidentally activated while driving.
13. Route the LCD controller wire loom from the controller to the Plug n Play The loom will pass through the small plastic grommet in the middle top of the Plug n Play Do not plug LCD loom into the Relay control box yet.
14. Plug the Red and Black power connection into the Plug n Play
15. Connect the vehicles battery.
16. Plug the LCD Controller into the Relay control box. The LCD display will turn on the run through its intialization process Once the LCD turns on the compressor will start filling the tank. The display will show the tank pressure and the individual bag pressures. The height sensor will not display until they are connected.
17. Test the valves to make sure they are connected correctly
18. Mount the height sensors (See Height Sensor Installation Section) and route wires through the same grommet as the LCD loom. The height display for each corner will activate when the height sensor is connected to the relay control box.
19. (Optional) Connect necessary "Optional Input Loom" to the third party controller. +12V Only
20. Calibrate the height sensors. (See Calibration Section)
21. Reinstall Plug n Play Top

AIR ENGINE OR AIR FORCE WIRING SCHEMATICS



HEIGHT SENSOR INSTALLATION

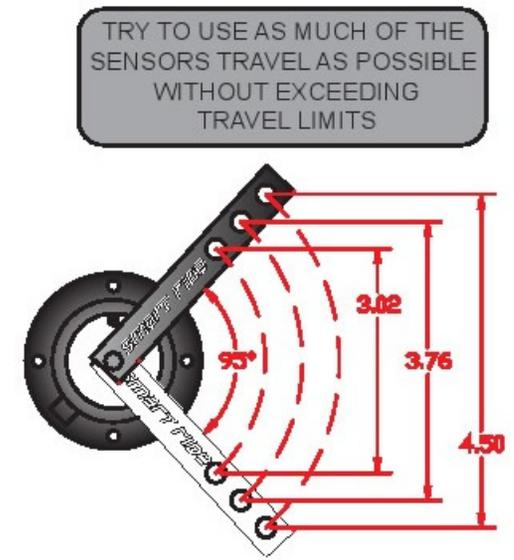
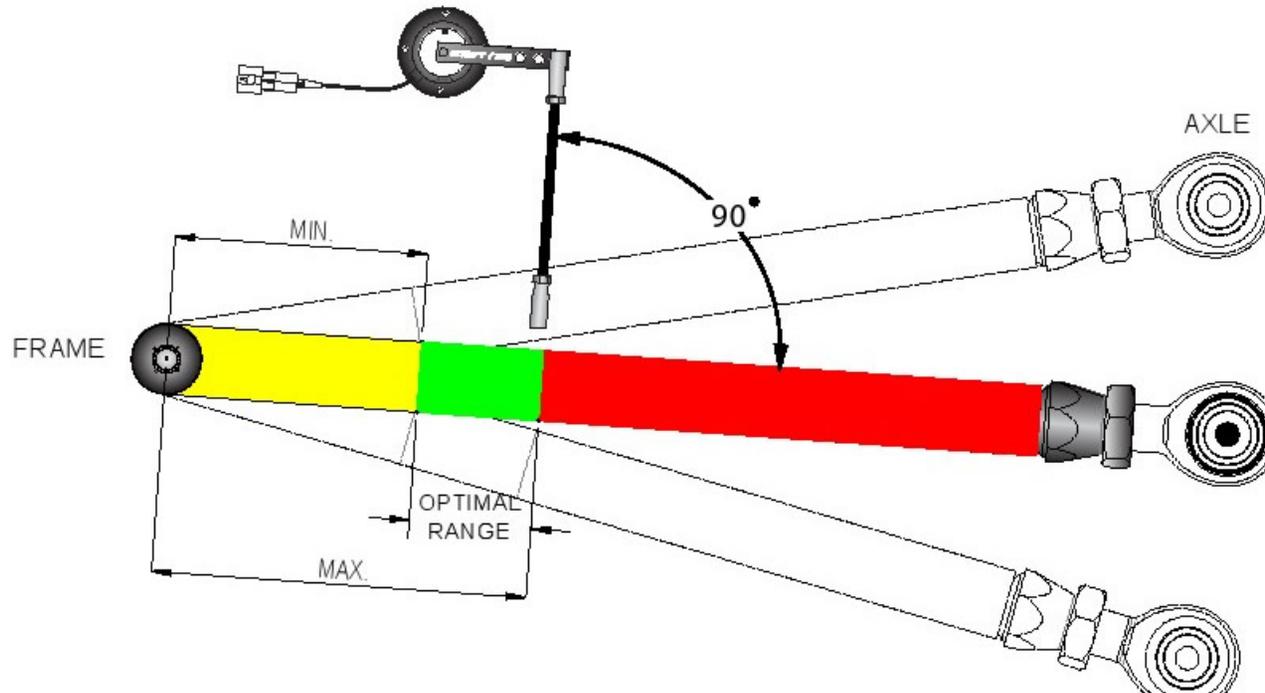
1. MEASURE THE SUSPENSION TRAVEL WITH YOUR AIR SYSTEM.
 - a. DETERMINE WHICH SUSPENSION LINK IS GOING TO BE ATTACHED TO THE HEIGHT SENSOR
 - b. INFLATE THE SUSPENSION TO MAXIMUM PRESSURE OR MAXIMUM LIFT.
 - c. MEASURE THE DISTANCE FROM THE FRAME SIDE LINK PIVOT POINT OF THE LINK TO THE GROUND.
 - d. WRITE DOWN THIS MEASUREMENT IN BOX "A".
 - e. DEFLATE THE SUSPENSION TO ITS LOWEST POINT.
 - f. MEASURE THE DISTANCE FROM THE SAME PIVOT POINT TO THE GROUND. WRITE DOWN THIS MEASUREMENT IN BOX "B".
 - g. SUBTRACT "A" AND "B" TO GET THE VERTICLE LIFT. WRITE THIS DOWN IN BOX "VL".
 - h. RAISE THE VEHICLE HALF WAY UP SO THAT THE FRAME SIDE PIVOT IS EQUAL TO HALF OF "VL".
 - i. MEASURE THE DISTANCE BETWEEN THE PIVOT BOLTS ON THE LINK AND WRITE THIS DOWN IN BOX "AL".



HEIGHT SENSOR INSTALLATION

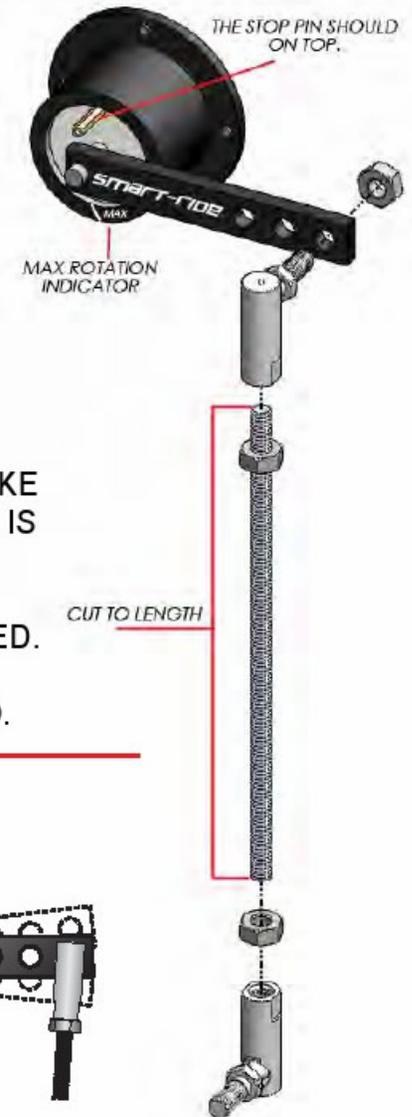
2. COMPLETE THE EQUATIONS BELOW TO GET THE OPTIMAL RANGE FOR MOUNTING THE HEIGHT SENSORS LINKAGE. THIS OPTIMAL RANGE IS MEASURED FROM THE FRAME SIDE PIVOT OUT TOWARD THE WHEEL.
3. MOVE THE SUSPENSION TO ITS MID-TRAVEL POSITION, PICK A POINT INSIDE THE OPTIMAL RANGE FOUND IN THE PREVIOUS STEPS. LOCATE A SECOND POINT ON THE FRAME THAT IS 90 DEGREES ABOVE THE PREVIOUS POINT AS SHOWN IN THE ILLUSTRATION BELOW.
4. MEASURE THE DISTANCE BETWEEN THE SPOT ON THE FRAME AND THE SPOT ON THE LINK. SUBTRACT 3/4" FROM THIS DISTANCE AND CUT THE SUPPLIED THREADED ROD TO THIS LENGTH.

<div style="display: flex; align-items: center; justify-content: center; gap: 10px;"> <div style="background-color: red; color: white; padding: 5px 10px; font-weight: bold;">"A"</div> - <div style="background-color: blue; color: white; padding: 5px 10px; font-weight: bold;">"B"</div> = <div style="background-color: gray; color: white; padding: 5px 10px; font-weight: bold;">"VL"</div> </div>	$3.00 \div \text{"VL"} \times \text{"AL"} = \text{MIN. MOUNTING DISTANCE}$	$4.25 \div \text{"VL"} \times \text{"AL"} = \text{MAX. MOUNTING DISTANCE}$
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HEIGHT SENSOR INSTALLATION

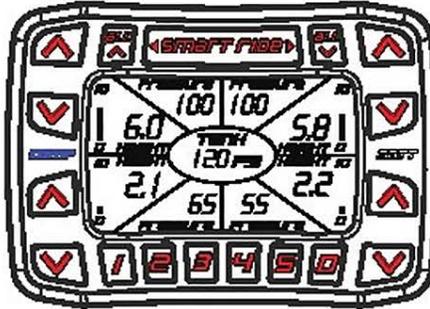
5. MOUNT THE HEIGHT SENSOR TO THE FRAME SO THAT THE TOP LINKAGE BALL JOINT IS OVER THE PREVIOUSLY MARKED SPOT ON THE FRAME. THE ARM OF THE HEIGHT SENSOR SHOULD BE SET IN THE MIDDLE OF ITS TRAVEL. DO NOT CONNECT THE LINKAGE YET.
 6. INFLATE THE BAGS ALL THE WAY TO MAXIMUM LIFT.
 7. CHECK TO MAKE SURE THE LINKAGE CAN BE CONNECTED BETWEEN THE LINK AND THE HEIGHT SENSOR WITHOUT OVERTRAVELING THE HEIGHT SENSOR OR WITHOUT AN EXCESSIVE AMOUNT OF ANGLE BETWEEN THE HEIGHT SENSOR ARM AND THE LINKAGE. DO NOT CONNECT THE LINKAGE YET. (SEE BELOW)
 8. DEFLATE THE BAGS ALL THE WAY DOWN TO THE LOWEST POINT.
 9. CHECK TO MAKE SURE THE LINKAGE CAN BE CONNECTED BETWEEN THE LINK AND THE HEIGHT SENSOR WITHOUT OVERTRAVELING THE HEIGHT SENSOR AND WITHOUT AN EXCESSIVE AMOUNT OF ANGLE BETWEEN THE HEIGHT SENSOR ARM AND THE LINKAGE. TAKE INTO CONSIDERATION THAT IF A VEHICLE IS LAID OUT ON THE FRAME RAILS AND THE FRONT IS THEN LIFTED UP THE REAR SUSPENSION WILL TRAVEL HIGHER THAN WHEN IT IS LAID OUT COMPLETELY AND COULD OVER TRAVEL THE SENSOR.
 10. ONCE THE SENSORS HAVE BEEN THOROUGHLY CHECKED THE LINKAGE CAN BE CONNECTED.
 11. THE WIRES CAN NOW BE RAN TO THE SMART-RIDE RELAY CONTROL BOX.
- TIP: MARK THE BLUE PLUG TO IDENTIFY WHICH CORNER THE HEIGHT SENSOR IS MOUNTED TO.



BAD HEIGHT SENSOR CONFIGURATIONS



PRESET SETUP AND COMPRESSOR



To Save a Preset

Presets should only be set after the height sensors have been calibrated.

1. Raise or Lower each corner to the desired position.
2. Press the center of the Smart-Ride Button once and then the press the right side of the Smart-Ride button ">" button to enter into the Preset Setup Screen #1.
3. Press whichever preset button you would like to have associated with the current position. The controller will beep once and save the current position.
4. Press the Smart-Ride Button once to exit out of the setup screens.

To Activate a Preset

1. Press the button once for the desired preset. The heights and pressure associated with that preset will flash on the LCD.
2. Double press the preset button quickly to activate the preset. The button lights will flash and if the button beeper is turned on it will beep while the system is going towards the preset.

Compressor Functionality

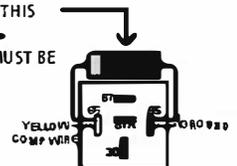
1. The Smart-Ride will send out a +12V signal when the Tank Pressure is outside the range set in Setup Screen #2.
2. The compressor can be set to run whenever the tank is low or whenever the tank is low and the LCD is turned on. (See Setup Screen #2 section)

2. The Smart-Ride is only capable of supplying 40amps of current to run a compressor. Any compressors requiring more than 40A will require a relay to be installed between the Smart-Ride and the compressor.

NOTE: UNLESS YOUR RELAY CAME WITH A BUILT IN DIODE, THEN A DIODE NEEDS TO BE INSTALLED.

3. The Compressor will run for only 5 mins at a time and then turn off. This will prevent the compressor from running if there is a leak or a failed airline. The COMP light will turn red when this error has occurred. In the regular control screen Press the "D" button to restart the compressor.

NOTE: IF YOUR RELAY DOES NOT HAVE THIS SYMBOL  THEN A DIODE MUST BE ADDED

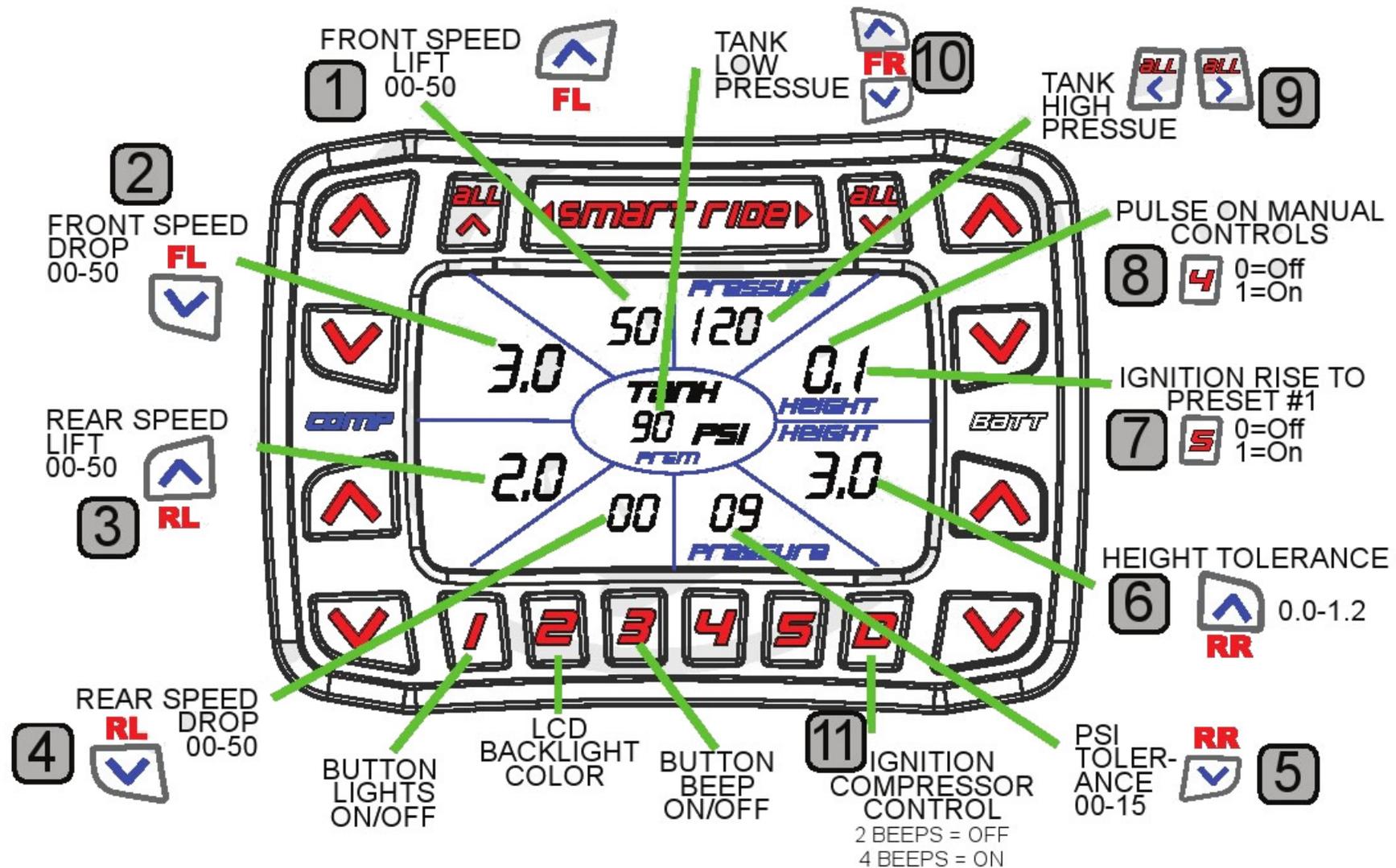


Restore Factory Defaults

1. Press the center of the Smart-Ride Button once and then the press the right side of the Smart-Ride button ">" button to enter into the Preset Setup Screen #1.
2. Press and hold the "D" button for 3 seconds.

SETUP SCREEN #2

THESE SETTINGS ARE OPTIONAL AND SHOULD BE CHANGED IF FINE TUNING IS REQUIRED.



SETUP SCREEN #2 CONT.

BELOW IS A DESCRIPTION OF THE BUTTON AND OPTION SHOWN ON THE PREVIOUS PAGE

1-4. Speed Settings: These Speed Settings control the pulse frequency for when the vehicle is lifting or dropping the airbags. The valves will pulse whenever the system is moving towards a preset. Press the corresponding button to change the speed settings for either the Front Lift, Front Drop, Rear Lift, and Rear Drop. To test these speed settings, Make sure Pulse on Manual Control is set to 1 or on (SEE #8 BELOW), exit out of the Setup Screen by pressing the center of the Smart-Ride button, now press one of the manual valve control buttons i.e. FR UP. The settings range from 00-50.

Speed Settings

Speed Setting	Valve "On" Time	Valve "Off" Time
00	Full	0
10	0.1 sec	0.1 sec
20	0.5 sec	0.3 sec
30	0.1 sec	0.5 sec
40	0.5 sec	0.8 sec
50	0.1 sec	1.0 sec

5. PSI Tolerance: This adjustment controls the pressure tolerance when the system is in Pressure Sensor only mode. This controls how close the system will try to get to the target preset pressure. This adjustment only applies when the height sensors are unplugged and when the system is in "Pressure Sensor" Mode. This is controlled with the RR Drop button. Default = 10

6. Height Tolerance: This adjustment controls the height tolerance when the system is in Height Sensor mode. This controls how close the system will try to get to the target preset height. This adjustment overrides the PSI tolerance when the height sensors are plugged in. This value is changed by pressing the RR Up button to cycle through the tolerance options Default = 1.2

Note on Tolerance: The Height and Pressure Tolerance settings should not be set tighter than the movement of the vehicle in 1 pulse. To verify this, enable the "Pulse on Manual Control" option that is described in the Setup Screen #2 page. Once this is enabled, press the "D" button to start the compressor. Let the compressor run until it shuts off at its set Tank High Pressure. Next, press each "Manual Control Button" and read the movement displayed on the LCD in the height section or pressure section. The amount of movement found must be less than the tolerance setting. For Example: If one pulse moves the Rear Right from 4.2 to 5.1 than the Height Tolerance shouldn't be any smaller than 0.9.

7. Ignition Rise to Preset #1: This option turns off "00" or on "01" to control if the vehicle will go to "Preset #1" when the ignition is turned on. This option can be used in both the "Pressure Sensor mode" or "Height Sensor Mode" and is controlled with the "5" button. Default = 0

8. Pulse on Manual Control: This option turns off "00" or on "01" to control if the valve outputs are constant or pulsed. This only applies to the manual controls i.e. FR up. Default = 0

9-10. Tank High and Low Pressure: This adjustment controls the pressure at which the compressor starts and stops running and is controlled with the All Up, All Dump buttons and the FR UP and FR DOWN buttons. Note: The Tank pressure will always be higher than the Low Tank Pressure. 300psi max. Default = 90 on 120 off.

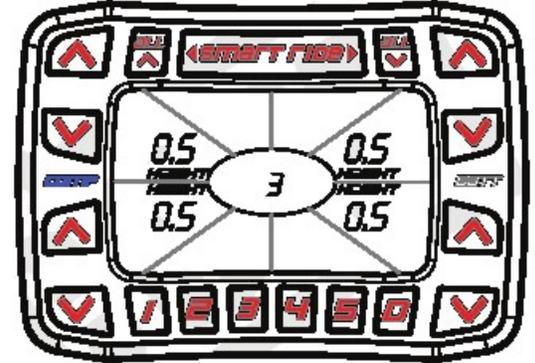
11. Ignition Compressor Control: This option allows you to set the compressor to run whenever the tank is low regardless of whether or not the ignition is turned on. If this option is turned on then the compressor will only run when the tank is low and when the LCD is turned on. Note: When the ignition is turned off the LCD will remain lit for 30 secs and then turn off. Pressing any button will turn on the LCD controller. 2 beeps will turn this option off and 4 beeps will turn this option on.

HEIGHT SENSOR CALIBRATION

After installation of the height sensors a calibration is required so the Smart-Ride can better understand your suspension. The calibration process converts the vehicles suspension travel into a scale 0.0 - 9.9. The Smart-Ride then displays the vehicles position based on this scale. The 0.0 - 9.9 Scale is not a reference to ride height inches. Cycle your suspension up and down to verify that the height sensors are communicating properly with the Smart-Ride system and that the height values are changing with the suspension.

Setup Screen #3 Calibrate Minimum Height.

1. Lower the vehicle all the way down to its lowest point.
2. Press the center of the Smart-Ride Button once and then the press the right side of the Smart-Ride button ">" button until you reach Setup Screen #3.
3. Press and hold the "All" Down button until all of the height displays read 0.5. Each individual control buttons can also be used to set the display at 0.5.
4. Press the center of the Smart-Ride Button to exit out of the calibration mode.



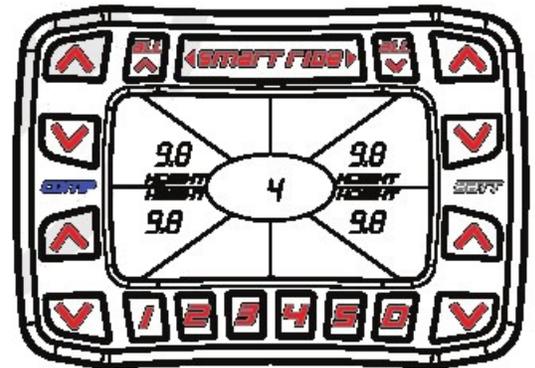
Safety Height Alarm

The software has an alarm that will beep when any of the vehicle's height sensors are between 0.0- 1.5 and 8.5 - 9.8. This option is controlled from Setup Screen #3 by pressing the "D" button.

2 Beeps = Off and 4 Beeps = On

Setup Screen #4 Calibrate Maximum Height.

1. Raise the vehicle all the way up to its highest point.
2. Press the center of the Smart-Ride Button once and then the press the right side of the Smart-Ride button ">" button until you reach Setup Screen #4.
3. Press and hold the "All" up button until all of the height displays read 10. Each individual control buttons can also be used to set the display at 9.8.
4. Press the center of the Smart-Ride Button to exit out of the calibration mode.



TIPS AND TROUBLESHOOTING

Functionality Tips:

1. The Tank Pressure Sender must be plugged in for the Smart-Ride to work properly.
2. The Smart-Ride will attempt to move the vehicle to the requested preset for 30 seconds. After this time the system will cancel the function. If the vehicle hasn't reached its desired preset before this 30 seconds then the flow control valves need to be adjusted to increase or decrease the speed.
3. Pressing any key while the system is moving the vehicle towards a preset will cancel the function.
4. Adjusting the timing and flow control valves will allow the vehicle to lift and lower at the same speed.
5. The Height and Pressure Tolerance settings should not be set tighter than the movement of the vehicle in 1 pulse. To verify this, enable the "Pulse on Manual Control" option that is described in the Setup Screen #2 page. Once this is enabled, press the "D" button to start the compressor. Let the compressor run until it shuts off at its set Tank High Pressure. Next, press each "Manual Control Button" and read the movement displayed on the LCD in the height section or pressure section. The amount of movement found must be less than the tolerance setting.

For Example: If one pulse moves the Rear Right from 4.2 to 5.1 than the Height Tolerance shouldn't be any smaller than 0.9.

Troubleshooting:

Q. Smart-Ride isn't reading any pressures or heights and all the number in the pressure and height section are reading zeros?

A. The Smart-Ride's CPU has miscycled. Reset the system by disconnecting the barrel plug for 10 seconds and then plug everything back together. The main reason for this issue is from an unprotected relay, an installed regular pressure switch, or from the LCD control cable being shorted out.

Q. The compressor doesn't turn on?

A. Make sure you have your tank pressure sender installed and reading pressure on the display. Press the "D" button and see if the compressor turns on. If the compressor doesn't turn on then check your wiring between the Smart-Ride and the compressor. If the compressor does turn on then check your high and low pressure settings. (See Setup Screen #2).

Q. The compressor is running when the key is off?

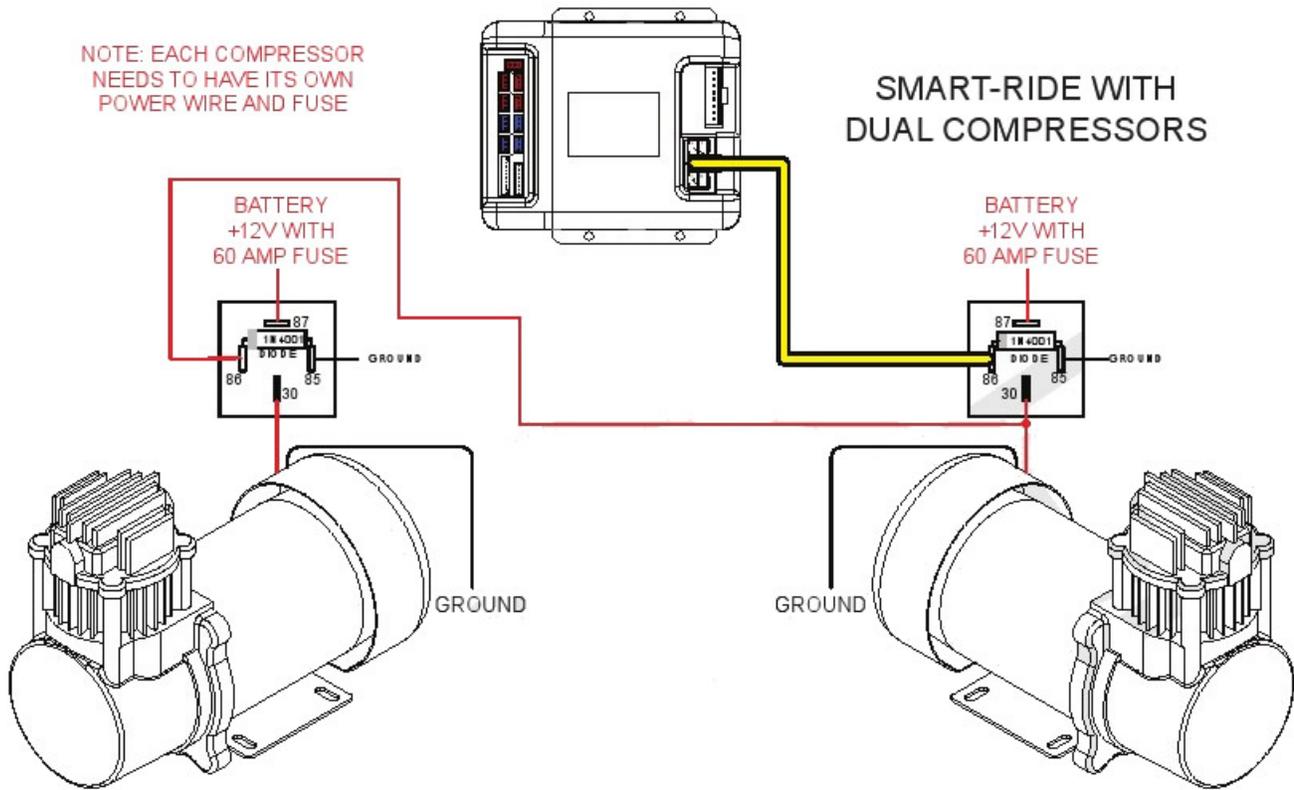
A. Change the "Ignition Compressor Control" option. (See Setup Screen#2).

Q. The cables for my LCD Controller/height/pressure senders are too short?

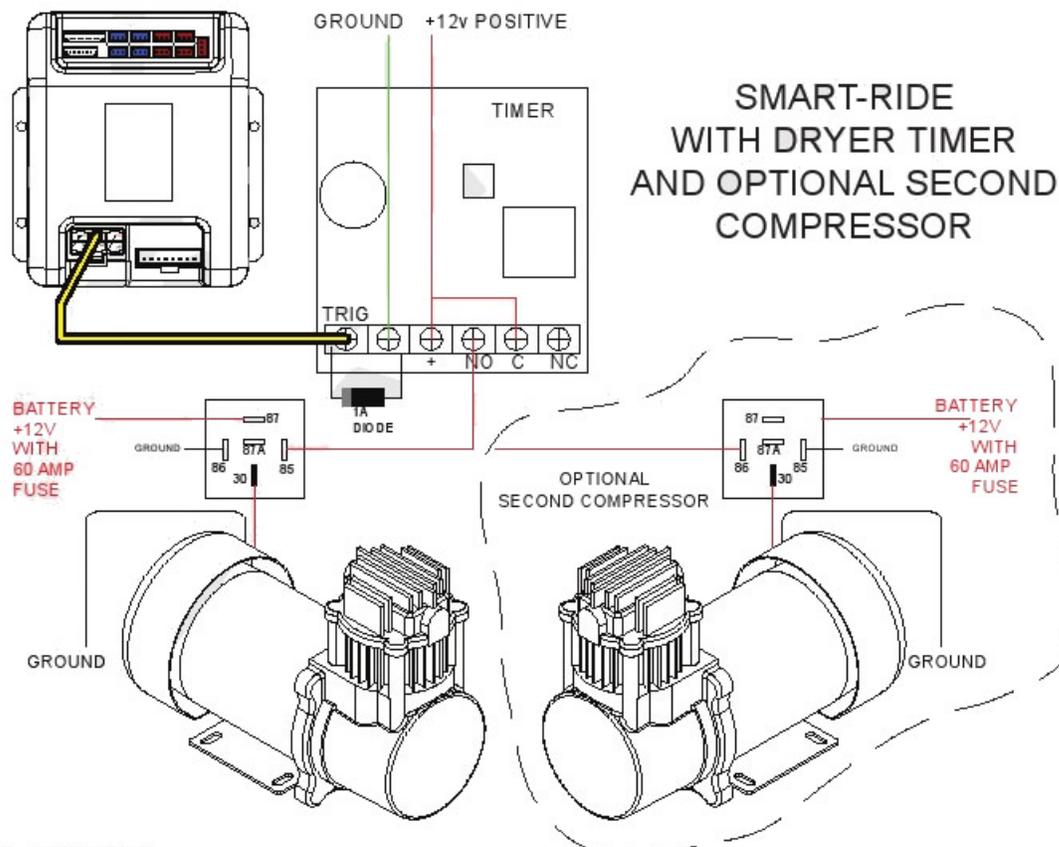
A. We have extensions that we can send out. Do not splice in a new length of wire into your connection cables.

NOTE: EACH COMPRESSOR NEEDS TO HAVE ITS OWN POWER WIRE AND FUSE

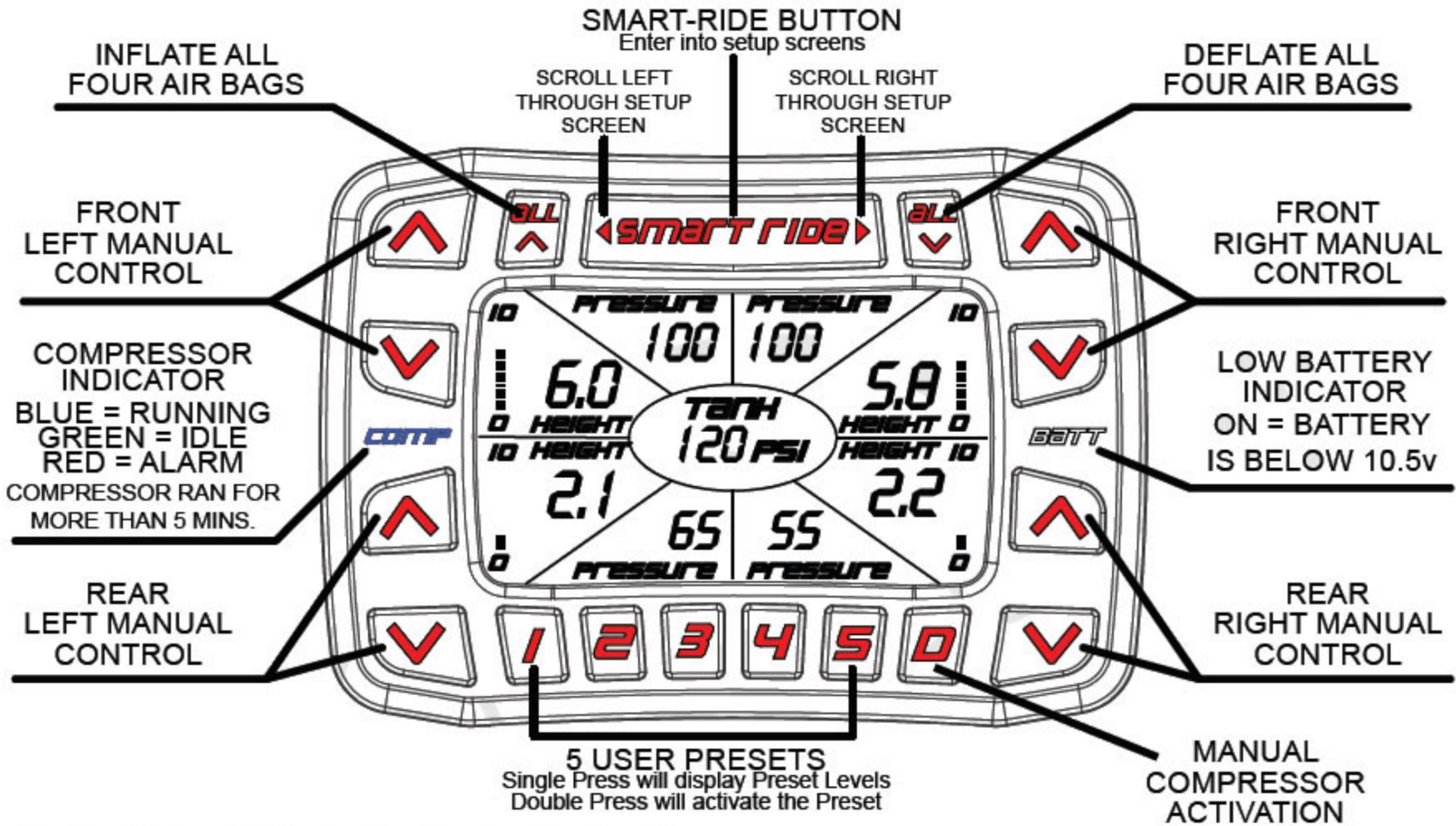
SMART-RIDE WITH DUAL COMPRESSORS



SMART-RIDE WITH DRYER TIMER AND OPTIONAL SECOND COMPRESSOR



LCD CONTROLLER



RELAY CONTROL BOX

