

# VEI Systems Installation Instructions

## V1-BHEP-Mx – Hi-Resolution Vacuum-Boost Monitor (PSI scale)

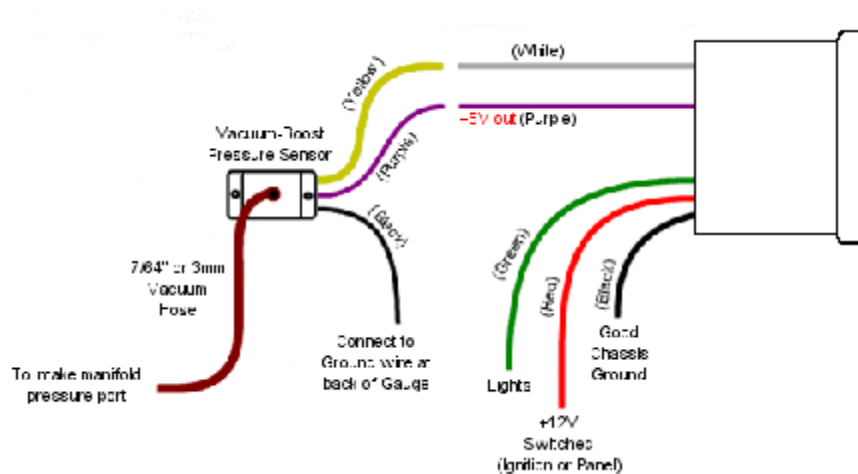
Please read these instructions completely before beginning installation to ensure that you have the tools and skills necessary for installation and operation of this instrument. If you are not sure that you can perform the installation safely, then consult a qualified installer. Further instructions available at [www.VEISystems.com/technical.html](http://www.VEISystems.com/technical.html).

### MOUNTING

Install the unit through the front of the mounting hole in the dash pod or panel. If you are making a custom dash panel, you will need to drill a 2-1/16" hole (52mm). Slide the clamp onto the 2 studs on the back of the instrument. Secure with the 2 thumb-nuts. Use a small drop of threadlocker or nail polish on the thumb-nuts to prevent them from loosening under vibration.

### WIRING

The wires should be connected as below using crimp-on butt connectors, or soldered and sealed with heat-shrink tubing. Before connecting any wires, you should either disconnect the battery power, or carefully connect the wires in the order shown. If not, you may damage the instrument. Use an existing fuse in the fuse panel, or an external fuse to supply power to the instrument. The V1 series instruments use an average of 105mA of current, and a maximum of about 175mA, so ensure the fuse is sized appropriately. For a typical 6- or 7-gauge setup, a single 5 Amp fuse is good.



- BLACK -- connect to a solid chassis ground under the dashboard, or directly to the battery. You may need to expose the metal connection point under the dash by scraping or lightly sanding it. A ring terminal and a screw should work well in most cases.
- RED -- connect this to a source of **switched** +12V power. This will usually be found at or near the ignition switch, and will usually have a relay wired through the ignition switch. An alternate source of this is a switched power line from a nearby light or accessory (radio, etc). If you are unsure that the wire can supply the power required for the instrument, then use an external relay.
- GREEN -- connect this wire to the positive line (+12V) from the headlight switch. Alternatively, if setting up a racing-mode display, this can be connected to a separate mode switch (12V or 0V signal).
- WHITE -- connect this wire to the yellow wire on the vacuum-boost sensor.
- PURPLE -- connect this wire to the purple wire on the vacuum-boost sensor. Be careful not to let this wire touch any other wire or ground as this could cause damage to the gauge. NOTE: the purple wire on the gauge must NOT be connect to anything other than the +5V source on the gauge, as any other voltage would damage the sensor.

## OPERATION

The Vacuum & Boost Gauge will show positive numbers and a **clockwise** bargraph for boost pressure, and negative numbers and a **counter-clockwise** bargraph for vacuum. Press and hold the button for a few seconds to change the mode. Press and release quickly (tap the button) to change the setting in any mode. Modes are as follows:

MODE	DISPLAY	SETTINGS
Normal	(Vac/Boost)	Tap the button during this normal display mode to display (flash) the peak boost level achieved. Both the numeric and bargraph peaks will be reset.
Set bargraph scale	S . 10	Sets the positive (boost) scale of the bargraph to 12, 24, 36, 48 or 60 PSI. This does not affect numeric resolution/scale.
Peak mode	P.On / P.Of	On / off (bargraph shows peak recorded boost, until vacuum condition occurs again or until reset).
Numeric peak time	Pt . 1	Sets how long the peak value will be flased on the display from ~1 to 5 seconds.
Boost resolution	r . 1 . 0	Sets the numeric display resolution to 1.0 PSI, 0.5 PSI or 0.1 PSI. This does not affect bargraph resolution/scale.
Startup test	t . On / t . Of	Enables/disables the startup display sweep/test. This is shown on power-up as all numeric digits on and the bargraph will sweep from left to right and back.
Brightness Regular	Br . 9	Last digit shows regular brightness level from 1 to 9.
Brightness park-lights on	BP . 1	Last digit shows brightness level with lights on from 1 to 9.

## RESETTING THE AMBIENT REFERENCE

To be able to provide positive (boost) and negative (vacuum) pressure measurements, the boost gauge needs to know the ambient air pressure level. Although this is set at the factory, the ambient pressure may be different at the usage location, or in different climates. You will notice the effects of this as a non-zero reading when the engine is off and the pressure in the intake manifold or vacuum line has had enough time to bleed back to ambient. This reference pressure level can be reset (re-calibrated) by using the following procedure:

- Turn the engine off, and the ignition key off so that the gauge is powered off.
- Allow some time for the pressure in the manifold to bleed off, or temporarily disconnect the vacuum line to the boost gauge.
- Press and hold the button on the front of the vacuum-boost gauge.
- Turn the ignition key on (do not start the vehicle).
- The display should read “End” and show alternating LEDs on the bargraph on.
- You can release the switch now.
- Turn the key off.
- The reference level has been re-calibrated. Remember to re-connect the vacuum line if you disconnected it.

## WARRANTY & LIABILITY

Neither VEI Systems, nor its dealers or agents shall be liable in any way, for any damage, loss, injury or other claims, resulting from the installation or use of this product. By purchasing or installing this product, you assume all liability of any kind connected with the use and/or application of this product. If you are unsure that you can safely install and use this product, consult a qualified installer or mechanic. The warranty on this product covers only the product itself for a period of 1 year from the date of purchase, and it will be at our discretion to repair or replace the affected parts. No user serviceable parts inside. Warranty void if product enclosure opened.