Installation Instructions for the Classic Car Voltage Stabilizer (CCVS1)

Thank you for purchasing the CCVS1 classic car voltage stabilizer! The CCVS1 uses the latest semiconductor technology to provide your vehicle with a stable 10V supply for accurate gauge readings.

The CCVS1 is designed to replace both two and three terminal voltage stabilizers used on a large number of classic British cars manufactured in the 50’s, 60’s and 70’s.

Introduction
A vehicle’s supply voltage varies considerably depending on the state of charge of the battery, the engine speed and the loads, such as any lamps and motors, that are operating. The Fuel, Temperature and Oil gauges all work by measuring a voltage put out by a sender that responds to fuel level, water temperature or oil pressure respectively. Hence, any variation in the supply voltage will cause changes in the readings of the gauges. In order to overcome this problem, an attempt was made to stabilize the voltage supplied to the gauges using a rather crude method that was necessary before the availability of robust semiconductor devices.

A standard voltage stabilizer used in many classic vehicles is intended to regulate the voltage to the gauges at about 10 Volts. It does this by monitoring the input voltage and should it find it to be higher than 10 Volts, as it normally would be, then it temporarily removes the supply to the gauges. The gauges are so highly damped, that is slow in responding, that the voltage supply can be interrupted for a few seconds without noticeable effect. If the voltage stabilizer were accurate, which it is not, then it would ideally maintain an average voltage of about 10 Volts although in reality the gauges actually receive full voltage for some of the time and none for the balance. For example, if the car is running with a good battery at reasonable speed, a voltage of 13.0 Volts might well be seen at the regulator. The regulator should therefore switch off for a few seconds and then switch on again so that the on to off ratio is about 77%-23% and the average voltage the gauges see is 77% of 13.0 Volts = 10 Volts. Similarly, the stabilizer should respond to a 11.5 Volt input, say when the vehicle is stationary with the ignition on, by being on for about 87% of the time and off for the remainder. In reality, the regulator is both not very accurate, and results in the gauges cycling up and down as it switches on and off. This is particularly noticeable when the fuel gauge is reading toward empty.

By replacing this device with the CCVS1 which uses the latest semiconductor technology a stable 10v will be supplied to your gauges whatever your vehicles supply voltage.

Figures 1 and 2 above show typical stabilizers manufactured by Smiths.

The terminals of these devices are usually labelled as follows:

B - Battery/unregulated supply (Vehicles fused ignition switch supply).
I - Instrumentation (stabilized 10v supply).
E - Earth/Chassis Ground.

Similarly connection to the CCVS1 are shown in figure 3:

Please note the CCVS1 is designed for use with 12v negative earth vehicles.

Figure 1: Two terminal voltage stabilizer with mounting/earth tab from MGB.

Figure 2: Three terminal voltage stabilizer.

Figure 3: Connection to CCVS1

Figure 4 below shows a typical example of a voltage stabilizer circuit used in a classic car (in this case for a MGB). For other vehicles please refer to the manufacturers wiring diagram.
Installation

1. Before installation of your new stabilizer disconnect the vehicles battery.
2. Locate and disconnect your vehicles old stabilizer unit (noting the connection and colour of each wire). The stabilizer maybe mounted on the back of the dashboard, possibly the back of the speedometer or on the bulkhead/firewall.

Note: If in doubt consult your vehicles workshop manual and wiring diagram.

Two terminal Stabilizers:
This type of device has an earth connection via the mounting tab. The CCVS1 can be installed two ways:

3a. Connect the ring terminal adaptor lead to terminal ‘E’ and mount to the vehicle using original screw (ensure good clean contact between chassis and ring terminal). See figure 5.

3b. (Recommend method) Using a drill enlarge the hole in ‘E’ terminal and mount directly to the vehicle using original screw (ensure good clean contact between chassis and terminal). See figure 6.

4. Connect the vehicles fused ignition switched supply to terminal ‘B’.
5. Connect instrument supply (stabilized 10v) to terminal ‘I’.
6. Recheck all connections.
7. Reconnect battery.
8. Start engine and verify the instruments are reading correctly.

Three Terminal Stabilizers:

3. Connect the vehicles Earth/chassis ground to terminal ‘E’.
4. Connect the vehicles fused ignition switched supply to terminal ‘B’.
5. Connect instrument supply (stabilized 10v) to terminal ‘I’.
   (Note: Use the male/female adaptor lead if required).
6. Recheck all connections.
7. Reconnect battery.
8. Start engine and verify the instruments are reading correctly.

Fault Finding

No input voltage:
Do other function operate as normal (lights indicators etc).
No? Check Fuses.
Yes? Using a voltmeter or circuit tester, check the voltage at terminal ‘B’.
No? Using vehicles wiring diagram trace wiring back to connectors at fuse box.

No output voltage:
Using a voltmeter or circuit tester, check the voltage at terminal ‘I’ is 10v.
   No? Earth contact is bad and needs cleaning (use fine abrasive paper).
   Yes? Using vehicles wiring diagram trace wiring to instrument connectors.

Contacts
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