

HALCYON BATTERY FOUR (Cont)

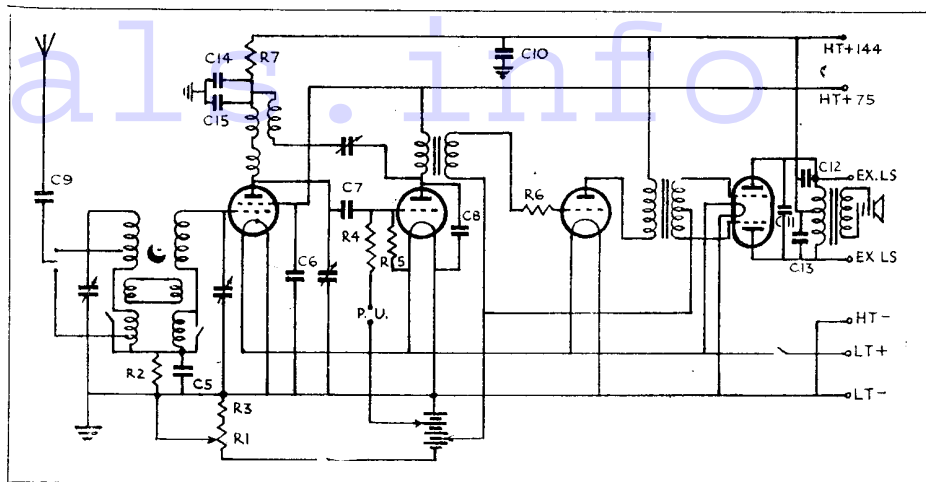
can be removed by undoing the screws from the small baffle.

General Notes.—The switch contacts are opposite their respective coils, the L.T.+ switch being the rearmost of the two front contacts.

The secondary of the driver transformer has five terminal tags, of which the two outers are taken to the grids of the Class B valve (V4), while the centre tag is the centre tapping and is connected to the G.B. 3 or 4.5 volt lead.

Components are conveniently mounted on tagged insulating panels, and no difficulty should be experienced by the novice in tracing out the circuit or in replacing any component.

Replacing Chassis.—Catch the holding screws in the rubber washers, and lay chassis inside cabinet, replace holding screws and knobs.



Screen-grid, detector, driver and class B valves form the basis of the Halcyon circuit.

VALVE READINGS

V.C. max. but no reaction.*

Valve	Type	Electrode	Volts.	M.A.
1	VS24 met (4)	anode .. screen .. as tapping	115	3
2	H1.2 (4)	anode ..	68	4.1
3	L21 (4)	anode ..	138	2.1
4	B21 (7)	each anode	138	2.25

* In taking V1 and V2 readings oscillation is shown by a sudden decrease in anode current. The higher reading is the correct stable reading.

RESISTANCES

R.	Purpose.	Ohms.
1	Variable bias ptr. (VC) ..	10,000
2	Bias supply to V1 ..	1,500
3	Limiting minimum bias on V1 ..	500
4	Series with P.U. lead ..	49,000
5	V2 grid leak ..	1 meg.
6	HF stopper in V3 grid ..	260,000
7	Decoupling V1 anode from H.T. ..	10,000

CONDENSERS

C.	Purpose.	Mfd.
5	Band pass coupling ..	.02
6	Decoupling V1 screen ..	.1
7	HF feed to V2 grid ..	.0001
8	V2 anode by-pass ..	.0001
9	Series aerial ..	.0001
10	Across H.T. ..	1
11	Tone compensating V4 anode ..	.005
12	Tone compensating V4 anode ..	.005
13	Tone compensating V4 anode ..	.005
14	Decoupling V1 anode ..	1
15	In parallel with C14 ..	1

K.-B. UNIVERSAL TYPE 383

Circuit.—The first detector oscillator valve, 15D1 (V.1) is preceded by a band-pass aerial coupling. Tuning is in the oscillator grid circuit, and bias is partly fixed and partly derived from the A.V.C. Coupling to the next valve is by band-pass I.F. transformer (frequency 130 kc.).

The I.F. valve, 9D2 (V.2), is also biased by A.V.C. and cathode resistance, and is linked by a second band-pass I.F. transformer to the second detector and L.F. valve. This, an 11D3 (V.3), has the A.V.C. diode fed from the primary of I.F.T.2 and the L.F. diode from the secondary.

In the coupling to the triode R.2 is the load, R.3 the H.F. stopper, and C.9 the coupling condenser. The triode anode is linked to that of V.4 (8D2), an additional valve to give inter-station muting and suppression control. (See special notes.)

The triode of V.3 is resistance capacity coupled to the output stage.

Two 7D3s (Vs. 5 and 6) are used. These are pentodes connected in parallel except the heaters. The grid leads contain separate stabilising resistances.

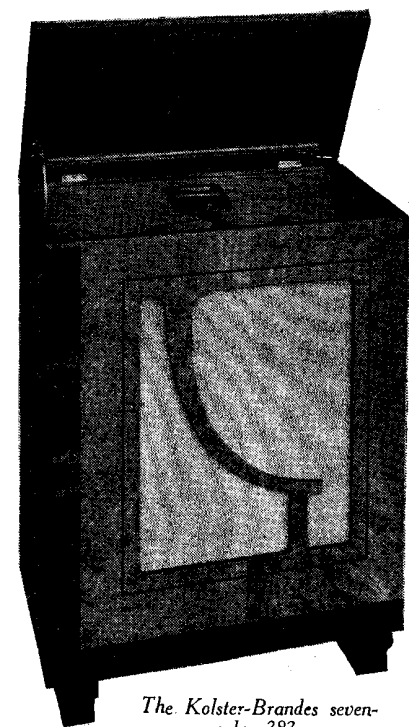
Mains equipment consists of safety switches operated by the back of the cabinet and H.F. chokes in each lead. A small resistance R.24 is used to provide the voltage for the pilot lamps, and the rectifier on A.C. is a 1D5 (indirectly heated).

Both a choke, L.8, and the speaker field are used for H.T. smoothing. The anodes of V.1 and V.2 only are fed through the choke.

Special Notes.—The pilot lamp is a 6.2-v. .3-amp. type.

V.4, the muting valve, being supplied from the same anode resistance as V.3 and from the A.V.C. line, draws sufficient current

(Continued on opposite page.)



The Kolster-Brandes seven-valve 383.

RESISTANCES

R.	Purpose.	Ohms.
1	Mains adjustment 150 + 100 + 100 ..	350
2	Diode load ..	.5 meg.
3	H.F. stopper from diode ..	.1 meg.
4	V3 cathode bias ..	10,000
5	A.V.C. diode load ..	.5 meg.
6	Decoupling A.V.C. line ..	.5 meg.
7	Decoupling V4 grid ..	1 meg.
8	Decoupling V3 anode ..	.1 meg.
9	V3 anode L. F. coupling ..	.25 meg.
10	V5, V6 grid leak ..	.25 meg.
11	V5 and V6 cathode bias ..	250
12	Part of ftr. for V4 aux. grid ..	25,000
13	Series with suppressor control ..	1,000
14	V3 cathode bias ..	5,000
15	Decoupling V1 aux. grid ..	15,000
16	Series with neon tube ..	15,000
17	V6 grid stabiliser ..	1,000
18	V5 grid stabiliser ..	1,000
19	V2 cathode bias ..	300
20	V1 cathode bias ..	150
21	V1 osc. grid leak ..	25,000
22	Harmonic stabiliser V1 ..	2,500
23	Decoupling A.V.C. to V1 ..	100,000
24	Voltage dropping for pilot lamps ..	8
25	Priming voltage supply for neon tube ..	1 meg.

CONDENSERS

C.	Purpose.	Mfd.
1	H.F. by-pass from diode ..	.0001
2	H.F. by-pass from diode ..	.0001
3	V3 cathode ..	25 el.
4	L.F. coupling V3 to V5 and V6 ..	.02
5	Tone control circuit V5 and V6 ..	.0005
6	Tone compensating V5 and V6 ..	.006
7	Decoupling V1 osc. anode ..	2 el.
8	V1 aux. grid by-pass ..	.5
9	L.F. coupling to triode grid ..	.02
10	Decoupling V1 and V2 anodes from H.T. ..	2 el.
11	V5 and V6 cathodes by-pass ..	25 el.
12	By-pass from V4 grid ..	.05
13	Decoupling neon tube ..	.001
14	Separating aerial input from chassis ..	.01
15	H.F. by-pass across rectifier ..	.01
16	V1 cathode by-pass ..	.01
17	Decoupling V2 grid ..	.1
18	Series with P.U. lead ..	.1
19	V2 cathode by-pass ..	.1
20	Decoupling V3 anode ..	.1
21	H.T. smoothing ..	12
22	H.T. smoothing ..	12
23	H.T. smoothing ..	8
24	V1 osc. grid ..	.0001
25	L.W. pad on oscillator ..	*14 mmf.
26	I.F. feed to A.V.C. diode ..	*20 mmf.
27	Band-pass coupling ..	.02

* Twisted wire.

VALVE READINGS

No signal.

Valve.	Type.	Electrode	Volts.	ma.
1	15D1	anode	140-190*	3-4
		aux.grid	100	3-5
2	9D2	anode	50	3
		aux.grid	115	2
3	11D3	anode	0-60**	0-1
4	8D2	anode	0-60**	0-5
		aux.grid	0-50	0-2
5	7D3	anode	135	34
		aux.grid	145	7

* Varies with neon control.
** Varies with suppressor control.

K.B. UNIVERSAL 383 RECEIVER (Cont.)

through R.9 to render the triode of V.3 almost inoperative when there is no signal.

Heater wiring and voltages in order from R.1: V.6, 40 volts; V.5, 40 volts; V.7, 40 volts; V.4, 20 volts; V.2, 20 volts; V.1, 20 volts; V.3, 20 volts.

The selectivity control operates by varying the coupling between the primary and secondary of both I.F. transformers. The control is the left-hand one in front, and is ganged to the switch. It cuts out the tone-compensating condenser in the minimum position.

The neon tuning indicator is connected in the anode circuits of V.1 and V.2, and the length of the fluorescence can be controlled by varying V.R.2, the upper knob at the back of the cabinet.

Inter-station suppression is controlled by varying the auxiliary grid potential of V.4, the higher the voltage the greater the voltage drop across R.9.

Quick Tests.—Voltages between the following points and chassis:—
Smoothing choke (on left of L.S.):

Lower terminal, red and black, H.T. unsmoothed, 210 volts.

Upper terminal, black with red tracer, 195 volts.

L.S. transformer:

Lower two, joined, H.T. smoothed, 145 volts. (3) Blue, V5 and V6 anodes, 135 volts. T of (4), to smoothing choke, 195 volts.

Removing Chassis.—Slide out the neon tube and holder. Remove the screws holding the aerial panel and the resistance R.1 in the bottom of the cabinet, and undo the leads from the cleats. Remove the two bolts from underneath the L.S. platform and undo the four (or two) screws holding the sloping wooden base underneath the chassis. Remove the four screws (underneath) holding the control panel to the cabinet, and remove the knobs (grub screws).

Lift the control panel out, and then lift the chassis complete with speaker, resistance and aerial panel, from the cabinet, taking care that the connections are not damaged. Remove the wooden base.

General Notes.—The assembly can conveniently be tested outside the cabinet, but care should be taken to see that no accidental short circuits are caused and that no actual earth connection comes into contact with the metal.

Ganging.—Intermediate frequency, 130KC. Gang the M.W. tracking condenser on 600K.C. and the L.W. on 175 K.C. Tune and gang the band-pass coils on 1,400 K.C.

The I.F. transformer trimmers are underneath the chassis.

The voltages on V3 and V4 are very small with no signal, but rise to 40 volts when a sufficiently strong signal is tuned in.

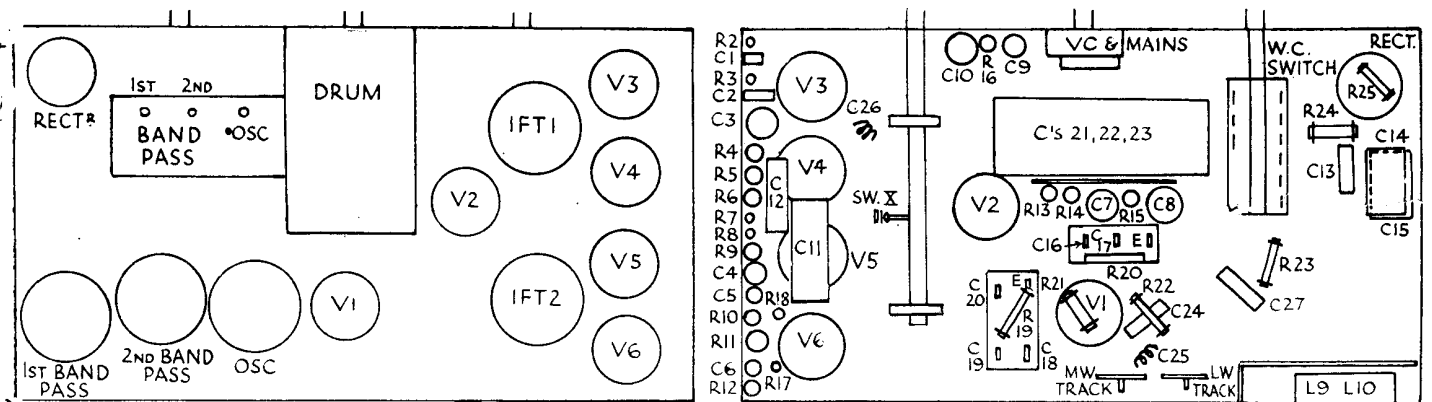
The condensers, C25 and C26, are made of twisted wire, and care should be taken to see that they are not disturbed.

The leads from the block electrolytic condenser are, C21 and C22, red; C23, yellow, black, negative.

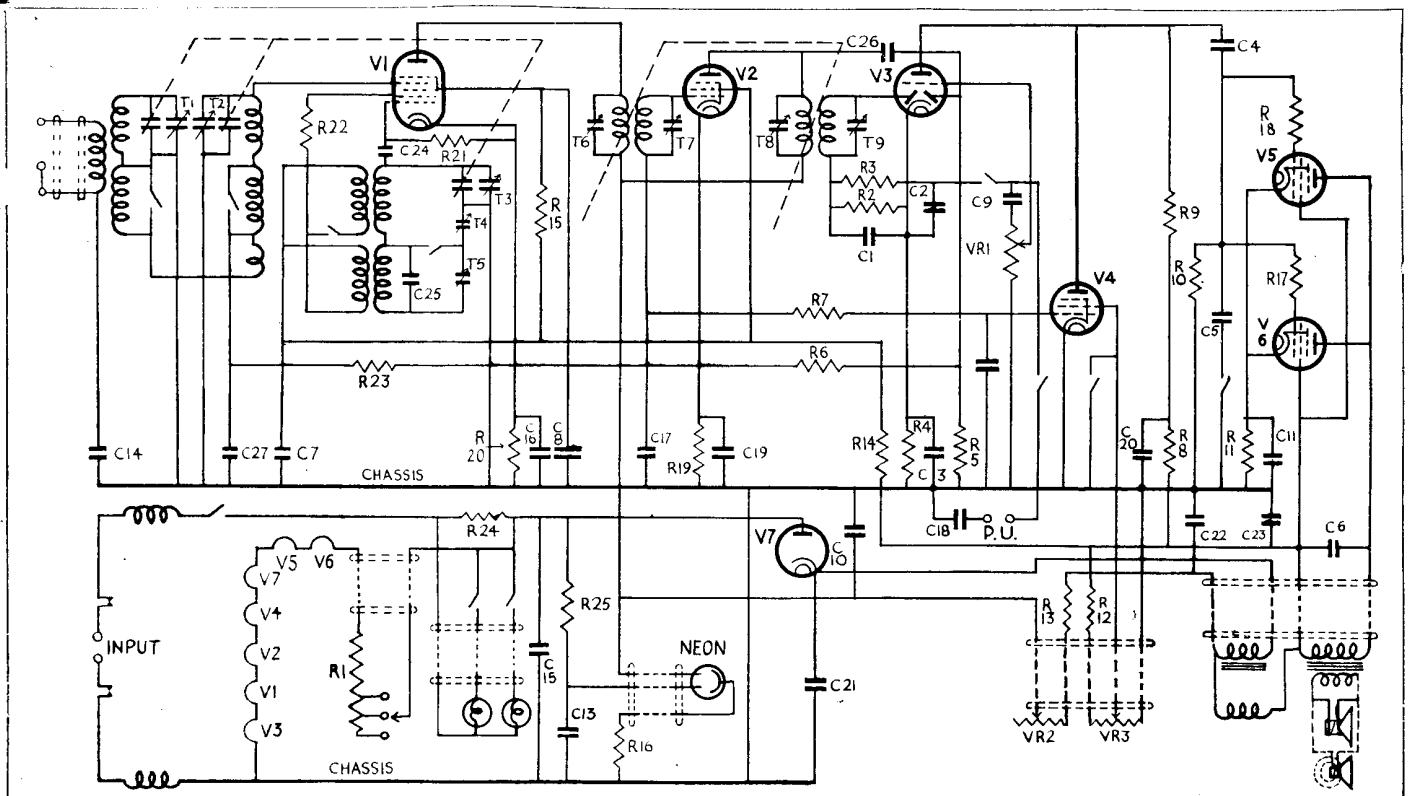
Replacing Chassis.—Replace wooden base (flush on front). Lift lid of cabinet and, holding both L.S. and chassis, slide the wooden base into the slots while laying the speaker on the platform.

Before fixing the aerial panel replace the two lower screws holding the wooden base to the cabinet, and if the set has to be transported replace the upper two.

Replace the aerial panel, R1, and the wood screws holding the control panel. Replace the neon tube, taking care that the socket tags have not been pressed together. Replace the knobs.



The chassis diagrams of the Kolster-Brandes 383 receiver.



Means for adjusting the selectivity by varying the coupling between the intermediate frequency coils is an interesting feature of the K.B. 383.