

Command Technologies HF2500 Amplifier – Issue with Festoon Bulbs

Hardy Command Tech owners will testify to the problem of replacing the small bulbs used to light the two front panel meters on the original range of amplifiers. The HF1250/2500 and 2500E range use 4 small 'Festoon' type bulbs which are located on a small board called the 'Switch Board' positioned towards the front of the unit.

In theory replacing small bulbs such as these should be fairly easy, but although the Command Tech range proved a reliable and solid workhorse, it had some minor but annoying misgivings.

In order to replace these bulbs both top and bottom covers of the unit required removal. The reason the bottom cover needed removing was that the Switch Board was located directly behind the main transformer and was in a really awkward position. Coupled with this, the amps were all 'Hardwired' with very few plugs on leads. This made disassembly quite tedious and time consuming, even to fix minor problems.

To gain access to the Switch Board, remove both top and bottom covers and then remove the 4 stainless screws and bolts that hold the transformer. Unclip the transformer Molex connector and remove the transformer unit. Take care as towards the front of the transformer there is a small disc capacitor connected on the chassis which could easily be crushed by the heavy transformer. Now you can work without hindrance.

Take the knob off the IP/VP switch – it's held in with 2 small grub screws. Unscrew the fine nut which holds the switch in place, and slide the switch out. The switch is hardwired to the board, so the switch and whole board will now come out as a single unit.

You'll notice 4 small 'Festoon' type bulbs. They look like fuses but are not and work differently. All 4 of mine had blown but the PDF info from Command Tech gave no values. Checking the feed read 12v. I searched online here in the UK and found nothing, even at places like RS and Farnell.

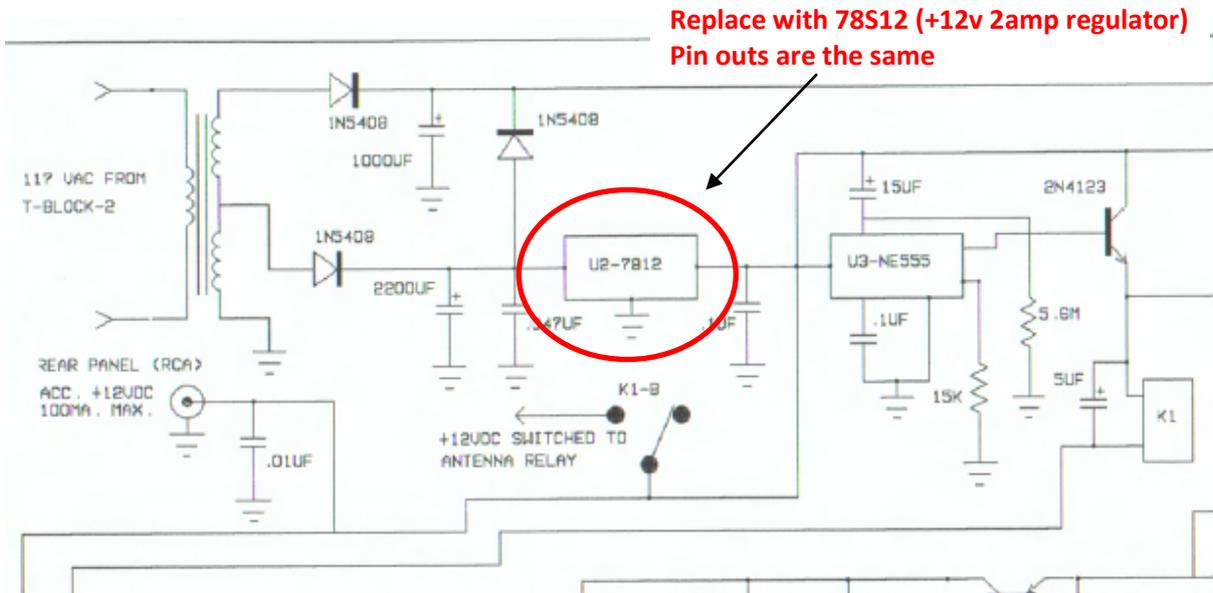
Eventually I found a 3w version here at Conrad, but it had to come from Germany – so I ordered ten. <http://www.conrad-uk.com/ce/en/product/725815/Barthelme-12VV-3WW-Festoon-Bulb-S55-Clear-00311203/0234057&ref=list>

On the face of it, it looked fairly easy so I popped in 4 new bulbs and re-assembled the amp. Switched on and four nice bright new bulbs lit the panel meters, more so than before.

I decided to check everything out and this is where the problems started. First time key up there was a definite problem, amp keyed but the internal relay failed to throw. Grid current went high with little or no output. Something is wrong, so I checked out all the leads and connections, I even checked the tubes and mountings. Could not find any problems. Tried again – same problem. Ok time to reverse engineer what I'd done, so took amp apart removed bulbs and re-assembled. Amp key'd fine and the relays worked so the bulbs are causing a problem. Time to check the schematic.

On reading the schematic, the 12v line seems to be fed from a normal **7812 12volt positive voltage regulator** mounted to a heat sink on the control board. Normal 7812 devices are rated at 1amp but you can allow a little extra if a heat sink is used. In theory this will allow just over 1amp current before the internal current limiting in the device cuts in.

If you then work out that the new 3w bulbs will pull an amp, there seems little in reserve to fire the relay. Also bear in mind the same 12v 1 amp line also supplies the 12v RCA socket on the rear of the amp. This is for supplying 12v DC to accessories. I had this coupled to an ATU which powered the panel lights on the tuner, so add another 100-200 milliamps.



At that point I decided that the problem was the regulator was not sufficient to drive the four new bulbs. No info existed on the old original bulbs so I presume they were fairly low wattage, maybe even 1 or 1.5w. I then took out the control board. This is also not easy as all connections are hard wired. I had to un-solder some connections from the main board to allow for full removal.

At this point I removed the 7812 regulator to find that **no conductive heat sink compound** had been used on the regulator and heat sink. This would further diminish the device output capacity as it would get hot quite quickly. I replaced it with a **78S12** 2 amp regulator mounted to the heat-sink **WITH** plenty of compound. On paper this should allow about 2.5 amps of current on the line.

Cutting a long story short, the amp now keys the relays with all four new 3w bulbs fitted. Following the failure of one bulb 6 months later, I then removed one bulb on each meter as 6w per meter was rather bright. I could have put a resistor inline, but I now run one bulb of 3w on each meter and the display is still really bright as shown below.



I do know of LED conversions which some owners may find easier but this mod worked for me.

73 – Steve G0UIH

Vortex Antenna Systems

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