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## Tubes !! Tubes !! Tubes !!

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**A**t times, tubes can be a mystery. The letters can be rubbed off or worse yet there are no tubes in the set. The age-old trick to read the numbers on a tube that has lost them is to breathe on the tube. This works best if the tube has been chilled first. Your warm breath will condense on glass, often times making the number readable.

Another possibility is to study the tube and its internal architecture. You can often look into the plate structure and count the number of grids. It is easy to spot a twin triode, each with a single grid and thus know that if it is a 9 pin tube, supplied with 12 volts to the filament, you are probably looking at a 12AX7, 12AU7 or 12AY7. Tube manuals often have lists that connect the purpose of the tube, its package, its type and its filament voltage. You can work this backwards, by identifying those features and then checking to see what it could possibly be.

Tube manuals and tube books can be very helpful. Ludwell Sibley's "Tube Lore" available from Antique Electronic Supply in Tempe is my favorite. I have about ten different tube manuals as published by RCA, Sylvania, Mullard and others. Each is from a different time. The tubes that were in high volume use at the time of publishing got the most space and most information.

Here are some hints on what to do if you don't know what goes into a particular set. Look on the socket the tube is meant to plug into. Some makers wrote the tube number on the socket or stamped it into the metal next to the tube. Look on the cabinet, there may be a tube layout. If you have

the model number the safest bet is the schematic. Rider's manuals can be used to look up 80%+ of all radios built before 1950. Sam's Photofax covers most products from 1950 to 1980. The original Rider's was 22 manuals weighing hundreds of pounds. Now they are available on 2 CD ROM's for less than \$60 via the Internet. Go to Ebay, and search for Rider's.

There are two types of numbers that could be on the radio. The model number refers to the whole set. The chassis number refers to the radio that might have been put into many different models. Be sure to look for both numbers in Riders, as it might be listed one way and not the other.

The term "All American Fivers" refers to five tube sets that used similar strings of tubes. If you know the other four tubes, it is often a safe guess as to what the fifth one should be. There was a book published in the mid thirties called Tube layouts 1921 to 1935. This shows the tube combinations used in those early sets.

Don't forget to try the Internet. Someone else may have the same model posted on their website. Also, there are lots of people selling schematics that do not appear in Riders or Sam's. Go to Google and search for "Schematics". Some outfits like Radio Daze have most of Rider's posted on the Internet free for your use. The trick is to get them to print out so the whole schematic shows rather than a small, enlarged part of it.

A word of good cheer. Almost any tube is available – it is just a matter of price. The rare ones are those built before

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A first place winning tube collection owned by Mark Spears.