

HIS MASTER'S VOICE

MODELS 465 and 465D

•
**Five-Valve, Broadcast and Dual-Wave
Superheterodyne Receivers**

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**Technical Information
and Service Data**



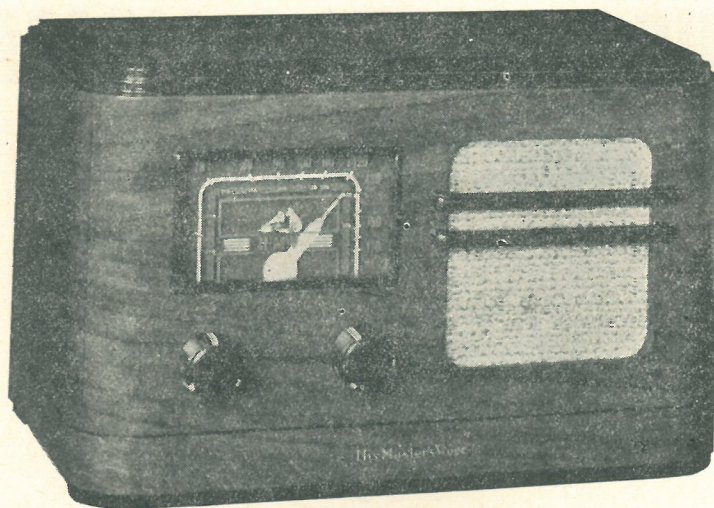
H-M-V

SERVICE DIVISION

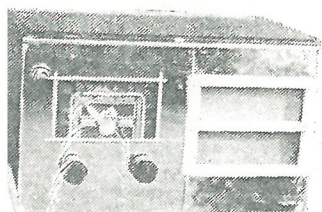
HIS MASTER'S VOICE (New Zealand) LTD.

118-120 WAKEFIELD ST., WELLINGTON

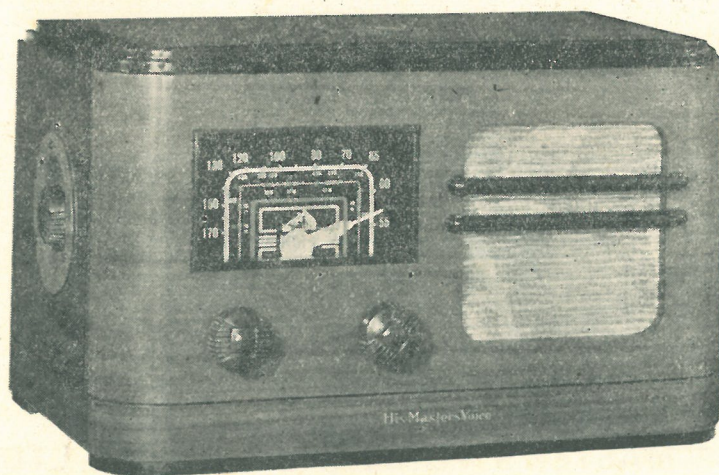
465
465D



Model 465



Model 465 5-valve 1946,
mirror glass cabinet



Model 465D

HIS MASTER'S VOICE

MODELS 465 and 465D

*model names wanted
(if they had any)*

Five-Valve, Broadcast and Dual Wave
Superheterodyne Receivers

TECHNICAL INFORMATION

Electrical Specifications

FREQUENCY RANGES

"Standard broadcast" (A) 540-1,750 K/cs.
"Short wave" (B) 5.5-19 M/cs.

ALIGNMENT FREQUENCIES

"Standard broadcast" (A) 600 K/cs., 1,400 K/cs.
"Short wave" (B) 6 M/cs., 18 M/cs.
..... 455 K/cs.

VALVE COMPLEMENT

(1) 6K8-GT First Det.—Oscillator
(2) 6K7-GT Intermediate Amp.

(3) 6Q7-GT Second Det., A.F. Amp. and A.V.C.
(4) 6V6-GT Audio Power Amp.
(5) 6X5-GT Full-wave Rectifier

POWER SUPPLY RATING 230 V., 50 Cycles

with?

Mechanical Specifications

Height $7\frac{3}{4}$ inches
Width $8\frac{1}{4}$ inches
Length $12\frac{1}{2}$ inches
Weight (net) $12\frac{1}{2}$ pounds
Operating Controls (1) Tuning, (2) Power Switch-Volume, (3) Wave-Change Switch
Tuning Drive Ratio 8 to 1

General Features

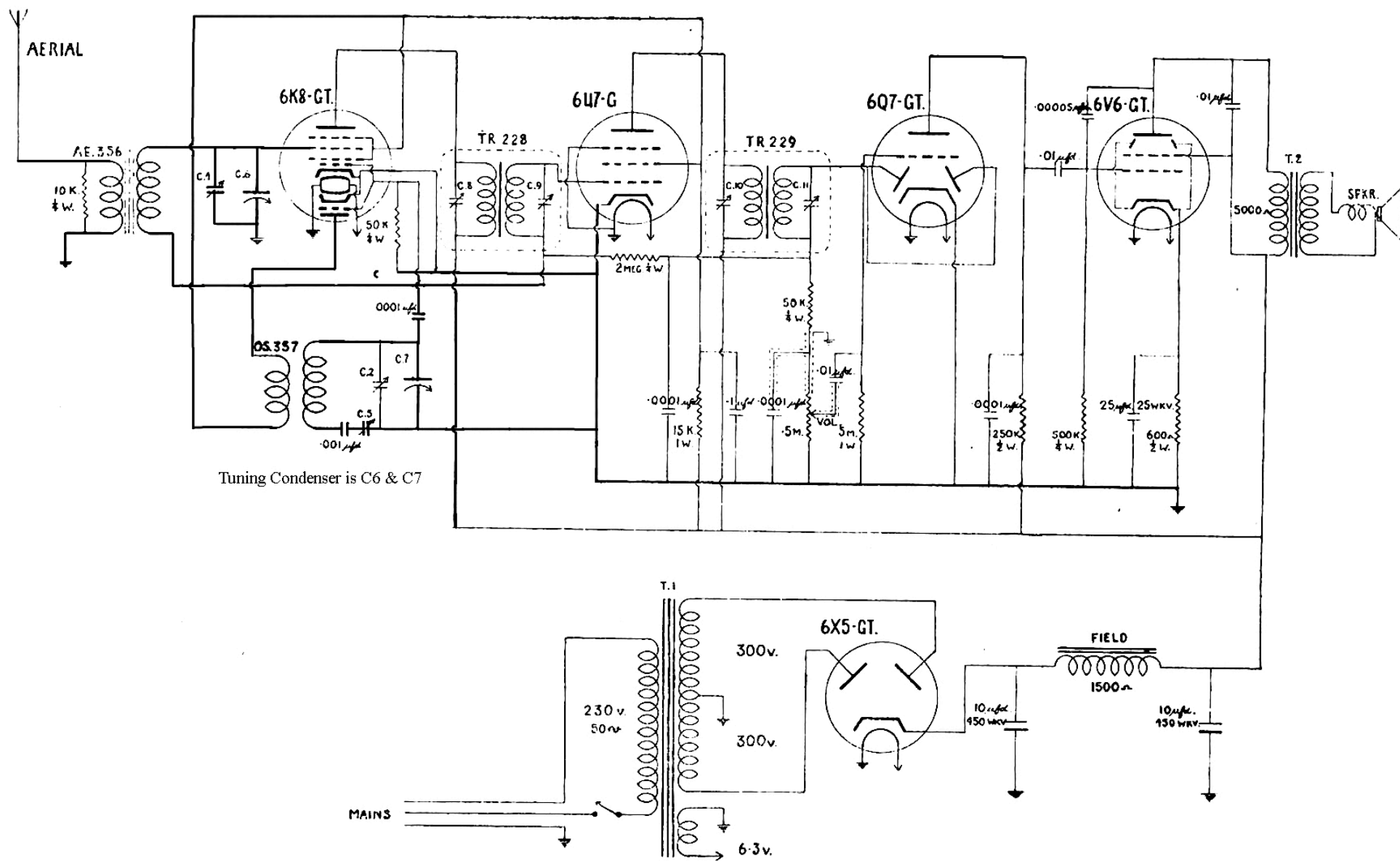
These receivers are of the superheterodyne type, and have many distinctive features. Their design includes iron-cored I.F. transformers, iron-cored broadcast aerial coil, resistance-coupled audio system, 5-inch dust-proof electrodynamic loudspeaker, rubber gang mounting and edge-lit dial. The trimmers, which are located at accessible points, maintain a very high standard of alignment stability. The cabinet, finished in various shades of enamel or specially hand-picked walnut veneer is delightfully simple in design, but has a quiet richness and a good-taste appeal, characteristic of His Master's Voice Radios. The 465D tuning range on Short Wave, which covers all bands from 16-49 metres, is a remarkable feature to the technician.

balls!

note:

*There was also a mirror glass cabinet case. S/N 2889
Ray Knowles*

*4378
Guth. Bordenheim*



*Circuit Diagram
HMV Model 465*

Circuit Arrangement

The first detector and oscillator functions are accomplished in a single ~~tube~~^{tube}, a 6K8-GT. The input of this tube is coupled to the aerial through a tuned R.F. transformer. The two-section gang condenser (C.6, C.7) tunes the aerial transformer secondary and the heterodyne oscillator coil. Trimmers C.1, 2, 3 and 4 are in parallel with the gang for obtaining exact alignment.

The intermediate frequency stage is coupled to the 6K8-GT and to the 6Q7-GT by means of iron cored transformers which resonate with variable condensers. These transformers are adjusted to tune at 455 K/cs.

The modulated signal as obtained from the output of the I.F. system is detected by the diodes of the 6Q7-GT. Audio frequency secured by this process is passed on to the control grid of this same valve for amplification before final reproduction. The D.C. voltage, which results from the detection of the signal, is used for Automatic Volume Control and is applied as grid bias to the 1st detector and I.F. valves.

Manual volume control is effected by means of a potentiometer connected as a variable coupling element between the output of the second detector and the first audio control grid. After amplification by the 6Q7-GT, the audio signal is transmitted by resistance-capacitance coupling to the input of the 6V6-GT power output stage, which, in turn, is transformer-coupled to the dynamic speaker.

The power supply system consists of a 6X5-GT rectifier tube which is supplied from an efficiently designed power transformer and which works into a suitable filter. The various potentials required for the plate, screen and cathode circuits are obtained from the output of the filter. The electrodynamic loudspeaker field coil is used as a filter reactor.

NOTE.—The 465 and 465D circuits are essentially the same except for (A), the oscillator section in the 465 is "grid tuned", (B) the two trimmers (C2 and C4) are gang mounted, and (C) the bias is removed from the 6K8-GT and 6K7-GT by grounding the cathodes. *note*

SERVICE DATA

Alignment Procedure

There are four alignment trimmers provided in the aerial transformer and oscillator coil tuned circuits. The I.F. transformer adjustments are made by means of screws attached to the variable condensers. All of these circuits have been accurately adjusted during manufacture and should remain properly aligned unless affected by abnormal conditions or altered during servicing. Loss of sensitivity, improper tone quality and poor selectivity are the usual indications of improper alignment.

The correct performance of this receiver can only be obtained when the aligning has been done with adequate and reliable apparatus. A test oscillator is required as a source of specified alignment frequencies. Visual indication of receiver output during the adjustment is necessary and should be accomplished by the use of a good type of output indicator. The procedure outlined below should be followed in adjusting the various trimmer condensers. (Locations found on Fig. 2.)

I.F. TRANSFORMER ADJUSTMENTS

The four adjustment screws (attached to variable condensers) of the two I.F. transformers (on top of I.F. cans) are located as shown by Figure 2. Each circuit must be aligned to a basic frequency of 455 K/cs. To do this, attach the output indicator across the loudspeaker voice coil or across the output transformer primary. Connect the output of the test oscillator to the control grid of the 6K8-GT through a .05 Mfd. condenser. Connect the test oscillator ground terminal to the ground terminal of the receiver chassis. Wave change switch should be in "Broadcast" position. Tune the oscillator to 455 K/cs. Advance the receiver volume control to its full-on position and adjust the receiver tuning control to a point (on low frequency end of band) where no interference is encountered either from local broadcast stations or from the heterodyne oscillator. Increase the output of the test oscillator until a slight indication is present on the output indicator. Adjust the two condensers C.10 and 11 to produce maximum indicated receiver output. Then, adjust the two condensers C.8 and 9 in the same manner. During these adjustments, regulate the test oscillator output so that the indication is always as low as possible. By doing so, broadness of tuning due to a.v.c. action will be avoided. It is advisable to repeat the adjustment of all I.F. variable condensers to assure that the interaction between them has not disturbed the original adjustment.

R.F. TRIMMER ADJUSTMENTS

"BROADCAST"

Attach the output of the test oscillator to the Receiver aerial through a 200 Mmfd. condenser. The ground connections remain connected together. Calibrate to the tuning dial by setting the pointer to the arrow at the low frequency end of the dial scale (two-gang tuning condenser in full mesh). The output indicator should be left connected to the system. Adjust the test oscillator to 600 K/cs. Leave the volume control of the receiver at its maximum position. Make sure that the wave change switch is at its broadcast position. Tune the receiver to pick up this signal, then, disregarding the dial reading at which it is best received, rock the tuning control backward and forward through the signal, simultaneously adjusting the receiver oscillator padder C.5 for maximum receiver output. After this maximum has been accurately obtained, shift the test oscillator to 1,400 K/cs. and set receiver tuning control to a dial reading of 1,400 K/cs. Regulate the output of the test oscillator until a slight indication is perceptible at the receiver output, then adjust the two trimmers C.2 and 4 of the oscillator and aerial coils, so that each produces maximum receiver output. Go back and repeat both operations again to ensure complete alignment.

"SHORT WAVE"

Adjust the test oscillator to 18 M/cs. and set receiver tuning control to a dial reading of 18 M/cs. Make sure that the wave change switch is in its "Short Wave" position. Adjust the two trimmers C.1 and 3 of the oscillator and aerial coils, so that each produces maximum receiver output. If alignment is correct an "image" signal should appear twice the I.F. frequency (910 K/cs.) away, (i.e. at 17.09 M/cs. on dial). Now adjust the test oscillator to 6 M/cs. and tune the receiver. With no further alignment the dial reading should correspond.

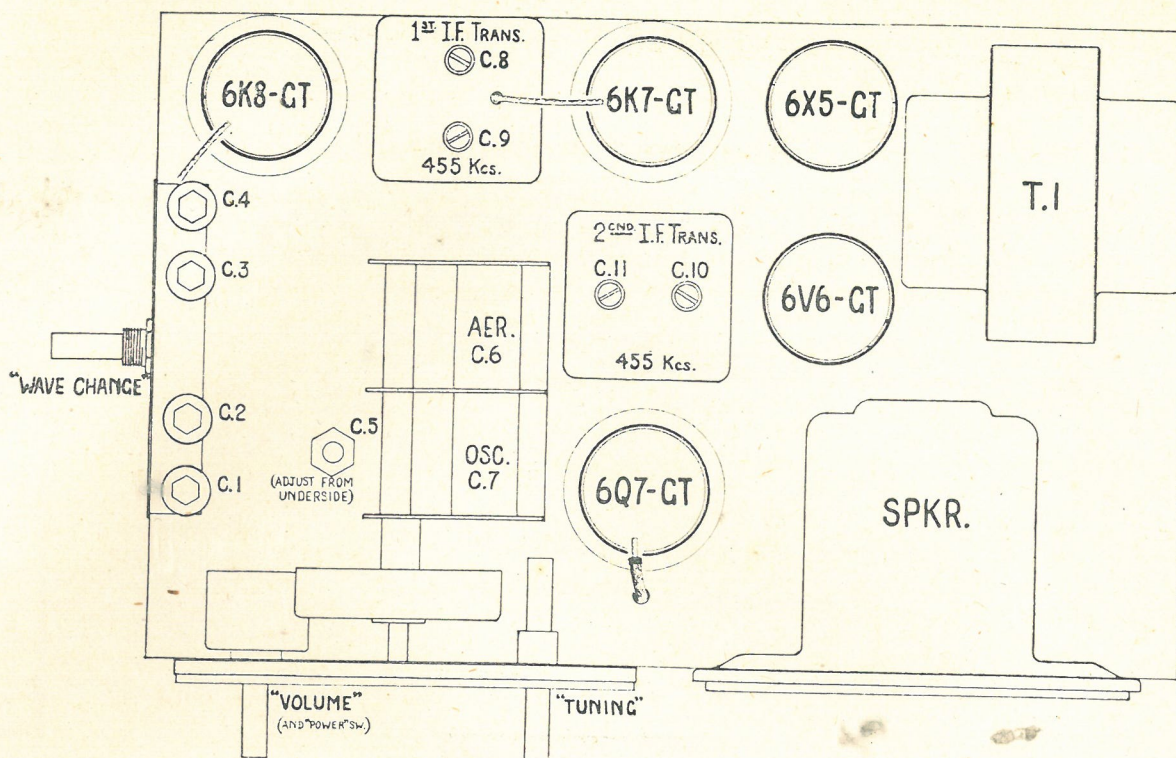


Figure 2-Component Locations

*class, finished
in brown
enamel
no nameplate
or model number
on class.*

Modifications and Service Notes

Post-war (1946)
Owing to the acute shortages in materials and parts it has been found necessary to use substitute components in the various post-war models of His Master's Voice Radios. This has, in some cases, necessitated slight modifications in design, but in no case has any modification been permitted to impair the efficiency or quality of the finished machine.

Some of the components affected are valves, ganged and fixed condensers, trimmers, padders and wave change switches.

Likely substitutes for valves.

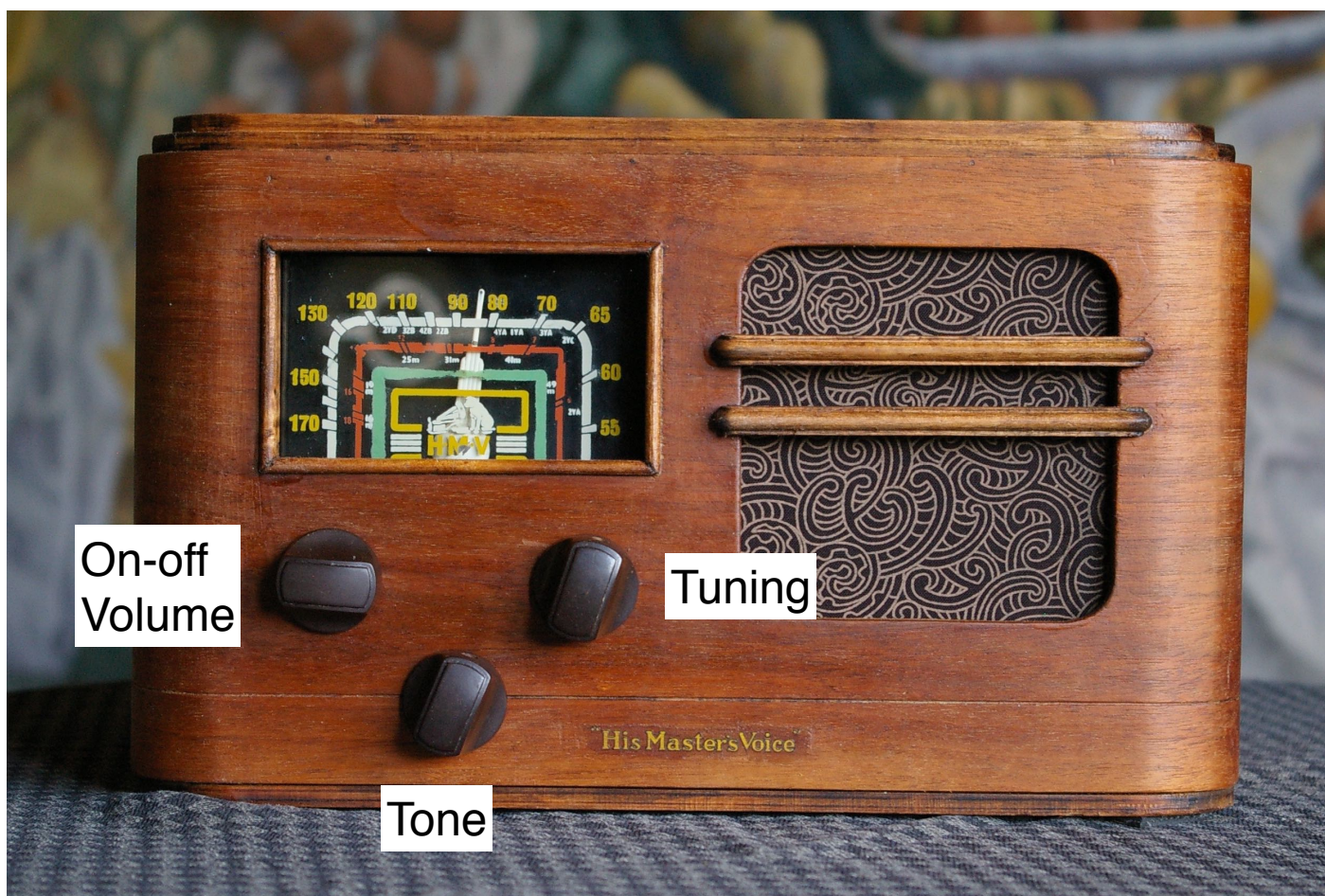
6K8-GT-----	ECH35	:
6K7-GT-----	EF39, 6U7G	X
6Q7-GT-----	EBC33, 6SQ7	*
6V3-GT-----	EL33	
6X5-GT-----	5Y3G	

: Slight alteration in wiring necessary.

X Bias voltage decreased.

* Separate filament winding on power transformer required.





HMV model 465D. Serial no. 3412. Date of manufacture: 1946.
Note tone control not shown on circuit, apparently added at time of manufacture or shortly thereafter.