

The Elmers Corner: Taking Tube Radios for a Test Drive

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The first time I had a chance to operate a radio from the 1960s I couldn't believe the difference in the feel of the radio's dials and switches. Being a child of the transistor age I became accustomed to lightweight radios, plastic switches, and soft spinning dials. Turning the tuning dial on an old Hallicrafters or an old Swan HF transceiver was like feeling the whole radio was a mechanical marvel, and I instantly fell in love with the feel.

This month I am going to take a step back in time to look at tube radios with the hope that you will find the same thrill I did as a newcomer, or perhaps rekindle your romance with these mechanical marvels from your past.

Relatively Speaking

I realize what I consider old is not *really* old—the term “old” is always a relative one. The oldest radio I own comes from the 1950s, but I am working on that, slow but sure. Really old radios would come from the '30s and '40s, and ancient ones would be from the '20s or earlier. Fortunately, radios from the '50s and '60s abound, and many parts are readily available for repair.

One of the first things you would notice about older radios is the heft of these things—these are not called “boat anchors” for nothing! Metal cases and metal parts abound, and the size of virtually all of the components are far larger than their modern counterparts. Some radios used slide rule dials and string for tuning, with rather intricate stringing patterns.

The advantage to slide rule dials is more room for other components while keeping the unit smaller over all, but the accuracy of the vernier dials is noteworthy. Most well-made older radios had gear reduction systems in them to make tuning easier. The Swan 350 I own actually has a fast and slow/fine tuning dial—the outer ring moves through the band quickly, while the inner knob is a fine tuning adjustment.

Tubes

For some folks “tubes” represent a return to an age they never knew and do not want to know. For others it brings back fond memories of sitting in the warmth and glow of their radios on a cold winter's evening. Then there are folks like me who missed the “golden age” of radio, and who want to experience even a small sense of that time.

Old radios are not much different than modern radios in many respects, other than the tube circuitry and their controls. While the tuning of the radio (tuning here refers to balancing power/impedance issues for the vacuum

tubes) requires a bit of a learning curve, almost everything else is what you would expect from a solid state radio (without the menus!).

Tube radios need time to warm up and to stabilize. A common complaint for these radios is that they drift off frequency over time. Typically, the amount of drift after warming up for 30 minutes is minimal, and I have not noticed much drift at all, even though Swan 350s were often called Swan 3-drifties! Any tube radio will need time to stabilize, and even modern solid state radios can experience a bit of drift.

Of course the first thing to do with any tube radio is to read the manual, particularly if you do not already have a lot of time operating your particular unit. Even if you think you know what to do, enjoy the manual. Unlike modern manuals, older manuals are almost a radio education in themselves as there is often radio and antenna theory summarized in a well-written style. There can also be a description of how the major components work which can help you understand the design flow/logic of the radio, and instructions on alignment and calibration.

Vacuum tubes (or valves for the British) once so ubiquitous such that every corner drugstore had a tube checker, can be a bit of a mystery to modern ears. Plate currents, grid currents, and load currents are things we don't have to worry about with modern radios, but if one never experiences a tube radio, this part of the magic stays forever hidden behind the curtain.

Tube Basics

Without going into a long technical section on tube operation, the basic idea of a tube is that electric current comes into the tube, usually glass, and travels through a vacuum. There are electrical conductors (electrodes) which take the electrons from a heated filament and cathode (by means of thermionic emission) to a plate, the rate of which is controlled by a grid, and an amplification of the current results.

This basic tube was referred to as a triode tube. Advancements in field led to adding more grids to produce the tetrode (4 elements) and the pentode (5 elements), with the Pentode being the most commonly used in radio. The additional electrodes allowed for more control over the current, reduced capacitance, and greater amplification.

This control is determined by adjusting plate and grid current/voltage levels—thus the controls on vacuum tube radios. Adjustments must be made in the proper order, and this often become confusing for the newcomer without following the instructions in the manual. After using the controls for

a while one can tune up the radio fairly quickly, but if you are like me, a few weeks away from it and I am getting out the manual once more.

Using an Old Radio

Warm up time is always needed for older radios, but if a radio has been sitting for a long time it is always advisable to bring it up to full power slowly, using a Variactor or similar device. Giving an old radio a 110v "shock" could easily blow out some of the components in the radio.

By slowly raising the power voltage you also might be able to coax weakened capacitors back to life, sometimes referred to as reconditioning a capacitor. When slowly raising the power you may not see the tubes begin to glow until you are at half power, or they may be very dim. As power is increased the tubes should have an orange tint to them and be reasonably bright, but not like looking at a light bulb. If a tube does not glow it may have lost its vacuum or not be making proper contact in the socket. Another possibility could be a heater to cathode short circuit. This could also cause one or more tubes to be significantly brighter than the others. You may need to check some tubes, or all of them, to locate a problem.

Assuming everything powers up correctly, give the tuning dial a spin and see what comes in. Most controls not related to tuning up the power amplifiers will be familiar to you, such as AF control, RF control, AGC, and the like. Of course if you are only using a receiver, virtually all of the controls will be familiar since you will not have to worry about transmitting/amplifying tubes.

Enjoy the Warmth

I think old radios are a mindset as much as anything—in a world of microwave-type fast food expectations, an old tube radio is like sitting down to Sunday dinner with the family. The pace is laid-back, the conversations are casual, and the atmosphere is warm and inviting. All in all, not a bad way to spend a Sunday afternoon!