VEHICLE SPEED MONITOR

APEXS, INC.
Applied Expert Systems, Inc.

VEHICLE SPEED MONITOR

VSM V-COUNT II

INSTALLATION GUIDE

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VSM V-COUNT Vehicle Speed Sensor (VSS) Installation Guide

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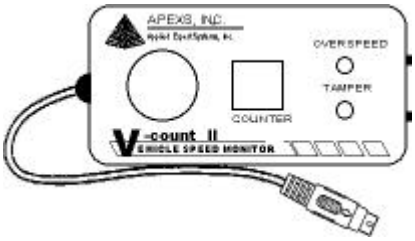
VSS Installation Guide

INTRODUCTION

The following instructions explain how to complete a Vehicle Speed Monitor (VSM) V-COUNT II VSS (Vehicle Speed Sensor) installation. VSS Installation is one of the two modes possible on the V-COUNT II Unit. Please see enclosed Installation Option Sheet.

COMPONENTS

The VSM V-COUNT II Unit (VSS Input) should come with all of the materials shown below. Please make sure you have all listed components before proceeding with the installation.



VSM V-Count II Unit

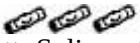
Wiring Harness Cable

Red +12V Wire with Fuseholder (18AWG)

Black Ground Wire (18AWG)

Whiter VSS Wire (18AWG)

Tie Wraps (5)



Butt Splices (3) (26-22AWG or 24-20AWG)

Fuses (2) (3AG 1-1/4 x 1/4", .25A, Slo-Blo)

In-Line Splice (2)

#8-10 Studs (3.5-5 mm.

Velcro Tape (2)

Tools and Materials Needed

The installation requires some or all the following tools and materials. Please make sure you have all necessary items before proceeding with the installation.

- Medium Philips Screwdriver
- Crimping Toll
- Pliers
- Electrical Drill with 2.5mm (7/64") Drill Bit
- Fuse Tap
- Multimeter (optional)

INSTALLATION

The instructions contained in the following sections provide guidelines for installation of the VSM V-COUNT II.

Planning the Installation

The Installation is similar to installing a vehicle stereo or vehicle alarm. The V-COUNT II requires three electrical inputs; +12 V, vehicle ground, and your vehicle's VSS signal. The steps required to install the V-COUNT II are:

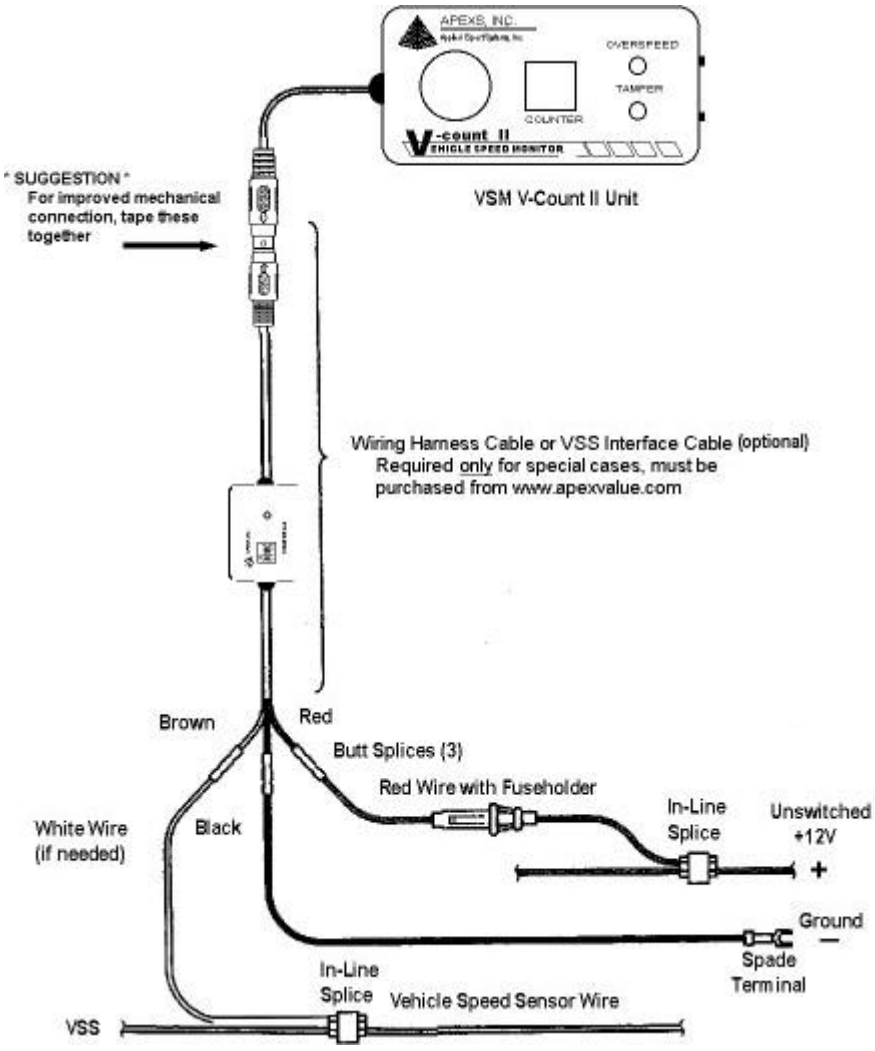
1. **Determine where to mount the V-COUNT II unit.**
2. **Locate and tap your VSS wire.**
3. **Locate and tap power (+12V from battery) and ground.**
4. **Connect the VSS Interface cable to the 3 main tap wires.**
5. **Mount the V-COUNT II in the vehicle.**
6. **Connect the V-COUNT II and go for a testdrive.**

***WARNING**:*

Installing the VSM V-COUNT II can be hazardous to both the installer and your vehicle's electrical system if not done by an experienced professional. This manual assumes you are aware of the inherent dangers of working in and around a vehicle and have a working understanding of electricity.

Wiring Diagram

The diagram below provides an overall picture of the VSM-COUNT II VSS installation.



Step 1: Determine where to mount the VSM V-COUNT monitor

Knowing where you are going to mount the VSM V-COUNT unit can help you make wiring decisions later on. For example, if your V-COUNT is near the fuse box it will be convenient to get un-switched +12V using a fuse tap connector. However, if your V-COUNT unit is on the other side of the vehicle it may be easier to find a lamp circuit, If the position of the unit is not critical, you may wish to move to the next step, and decide where to mount it after you've tapped the three main electrical connections (+12V, Ground, VSS)

NOTE: *If you need ideas about where the display might be mounted, look at "Step6: Mount the VSM V-COUNT unit in the Vehicle" on page 8.*

Step 2: Locate and tap your VSS wire

Contact the Maintenance/Service Department of the dealer from which the vehicle was purchased. The mechanic will have documentation indicating location of the VSS. This signal is connected to the speedometer. The V-COUNT VSS wire is be connected to the same signal. This connection will not prevent operation of the speedometer.

VSS installation information is also available on the World Wide Web at www.rostra.com. Go to that web address and click on "Rostra VSS & Tach Information System". Enter the full year and manufacturer of the vehicle. The information will specify a "location number" indicating where the wire can be found, and it will specify the wire color.

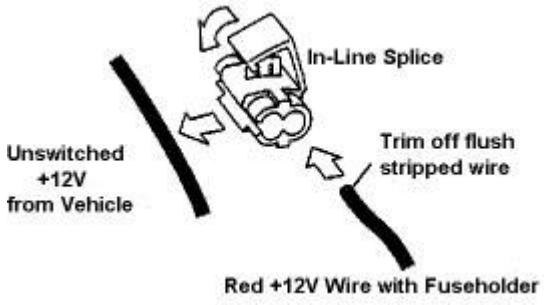
NOTE: *Some base model vehicles with manual transmission and no cruise control may not have a VSS module installed. Also, Vehicles manufactured before 1992 may not have VSS signal. Consult the service department if your vehicle has a cable driven speedometer, it may be possible for you to purchase a VSS pulse converter that can be installed to provide the VSS pulse.*

Use the inline splice to make the connection to the VSS wire as shown below. Select In-Line Splices to fit your VSS wire.

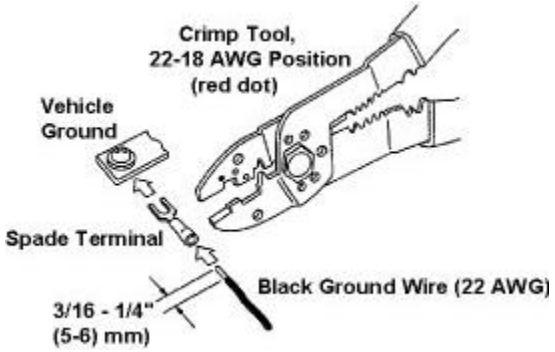
Step 3: Locate and tap power (+12) and ground

The VSM V-COUNT II requires a constant (un-switched) +12 volts and has a negligible drain (10 ma) on the battery. You can obtain the +12V from several different places. Generally, you can easily obtain +12V from the fuse box using a fuse tap connector (not supplied) or the supplied in-line splice connectors to tap into a KNOWN circuit that does not involve safety related equipments (headlights, tail lights, air bag, etc.). Possible candidate wires include those from the cigarette lighter, dome light, glove compartment light, clock, tailgate light, or other convenience functions.

After locating +12V, connect it to the red +12V wire (the one with the fuse holder) using the in-line splice as shown below. Do not install the fuse into the fuse holder until instructed to do so in step 4.



If you are getting +12V from your fuse box, use a tap connector appropriate for your vehicle. A ground can be made by inserting the spade terminal under the head of the screw threaded into the vehicle chassis and then crimping the spade terminal onto the black ground wire, as shown below. Check that the screw is actually grounded using a multimeter before making the connection.

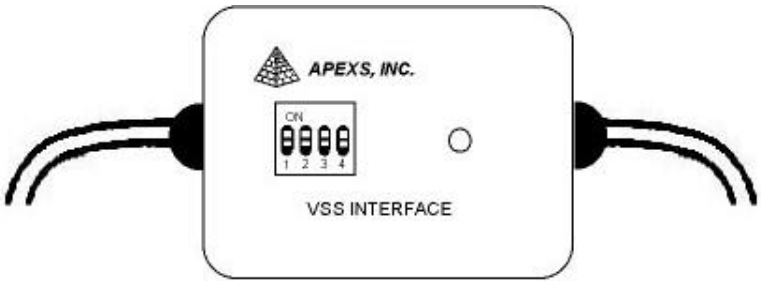


Step4: Connect the VSS Interface Cable to the three (3) Main Tap Wires

Use the butt splice to connect the VSS Interface circuit input wires to your three main tap wires (+12V, Ground, VSS) by matching the wire colors. Red is used for +12V, black for the ground wire, brown for the VSS wire. Make sure the wiring harness extends to where you can plug the VSM V-COUNT II unit into it. Once the harness cable is connected, install the fuse into the fuse holder in the red (+12) tap wire.

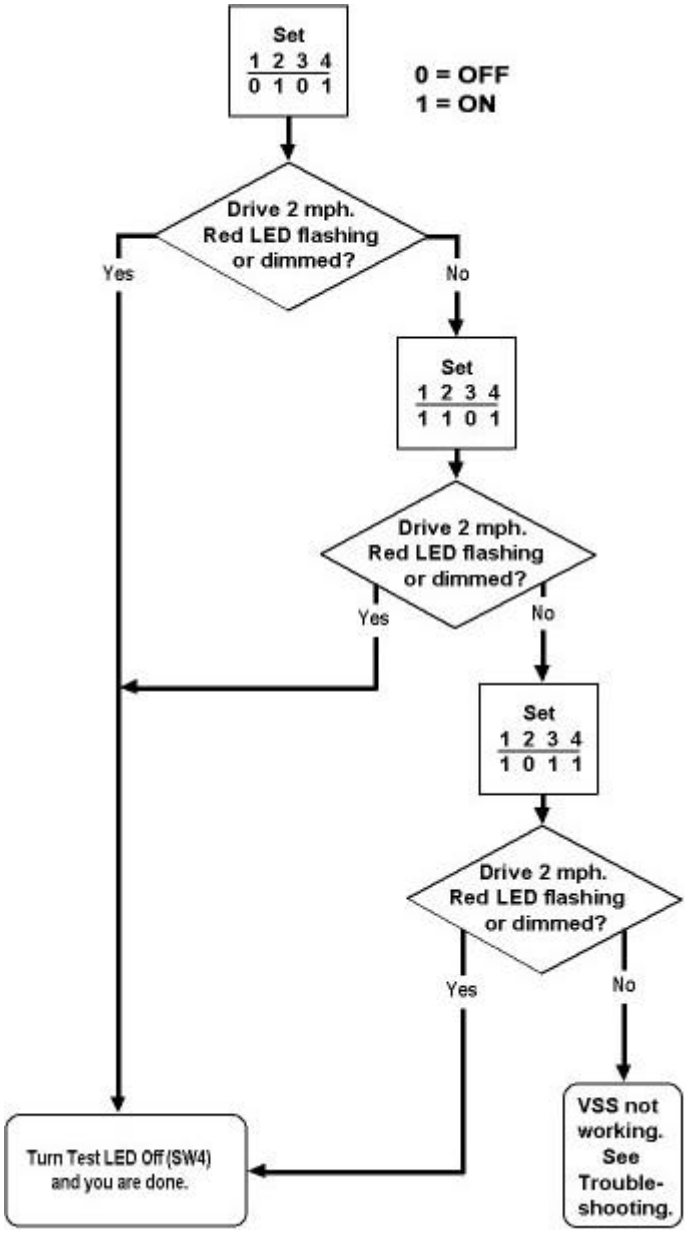
Step5: Choose the Correct Dip Switch Settings

Because not all VSS signals are the same, you may need to change the default dip switch settings on the VSS in -line circuit. As a technical note, the switches have the following functions. Switch 1 is required if your VSS signal is a square wave which does not go to ground, Switch 2 AC couples the signal in and is used for sine wave VSS signals. Switch 3 improves the sensitivity of the AC coupled signals. Switch 4 turns on the LED test circuit.



Use this flow chart to determine the optimum dip switch setting.

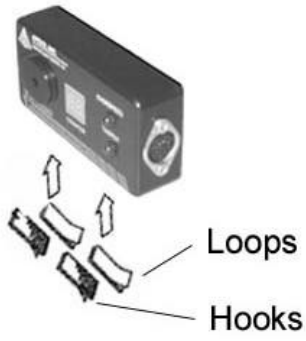
Note: *You will need to test drive the vehicle and observe the red test LED which is enabled using switch 4. 0 (zero means the switch is off and 1 means switch is on.*



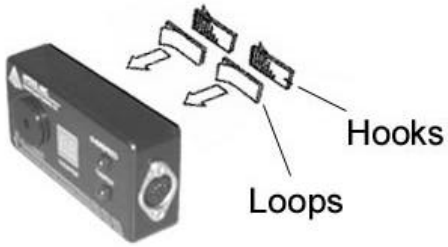
Step 6: Mount the VSM V-COUNT Unit in the Vehicle

The following illustrations show possible mounting options for the unit.

TOP OF DASHBOARD (Horizontal Surfaces)



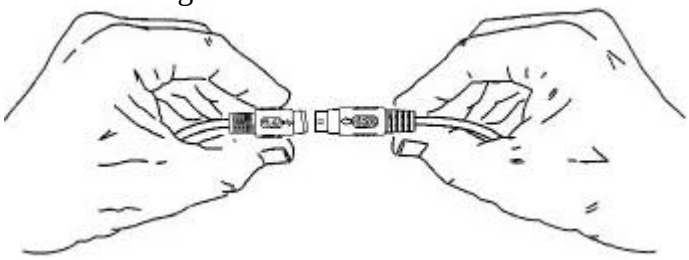
FACE OF DASHBOARD (Vertical Surfaces)



Step 7: Connect the VSM V-COUNT Unit and Go for a Test Drive

Connect the harness cable to the VSM V-COUNT unit cable as shown below. It is important to hold the cable as shown in order to achieve a secure connection. The connectors should be firmly pushed into place to make the connection.

NOTE:
For a more secure connection, we suggest tapping the two connectors together.



Once plugged in, the red TAMPER (LED) immediately will start flashing. This is NORMAL anytime the VSM V-COUNT has been disconnected from the power source of the vehicle for 5 minutes or more and re-connected. If the TAMPER (LED) remains off after connecting the V-COUNT, check both the +12V and ground connection.
It is also possible that the unit may alarm unexpectedly during an initial test drive, which can be caused by incorrect calibration along with the maximum speed being set. Consult the calibration section of the VSM V-COUNT User's Guide for the V-COUNT for instructions on calibrating the unit.

APPENDIX 1: TROUBLESHOOTING

If your VSM V-COUNT II is not responding the way we expected, consult the following checklist to help you identify the cause of the problem.

- **Make sure the unit has been calibrated correctly.**
  Check the calibration section of the VSM V-COUNT II unit User's manual
- **The switch setting on the VSS Interface circuit is not correct.**
  Go to step 5
- **Double check your power and ground connection using a multimeter.**
  The red TAMPER (LED) immediately will start flashing. This is NORMAL anytime the VSM V-COUNT has been disconnected from the power source for 5 minutes or more and re-connected.
- **Make sure the VSS wire is correct.**
  If the red test LED of the VSS Interface circuit does not flash at low speeds, you may not have the correct wire (switch 4 must be on to enable the test circuit). The following other method can be used to see if you have the correct wire.
  A voltmeter can be used on square wave signals to verify the 2 DC levels when the vehicle must be running and driven very slowly (about 2MPH/5KPH) to detect this change.
- **Check with your local vehicle dealership service/maintenance department to make sure the vehicles make and model is equipped with a VSS signal.**