

At the Repair Bench – Simpson 260® – July 2026

Three years ago, I reported in this column on the repairs I made to a Simpson 260® VOMM that had a cracked circuit board. This month, I am looking at another of these venerable multimeters, another Series 5 (?) model that had a combination of ailments (Figure 1). This meter belongs to one of my fellow GCARC members, and she was happy to have the unit repaired, as it had belonged to her father, and therefore held some sentimental value to her.



Figure 1 - Simpson 260® VOMM

When this particular meter came to me, it was basically inoperable, though we had ascertained that it would be repairable because we determined through some basic testing that the D'Arsonval meter movement was in good condition. The meter movement is the heart of the instrument. So long as the meter movement and the rotary function switch are in serviceable condition, it really doesn't matter what else may be wrong with the instrument... it will be repairable in the overwhelming majority of cases. However, if either of these two main components have failed, it will not be quite so simple to repair the unit. Don't get me wrong here... it can *always* be repaired, but sometimes the cost will exceed the value, at which point the repair is no longer a viable option for many owners.



Figure 2 - Simpson 260® front panel controls and jacks

These meters are actually very durable while also retaining an unbelievable resiliency, making them completely able to recover from many faults that would kill a lesser VOMM. Before I go any further, let's take a minute to explain why I refer to the Simpson 260® as a VOMM. A standard multimeter includes a voltmeter and an ohmmeter, and are usually termed "VOM" for volt-ohmmeter. With many such

instruments, that is then exactly what the tool offers – voltage and resistance measurements. The Simpson 260®, however, offers much more capability than that of a basic VOM, which is why its type nomenclature has been changed to *VOMM*, meaning “*volt-ohm-milliammeter*”.

The Simpson 260® VOMM incorporates three resistance ranges, four current ranges*, and five voltage ranges. Additional capability is afforded by the use of additional test lead jacks on the instrument front panel, and by the *Polarity* switch. The *Polarity* switch is used

* There is actually a fifth current “range” offered, that being a “50 μ A” range, which is accessed by setting the Range/Function switch to its “50V/ μ Amps” position, and then moving the red test lead to the “50 μ AMPS” jack while the black test lead remains in the “COMMON –” jack.

to effectively reverse the test lead connections while making DC voltage measurements so that the meter always reads upscale. This switch also provides the capability of making AC voltage measurements. It should also be noted that one each of the voltage and current ranges actually have dual ranges assigned, with the second range being accessed via a dedicated front-panel jack for that function.

As to display capability, the Series 5 version of the venerable Simpson 260® VOMM was offered both with and without an anti-parallax mirror in the scale quadrant. “*Parallax error*” is that error that creeps in during the reading of an analog sweep-needle meter when the meter is not viewed directly head-on and straight-in. Viewing the meter from even a slight angle will cause the apparent needle position over the scale to be other than its actual position. The mirror helps to prevent the parallax error by allowing the user to ascertain



Figure 3 - Simpson 260® Series 5 meter face
The meter is viewed properly, i.e., head-on and straight-in, there will be only one needle visible, as the mirrored image of the needle will be directly behind and therefore hidden by the actual meter needle. If the meter is viewed at even a slight angle, a second “needle” will appear, which is in reality the angle-offset mirror image of the sweep needle. Typically, a Simpson Series 5 meter that had a mirrored scale when it left the factory carried a model number of *Simpson 260® Series 5M*.

The standard Series 5 meter (Figure 3) incorporates a series of scales including a (black) *decibel* scale, (red) AC voltage and current scales, (black) DC voltage and current scales, and a single (black) resistance scale. At the bottom of the meter face, some important information about the instrument is provided. Some of this information will directly impact the value indicated by the meter. Other information provided there tells the user a little bit about how much accuracy can be expected from this instrument, or put another way, how much this instrument will affect the circuit to which it is connected when making voltage measurements. This is the very important “*Ohms per Volt*” rating of the instrument.

The “*Ohms per Volt*” specification tells the user what the input impedance of the instrument will be under various testing scenarios. Note, for example, that the DC rating is 20,000 ohms per volt. This means that if the user is making a measurement using the ten-volt DC Voltage scale, the input impedance of the instrument will be ten times twenty-thousand, or two-hundred-thousand ohms. This is a respectably high input impedance, which means that this instrument will have relatively little effect on the measured circuit when the meter is connected in parallel to the circuit under test, as is done when

measuring voltage. The standard input impedance for most DVOM's and also for VTVM's and FETVOM's is right at about ten or eleven megohms overall.

OK – enough of the descriptive data about the instrument under repair here. Let's move on to the actual failures and repairs that were made on this particular specimen. As was noted at the time of the initial examination of the instrument, there was considerable damage done to the battery terminal leaf springs in the meter battery compartment. This



Figure 4 - Inside the Simpson 260®

version of the Simpson 260® uses one snap-top nine-volt battery and one 1.5-volt type “D” cell. The damage done was to the “D” cell compartment, with the damage being bad enough to necessitate complete replacement of the cell's negative terminal contact.

Additionally, the instrument had had a blown (open) fuse in its fuse holder. The owner attempted to source a replacement fuse, but she was unable to obtain the correct fuse, and as a result, a fuse with an incorrect value rating was installed in the unit. That too needed to be replaced.

The funny thing about this particular Simpson 260® is that it does not seem to truly be what its front panel says that it is. You see, according to the markings on the face of the meter movement, the unit is a Series 5 model. However, according to the physical structure of the instrument internals and the battery arrangement, it would appear to be a Series 6 model. Series 6 is the first time that Simpson used the nine-volt/one point five-volt configuration. Prior to that, the battery arrangement called for a 1.5-volt and 6-volt pairing, used as a 1.5V source and then as a 7.5V source for various ohmmeter circuits. It is entirely possible that the meter movement had been replaced at some point in time with a Series 5 meter, which would account for the difference, but the instrument is clearly *not* a true Series 5 model.

It should be noted that Simpson actually anticipated the need to replace the negative “D” cell terminal contact at some point, because they supplied a spare contact, nestled into the 9-volt battery pocket. This spare terminal is just visible in the Figure 4 photo of the working side of the instrument. I chose *not* to use this spare contact, leaving it there against a future need. Instead, I fabricated a new contact from some sheet copper that I had on hand, which worked out nicely.

I installed a fuse of the correct type and value, placing a second such fuse into the spare fuse holder next to the fuse location. Next, I installed a fresh 9-volt battery and “D” cell, and set out to test the remainder of the unit. With the battery situation sorted, the ohmmeter functions all worked perfectly. The same could not be said for the voltage and current sections of the instrument. No matter how hard I tried, I simply could not get the unit to calibrate properly, and I found some other anomalies as well. For example, when

inputting a DC voltage into the *OUTPUT* jack, a voltage was indicated on the meter. This should not happen, as all current through that port passes through a 0.1 μ F 400V capacitor whose sole purpose is to pass AC while blocking DC. That is why the simple test of applying a DC voltage there is so diagnostic – DC *should not* get past the capacitor and into the instrument. When it does, it is obvious that the capacitor has failed in a leaky condition and must be replaced.

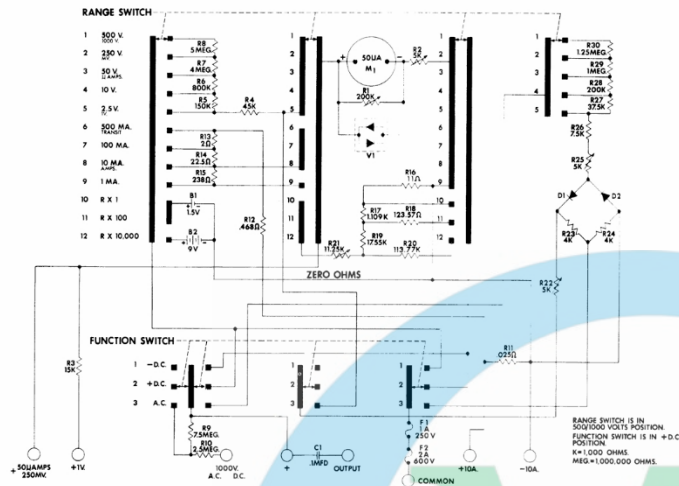


Figure 5 - Schematic diagram

resistors, R17 and R20 (Figure 5) both needed to be replaced. Once the resistors were replaced, the calibration went well and I was quickly able to bring the instrument back into top operating condition.

With all functions operating normally and all evidence of the “D” cell corrosion gone from the unit, I felt comfortable buttoning it up and returning it to its owner. These instruments, when properly cared for, can have extremely long useful lives, and will serve the user well for any and all measurements necessary for basic troubleshooting of electric and electronic circuits. Remember – before the invention of the DVOM, these analog meters were the everyday workhorses on the technician's bench unless a meter with a higher input impedance was required, at which point the technician would switch over to the less portable VTVM.

See you next month...