

# HOW TO

WHILE MOST COLLECTIBLE RADIOS ARE NOT OLD ENOUGH TO BE classified with antique furniture, many of them can be called antiques in their own right. You may be young enough to think that a radio from the thirties or forties is old. And, if you are a newcomer to the hobby of collecting radios, it is good to start with radios from that era because there are plenty to choose from. Often, you can even get such a radio for free. But, can it be restored?

As with any type of restoration, the task begins with what you have to work with in the first place. There are many old radios that are not worth restoring. (Of course, any radio that you identify with in some special way is worth restoring.) Also, some old radios are considered to be more of a classic than others (such as the cathedral-cabinet table model) and are more in demand. If you find one of these "classics" cheap, take it—no matter what the condition. Later, you may find another, and make one complete, working set.

When restoring an old radio, it is important to keep it as original as possible. That applies to everything from the chassis and parts to the knobs and the finish on the wood cabinet. That does not apply if you want only a working conversation piece and not a truly-restored radio. Any good cabinet can be fitted with a working radio chassis with a little alteration. Remember that proper ventilation and insulation must be observed. Although you might not have the rich, deep tone of the original, any modern radio in a cabinet from the thirties in daily use in your home will attract much attention.

## Where to find old restorable radios

Radios that can be restored are all around—but not in your local TV and appliance store. Try the classified ad columns, flea markets, and garage and yard sales. There are also many ads in magazines dedicated to this hobby. One example is *The Horn Speaker* (9820 Silver Meadow Dr., Dallas, Texas 75217). Some of your friends and relatives may have an old radio lying around for the asking. Of course you have to know what to look for when trying to find a radio to restore. We'll go into that next.

First, the radio should be old (whatever is old to you) and should have most if not all of its parts. The cabinet will be the first thing you will see. Can the cabinet be refinished to some semblance of its original condition? (Only knowing your own limits and abilities in wood-working and refinishing can answer that.) Are the knobs there? If not, you can most likely get some

that fit and look original.

The big question is: Does it play? Ask the seller if he can play the old radio for you, or at least turn it on. If the old radio hasn't been played for years and the line cord and plug are corroded, you will have to rely on just what you can see. That will include the speaker assembly, the chassis, and the cabinet.

## The speaker assembly

The speaker assembly is a monstrous arrangement in old radios. Along with the cone and the voice coil, there is a field coil and impedance-matching transformer all mounted on a massive frame (see Fig. 1). That array, called an electrodynamic speaker should be intact, even if it needs a little work. While it may be possible to replace the dynamic speaker with a

PM (Permanant Magnet) type, it will take much from the originality. The most visible problem might be the speaker cone. Finding a fifty-year-old radio with a speaker cone that is not warped or torn will be rare. If the cone isn't torn badly, it can usually be repaired with a little speaker cement, available in any parts shop. A warped speaker cone is not as obvious as a torn cone, but it is just as easy to repair.

Any radio that has not been used for many years is likely to have at least one of those speaker-cone problems. Checking for a warped speaker cone is a fairly simple procedure. With the set off and unplugged, of course, remove the speaker and examine the cone. (The wires are usually long enough to turn the speaker around without having to cut them.) A warped cone can cause an off-

center voice coil. To determine if the voice coil is off center, apply a slight pressure around the center of the cone as shown in Fig. 2. If a scratching noise is heard, the voice coil is off center. That test must be done very carefully or you may put your finger through the cone. If you hear the scratching noise, all is not lost, for there are a few things that can be done to re-center the voice coil. Some old sets have small set-screws in the center of the cone that need simply be adjusted to re-center the voice coil. Also, the outer edge of the cone may be reglued to the frame to solve the problem.

Even if your speaker cone is completely tattered there is still hope. There are still a few places around that re-cone speakers. The cost of re-coning the old speaker will not be much more than buying a PM speaker and you will avoid the electrical and physical conversion problem. Also, keeping the set original will

always be an asset when showing or discussing your restored set to knowledgeable people.

If you are unable to pass a signal through the speaker because of unrelated problems with things such as tubes, line cords, etc., make a continuity test of the speaker components. With the set off and unplugged, check the voice coil, field coil, and both sides of the output transformer. Any inexpensive ohmmeter can be used, as the exact resistance is not important at this time. If you should fail to find continuity at any one of those points, the problem may be less than an inch away. The soldered connection where the coil or transformer is joined to the lead wire is the most likely culprit. You might have to carefully remove a little paper from the transformer to get to the connection. Even if there is no obvious break at the connection it still may have built up corrosion or a resin block. All those connections should be resoldered to make a good contact so they will cause no future problems.

### The chassis

You can get a wealth of information from the chassis just by looking at it. Naturally, the first question to ask is whether or not all the parts are there. It will be easy to see if there are any tubes missing. Finding tubes for those that are missing will be one of the easier chores. Many old sets had the tube number stamped on the socket or on the chassis near the socket. It might be your good fortune to find a legible diagram with all pertinent information (such as the model number, IF frequency, tube locations, and filament diagram where applicable) fixed to the inside of the cabinet.

Missing chassis parts

other than tubes can create big problems. If an exact or a similar schematic isn't available, finding out what was in that hole with the wires hanging out will challenge even an expert. Large, tapped, wire-wound resistors, capacitors, IF transformers, and coils are some of the parts that may have been ripped from a chassis over the years. Unless you have full schematic information or for some reason want the set very badly, pass it up if it has parts missing other than tubes and knobs.

Some old radios seem to withstand age better than others. Where a radio was stored is especially responsible for its condition, as is the quality of material used in its manufacture. One chassis may be completely corroded and have a cabinet warped beyond repair, while another of the same vintage—maybe even of the same make—will appear like-new. A corroded chassis can entail a lot more work than a warped cabinet and can make

the project not worth your while. What's so serious about a corroded chassis? There are two big problems—the tube sockets and potentiometers. If the tubes are corroded in the sockets, removing them without any further damage to the tube or socket will take much patience—and a lot of solvent. And, you will still have a rusted socket when you are finished. To answer any question about the extent of the corrosion, you will have to remove the chassis from the cabinet for a look underneath. Often the underside of the chassis will be spared the corrosion and rust that was evident on top.

### Cabinet restoration

How well the cabinet can be restored is limited mostly by your own ability. If you enjoy woodworking and do it well, almost any cabinet can be restored. Even a cabinet with the plies separated can be re-glued. It is important that you take care to preserve any decals or designs (like that shown in Fig. 3) on the front of the cabinet. Before removing the finish, try restoring it with polish. However, if the finish must be removed, light-sand over those areas. Sometimes, furniture polish will restore an old finish and cover up minor scratches. If there are any deep scratches or dents, wood filler can be used. However, since the wood filler will rarely match the original cabinet, it will have to be tinted after the final finish is started so that it won't show through.

Before attempting any work on the cabinet, be sure to remove everything from inside. Also, all removable name plates, decorative speaker bolts, and

even the grill cloth should be removed. Getting sanding dust and paint products on the chassis parts will not do anything to improve your old radio. If any parts of the cabinet are beyond restoration, they may be able to be replaced by a patient woodworker. That will apply most often to the bottom of a cabinet that absorbed moisture because it was stored in a damp place. Just be sure to replace any vent holes that were in the original cabinet, because an old radio with its big tubes and wirewound resistors radiates considerable heat.

### Troubleshooting old radios

Troubleshooting old radios is not much different than troubleshooting new radios. (And it is just as important to be familiar with all safety procedures.) Many old radios have the grid cap conveniently sticking out the top of the tube envelope.



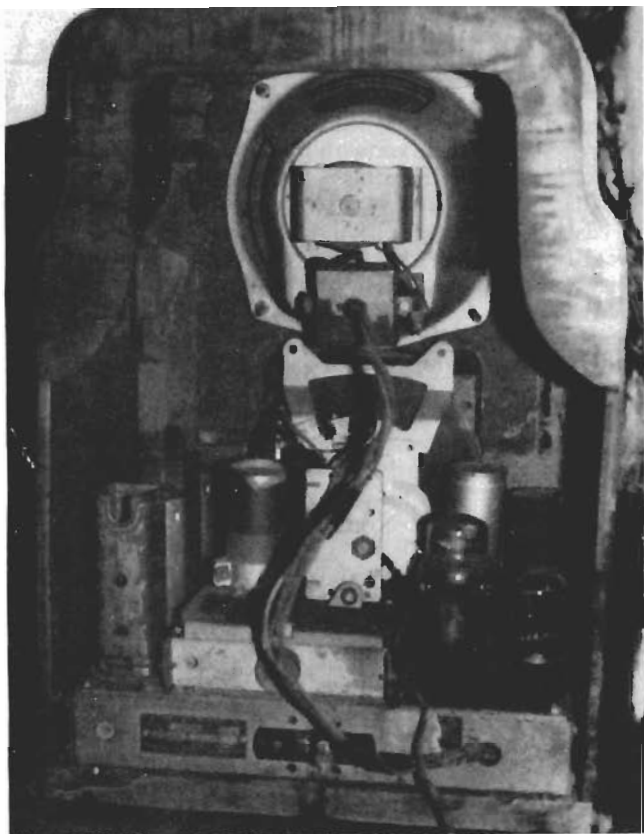


FIG. 1.—MAKE SURE WHEN BUYING an old radio that all chassis parts are included. Without a schematic it may be impossible to identify a missing part.

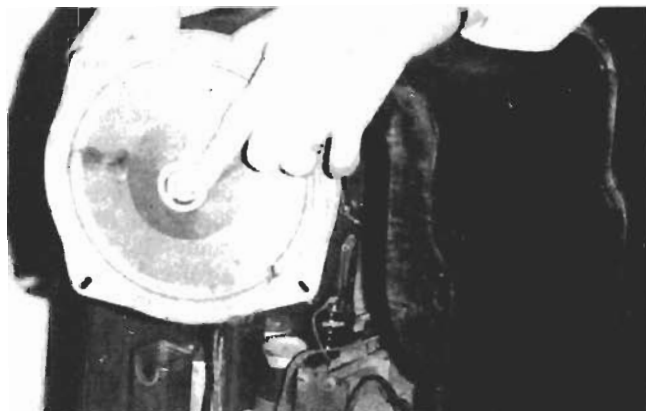


FIG. 2.—THERE IS A SIMPLE TEST to determine whether or not the speaker's voice coil is off center.

That permits a signal injection or circuit-disturbance test without even removing the chassis from the cabinet. Most of the rest of the parts are similar to those in newer radios, but are much larger, of course.

When you select an old radio to restore, don't be surprised if it lights up but doesn't play. Even if there is just some slight hum from the speaker don't give up hope. There are a few factors to consider on early models that should be checked. If there is no built-in aerial, there should be a terminal on the back of the chassis for connection to an external one. (The radio might play weakly or not at all if it was designed to use an outside aerial.) Any piece of wire can be attached to the terminal screw for test purposes.

Keeping the equipment original is not as difficult as it sounds. The band switches, potentiometers, coils, and even IF transformers can be dismantled and repaired. As with speakers, the most likely problem with an intermediate-frequency transformer that will not pass a signal is a poor connection. Remove



FIG. 3.—WHEN RESTORING A CABINET, take great care to preserve any decals or designs.



FIG. 4.—A TUBE TESTER can save you a lot of time and aggravation, especially if you buy a large numbers of used tubes.

the transformer's shield and carefully resolder all of the connections. (A turn can even be taken from the winding if more of the hair-like wire is needed to make a good connection to the trimmer terminal.) If you have to remove the trimmer screw to clean it, you will want to reset it as closely as possible to its original position. You can do that by counting the turns as you screw it down as far as it will go. Then remove the screw and clean it and the trimmer if needed. Replace the screw and turn it as far in as it will go, then back it off the number of turns needed. You will probably have to align the entire set after the IF transformer work.

There isn't much that can be done to repair a bad tube. A partial solution is a good collection of used tubes. Also, there are still some mail-order houses offering old tubes. Even some long-established repair shops have some tubes for early sets. One source for tubes and information that comes to mind is Puett Electronics (P.O. Box 28572, Dallas, TX 75228). A tube tester with an older roll-chart, like the one shown in Fig. 4, is a priceless piece of equipment for the old-radio buff.

Even if restoring your nostalgic radio ends up costing you more than the radio did when it was new, the pleasure of restoring it and the pride of accomplishment can far outweigh the cost. And, if that's not enough, you can expect many offers to buy your restored radio.

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