

e-LEVEL

Installation Manual



Installation Manual

e-Level™: TouchPad™ Controller

Congratulations!

Thank you for purchasing the revolutionary e-Level™ system by AccuAir.

This system manages the height of up to 4 Air Springs and offers never before seen accuracy in all applications by constantly learning your vehicle's characteristics. Through the use of advanced height monitoring techniques, this system automatically corrects for changes in load, whether driving or parked, minimizing user input and maximizing accuracy throughout your driving experience. To enhance the entire system's performance and reliability, the AccuAir e-Level™ also manages your Air Compressor(s) to keep onboard air at an ideal pressure for your application.

To maximize functionality, the AccuAir e-Level™ allows you to select from three distinct vehicle heights through a TouchPad™ Controller:

- 3.) **Ride Height** (The height that you will typically drive your vehicle at).
- 2.) **Low/Cruise** (Typically set at 10% of your total suspension travel).
- 1.) **High/Extra Clearance** (Typically set at 90% of your total suspension travel to increase mobility and clear driving obstacles).

At AccuAir, we pride ourselves on thorough customer service, quality products, and a better driving experience through technologically superior design. Please visit our website or call us toll free to let us know if there is any way that we can help improve your AccuAir experience.

(877) AIR-DOWN
247-3696

www.accuair.com



**THE SYSTEM MUST BE CALIBRATED BEFORE USE.
SEE OPERATION MANUAL PAGE 9**



Table Of Contents

**Terms & Conditions
Installation Overview**

Page 4-5

System Diagram

Page 6-11

Mounting & Wiring Installation

Page 12-17

**Test Mechanical &
Electrical Hookup**

Page 18

Height Sensor Installation

Page 19-29

Setup Programming

Page 30

Mounting Templates

Page 31-37



Terms & Conditions:

AccuAir Control Systems, L.L.C. is hereby referred to as **ACCUAIR**. The Purchaser, end-user, or installer is hereby referred to collectively as **CUSTOMER**. By purchasing and installing the **ACCUAIR** products, systems, or components to which this Installation Manual relates, **CUSTOMER** is deemed to agree with and accept the terms and conditions below.

Limited Warranty

ACCUAIR will repair or replace any defective products or components for the life of the vehicle on which they were originally installed, provided that the products or components were installed exactly as instructed herein, not modified or altered, and operated as expressly intended by **ACCUAIR**. Upon the return of a failed component(s) at **CUSTOMER's** expense, **ACCUAIR** will determine the cause of failure. If it is due to improper installation or misuse of the system, as determined by **ACCUAIR**, a repair charge will be assessed, and the customer will be contacted before work is performed or replacement parts are shipped. If the failure is due to defectively manufactured parts, then **ACCUAIR** will either repair or replace the failed components, at their own discretion and in a timely manner. There are no other warranties, express or implied, except as contained in this paragraph.

Repairs and Returns

A Return Merchandise Authorization Number (RMA) is required for ALL shipments to **ACCUAIR**. This number should be written in large letters on the shipping box. Call **ACCUAIR** to receive an RMA number and send items to:

AccuAir Control Systems, L.L.C.
Attn: Service Department/RMA # _____
831 Buckley Road
San Luis Obispo, Ca, 93401
USA

Legal Disclaimer (IMPORTANT—PLEASE READ CAREFULLY)

- **ACCUAIR's** products are intended and designed for off-road use. If a customer chooses to use **ACCUAIR's** products on a highway, **CUSTOMER** understands that they do so at their own risk.
- **ACCUAIR's** products must be installed by a qualified professional installation facility, as recommended by **ACCUAIR**.
- **ACCUAIR's** products may void or limit any manufacturer's warranty or service contract covering **CUSTOMER's** vehicle. **ACCUAIR** shall have no liability for any effect that installation of its products may have on such warranties or service contracts.
- **ACCUAIR's** products may drastically alter the performance characteristics of **CUSTOMER's** vehicle and may cause it to operate in a manner not intended by the vehicle's original manufacturer. System operation and installation is at the **CUSTOMER's** own risk.
- **CUSTOMER** is responsible for periodically inspecting any and all **ACCUAIR** products or components installed on **CUSTOMER's** vehicle, to ensure they remain safe and functional. **ACCUAIR** shall have no liability for any loss or injury caused by **CUSTOMER's** failure to inspect.
- **ACCUAIR** shall have no liability for damage to property or persons caused by its products, components, accessories, installation instructions, or otherwise. **CUSTOMER** alone assumes all such risks and liabilities.
- **ACCUAIR** accepts no responsibility for systems, products or components provided by other manufacturers for use with or around the **ACCUAIR** system. For components other than **ACCUAIR's**, follow the manufacturer's instructions for installation and operation.
- **ACCUAIR's** liability, if any, shall be limited to the replacement cost of the purchased product or component.
- Any and all disputes between **ACCUAIR** and **CUSTOMER** relating to the purchase or installation of an **ACCUAIR** product or component must be resolved through final and binding arbitration, applying the laws of the State of California, and conducted pursuant to the California Arbitration Act (California Civil Code sections 1280, *et seq.*). Arbitration shall take place in San Luis Obispo, California, and **CUSTOMER** consents to personal jurisdiction in California.



WARNING: No part of the vehicle should be able to contact the ground when all air is out of the Air Springs.

Installation Overview:

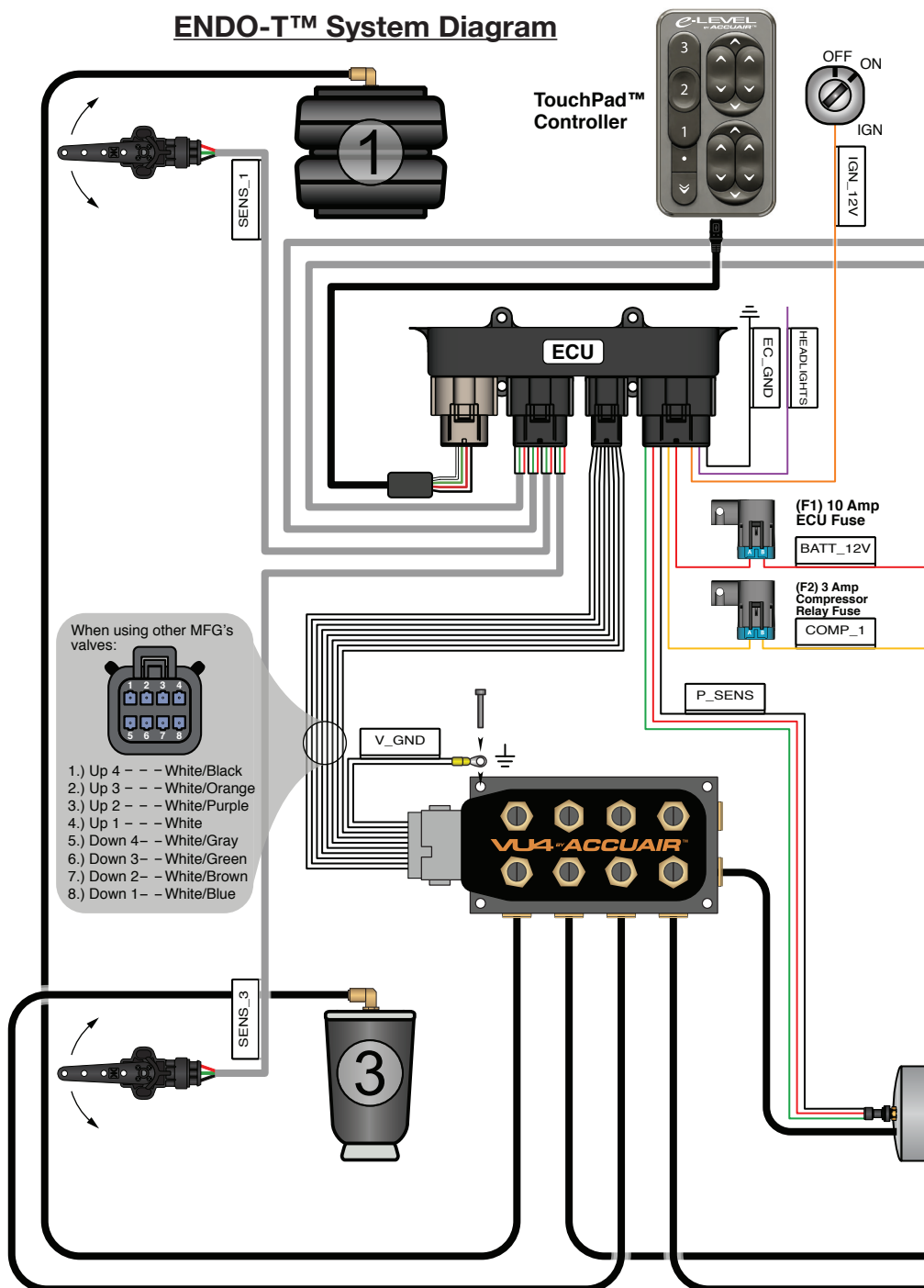
After your Air Springs and Suspension Components have been installed, you can begin installing the AccuAir components in the following order:

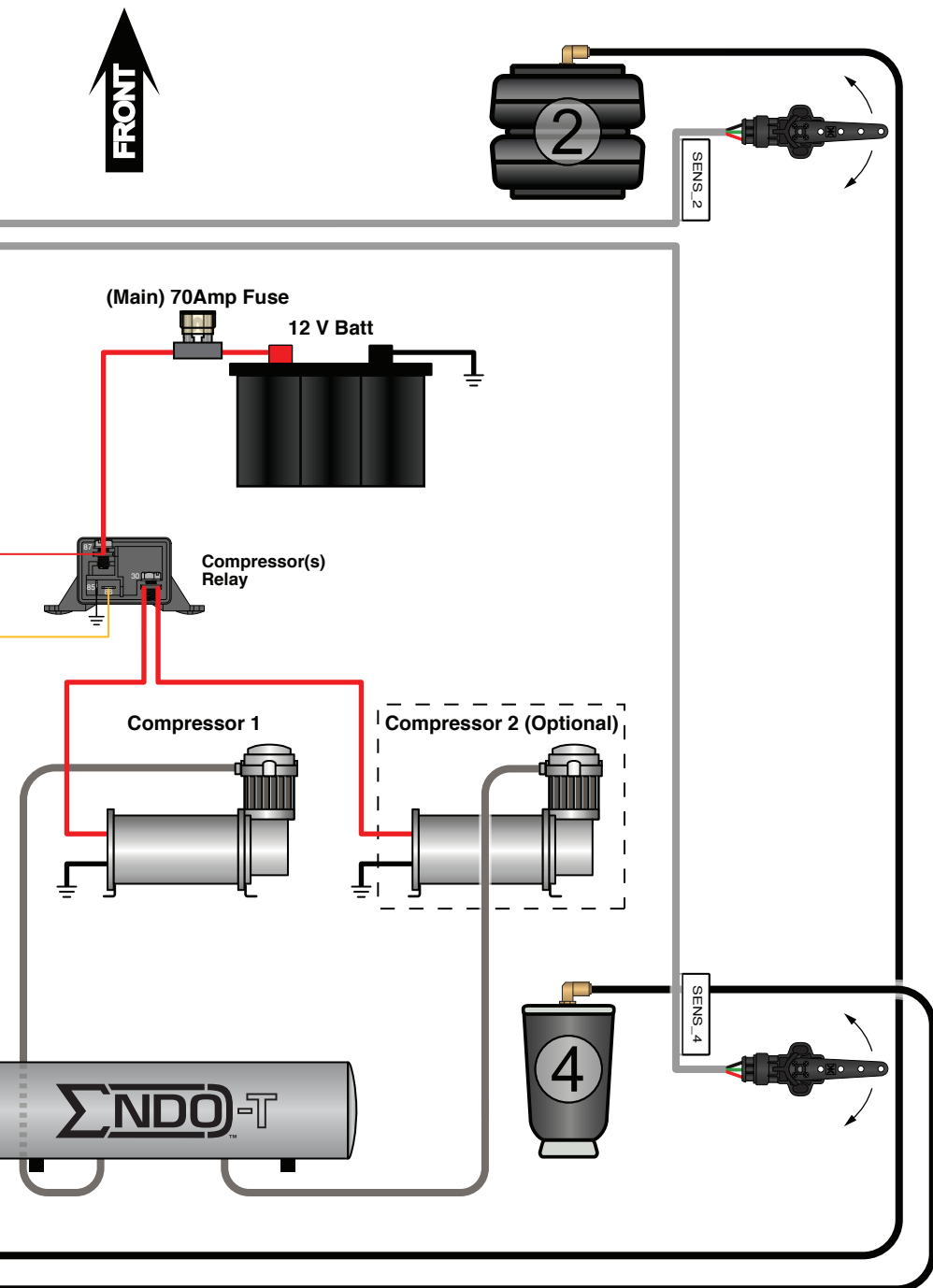
- 1.) Install VU4 (Valve Unit)
- 2.) Install ECU (Electronic Control Unit)
- 3.) Install TouchPad™ Controller
- 4.) Install Tank Pressure Sensor
- 5.) Install Air Compressor(s)
- 6.) Install Wiring Harnesses
- 7.) Test Wiring and Mechanical Components
- 8.) Install Ride Height Sensors
- 9.) **CALIBRATE SYSTEM**



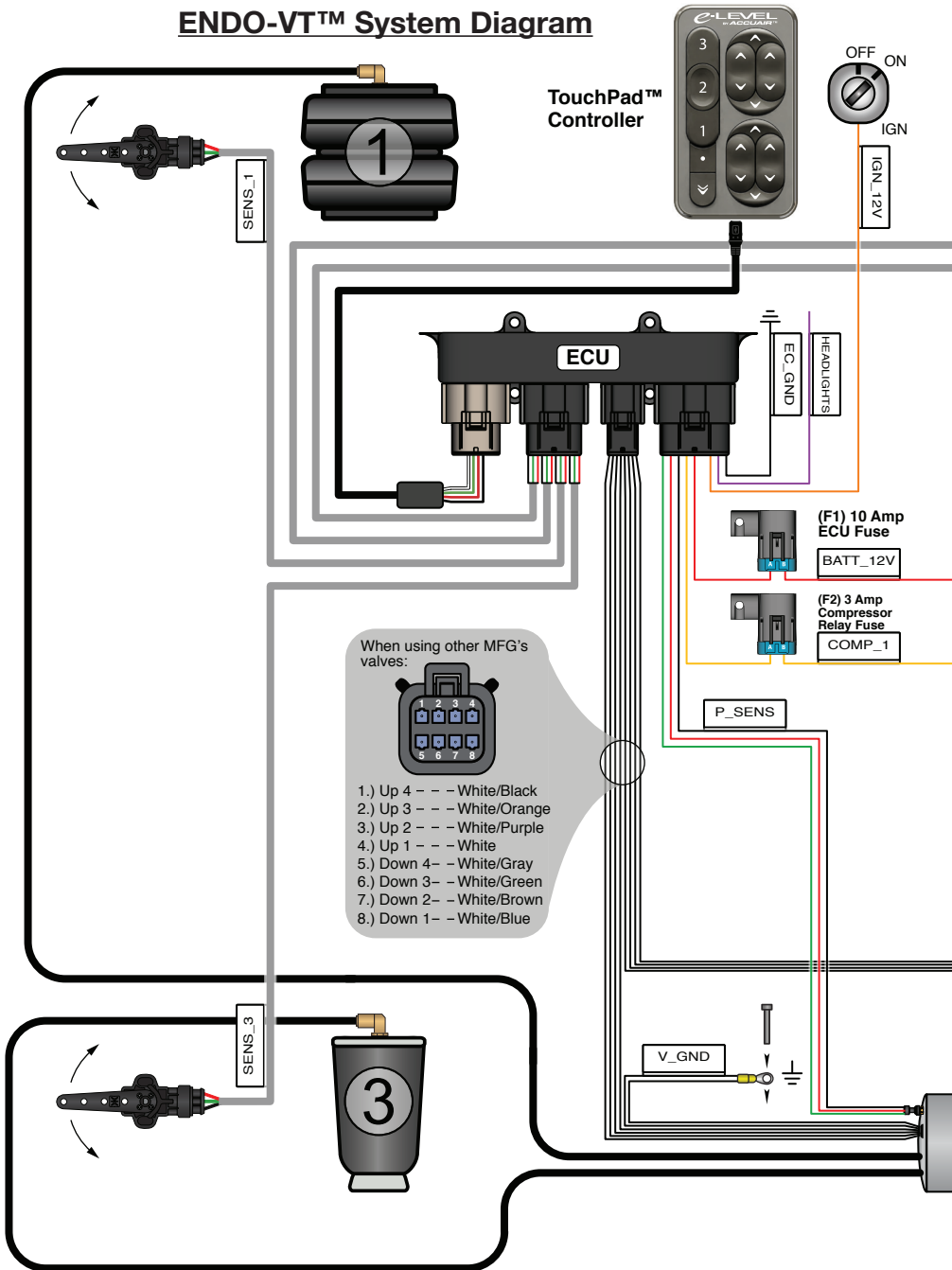
WARNING: Make sure to disconnect the vehicle battery ground terminal throughout the wiring process.

ENDO-T™ System Diagram

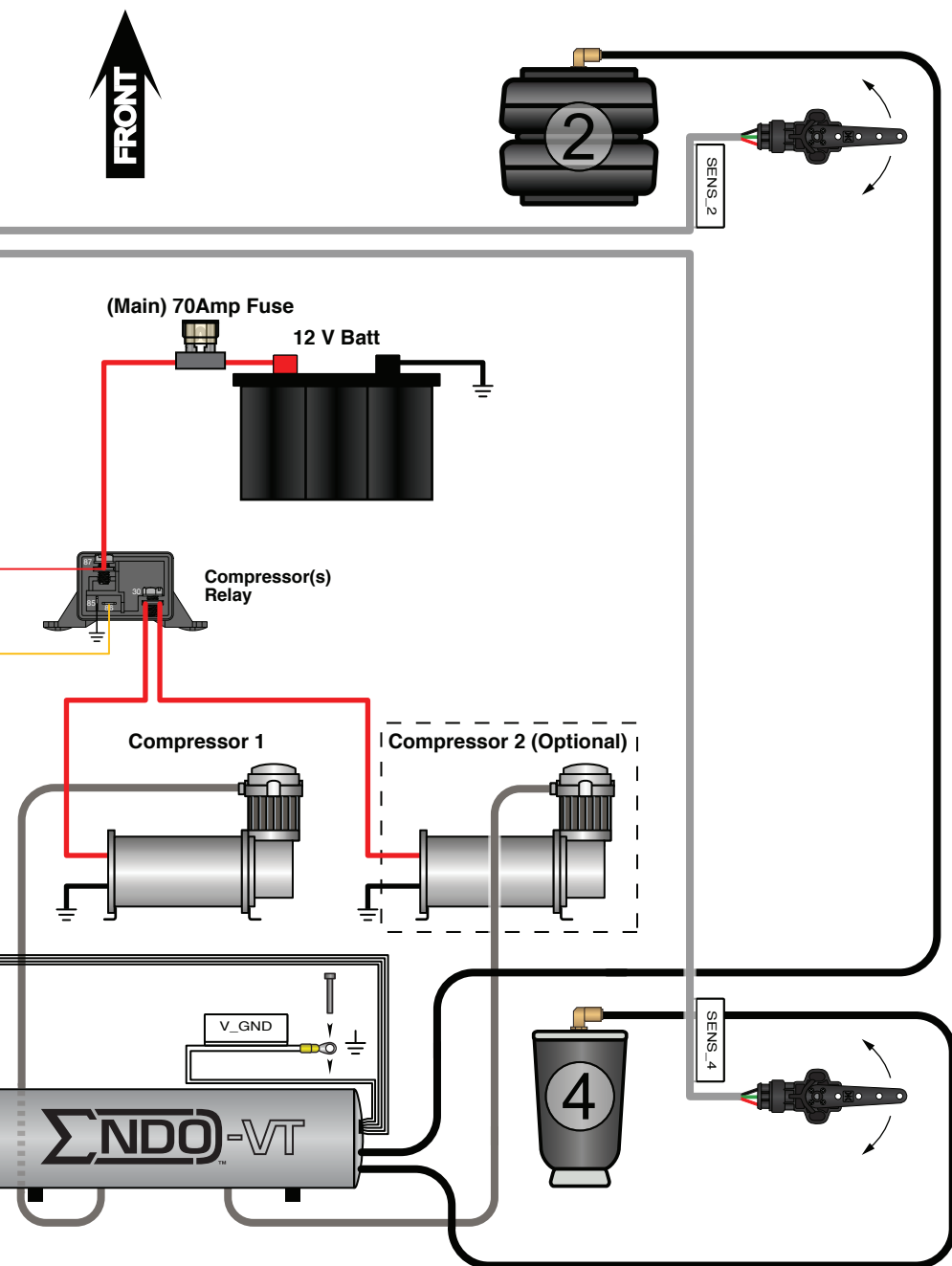




ENDO-VT™ System Diagram



***PLEASE REFER TO YOUR ENDO INSTRUCTION MA**



Terms & Conditions
Install Overview

System Diagram

Mounting & Wiring
Installation

Test Mechanical &
Electrical Hookup

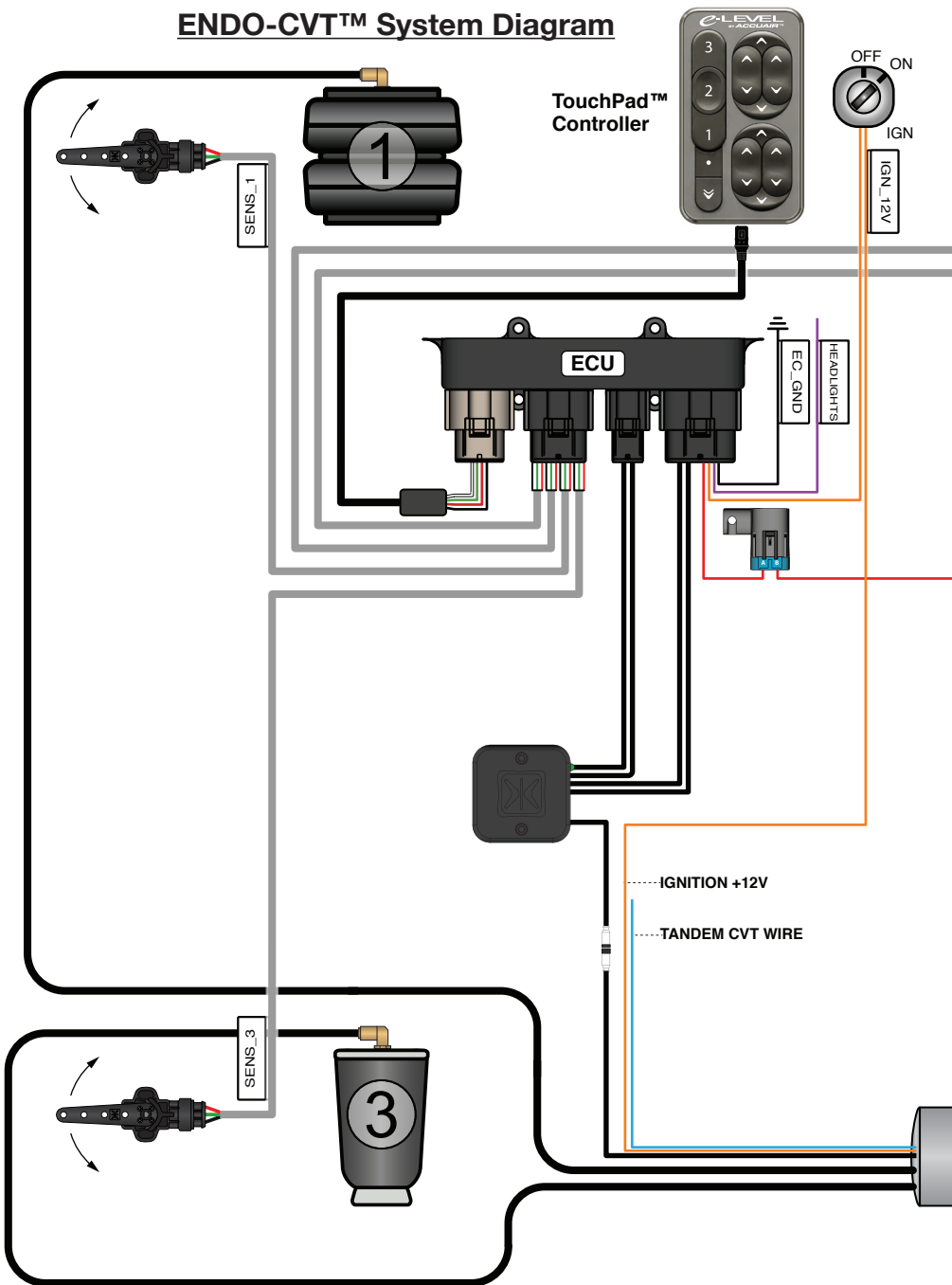
Height Sensor
Installation

Setup Programming

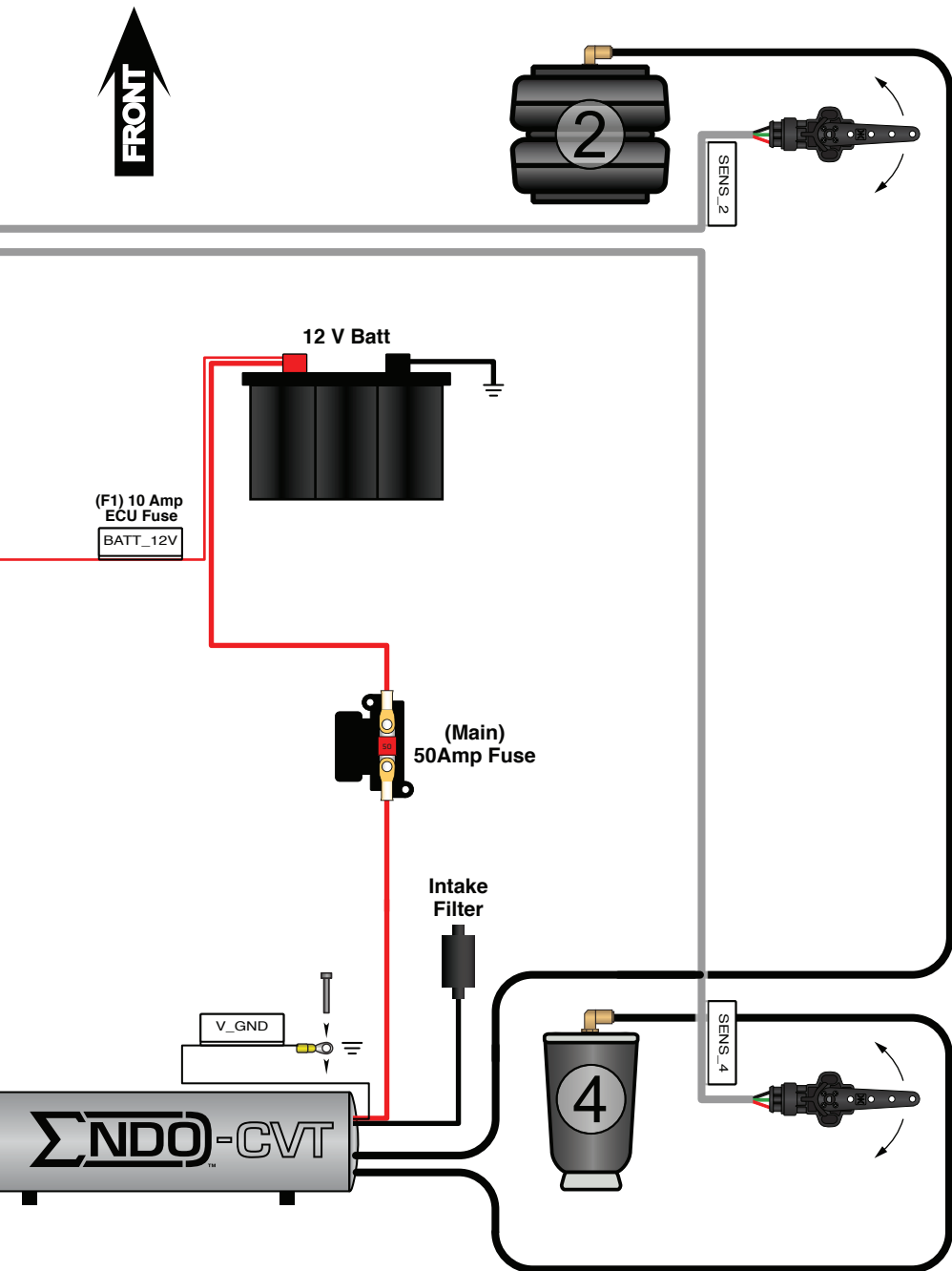
Mounting Templates

MANUAL FOR OTHER ORIENTATION / SETUP EXAMPLES.

ENDO-CVT™ System Diagram



***PLEASE REFER TO YOUR ENDO INSTRUCTION MA**



Terms & Conditions
Install Overview

System Diagram

Mounting & Wiring
Installation

Test Mechanical &
Electrical Hookup

Height Sensor
Installation

Setup Programming

Mounting Templates

MANUAL FOR OTHER ORIENTATION / SETUP EXAMPLES.

- Page 11 -

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VU4 (Valve Unit) Mounting:

Valve Mounting Considerations

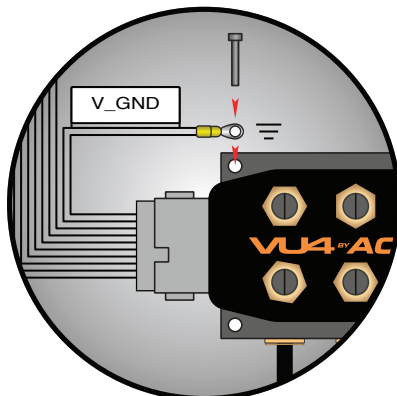
- These valves are 100% weather-proof and can be mounted under vehicle.
- You will need to mount the ECU near the valves, so make sure that there is enough space for both items.



Step-by-Step

- 1.) Find a flat location to mount the VU4. This should allow enough room for the airlines to be inserted without too much bending.
- 2.) Transfer hole pattern from the **VU4 Mounting Template** on page 27.
- 3.) Drill holes with a 3/16" drill bit and bolt the VU4 down with the included #10-24 Allen head cap screws.
- 4.) Place the ground eyelet from the VU4 wiring harness under one of the cap-screws and make sure that this screw has good contact to chassis ground. (Remove paint or coatings to expose bare metal)
- 5.) You may use this same location to place the ECU ground, so do not tighten yet.

Ground Eyelet Installation



Wire Color Description

When using other MFG's valves:



1.) Up 4	—	—	—	White/Black
2.) Up 3	—	—	—	White/Orange
3.) Up 2	—	—	—	White/Purple
4.) Up 1	—	—	—	White
5.) Down 4	—	—	—	White/Gray
6.) Down 3	—	—	—	White/Green
7.) Down 2	—	—	—	White/Brown
8.) Down 1	—	—	—	White/Blue

ECU Mounting:

ECU Mounting Considerations

- The ECU is 100% weather-proof and can be mounted under vehicle next to the valves.
- The ECU can be mounted upright or on its back as seen below.
(If back mounted, back tabs must be removed)
- The following diagrams illustrate both “Standard” and “Optional” mounting configurations.

Bottom Mounting (Standard):

See ECU Mounting Template on page 31.



Back Mounting (Optional):

See ECU Mounting Template on page 33.



Step-by-Step

- 1.) Find a flat location near the VU4 (Valve Unit) to mount the ECU.
- 2.) Plug-In the Valve Harness while finding the mounting position to make sure that it reaches.
- 3.) Transfer hole pattern from the ***ECU Mounting Template*** on pages 31-33.
- 4.) Drill holes with a 3/16” drill bit and bolt the ECU down with the included #10-32 Allen head cap screws.



***For optional mounting,
remove back tabs with
diagonal cutters and a file.***



Pressure Sensor Mounting:

Tank Pressure Sensor Mounting Considerations

- Mount the Pressure Sensor either vertically or horizontally, but never with the threads aiming upward in order to avoid moisture build up in the sensor.
- Mount the Sensor close to the ECU to connect the pre-terminated sensor harness that is part of the Main ECU Harness.

Example 1:
Pressure Sensor Mounting.
(On Endcap)



WARNING: e-Level™ System is NOT compatible with any other Pressure Sensor or Switch.

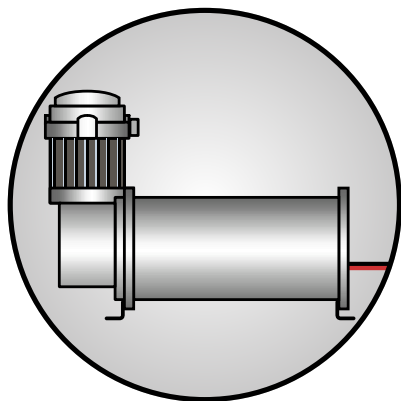
Step-By-Step

- 1.) Coat the threads of the Sensor and any threaded fitting or adapter used in the air supply system with a thread sealer to help prevent air leaks. We recommend a liquid thread sealer for best results but Teflon tape will work also. We strongly recommend an Anaerobic Thread Sealer such as **Loctite's (P/N: 565)**
- 2.) After tightening the sensor wipe off the excess thread sealer.

Installing & Wiring Air Compressor(s):

Air Compressor(s) Mounting Considerations

- There should be a fuse in between the Compressor(s) and the battery.
- The Compressor(s) get very **HOT** during operation. Make sure to leave space between items that are susceptible to heat. (Wires, Nylon-Air Line, etc.)



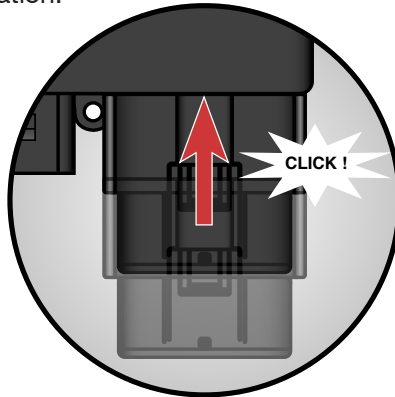
Step-By-Step

- 1.) Find a location for the Compressor(s) to be mounted with good air circulation.
- 2.) Transfer the hole pattern of the Compressor using the Air Compressor as your template.
- 3.) Drill holes and bolt the Air Compressor(s) down.
- 4.) Install the Power Wire to the vehicle battery (12v+) with an inline fuse (30amps per Compressor) that is included with your Compressor(s) near the vehicle battery (12v+).
- 5.) Install the Compressor Relay inline with the Compressor's power line.
- 6.) Install the Ground Wire to vehicle/chassis ground (Make sure to remove any rust or paint to ensure a thorough ground).

Install Wiring Harnesses:

Wiring Harness Installation Considerations

- The plugs that connect to the ECU will only fit in the correct orientation. Do not force the connectors into the wrong mating connector.
- Make sure to press all connectors on firmly until an audible “click” sound can be heard from the lock.
- Route all wiring away from exhaust or other hi-temp areas.
- Use Rubber Grommets for areas where sharp metal could eventually wear through the wire insulation.



*See System Diagram
on pages 6-9.*

Step-By-Step

•ECU Main Harness

- 1.) First connect the Main Harness at the ECU then route each section to each component on the vehicle.
- 2.) Route the Touchpad™ harness (Mini USB Cable) to the inside of the vehicle and leave until later in installation. Route the single purple wire labeled “HEADLIGHTS” to a 12V source in the vehicle Headlight Switch. Check the manufacturer’s specs for a 12V Headlight source inside the vehicle (You can also use a 12V wire from the closest marker light instead of running it to the Headlight Switch inside the vehicle). This will allow the TouchPad™ Controller’s backlighting to dim automatically when the headlights are on.
- 3.) Route the single orange wire labeled “IGN_12V” to an ignition source.
- 4.) Route the 3-wire Tank Pressure Sensor sub harness (green, red, and black wires) labeled “P_SENS” to the sensor.
- 5.) Route the single yellow wire labeled “COMP_1” with a 3 Amp fuse to trigger the Compressor Relay(s).
- 6.) Route the single red wire labeled “BATT_12V” with a 10 Amp fuse to the vehicle battery.
- 7.) Mount the single black wire labeled “EC_GND” with the VU4 ground.

TouchPad™ Controller Mounting:

TouchPad™ Controller Mounting

- Choose a mounting location that will allow the driver to operate and view the TouchPad™ Controller from the driver's seat. Once your target mounting position has been found, use the template to drill mounting holes.

NOTE: *See Mounting Template on page 35.*



Testing Wiring & Mechanical Components:

Now that the majority of your system components are installed, plumbed, and wired (Mechanical Air Suspension Components, Compressor(s), Tank(s), Tank Pressure Sensor, Valves, Air Line, ECU, and TouchPad™ Controller), it is time to test the system and begin the height sensor installation.

NOTE: *This process can be done manually with jacks or electronically using the following instructions.*



To Begin Testing The System:

Turn the vehicle Ignition ON, or start the vehicle. (You will need to be charging your electrical system either by running the vehicle or by using a high amperage battery charger). The Air Compressor(s) will turn ON and begin filling the Tank(s). Wait until the system reaches max pressure and turns the Air Compressor(s) OFF. This process can take from 1-8 minutes depending on the size of your Compressor(s) and Tank(s).

As you consume air pressure by raising the vehicle, the Air Compressor(s) will automatically turn ON when necessary.

This is a good time to do some mechanical system checking:

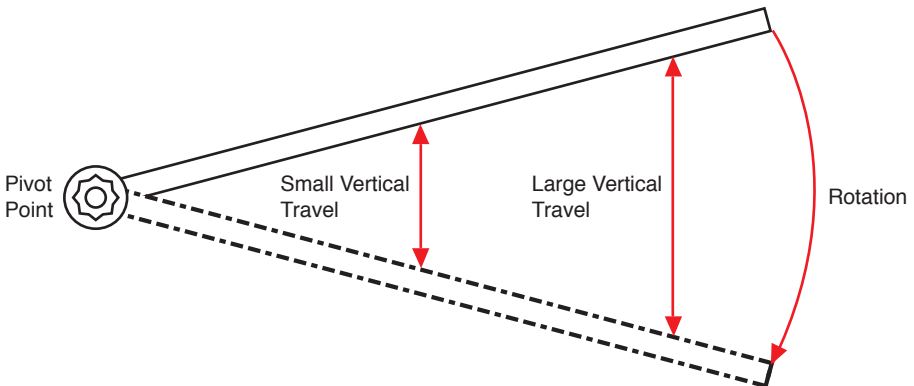
Look for mechanical interference throughout the range of travel for the Air Springs and all moving suspension components.

Test for air leaks at all fittings and pipe threaded joints using a soapy spray bottle. To fix any air leaks first lower the Air Springs, then turn the Ignition OFF and depressurize the Air Storage Tank(s).

Basic Height Sensor Installation:

⚠ DANGER: Sensor installation requires viewing suspension movement from underneath the vehicle. This process must be done on a lift with ramps for safety. Do not attempt to get under the vehicle while it is on the ground or on jack stands for this process!!!

Understanding suspension movement is the key to sensor mounting. The term “vertical travel” means the amount of up and down distance that a point on a suspension arm moves as it rotates. Realize that there is no “vertical travel” at the arm’s pivot point. If you mount a sensor very close to a pivot point it will barely travel at all. If you mount a sensor too far out on an arm, it will travel too far and damage the sensor. See the following diagram for an illustration of this theory:





Basic Height Sensor Installation:

Arm Positions:

This all-new re-designed adjustable travel height sensor simplifies installation by allowing you to select your desired travel setting during installation. Measuring, locating & installing the height sensor will depend on your cars suspension (full compression & full extension). Please review and follow the step-by-step instructions to successfully install the height sensor.

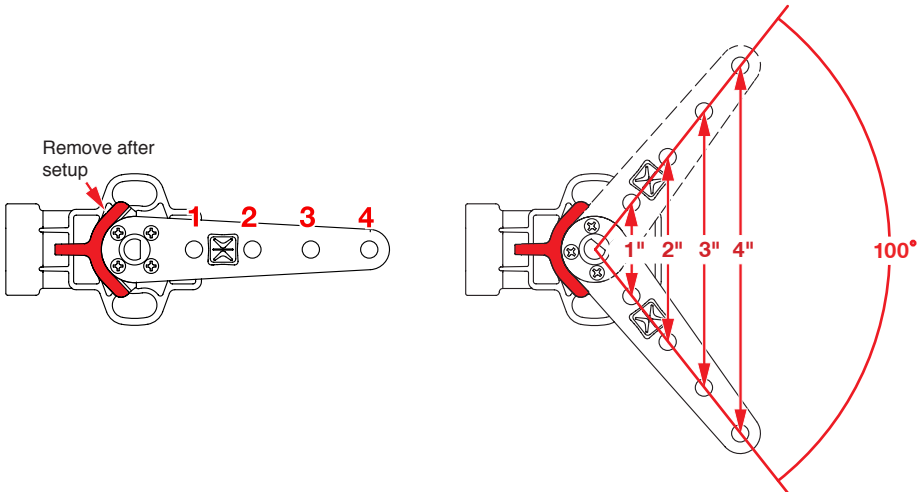
NOTE: *Use hole #3 if you are retrofitting from the old style sensor.*

Hole #1 = For suspension travel of 0.5" to 0.99"

Hole #2 = For suspension travel of 1.0" to 1.99"

Hole #3 = For suspension travel of 2.0" to 2.99"

Hole #4 = For suspension travel of 3.0" to 3.99"

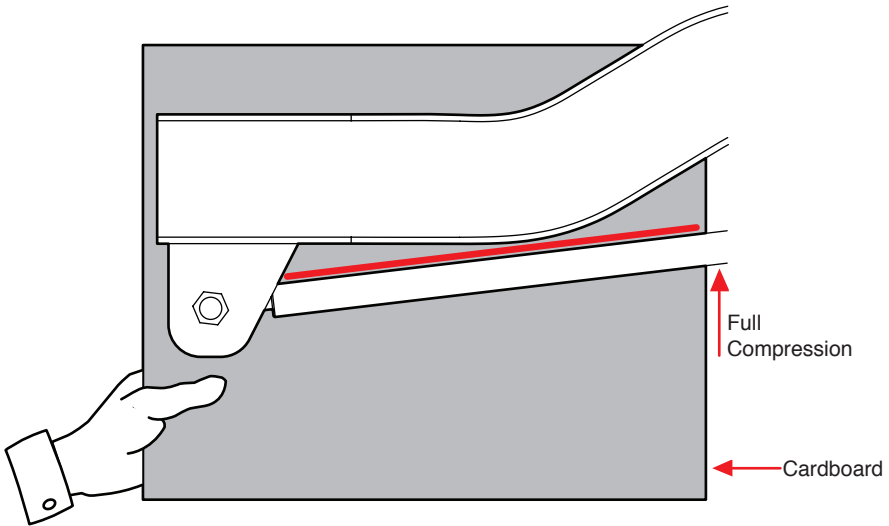


Basic Height Sensor Installation:

Measuring Suspension Travel:

- Measure the total vehicle suspension travel to determine the best possible location to mount the height sensor.
- Cut a large enough piece of cardboard to measure total suspension travel at full compression and full extension.

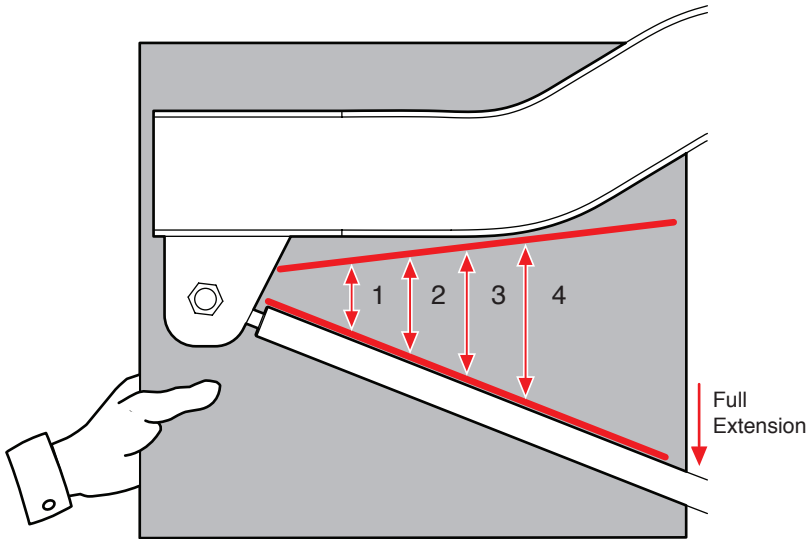
NOTE: *Remove wheels and tires before starting installation in order to achieve maximum travel. Disconnect the air line from the air spring so there is no pressure in the air spring during this process.*



Step-by-Step:

- 1.) Clamp the cardboard to the frame where you will be able to mark both full compression and full extension of the suspension travel.
- 2.) Secure your jack under the center of the axle and cycle the suspension to full compression. Trace a line along the suspension link arm to mark where the suspension is fully compressed and label it "Full Compression".

Basic Height Sensor Installation:

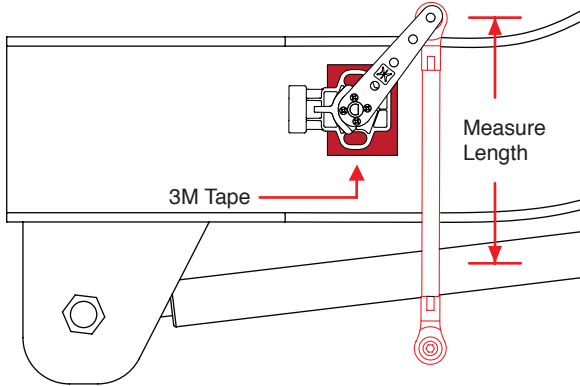


- 3.) Cycle the suspension to full extension and trace a line along the suspension link arm, in the same place as step 2, to mark where the suspension is fully extended and label it "Full Extension".
- 4.) Measure the distance between the two lines and trace a vertical line at 1", 2", 3", and 4" on the cardboard and label them 1, 2, 3, and 4.
- 5.) Determining which mounting hole on the height sensor arm to use depends on how much suspension travel the vehicle has. For 1" of travel use hole #1, for 2" of travel use hole #2, for 3" of travel use #3, and for 4" of travel use #4. When choosing which mounting hole to use make sure that the linkage won't bind or damage the sensor and is vertical to the suspension linkage.

Basic Height Sensor Installation:

Mounting Sensor Rod:

- Determine where to mount the sensor linkage to the suspension arm.
- Attach the sensor linkage to the suspension arm.



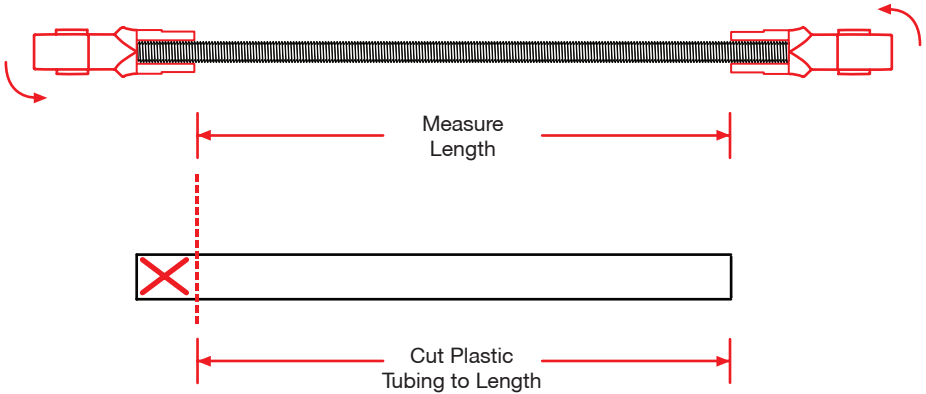
Step-by-Step:

- 6.) When choosing which mounting hole on the sensor to use, make sure that the linkage won't bind or damage the sensor and is vertical to the suspension linkage.

NOTE: We understand that using exactly 100 degrees of travel is not possible, so make it travel less then 100 degrees rather than more.

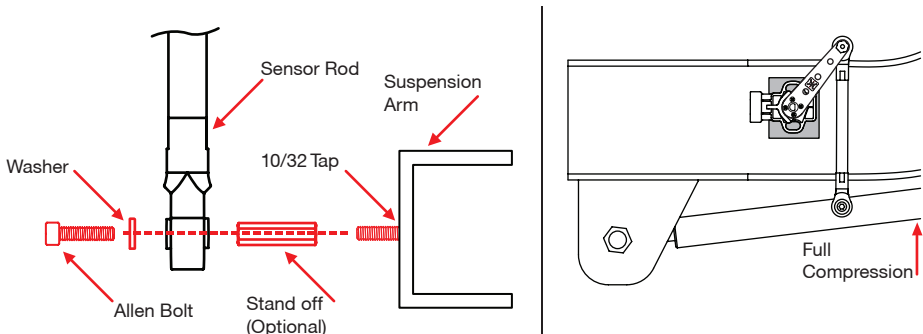
- 7.) Attach the linkage to the chosen mounting hole on the sensor with the supplied hardware.
- 8.) Using 3M Tape to temporarily attach the height sensor to the frame rail to determine where to mount the sensor linkage to the suspension arm.
- 9.) With the sensor linkage installed on the sensor arm and the vehicle at the bottom of the travel (full compression), hold the sensor apparatus up as if it were attached to the suspension arm. Determine if you will need to shorten the linkage. If not continue to step 11.

Basic Height Sensor Installation:



- 10.) If so unscrew the endlinks and cut the threaded rod, make sure to restart the threads cleanly. Then cut the plastic tubing 1" shorter than your new total rod length (you want 1/2" worth of thread engagement on each end).

NOTE: Make sure to restart the threads cleanly.



- 11.) Once the sensor linkage is cut to the correct length, cycle the suspension to full compression and to the top of the sensor travel. Mark the suspension arm where the sensor linkage meets it vertically. This is where the sensor linkage will mount to the suspension arm.

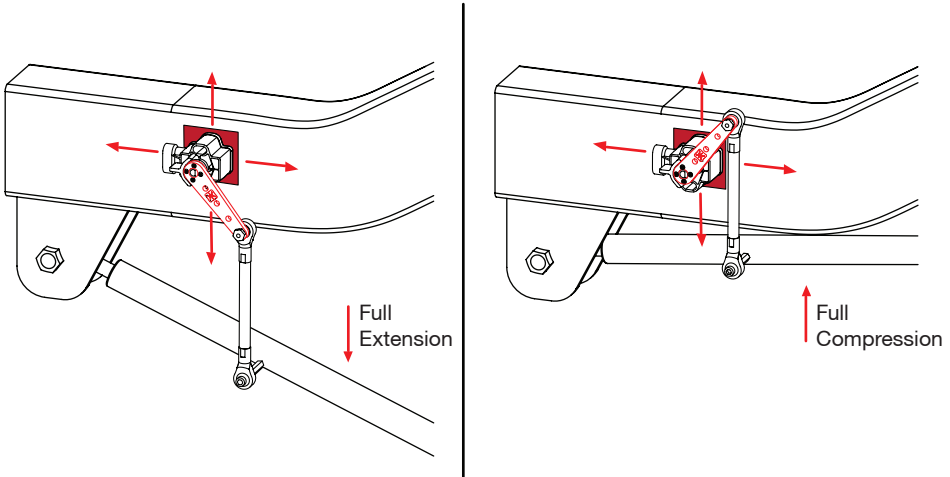
- 12.) Drill a hole with a 5/32 or #10 drill bit and tap the hole with a 10/32 tap and bolt the endlink to the suspension arm with supplied mounting hardware.

NOTE: The end links do not need to be tight on the rod because once installed the rod ends are designed to prevent them from rotating loose.

Basic Height Sensor Installation:

Locating the Sensor Body:

- Finding the correct position for mounting the height sensor.



Step-by-Step:

- 13.) With the linkage bolted together and to the suspension arm, cycle the suspension from full extension (the bottom of its travel) to full compression (the top of its travel) to make sure that the sensor touches the setup guide at both ends and there are no clearance issues.

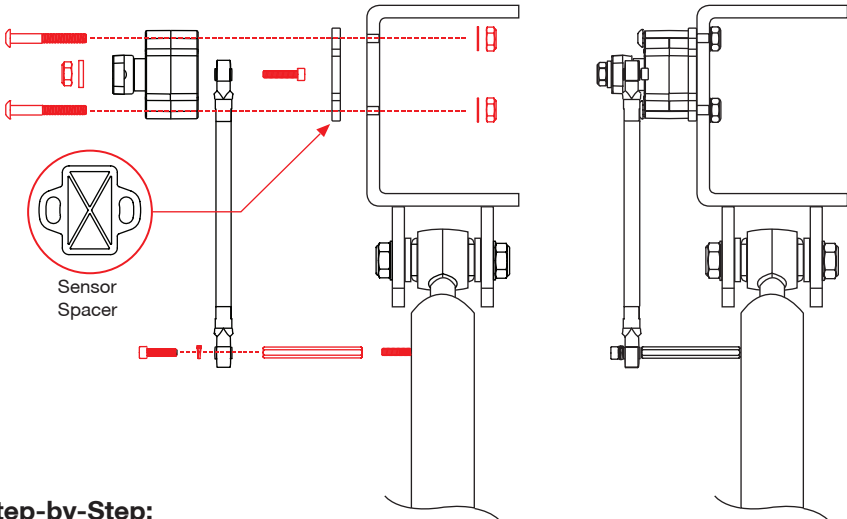
NOTE: *If the sensor arm wants to go past the setup guide or there is binding while cycling the suspension, adjust the sensor body's position slightly until it moves freely throughout its total travel.*

- 14.) Use this final sensor location to mark the two mounting holes to be drilled through the frame, repeat step 13 to make sure that the sensor moves freely throughout its total travel and adjust the linkage if necessary.

Basic Height Sensor Installation:

Final Steps:

- Now attach the height sensor to the suspension.

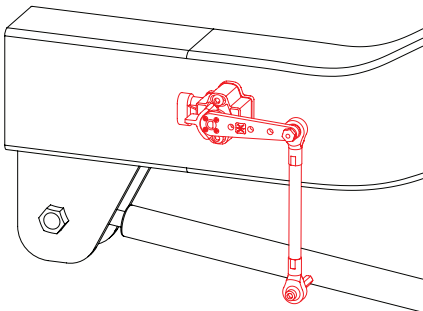


Step-by-Step:

- 15.) Remove the 3M Tape and the sensor and make sure it's out of the way before drilling the mounting holes. Drill the marked holes using a 5/32 or #10 drill bit and install the sensor using the supplied mounting hardware. **(BE CAREFUL NOT TO OVER TIGHTEN!)**

NOTE: If the frame is boxed or doesn't have enough room to access the other side, tap the holes using a 10/32 tap.

- 16.) Use the given sensor mounting spacer to provide adequate clearance for the harness connector.

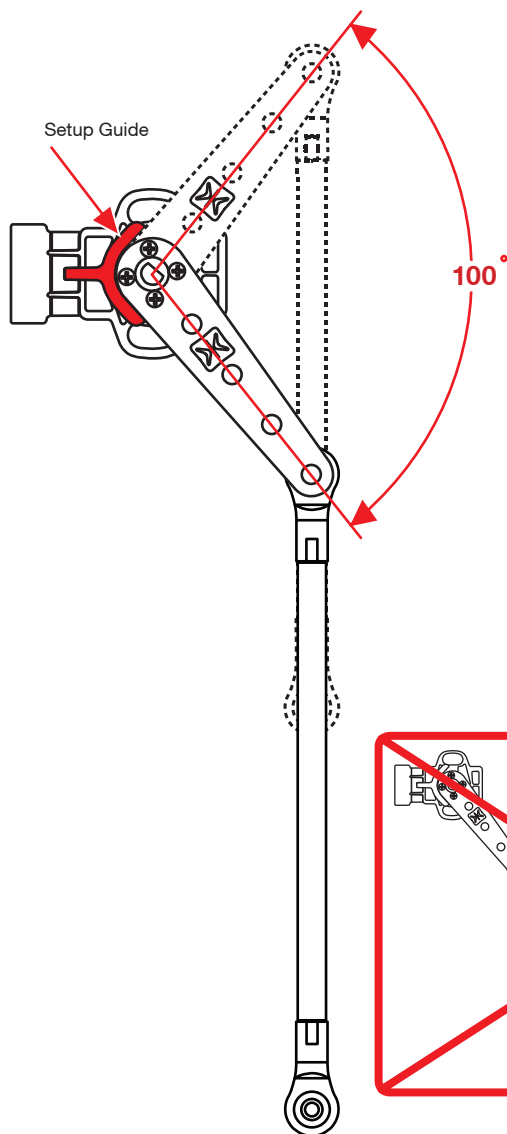


- 17.) Repeat step 13 to make sure that the sensor moves freely throughout its total travel and adjust the linkage if necessary.

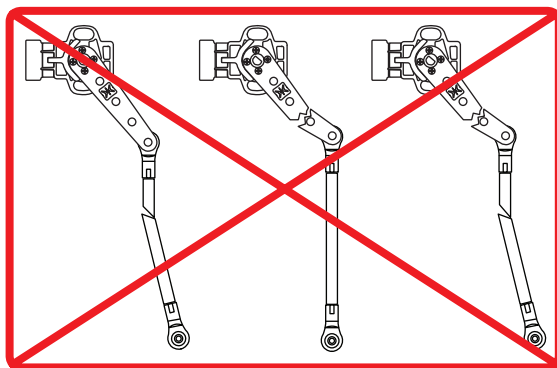
- 18.) Repeat these steps to mount the height sensor on the other side of the vehicle.



WARNING: Over extension or over compression will damage the sensor and or the linkage.



Under/Over Extension



Terms & Conditions
Install Overview

System Diagram

Mounting & Wiring
Installation

Test Mechanical &
Electrical Hookup

Height Sensor
Installation

Setup Programming

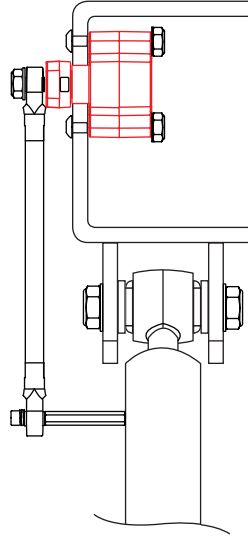
Mounting Templates

Advance Height Sensor Installation:

Advanced Sensor Mounting:

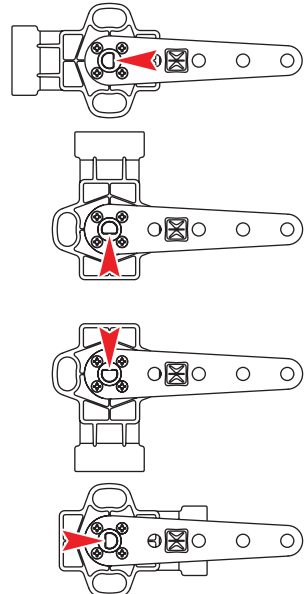
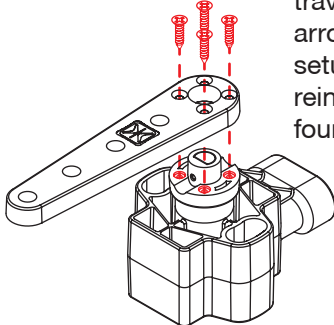
Face Mounting: This method allows you to hide the sensor body in the frame. For this you will need 3/4" drill bit to make the hole for the sensor shaft.

- 1.) Measure between the bolt holes of the sensor body and find the center.
- 2.) Mark the center on the frame and drill out the 3/4" hole.
- 3.) Remove the sensor arm via the four screws.
- 4.) Align the sensor with the corresponding holes in the frame and bolt everything together.

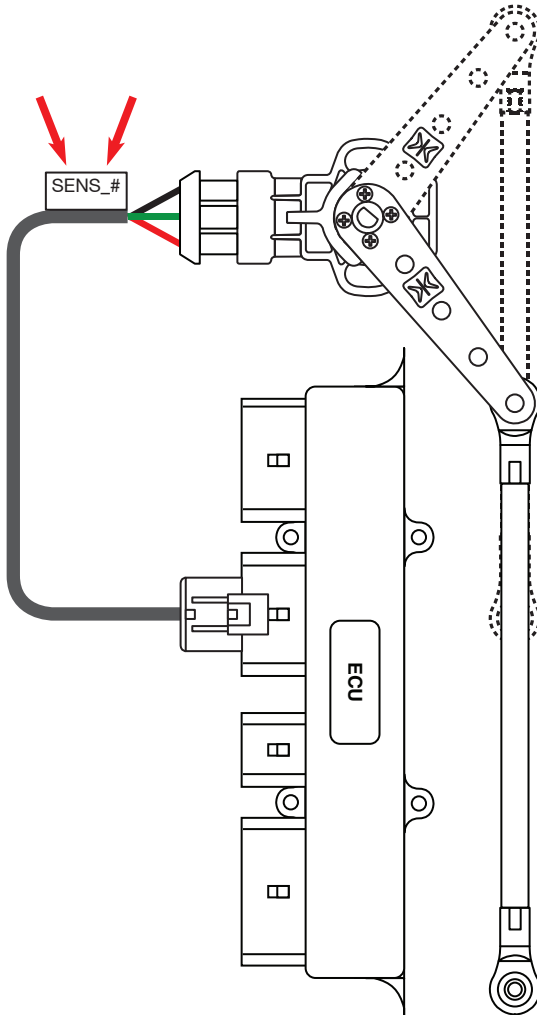


Arm Re-clocking:

It may be convenient for some installations to re-orient the location of the sensor connector with respect to the sensor arm when clearance is limited for the connector. The sensor arm can be re-clocked to one of four different orientations by removing the (4) arm screws as shown below. It is critical that the flat spot on the shaft always points away from the sensor connector when the arm is at the center of travel as shown by the arrows to the right. The setup guide can also be reinstalled in any of these four orientations.



⚠ NOTE: It is **EXTREMELY** important to wire the Ride-Height Sensors correctly. Identify the number label on each sensor cable and route it to the correct corner of the car based on the system diagram in the front of this manual.

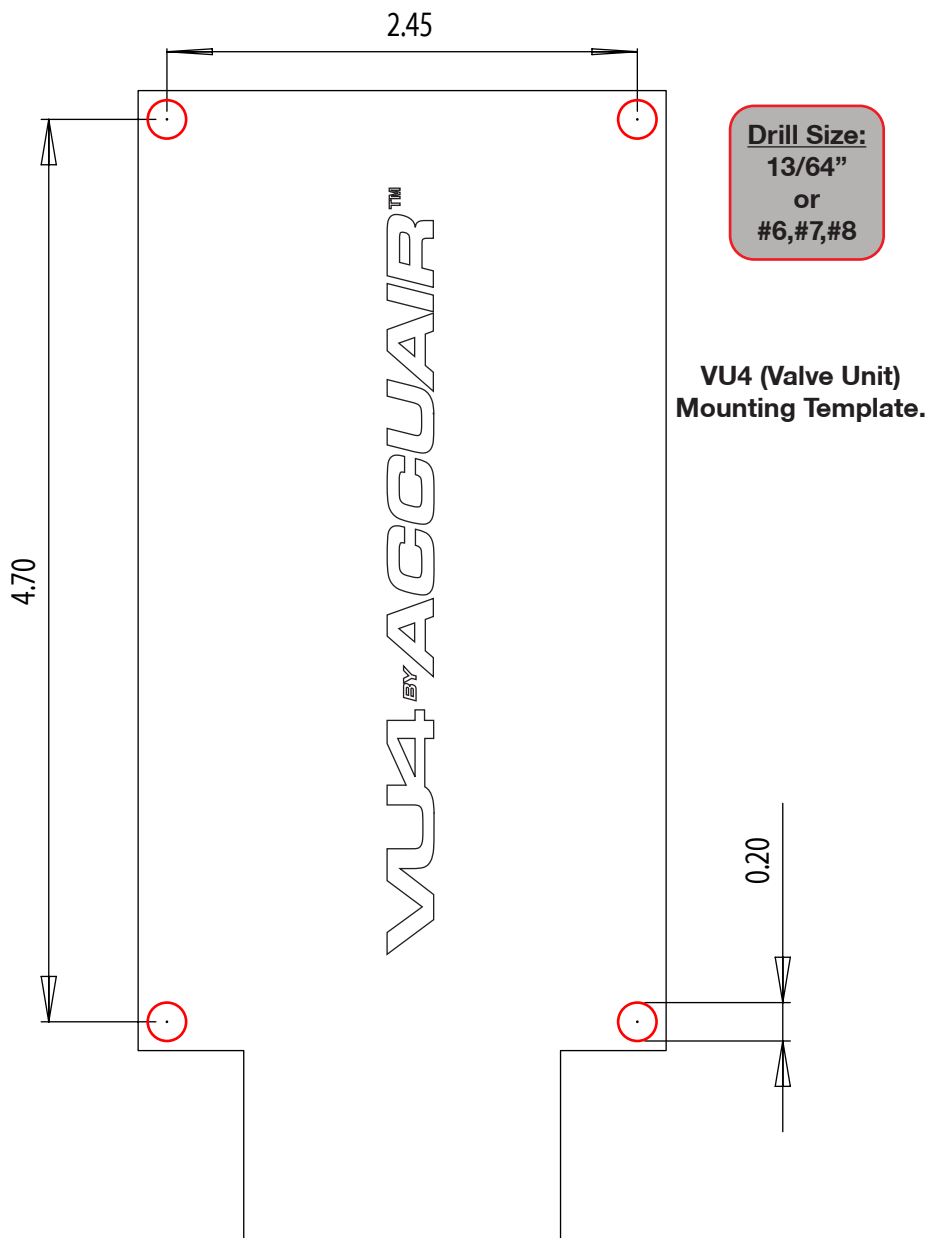


Setup Programming:

System Calibration

The system must be calibrated before use. Refer to your OPERATION MANUAL for the System Calibration Procedure on page 9.

Mounting Templates:



Terms & Conditions
Install Overview

System Diagram

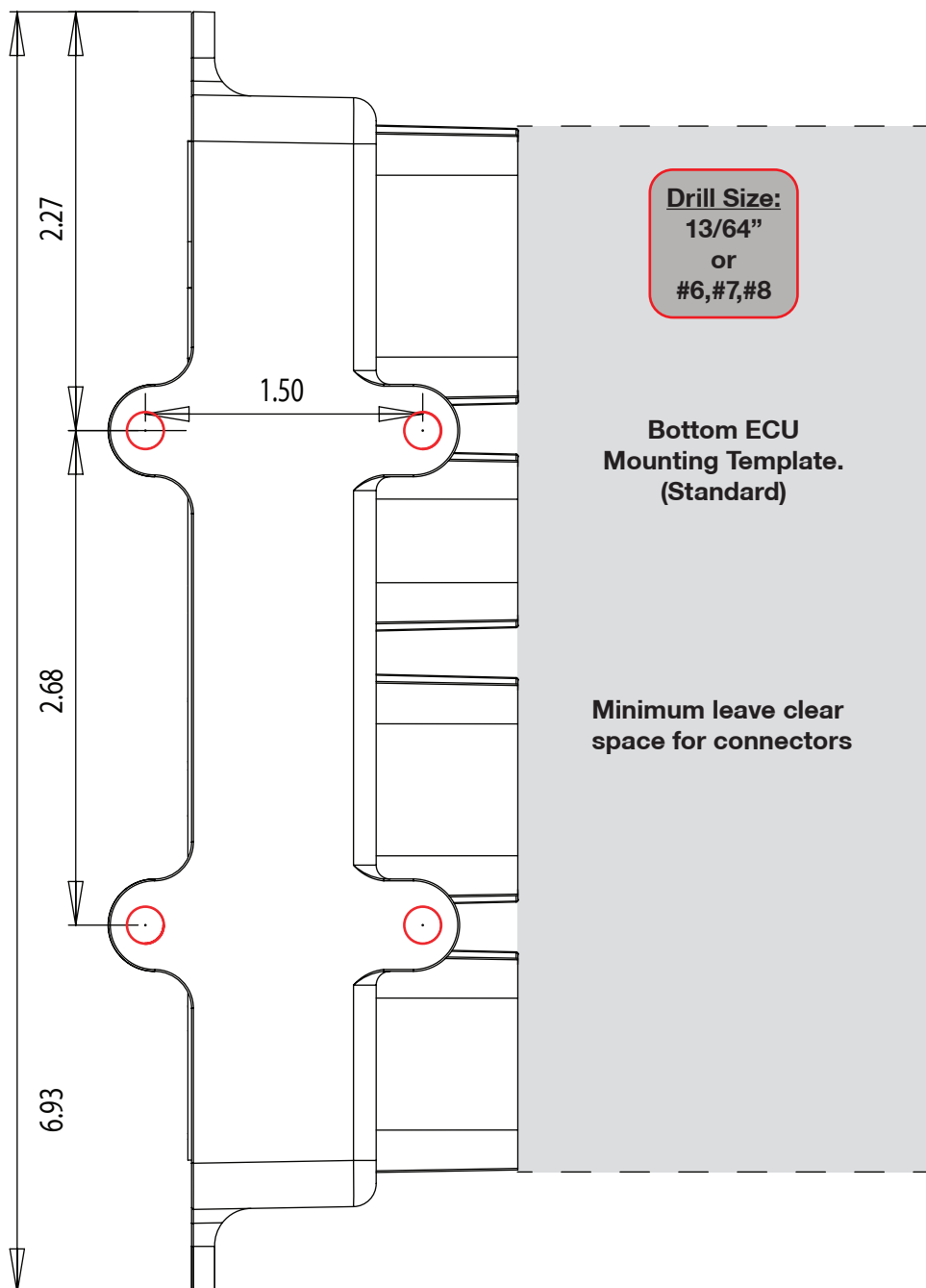
Mounting & Wiring
Installation

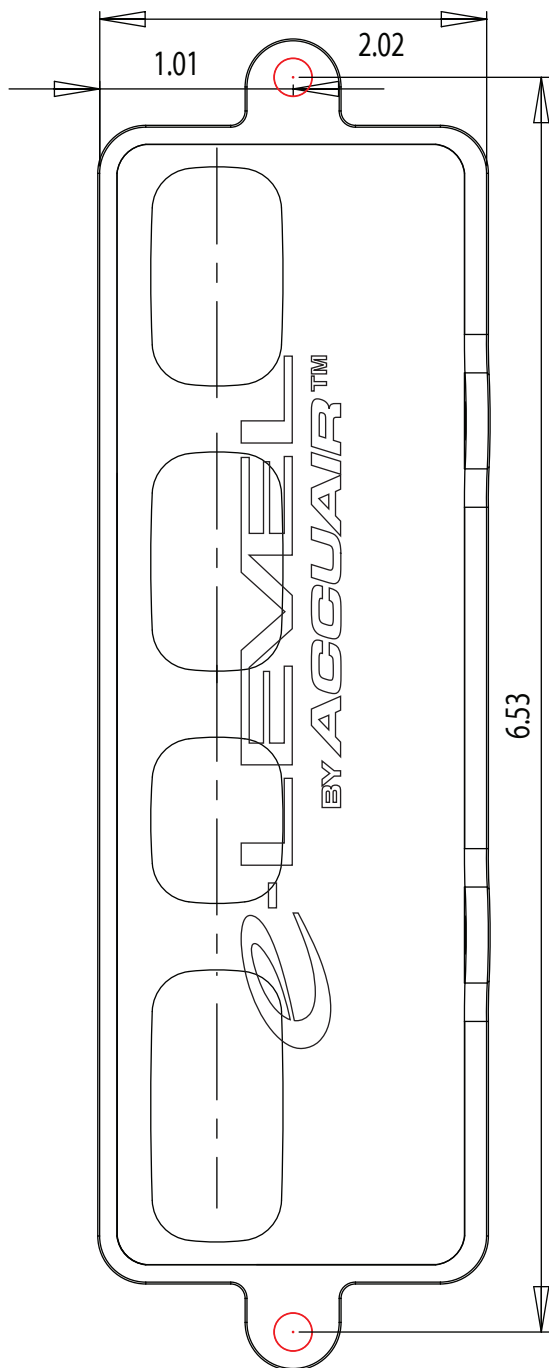
Test Mechanical &
Electrical Hookup

Height Sensor
Installation

Setup Programming

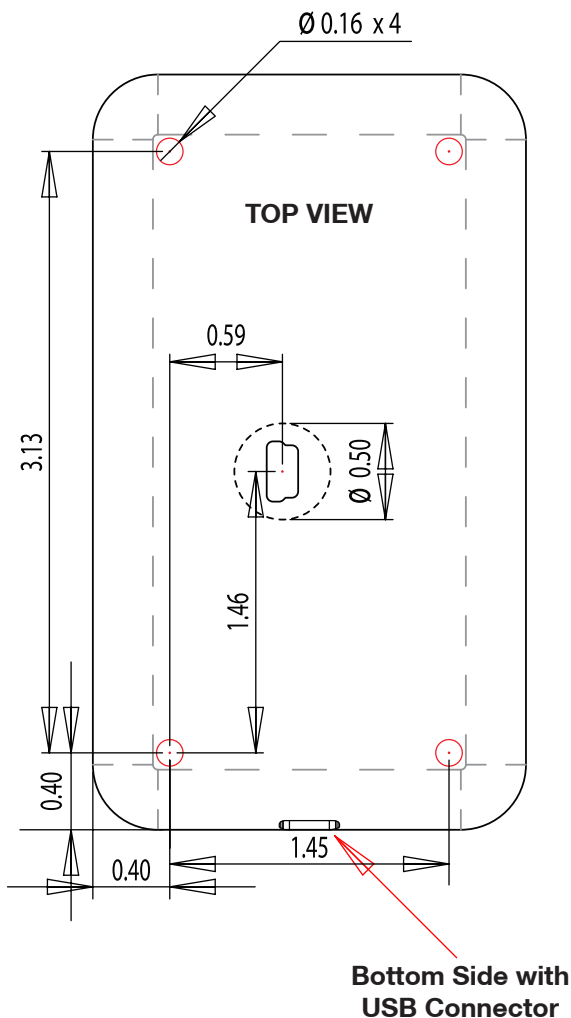
Mounting Templates





Drill Size:
13/64"
or
#6,#7,#8

**Rear ECU
Mounting Template.
(Optional)**



Drill Size:
5/32"

**TouchPad™
Mounting Template.**



TM

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