

# 73 Chevy C10 Ammeter to Volt Gauge Conversion

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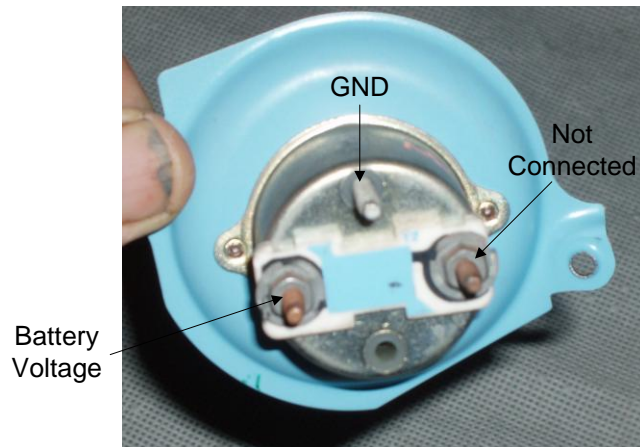
The ammeter in my son's 73 Chevy C10 did not work, so we decided to convert it to a more modern volt gauge.

We made a number of mistakes in the process before finding a very easy way to add the gauge. We'll list the mistakes at the end of the document so you don't have to repeat them.

Here is the before picture of the cluster with the ammeter:



You will need to find a newer replacement voltage gauge that will physically fit inside of the older cluster in place of the ammeter. We were told that '76-'90 clusters have volt gauges, so we made a trip to the local Pick-N-Pull to look for GM clusters. We found that '90 clusters are very different and that the '90 volt gauge will not fit. Then we found a '77 cluster with a voltage gauge that will fit.



The photo above shows the function of each stud on the volt gauge.

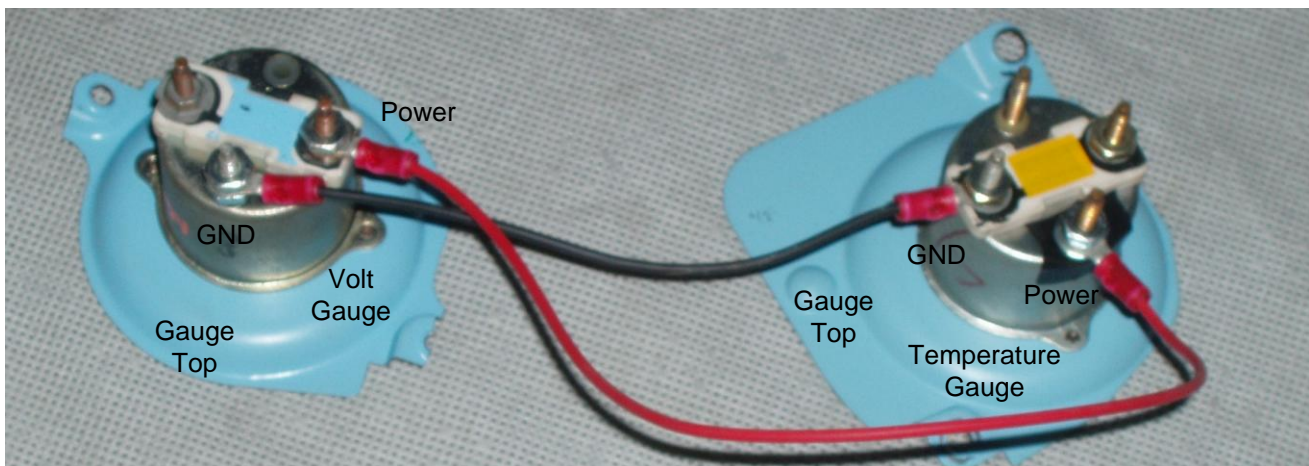
The ammeter socket in the gauge cluster has only two terminals:

Here is the before picture of the cluster with the ammeter and temperature gauge removed:



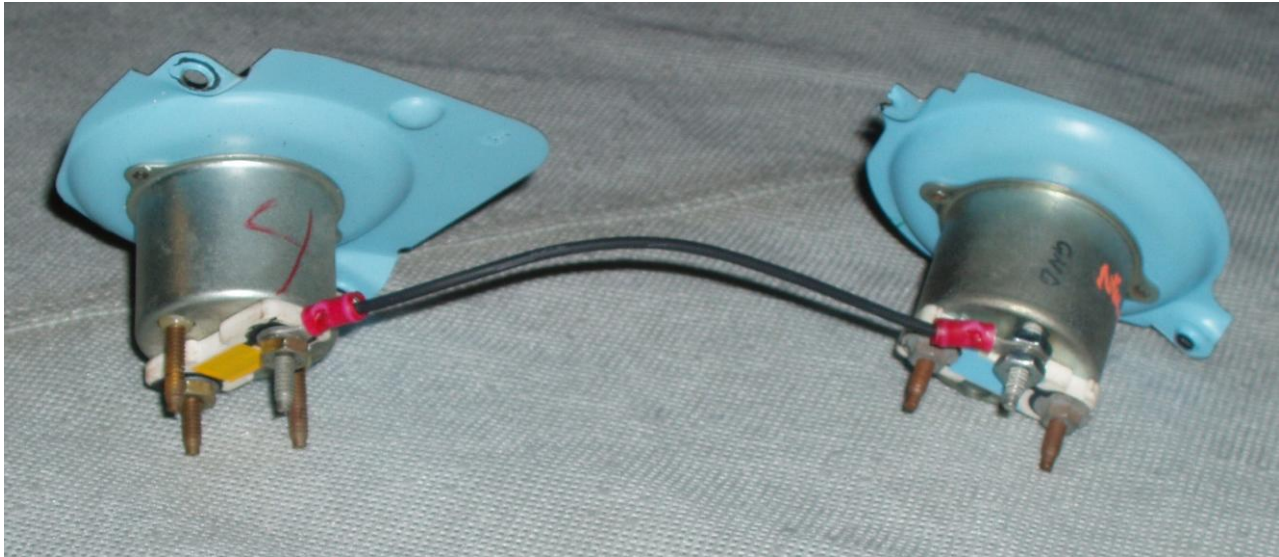
The studs on the back of the volt gauge we got from the junkyard were shorter than the studs on the ammeter it replaced. As a result, the volt gauge studs make intermittent contact with the ammeter terminals. This means that the voltmeter will not work reliably if you try to put switched battery voltage on one of the ammeter traces on the cluster. This also means that the ammeter terminals need to be isolated from the truck's always hot power circuit. Fortunately, it is very easy to do this. Simply remove both four-amp in-line fuses on the firewall in the engine compartment. This disconnects the ammeter terminals from the always hot ammeter power.

The challenge at this point is to get battery voltage and ground to the volt gauge. To do this, we made two short pieces of automotive hookup wire, one red and one black, with #6 screw terminal lugs crimped to each end. We removed the temperature gauge from the cluster, and connected the red wire from the temperature gauge power stud to the volt gauge power stud. We connected the black wire from the temperature gauge ground stud to the volt gauge ground stud, making sure that the wire side of the lugs were on the case side of the studs.

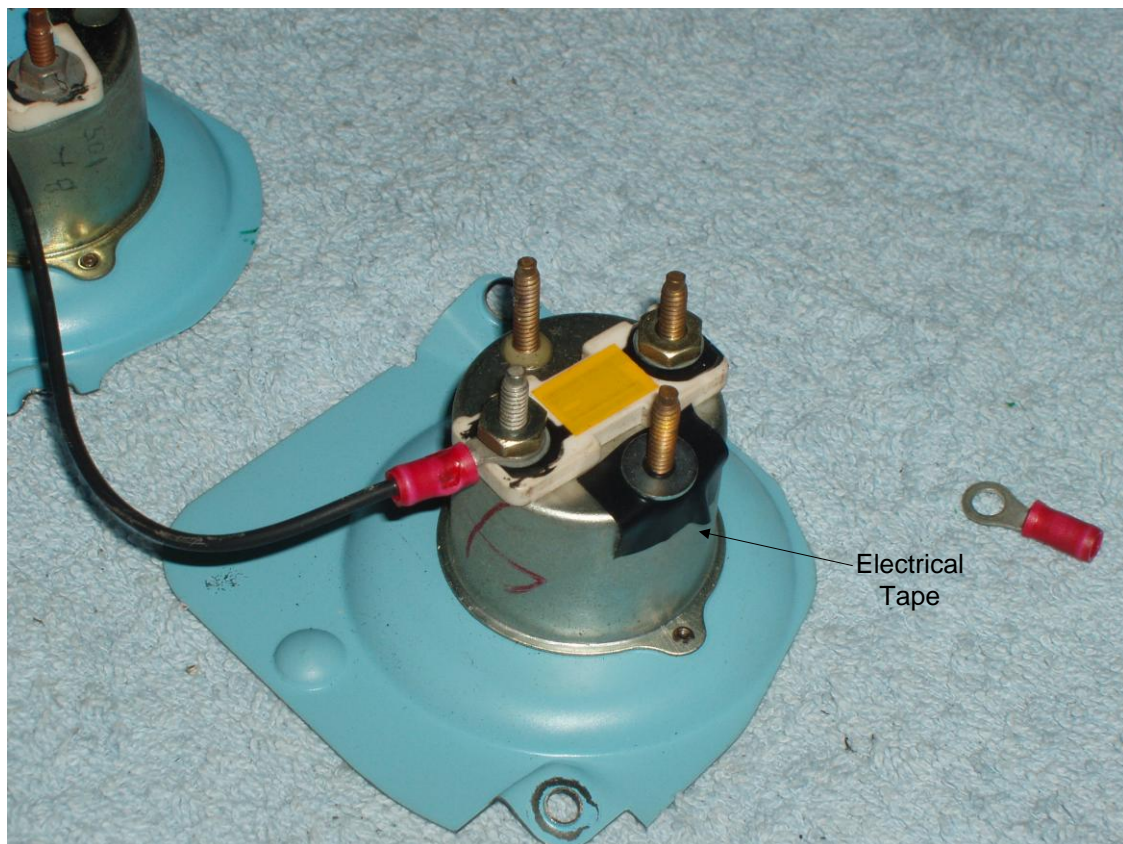




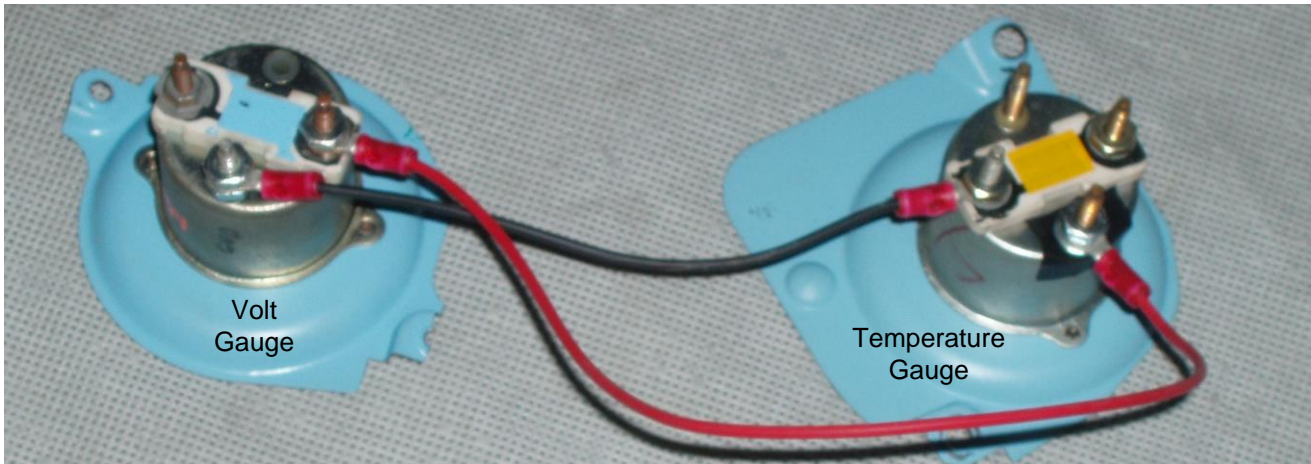
To connect the ground wire to the ground connection on the temperature gauge, we replaced the stamped sheet metal nut with a standard 6-32 nut with a split washer. The nut must be pulled down close to the gauge case in order to ensure that the nut doesn't interfere with the terminal the stud plugs into. To connect the ground wire to the ground connection on the voltage gauge, we double-nutted it to prevent it from shorting to the case. We put a nut on the stud, a split washer next, and then the lug. We put a split washer on that followed by the top nut. This ensures good electrical connections with good resistance to vibration. There is no risk of interference with a terminal on the volt gauge ground stud because there is no terminal in that location in the cluster.



Next the power needs to be connected between the gauges. The power stud on the temperature gauge does not have a nut and putting the lug directly onto the stud would short the power to the case, so we put a piece of electrical tape down around the stud to provide insulation. A flat washer goes over that:



To connect the other side of the power wire to the volt gauge, simply replace the stamped sheet metal nut with a 6-32 nut and spit washer on top of the lug. Make sure you tighten the nut down well so it does not interfere with the ammeter terminal. Note how the wire sides of the lugs are mounted towards the gauge cases to ensure maximum clearance for the terminals.



We reinstalled the gauges into the cluster and tested them:



And the project is done:



The next page documents what not to do.

We made a few mistakes during the process of figuring this out. Don't make the same mistakes we made.

Our first attempt to isolate the ammeter terminals and to put switched power on the ammeter terminal that the voltmeter power stud plugs into involved unplugging the cluster connector, de-pinning the ammeter pins, and then splicing in a junkyard pink cluster switched power wire (with pin) and installing it into the correct connector slot to supply switched power to the correct ammeter terminal for the volt gauge. The problem we found was that the traces on the flexible circuit board on the back of the cluster started to delaminate and come up when we disconnected the harness from the cluster. We had to carefully press the traces back down in the connector hole and then carefully plug the connector back in. Fortunately, we did not destroy the traces or the cluster would no longer have worked. The flexible circuit boards on these old clusters are getting extremely fragile. Don't unplug the cluster connector unless you absolutely must and then do so very carefully.

We simply put shrink tubing over the ammeter pins and zip-tied them to the cable to isolate the volt gauge from the always hot ammeter power. This is not needed if you pull the two ammeter in-line fuses out of the harness on the firewall in the engine compartment.

When we had reliable power to the correct ammeter pin, we tried plugging the voltmeter into the cluster with only the ground wire run to the temperature gauge. That was when we learned that the volt gauge studs were shorter than the ammeter studs, causing an intermittent power connection for the volt gauge. That led us to add the power wire between the gauges, rather than trying to use the cluster traces.

The final solution of removing the two fuses and simply wiring the two gauges together was the best final solutions we came up with.

Hope it all works out well for you if you try this.