

SERVICE ENGINEER

RAINBOW MODEL 606E SUPERHET FIVE FOR A.C. MAINS

CIRCUIT.—A five-valve plus rectifier superhet for operation on A.C. mains and working on the usual medium and long wave-bands.

An inductively-coupled band-pass filter precedes V1, the frequency changer, which is coupled through an I.F. transformer tuned to 465 kc. to V2, an H.F. pentode.

A second I.F. transformer is used to couple this valve to V3, a double diode, one diode being used for demodulation and the other to supply A.V.C. bias to the preceding valves in the orthodox manner.

The cathode ray tuning indicator is connected in this part of the circuit and is operated by the rectified output from the demodulated diode.

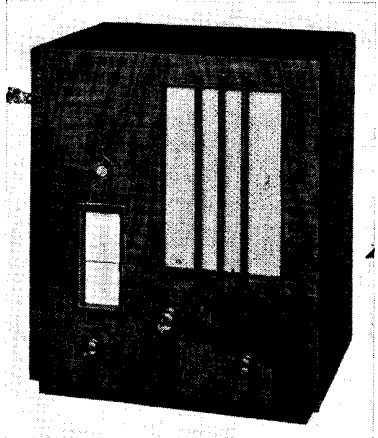
The output from V3 is passed to V4, a triode, through a resistance and capacity stage incorporating the volume control. This operates by varying the input to the grid.

A further resistance and capacity stage couples the signal to V5, the output pentode, the amplified output of which passes to the loud-speaker through a matching transformer.

Mains equipment consists of transformer, full-wave rectifier, electrolytic condensers and the speaker field.

Special Notes.—Connections are provided for an external speaker. These are taken between the anode of the output pentode through an isolating condenser C17 and the chassis. An extension speaker should have its own matching transformer.

The dial light is rated at 6 volts .3 amp. It can be removed without unscrewing the



The Rainbow 606E receiver is a five-valve plus rectifier A.C. superhet in an attractive cabinet. A cathode ray tube type tuning indicator is incorporated in the circuit which also employs an inductively coupled band-pass input filter. A.V.C. is of course a feature.

holder if the rectifier is first taken out of its socket.

R12, R13, R14 and C13 are mounted on the tuning indicator bracket. The tuning indicator is a Mullard TV4.

Removing Chassis.—First remove the three knobs from the front of the cabinet; these are secured by grub screws. Next remove the two wood screws securing the tuning indicator, and release the speaker plug from the back of the chassis.

Three bolts must then be removed from underneath the cabinet, and this will leave the chassis free to be removed.

ALIGNMENT NOTES

I.F. Circuit.—Inject a signal of 465 kc. from a modulated oscillator to the grid cap of V1. Connect an output meter having a full scale deflection of about 2 volts across the external speaker terminals. The oscillator output should be such that a reading of about .5 volt is obtained on the meter.

(Continued on next page.)

VALVE READINGS

No signal. Volume maximum, 200 volts A.C. mains.

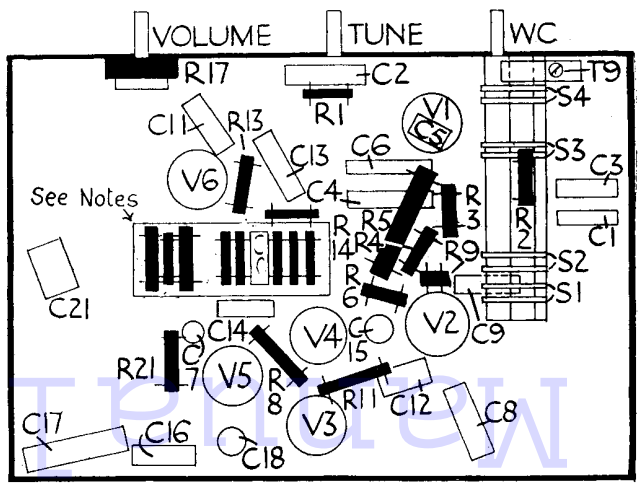
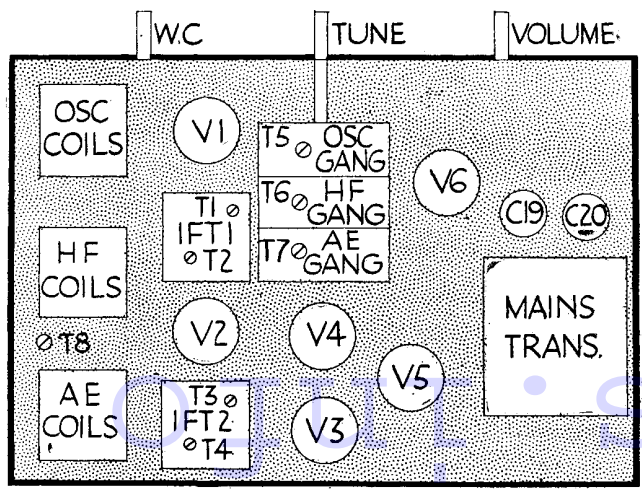
V.	Type.	Electrode.	Volts.	Ma.
1	(All Mullard.) FC4 met. (7) ..	Anode ..	200	1.9
		Screen ..	90	4.9
		Osc.anode ..	90	1.7
2	VP4B met. (7)	Anode ..	210	5
		Screen ..	107	1.8
3	2D4A met. (5)	Diode ..	—	—
4	354 V. met. (5)	Anode ..	105	2.9
5	Pen.4VA (7) ..	Anode ..	193	32.5
		Screen ..	210	2.9
6	1W3 (4) ..	Filament	335	—

QUICK TESTS

Quick tests are available on this receiver on the speaker transformer.

Volts measured between this and the chassis should be:—

- Yellow, 210 volts, smoothed H.T.
- Black, 185 volts, smoothed H.T.
- Red, 335 volts, unsmoothed H.T.



Left is the view of the top of the chassis of the Rainbow 606E. On the right is the reverse view. Resistors are in solid black.

RAINBOW MODEL 606E FIVE-VALVE A.C. MAINS SUPERHET

(Continued from previous page.)

Adjust T1, T2, T3 and T4 for maximum deflection.

Medium Waves.—Connect the oscillator to the aerial and earth terminals. Tune it and the receiver to 220 metres, and adjust T5, T6 and T7 for maximum.

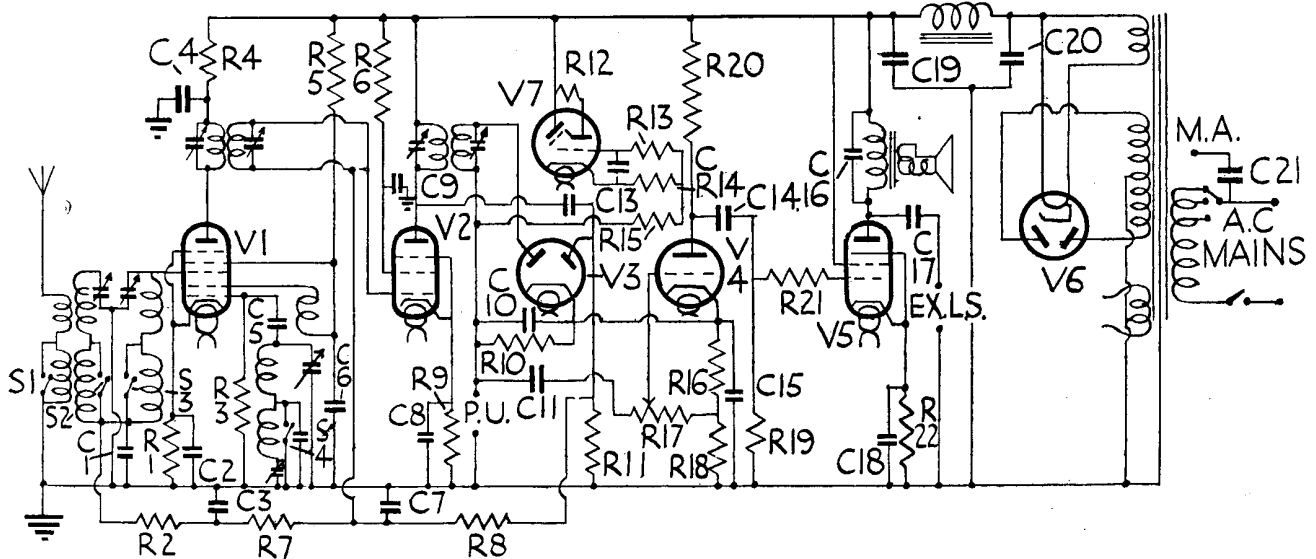
Tune the receiver and the oscillator to 500 metres and check the adjustment of T5, T6 and T7.

Long Waves.—Inject and tune in a signal of 1,300 metres and trim T8 and T9 for maximum reading on the output meter.

Layout Note.—The resistance-condenser assembly strip on the underside of the chassis (see diagram on previous page) carries its components in the following order, left to right : R's 22, 19, 20, 7, 15; C10, R's 10, 16, 18.

RESISTANCES		
R.	Purpose.	Ohms.
1	V1 cathode bias	300
2	V1 A.V.C. feed	40,000
3	V1 osc. grid leak	50,000
4	V1 anode decoupling	5,000
5	V1 screen and osc. anode decoupling	20,000
6	V2 screen decoupling	50,000
7	V1 A.V.C. decoupling	1 meg.
8	V2 A.V.C. decoupling	.25 meg.
9	V2 cathode bias	300
10	Demodulator diode load	.5 meg.
11	A.V.C. diode load	1 meg.
12	TV4 triode anode feed	2 meg.
13	TV4 grid filter	.1 meg.
14	TV4 grid filter	.5 meg.
15	TV4 coupling	1 meg.
16	V3 and V4 cathode bias part.	500
17	Volume control	.5 meg.
18	V3 and V4 cathode bias part.	2,000
19	V5 grid leak	.5 meg.
20	V4 anode load	30,000
21	V5 grid stopper	.25 meg.
22	V5 cathode bias	500

CONDENSERS		
C.	Purpose.	Mfd.
1	Band-pass coupling	.025
2	V1 cathode bias shunt	.1
3	V1 A.V.C. decoupling	.1
4	V1 anode decoupling	.1
5	V1 osc. grid	.0005
6	V1 screen and osc. anode decoupling	.1
7	V2 A.V.C. decoupling	.1
8	V2 cathode bias shunt	.1
9	V2 screen decoupling	.1
10	H.F. by-pass	.0002
11	L.F. coupling	.01
12	A.V.C. diode coupling	.0002
13	TV4 grid filter	.1
14	L.F. coupling	.04
15	V3 and V4 cathode bias shunt	.25
16	Pentode compensating	.02
17	External loud speaker coupling	.1
18	V5 cathode bias shunt	.25
19	H.T. smoothing	8
20	H.T. smoothing	8
21	Mains aerial	.0001



The circuit of the Rainbow 606E A.C. superhet shows the five-valve and rectifier arrangement used. An inductively-coupled band-pass filter precedes the frequency changer, while a cathode ray type tuning indicator is incorporated.

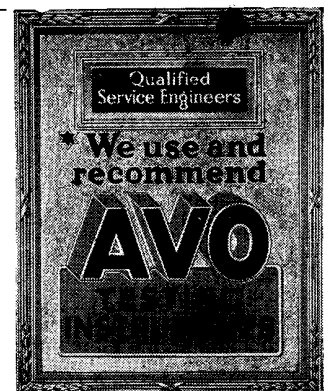
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