

ANTIQUÉ COMMUNICATIONS RECEIVERS: COLLECTING AND RESTORING TECHNIQUES

Chuck Dachis
"The Hallicrafter Collector"

PART ONE: THE STORY

My involvement with electro mechanical devices extends back to my early childhood. As a toddler I was not interested in playing with the usual toys designed for children of my age, but rather the neighbors discarded toaster, burned out electric fan, or an old carburetor! My mother didn't see any problem with this until one of her friends admonished her for letting me play with this "junk" instead of buying me "proper" toys. Being embarrassed by this, and also sensitive to my needs, she decided to convince me to play with "normal" toys by using a very logical approach. She told me that all these old things were dirty and could cause germs, so it would be a good idea not to play with them any more. I have always had a very logical and orderly thought pattern, approaching that of the "scientific process". At age 3 or 4 my response to this problem of "germs" was simple. I took all my "junk", through it in the bath tub and washed it! Mother told her friend to mind her own business!

I have always had an affinity for mechanical and electronic devices, and wanted to know what made them work. My dad wouldn't let me take apart the family radio because, he said, "it works fine, and if it works - don't fix it"! So at age 8 I found an old Philco "Cathedral", plugged it in, and watched it smoke and blow a fuse (no, I didn't wash it in the tub). I excitedly rounded up some of my dad's tools and started an autopsy, completely disassembling the set and studying all the weird little parts it yielded. During the next few years I dissected probably 200 radios, most of which collectors would give their eye teeth for. By age 12 I was quite familiar with the mechanical principals of radio construction, and could identify parts and understand their function.

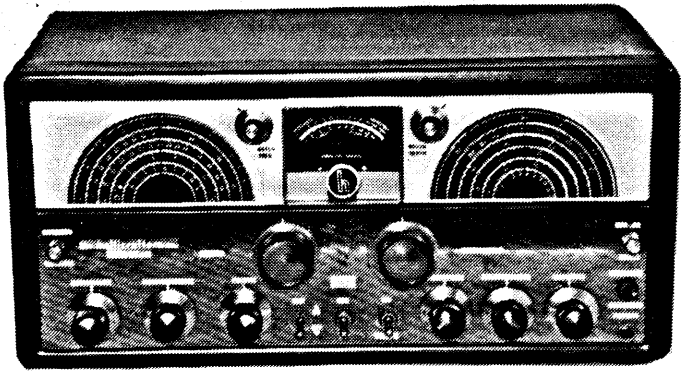
One of the radios I purchased at the local "Goodwill" store for one dollar (a half weeks allowance) was an RCA 816K. It was scheduled for major surgery so it would fit in my "rocket ship" control panel ("Tom Corbet" and "Captain Video" were my heros). I had it out of the cabinet and on the bench when it's grandeur suddenly hit me and I couldn't cut it up (the 816K has always been very special to me and though I sold it a year later and haven't seen one since I have had many dreams about it). I decided I would get it working, and I did! It was a real triumph, and also marked a turning point in my relationship with radio.

I was no longer interested in taking them apart, but rather wanted to fix and use them. The more frequency bands, tubes, dials and knobs they had the better I liked them. I called these sets "super radios". My first Hallicrafter was the SX-28, which certainly fit the "super radio" classification. It was also my first communication receiver. I became an avid AM and short wave DX listener. Whenever we would take cross country trips my dad was always amazed because no matter what city we were in I knew the call letters and frequencies of the stations.

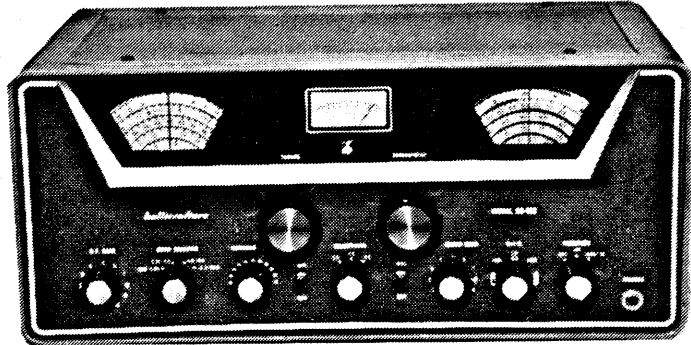
THE DREAM STORE

During the next 13 years I was looking for bigger and better radios and found few, but always hoped I'd find a "dream store" with wall to wall and floor ceiling "super radios" at a price I could afford. I never found that store! My interest in radio waned for a decade or so and most of what I had acquired was given away or sold.

In 1973, I decided (again) to start a collection of "super radios" of all brands. The first radio I wanted, for nostalgic reasons, was the SX-28. Not knowing where to look, it took over 6 months of advertising in the local newspaper to find one. The one I found had been in a flood, was full of mud and in awful condition. It had taken so long to find that I considered it rare, and

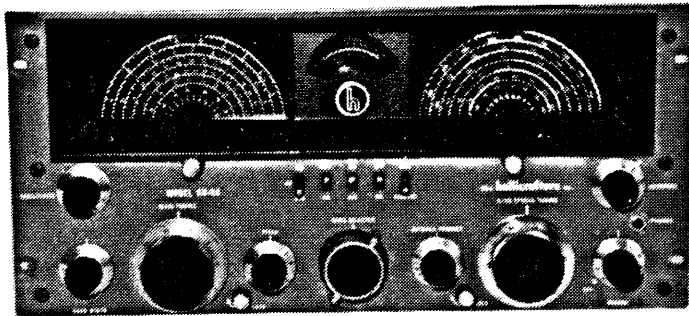


SX-100



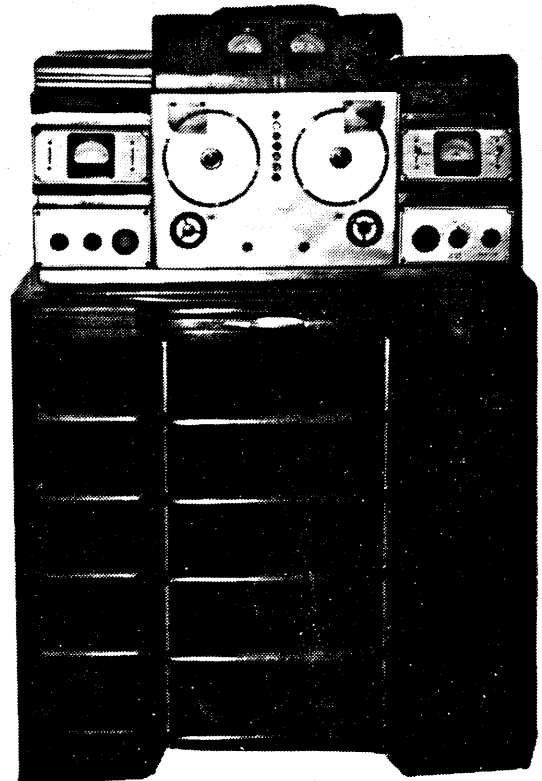
SX-122

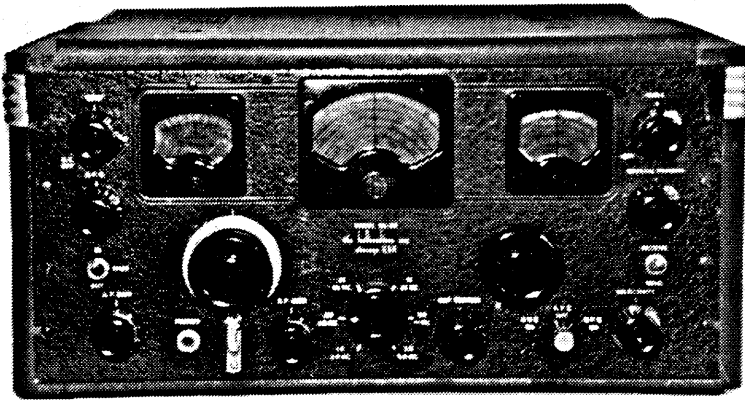
SX-88



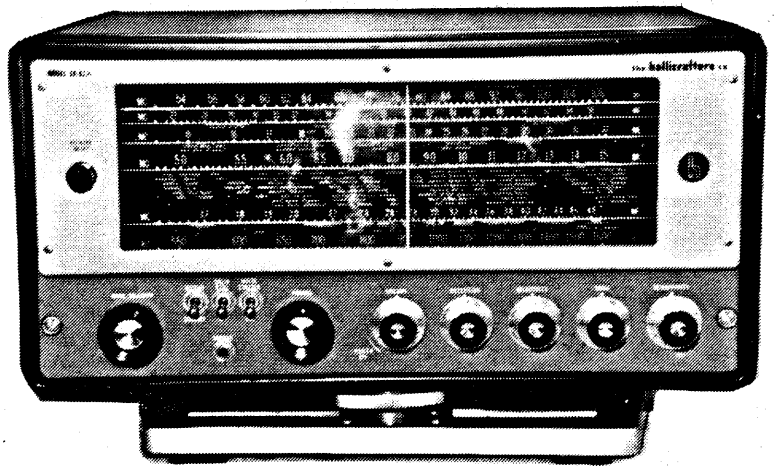
SX-73

Model DD-1
Sky Rider Diversity





SX-28

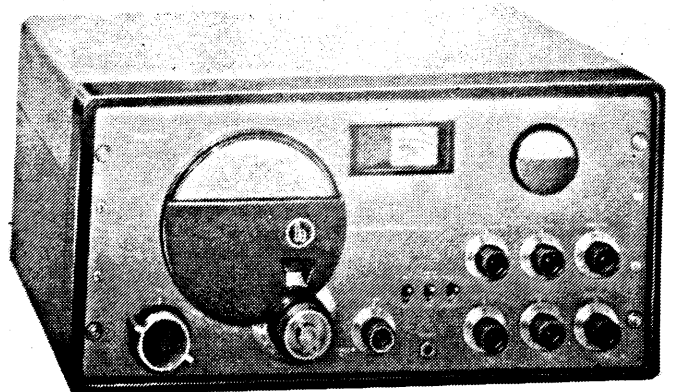


SX-62

RCA 816K



SX-42



proceeded with my first "modern" restoration. While looking for the SX-28, I came across an S-36. Until this time I never knew Hallicrafters made anything other than SX-28's, and realized if there was a 28 and 36, there must be a 29 and 37. With almost no documentation available, finding and collecting all Hallicrafter products, technical data, advertising and promotional items would be a challenging and exciting project. It quickly became apparent that I would need to specialize. My collection currently contains over three hundred different major equipment items displayed on wall to wall and floor to ceiling shelves, and hundreds of original technical manuals, advertising brochures, and smaller accessory units. I have created my "dream store"!

Because I acquire about ten to fifteen sets per year, display space for the collection is a real problem. The bulk of the collection is currently in the second largest bedroom in the house, which has been full for at least two years. There isn't a closet that doesn't have at least one radio stored in it, and they are starting to creep out into the other living areas! I am building a 500 square foot addition to house the collection, but that too will be outgrown shortly. My goal is to open a museum with adequate space so this wonderful and unusual collection can be enjoyed by any one who is interested.

When most of us think of Hallicrafters we remember the SX and HT line of Ham and SWL sets. This is a small portion of what was actually produced. Documentation has become as important to me as acquiring the products. Most of the original company records were either lost or destroyed years ago, and until I published the first edition of my comprehensive product list, THE HALLICRAFTER COMPANY: 1932-1982, A PARTIAL PRODUCT LISTING COVERING FIFTY YEARS OF PRODUCTION, in 1983 no one knew just what the company produced. This "list" is over thirty pages of condensed type and contains the model numbers, names, production dates, original prices, and a brief technical description of as many Hallicrafter products as I am aware of, along with some historical information on the company and comments on some of the equipment.

I am constantly finding new models and product lines I never knew existed, and just published the third edition in late 1989. This "list" is an invaluable tool for any beginning Hallicrafter collector, or for someone who wants information on the products, and is available from me at \$11.00 post paid. There is no book currently available dealing exclusively with Hallicrafters or it's complete product line but I am working on it, and will use the "list" as the foundation for the product section.

There are several books available that give a good cross section of information on many different brands including Hallicrafters. Two that I would recommend are "A Flick Of The Switch 1930-1950" by Morgan E. McMahon, published by "Vintage Radio" (Box 1331, North Highlands, CA. 95660), and "Communication Receivers, The Golden Years" by Raymond S. Moore (RSM Communications, P.O. Box 218, Norwood, MA. 02062).

What were the biggest, best, and most exotic general coverage receivers built by Hallicrafters? There were four. The most exotic was the Sky Rider Diversity, model DD-1, produced in 1938 at a cost of \$550.00. A twenty-five tuber that stood nearly four feet tall, three feet wide and two feet deep. It's frequency coverage was .55 to 45 Mhz in six bands. The unit was actually two receivers using a common power supply and audio amplifier. The black steel and chrome tuner sat on top of the walnut speaker enclosure, which also had a pull out writing desk. The separate power supply and audio chassis sat on shelves in the speaker cabinet along side the sealed base reflex speaker compartment containing the Jensen 15 inch pm speaker.

The "best" receivers were the SX-28, SX-73 (R-274D) and the SX-88. The DD-1 and SX-88 are very difficult to find, the SX-28 is still relatively common, and the SX-73 is becoming scarce but can be found. Other "good" Hallicrafter sets are the SX-42, SX-62, SX-100, and SX-122. Good non Hallicrafter radios I recommend are the HQ-170 and 180 by Hamarlund, The NC-183 by National, the R-390/URR, and there are many others (see photos at end).

What can the beginning collector expect in the 1990's? In the early 1970's there were only a "handful" of serious radio collectors, most had no interest in communication gear, but rather in the grand old Scotts, Midwests, Atwater Kents and Zeniths, to name a few. This left the field of collecting vintage communication equipment wide open and relatively inexpensive. There was little

demand for it and I was able to buy many radios in the five to twenty dollar range, and as often as not was told I could have it if I would just haul it off!. Unfortunately, this is not the case today.

In the past few years there has been a tremendous resurgence of interest in antiques and collectable items of every description, especially antique and vintage radios of all types. This has driven the price of most of these items to levels where only the well off can contemplate a collection of considerable size. Most of the radios bought today are by what I call "mini collectors", those who want from one to a dozen or so sets. For most, the emphasis is on owning these radios and not on restoring them. Don't despair, there are still some good deals out there.

The twenty to sixty year age of these vintage radios means they will almost certainly need considerable work to bring them back to their original glory. Once properly restored they will usually provide many more years of good service. For those of you who are not technically inclined but want to own and operate one of these radios, good news! One of the "spin-offs" of the antique radio "boom" is the reappearance of technicians who know how to work on these sets. Several advertise in the magazines mentioned later in this article, and in any larger city there is likely to be one or more vintage radio repair shop listed in the phone book. But be careful for it would not be unusual to spend \$300.00 to \$400.00 to have the SX-28 or other vintage "super radio" restored! For those doing their own restorations and who want a refresher course in radio repair I recommend Practical Radio Servicing by William Marcos and Alex Levy, published by McGraw Hill in 1953.

PART TWO: THE RESTORATION

"This radio has been completely restored". How many times have you heard that statement? What does it mean? "Restored" can mean different things to different people. I have seen radios where "restored" meant that the dust was wiped off, a tube or two and a capacitor was replaced just to get them to work. I have also seen "restored" radios that have been completely disassembled, all metal parts refinished to exact paint or plating formulas, new lettering silk screened on the new finish, all components and wiring replaced with "new" components of the same type and vintage, and new plastic parts molded from old formulas. Would this radio be restored, or is it new? For me the answer lies somewhere between. The level of detail for each restoration I do will depend on the initial condition of the radio, rarity, its value, and the availability of parts. For some, other considerations may include funds to purchase parts and on ones own skill, time, and desire.

Start the restoration with an overall physical cleaning and examination of the radio's general condition. Any physical or mechanical problems or modifications that would impede the electrical restoration are handled first. Remove any non original switches, "magic tuning eyes", or meters that may have been added and fill the resulting holes in the front panel, chassis or case. This can be tricky! I generally back the hole with metal duct tape, then fill with several thin coats of automotive "Bondo", lightly sanding between each coat. Once it is dry and sanded smooth I "spot" paint the repaired area with an "air brush", blending it into the existing finish. Matching the paint is very important, and will be discussed in more detail later. Depending on the location of the hole, the panel may have to be removed and if any original controls or switches are broken, bad, or missing, they will be replaced at this time.

Having fixed the physical and mechanical problems we can move to the electrical restoration. Remove all modifications, rework sloppy former repairs, and return all circuitry to the specifications of the original factory schematic. Next check the small components, starting with paper and wax by pass capacitors. To check these capacitors you need not remove them, but can carefully de-soldered one lead, disconnecting it from the circuit, then check for "leakage" resistance on the high range of a good analog VOM (the digital units do not work well for this test).

It has been my experience that most of these capacitors are "bad", and have a typical leakage resistance of 100 K ohm to 10 megohm, I generally replace all of them. There are three reasons "leaky" capacitors are replaced; First, a circuit will not operate properly when a capacitor is

acting more like a resistor. Second, the leakage current through a dozen or so capacitors can create enough additional "load" on the power supply to cause failure of the power transformer, rectifiers, and other power supply components. And last, when I restore a set I want it to work for a long time. If I didn't replace all these capacitors, sooner or later (usually sooner), they will fail. The mica and ceramic capacitors are almost always good and will not generally need to be replaced or even checked.

Any resistors connected to the terminals we de-soldered while checking and replacing capacitors will also be checked at this time, and replaced if necessary. Resistors are the next biggest culprit in degrading the performance of the equipment. It is typical for many of them to "look" perfectly good but be any where from 10 to 200 percent higher in resistance than the marked value (they are rarely lower). This causes a serious voltage deficiency in a given circuit, not allowing it to function properly. Any resistor that is more than 10% out of tolerance (high or low) should be replaced. A quick check of resistors can be done in circuit with the VOM. When you check in circuit it is not possible to get a reading higher than the marked value unless the part is bad. A suspected bad part can be de-soldered as we did with the capacitors, and a detailed check can be made. I recommend that only one part at a time be checked or replaced to avoid confusion. When replacing small components I use "state of the art" "mylar" capacitors (usually 600 working volts) to assure continued long lasting performance, and new resistors of proper type and values. These parts can be ordered from most electronic supply houses.

Now I get brave and apply power to see if it works, or smokes!. Usually it works but not always well. This means there is more to do. Check and replace any bad tubes, and any major component that may be bad (transformers, IF cans, and electrolytic capacitors). "Clean" the controls and switches with control cleaner, and finish the physical cleaning of the chassis and major components. Next we do a complete IF (intermediate frequency) and RF (radio frequency) alignment, in that order, following the factory instructions. The set should now work as well or better than it did new!

What do we do about dirty paint and lettering on the case and front panel? Most of the time the paint and lettering can be restored to it's original brilliance by using various cleaners and rubbing compounds. A mild automotive rubbing or polishing compound can be found in the automotive section of most K-Marts and will work well for this purpose. A light weight oil such as "WD-40" also works very well for cleaning and bringing back the sheen to dull paint. Caution should be exercised with some cleaners on some surfaces. Test everything on a small inconspicuous area first. There is nothing more disheartening than to take a dial or lettered panel and "clean" all the numbers or lettering off the surface! A mild dish washing detergent will usually remove most of the dirt and grime with no damage to paint or lettering. Extreme caution should be used in cleaning the numbered side of glass or plastic dials. Start with plain water and a soft cloth and do not rub hard. Avoid "Windex" and other glass cleaners because they contain ammonia which can dissolve the lettering.

Next you can touch up any paint scratches and replace any missing or faint letters with "dry transfer" lettering. The lettering I use is "MarKit JR." made by Russell Industries Inc. and is available at most electronic supply houses.

Your radio should now work and look almost as it did when it left the factory. Sounds simple doesn't it! Well, it's not! Here are a few more tips. Lead "dress" is very important. New components should be installed in the same space the old one occupied, terminals should be de-soldered and old leads removed. Keep new leads as short as possible and follow the same wire path as the old component. Making a drawing may help here. Some of these components are in places that seem nearly impossible to reach so it helps if you have some training as a brain surgeon and lots of patience.

TOOLS

In addition to the "usual" tools, I find surgical hemostats and tweezers very useful. A magnifier light is essential for those of us with failing eyesight, as is the service manual which will give the alignment instructions, parts lists and schematic. The only essential electronic tool

for most restorations is a good analogue VOM. Oscilloscopes, frequency meters, and signal tracers can make the job easier but are not necessary. For RF alignment I recommend using a signal generator, but it can be accomplished without one by using broadcast stations of known frequency on the standard broadcast band and WWV on the short wave bands. IF alignment can be done "by ear", but again I recommend a signal generator for accuracy and maximum performance.

MATCHING PAINT

Matching paint for cabinets and panels once presented problems until I took clean examples of the dozen or so shades of Hallicrafter gray and black to a local automotive lacquer company and had them mix up a quart of each. If a panel or cabinet is in very bad condition, I will acquire another rather than do a complete repaint or re-lettering job, unless of course the radio is very rare.

MAJOR COMPONENTS

Unlike the small components my philosophy is to use only original parts when replacing power, audio, and IF transformers. There is no commercial source for these parts so where do you find them? Well, the answer is simple, although somewhat costly. Sometimes I will purchase as many as five radios of the same or similar model to get enough parts to restore one. Many of the Hallicrafter models from a given time period used the same or very similar components. This gives me a choice of models to choose from, making acquisition of parts easier. If the radio is rare and needs a power transformer, and the chance of finding another is slim, I would have the transformer re-wound. One company doing transformer re-winding is The Peter Dahl Co. of El Paso Texas.

How do you find a forty year old radio of particular model to use as a source for parts let alone for your collection? I have been collecting Hallicrafter products since 1974. About eighty percent of my collection is acquired through my continuous ads in the national radio magazines, like "QST" (the journal of the "American Radio Relay League" 225 Main St. Newington, CT. 06111), "Antique Radio Classified" (P.O. Box 2, Carlisle, MA. 01741), and "Electric Radio" (P.O. Box 139, Durango, Co. 81302). Others are acquired at swap meets. It is my policy to buy any Hallicrafter product whenever it is offered if "the price is right" regardless of how many of the same model I already have. After 16 years I have built quite a stock of "parts radios" as well as duplicate sets used for trading.

This stock of extra radios makes restoration much faster than would otherwise be possible. If a front panel, dial, or power transformer is needed, it's off to my "parts department" with out waiting weeks or months to locate and obtain the part. I usually purchase tubes, and sometimes capacitors, resistors, power cords, and small items like rubber grommets, at swap meets. I have bought many hundreds of "new" military surplus tubes, usually in lots of a hundred or more for a few dollars. Admittedly, this is getting harder to do as most people are now selling by the tube and for a much higher price.

Purchasing radios and parts in these quantities is probably not a good idea for everyone. There are commercial sources where most tubes, manuals, and some components can be purchased in small quantities. One such source is "Antique Electronic Supply" (688 W. First St., Tempe, Arizona 85281). I can usually supply photo copies of Hallicrafter manuals, and if I can't "Ardco Electronics" (P.O. Box 95, Berwyn IL. 60402) usually can. For other brands you could use "HI Inc." (P.O. Box H 802, Council Bluffs, Iowa 51502), but there is a charge for their catalogue.

If it's a Hallicrafter you want, I enjoy helping others fulfill their nostalgic fantasies in either finding a specific model, finding parts to restore one they have already found, or just giving information about the company. I will answer any and all questions I can on Hallicrafters and the equipment. All I ask is a self addressed stamped envelope.

As a result of writing this article I suffered a acute nostalgia attack over the RCA 816K. I am happy to report that I have found one and have recovered. It is restored to museum quality and is once again part of my conscious life. The dreams have stopped! Happy hunting and good DXing.