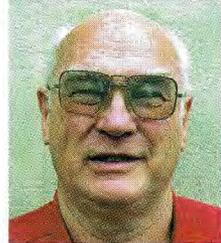


VINTAGE RADIO

By RODNEY CHAMPNESS, VK3UG



The HMV C43B console radio

Generally considered a “step-up” from mantel radios, console receivers enjoyed an extended period of popularity from the 1930s to the early 1950s. Typical of the era was the HMV C43B console, a 5-valve receiver with an impressive cabinet and performance to match.

At the height of its popularity, a console receiver was usually the focus for household entertainment, just as DVD players and home-theatre equipment are today. Their reign ended during the late 1940s and early 1950s when they evolved into the popular radiogram of the era.

To cater for the demand, domestic receiver manufacturers developed a range of impressive console radios. Consoles always sounded more impressive in terms of volume and audio quality compared to the table and mantel sets of the era. The reasons for this weren't hard to find – they had

adequate baffling for the speakers mounted in them and speaker sizes varied from 6-inch to 12-inch types.

By contrast, mantel sets had to make do with speakers ranging from three inches to eight inches in size. What's more, their baffling was either inadequate or there was no baffling at all.

The HMV C43B

HMV had many fine pieces of furniture produced for them, into which they fitted quality receivers. The C43B is a typical example. The “C” in the model number means it is a 5-valve dual-wave receiver; the “4” means it

is a horizontal console (whatever that meant); the “3” means it is an AC-powered receiver; and the “B” indicates that it is a second issue model of this type.

Table 1 shows the model number code used by HMV and will help readers to identify other HMV models.

The C43B console receiver described here belongs to a fellow vintage radio club member and is one of Jim's more interesting radios. The set itself is quite attractive and given the right setting, would look quite impressive in the lounge room.

As can be seen in the photos, the dial sits horizontally along the top front edge of the cabinet (perhaps that is what is meant by “horizontal” in the identification table). The dial doesn't impress me as much as some of the early HMV dials but it is still quite functional. It's also simpler than some of the earlier units, so it is less likely to give trouble with wear over an extended period.

Information sheet

A sheet of paper glued to an inside panel of the cabinet details the dial drive system and indicates the valve type used at each location. This valve location guide is handy for ensuring that the valves are correctly replaced in their respective sockets after they have been removed for testing.

It was not an uncommon practice in the 1930s, 1940s and 1950s for set owners to remove all the valves when the radio refused to operate or had some other annoying fault. They would then take them to their local radio serviceman and ask him to test them. The serviceman often did this on his emission type valve tester as a free service to the customer.

Any valves that showed “replace” on the meter were considered faulty



This rear view shows the C43B receiver chassis mounted in the cabinet. Note the large metal brackets at either end.

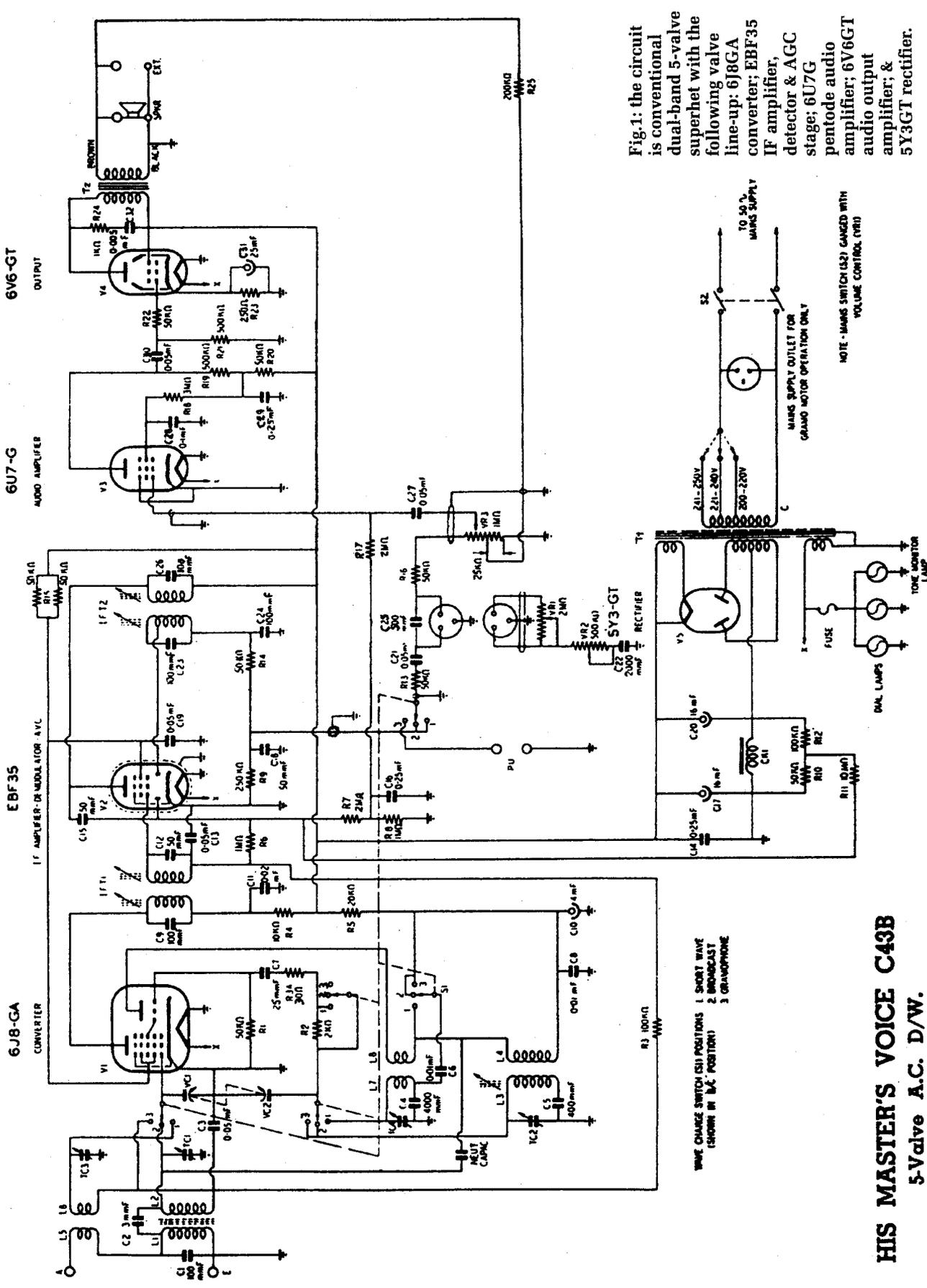


Fig. 1: the circuit is conventional dual-band 5-valve superhet with the following valve line-up: 6J8GA converter; EBF35 IF amplifier, detector & AGC stage; 6U7G pentode audio amplifier; 6V6GT audio output amplifier; & 5Y3GT rectifier.

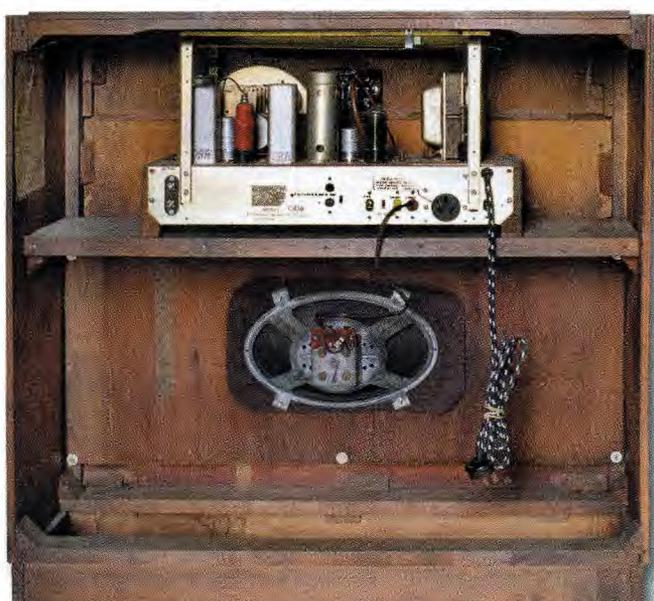
WAVE CHANGE SWITCH (S1) POSITIONS
 1. SHORT WAVE
 2. BROADCAST
 3. GRAMOPHONE

NOTE - MANS SWITCH (S2) GANGED WITH VOLUME CONTROL (P2) FOR GRAMMO MOTOR OPERATION ONLY

HIS MASTER'S VOICE C43B
 5-Valve A.C. D/W.



It may be a little plain from the front but the cabinet is still an impressive piece of furniture.



The large oval-shaped loudspeaker is properly baffled by the cabinet, which contributes to the audio quality.

and the set's owner would usually buy a new valve in the hope that that would fix the problem. I wonder how many valves were replaced just because the tester said "replace", when in reality the valves still had quite a bit of life left in them for the job they had to do?

On returning home, an owner would then put the valves back into the set and turn it on. Often, of course, it didn't work and sometimes smoke even erupted from the set.

Why? Many owners did not understand the significance of valve type numbers and he (she) may well have installed a 6V6G in a 5Y3G socket, or been responsible for some other equally disastrous substitution. Valves often survived this rugged treatment but many didn't. Hence, you can see the value of having the type numbers either on a sheet, as this set does, or painted onto the chassis alongside each valve socket.

An episode like this often meant that the radio had to be taken to the serviceman to rectify the damage that had occurred.

In short, it pays to be careful when replacing valves, to ensure that you don't plug the wrong valve into the wrong socket. If in doubt, ask someone with more experience.

The tone controls

The tone controls on this set are on a separate sub-assembly that's attached

to the front panel of the receiver. They connect to the main chassis via a plug and socket combination.

The receiver will operate with the tone controls disconnected, although it will lack bass performance. That's because, with the tone controls disconnected, there's just a 500pF coupling capacitor in the audio chain. Fig.1 shows the tone control circuit (VR1, VR2 & C22) and shows how it is attached to the main circuit.

Removing the chassis

The chassis is easy to remove and simply involves removing the bolts that fasten the chassis to the mounting shelf, then removing the knobs and disconnecting the loudspeaker and tone controls. The chassis can then be removed and, thanks to the large "roll-over" brackets located at either end, stood on its end for service.

Circuit details

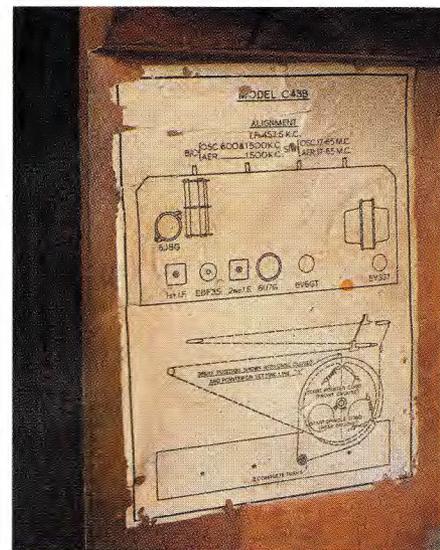
The circuit is quite conventional – it has a 6J8GA converter; an EBF35 IF amplifier, detector and AGC stage; a 6U7G pentode audio amplifier; and a 6V6GT audio output amplifier. The power rectifier is the common 5Y3GT. The set is dual-wave, covering 540-1600kHz and 5.9-18.1MHz, and it also features a pickup input ("PU") so that records can be played through the audio amplifier stage.

The converter stage has AGC volt-

age applied to it on both the broadcast and shortwave bands. On the broadcast band, the converter is neutralised and HMV was one of the few manufacturers that took the trouble to do this (neutralisation results in im-

HMV Model Number Code

Parameter	Code	Meaning
Performance	A	4-valve broadcast band receiver
	B	5-valve broadcast band receiver
	C	5-valve dual-wave receiver
	D	5-valve dual-wave non-auto radiogram
	E	5-valve dual-wave auto radiogram
	F	Electrogram
	G	Electric record player
	H	Spring record player
	J	Spring acoustic player
	K	FM tuner
	L	FM/AM broadcast-band receiver
	M	FM/AM dual-wave receiver
	N	Extension speaker
P	4-valve dual-wave receiver	
Type of cabinet	1	Bakelite mantel
	2	Bakelite table
	3	Wooden table
	4	Horizontal console
	5	Vertical console
	6	Portable
	7	Metal case
Power supply	1	Dry battery
	2	DC
	3	AC
	4	DC/AC
	5	6V vibrator
	6	12V vibrator
Styling	A	First issue
	B	Second issue, etc
<p>HMV audio equipment was given a 4-digit model number, which specified the performance, type of cabinet, power supply and styling. For example, the HMV 5-valve portable was coded B61A, the 1948 5-valve table dual-wave receiver (formerly 888) was a C33A and the 1949 5-valve bakelite table dual-wave receiver was a C23A.</p>		



This label is attached to an inside panel and shows the dial stringing arrangement and the valve positions.

small loading coil in series with the antenna. So, for all practical purposes, the broadcast coil is not affected by the shortwave coil.

The broadcast coil primary is tuned by L1 and C1 so that it resonates at a frequency just below the broadcast band. This is done to get the best performance on the lower frequency stations. C2 is a "top-coupling" capacitor and its inclusion ensures good performance at the high-frequency end of the dial.

On shortwave, L1 acts as a radio frequency (RF) choke and prevents L5 from operating effectively. However, while L1 acts as an RF choke, C1 has very little reactive effect at shortwave and so the bottom of the shortwave winding is effectively connected to earth. This saves the use of a switch section and is quite effective.

The intermediate frequency (IF) amplifier is quite conventional, operating on 457.5kHz. As shown, the detector diode takes its signal from a tap on the secondary of the second IF transformer. This gives higher selectivity as opposed to extracting signal from the top of the winding.

The signal for the AGC diode is taken from the plate of the IF amplifier valve, where the signal is stronger but the selectivity is reduced. This method helps to smooth the operation of the AGC system and ensures that it starts to work before the signal is fully tuned in, thereby preventing momentary "blasting" before the AGC becomes fully operational.

proved performance and less radiation of the oscillator signal from the antenna system).

On shortwave, padder feedback capacitor (C6) is used to ensure that the converter oscillates reliably across the entire tuning range. An unusual feature here is the inclusion of a 2kΩ resistor (R2) in the grid lead circuit of the local oscillator for the broadcast band. Obviously, the oscillator was

quite "lively" on the broadcast band so this resistor was included to reduce its activity and prevent spurious harmonics from being generated.

The aerial/antenna input circuit is one that HMV commonly used. Note that the shortwave primary winding (L5) is in series with the broadcast band coil (L1) primary. On the broadcast band, the inductance of L5 is quite low and it actually acts as a

The AGC is delayed by the bias supplied through R11 (at the bottom of Fig.1). Note that about a third of the AGC voltage is applied via R17 to the 6U7G audio valve! This technique is rather unusual but was often favoured by HMV in particular.

By doing this, the peak audio volume will remain almost constant for quite wide variations in signal strength. This usually obviates the need to alter the volume control setting when tuning from a strong to a weak station and vice-versa. However, it does increase the noise between stations in some circumstances.

Audio amplifier

The audio amplifier is a conventional high-quality, high-gain design with audio AGC as mentioned. There is voice coil negative feedback to the first stage via a tap on the volume control. The audio quality is quite good, being noticeably better than the average mantel receiver.

The power supply has an unusual feature in that the filter choke has been placed in the negative lead. The advantage of this is that the voltage between the winding and the frame is quite low. The delay bias for the AGC system is obtained by a voltage divider across this choke.

Note that a third of the voltage across the choke is used for this bias. This is dropped by another two thirds by a voltage divider consisting of R11, R7 and R8.

Most stages employ quite good decoupling, which accounts for the set's good stability and performance. However, this receiver, like many others, has minimal decoupling of the audio output stage from the IF stage and audio preamplifier. That said, the set has sufficient filtering to remove the IF signal from the audio circuit.

This is necessary to ensure that the audio stages don't act as IF amplifiers, with the possibility of feeding back into the IF amplifier. Inadequate filtering in this area has led to a number of receivers being unstable in some circumstances.

As with most, if not all, HMV receivers of the late 1930s to early 1950s, the wiring is very neat and the set gives the impression of being a quality item (which it is).

Restoration

As with most receivers, there are a

Photo Gallery: 1940 Tasma Model 710 5-Valve Radio



Manufactured by Thom & Smith Pty Ltd in 1940, this Tasma Model 710 from was a compact 5-valve dual-wave mantel set. It featured an unusual "rust-stained" white bakelite cabinet and this was manufactured using a process that ensured no two cabinets were ever like.

Band switching was controlled by a central winged knob, although this became the tone control on broadcast band only models. The valve line-up was as follows: 6J8G frequency converter, 6U7G IF amplifier, 6G8G audio amplifier & detector, 6V6G audio output and 5Y3G rectifier.

This particular unit was been fully restored by its owner, Maxwell Johnson, Kingston, Tasmania. (Photo: Ross Johnson).

few key components that should be replaced almost without question. These include the AGC bypasses and audio coupling capacitors (unless you can test them under real life conditions with high voltages and when they are quite warm). Note that a normal multimeter (set to an ohms range) rarely gives a true picture when it comes to testing capacitors.

Only a few components needed replacement in this receiver. In addition, it is also a good idea to check the shielded wires in sets of this era. In some sets, the rubber insulation inside the shield perishes and often goes "goosey" – sometimes becoming conductive in the process. When this happens, it is necessary to replace it with new shielded cable.

Despite the set's age, Jim found that the valves were all in good condition. What's more, it required no attention to the alignment. The cabinet also required very little attention, having been well looked after by its previous

owner. This is one set that had been kept inside, rather than stored in a damp and dusty shed.

Summary

This set is one of many HMV receivers that look good and perform well. It's only real drawback is having the horizontal dial on the top of the cabinet, as it's always possible for someone to put something on top of it and cause damage. What's more, the operator still has to reach down the front of the set to tune it, although the arrangement does make it easy to see the stations.

That said, if it had been set down a little from the top and at an angle (like most of its contemporaries), the set would have looked better. As it stands, the set looks a little bland when viewed from the front.

In spite of this minor criticism, the HMV C43B is a good performer and is well worthwhile having in your collection. **SC**