

Installation and operating instructions

Index	Page
LCD Controller and Relay Control Box Layouts	1
Plug n Play Installation	2
Non-Plug n Play Installation	3
Non-Plug n Play Schematic	4
Air-Engine / Air Force Wiring Schematics	5
Height Sensor Installation	6-8
Preset and Compressor Setup and Functionality Tips (Setup Screen #1)	9
Timing, Pressure Switch and Tolerance Setup (Setup Screen #2)	10
Height Sensor Calibration (Setup Screen #3 and #4)	11
Optional Input Wiring Schematic	12

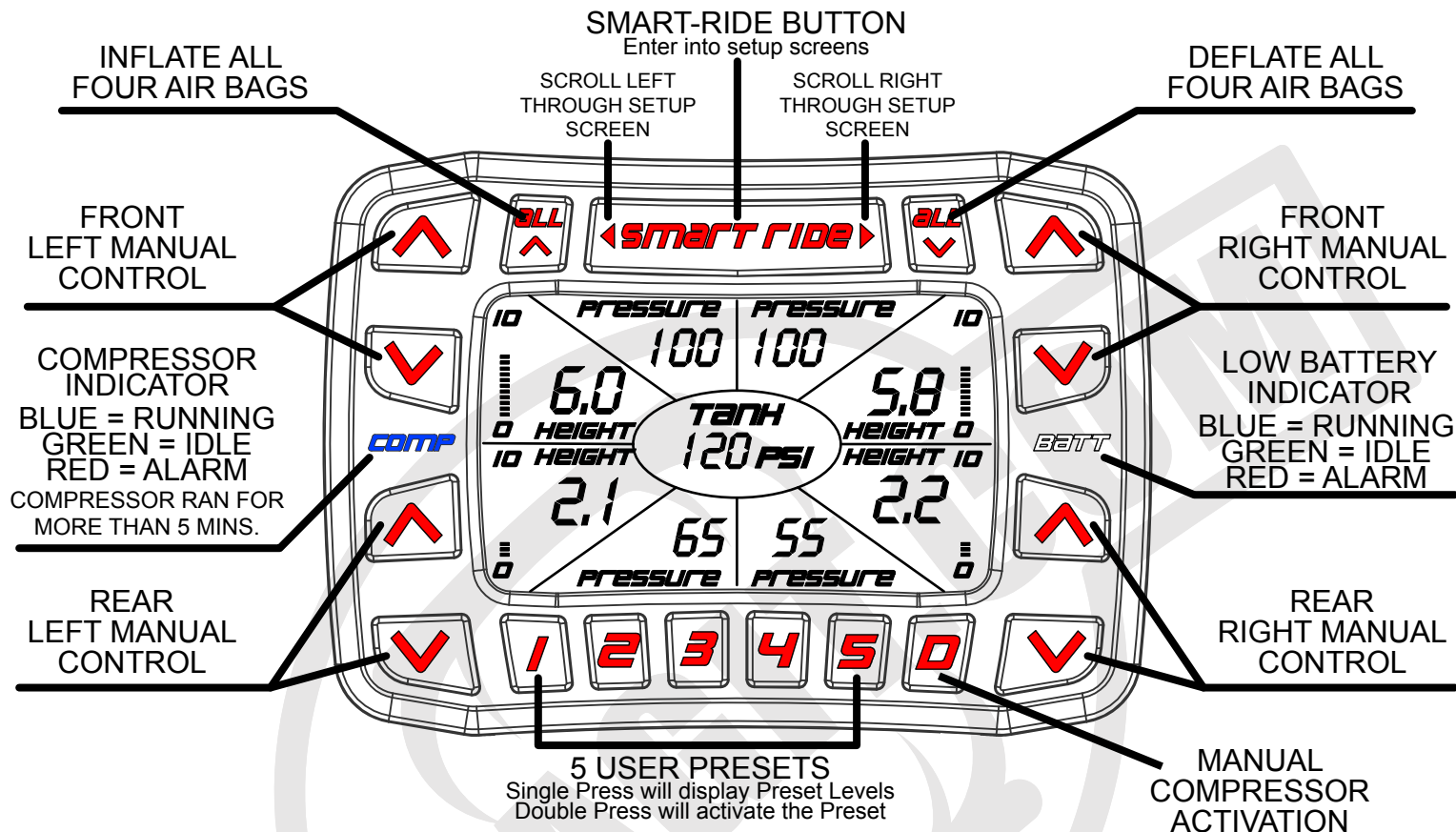
The System Includes	QTY
Smart-Ride Standard	
LCD Controller	1
Relay Control Box	1
Power Loom	1
Valve Loom	1
Smart-Ride P and Smart-Ride HP	
300 PSI Digital Pressure Sender w/18" Loom (Optional 240" Loom)	5
Spanner Wrench	1
Smart-Ride H and Smart-Ride HP	
Height Sensors w/240" Looms	4
Smart-Ride HP Hardware 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

Smart Ride

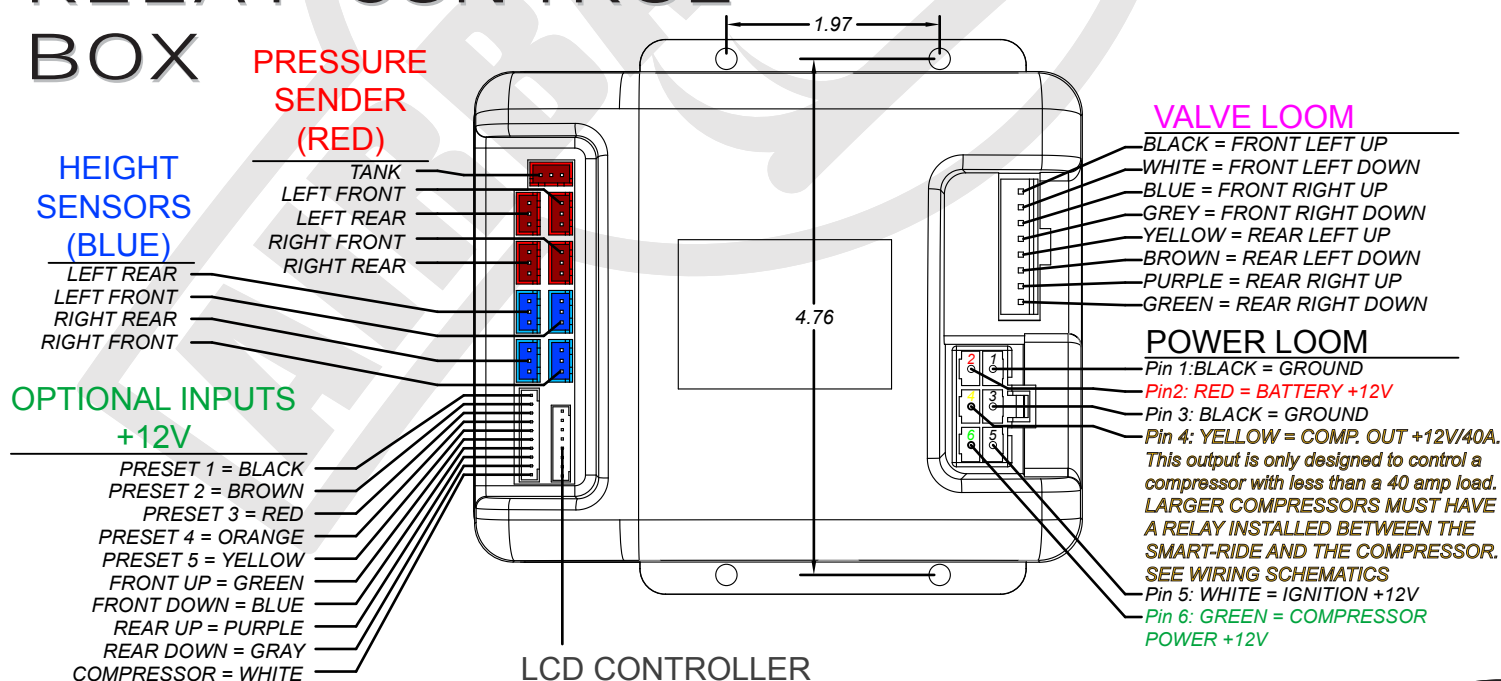
COMPLETE DIGITAL AIR MANAGEMENT SYSTEM



LCD CONTROLLER



RELAY CONTROL BOX

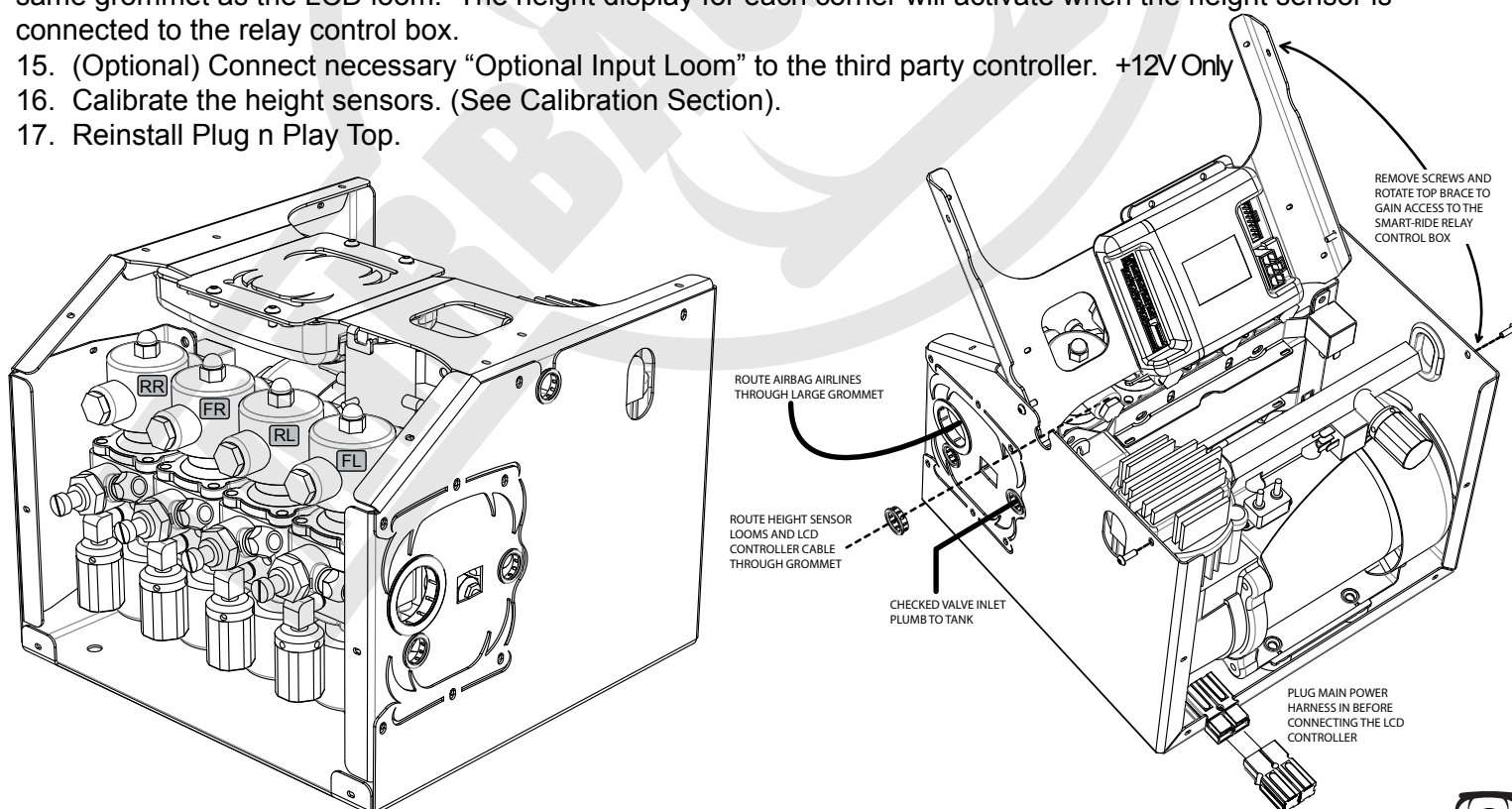


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Plug n Play INSTALLation

1. Disconnect the negative battery terminal.
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. Route Airbag airlines through the large grommet and connect to the valves. See figure below for valve assignments.
6. Run 8 gauge power wire to the battery and connect through the supplied 60Amp breaker. Also, make sure the ground wire is connected to a clean part of the frame.
7. Connect the Smart-Ride's White wire to the cars ignition.
8. Locate a safe position for the LCD controller to be mounted. The controller can also remain loose and be hand-held. Make sure the controller isn't in a position where it can be accidentally activated while driving.
9. 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.
10. Plug the Red and Black power connection into the Plug n Play.
11. Connect the vehicles battery.
12. 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.
13. Test the valves to make sure they are connected correctly.
14. 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.
15. (Optional) Connect necessary "Optional Input Loom" to the third party controller. +12V Only
16. Calibrate the height sensors. (See Calibration Section).
17. Reinstall Plug n Play Top.



non Plug n Play Installation

1. Disconnect the negative battery terminal.
2. Mount the Smart-Ride in a dry location away from hot exhaust and any moving components.
3. Determine where the LCD Controller will be mounted.
4. Connect the LCD controller to the Relay Control Box.
5. Wire according to diagram on page 1.
 - a. Power Loom
 - i. Connect the Black wires (Pin 1 & Pin 3) to (-) Ground.
 - ii. Connect the Red wire (Pin 2) to constant +12V.
 - iii. Connect the Yellow (Pin 4) to the Compressor (less than 40amp) or Compressor Relay (over 40amp draw).
 1. This output is only designed to supply power to a compressor that requires less than 40 amps. Larger compressors must have a relay installed in between the Smart-Ride and the Compressor. (Wiring Schematics)
 - iv. Connect the White wire (Pin 5) to an Ignition wire. This wire will turn the LCD Controller On. When the ignition turns on it will also activate Preset #1 if that option has been turned on (See Screen #2 instructions for details).
 - v. Connect the Green Wire to constant +12V (Pin 6). This wire will supply power to the internal relay that powers the Yellow Wire.
 - b. Valve Loom
 - i. Connect each wire to its corresponding valve as shown on the Non-PnP Wiring Schematic.
 - ii. If you have purchased this Smart-Ride controller with one of Airbagit.com's Air Engine valve assemblies, or Air Force then the Valve Loom will plug right into the Air Engine's white 9 pin plug. See Air Engine Wiring Schematic.

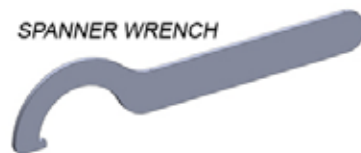
The system will now have control of the valves but will not display pressures or heights until the sensors are installed.
 - c. Pressure Sending units (RED). (**SMART-RIDE P and SMART-RIDE HP Models Only**)

After the each Pressure Sending unit is installed you will see the tank pressure displayed on the LCD Controller.

 - i. Install the pressure sending units and plug into the red sockets on the relay control box as indicated on page 1. Note: Pressure Sending units are to be tightened with the included spanner wrench only, Tightening by hand will damage the sending unit.



SPANNER WRENCH



- ii. **Smart-Ride P Models** with speed control adjusters will need to make sure that the pressure sender is installed between the bag and the speed control adjuster. Installing the pressure sender after the speed control valve will cause inaccurate readings thus affecting the units ability to reach its preset values.
 - d. Height Sensors (BLUE). (**SMART-RIDE H and SMART-RIDE HP Models Only**)
 - i. **SEE HEIGHT SENSOR INSTALLATION INSTRUCTIONS**
 - e. Optional Inputs (These should be installed after the system has been completely installed and setup)
 - i. NOTE: THESE ARE ONLY TO BE CONNECTED IF YOU INTEND ON USING A THIRD PARTY CONTROLLER I.E. 12 CHANNEL REMOTE, OR ALARM SYSTEM. If you do not intend on controlling the Smart-Ride with anything other than the Smart-Ride LCD Controller then leave this loom unplugged.
 - ii. In order to use the optional third party inputs you will need to supply each wire with +12V. This is not a constant +12V but momentary power that is supplied by a third party controller.

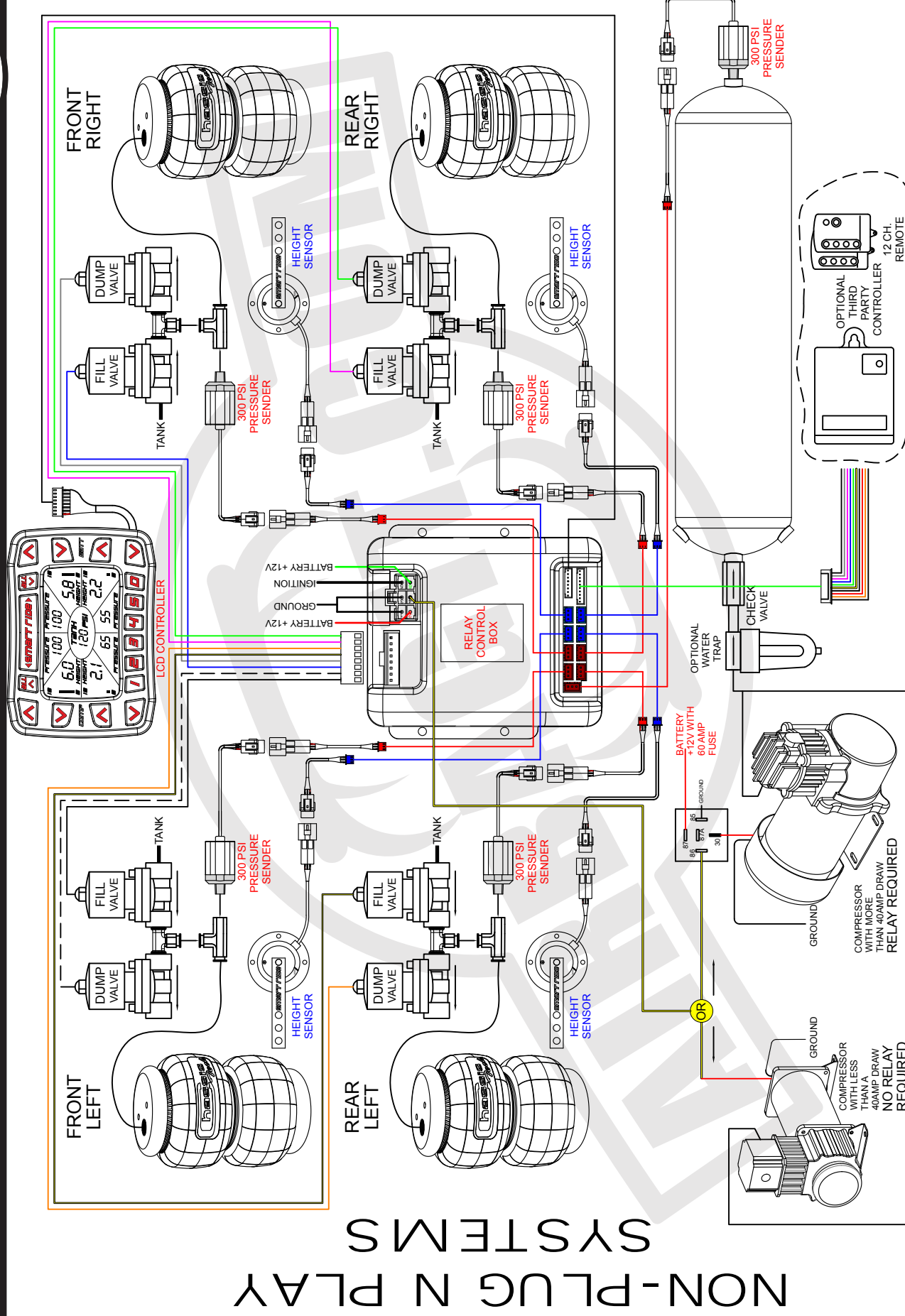
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4



NON-PLUG N PLAY SYSTEMS

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AIRBAGIT.COM SUSPENSIONS

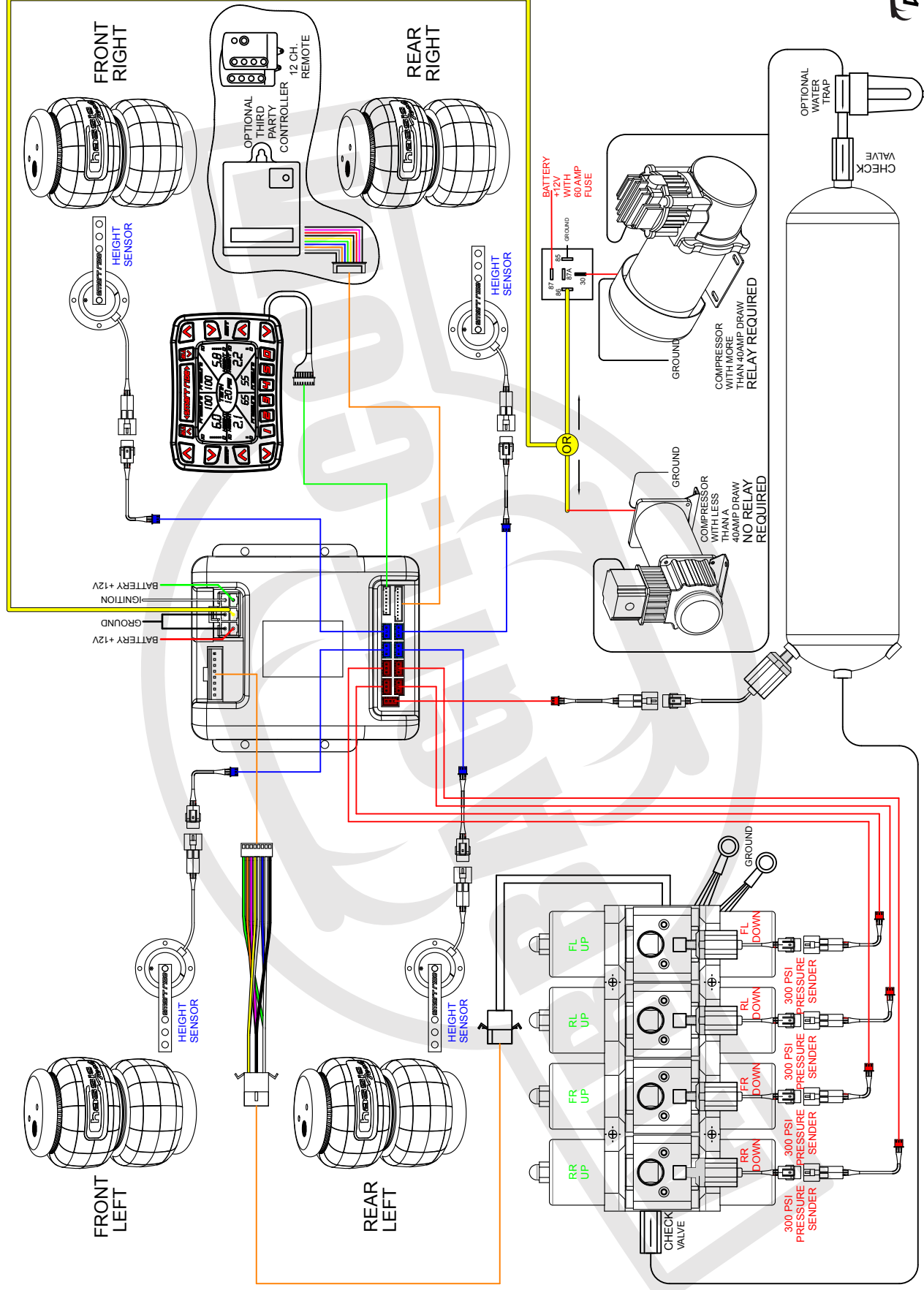
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wiring schematics



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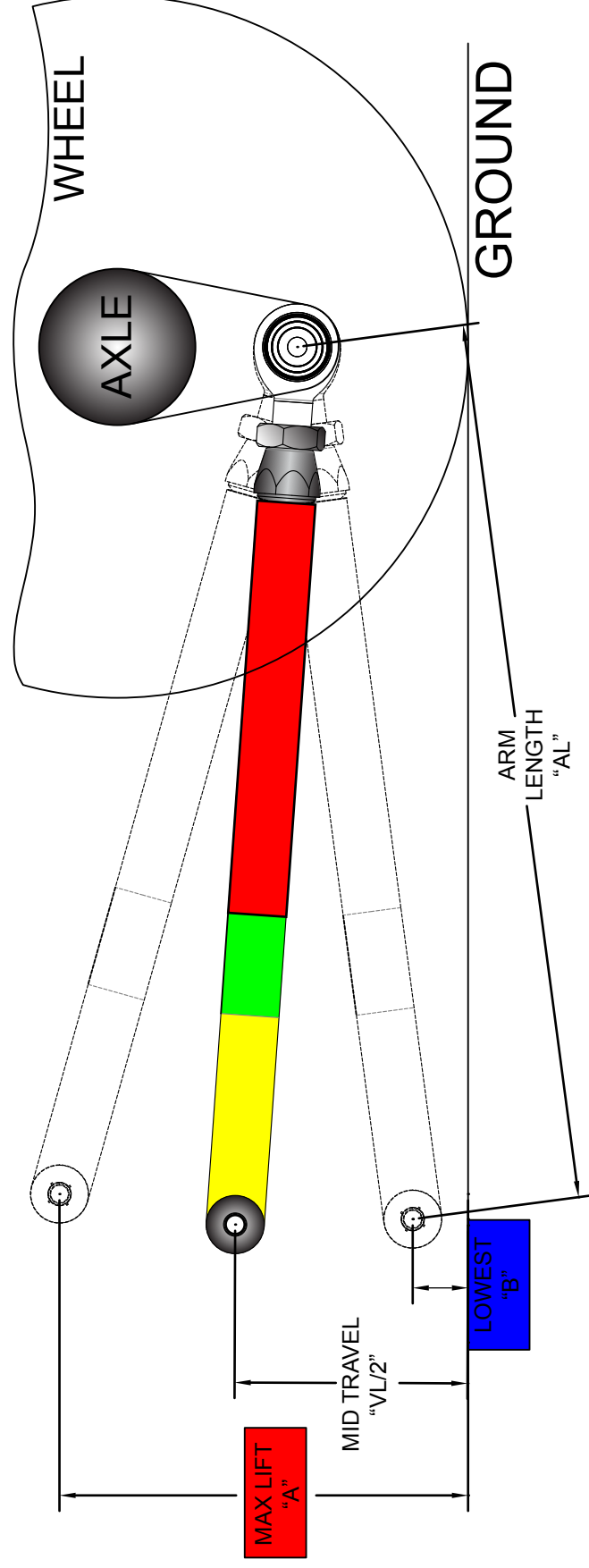
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HEIGHT SENSOR INSTALLATION

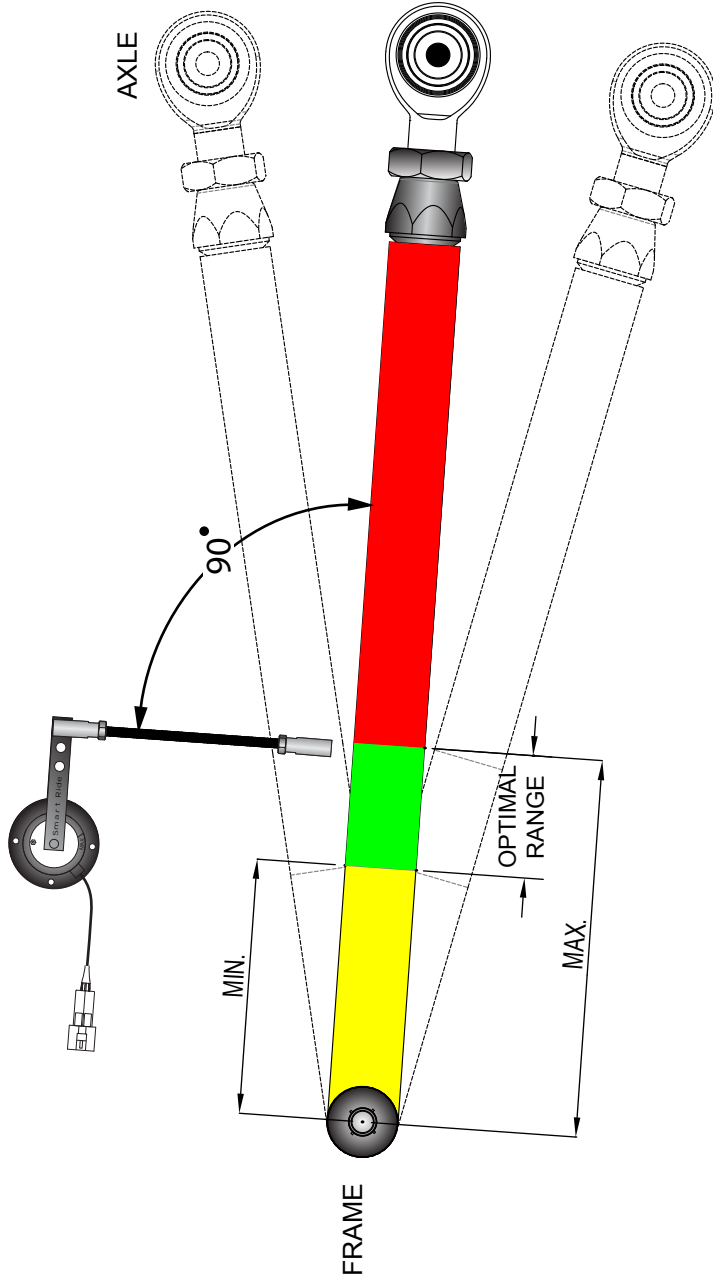
1. MEASURE THE SUSPENSION TRAVEL WITH YOUR AIR SYSTEM.
 - a. DETERMINE WHICH SUSPENSION LINK IS GOING TO BE ATTACHED TO THE HEIGHT SENSOR
 - b. INFLATE THE SUSPENSION TO MAXIMUM PRESSURE OR MAXIMUM LIFT.
 - c. MEASURE THE DISTANCE FROM THE FRAME SIDE LINK PIVOT POINT OF THE LINK TO THE GROUND.
 - d. 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

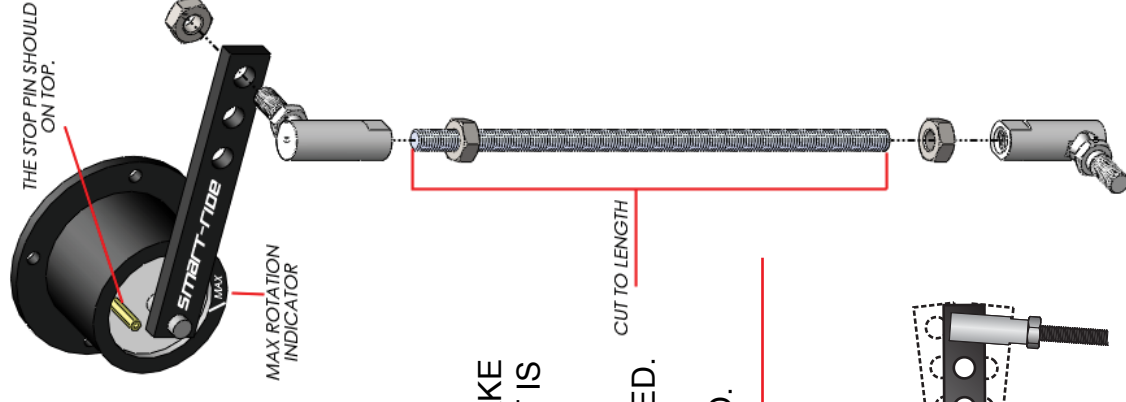
- COMPLETE THE EQUATIONS BELOW TO GET THE OPTIMAL RANGE FOR MOUNTING THE HEIGHT SENSORS LINK-AGE. THIS OPTIMAL RANGE IS MEASURED FROM THE FRAME SIDE PIVOT OUT TOWARD THE WHEEL.
- MOVE THE SUSPENSION TO ITS MID-TRAVEL POSITION, PICK A POINT INSIDE THE OPTIMAL RANGE FOUND IN THE PREVIOUS STEPS. LOCATE A SECOND POINT ON THE FRAME THAT IS 90 DEGREES ABOVE THE PREVIOUS POINT AS SHOWN IN THE ILLUSTRATION BELOW.
- 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="background-color: red; color: white; padding: 2px 5px;">"A"</div>	-	<div style="background-color: blue; color: white; padding: 2px 5px;">"B"</div>	=	<div style="border: 1px solid black; padding: 2px 5px;">"VL"</div>	=	<div style="background-color: blue; color: white; padding: 2px 5px;">"AL"</div>	×	<div style="border: 1px solid black; padding: 2px 5px;">4.25 ÷</div>	=	<div style="border: 1px solid black; padding: 2px 5px;">MAX. MOUNTING DISTANCE</div>

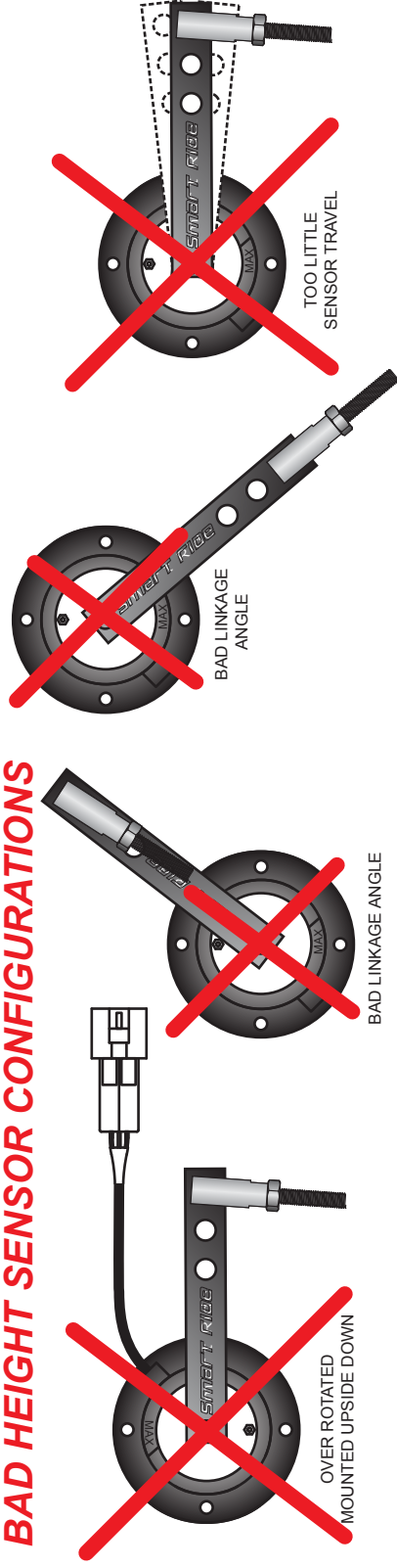


HEIGHT SENSOR INSTALLATION

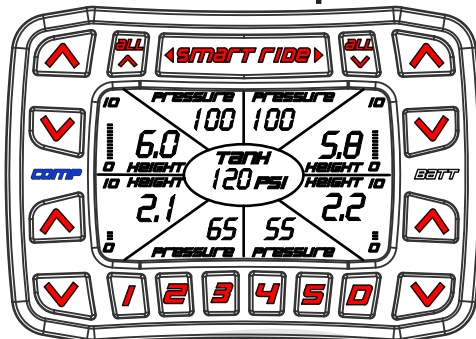
5. MOUNT THE HEIGHT SENSOR TO THE FRAME SO THAT THE TOP LINKAGE BALL JOINT IS OVER THE PREVIOUSLY MARKED SPOT ON THE FRAME. THE ARM OF THE HEIGHT SENSOR SHOULD BE SET IN THE MIDDLE OF ITS TRAVEL. DO NOT CONNECT THE LINKAGE YET.
 6. INFLATE THE BAGS ALL THE WAY TO MAXIMUM LIFT.
 7. CHECK TO MAKE SURE 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 OVERTravel 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



PRESETs setup and tips



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 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.

Functionality Tips

1. 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.
2. Pressing any key while the system is moving the vehicle towards a preset will cancel the function.
3. Adjusting the timing and flow control valves will allow the vehicle to lift and lower at the same speed.
4. 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.

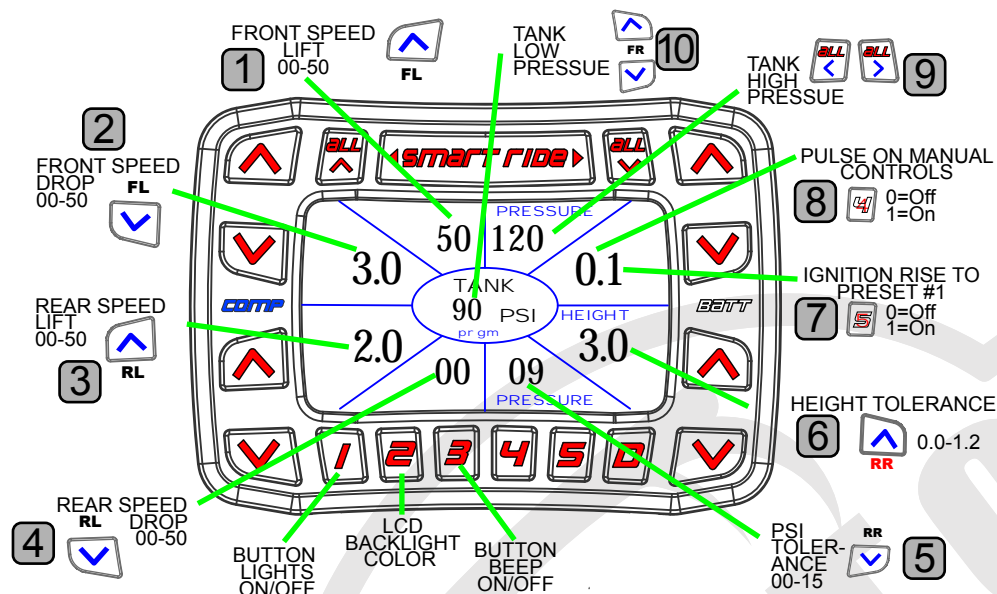
For Example: If one pulse moves the Rear Right from 4.2 to 5.1 then the Height Tolerance shouldn't be any smaller than 0.9.

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 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.
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. Press the "D" button to restart the compressor.

SETUP SCREEN #2

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



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

1. Front Speed Lift: This adjustment controls the pulse frequency for when the vehicle is lifting the front two airbags. This speed control only applies when using the preset buttons and when #8 is turned on. The settings range from 00-50 and are controlled with the FL Up button. Default = 40

2. Front Speed Drop: This adjustment controls the pulse frequency for when the vehicle is dropping the front two airbags. This speed control only applies when using the preset buttons and when #8 is turned on. The settings range from 00-50 and are controlled with the FL Drop button. Default = 10

3. Rear Speed Lift: This adjustment controls the pulse frequency for when the vehicle is lifting the rear two airbags. This speed control only applies when using the preset buttons and when #8 is turned on. The settings range from 00-50 and are controlled with the RL Up button. Default = 10

4. Rear Speed Drop: This adjustment controls the pulse frequency for when the vehicle is dropping the rear two airbags. This speed control only applies when using the preset buttons and when #8 is turned on. The settings range from 00-50 and are controlled with the RL Drop button. Default = 40

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 and is controlled by Holding the "D" button and pressing the preset button equal to the desired tolerance. Default = 3.0

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 and is controlled with the "4" button. Default = 0

9. Tank High Pressure: This adjustment controls the pressure at which the compressor stops running and is controlled with the All Lift and All Dump buttons. Default = 120. Note: This number will always be higher than the Low Tank Pressure. 300psi max.

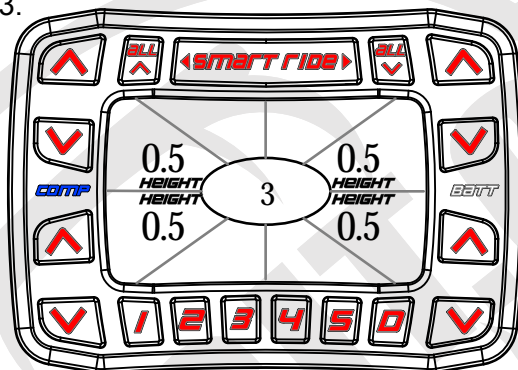
10. Tank Low Pressure: This adjustment controls the pressure at which the compressor starts running and is controlled with the FR Lift and Dump buttons. Default = 90.

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 0.0-10.0. The Smart-Ride then displays the vehicles position based on this scale. The 0.0-10.0 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.

Calibration Min. Height.

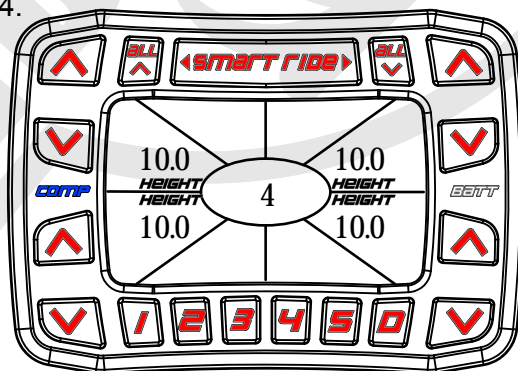
1. Lower the vehicle all the way down to its lowest point.
2. Press the center of the Smart-Ride Button once and then the press the right side of the Smart-Ride button ">" button until you reach Setup Screen #3.



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.

Calibration Max. 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 10.0.
4. Press the center of the Smart-Ride Button to exit out of the calibration mode.