

Dating Your Radio – A Beginner’s Guide

No, I don’t mean taking it to the movies or for a romantic meal (but I am not stopping you from doing so if that is your ‘thing’!), I mean how do you tell how old a radio is?

Introduction

Over the years I have been asked two questions over and over: “What is my radio worth?” and “How old is my radio?”. An attempt at answering the first question is made in a separate short article, so here I provide a few pointers on how to tell your radios age – often to the nearest year or two. Armed with his knowledge and with some further background researching, you can develop a skill that will allow a rapid estimation of a sets age after a short inspection of the cabinet and/or chassis, even without knowing the make or model of the set.

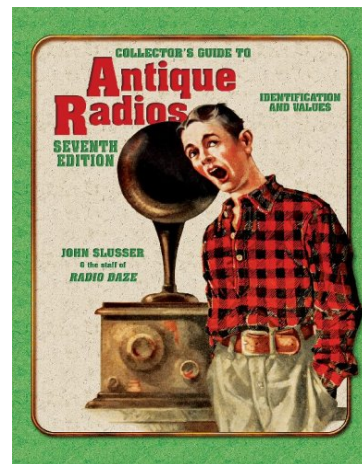
Researching

First, make every attempt to identify the make (manufacturer) and model of the radio. The make is often displayed on the front of the set and/or on the dial (but not always) or on the rear panel (label on the chassis and/or tube layout sticker in the cabinet) and the most sure way of checking the model is by looking in the rear of the set and reading these (if present). Sometimes these are missing and other methods must be used to attempt identification.

Other methods include reference to one of several well-illustrated books, such ‘The Collectors Guide to Antique Radios’ by John Slusser (mainly USA-manufactured radios), ‘Radios of Canada’ by Lloyd Swackhammer, or more specialist, manufacturer-specific ones such as ‘Philco Radio 1928-1942’ by Ron Ramirez, to see if a good visual identification can be made. Unfortunately not every model is listed, even less illustrated (that would be quite a tall-order as there were many thousands of models produced), but it can be a good place to make a start, as are the many on-line resources, eg.

<http://www.philcoradio.com/> - just ‘Google’ the make or search the many on-line galleries for a look-alike set. Even knob styles can be manufacturer-specific, eg. those from 1930’s Zeniths can have a ‘Z’ emblem on them. Radio dials are also often distinctive, in the case of Zenith, many of their 1930’s models used the very stylish ‘black dial’.

The tube line-up, layout, number of wavebands, number and type of controls, power type (Battery, AC/DC, ‘Universal’, or AC-only) can all give clues as to the model. The Philco book mentioned above (and some others) include tube layout diagrams so that a model can be identified from type and layout on the chassis. It should be noted that often the model number and chassis type are different and the same (or similar) chassis can be incorporated into several models, even across model years. This is particularly the case for sets that were manufactured for the major retail stores such as Sears, Woodwards, Eatons, etc.

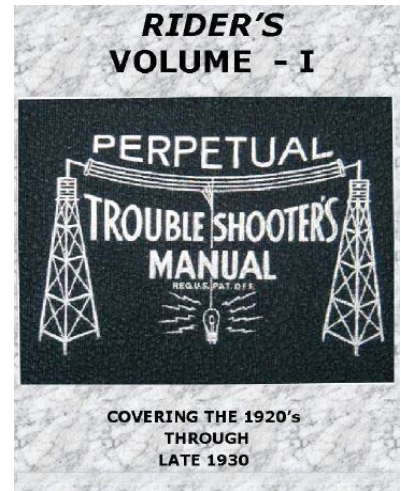


There are several additional sources of information that can help deal with clues to identify the make/model and the model year - some of these are noted below. However, even if you cannot identify the make and/or model, there are many things about your radio that will help give away the approximate year of manufacture:

Direct Information

Model Type/Model Year Matching

If the make and model of the radio can be identified, then the model may be looked-up in various period technical (service trade) publications such as ‘Rider’s Perpetual Troubleshooters’ or ‘Beitman’s Most-Often-Needed’ (both of these cover sets of USA manufacture), Radio College of Canada (RCC) for sets of Canadian manufacture, or the DVD produced by UK Vintage Radio (as advertised on <http://www.vintage-radio.com/>) for sets of UK manufacture. CD ROM and DVD copies of Rider’s, Beitman’s and RCC publications can be purchased on Ebay, and SFU have scans of Riders available free on line (<http://highgate.comm.sfu.ca/oldradio/>) – very large files though. These documents provide the schematic and other technical information for the sets, often listed with the model year¹. Another great source of information is the Europe-based ‘Radiomuseum’ website <http://www.radiomuseum.org/> - this includes global listings of sets (claiming to have over 183,000 of them posted on-line at the end of 2010) including many European models, some 800,000 photos, tube data and circuit data (346,000 schematics).



It is not often possible to tell the model year by model numbers alone though, but there are exceptions to this, eg. from 1937, Philco sets had a model code that prefixed with the year, eg. Model 38-610 was a 1938 model year set. It should also be noted that often



model numbers were not necessarily sequential, so the lowest number is not always the earliest. Also, the same chassis type often appears in different cabinets/models of set, and sometimes in models of apparently different makes. An example of this in Canada are radios manufactured by DeForest, Rogers and Majestic (who amalgamated), see example table below (eg. a DeForest Saguenay “B” is fitted with the same chassis (Type 613) as a Rogers Model 12/62B (photo, left) and a Majestic 762B.

¹ Model years usually ran from mid-year to mid-year, eg. the 1938 model year ran between mid-1937 and mid-1938.

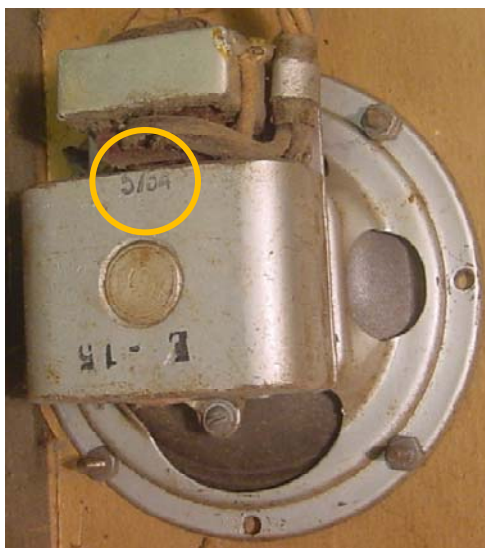
ROGERS			MAJESTIC			DEFOREST		
Chassis	Model	Dial Scale	Chassis	Model	Dial Scale	Chassis	Model	Dial Scale
7R561	12/54	13891	7M561	754	13892	7D561	Yukon	13893
7R562	12/59	13891	7M562	759	13892	7D562	Hudson	13893
			7M611	766	14181			
7R612	12/62	14181	7M612	762	14181	7D612	Saguenay	14181
7R613	12/62B	14181	7M613	762B	14181	7D613	Saguenay "B"	14181
7R621	12/60	13755	7M621	760	13756	7D621	Erie	13757
7R622	12/60B	13755	7M622	760B	13756	7D622	Erie "B"	13757
7R631	12/65	13764	7M631	765	13765	7D631	Laval	13766
7R632	12/61	14024	7M632	761	14025			
7R633	12/67	14024				7D633	Pacific	14026
7R634	12/66	14024	7M634	768	14025	7D634	Columbian	14026
7R651	12/64	13814	7M651	764	13814	7D651	Banff	13814
7R651	12/69	13814	7M651	769	13814	7D651	Jasper	13814
7R731	12/70	13764	7M731	770	13765	7D731	Dufferin	13766
7R732	12/75	13764	7M732	775	13765	7D732	Welland	13766

Component Dates

Some components in a radio actually have manufacturing dates marked on them: the most common of these are electrolytic capacitors (circled in photo, right) – especially from the 1940's onwards. The reason for having a date posted on an electrolytic capacitor is that they deteriorate with age, especially early types, and particularly if they are not used regularly. A date older than a few years could indicate to a service technician that the capacitor should be changed-out as a precaution against failure.



The premise here is that the radio must post-date the latest date observed on one of its components. In the case of an electrolytic, it was likely installed in the radio within a few months of its manufacturing date. Caution must be



exercised however, as several components, especially electrolytics, may have been replaced at some time during the service life of the radio (sometimes several times in a 70 year old set who's service life may have extended over a couple of decades or more), eg. an electrolytic dated '1947' installed in radio manufactured in 1939. Replaced components are usually (but not always) obvious.

Dates may also be observed on loudspeaker frames (circled in photo, left), as well as QA/QC stamps on chassis and cabinets.

Patents

The serial number plate, tube layout sticker or other documentation with the set often contain one or more patent numbers notices. The set must have been manufactured after the most recent patent (but possibly several years after, so this is not a very precise measure). For sets manufactured in the USA, the patent numbers by year are provided in the table, right. Thus, for example, if your set has Patent 1953444 on it, it was manufactured sometime during or after 1934.

January	Number	January	Number
1900	660,000	1926	1,580,000
1902	720,000	1928	1,660,000
1904	770,000	1930	1,760,000
1906	830,000	1932	1,850,000
1908	890,000	1934	1,940,000
1910	950,000	1936	2,010,000
1912	1,020,000	1938	2,100,000
1914	1,080,000	1940	2,180,000
1916	1,150,000	1942	2,270,000
1918	1,240,000	1944	2,340,000
1920	1,320,000	1946	2,390,000
1922	1,410,000	1948	2,430,000
1924	1,500,000	1950	2,500,000

Cabinet Style and Features

Before the 1920's, the cabinets for radio apparatus (they were not really 'sets' at that time) were often made from Ebonite and/or wood and tended to look rather like scientific instruments, often displaying the new-fangled (and very expensive) tubes for all to wonder at. In the early-1920's, 'breadboard' construction was common, as exemplified by the range of Atwater Kent radios of this



period (photo, above). By the mid-1920's, 'coffin' style wooden cabinets (photo, right) were becoming the standard for table-top sets, usually with separate loudspeaker – often a horn type. Slant fronts were often used to jazz these coffins up a bit, especially between 1924 and 1926. Some manufacturers, eg. Philco and Atwater Kent manufactured cases from steel at this time.



By the late-1920's, 'low-boy' and 'high-boy' style floor-mounted sets had appeared, sometimes with doors to disguise the set as a regular piece of 'parlour' furniture. By 1930, manufacturers were experimenting with alternative styles, often in an attempt to cut costs and be more attractive than the competition in a very tight market. Thus the well-known 'cathedral' (photo, right) and 'tombstone' styles appeared for table top sets and the low-boy and high-boy sets morphed into the console style, without legs by around 1933. The cathedral style was already out of vogue by the mid-1930's and tombstones were giving way to squatter, 'horizontal' and 'upright' style table-top models. 'Chairside' models were popular between 1936 and 1941. Elaborate veneers were often used to enhance the cabinet's appearance in more expensive sets, however, Philco and some other manufactures introduced 'faux' (fancy wood-pattern printed paper) finishes to the cabinet front around 1936 – a further economy measure.





Bakelite began to be used for radio cabinets in the early-1930's, with other plastics being introduced by the mid/late-1930's, usually for the smaller 'mantle' and 'midget' sets.

'Deco' styling features of Bakelite and wood cabinets is indicative of early-mid 1930's.

The table, right, shows some other date-related cabinet features. Be careful using this though – for example, I have seen a type of slide rule dial on a set as early as 1931 (a Brunswick Model 22).

LITTLE-USED BEFORE	STYLE
1927	A-C Console (Built-in Speaker)
1937	Plastic
1929	Cathedral and Compact
1933	Airplane-Type Dial
1938	Tiny Cheapies
1939	Slide Rule Dial
1939	Push-Button Tuning
1941	FM, 42-50 MC
1946	FM, 88-108 MC
1939	Cloth-Covered Portable Radio
1946	Plastic Portable Radio
1948	TV Channels 2 - 13 (Ch 1 cancelled)
1953	U H F TV Channels (14 - up)

An informative, well illustrated beginners guide to dating cabinet styles and details (for USA sets) is provided in Ch. 7 of 'Guide to Old Radios- Pointers, Pictures and Prices' - a book by David and Betty Johnson.

Tube Types

The pace of tube development was quite astounding from the late-1920's through the 1950's. Many tube types were 're-invented' in different forms – various heater voltages, envelope styles and base type. AC-filament tubes were introduced around 1926.

INTRODUCED	TUBE TYPE
Early } 1920's }	{ -00, -01, -00A, -01A, WD-11, WD-12, -99
1926	112, 120
1927	-26, -27 A-C Tube
1929	-24, -24A Grid-Cap
1932	6-7 Prongs
1935	"Octal" with 8 pins and Plastic Key
1935	Metal Tubes
1946	"Loctal" with Metal Base and Wire Prongs
1941	Miniature Glass with wire Prongs, Portable
1946	" " " " " " A-C

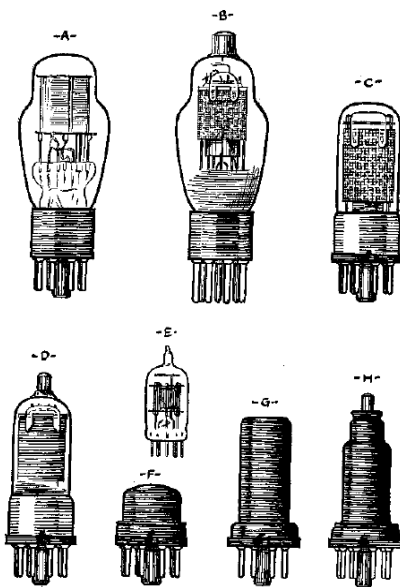


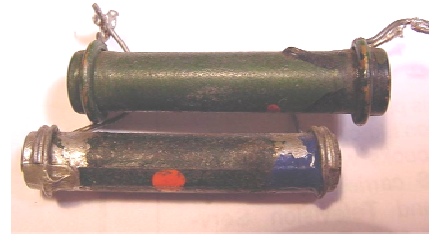
Fig. 3-26. Types of tube envelopes. (A) Glass, pear-shaped, no grid cap. (B) Glass, pear-shaped, grid cap. (C) Glass, tubular, no grid cap. (D) Glass, tubular, grid cap. (E) Glass, miniature. (F) Metal, type 6H6 tube. (G) Metal, no grid cap. (H) Metal, grid cap.

There was a general progression to more pins on the base: four pins were adequate for the diodes and triodes of the mid-1920's, but as screen-grid, pentodes, heptodes and multiple tubes in one envelope were introduced, top caps were added, along with more pins on the base. The table, above, provides some indications as to dating using tubes. The tube types in a set can be looked-up on websites, such as www.radiomuseum.com where the date of the tube's introduction to the market is also given – the set must post-date the latest tube type introduction date.

Envelope style (illustration, left) is also an indicator of when a tube was produced, though often several styles were manufactured contemporaneously for the same generic tube type – so some caution is needed here. However, tubes having a globe shape and/or a 'pip' on the glass envelope were likely produced prior to 1930.

Other Components

'Dog-bone' resistors (photo, right) were introduced in the 1920's and started to drop out of use by the late-1940's. At this time, cylindrical resistors with colour code bands became the norm, but some old stock 'dog bones' were still being used through the 1950's.



Capacitors can also provide a clue to age: wax-coated paper capacitors (photo, left) were the norm for by-pass and audio coupling capacitors from the late-1920's through mid-1950's, however, plastic-encapsulated paper capacitors (photo,



right) were introduced in WWII as a way of providing enhanced moisture-proofing. By the late-1950's these plastic-encapsulated paper capacitors were in widespread use, soon to be replaced by the much more reliable plastic film (eg. Mylar) types. Tubular and disc ceramic capacitors were developed during WWII and these were present in some sets by the mid-1940's onwards. Electrolytic capacitors evolved from the large can 'wet' electrolyte types of the early 1930's through 'dry' (electrolyte paste) types in both can and axial form by WWII and afterwards (photo, right). Silver mica capacitors were often encapsulated in rectangular Bakelite cases in the 1920's through 1940's.



Pre-WW2, magnet technology was such that strong, focussed-field permanent magnets that would retain their magnetism for many years could not be produced economically. Therefore 'electro-dynamic' loudspeakers were the norm, the field coil on the electromagnet often serving a dual or even triple purpose (also as a smoothing choke and bias resistor). The output transformer was usually mounted on the speaker frame. This type of loudspeaker can be



identified by three to five wires running from the chassis to the loudspeaker. During WWII, Alnico alloy magnets were produced that allowed long-lasting permanent speaker magnets to be produced and post-WWII their use became the norm.

'Bias cells' (small dry cells that provided bias for amplifier circuits - they look like modern day 'button' cells - circled in photo, left) were introduced by some manufacturers, eg.

Rogers-Majestic, in the mid-1930's and their use died-out during WWII.

Circuit Features

The earliest radio sets were often simple tuned circuits and a detector ('eg. 'cats whisker') – 'crystal sets'. By the early-1920's, the use of triode amplifiers allowed the 'tuned radio



(especially in the UK) in the early-mid 1930's (photo, right) as they provided a reasonable

degree of sensitivity and selectivity at much lower cost than a TRF set with the same number of tubes, though at the expense of being rather 'fiddly' to operate for the non-'techie'. These sets usually have one, two or three tubes and a 'regen' or 'reaction' control on the front panel.



AC-heated tubes were introduced in the mid-1920's, with all sets prior to this time being either battery-operated (usually requiring at least two batteries, often more) or, much less common, powered by a separate power supply providing DC voltage for the filaments. The photo, left, shows an early AC-filament tube produced by Rogers (Canada), around 1925 (filament connections at top).

Prior to the introduction of screen grid tubes around 1927, neutralization techniques were often used to stabilize triode amplifiers at radio frequencies – the patented 'Neutrodyne' technology (usually depicted in the radio model name, control naming – photo, right, or on the patent label) for this was used by several manufacturers in the USA, sometimes with a high degree of screening between amplifier stages. Superheterodyne technology was introduced with a couple of false-starts in the 1920's and was rarely used

frequency' (TRF) set to become popular. In the USA, TRF designs often had 3 to 6 tubes (sometimes more) and several tuning knobs (one for each RF amplifier stage) on the front panel.

Regenerative detectors became popular, though mostly for home constructors

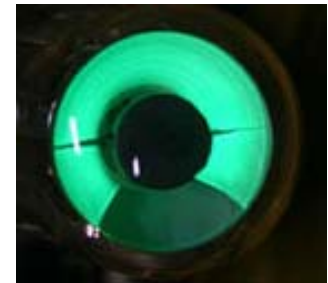


commercially at that time, however, by the early-1930's this technology really started to dominate in the market.



The 1930's also saw introduction of more sophisticated circuit features. These included tone controls, around 1930, automatic gain control ('AGC', often known as automatic volume control, or 'AVC') around 1931, automatic frequency control ('AFC') around 1936 (referred to as 'magnetic tuning' by Philco) and push-button/rotary pre-set tuning, also in the mid-1930's. Tuning indicators had been around

since the late-1920's – usually using meters, but the very popular 'magic eye' (photo, right) was introduced in 1935 – more of a sales gimmick than a useful gadget, though some manufacturers retained some form of



meter, eg. Philco, with the 'Shadowgraph'.



The presence of a VHF or FM band (arrow on photo, left) indicates that the set is very likely post-WWII, though there were a few sets manufactured with this facility in the late-1930's (eg. General Electric in 1938).

Closure

This article provides some good pointers on how to go about determining the approximate year a radio was manufactured, however, the reference sources provided will allow much more precision and certainty to be made in your identification. After a while you develop an 'eye' for this and you will find that it can be quite satisfying to be able to point to an old radio in a fleamarket or antique store and say, quite authoritatively, to the seller that it was made around 1931-1932 or 1939-1940. So go-on, go get the knowledge!



Gerry O'Hara, February, 2011