

Vintage Radio

By Associate Professor Graham Parslow



Hotpoint 1954 4-Valve Model P64MEX

The Hotpoint Model P64MEX is a 4-valve superhet receiver from 1954 which featured a 6BV7 multi-function valve. Because of this valve the set was claimed to have “super sensitivity and improved performance under all conditions”.

This Hotpoint was ostensibly a 4-valve superhet receiver but it used a 6BV7 multi-function valve which would have allowed the manufacturers to claim that it was a “5-valve function” set. Instead, they claimed “super sensitivity and improved performance under all conditions”. But was that claim really justified?

The following text comes from an advertisement in the Australian Women's Weekly, October 1953:

“Close to a station or far distant, even in so-called weak signal areas the new Hotpoint P6 comes into its own. With the amazing 6BV7 valve this Hotpoint receiver gives super sensitivity and improved performance under all

conditions – not only for distant stations but also in city dead spots where tall buildings stand in the way. Choose the new Hotpoint P6 for greater clarity and purity of tone everywhere.

Tops in tone the new Hotpoint P6 is tops in looks too. The lustrous moulded cabinet has a striking dual colour scheme in a variety of combinations. Although the cabinet is average size, the dial is exceptionally large and easy to read.

Fitted with a continuously variable tone control – you pick the tone you want – and completely new AVC circuit, the new model P6 is a super addition to the complete line of outstanding Hotpoint Radio Receivers.”

That an advertisement for such a “state-of-the art” product (at the time) would appear in Australia's largest circulation women's magazine seems most unusual more than six decades later.

The general public at the time would have been familiar with valves as the major components in wireless sets, as they were then known, and they would also understand the concept of sensitivity, as being important for long distance reception.

But does the radio match the copywriter's hyperbole? Certainly, in an urban high strength signal region, the Hotpoint radio featured here sounds as good as other comparable valve radios. All local stations give good performance using only the internal ferrite rod aerial.

However, there is no RF amplifying stage for extra sensitivity and the 6BV7 has no role to play in generating “amazing” performance. In fact, the 6BV7 is precisely described as a “double diode, output pentode” and would provide the functions of AM detection, AVC (automatic volume control or automatic gain control) and the single-ended audio amplifier.

Circuit configuration

A glance at the circuit diagram shows a superheterodyne that is remarkable for its use of only four valves and relatively few other components. The impression of a low component count is reinforced when you look under the chassis and that also means that it is easy to service this radio.

Note that it could have been done even more economically, as Ian Batty described for the Astor DLP two valve receiver, in the October 2016 issue of SILICON CHIP.

The chassis is clearly marked with “model P64MEX”. The P6 prefix, as seen in the advertisement, designates the moulded case. What follows P6 in the model type is often not useful in tracking down a particular radio in

published circuits, particularly the annual Australian Official Radio Service manuals (AORSM).

In the case of Hotpoint, it can also be useful to check AWA circuits since these radios came off the same production line. However, this is usually more than simple "badge engineering". Incidentally, Hotpoint is a brand proprietary to Australian General Electric (AGE).

This radio is a P64MEX and the circuit of the P64MEC appears in the 1954 AORSM compilation. That set was a clock radio so I assumed that the C suffix represented clock but other Hotpoint clock radios do not have a C suffix, so this was not a systematic naming convention.

The P64MEC circuit did have the same valve line-up as the set featured here but it had no ferrite rod antenna and no tone circuit.

The circuit diagram shown in Fig.1 was cobbled together from other Hotpoint circuits and then modified after tracing out to see how the radio was wired but it should not be regarded as definitive.

Not all radio circuits had the valves drawn with functional depictions of the internal valve connections. That made life easier for the draftsman but more challenging to users. The valve pinout diagram of Fig.2 has been included here to show the internal structure of the valves; **H** stands for heater, **f** for filament, **G** is a grid, **K** is a cathode, **P** is the plate (anode) and **D** is for diode.

From 1952 onwards, reliable supplies of new generation miniature valves were allowing manufacturers to produce radios like this one, with all miniature valves. The original valves for this radio would have been made in Australia by Amalgamated Wireless Valves (AWV), a subsidiary of AWA.

Looking at the circuit of Fig.1, the first valve is a 6BE6 mixer-oscillator. It was referred to as a converter by Hotpoint, and it mixes the incoming signal from the antenna with its local oscillator to generate the IF signal of 455kHz.

The ferrite rod allowed the design to move away from previously needed aerial coils that coupled the antenna signal to the first tuned circuit.

The control grid of the 6BE6 also receives a variable negative bias signal from one of the diodes in the 6BV7 to generate the AVC (automatic volume

Super Sensitivity

from **NEW** **Hotpoint**
MANTEL MODEL P6

Close to a station or far distant, even in so-called "weak signal areas," the new Hotpoint P6 comes into its own. With the amazing 6BV7 valve this Hotpoint receiver gives superior sensitivity and improved performance under all conditions... not only at distant stations but in city "dead spots" where tall buildings stand in the way. Choose the new Hotpoint P6 for greater clarity and purity of tone everywhere.

Tunes in tone, the new Hotpoint P6 is tops in looks, too! The handsome wood-grain cabinet has a striking dual colour scheme in a variety of combinations. Although the cabinet is attractive, the dial is exceptionally large and easily read. Filled with continuously variable tone control—you select the tone you want—and completely new AVC circuit, the new Model P6 is a major addition to the complete line of outstanding Hotpoint Radio Receivers. ASK YOUR LOCAL HOTPOINT DEALER TO SHOW YOU MODEL P6 RADIO TODAY.

with this **AMAZING 6BV7 Valve.**

AUSTRALIAN GENERAL ELECTRIC

Agents: Melbourne, Sydney, Perth, Adelaide, Brisbane, Newcastle, Townsville, Darwin, Hobart, and Launceston. Radio Dept., 100, Market Street, Sydney, N.S.W.

The Australian Women's Weekly, Sydney, N.S.W.

Reproduced from the October 14, 1953 issue of the Australian Women's Weekly, this advertisement for the Hotpoint radio trumpeted its outstanding performance due to the inclusion of the "amazing 6BV7 valve". Actually, the performance was more the result of the designer's careful work.

control), depending on signal strength.

The second valve, a 6AU6, is a pentode IF amplifier driving the second IF transformer, L7 and its output goes direct to the first diode pin (D1) on the 6BV7.

Both the 6BE6 and 6AU6 were developed by RCA America, a partner company to AWA and were common choices for the RF sections of radios. Both of these RF valves were registered at the end of 1945 so they were conservative choices in the 1950s.

Arguably more radical is the "amazing" 6BV7 which was an Australian design registered by AWV in August 1951. As already noted, it houses two

diodes for recovering the audio signal and for generating the AGC voltage. The high-gain pentode section is capable of an audio output up to 4W; see the data in Fig.2. Note the figure for harmonic distortion!

So the 6BV7 eliminated the need for a separate valve that packaged diodes with an audio preamplifier, eg, 6N8 or 6AV6. However, the 6BV7 is rarely seen in radios other than those made by AWA or its subsidiaries. Did they have first "dibs"?

Chassis layout & case

With only four valves, a simple linear arrangement of components is easily



An AWA Radiola M67A set at left and next to it a Hotpoint clock radio. The case used in these sets is from the same mould as the Hotpoint P64MEX.

accommodated. The original radio had a five-inch Rola speaker but a modern speaker had been substituted in this one by a previous owner.

The introduction of thermo-mouldable plastics in the 1950s allowed complex shapes to be achieved using relatively cheap feed-stock and inexpensive moulds. By contrast, the thermo-setting Bakelite was far more expensive in every way, including the

time required to form a case. Bakelite was also easily shattered.

An advertisement for the P6 series appeared in the 1952 AORSM circuits extolling the virtues of the plastic case. "It comes in lustrous brown, burgundy, grey or ivory shatter-proof plastic. Customers can choose between a cream or red fret."

The shatter-proof claim is dubious because when I acquired it, the

radio had the right front section broken away. Nor did the advertisements make any mention of the need to be cautious to avoid damage by heat. My radio had a section at the top deformed by being too close to a heat source.

As Confucius rightly observed, a journey of a thousand leagues begins with a single step. This radio was my first step to becoming a collector. It was

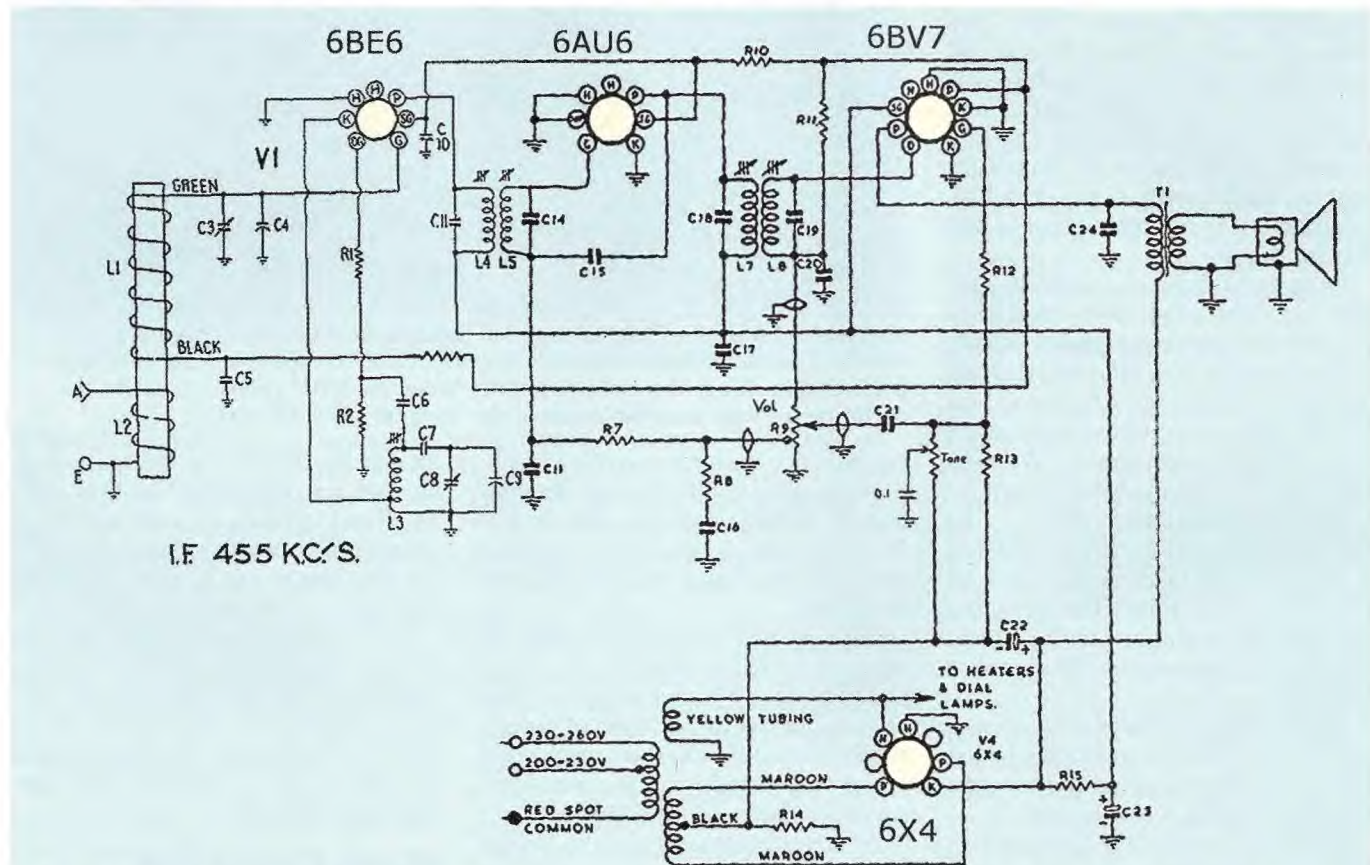
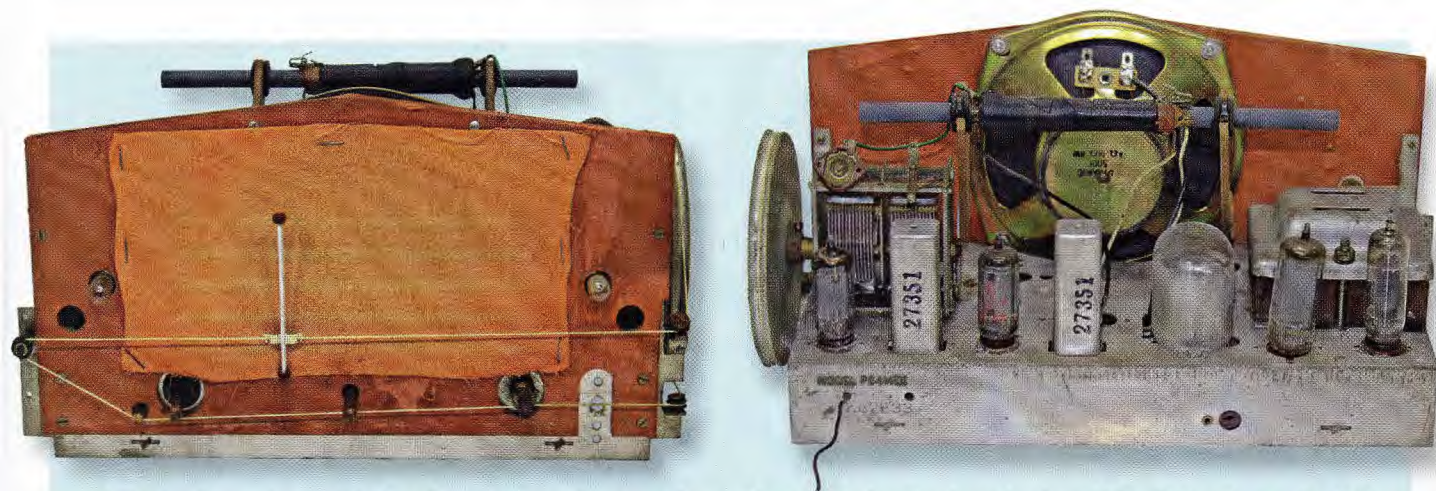


Fig.1: the 4-valve circuit is fairly unremarkable except for the ferrite rod antenna and its inclusion of the 6BV7 double-diode output pentode which was introduced in 1952.



At left, the front view with the chassis out of the case shows the relatively simple stringing of the dial pointer. At right, the rear view of the chassis, the 6BV7 valve is the second valve from the right.

purchased in 1993 at a country market for \$10. I used some masking tape to moderate the appearance of the hole in the case but otherwise it remained on a shelf for 23 years.

My long-term intention was to restore the case by adding car filler to the hole and moulding it to shape. In the meantime, many other radios distracted me. By chance I was able to purchase a recycled case from an AWA variant of the radio. The replacement could be identified as from AWA due to a Radiola badge.

The case consists of separate front and rear halves that slot into each

other. The halves are held together by mounting brackets retained by screws at the rear.

An accompanying photo shows a burgundy AWA Radiola 467MA from my collection that is included here to illustrate how AWA used the same outer case with the addition of a Radiola badge.

The cases come from the same mould because both AWA and Hotpoint cases are stamped internally as AWA 28103 – AGE 28105. The AWA fret is a different moulding that is glued into the front of the case. The AWA dial glass is similar, but

distinguishable from the Hotpoint by different colours of the lettering.

Restoration

Radiola is proprietary to AWA and RCA, so it is inappropriate on a Hotpoint radio. I removed the badge, which was retained by tags pushed into three holes in the case. The badge-holes were drilled after the case was moulded and they can be seen in the leading image for this article.

One feature of this radio is the cursive-script logo of AGE at the two sides of the dial, back lit by the two dial globes. The original logo was printed on plain paper and each small square of paper fits into a recess at the back of the fret.

As purchased, the AGE logos in the fret had faded, so a new logo was created with photo editing software and printed as a replacement.

Hotpoint also had an alternative fret for the case for the clock radio series. The Hotpoint clock radio, shown on the previous page, from my collection and has a five-valve line-up, quite different to the P64MEX. It has no tone control, so as to simplify the knob layout.

The rear half of the case comes in two variants, with and without a hole to mount a mains 3-pin socket. The original Hotpoint case of the radio featured here had no installed socket but did have the socket mounting hole. The transplanted AWA case on the radio is the variant without the socket hole.

In the early 1950s, there were generally few power sockets in houses and a common solution was a proliferation of double adaptors. An extra socket at

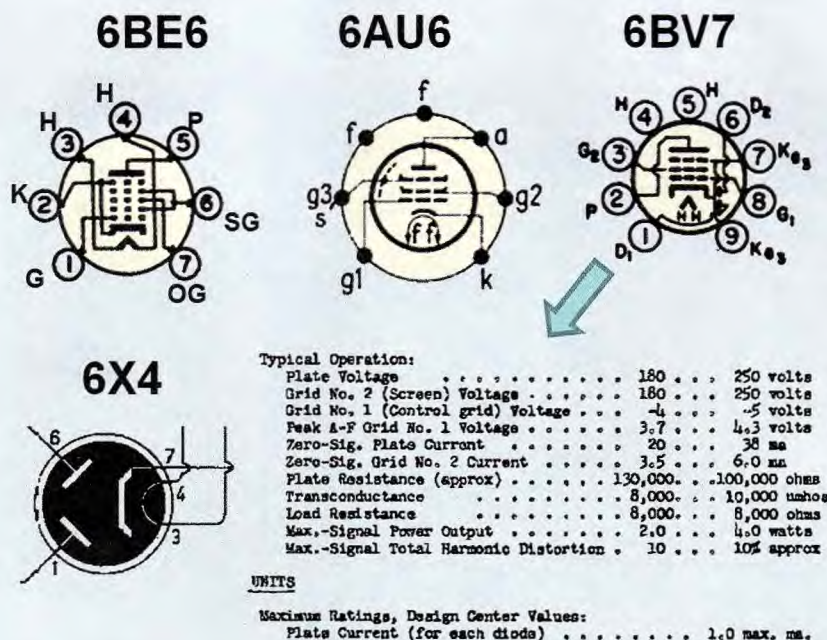


Fig.2: this diagram shows the pinouts of the four valves used in the Hotpoint circuit plus brief specifications for the 6BV7. Note the rated harmonic distortion at maximum signal.



On the left is the rear of the replacement case for the Hotpoint P64MEX (which was taken from an old AWA radio), while to its right is the alternative rear case which had clearance to mount a 3-pin mains power socket. This was quite popular as double adaptors were becoming increasingly common, letting people connect a reading lamp at the same time.

the back of a radio was a selling point and meant that a reading lamp could be run from the radio.

Apart from work on the case, relatively little needed to be done to the chassis. The electrolytic capacitors were changed and all the "moulded mud" encapsulated paper capacitors were also eventually replaced, along with some of the carbon composition resistors.

The cotton-covered 3-core mains

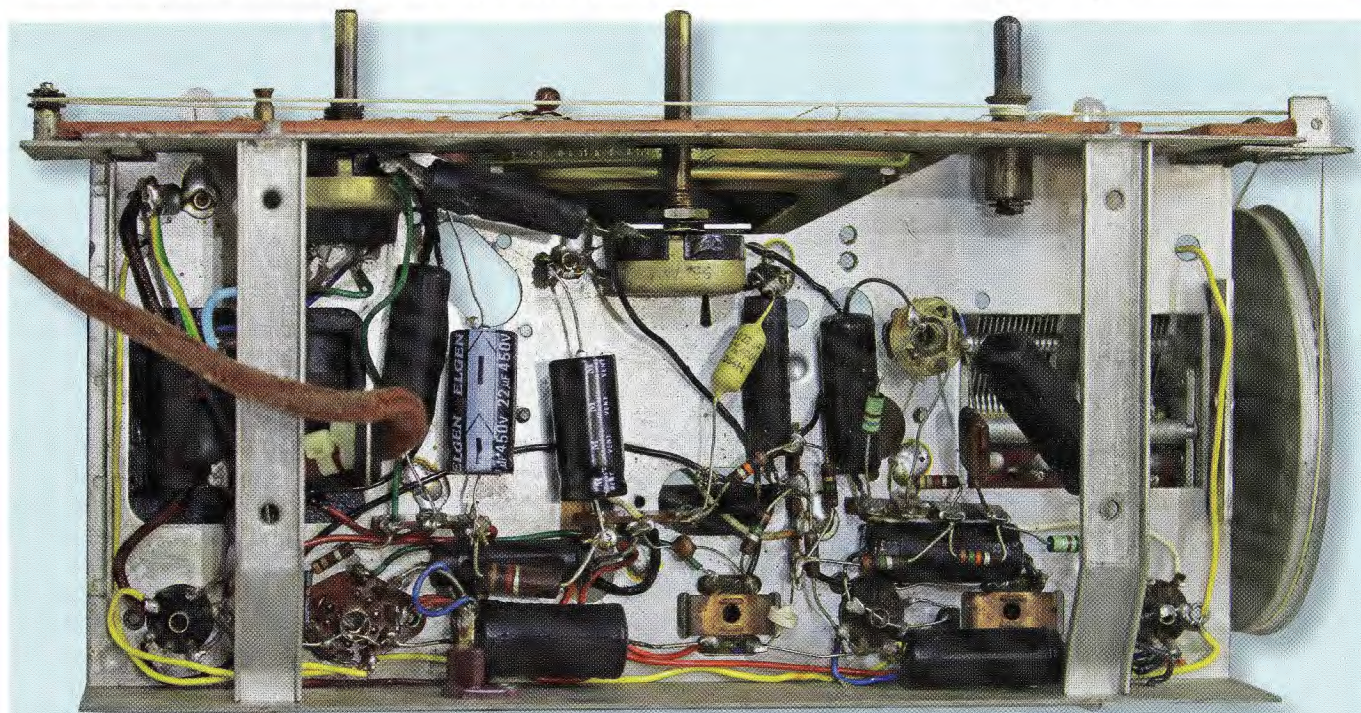
cord also had to be replaced and correctly anchored – not easily done, given the way the case clamps together in two halves.

After warm-up, this radio draws only a modest 30W at 240VAC and generated 205V DC at the first filter electrolytic and 187V at the second HT filter electrolytic. These are conservative HT voltages for this valve line-up. The IF cores needed a slight tweak to give correct alignment.

If you would like to have a valve radio as an item of functional nostalgia then an AWA or Hotpoint radio of the early 1950s is a reasonable buy. They are not in the highly collectable category and they are relatively common due to the market dominance by AWA.

Should you acquire a radio in one of these cases, you may find four or five valves, with or without a ferrite rod aerial inside.

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Compared to the Pye 1951 5-valve Model APJ-Modified from last month's Vintage Radio, the underside of the P64MEX's chassis is much cleaner due to the lower component count, making servicing of this radio much easier.