

VEI Systems Installation Instructions

V1-BHVP-Mx – Integrated Hi-Resolution Vacuum-Boost plus Valentine One™ Remote/Concealed Display (internal sensor version)

V1-BHVEP-Mx – Integrated Hi-Resolution Vacuum-Boost plus Valentine One™ Remote/Concealed Display (external sensor version)

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.

FEATURES

This combination gauge is two single-function gauges in one – a vacuum-boost gauge that monitors engine intake manifold vacuum-boost pressure and an integrated Valentine-One™ remote/concealed display in a single housing. An automatic-switchover feature changes the display to radar mode when a radar signal is received with at least a specific strength (adjustable).

The vacuum-boost function displays negative values (vacuum) in inHg and positive values (boost) in PSI. The boost function has adjustable resolutions of 1-PSI, 0.5-PSI, or 0.1-PSI, and a numeric peak-recall function that flashes the highest boost recorded so far. Versions are available with an internal or external sensor.

The radar display function also allows for remote control of the radar detector to change mode and mute the volume.

The automatic switchover feature has an adjustable hold-time, or can be set to stay in radar display mode when it automatically switches over.

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. 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.

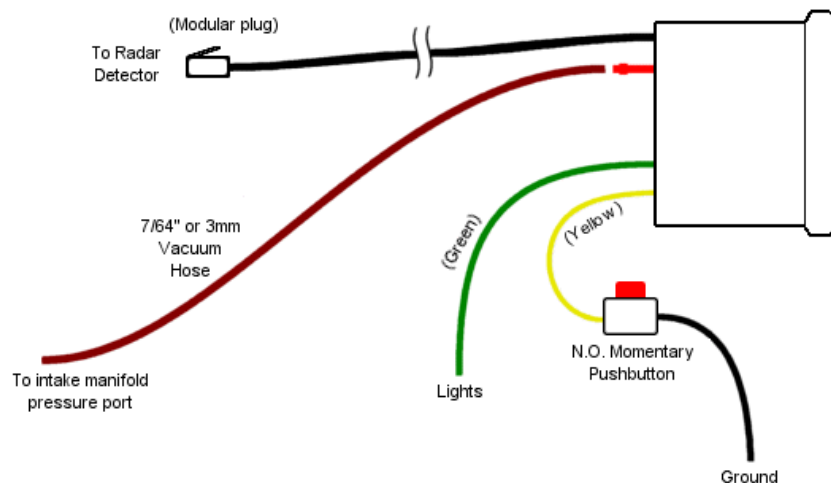
For the external-sensor version (V1-BHVEP-Mx), vacuum-boost pressure requires sensor SEN-P70B. Mount the sender behind the dash (preferred) or on a relatively cool part of the engine bay, such as in the ECU-box, behind a secondary firewall (if the vehicle has one) or behind a fenderwell. Make sure it will not come in contact with water or other fluids. Secure it to the mounting location with 2 screws (#6, #8 or M5) or attach with adhesive tape or velcro.

For the radar display, mount the Valentine One™ radar detector where desired, using the supplied accessory-outlet plug or hard-wire adapter.

WIRING

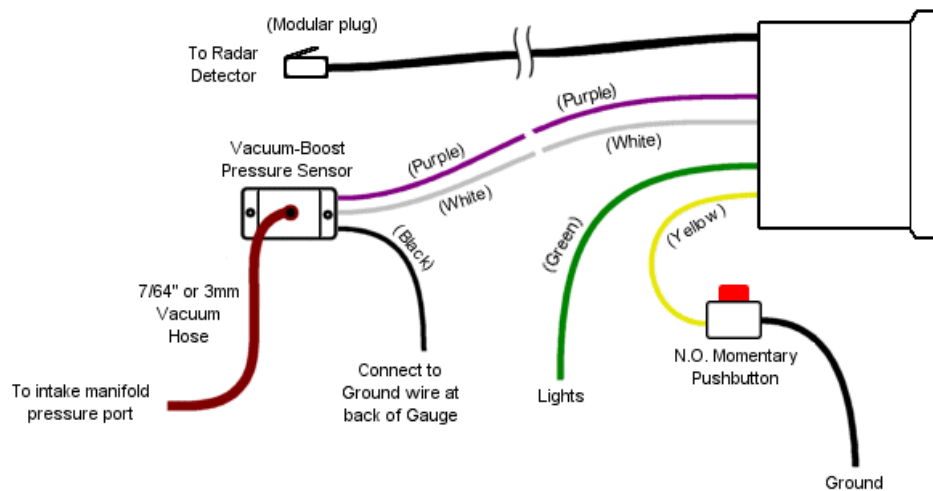
The wires should be connected as below using crimp-on butt-splice connectors, or soldered and sealed with heat-shrink tubing. Before connecting any wires, you should either disconnect the battery power, or carefully connect the wires in the order shown. If not, you may damage the instrument. Use an existing fuse in the fuse panel, or an external fuse to supply power to the instrument.

For the internal sensor version, wire the unit as follows:



- RJ-11 Plug– connect this to the remote-display port on the Valentine One™ radar detector, by simply pushing it into the jack until you hear it click. The remote jack is usually on the power adapter, although other arrangements are possible. See the Valentine One™ Owner's Manual or other appropriate documents for more information on appropriate connection positions. Be careful routing this wire behind the dashboard and other locations as the clip on the connector can get caught on other wires or other protrusions and break.
- If you need to extend the RJ-11 cable, you can use an RJ11 extension, available at most electronics/phone-equipment stores. You can also use an F-F RJ11 coupler, with an RJ11 to RJ11 cable of the appropriate length, but ensure that this arrangement does not swap the wiring order, and that it extends/couples all 4 wires in the connector.
- GREEN – connect this wire to the positive line (+12V) from the headlight switch. When this line receives a positive voltage, the gauge will use the “park-lights” brightness setting. Alternatively, if setting up a racing-mode display, this can be connected to a separate mode switch (12V or 0V signal).
- YELLOW – This is an optional remote-switch wire, that allows remote muting of the Valentine One™ radar detector in a safer location. Connect this to one side of a normally-open pushbutton switch, and connect the other side of the switch to ground. If this feature is not used, tape the wire up to prevent it touching anything.
- The sender is built into the vacuum-boost gauge, so you just need to run a length of 7/64” vacuum line from the gauge to the engine bay. A good vacuum source is the intake manifold itself – if you have a spare port on the intake manifold you can use that. If not, then use a barbed tee on a vacuum hose near the intake manifold. Avoid tapping a signal off the vacuum line that goes to the fuelpressure regulator. The two opposing sides of the tee should be sized to fit the hose you're taking the signal from, and the middle branch of the tee should be 1/8” barbed. Keep vacuum lines as short as possible, and wire tie all hose ends to prevent leaks or blowing off any hose under pressure.

For the external sensor version, wire the unit as follows:



- RJ-11 Plug– connect this to the remote-display port on the Valentine One™ radar detector, by simply pushing it into the jack until you hear it click. The remote jack is usually on the power adapter, although other arrangements are possible. See the Valentine One™ Owner's Manual or other appropriate documents for more information on appropriate connection positions. Be careful routing this wire behind the dashboard and other locations as the clip on the connector can get caught on other wires or other protrusions and break.
- If you need to extend the RJ-11 cable, you can use an RJ11 extension, available at most electronics/phone-equipment stores. You can also use an F-F RJ11 coupler, with an RJ11 to RJ11 cable of the appropriate length, but ensure that this arrangement does not swap the wiring order, and that it extends/couples all 4 wires in the connector.
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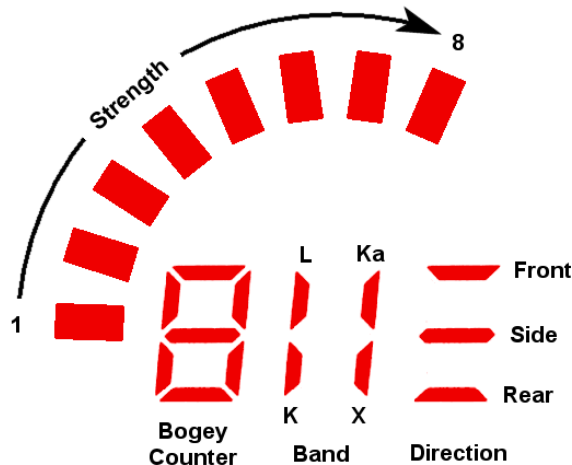
- PURPLE – Connect this to the purple wire on the vacuum-boost sensor (SEN-P70B). This provides +5V power to the sensor.
- White – Connect this to the white wire (or yellow) on the vacuum-boost sensor (SEN-P70B). This is the signal input from the sensor to the gauge.
- BLACK (on sensor) – Connect this to ground, preferably to the same location that the Valentine One™ radar detector is grounded.

OPERATION

As with our other gauges, press and hold the button on the gauge (or remote-wired switch) for a few seconds to change the mode. Press and release quickly (tap the button) to change the setting in any mode. This gauge however has one other button-pressing mode – in (regular) run-mode, press and hold the button and within a second the display will fast-flash either “rdr” or “bst” indicating it can switchover to radar or vacuum-boost display modes if you release the button quickly (while “rdr” or “bst” is still fast-flashing on th display). Instead however, if you keep holding the button down, the gauge will switch to the next mode (first setting mode). Modes are as follows:

MODE	DISPLAY	SETTINGS
(Run mode)	(Vac-boost pressure or radar display)	If vacuum-boost is currently displayed, tap the button to flash the peak boost level and reset it. If radar is currently displayed, tap the button to mute the radar detector. Press and hold for a second until “rdr” or “bst” fast-flashes, and release immediately to switch current display to radar or vacuum-boost respectively.
Radar control	rc.A	Tap to change the radar detector mode (equivalent functionality to pressing the button on the radar detector).
Auto-switchover level	rL.2	Sets the auto-switchover threshold level (corresponds to the Valentine One™ signal-strength indicator bars (from 1 to 8). This can also be used to display auto-switchover.
Auto-switchover time	rt.1	Sets the temporary radar display switchover time from instant to approx 60 seconds in 10-second increments. Note that the temporary hold time is the time after the signal drops below the auto-switchover threshold level. This can also be set to stay in radar display mode once it switches over, shown with a dash on the rightmost display position (rt.-).
Bargraph scale	ScL / 12	Sets the boost bargraph scale in increments of 12 PSI or displays the bargraph.
Bargraph peak feature	P.On	Enables or disables the bargraph peak feature. The peak value is reset when the button is tapped while vacuum-boost is being displayed.
Numeric peak time	Pt.3	Sets the numeric peak flash time in seconds (approximate).
Boost resolution	ReS / 0.5	Sets the boost resolution to either 0.1-PSI, 0.5-PSI, or 1.0-PSI.
Display sweep / test	t.On	Enables or disables the startup display sweep feature.
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.
Vac-boost sensor calibration	CAL / On	Enables or disables the calibration feature. When set to “On”, cycle power to the gauge off and back on, and the sensor calibration will be performed automatically. This takes a few seconds and shows “End” on the display when it's done. Cycle power to the gauge off and on again to return to regular operation.

In normal operation, when radar is currently displayed, the radar detector display elements are translated over to this instrument with the following format:



This arrangement was setup to match the Valentine One™ display as closely as possible...

- The strength meter is on the first 8 segments of the bargraph from left to right.
- The bogey counter is on the left numeric digit.
- The band indicators is shown with the middle numeric digit, with the positions shown.
- The right numeric digit shows the location of the radar signal(s). Only the segments shown are used.

With this arrangement, the display becomes very intuitive, and you'll probably only need to remember the locations of the band indicators. However, that will become intuitive after a bit of use with it.

When vacuum-boost is shown on the display, vacuum is shown with a negative bargraph (right to left), and boost with a positive bargraph (left to right).

NOTE: Sensor calibration is required for first-time use, and it is recommended when ambient air pressure changes significantly, such as when in an area of considerably different altitude. Calibration values are saved even if power to the gauge is completely removed (such as disconnecting the vehicle's battery).

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.