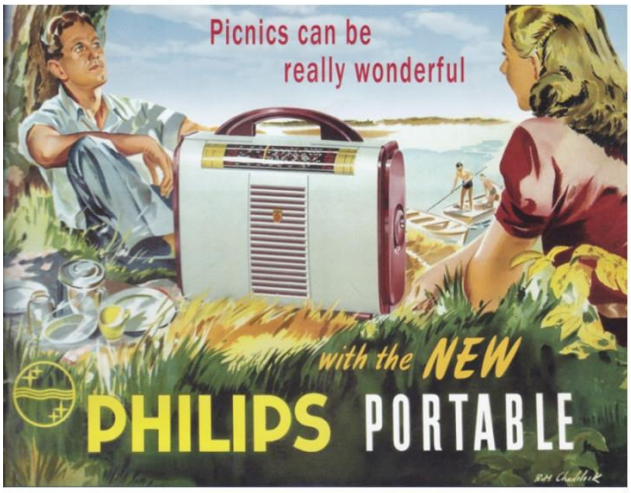
1948



1951-55

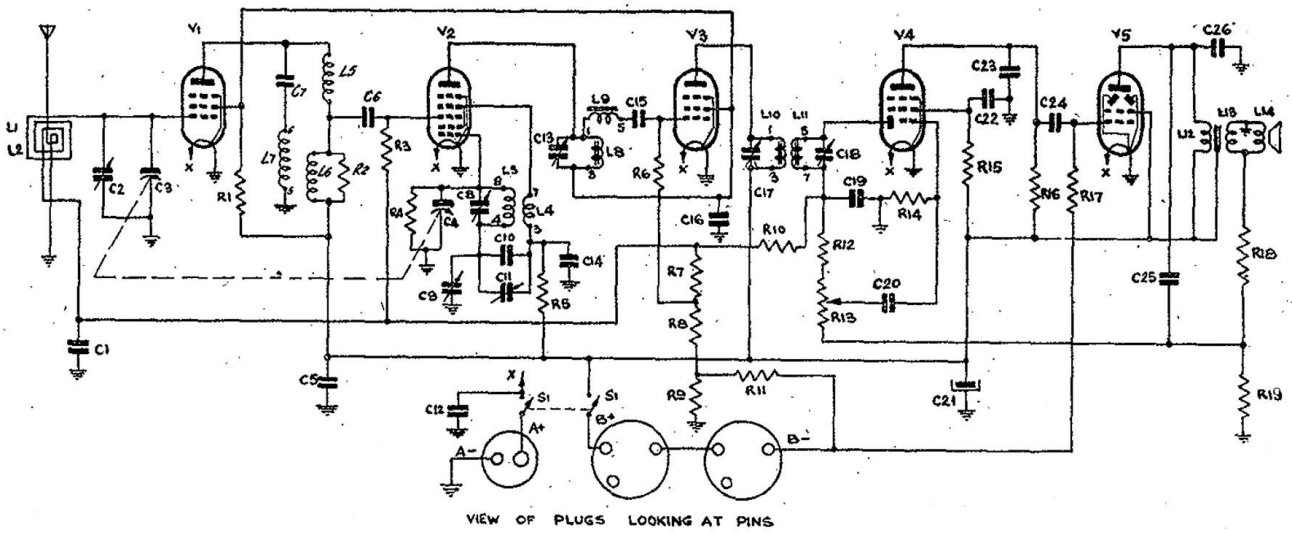
1956-57

Philips portable valve radios 1948 to 1957

By Graham Parslow

Portable radios for the beach and picnics date back to the 1920s. By the end of the 1930s a series of valves with 1.5 V heaters and octal sockets had appeared that were a reasonably standard set used by many manufacturers (valve types 1C5, 1H5, 1P5, 1A7 and 1Q5).

Those portable sets were almost invariably housed in vinyl covered wooden cabinets. The Second World War 1939-1945 changed many things including the affordable use of aluminium in construction. Although we take aluminium for granted it was a novelty and a special material in the 1940s. Philips went with this new material to offer a modern package for 1948 when they released the model 111. The series was also released with Mullard and Fleetwood badges. Collectively they became inaccurately known as “tinnies”. It is somewhat surprising that other manufacturers largely stuck with vinyl covered boxes.



Valve Function	Valve No.	Valve Type	Plate Volts	Screen Volts
R.F. Amplifier	V1	1T4	82	39
Frequency Converter	V2	1R5	39	45
I.F. Amplifier	V3	1T4	82	39
Demodulator, A.V.C. and 1st Audio	V4	1S5	22	10
Power Amplifier	V5	1Q5GT	80	82

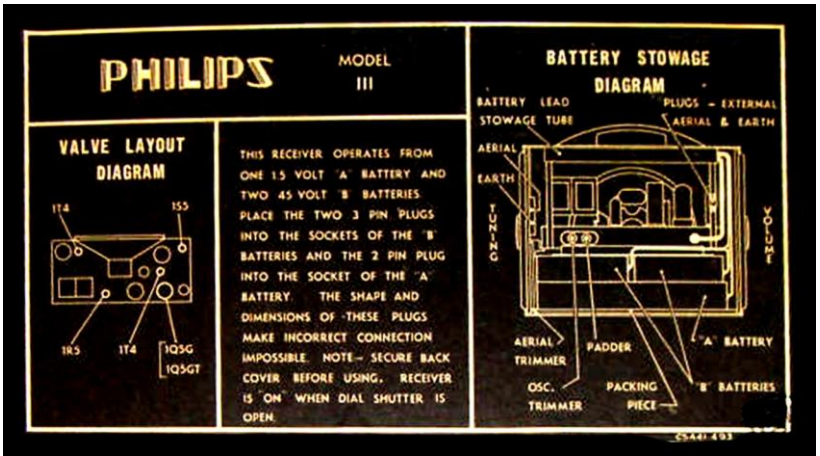
B– chassis — –4.7 volts

Philips model 111. Data from AORSM 1948 circuits

The circuit of the model 111 incorporated four miniature valves and one octal valve (a 1Q5) for the output. That output valve was quickly updated to a miniature valve type 3V4 in model 111B and subsequent revisions.

The circuit of model 111 shows a 1T4 used as an RF amplifier at the front end of the circuit and, unusually for an RF preamplified set, this is the only tuned circuit for station selection by the two-gang tuning condenser. The second gang is used by the oscillator to generate the 455 K Hz IF.

The consumer information panel pasted inside the 1948 radio shows the layout of the radio.



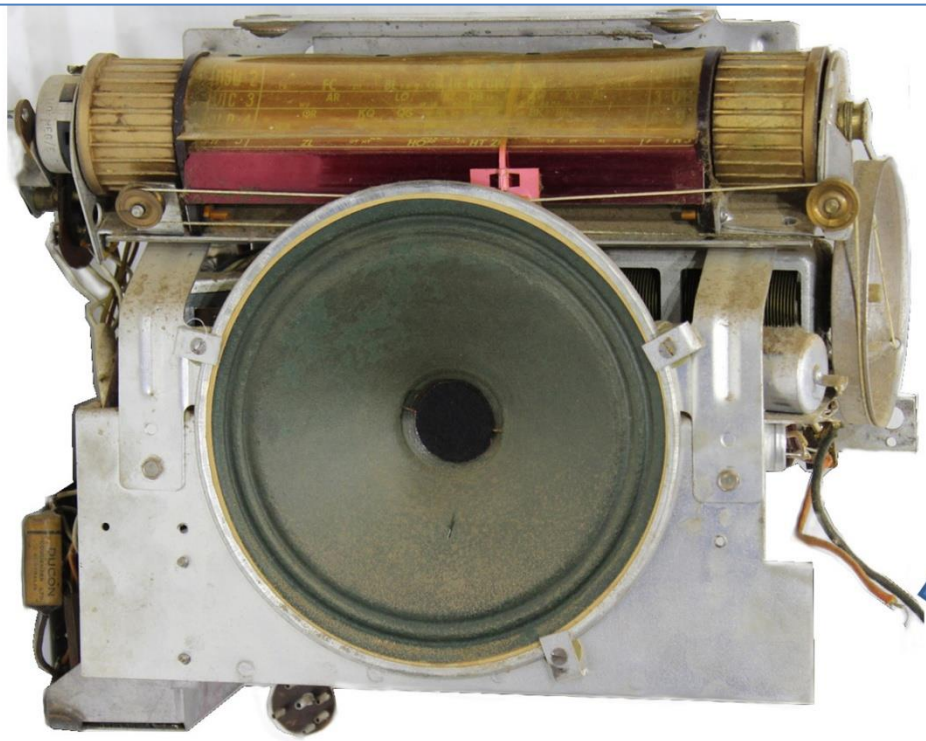
Philips gets my vote as the manufacturer most consistently making disassembly and repair of their radios a monumental challenge. In the model 111 the worst construction foible is the inaccessibility of the 1T4 RF amplifier. The subsequent cases and chasses exhibit fiendish tack-on engineering that make bench repairs a chore.

I collected seven examples of the Philips line of aluminium-cased portables then tackled them as a batch-job for restoration. Invariably oxidation of the valve pins had rendered these radios non functional. The solution is to remove all valves and clean the pins before any other electrical work. Clean heater pins are particularly critical to make good contact because much less than 1.5 V delivered to the heaters lowers emission to unserviceable levels. Even when a built in mains power adapter was incorporated I would initially power up with bench supplies providing the

power via the battery connections. For circuits using 1.5V batteries with heaters in parallel (model 111) the working current will be around 300 mA at 1.5 V. For series connected heaters using a 9 V source the current will be around 50 mA because of the way divider resistors supply valve bias and ensure that each heater receives 1.5 V. The 90 V B-supply will usually settle at 8-12 mA when electrolytics are in good condition. Higher HT current drain generally indicates leakage of the paper coupling capacitor to the output valve grid (usually a 3V4). Leakage gives positive bias to the valve and increases current draw. Surprisingly for low voltage sets using capacitors rated at 400 V, failure of the output coupling capacitor was more common than not. Replacement of the coupling capacitor to the 3V4 is much easier with the chassis removed because access can be gained from the side.

Although removing the chassis is not to be undertaken lightly, it is essential for a quality restoration. Restoration will usually include cleaning the speaker cone of sixty plus years of dirt infiltration.

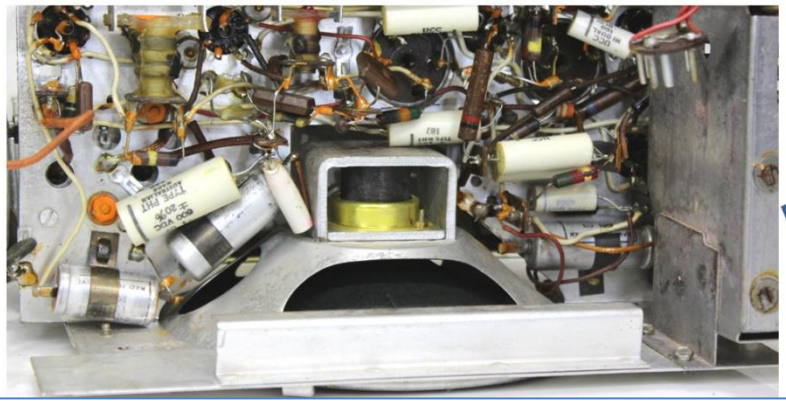
A picture shows the front of a 1951 model 148 before cleaning. In this case the speaker cone was relatively free of dirt. The front picture also shows the way that 1950s models used large wheels at the side of the dial for volume and tuning. These wheels are prone to have cracked spindle hubs and with luck they can be Araldited while in place. Removal of the wheels for repair requires a patient disposition.



Model 148 (1951) showing the Philips speaker that was used interchangeably with a Rola six inch speaker.

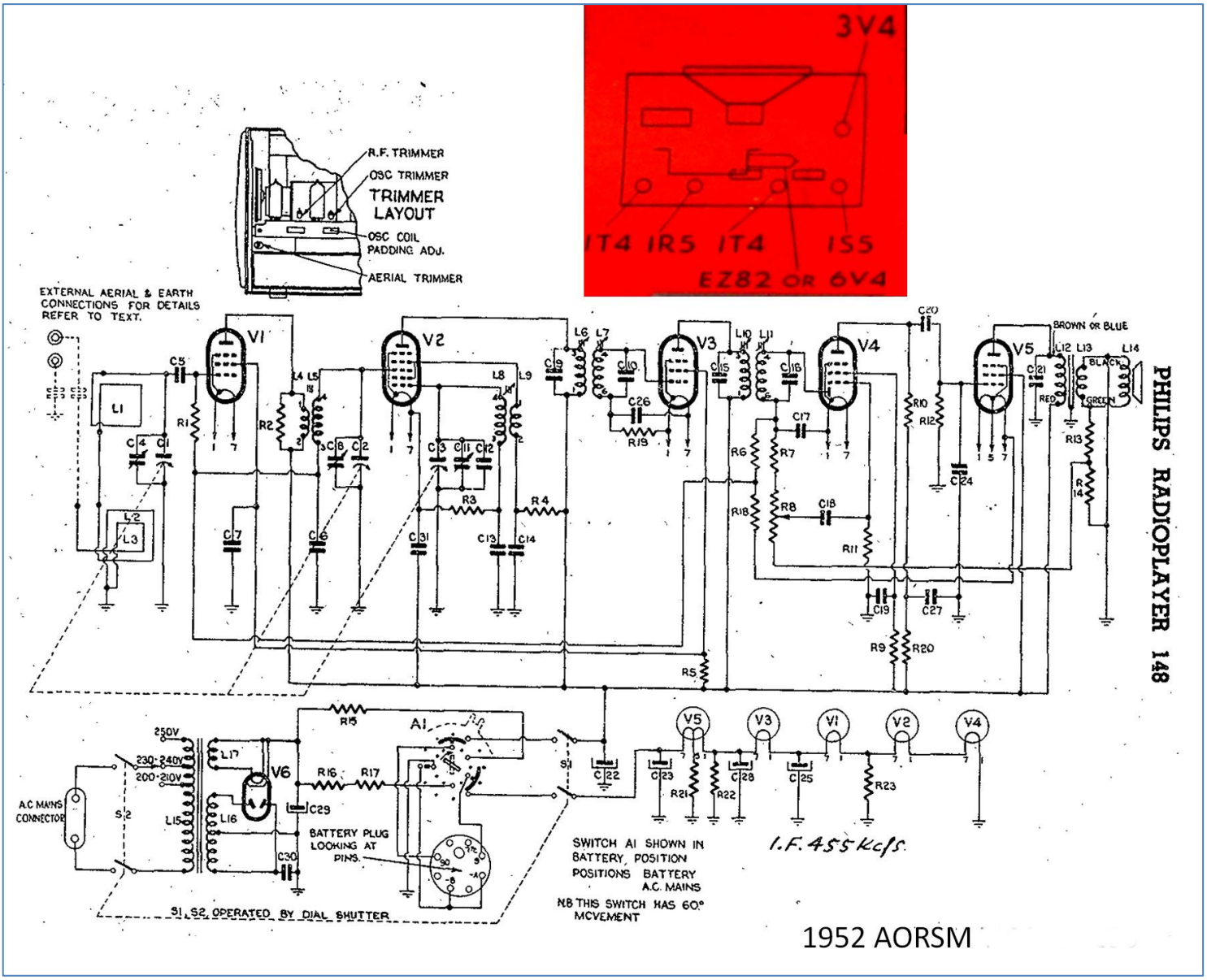
A semi-miniature three gang brass-plate tuning condenser replaces the conventional larger tuning condenser in the model 111.

These fly leads to the aerial coils must be de-soldered to remove the chassis.



The under chassis components are built on top of each other making it difficult to identify and replace “buried” components.

The mains power adapter covers components associated with the 1S5 and 3V4.



In model 148 the superstructure with the dial captures many of the chassis mounted components that become locked in. In one case of an open circuit output transformer the requirement for extensive disassembly to remove the transformer led me to leave it in place and mount another one elsewhere.

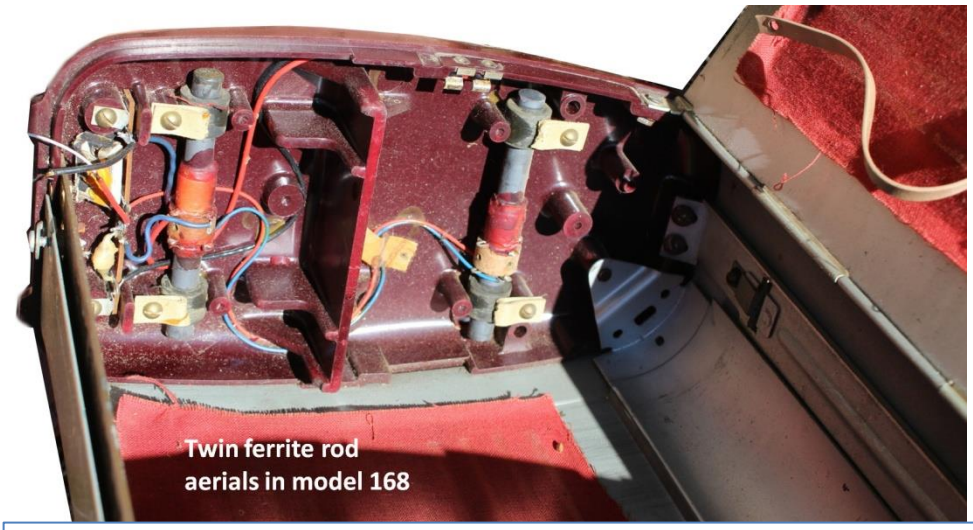
By 1956 the model 168 circuit had been augmented with a DM71 magic eye valve for tuning. The magic eye is the type used for level meters in portable tape recorders of the time. The end of the line case for model 168 is easily recognised by the red used in the control wheels and the dial lettering. Thankfully these latter models used a clear plastic dial cover that avoids the yellowing, warping and cracking of the celluloid previously used. The side-on picture of model 168 also shows the simplified profile of the end panels and the flat base that is stable without the feet previously fitted at

Model 168
(1957)

the base of the case.

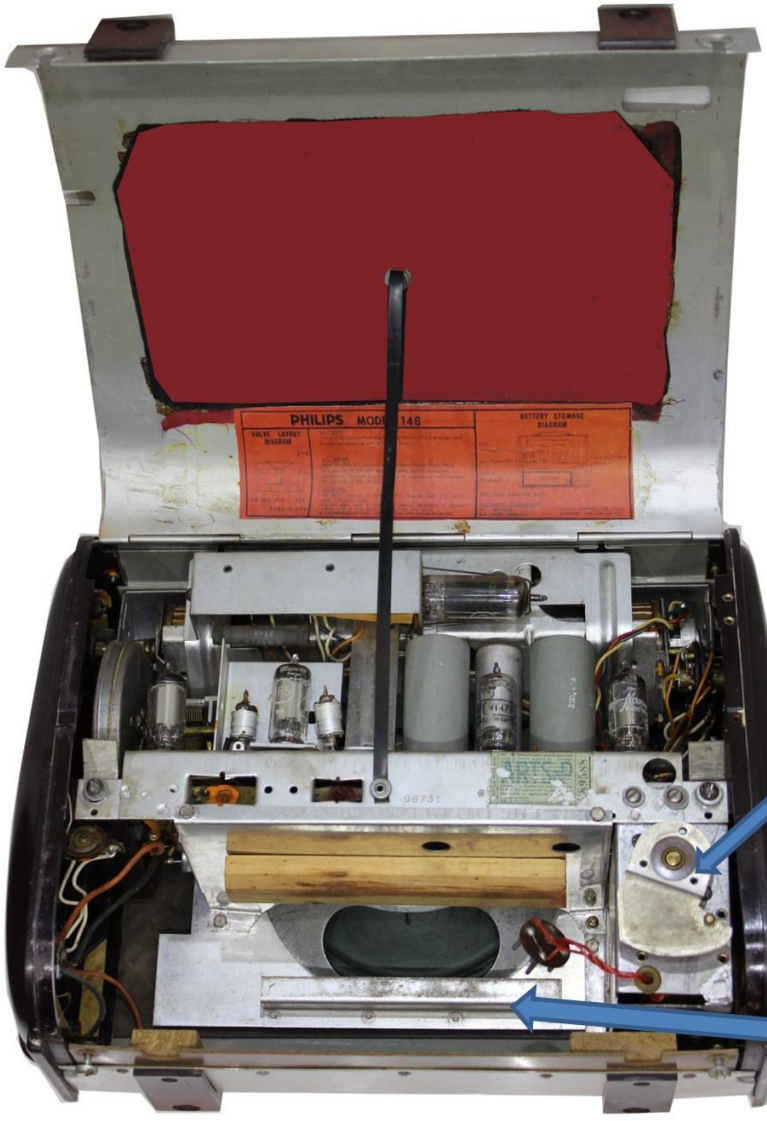
The circuit varied only slightly after the introduction of the 1951 model 148. The valves were two 1T4, one each of 1R4, 1S5, 3V4 and 6X4. This made for a radio with good sensitivity and selectivity. Even with a meagre output of 250 mW, the sound is adequate for most listening environments.

The single loop antenna of the model 111 in 1948 was wound into the right hand side Bakelite panel. For the model 148 both side panels had an aerial coil (see circuit diagram). This adds extra work for complete disassembly during restoration. Finally model 168 has twin ferrites mounted on the right hand side panel. Others have noted that these ferrites are often broken.



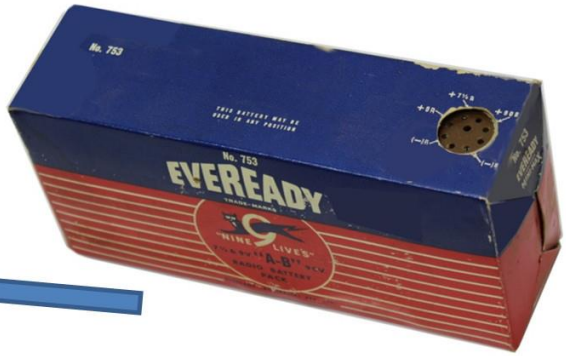
Twin ferrite rod aerials in model 168

In 1948 the batteries were the well established mixing of two 45V B-batteries and a 1.5 V A-battery. From 1951 only a single battery was required combining 9 V and 90 V sections (e.g. Eveready type 753). The more compact single battery left room for a mains transformer to be installed next to the battery under the



The model 148 of 1951 retained full size IF coils that were soon downsized to the commonly installed miniaturised Philips IF transformers of the 1950s.

A shutter covers the 240V socket. Moving the shutter switches to mains.



main chassis. This location however blocks access to components in the audio stages.

The add-on mains adapter uses a 6X4 valve as a rectifier and HRSA member Ron Souter informed me that a common fault was lack of solder on the 6X4 socket. Ron restored four and found two missing solder. He recalled that the service man from Radio & Hobbies also mentioned the unsoldered 6X4 socket.

The power supply problem I encountered was in a model 168 that had changed to using a selenium rectifier to provide heater current. The transformer provides 2 x 3.3V for full wave rectification with two diodes. Selenium diodes drop around 1V so silicon diodes dropping only 0.5 V require a ballast resistor to reduce the voltage to the heaters. In the model 168 the heater circuit drains a surprisingly high 350 mA due to a divider resistor. I found that adding a series 0.82 ohm resistor with silicon diodes dropped the heater voltage from 1.85 V to a more sustainable 1.60 V.

The 1948 case front is a single sheet of aluminium with a cleverly pressed grille. The indented sections are painted red to give the impression of a separate panel behind the front. From 1951 the wider speaker vents were backed by red speaker grille cloth. In most surviving examples this cloth has faded due to photo bleaching. At first I painted the faded cloth after cleaning, but soon realised that it was more advantageous to install new cloth.

The 1948 radios sported an enamelled brass badge with the Philips name and logo. From 1951-1955 the badge was a lower quality print on aluminium. The badge then reverted to enamelled brass in 1956.

The carry handle started as a one piece Bakelite moulding. From 1951 the handle could fold down to the case. That handle was secured by square section shackles that can be unscrewed to get access to two screws at the top that retain the superstructure of the chassis. The final case has a variation of this with additional Bakelite mouldings at each end of the handle.

The dial calibration had ongoing revisions with changes to the colours and/or the stations.

The original 1948 speaker was a Rola. From 1951 the speaker was either a Rola or Philips 6 inch speaker. For the final iteration they downgraded to a Rola five inch speaker that needed a Masonite baffle to fit a five inch speaker in the space for a six inch speaker. To my ear this down grade adversely affected the listening quality.

Philips 1953 model 148C

In summary the common damage likely to be found includes broken Bakelite, scratch and dents to the case, radio not working, lost 240V adapter plug plus yellowed and damaged celluloid dials. On the positive side for a collector these radios are relatively plentiful and inexpensive. Their good performance and period character justify restoring one, or several, of these radios. As previously mentioned a patient disposition is an asset when tackling these radios.

Acknowledgement: The Philips advertisement of 1948 is from artwork provided by Kevin Poulter.