At the Repair Bench – MFJ-259/269 Series – July 2025

This month's column is taking a slight departure from the norm. Instead of reporting on a failed piece of equipment, this article will discuss an *ongoing repetitive failure that was caused by the design of the equipment.* Now, that is not one-hundred-percent true, as the problem is much worse on some models or examples than it is on others. In fact, some users may never notice any problem with this issue, while others will be cursing MFJ every time they attempt to use the MFJ-259 or MFJ-269 (Figure 1) type of SWR analyzer.

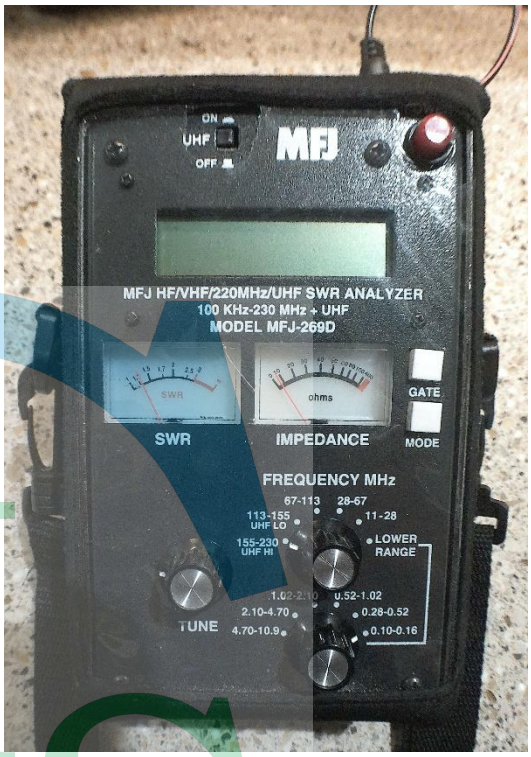

Figure 1 - MFJ-269D

Let's see just what this is all about. On my bench, I have an MFJ-259D as well as an MFJ-269D. Why would I have both of these instruments? Simple – the first instrument purchased does not cover the entire ham band set, but it was the best option at the time of purchase. The MFJ-259D has frequency coverage from 0.1MHz (100kHz) through 232 MHz, but has no coverage for UHF frequencies. The MFJ-269D, which was offered after I purchased the MFJ-259D, adds in the missing UHF coverage, in two ranges labeled as *"UHF LO"* and *"UHF HI".* Furthermore, the MFJ-259D is marked as being an *"HF/VHF SWR ANALYZER"*, while the MFJ-269D is marked as being an *"HF/VHF/220MHz/UHF SWR ANALYZER".*

These two instruments are remarkably similar in outward appearance and design features. However, there *are* some important differences not only between the instruments themselves but also in the fabric and plastic film protective carrying case/covers offered by MFJ for these instruments. Starting with the cover, the MFJ-259D cover has a nicely rounded and perfectly positioned hole in the front panel plastic film at the site of the push-button power switch. The placement of this hole is important in that it can interfere with the switch operation and even cause inadvertent switch activation if it is not properly positioned.

There are three shaft holes provided in the film at the locations of the three front panel rotary controls installed on the instrument, but there is no such hole in the film at the location of either the *GATE* or the *MODE* pushbutton switch. These two switches are momentary-type switches and are not easily activated inadvertently, so no holes are really needed for these switches.

Going back to the *POWER* pushbutton switch, this switch is a latching “ON” type of switch. In my example of the MFJ-259D, the pushbutton actuator is a low-profile cap that is just barely proud of the raised ring that surrounds its hole in the instrument front panel when the switch is “OFF”. When this switch is “ON”, the actuator cap is recessed below the plane of the surrounding ring. This arrangement makes it almost impossible to inadvertently switch this instrument’s power switch “ON”, as a casual bump of almost any type would not depress the button below the surface of the surrounding ring.

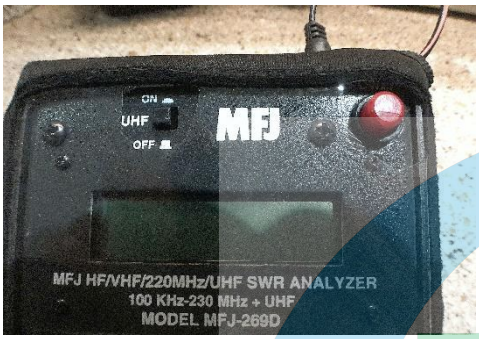

Figure 2 – The infamous pushbuttons

As a result of the power switch actuator design, I have never had an inadvertent power-on of the instrument, so I have never had an unexpected depletion of the battery pack in my MFJ-259D. The same cannot be said, of course, of my MFJ269D.

Before going into the problems with the MFJ-269D, let’s spend a minute or so discussing just *why* it is *so* annoying when the MFJ-269D battery pack is depleted. First of all is the plain and simple inconvenience of needing to change out the battery set in the middle of a job. Most folks just want to get on with the job, and do not want to be bothered with the tedious task of battery pack replacement.

Next is the hassle involved in getting to the battery pack. In order to service the battery pack on this unit, the instrument must first be removed from its protective carrying case/cover. This requires the use of a 1/16” Allen wrench to loosen the grub screws (set screws) in the knobs. Once the knobs have been removed, it is necessary to work the case off the instrument, carefully lifting the plastic film off the control shafts that extend through the film. While not difficult to do, a momentary lapse of attention will result in a torn film as it snags on one of the shafts.

Once the protective carrying case/cover has been removed, we can remove the two sheet metal screws that secure the battery compartment cover to the instrument body, revealing the ten (10) “AA”-size cells within. That’s right – *ten “AA” cells* make up the battery pack for this instrument. Repetitive battery failure on this unit gets to be an *expensive* proposition!

From the above, it is easily evident just why it is such a problem that this instrument goes through so many batteries, but… exactly *why* do the batteries need such frequent replacement? The answer is because of the design of the front panel power switch as well as the design of the protective carrying case/cover.

Starting again with the cover, it was disturbing to discover that no provision had been made in the plastic film for the power switch actuator pushbutton. This meant that I had to first install the cover and mark where to make a hole, then remove the cover and cut the required hole in its marked location. In addition, this model also has a latching pushbutton switch used to select either the *“UHF LO”* or the *“UHF HI”* frequency range

when working with UHF frequencies. This switch too required the marking of a location and then the cutting of a hole at that location so as to be able to comfortably operate the switch (Figure 2).

Figure 3 - Prepared dummy plug

Once again going back to the power switch, the switch actuator on this model differs from that on the MFJ-259D in that it is a physically longer actuator, meaning that it sits considerably further out from the ring that surrounds the switch opening on the instrument front panel. This additional length also means that in its "ON" position, the actuator cap is still proud of the surrounding ring. Thus, it is very easy to inadvertently bump this switch and turn it "ON" without the user being aware that it has happened.

I typically store my two MFJ SWR analyzers by hanging them by their carrying case straps from the same hook on the wall of my shop. This arrangement then has one of these instruments hanging in front of and in contact with the other, often resulting in the inadvertent activation of the power switch on the MFJ-269D. The result is that almost every time I reach for it to use it, I find that the battery pack has been depleted and must be replaced before I can use the instrument.

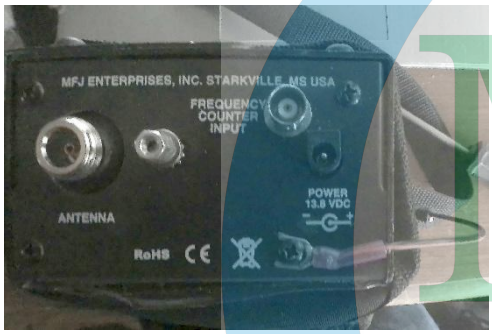

Figure 4 - Dummy plug mounted to instrument

Now we have arrived at the purpose of this article, and the nature of the "repair' that was made. In reality, this repair, actually a modification, was so simple that it is surprising to me that I had not thought of doing it sooner than I did.

I quickly realized that the MFJ switch design was poor and was the root cause of this problem. I set out to design a simple means of breaking the battery feed circuit between the battery pack and the power switch – something that could be easily installed, would not require major modification to the instrument, and would be easy to activate in order to kill the battery circuit whenever I wanted to do so. To be honest about it, I dragged my feet on this one, because I really did not want to start making holes willy-nilly in the enclosure. The protective carrying case/cover did not leave many alternatives as to location for a switch to be installed. Besides, what type of switch would I want to use? In reality, the simplest fix would have been to find a lower-profile switch actuator cap such as that used on the earlier models of this instrument. However, I think that I learned just why MFJ made the change – I could not find the low-profile actuator cap *anywhere!*

While I was perusing the MFJ-269D schematic one recent day, I realized that the DC power input jack used on the instrument is of the switching type as many of them are, but what is a bit different is that the switch was actually *used* in this circuit!

Quite often, the two terminals of the integrated switch in the DC power jack are simply tied together at the negative side of the supply. What was different here is that MFJ

actually used the switch in the jack for the purpose of – wait for it – yes… disconnecting the battery pack when the wall wart power supply was connected to the instrument. Well, that is *exactly* what I wanted to do – to disconnect the battery pack. I realized that I could accomplish the task simply by inserting an appropriately-sized barrel connector dummy plug into the DC power jack!

I sourced a 5.5mm x 2.1mm power plug with a short twin-lead pigtail attached. I have several of them on hand, so that was no problem. I separated the two wires, and then I cut off the red wire right at the plug body – I only needed one wire for my purposes. I shortened the remaining black lead to about six inches, and then I crimped on a spade terminal with a heat-shrink tube covering. After shrinking the covering by applying hot air from my heat gun, I was ready to install the dummy plug.

I loosened one of the screws on the upper surface of the instrument, underneath the top flap of the carrying case. Then, I slid the spade lug under the screw head (Figure 4) and re-tightened the screw to secure the wired dummy plug to the instrument. Inserting the dummy plug barrel into the DC power jack (Figure 5) opens the battery circuit, making it impossible for the battery pack to become depleted inadvertently.

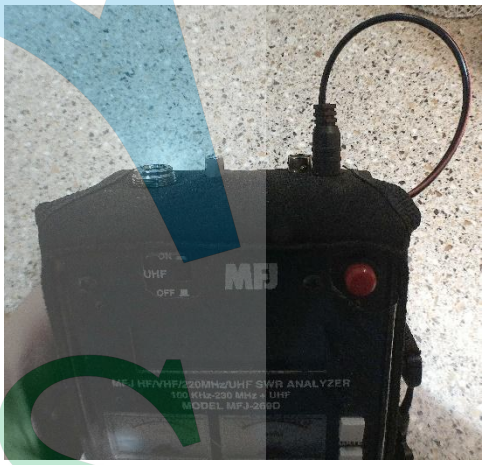

Figure 5 - Dummy plug inserted into DC jack

This is such a simple solution to a nagging headache of a problem that had been annoying me for a couple of years. Every now and then a manufacturer does something that has unforeseen drawbacks, and it is up to those of us in the field to develop a solution to the problem presented. Sometimes that solution is so easy that it is often overlooked while searching for something more involved and complex. We are then making it harder on ourselves – harder than it needs to be. There is an old adage that says ***KISS!*** – **K**eep **I**t **S**imple, **S**tupid! It is good advice that was never any truer than it was here.

See you next month!