An overview of 30L-1 Maintenance ~ some 50 years later

by Bill Carns, N7OTQ/K0CXX (Refer to *RX for Your Collins* on the CCA website)

Recently, as well as over the past several years, there have been a number of articles here on the CCA website regarding the health and maintenance of your 30L-1. Most of these articles are directly related to changes that we (the CCA) feel are essential to safe and competent operation.

The current posting of the very important SB-5 (regarding bias bleeder resistor failures and the need to increase the wattage rating of R15, the 10K Ω bias supply bleeder) has prompted me to reflect on some of the current needs for maintenance as well as some of, what I consider, the misconceptions regarding this fine amplifier.

First, I should comment that the 30L-1 remains one of the finest compact (close to) 1 KW input amplifiers ever designed. For instance, I – nor any of the other repair people who have worked on a significant number of 30L-1s – have ever (Note – EVER) seen a 30L-1 transformer burn up because the high voltage filter capacitors failed. Please note this. If those capacitors do age out, and fail shorted, they just blow the fuse(s). Then, no big deal, just diagnose and change them.

We are seeing way too many people do a preemptive strike on those capacitors and replace then – IN THE INTEREST OF IMPROVED RELIABLITY – Often when they are not qualified to even be in there. I recently personally got a call from an owner who had decided to do a Young Kim board replacement kit and then gotten in trouble. The amplifier involved was a late production Rockwell Collins (very collectable) unit and the HV caps in question were beautiful shiny good condition Yellow late production Sprague capacitors that I would have been proud to use as replacements - after careful checking ☺ .

So, now I share with you my feelings and conclusions regarding maintenance of the 30LL-1

Unless you are competent to do repairs, or are willing to find a mentor and undergo the training needed, STAY OUT! Go get help from someone skilled in repair.

Do make sure that your amplifier has all the recommended updates.

These include:

All Collins Radio Service Bulletins 1 through 4	Necessary
CCA Issued SB-5 (This bulletin is critical)	Critical
Grid Bias Circuit Clamp Diode	(Article "*The Care and Feeding of Your 30L-1"*)
"Filament Fuse" for HV – See "*The Care and Feeding of Your 30L-1"*	Necessary (See pg. 2 below)
See "30L-1 Instability – A Don Jackson Analysis"	Recommended

Other than these important and well-engineered changes, we recommend that you just enjoy your amplifier until it gives you a problem to consider.

Best 73s,

de Bill N7OTQ/K0CXX wec 03/17/19

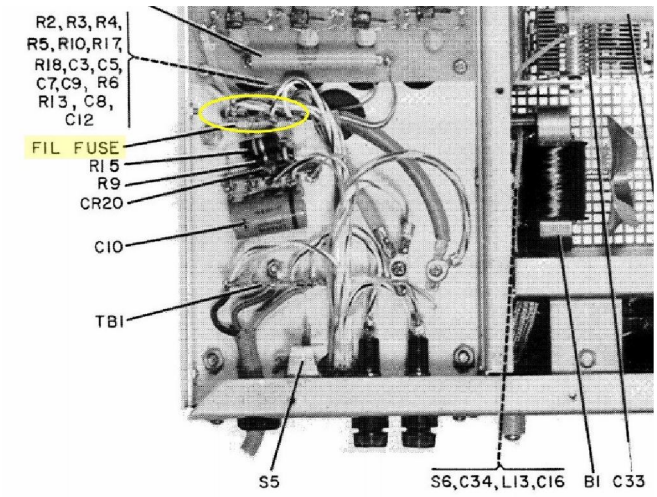
Don’t “BLOW A GASKET”, BLOW A FUSE

When first designed by Gene Senti, and then introduced in 1961, the 30L-1 did not have any additional protection in the High Voltage circuit beyond the two listed external (F1 & F2) AC Line Cord fuses.

Early in its history, the 30L-1 saw significant service in ARMY MARS work in Vietnam. Much of this work was rather portable operation – this service providing ample opportunity to bang around installed 811As, resulting in Plate to Grid or Plate to Filament shorts.

This often proved to be the undoing of the amp, as the transformer often was damaged before the line fuses blew. You <u>have</u> checked to make sure yours are the correct size! - - Right ?

Collins responded to this problem by installing “a High Voltage sic Fuse” in the center tap of the filament winding ground connection. This ground not only provides “Hum Balance” for the tubes, but also is the high voltage power supply ground return path. This fuse was a simple 1 inch long piece of tinned #30 buss wire that was installed on the terminal strip where the filament winding was grounded. It is located in-between the bias supply components and the HV Rectifier Diode board. The location of this “fuse” is shown in the figure below. There is a rather obscure reference to this fuse in manuals issued after the change. This reference is in paragraph 4.1 in the MAINTENANCE section of the manual and gives no further details about this addition.



A fuse consisting of a number 30 wire in the center-tap ground return of the filament winding of T1 is included to protect the PA tubes from excessive plate current. The fuse is connected between the two outer lugs of a terminal strip located near R11 in the power supply compartment (refer to figure 6-1). Under some conditions, the amplifier may appear to function normally even though this fuse has blown; however, this causes hum to appear on the output signal. Check for shorts in the filament circuit.

It never was shown on the schematic (in any manual revision that I know of) as a fuse and this often has disastrous results years later. If found blown by someone who does not understand its purpose, or even found “Unsuitably small” by someone who does not understand and who then replaces it with a heavier size wire for whatever reason, it ceases to be a fuse. It is never shown in the parts list that we know of. Now, if it is found blown, or of the wrong size wire, it should be replaced with an approximately 1 inch long piece of #30 tinned buss wire. Do not use insulated wire.

If your amplifier is an early winged emblem, you should inspect it to make sure this fuse has been installed and that it is still the correct size and type of wire.