ANTIQUE RADIO

BASIC TUBE RESTORATION

By William Donzelli

If you are an antique radio enthusiast, you have undoubtedly had more than a fair share of experience with old electron tubes. Unfortunately, these tubes, ranging from forty to seventy years old, deteriorate with age and are rapidly becoming an endangered species. They become dirty, the base becomes loose, and the wires break, Don't despair! If you are lucky enough to possess some of these rare gems, they may be salvaged. There are ways to correct these problems that will result in better operation and a neater appearance. In this article, we will explain some basic procedures for the restoration of electron tubes.

Cleaning

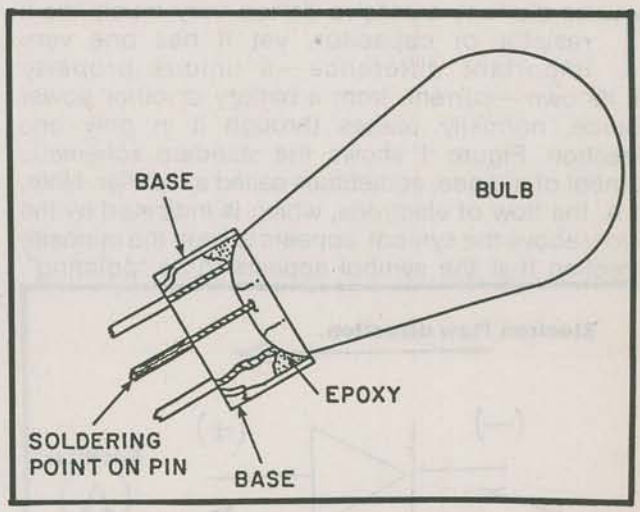
As you probably know, electronic devices tend to collect dirt quickly. Tubes are no exception and they usually accumulate a substantial amount of undesirable material. Cleaning these old tubes is the first and easiest of the restoration process.

The materials needed are Isopropyl Rubbing Alcohol and some cotton balls. The process is simple, although care must be taken or problems could arise. Simply soak the cotton with the alcohol and wipe the tube, changing the cotton when it becomes saturated with dirt. You will observe that some of the discolorations are inside the tube, so don't be fooled by a spot that can not be cleaned.

When cleaning the glass bulb, be very careful not to rub off any ink markings, such as the tube number. The alcohol will dissolve the ink if rubbed vigorously, therefore, *gently* dab the inked area with the cotton. This will loosen the dirt and remove it, but the ink will remain unchanged. After the tube is cleaned and the alcohol evaporated, wipe the tube with a dry cotton ball to remove any smears. If you have been careful, you should now have a clear, neat looking tube.

Fixing Loose Bases

Loose bases are another common problem with old tubes. The combination of heat and age cracks the glue joining the base and the bulb, leaving delicate wires as the only mechanical connection. Obviously, this problem must be corrected or the tube can anticipate further deterioration in the near future.



Mending a loose base is relatively easy, but involves more time and materials than cleaning. You will need some solder and a soldering iron, a hobby knife, epoxy, and desoldering braid. First, remove the old solder from the tube's pins with the braid (see illustration). After the pins are desoldered, gently remove the base, labeling each of the wires and the respective pins. This will be critical when the base is re-attached. Next, remove *most* of the old epoxy with

(Continued on page 96)

you hobby knife. Leave some of the glue that is still bonded to the base. It can be used to anchor the new epoxy, ensuring a tight connection. Next, mix some fresh epoxy and apply it to the base and the bulb. Now you can guide the labeled wires into their corresponding pins. Seat the bulb in the base properly and solder the wires to the pins. This procedure should be done while the epoxy is still wet so the hot air from the heated pins can expand. After the epoxy has dried, the base should have a tight fit on the bulb.

Joining Broken Wires

Another problem often associated with a loose base is broken wires. These are also relatively easy to repair. However, you must take care or you will destroy the tube. Tin the wires and join them, or use a jumper if they are too short. When you do this on a tube, be careful not to heat the wire too long or the glass-metal seals will develop leaks. Also, be very careful with old wires. They are often brittle and will break under very little stress. Once you have made a good connection, the rest of the tube can be reassembled.

Conclusion

So, you see, simple restoration of old electron tubes is really not that difficult if you are careful and take a little time. The materials are inexpensive and can be found in most home workshops. Hopefully, the procedures that we have described can revive some of your old tubes and make them a useful part of your antique radio restoration. ■