

“Regettering” Gu-74b tubes in the Alpha 91β Amplifier

This technique should also apply to the Alpha 99 and possibly Acom amplifiers as well

Soviet-made Gu-74b tubes are readily available, but most were constructed sometime deep in the last century. After sitting on a shelf for years, when they are installed in an amplifier and are immediately hit with screen and B+ voltages, they tend to react nastily—with a large surge of cathode current. This surge is a result of current flow enhanced by residual gas inside the envelope that has been released during storage. Often, if the tube is “re-gettered” by applying heater voltage alone for some time, the getter is activated and captures this gas, preventing the nasty current surge. Here is a method of regettering newly-acquired-but-old Gu-74b tubes using your amplifier.

Scenario

My Alpha 91b was purchased directly from Alpha in 1997. After assembling the tubes, AC plug, and power transformer, I happily hit the power switch and expected to have a new amp on line after the specified 3-minute warm up delay. Instead, about halfway through this wait time, a nasty thump sounded and a relay clicked, followed by the LEDs and blower immediately turning off. My amp experienced a current surge and protected itself by shutting down. This was a huge surprise and disappointment to me, as I’d never heard of this problem—and of course the amp was supposedly brand new. Fortunately, the second time it was powered-up, the amplifier warmed up properly and has worked perfectly ever since.

A little research shows that this is a common issue with vacuum tubes that have been stored for long periods of time. Glass envelope tubes are more susceptible than ceramic, but my episode showed that ceramic tubes are not immune to gas. Tubes with good seals may be “gettered” (activating a chemical deposited inside the envelope that captures stray gas molecules) by heating up the tube. The Gu-74b is gettered by the heat from the filament alone, so applying heater voltage for a short while prevents the unwelcome fireworks.

Unfortunately, there is more to it than that. The Gu-74b filament is powerful enough to overheat the tube seals unless there is air flow through the base. So don’t connect clip leads between your 13.8V power supply and the filament pins for a couple of hours and expect long tube life. Instead, use your amplifier with its existing socket, blower, and filament supply to getter your “new” tubes. You need to pull two connectors so the tubes receive neither screen nor plate voltage. The –125V cathode bias does no harm, so leave it on.

Regetter Tubes Using Your Amplifier

I won’t bore you with a warning about working with high voltage. If you zap yourself dead, don’t come running to me (or something like that). These directions and photos are for a ‘91β, but the ‘99 schematic is identical and I presume the Acom is nearly so (my 91β’s power supply PC boards are etched “Acom”).

Begin by pulling the AC power cord. Remove the top cover.

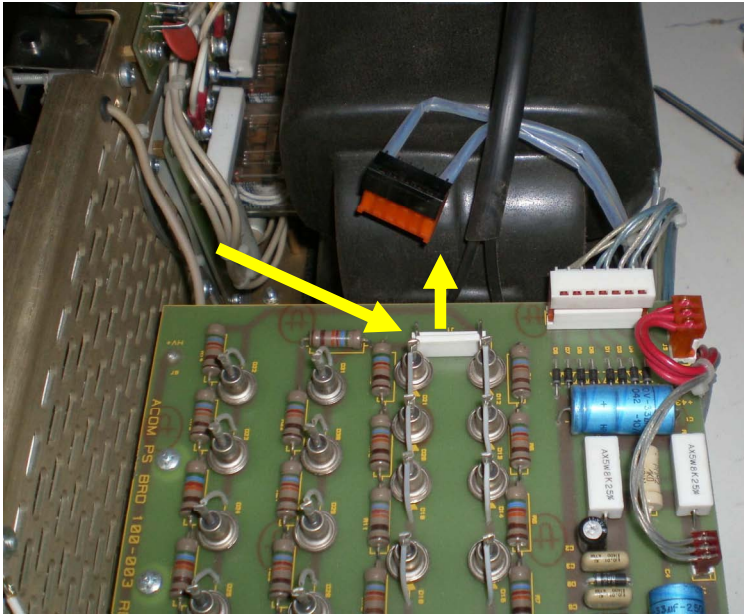


Figure 1. Pull B+ from Rectifier Board

Pull the B+ plug out of the top power supply board (it is a big connector, but only two pins are connected).

Pull the Screen voltage wire (spade connector) out of the lower power supply board (the one with the filter capacitors). You access this from the right-hand side of the amplifier. Long nose pliers are helpful. Bend it out of the way so it doesn't short into anything.

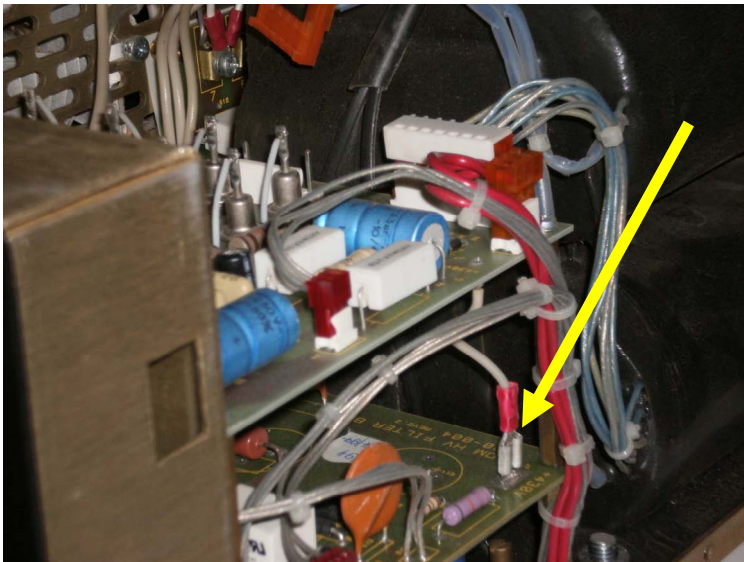


Figure 2. Screen Supply—Connected

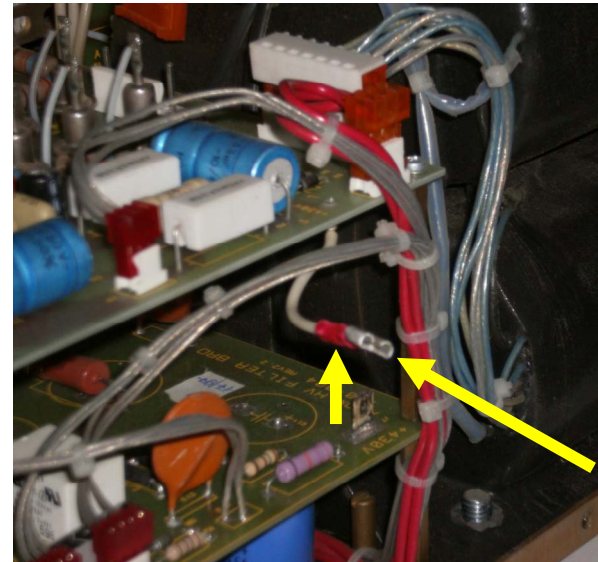


Figure 3. Screen Supply—Disabled

Remove the screw holding the parasitic strap from the plate choke. Remove the existing tubes, red rubber chimneys, and suppressors as one unit. Try to pull the tubes straight up out of their sockets. Work off the chimneys.

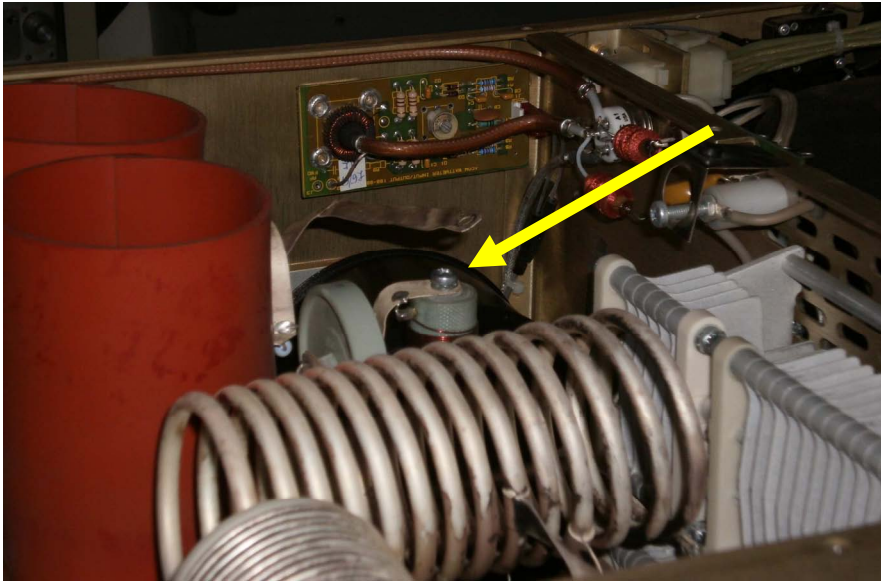


Figure 4. Remove Parasitic Suppressor Strap from Plate Choke

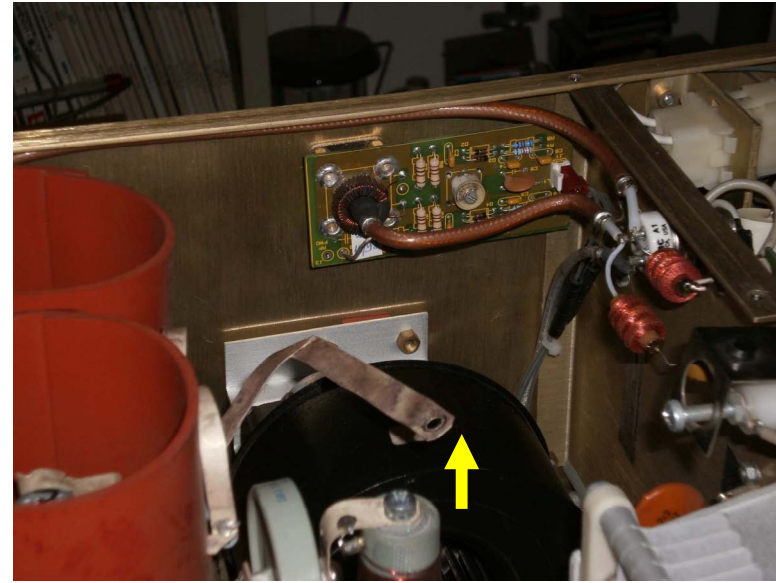


Figure 5. Close up view. Don't Lose the Screw!

Install the new tubes. Replace the chimneys over these new tubes.

Ensure the screen supply spade connector will not touch the top cover. Replace the top cover and install a couple of the machine screws along the rear so the interlock switch is held closed. Note that there is no need to disable the interlock tab in the middle of the amp, as there should be no B+.

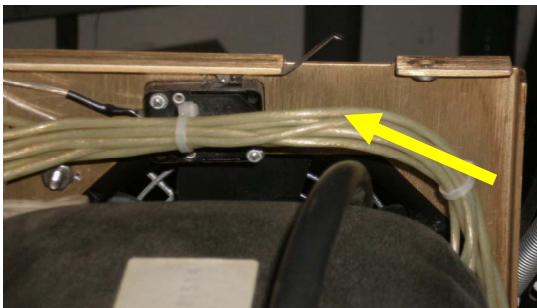


Figure 6. Rear Panel Line Interrupt Switch

Plug in the amp. Power it up and run for several hours to degreen. Some report that 24 hours is necessary; I don't have that much patience and believe that less time is sufficient. I generally run them for 2 hours when rotating my stock every year or two.

After the time has elapsed, unplug AC power and open the amplifier. Replace the parasitic suppressors (caution: the tube bases will be *hot*, even though the blower has been running).

Plug in the screen voltage spade tab to the filter capacitor board using long nose pliers. Plug in the B+ connector from the power transformer to the rectifier board. Double check that you've firmly connected everything before you install all of the top cover screws.

If you've done this correctly and your replacement tubes aren't beyond help, the amp should power up and operate without any unwelcome excitement. Looking forward to hearing you on the air.