

# BELMONT 600 UNIVERSAL FIVE

**CIRCUIT.**—The annual input on all bands is *via* a series condenser to a set of aerial transformers preceding V1, a 6A8G heptode frequency-changer. An I.F. trap circuit is included in the aerial circuit and consists of a coil (L1) tuned by a “padding” condenser.

The signal, converted to the I.F., passes by a transformer (tuned to 465 kc.) to the amplifying valve, V2, a 6K7G H.F. pentode. A second I.F. transformer couples V2 to the strapped diodes of V3, a 6Q7G double diode triode.

The diode load resistance R10 provides a potential used for A.V.C., and also the demodulated signal which is passed by a coupling condenser and volume control to the grid of the triode section of V3.

V3 is resistance coupled to V4, a 25A6G output pentode. Between the anode of V4 and chassis is a pentode compensator condenser.

Mains equipment consists of sundry voltage self-adjustment resistances, a 25Z6G strapped-anodes half-wave rectifying valve, electrolytic smoothing condensers and a smoothing choke (the field coil).

**Chassis Removal.**—Remove the back of cabinet and the three grub-screw fixed control knobs. Pull out the five-pin connecting plug from its socket. Remove the four chassis securing bolts from the underside of the cabinet.

**Special Notes.**—R16 and R17 consist of an American K52H resistance tube with

an octal base. R18 is a flexible resistor included in the mains lead.

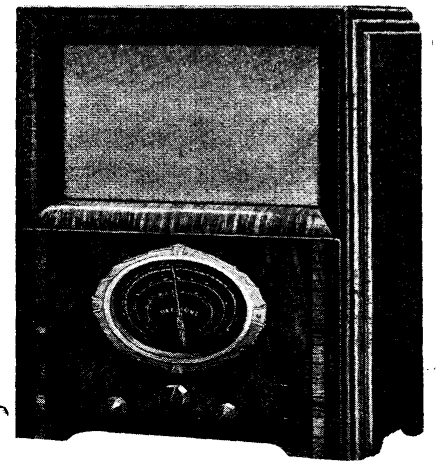
There are two dial lights mounted in screw-in holders. They have M.E.S. bases and are rated at 6 volts .15 amp.

C22 consists of a dry electrolytic condenser with capacities of 4 and 8 mfd. in parallel. In some chassis this may be included in the coil can containing C21 and have a value of 10 mfd.

No sockets are provided for an extension speaker, but a low-impedance permanent magnet type may be connected across the secondary of the speaker transformer.

## Circuit Alignment Notes

**I.F. Circuits.**—Connect an output meter across the primary of the speaker transformer (with a 2 mfd. condenser in series with one lead). Turn wave switch to



The model 600 by British Belmont, Ltd., is a four-valve plus rectifier three-band superhet designed for A.C. or D.C. operation.

M.W., gang and volume controls to maximum. Connect a service oscillator between the top grid cap of V1 and chassis.

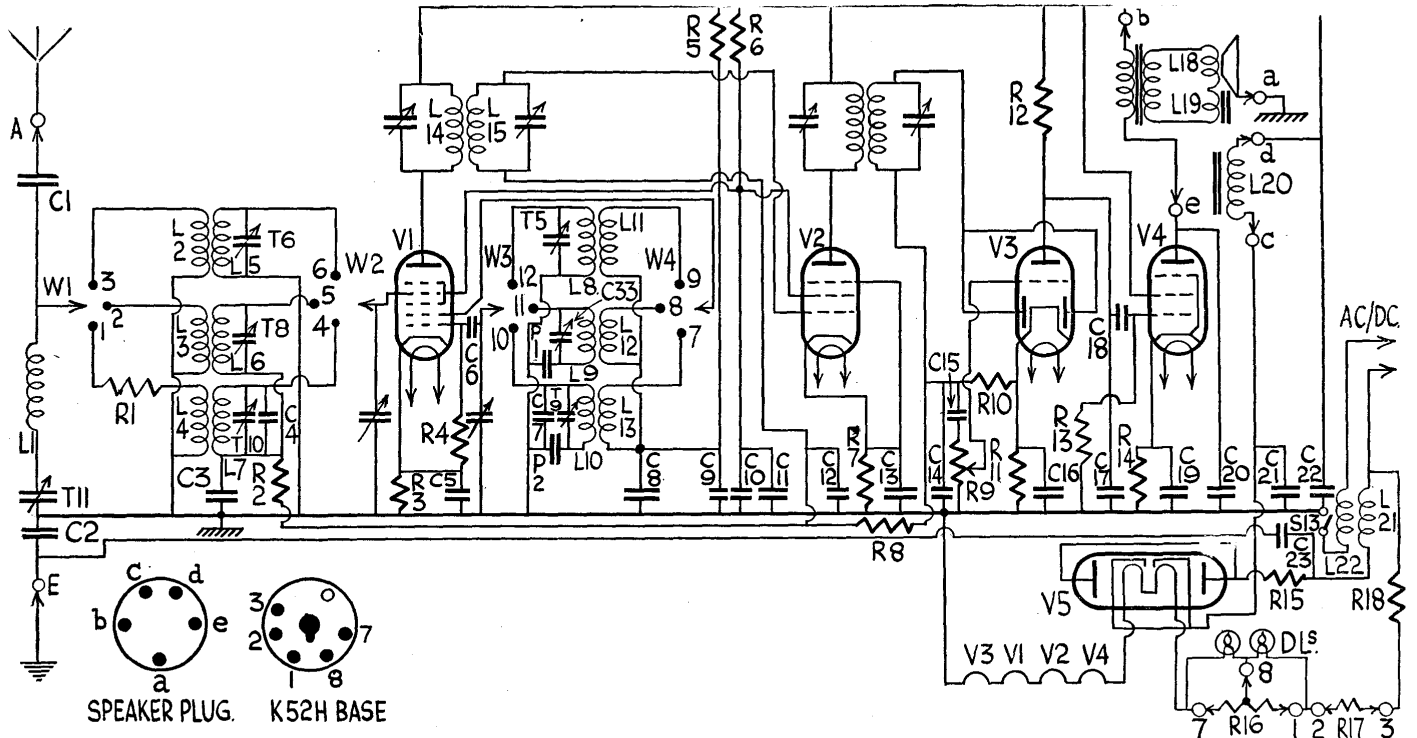
## VALVE READINGS

No signal, Volume maximum, M.W. min. cap. 233 volt A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	All Belmont 6A8G ..	.. Anode ..	175	1.9
		.. Screen ..	70	2.5
		.. Osc.anode	135	3.2
2	6K7G ..	.. Anode ..	175	5.7
		.. Screen ..	70	1.4
3	6Q7G ..	.. Anode ..	59	.2
4	25A6G ..	.. Anode ..	163	38
		.. Screen ..	175	7
5	25Z6G ..	.. Cathode	230	—

## WINDINGS

Winding.	Resistance	Winding.	Resistance
L1 ..	.. 9	L12 ..	.. 70
L2 ..	.. .3	L13 ..	.. 8
L3 ..	.. 2.8	L14 ..	.. 9
L4 ..	.. 42	L15 ..	.. 10
L5 ..	.. .05	L16 ..	.. 9
L6 ..	.. 3	L17 ..	.. 10
L7 ..	.. 18	L18 ..	.. 1.75
L8 ..	.. .05	L19 ..	.. .1
L9 ..	.. 4.25	L20 ..	.. 2,000
L10 ..	.. 6.5	L21 ..	.. 3.5
L11 ..	.. 25	L22 ..	.. 3.5



An orthodox “short” superhet circuit is found in the 600. The aerial circuit includes an I.F. trap. R16 and R17 cons is of an American K52H resistance tube.

Tune service oscillator to 465 kc. and adjust T1, T2 and T3 and T4 in that order for maximum, reducing the input from the oscillator as the circuits come into line to render the A.V.C. inoperative.

**Signal Circuits.**—Connect the service oscillator to the aerial and earth leads of the receiver via a dummy aerial. Only feed sufficient input to obtain definite peaks in the output meter, reducing the input as the circuits come into line.

**Short Waves.**—Tune set and oscillator to 17 metres (17.6 mc.) and adjust T5 and then T6 for maximum response.

**Medium Waves.**—Tune set and oscillator to 200 metres (1,500 kc.) and adjust T7 and then T8 for maximum.

Tune set and oscillator to 500 metres (600 kc.) and adjust P1 for maximum simultaneously rocking the gang.

Repeat until no further improvement results.

**Long Waves.**—Tune set and oscillator to 1,000 metres (300 kc.) and adjust T9 and then T10 for maximum.

Tune set and oscillator to 2,000 metres (1,500 kc.) and adjust P2 for maximum, simultaneously rocking the gang.

Repeat until no further improvement results.

**I.F. Filter.**—Inject a 465 kc. signal, switch set to L.W., tune to 1,300 metres and adjust T11 for minimum.

**Replacement Condensers**

**E**XACT replacement condensers for the Belmont model 600 are available from A. H. Hunt, Ltd., of Garratt Lane, Wands-worth, London, S.W.18.

The two units in the block C22 are actually connected in parallel, and therefore the replacement need be only a single unit. For this Hunt's make unit 4,014, capacity 12 mfd., price 4s. 6d.

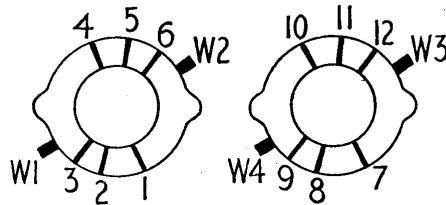
For C16, there is unit 2,915, 1s. 9d.; for C19, 3,723, 1s. 6d.; for C21, 2,980, 8s.; and for either C9 or C10 there is unit 3,813, 2s. 6d.

**RESISTANCES**

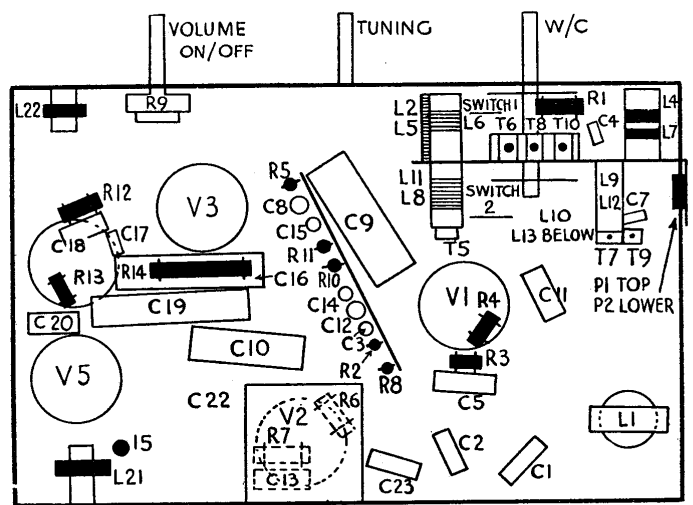
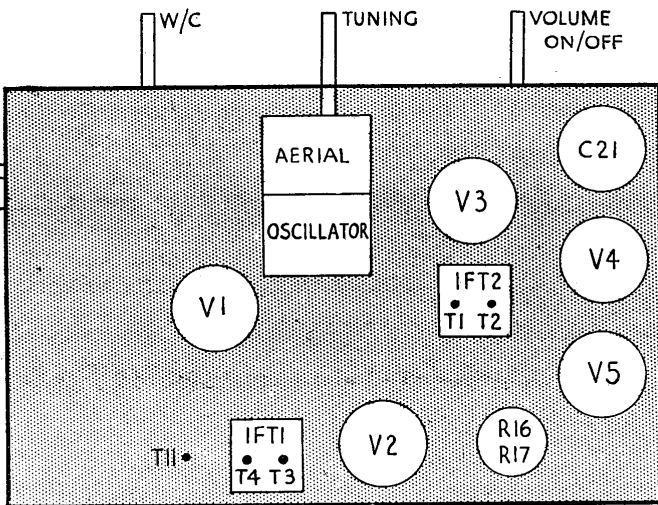
R.	Purpose.	Ohms.
1	L.W. aerial damping ..	1,000
2	V1 A.V.C. decoupling ..	250,000
3	V1 cathode bias ..	250
4	Oscillator grid leak ..	50,000
5	Oscillator anode decoupling ..	10,000
6	V1 and V2 screen decoupling ..	25,000
7	V2 cathode bias ..	250
8	V2 A.V.C. decoupling ..	250,000
9	Volume control ..	1 meg.
10	V3 diodes load ..	500,000
11	V3 cathode bias ..	500
12	V3 anode load ..	250,000
13	V4 grid leak ..	500,000
14	V4 cathode bias ..	500
15	V5 safety resistance ..	50
16	Mains adjustment resistance ..	56
17	Mains adjustment resistance ..	134
18	Mains adjustment resistance ..	350

**CONDENSERS**

C.	Purpose.	Mfds.
1	Series aerial ..	.0005
2	Chassis isolating ..	.01
3	V1 A.V.C. decoupling ..	.05
4	L.W. aerial fixed trimmer ..	.000025
5	V1 cathode bias shunt ..	.1
6	Oscillator grid ..	.00005
7	L.W. oscillator fixed trimmer ..	.00007
8	Osc. anode decoupling (part) ..	.1
9	Osc. anode decoupling (part) ..	.1
10	V1 and V2 screen decoupling (part) ..	.1
11	V1 and V2 screen decoupling (part) ..	.1
12	V2 A.V.C. decoupling ..	.05
13	V2 cathode bias shunt ..	.1
14	H.F. bypass ..	.0002
15	L.F. coupling ..	.01
16	V3 cathode bias shunt ..	50
17	V3 anode shunt ..	.0002
18	L.F. coupling ..	.01
19	V4 cathode bias shunt ..	10
20	Pentode compensator ..	.01
21	H.T. smoothing ..	32
22	H.T. smoothing ..	12
23	Mains H.F. bypass ..	.01



The two switch banks indicated on the under-chassis layout, are here shown with the contacts numbered according to the circuit diagram.



Details of the Belmont 600 chassis are given by these drawings of the top (left) and underside (right). Note the switch, coil and trimmer section on the underside.

**Belmont 600 on Test**

**M**ODEL 600.—Standard model for universal operation, 200 to 250 volts (A.C., 50 cycles). Price, 10 gns.

**DESCRIPTION.**—Four-valve, plus rectifier, three-band A.C.-D.C. table superhet.

**FEATURES.**—Full-vision scale, coloured as to waveband, calibrated in station names and metres. Controls for combined volume and master switch, tuning and wave selection. Octal valves.

**LOADING.**—72 watts.

**Sensitivity and Selectivity**

**SHORT WAVES (16.5-52 metres).**—Very good gain, adequate selectivity. No appreciable drift. Greatest sensitivity at the commencement of the band.

**MEDIUM WAVES (200-550 metres).**—Good gain and reasonable selectivity. Number of whistles noticeable.

**LONG WAVES (900-2,000 metres).**—Good gain. Selectivity insufficient to give complete separation of Droitwich and Radio Paris in the London area.

**Acoustic Output**

Ample volume for an ordinary room, crisp high-note response and no noticeable resonances. Speech and orchestral music both pleasing with very little noticeable colouration.

**WHEN TESTING VALVES**

**W**HEN testing valves, it is essential to make sure that they are fully warmed up. This applies particularly to valves which are suspected of fading, noise or some such fault.

It is advisable, in fact, to switch on the receiver in which doubtful valves are employed, and run it for three minutes or more before transferring the valves one by one to the valve tester.

Frequently, soft valves will not show up the fault until they have been in use a few minutes.

It is also a good plan to give valves a smart tap when they are in the tester.