RESTORATION TOPICS

Rebuilding A Scott Allwave 23

BY FRANK DROST

WEB EDITION

When a collector rises to the challenge of a difficult restoration, the rest of us like to hear about it and have an opportunity to admire, maybe even emulate, the work. Frank Drost gives us that opportunity in the following article. (Editor)

Several years ago, as a new collector, I passed on buying a Scott Allwave 23 in a nice Tasman cabinet just because I thought that a Scott would be too much of a challenge for me to rebuild. I went on to buy and restore many complicated radios, such as my Philco 680 and 690 sets, and had no apprehension about rebuilding them.

Then one Saturday morning, I stopped into Great Northern Antique Radios in Minneapolis, and found a very nice Scott Waverly Grande that had the Allwave 23 chassis in it. The chrome was as nice as one could ever hope to find. I was so impressed with the quality of the cabinet and chassis condition that I just knew that this was too good a set to pass by. A deal was struck, and it was to become the first of several Scotts in my collection. See Figure 1.

MY FIRST SCOTT REBUILD

Having made the purchase, I planned to go forth and perform an electronic restoration on each chassis. I proceeded to collect all of the service data that I could find, and finally built up the courage to remove the four nuts and bolts which held the bottom cover on to the upper chassis, and begin the restoration process.

It was a totally different world in there from what I was used to working on. After gaining a familiarity with and an understanding of how the set was made, I felt the initial fear transform itself into a newfound appreciation of how well Scott had made the Allwave 23, and just how serviceable it really was. I spent the next several weekends rebuilding both the tuner and amplifier chassis, and finally got to the point where I could apply power and see what my work would yield.

Using my Variac, I slowly applied power to my newly restored Allwave 23 chassis and heard a station coming in. I then brought the voltage all the way up and began to check things out. All I can say is that I was amazed at how well that set performed. Extremely sensitive on all bands, and what audio output — those sets are loud! My first Scott rebuild was a complete success. A great experience and confidence builder!

A SECOND REBUILD — DOCUMENTED

I recently decided it was time to rebuild another

Figure 1. Frank Drost's first rebuild, shown completed here, was this Scott Waverly Grande with an Allwave 23 chassis.

Scott Allwave 23 chassis that I have had on a display shelf for quite some time. I thought that it might be a good idea to try to document the major phases of chassis restoration, and hopefully, inspire someone who is a little hesitant about rebuilding his own set. Figure 2 shows the various units of the Allwave 23 set.

Before I get into the rebuilding process, I would like to dispel the myth that owning a Scott radio has to be an expensive proposition. What I have found is that a large part of the value placed on a Scott chassis has to do with the condition of the chrome. If the chrome is in very good condition, then a premium is placed upon the value of the chassis. Many times, you can find an Allwave 23 that has very bad chrome. In this case, the value will be reduced significantly, and that opens up the opportunity for someone with a limited budget to become a Scott owner.

It should be fairly easy to find a "chrome chal-

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(Scott Allwave 23, continued)

lenged" Allwave 23 upper and lower chassis and speaker for under $1,000. How much under that figure would depend upon just how bad the chrome might be. A rusty set of chassis will sell well under that price. The important thing is to inspect the undersides of the chassis you are buying, and make sure they are clean and complete. And remember, the condition of the chrome will not affect the way the set will perform. You can enjoy Scott performance for less, if you are willing to accept flaws in appearance.

BEGINNING THE REBUILD

The first thing you should do is get a copy of the service information found in Rider's Volume 14. You will find the schematic diagram, parts location and description, and other information that will answer questions that will come up during the rebuilding process. Have a notebook ready, and make thorough notes of each stage of disassembly. You will need to refer to it later on when it's time to put things back together.

Now let's start with the upper chassis. I would suggest taking a quick look at the service info to get somewhat familiarized with how the set is constructed. Start the project by removing all of the tube shields and tubes. Next remove the remaining seven circular chrome cans by slightly rocking and pulling them up from the chassis. The back four cans will have a grid cap lead coming from them. Cut the lead off and then remove the can. Replace the leads with new wire, as the old wire will probably have failing insulation on it.

Alternatively, you may decide to leave the four IF cans on the chassis until it is time to replace parts in each assembly in order to protect the delicate IF transformers. You can decide which way you prefer to proceed. Then set the removed parts aside for cleaning. Figure 3 shows the upper chassis with the tubes and chrome cans removed.

Remove the bottom cover. You will see a second metal cover that protects a disk with coils mounted to it. This disk contains the RF and oscillator coils for each band, and rotates into proper position as the band switch is turned. Remove this metal cover by unscrewing the flat head screws on the front and rear of the chassis that hold it on. The exposed disk-mounted coils are shown in Figure 4. Once this is removed, proceed to remove the circular disk with coils by removing the center nuts. There will be two of them,

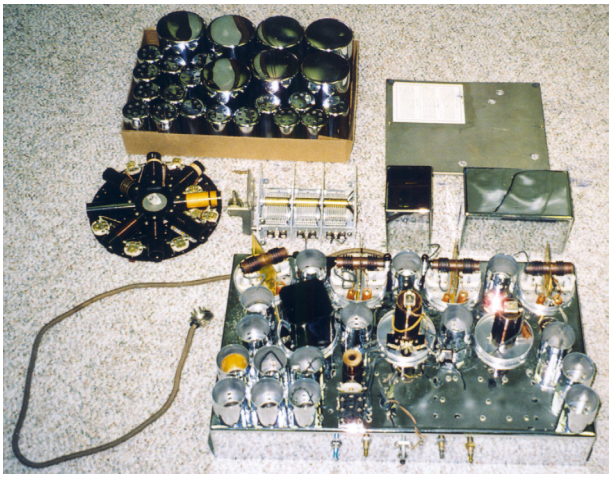

Figure 2. The various component parts of the Allwave 23 set.

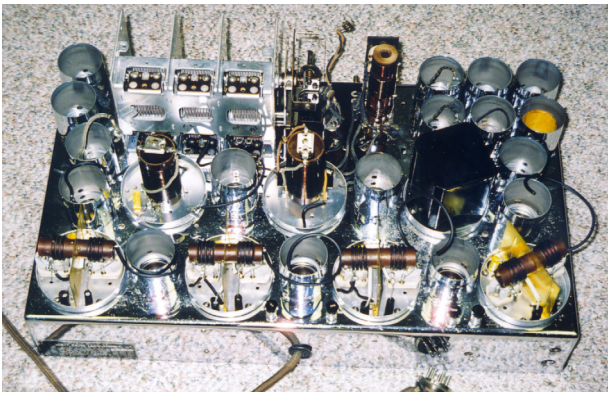

Figure 3. A top view of the upper chassis with tube and coil shields removed..

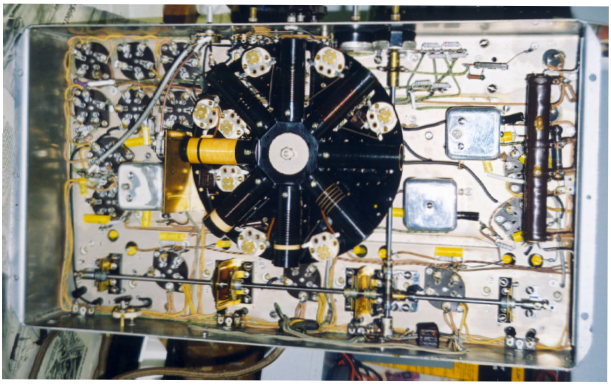

Figure 4. A bottom view of the upper chassis showing the rotating coil disk.

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one on top of the other. Figure 5 shows a view of the chassis with the coil assembly removed.

Don't worry about locking the band selector assembly in place, because disk replacement is very simple. The service data explains how to orient the disk to proper positioning, and it is a simple matter of just replacing the two nuts which hold the disk in place. Once you remove the disk, you will notice two button-shaped metal objects that have some spring action. They serve the purpose of locking the disk into position. You can remove them one at a time for cleaning and lubrication. Once you've done that, place tape over each one so that they do not fall out and get lost as you move the chassis around.

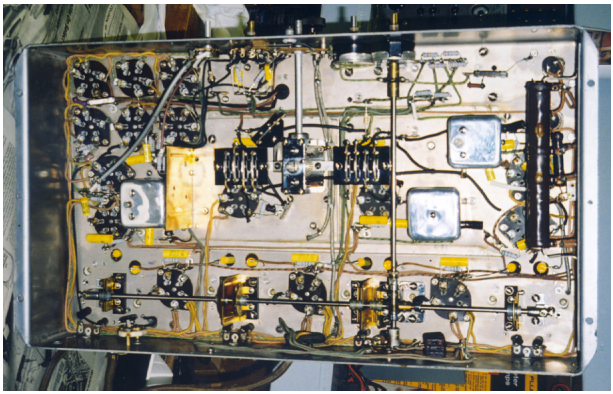

Figure 5. A bottom view of the upper chassis with the rotating coil disk removed.

After you have removed the disk coil assembly, you can now access and remove the screws that hold the two chrome boxes found on the top front of the chassis. The large box covers the tuning capacitor, and the smaller one covers a coil assembly. Look for large flat blade screws located under each box.

In the case of the tuning capacitor cover, you will probably end up removing some of the screws which hold the tuning capacitor to the chassis, as well as those which hold the cover. This is because they are right next to each other and a little hard to tell which hold down what. That's okay, because I always remove the tuning capacitor anyway, as it makes cleaning the chassis a lot easier.

Make sure the tuning capacitor is fully closed for clearance when removing the cover. Make some notes on where the tuning capacitor wires connect, and then cut them to free the part. The coil cover will have a 2-lug terminal strip mounted to it. The tuning meter connects here, and it is held on by one screw. Remove this strip to free the coil cover. You can also remove the tuning meter from the chassis by removing the one screw holding it to the chassis.

At this point, you now have the chassis stripped for cleaning, and best accessibility for parts replacement. Now is the time to wash and polish all of the tube shields, cans, and chrome boxes, as well as clean and polish the upper side of the chassis. Be careful not to damage any of the exposed coils, especially the four IF coils at the rear of the chassis.

Now would be a good time to check for open coils and bad audio transformer windings. Refer to the service info to identify each coil and winding connections for testing. The IF coils usually show around 11 ohms on each side. Be sure to check the audio transformer, which is the large square black box found on top of the chassis. It has five leads that protrude through the chassis. They are color coded, and there is normally enough color left for identifying the windings to be paired during your check. This part is somewhat prone to failure, and it is wise to know ahead of time whether you need to locate a replacement or not.

One thing should be obvious by now. There is a lot of room to work in under the chassis. If you are rebuilding a set that has never been worked on before, replacing the wax capacitors will go quickly. They are clearly marked, and easy to get at. I have found that most of the resistors will be in spec, and the cloth wiring seems to hold up better than other brands from the same era.

Much of the rebuild will be just like any other set you have worked on. So rather than describe every step of the rebuilding process, I will focus on what is different about the Scott.

RUBBER WIRE REPLACEMENT.

Generally speaking, the cloth-covered wire found in the Allwave 23 should be in excellent condition and not need replacement. Scott did use a limited amount of rubber-insulated wire in the signal path, which sometimes is found to be in a hard, brittle state. The insulation flakes off causing shorts to chassis. Sometimes these shorts are hard to spot, and makes troubleshooting difficult.

The best thing to do is to inspect all of the rubber wire runs for insulation failures, and replace those that are bad. Make sure that the replaced wires run exactly the way the old ones did. It makes a lot of sense to replace the grid cap connecting wires that exit the IF cans with new black insulated wire. You can do this just before replacing the chrome cans which cover each IF transformer assembly.

Finally, pay close attention to the rubber wires that run on top of the chassis. Many run through pilot holes, and some have the chrome cover cans in contact with them. This is where shorts can occur if the insulation fails. Take the necessary action to ensure that no shorting can occur.

REBUILDING THE CHOKE ASSEMBLIES.

There are three square cans mounted underneath the chassis that contain the IF diode choke assembly, RF diode choke assembly, and RF choke assembly. Each assembly is identified in the service info along with an internal component description. In order to service these assemblies, they must be removed from the chassis.

Before removal, it will help to make a drawing of where the wires go so as to avoid any confusion upon reinstallation. After you have completed your

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drawing, you can then carefully unsolder each lead and remove the fasteners that hold the assembly to the chassis. Just do one assembly at a time to keep things under control.

Each assembly will contain a coil and various resistors and capacitors. Each one has a wax capacitor that should be replaced, and there will also be resistors that should be inspected and replaced if necessary. I cannot emphasize enough how delicate these assemblies are.

I would advise against removing the coils from the can. There is a chance that you might flex things enough to cause one of the fine coil wires to break, and then you would know what trouble really is! I normally clip the part that I want to replace and leave the lead to use as a mount. Then I wind the lead of the new part into a small coil and slip it over the old lead and solder it. That way, you can replace the part with minimal chance of damage to the coil.

I have yet to have problems with any of the mica capacitors that are part of the assembly, and just leave them as they are. Replacement would require total disassembly to get at the mica capacitor and it's not worth taking the chance.

Slip any insulating covers back onto the replaced parts and install the assembly using the notes you made earlier. This is definitely one of the most tedious parts of rebuilding the Scott Allwave 23, and I suggest that you allow as much time for this as you need.

IF SECTION PARTS REPLACEMENT

The Allwave 23 has four IF stages that are physically located along the back of the chassis. The Scott IF transformers are much larger than what you usually see in a radio of that era, and use large air trimmer capacitors instead of the common ceramic/mica type. Each IF transformer and its associated parts are housed inside of a chrome can. A grid lead wire exits the upper side of each can.

There are two capacitors to replace in each assembly and two resistors to check for proper value. The first IF stage also has a 2-meg resistor and a mica capacitor. The important thing to remember when working on each IF assembly is to be very careful of the exposed windings on each IF transformer. Although they are constructed very well, movement of the chassis while the coils are exposed, or a misdirected soldering iron can damage a coil. Replacements would have to come from another Allwave 23 chassis, so that would make it a difficult and expensive proposition.

My procedure is to do one IF section at a time. Make notes regarding parts and wiring connections, and then carefully replace each capacitor and any bad resistors. Each capacitor fits through a hole in the chassis.

I have found that it makes sense to cut the ground lead from each capacitor as close to the old part as possible. Then fit the new capacitor through the hole to where it is about half way through. Then make a connection from the existing cut ground wire to the new part. This keeps the unusually long ground run as it was originally done. You will probably have to extend the leads from the new parts to their connecting point. Try to position the run like the original. You can use some insulation slipped over the extended lead to protect against a potential short.

There are some rubber wires that connect from the air trimmer capacitors to the underside of the chassis. You will notice that some of these wires terminate in what makes up part of the variable selectivity sections.

There are four square-shaped cans under the chassis that run in a straight line with a shaft going through them. Remove each can to access what resembles a truncated variable tuning capacitor. Looking closely, you can see points where the wires from above the chassis will connect. If these wires in your set are in good condition, it would be best to just leave them as they are. But if the insulation is crumbling, then replacement will be necessary.

Carefully heat the termination point at the variable selectivity section with your soldering iron while pulling slightly on the wire from the top of the chassis. The wire will come out. I usually heat that connecting spot again, and clean out any remaining solder until the hole for the wire is fully open. This makes installation of the new wire possible. Cut your new wires exactly the same length, and then install and solder.

The covers can be reinstalled once the wires have been checked or replaced. If you decide to align the set after you have completed the rebuilding process, then each cover will have to be removed in order to access each air trimmer adjuster. My suggestion is to replace the covers and see how the set performs before assuming that an alignment is necessary.

Finally, install a new grid wire making it long enough to exit through the hole in the chrome can. Position the chrome can to the chassis, and then trim the wire to a correct length and solder the grid cap to it.

REASSEMBLY

Once you have performed the above procedures, replaced all of the remaining wax capacitors and any other parts that were found to be bad, the chassis is ready for reassembly.

Start by replacing the tuning capacitor and both chrome boxes that are located on the top front of the chassis. Installation of the tuning capacitor is fairly straightforward. It might be easier to connect new wires to the part before installing it to the chassis. Feed the new wires through any chassis holes, and attach the tuning condenser to the chassis. Then connect the new wires to their appropriate connecting points.

Again make sure that the tuning capacitor is fully closed, then replace the chrome cover on the chassis. Replace the other square chrome can over the coil. At this point, you should see a huge increase in chassis weight. Continue replacing the remaining parts and chrome can covers by referring to the notes you have made during the disassembly process.

When you have reached the point where it is time to replace the disk coil assembly, refer to the Rider's service manual for specific instructions on how to orient the disk for proper installation. Install both nuts and washers. Check for proper operation by rotating the band switch throughout all four positions. After you have installed the disk, then you can replace the metal cover which will protect it from damage.

Continue on with final assembly, but leave the bottom cover off so that you will be able to make voltage checks during your testing process.

Figure 6. The completely restored Allwave 23 on the workbench for testing. Left to right, the speaker with an optional diffuser, the power amplifier/power supply, and the main chassis.

POWER SUPPLY/AMPLIFIER

The second chassis is the actual power supply and final amplifier for the Allwave 23. There is little that is unusual going on here, and it is mostly a matter of replacing the electrolytic and paper capacitors, and any out-of-spec resistors. Most power cords on these Scotts are usually in bad shape, so make sure that you replace the power cord and wires going to the on/off switch.

There are variations of these chassis that seem to depend upon when they were manufactured. It is helpful to compare your chassis to the service info to see which one you have. I have even seen hybrid versions where there is some overlap between both types. Spending time up front to determine what you have will save a lot of time later on when you start to do the actual repair work.

INITIAL START UP AND TEST

Once both chassis have been restored, it is time to connect them up with each other and the speaker. Figure 6 shows the completed set on the work bench for testing. Refer to the service instructions once again and look for the info on speaker connections.

Scott offered a pair of tweeters for this set. They were optional, and not all buyers ordered them. Because of this, you need to pay attention to how the short cord that is part of the loud speaker is plugged in to the sockets located at the speaker base. It must be correctly oriented depending upon whether you have tweeters or not. If it is improperly installed, then you will damage your set. Before applying any power to the set, make sure you have that plug properly connected.

Attach your antenna following the instructions in the service info for long wire antenna set up. Set the controls in preparation for power up. Turn to the AM band, and set the sensitivity control for maximum. Set the selectivity/fidelity control somewhere between "sharp" and the middle of its range.

Using a variac, slowly bring the set up to power in stages, and watch for anything unusual which might be happening. You should notice some audio coming forth. Once you do, tune the set for a station. Continue to ramp up the variac until you finally are at normal line voltage.

At this point I am assuming that your time and patience has paid off, and you are hearing a station coming in loud and clear! It is now time to experiment with the set and see how it performs on all bands, as well as how each control is functioning. I would advise performing voltage checks on each chassis as a quality control step in ensuring that the set will operate as the designers intended.

I have rebuilt several Allwave 23 sets, and each one has held its alignment surprisingly well. If you decide to align yours, the information for this process is in the service documentation.

SUMMARY

A Scott Allwave 23 is a classic radio that can be attainable by most radio collectors. As I have found, they are not beyond the scope of most hobbyists who have had some prior experience with radio restoration. These were expensive, quality radios when new, and their survival rate seems to be quite high. They are out there. Good luck on your search and restoration of your own Scott!

References:

Rider, John F. *Trouble Shooter's Manual, Vol, 14.*

Jesperson, Alan. Great Northern Vintage Radio, P.O. Box 17338, Minneapolis, MN 55417. 612-727-2489. www.gn4radios.com.

Frank Drost, a computer programmer, enjoys restoring large, high-end, 1930s-1940s console radios. Currently, the core of his collection consists of several Scott Imperials and Philharmonic, along with variants of late 1930s 15-tube Zeniths.