Mirage Repair Continued

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Well, I thought I had the Mirage 2 meter amp fixed, but turns out it still had more issues. At the start of the ARRL September VHF contest the fault LED lit up on the first transmission. So I had to stop and read the manual to see what would cause the Fault LED to light. Reading the manual and looking at the schematic only two things can do that. The first being too much input power and the second being too much SWR. I knew input power was OK so, it must be SWR. Got out the power meter to check SWR and all is fine. As the amp was running, which seemed odd, I went back to the contest.

After the contest was over I looked at the schematic. Seems that when the Fault LED lights up, the amp is supposed to go into bypass mode, which it did not do. So back on to the repair bench it went.

First thing I checked was the SCR and it turned out that the Zener Diode ZD1 was shorted, so it was more sensitive to SWR than it should have been. Next thing I discovered was Q3 was shorted, which prevented opening up the relay when the SCR fires. Once Q3 was replaced the amp would not engage. I then discovered Q2 was shorted out as well and that keep Q3 from turning on.

While I had it on the bench I had the VNA on it and started to connect the dummy load. Once the dummy load made contact everything looked great on the VNA, that is until I tightened the sleeve, then SWR went super high. Loosened it up and SWR returned to normal. So not only was the input SO239 bad, so was the Output SO239.

So once again I put it back in service and everything seemed OK for a few days. I had been running it at 200 watts out and decided to move it back up to 250 watts. The moment I did, the fault LED lit up again, and the amp went offline like it was supposed to. Sigh at least it tested my repair. The IC-9700's SWR meter went full scale. First thought was the Lighting Arrestors Arc Plug must have failed when I increased power. That was not the case, it seems the lightning arrestor was open.

So I pulled the lightning arrestor out and removed the Arc Plug. Using an Ohm meter it was easy to find which side was open (see picture on next page). I then touched up the solder connection, but no impact. I then removed the screws on the N connector and the connector pulled out without issue, which was not a good sign. Turns out they had the solder cup up when it should have been down, so the solder never made a connection to the connectors center pin. I put the connector back in with the solder cup down and put the screws back in. Touched up the solder and now there is a connection. I removed the screws and tried to pull the connector out, but it would not budge, so my soldering worked. I also removed the screws on the other connector to make sure it was OK and it was. The arrestor is now back in service as is the Amp. It's now working better than it

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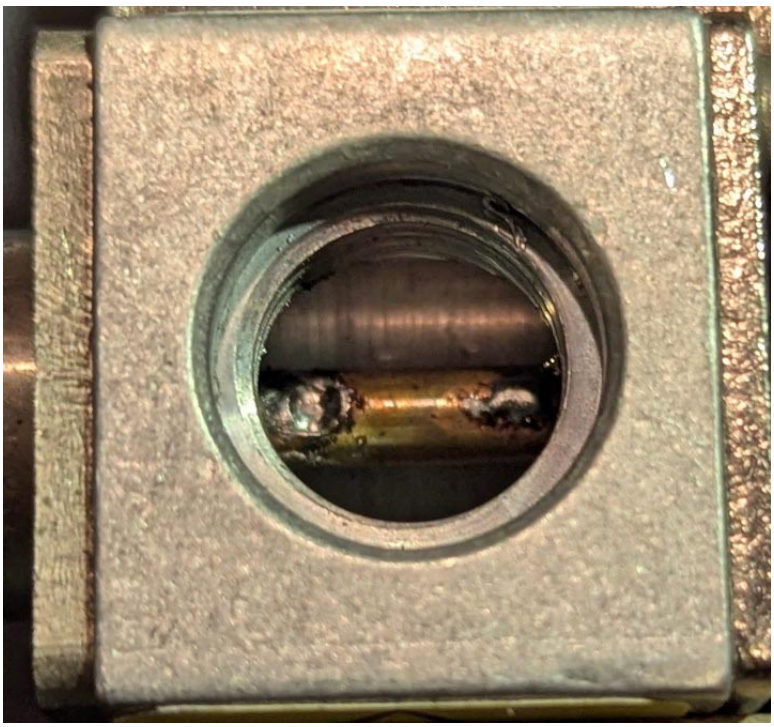
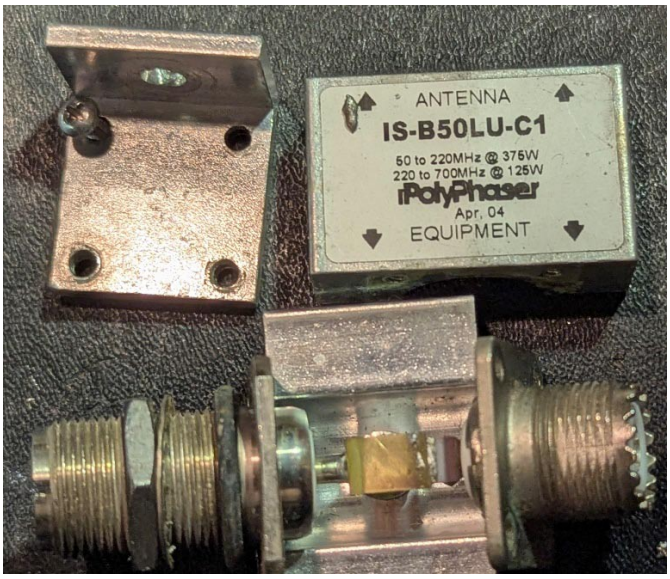
ever has.

While on the subject of Lightning arrestors….

I have had two arrestors fail over the years. Here are the pictures of the two that failed. One is Polyphaser and one is Alpha Delta. The Alpha Delta passes DC through 3 GHZ where the Polyphaser does not.



Alpha Delta



PolyPhaser

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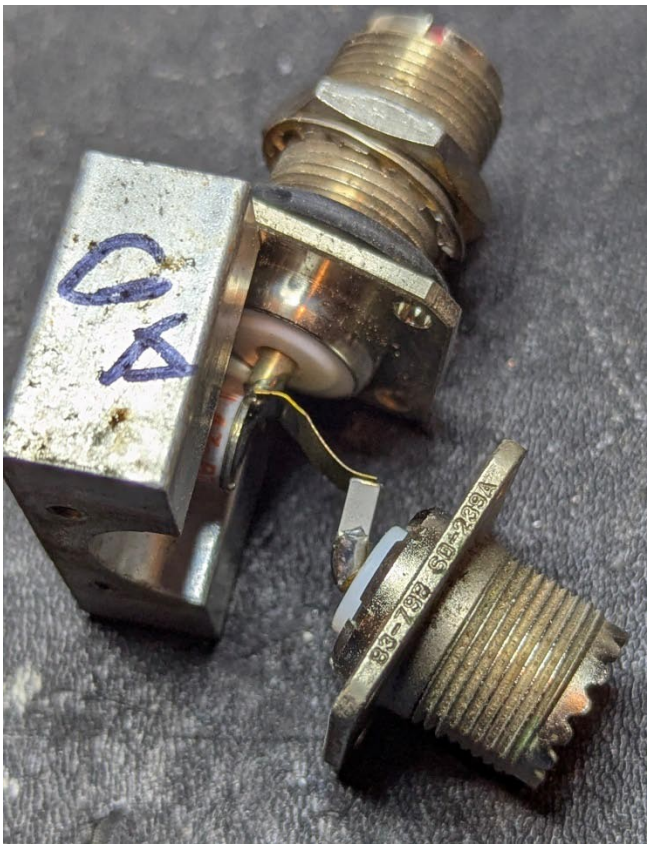

PolyPhaser showing the Capacitor

PolyPhaser showing typical routing