The SIGNAL

Collins Collectors Association

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# The Collins Radio KW- 1 Transmitter

by Bill Wheeler, K0DEW (CCM Reprint)

The rare and expensive Collins KW-1

Among the serious Collins Collectors, no single item excites us more than the KW-1 transmitter. This interest is due somewhat to the limited number of KW-1 transmitters that were produced, the most accurate information reveals that only 150, plus 2 prototypes were ever shipped from the Cedar Rapids plant. Of the 152, about two thirds have been accounted for, so there is still hope of finding an undiscovered unit in a dirty barn or damp basement. (Too large to find in a hot attic.) Because of their quality in design there is probably a KW-1 playing recorded Spanish music in some small Central American village. If you add a KW-1 to your collection from one that has been completely restored and totally operational, the price figure will most likely be in five figures. Keep in mind however that the 1952 price tag of $3,850 was the average annual salary for most working people, so a 1992 price of $20,000 may not be too far out of line. Also think what it would take to make a KW-1 today with all of the point-to-point wiring, a very labor intensive project.

Design work on the ultimate AM transmitter was started in 1949 by John Foster in the department headed by Ernie Papenfus. After Mr. Foster saw the KW-1 into production he went to the E.F. Johnson Company. We can detect a first cousin relationship between the circuitry of the KW- 1 and some of the AM transmitters produced by E.F. Johnson in the mid-fifties. It is almost certain that Art took a personal interest in this transmitter that was to set the pace during the latter years of the AM era.

The RF section starts with a 70E-14 PTO and is followed a 6BA6 buffer stage and four 6AQ5s in various stages of frequency multipliers, giving an output on 160 to 10 meters. An 807W is used as a driver stage, this stage is operated as a straight-through amplifier on all hands. A pair of 4-250As are used in the final power amplifier at inputs up to 1000 watts, AM and CW. A pi section followed by an L section forms the power amplifier output circuit. The L section, in addition to a built-in 35C-2, low pass filter, helps attenuate the higher harmonics to keep most TV watchers happy.

The 4-250 PA tubes are mounted at eye level behind wire mesh and glass so the control operator can keep a close watch on the plate color during tune up and operation. The audio circuitry contains speech dipping, low pass filtering, and splatter suppression to give as much talk power as possible. The first half of the 150 made were reported to have better audio than the last half. Some owners remove the audio clipper and splatter filter to improve the quality of audio. These removals are an attempt to get back to the broadcast sound of the earlier transmitters. Audio is added to the RF with a pair of 810 triodes (it was rare in amateur transmitter design of the time to use a triode, most engineers use tetrodes.) The choice was most likely done to keep the broadcast quality in the transmitter.

The power supply is stock design for its time with a separate supply for RF and AF. High voltage is developed by a pair of 872 recitifiers. The tubes have a dull blue glow when the power amplifier is fully loaded to the 1KW mark. The plate transformer will make two strong men grown with pain if they are involved with taking it out of its resting place in the very bottom of the cabinet. Putting the KW- 1 on the air is no harder than putting the 32V-3 on the air. Collins even used this point to advertise the KW- 1. After all voltages are up to operation, an operator needed only to set the frequency on the PTO, dip the final, set the final plate current to 400 ma. and your on the air. This tune-up was a total departure from the other knob-twister delights of the time.

Like many other transmitters by Collins, the KW-1 is very self protecting, when something, anything, starts to go wrong voltage will shut down. It's hard to hurt the old rig because of this protection. The radio is a pleasure to operate and the operator has a true feeling of using a rig that demands attention when placed in the transmit mode. Just sitting in the shack gives the operator a feeling of power, the entire package was placed in a steel cabinet that is just short of 70 inches (661/2) and weighs in at 600 pounds. This is a rig that is not moved around the radio shack without help and most owners have it setting on wheels of some kind. Primary power connections are run from the service box directly to the transmitter, it does not just plug into a wall outlet. At 100% modulation the power demand is 3100 watts, number 10, or larger wire is a must.

To operate this transmitter is to approach the same feeling we had on our first on the air QSO. This thrill came to this me after almost of two years of restoration to SN 71, but the effort was certainly worth it and I would start on another one tomorrow.

## In this issue...

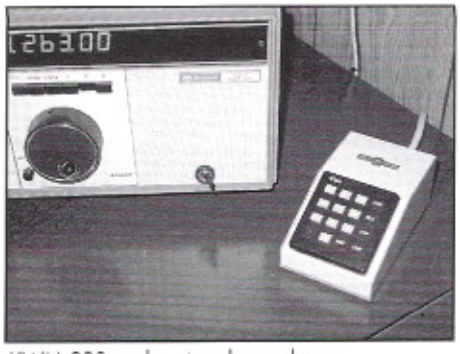


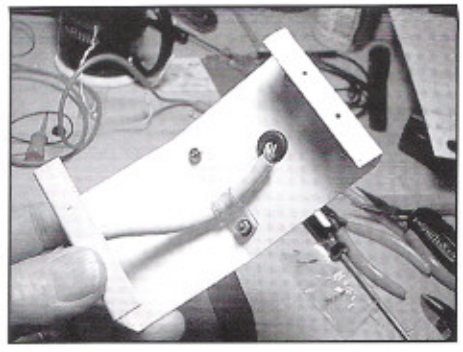
### We need your technical articles!

The CCA is a non-profit organization and this newsletter is written by non-paid volunteers. **This issue was delayed four weeks because we had nothing to print.** Please contribute Collins-related technical articles, hints n' kinks, & photos! We desperately need your support. Please send your contributions to kw6kw@attbi.com.

# A Weekend Project For Your KWM-380 / HF-380

by Tony Sokol, W9JXN





KWM-380 and custom keypad case

For sometime now, I had been looking for a way to spruce up the keypad used on my KWM-380. The former owner had mounted the standard Pipo keypad on a cheap Radio Shack gray plastic project box along with about an inch and a half wide ribbon cable. I tried various sources for a heavier base but they turned out to be costly or just plain unavailable.

One day I spotted a nice sloping panel project box by LMB (#MDC 532 - 5"x3"x2") that not only looked good, but also was available in Beige and Ivory. While not an exact match in color it sure looks a lot better than gray plastic. Some matching spray paint could be used to make an exact match for the purist.

The next challenge was to get rid of that ugly flat gray ribbon cable but it needs to have 9 conductors and be reasonably flexible. A quick check of the junk box revealed a nice printer cable that came complete with a molded on DB-25 connector. A quick check with the ohmmeter confirmed that all of the necessary pins indeed had a wire connected to it. At this point, it is a simple matter to cut the cable to length and carefully strip the insulation and tin the leads. From here, I drilled a hole in the front and rear panels to allow the cable to pass through the box and come out under the keypad. I would recommend the installation rubber grommets to prevent wire chafing. Note that the outer cable insulation is striped back far enough that it does not pass through the front panel. This allows the individual wires the necessary flexibility to pass under the keypad. Once the mounting frame is mounted to the front panel using 2x56 screws, washers, and nuts, the wires are soldered to the correct pins and the assembly is complete. Note the cable clamp that is mounted under one of the frame mounting screws.

The final touch is one of W6ZZ's winged emblem tie tacks glued to the top panel which fills in the wide open top panel space and lends that touch of professionalism. To install the tie tack I drilled a hole to pass the pin through and used rubbery glue that dries clear and can be cleaned up with water. Actually it is model aircraft canopy glue (RC-56) which can be found at your local hobby shop. There is more than ample room to mount weight in the bottom of the box. One source might be the stick on lead weights found in hobby shops that are used for balancing RC model aircraft. In practice I found that the weight was really not necessary. Because of the slope of the panel and the rubber feet on the bottom, the assembly stays put when pressing on the keys.

The whole project only took a couple of hours and the appearance looks a whole lot better than the cheap plastic enclosure. On top of that, the cost of the project is substantially more palatable than some of the other sources of KWM-380 keypads not to mention the self-satisfaction of a neat little home brew project.

# 100kc Calibrator

by Dutch Maurer, WB7DYW
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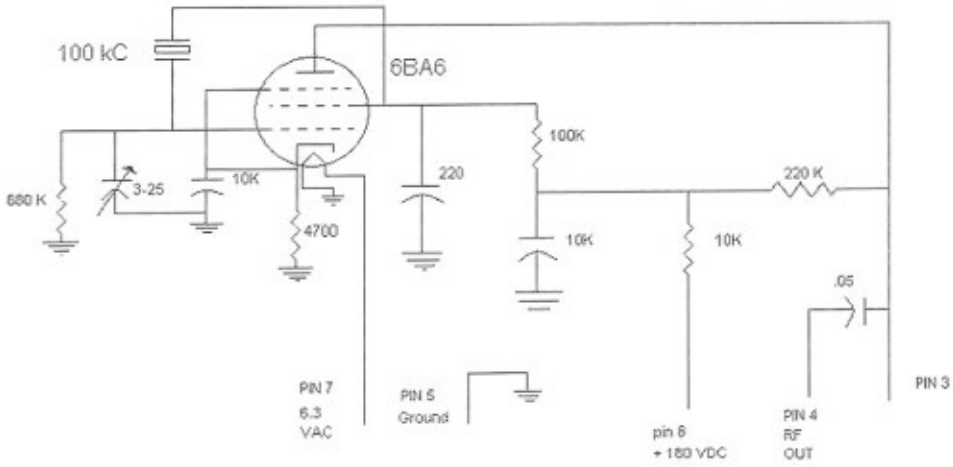
I was in need for a crystal calibrator for my Collins 75A-3 and found that they were very hard to find so I made one, it is a very simple project and a lot of fun for the experienced or beginner and all of the parts are easily found,

I spent a little over $25 making one with all new parts. This is a great project for your Collins station and is a simple project that almost everyone needs for their old boat anchor receiver, the 100 Kc calibrator.

This one is wired for the Collins 75A-3 but you can change the connector for almost any receiver, as the circuit will work on just about any radio with 6.3 VAC & +180 VDC.

Many of the parts can be found in your junk box but for this one I purchased all new except for the crystal (I hade one) but they're available from almost any crystal manufacture.




Here is a parts list:

1. Small metal box (Radio Shack $1.99)
2. 6BA6 tube
3. 100 Kc crystal
4. 2 ea 10K caps
5. 3-25pf variable cap
6. 220K cap
7. 680K ½ watt resistor
8. 4700K ½ watt resistor
9. 100K ½ watt resistor
10. 10k ½ watt resistor
11. 220K ½ watt resistor
12. .05 output cap.

# The History of the CCA

by Floyd Soo, W8RO
floyd@hi-rescom.com

The Collins User Net was started by Bill Wheeler, K0DEW, in early 1988. Bill has been interested in Collins equipment since he was in Jr. High School, just like many of us. He knew that there were many other like-minded people out there that had a desire to interact with each other. He also recognized the need for a network of expertise, rigs and parts to keep everyone happy. He began by placing a classified ad in several issues of QST informing the public of his intention to start a net for hams interested in Collins radios. He and several friends monitored several prospective frequencies on 20M for weeks, until they found an open slot Sunday afternoon on 14.263 Mc. When he called that first net in early 1988, he had 17 check-ins. Who would have ever thought that it would eventually grow to a net that has lasted over 5 continuous hours with hundreds of check-ins! I know! I have run those marathon 5 hour nets all by myself after the peak of Cycle 22!

The word got out and the net grew quickly. Pretty soon, the net was well known, with hundreds of check-ins and hundreds more that listened! We heard from many that didn't check-in via the mail! After a couple of years of growth, there were many that asked for a newsletter to keep the group informed of current events. Bill asked for help in this regard and Jay Roman, KB0ATQ, stepped up to the plate. With Jay handling the lion's share of the responsibility for thenewsletter (The Collins Collector's Monthly Magazine), a handful of us started the Collins Collectors Association. At this time, we were an informal, unofficial, unsanctioned, loose-knit group of people (some hams, some not!) that decided to organize our energies. We planned our first Collins Forum at Dayton and I was appointed Net Manager by Bill and held that position until November 1998. I asked Jay Roman to help with the nets, which he did for several years. Bill, Jay and I ran those Collins nets for several years before we began to burn out. At that point, we began to enlist the help of others that had been on the net consistently. That gave us all the breathing room that we needed to gather ourselves up and move on to bigger and better things.

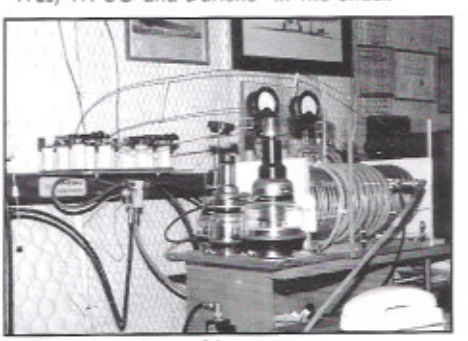
At the 1992 Dayton Hamvention, the CCA was officially established, and the first Board of Advisors appointed. There were 9 of us on that first Board. We began to deal with concerns that had come up with the growth of the Sunday Net, the club and the magazine. We came up with the first set of Grading Standards for used gear, the first Market Watch to monitor the going prices of Collins rigs, the fax on demand system, the 75M nets, the annual Dayton and Cedar Rapids get togethers, etc, etc.

The other thing that we all became painfully aware of was the fact that we were losing the people that made history, slowly, but surely. We realized that our most important mission was to gather and archive any and all historical and technical information that we could for future generations to enjoy! We became more dedicated to that goal as time passed. As I told you, Bill asked me to open the CCA Mission Statement, which I did, and that has stayed to the present. The videos that I have produced were prompted by this philosophy, as well.

There was a reprint of an article from "Rockwell News, Collins Avionics and Communications Division, Vol. 7, #8, Aug 1991; that appeared in the CCM, Vol. 1, Issue 4, Sept 1991. It talked about how the CCA and CCM started, who started it, when it was started, how Rockwell/Collins became involved, etc. In the May 1992 (Vol. 1, Issue 12) issue of the CCM, there was an article by Bill Wheeler that talked about what transpired at Dayton with the first "Board" meeting. So if you are looking for the date that the CCA was formed, I guess that April 1992 is as close as we'll get. I'll look up the day, if you want me to. The CCA Board of Advisors first appeared in the August 1992 (Vol. 2, Issue 3) issue of the CCM.

# In the Shack

Wes, W7UO and Darlene "In The Shack"



Definitely a "thing of beauty"

**Please send us your shack photos for future publication. Send us a high resolution photo ...with you in the photo and a brief description. Email them to kw6kw@attbi.com.**

## Join Us on the Air!

- Sunday 14.263 mHz at 2000Z
- Tuesday 3805 kHz at 8pm CST
- Thursday 3875 kHz at 8pm CST
- Friday (West Coast) 3895 kHz at 10pm CST
- Sunday 10m AM 29.050 mHz at Noon CST
- 1st Wednesday AM 3885 kHz at 8pm CST

Sunday for Technical, Buy, Sell & Swap
Tues., Thurs., Fri., & Sunday for Ragchew



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**The Signal**

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Sandy Meltzer, KW6KW, Production



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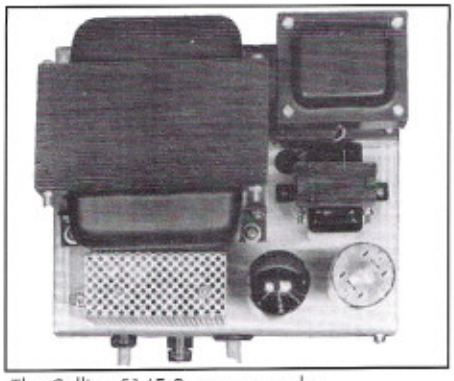
# 516F-2 Ceramic Socket Replacement

by Al Manhan, K2DYH



The Collins 516F-2 power supply

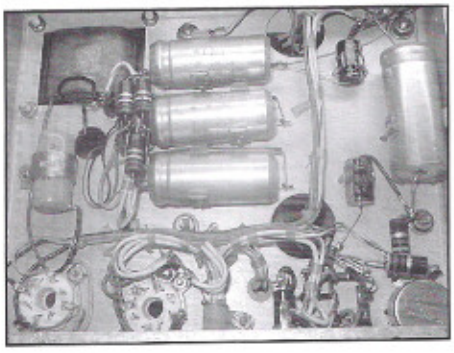
After my 516F-2 P/S socket shorted I looked around for something that would look like the original but incorporate ceramic material with as little work as possible. I found the necessary components at Triode Electronics at HTTP://store.yahoo.com/triodeel/index.html.

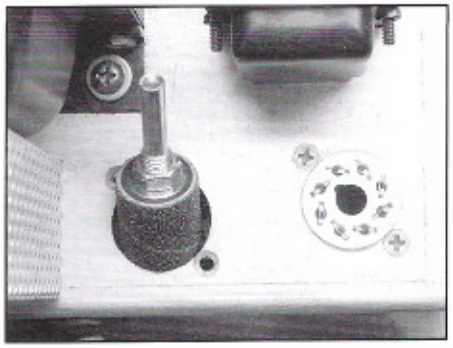
Look under Sockets, Octal and obtain the one inch ceramic socket $1.95, if you are a big spender spring for the ceramic/gold $2.95 but I wanted to be original.

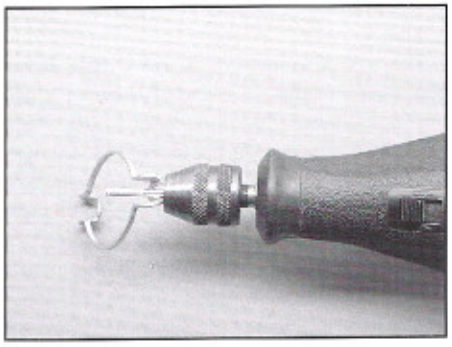
The only special tools needed are a Dremel with narrow metal cutting bit and a ¾ inch drum sander in electric drill. The new socket package consists of a socket and retainer ring. The original screws are reused but new nuts have to be obtained slightly smaller in diameter to fit the retainer or if cannot be found file them down. The one inch socket is a hair larger than one inch, so with the ¾ inch drum sander go around the hole with a series of passes in an even circle to fit the socket. Don't get overly ambitious here because if the hole is too large it will interfere with the mounting screws.

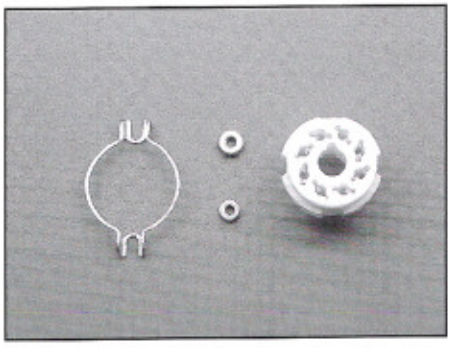
Next notch out the retainer a little bit more with the Dremel to line up with the existing holes. Again be very careful here as there is not much material to work with . Using the new nuts the socket can be installed.

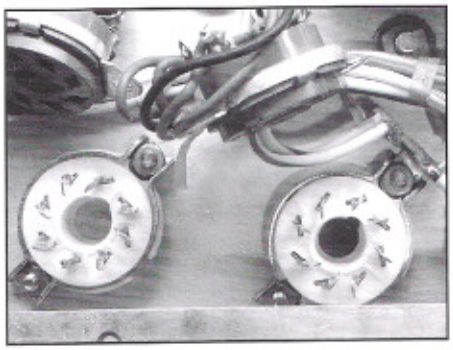
Now it's just a matter of bringing the wires on to the new work. Happy days are here again!

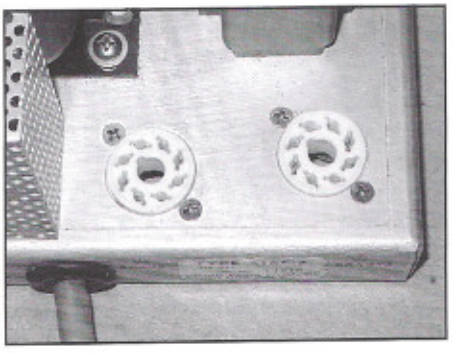












# Safe Shipping

by Don Merz, N3RHT

I need an inexpensive way to pack antique radios safely. If you are inexperienced, the best bet is to take the radio to UPS and have them do a foam-in-the-box packing of it. If you want to do this yourself, most good hardware stores carry the necessary foam. Those Mailboxes, etc. places charge big bucks to pack stuff, then they mark up the UPS costs by 200-300% and to add insult to injury, claims made in the event of damage must flow through them. If you do use these places, watch how they pack your radio--sometimes they just pour a bunch of peanuts on top of the radio and that is really asking for trouble.

If you pack yourself, here are some tips:

1. Use sturdy boxes--don't re-use paper towel boxes from the supermarket--they were designed to hold lightweight paper towels not heavy radios.
2. Always bag the radio before packing.
3. Line the bottom of the box with 3/4" or thicker sheet styrofoam. Builders supply places sell this stuff for insulating houses. If you can get the styrofoam cheap, then line the sides of the box with it too.
4. Start with an oversize box and, after laying in the styrofoam as above, pack it tightly with your choice of peanuts, rolled up newspaper, bubble pack, etc. The radio must be completely immobilized in the box and unable to come into contact with the sides of the box no matter how hard the box is dropped.
5. Put address info inside the box in case the label is ripped off.
6. Seal with nylon strapping tape. If you have packed tightly then the box should be hard to close and have a "bulging" appearance when taped up. I cover the strapping tape with plastic box sealing tape as an added measure but you may think that is wasted expense.
7. This may be futile but you can try writing "Up (with and arrow), FRAGILE, DO NOT DROP" on the box 4 sides and top. It may do no good. But in a claims process, the claims adjustor will write down if the box was marked FRAGILE or not. As an aside, he will also note if the box is re-used, what packing materials were used, etc.
8. Write address info BIG--sorters and truck drivers are in a hurry.
9. Mark boxes going to the same address 1 of 2, 2 of 2, etc. so driver knows to load and unload them all together. For boxes and packing material, look around your area for small stores that sell household decorative items made of glass and wood, or a musical instrument store. If they routinely destroy their boxes and packing before junking it, then talk to them and ask for their help--they will almost always save stuff for you if you are nice and don't make messes for them to clean up.