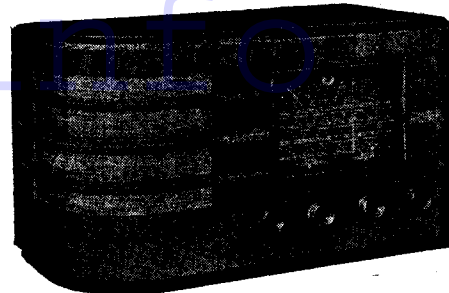


# KOLSTER BRANDES 750 FOUR-BAND EIGHT



A quality set at 14 gns., the 750 includes push-pull output and a signal amplifier stage. There are volume and tone indicators on the scale.

**CIRCUIT.**—The R.F. amplifier V1, a pentode, is fed on all bands by transformer aerial coils with tuned secondaries. Transformer coils also effect the coupling to the triode-hexode frequency-changer V2. The oscillator section of V2 follows standard practice, and a regeneration modifier resistance is included on all wave bands. It will be seen that the cathode bias of V1 is varied according to the position of the wave change switch.

An I.F. transformer leads to the I.F. amplifier valve V3, a pentode. V1, V2 and V3 are all A.V.C. controlled.

A coupling condenser from the anode of V3 feeds the A.V.C. diode of V4, a double diode valve, the potentials also operating the visual tuning indicator. Another I.F. transformer provides the coupling to the two diodes of V5, a double diode triode.

Both sides of the secondary transformer are connected to the diodes and a centre-tap of the secondary is connected to the demodulating diode load R14. The potentials are fed to the triode grid of V5 via an L.F. coupling condenser and manual volume control.

The triode section of V5 operates as a phase-reversing stage, and potentials obtained from the anode load R18 and the cathode load R16 are fed to the push-pull amplifying valves V6 and V7.

A tone control arrangement, R23 and C21, connected between the anodes of V6 and V7, enables the treble response to be varied.

Mains equipment consists of a mains transformer, a full-wave rectifying valve V8, electrolytic smoothing condensers and

a smoothing choke (the field coil). A mains suppressor condenser C24 is included.

**Chassis Inspection.**—A false bottom, secured by two wood screws, is provided so that the underside of the chassis may be inspected and trimmers adjusted.

**Chassis Removal.**—Remove back of cabinet and the four grub screw fixed control knobs. Remove the four chassis-securing bolts from the base.

Take out the two wood screws securing the extensions of the wavelength dial to the front (inside) of the cabinet. The chassis may then be withdrawn to the extent of the speaker cable and is accessible for all service requirements.

If desired the speaker and speaker control panel may be removed or, alternatively, the five leads to the speaker panel unsoldered. When replacing, connect the brown lead to the top tag, black to the second, blue to the third, fourth is blank, blue to the fifth and red lead to the sixth and bottom tag.

**Special Notes.**—The mains voltage adjustment on the mains transformer takes the form of three sockets marked with voltage values. Into one of these a flying

lead, terminating in a wander plug, is inserted.

The visual tuning indicator, a Mullard TV4, is mounted on a bracket on the mains transformer, and R24 is connected across the holder.

There are two dial lights mounted in screw-in holders clamped one each side of the wavelength dial assembly. They are

## VALVE READINGS

No signal. Volume maximum. M.W. min. ca p  
220 volt A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	All Brimar.	Anode ..	270	4
		Screen ..	80	1
		Heater ..	370	—
2	20 A1 ..	Anode ..	270	1.4
		Screen ..	80	1.6
		Osc. anode ..	120	6
3	9 D2 ..	Anode ..	270	4
		Screen ..	80	1
		Heater ..	370	—
4	10 D1 ..	Diodes ..	—	—
		only.	—	—
		Heater ..	370	—
5	11 D3 ..	Anode ..	170	.28
		Screen ..	260	30
		Heater ..	370	—
6	7 D5 ..	Anode ..	270	5
		Screen ..	260	30
		Heater ..	370	—
7	7 D5 ..	Anode ..	260	30
		Screen ..	270	5
		Heater ..	370	—
8	R2 ..	Heater ..	370	—
		Screen ..	270	5
		Anode ..	270	4

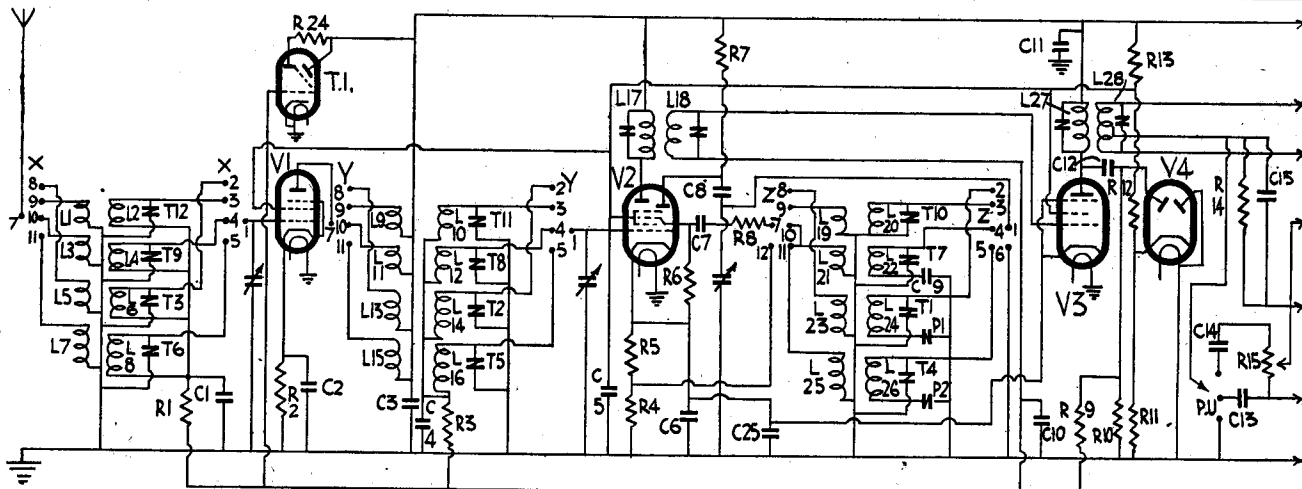
## RESISTANCES

R.	Purpose.	Ohms.
1	V1 A.V.C. decoupling	250,000
2	V1 cathode bias	500
3	V2 A.V.C. decoupling	250,000
4	V1 and V2 cathode bias (part)	800
5	V1 and V2 cathode bias (part)	200
6	Osc. grid leak	25,000
7	Osc. anode load	25,000
8	Regeneration modifier	40
9	V3 A.V.C. decoupling	500,000
10	A.V.C. diode load	500,000
11	A.V.C. delay	1,000
12	V1, V2 and V3 screens potr. (part).	15,000
13	V1, V2 and V3 screens potr. (part).	20,000
14	Demodulating diode load	250,000
15	Volume control	500,000
16	V5 cathode load	250,000
17	V5 cathode bias	5,000
18	V5 anode load	250,000
19	V5 anode decoupling	50,000
20	V7 grid leak	250,000
21	V6 grid leak	250,000
22	V6 and V7 cathode bias	250
23	Tone control	50,000
24	T.I. anode feed	2 meg.

## QUICK TESTS

Quick tests are available on the leads to the speaker panel. Volts measured between these and the chassis should be:—

- Brown lead, 370 volts, unsmoothed H.T.
- Blue leads, 260 volts, smoothed H.T.
- Red leads, 270 volts, smoothed H.T.



Careful design is evidenced throughout the 750 circuit. An R.F. stage precedes the frequency changer and V4 is a forms a phase-reversing valve for the resistance-capacity coupled output valves which are fed from the

For more information remember  
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rated at 13-16 volts .3 amp., and have M.E.S. bases.

A speaker control panel is provided on the side of the cabinet near the rear and enables an extension loud speaker of some 2 to 5 ohms. impedance to be used either separately from or in conjunction with the internal speaker.

Sockets enable a pick-up\* to be connected. When it is desired to operate on gramophone the wander plug should be withdrawn from its socket on the pick-up panel to cut off radio reception.

A refinement is included in the form of a sliding bar on which are mounted the two dial lights. As the wave selection switch is rotated, the dial lights are brought in line with the corresponding wavelength scale.

**Wavechange Switches.**—The order of the banks as lettered on the circuit is X, Y, Z from front to rear of chassis. The contacts are numbered 1 to 12, looking from the front, in clockwise order from the left-hand mounting tag.

The following shows which contacts are connected together for the various wavebands.

**Medium Waves.**—X, 1 to 2, 3-4-5, 7-8

and 9-10-11; Y, 1-2, 3-4-5, 7-8, 9-10-11; Z, 1-2, 3-4-5-6, 7-8, 9-10-11-12.

**S.W. Range 1.**—X, 1-3, 4-5, 7-9, 10-11; Y, 1-3, 4-5, 7-9, 10-11; Z, 1-3, 4-5-6, 7-9, 10-11-12.

**S.W. Range 2.**—X, 1-4, 7-10; Y, 1-4, 7-10; Z, 1-4, 5-6, 7-10, 11-12.

**Long Waves.**—X, 1-5, 7-11; Y, 1-5, 7-11; Z, 1-5, 7-11.

Contacts 6 and 12 are not used on banks X and Y.

### Alignment Notes

**I.F. Circuits.**—Connect an output meter across the primary of the speaker transformer. Switch receiver to medium waves, turn gang to maximum, volume to maximum, and tune to "High." Short R6. Connect a service oscillator between the top grid cap of V2 and chassis.

Tune the service oscillator to 464 kc. and adjust first the trimmers of I.F.T.2 and then I.F.T.1 for maximum. Reduce the input from the service oscillator as the circuits come into line to render the A.V.C. inoperative. Remove R6 short.

**Signal Circuits.**—First verify that the wavelength pointer coincides with the right hand vertical line when the gang is at maximum capacity.

Connect the service oscillator to the aerial and earth sockets via a dummy aerial. Only feed sufficient input from the service oscillator to obtain reliable peaks in the output meter and progressively reduce the input as the circuits come into line.

**Medium Waves.**—Tune set and oscillator to 214 metres (1,400 kc.). This is marked by a dot on the M.W. scale. Adjust T1, T2 and then T3 for maximum.

Tune set and oscillator to 500 metres (600 kc.) and adjust P1 (the nut of double padding condenser) for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

**Long Waves.**—Tune set and oscillator (Continued on page 10.)

Below, the under-chassis layout diagram. The drawing for the top is given on page 10.

## K.B. 750 on Test

**MODEL 750.**—For A.C. mains, 195-255 volts, 40-100 cycles. Price, 14 gns.

**DESCRIPTION.**—Seven-valve, plus rectifier, four-band table model.

**FEATURES.**—Full-vision scale, calibrated in metres and station names, traversed by a vertical pointer. Controls for volume and combined tone and master switch operate indicators on scale. Other controls for concentric tuning and wave selection switch. Visual tuning indicator. Push-pull output. Speaker at side of chassis. Sockets for pick-up and extension speaker with L.S. control panel.

**LOADING.**—95 watts.

**Sensitivity and Selectivity**

**SHORT WAVES** (11.5-32 and 30-100 metres).—Excellent gain and selectivity with ample reserve power. No drift and easy handling on both bands.

**MEDIUM WAVES** (194-595 metres).—Gain and selectivity both of a high order with clean background and small local station spread.

**LONG WAVES** (725-2,150 metres).—Excellent gain and selectivity, with only very slight interference on Deutschlandsender.

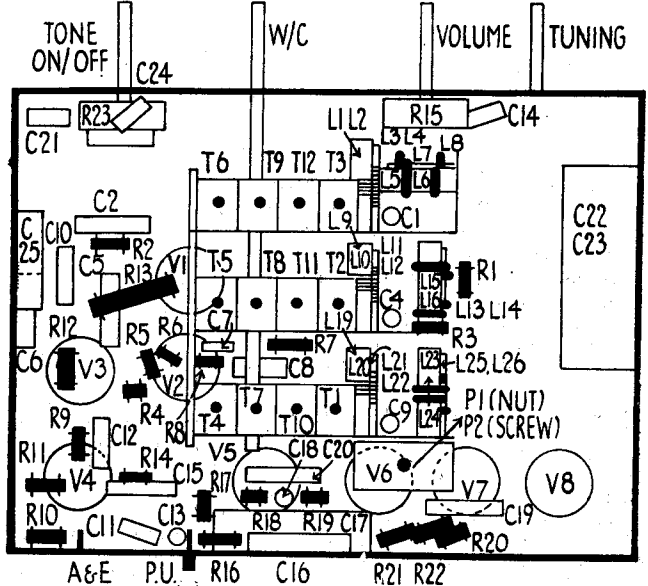
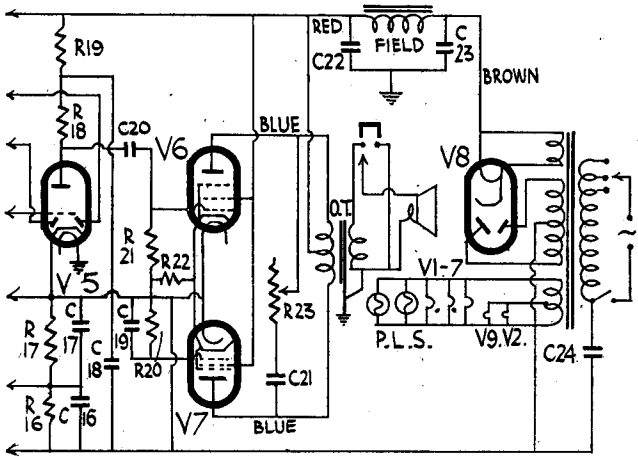
**Acoustic Output**

Ample volume for a large room, with exceedingly pleasant characteristics. Top is crisp and clean with very little colouration on speech. Good low-note radiation and excellent orchestral balance.

CONDENSERS		
C.	Purpose.	Mfds.
1	V1 A.V.C. decoupling	.1
2	V2 cathode bias shunt	.1
3	V1 anode decoupling	.1
4	V2 A.V.C. decoupling	.1
5	V1, V2 and V3 screens decoupling.	.1
6	V1 and V2 cathode bias shunt	.1
7	Osc. grid	.0001
8	Osc. anode coupling	.01
9	S.W.2 osc. fixed padder	.0029
10	V3 A.V.C. decoupling	.1
11	V3 anode bypass	.1
12	A.V.C. diode coupling	.00005
13	Pick-up isolating	.02
14	L.F. coupling	.01
15	H.F. bypass	.0002
16	V5 cathode load shunt	.005
17	V5 cathode bias shunt	25
18	V5 anode decoupling	.1
19	L.F. coupling	.1
20	L.F. coupling	.1
21	Tone control	.01
22	H.T. smoothing	16
23	H.T. smoothing	16
24	Mains suppressor	.02
25	V1 and V2 cathode bias shunt (part).	25

### Replacement Condensers

**EXACT** replacement condensers for the 750 are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18, for either C17 or C25, there is unit 2918, 1s. 9d., and for the block containing C22 and C23, unit 3659, 10s. 6d.



separate valve for A.V.C. The triode section of V5 anode and cathode of V5 respectively.

# Kolster Brandes Model 750 Four-Band Eight

(Continued from page 9.)

to 1,000 metres (300 kc.) and adjust T4, T5 and then T6 for maximum.

Tune set and oscillator to 1,714 metres (175 kc.) and adjust P2 (the screw or double padding condenser) for maximum, simultaneously rocking the gang. 1,714 metres is marked by a dot on the L.W. scale.

Repeat both operations until no further improvement results.

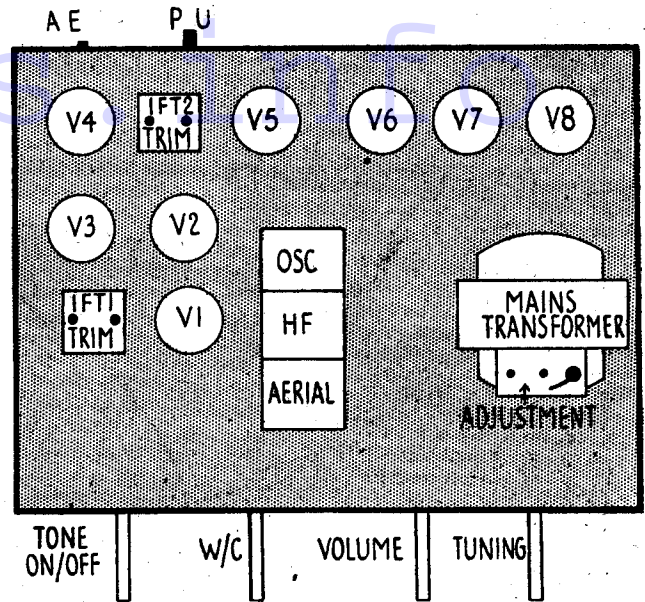
**S.W.2 Band, 30-100 metres.**—Tune set and oscillator to 33 metres (9 mc. approx.). This is marked by a dot on scale.

Screw T7 right up and then unscrew until the second peak from "tight" is heard. Then adjust T8 for maximum, at the same time slightly rocking the gang. Then trim T9 for maximum.

**S.W.1 Band, 11.5-32 metres.**—Tune set and oscillator to 15 metres (20 mc.). This is marked by a dot on scale.

Screw T10 right up and then unscrew until the second peak from "tight" is heard. Then adjust T11 for maximum at the same time slightly rocking the gang. Then trim T12 for maximum.

This "top deck" layout diagram for the K.B. 750 gives the valve positions and identifies other components. The diagram for the underside is given on the previous page adjoining the circuit diagram and component "tables"



## WINDINGS (D.C. Resistances)

L.	Ohms.	Range.	Where measured.	L.	Ohms.	Range.	Where measured.
1	.4	S.W.1	Aerial socket and chassis.	15	36	L.W.	Anode V1 and screen V7.
2	Below .1	S.W.1	Top grid V1 and C1 + E1.	16	32	L.W.	Top grid V2 and R3 + C4.
3	.7	S.W.2	Aerial socket and chassis.	17	7.9	Any	Anode V2 and screen V7.
4	.1	S.W.2	Top grid V1 and C1 + E1.	18	7.7	Any	Top grid V3 and C10.
5	4.9	M.W.	Aerial socket and chassis.	19	.5	S.W.1	R3 and chassis.
6	2.6	M.W.	Top grid V1 and C1 + E1.	20	Below .1	S.W.1	C8 and chassis.
7	35.5	L.W.	Aerial socket and chassis.	21	.8	S.W.2	R3 and chassis.
8	38.1	L.W.	Top grid V1 and C1 + E1.	22	—	S.W.2	Inaccessible.
9	.4	S.W.1	Anode V1 and screen V7.	23	2.1	M.W.	R3 and chassis.
10	Below .1	S.W.1	Top grid V2 and R3 + C4.	24	3.4	M.W.	C8 and P1.
11	.7	S.W.2	Anode V1 and screen V7.	25	10.5	L.W.	R3 and chassis.
12	.1	S.W.2	Top grid V2 and R3 + C4.	26	15	L.W.	C8 and P2.
13	5.2	M.W.	Anode V1 and screen V7.	27	7.6	Any	Anode V3 and screen V7.
14	2.7	M.W.	Top grid V2 and R3 + C4.	28	5.5	Any	Diodes V5.
				2450	Any		Blue and red leads sprk. panel.
				+250	Any		Mains plug pins.
				10	Any		
				primary	Any		
				Field	.950	Any	Brown and red leads sprk. panel.
				Total H.T. sec.	340	Any	Anodes V8.

## McMichael 380 Three-Band Five Alignment

(Continued from page 7.)

**I.F. Circuits.**—Connect a service oscillator between the top grid of V1 and chassis and an output meter across the primary of the speaker transformer. Switch set to M.W. band and turn gang to maximum capacity. Turn volume control to maximum and tone to "high." Tune the service oscillator to 460 kc., and adjust the trimmer of I.F.T.2, and then the trimmers of I.F.T.1 for maximum. Reduce the input from the service 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 sockets of the receiver via a dummy aerial or fixed condenser. Only feed sufficient input to obtain reliable peaks in the output meter and reduce the input as the circuits come into line.

**Short Waves.**—Inject a 20 metres (15 mcs.) signal, tune in on receiver and adjust T1 for maximum response.

The short wave padding is fixed.  
**Medium Waves.**—Tune set and oscillator to 214 metres (1,400 kc.), and adjust T2 and then T3 for maximum.

The medium wave padding is fixed, but check the calibration, compensating slightly with T2 if very much out.

**Long Waves.**—Tune set and oscillator to 1,000 metres (300 kc.), and adjust T4 and then T5 for maximum.

The long wave padding is fixed, but check calibration, compensating if necessary.

**I.F. Wavetrap.**—Switch set to L.W. band, inject a fairly strong 460 kc. signal, tune in signal on receiver, and adjust T6 for minimum response.

T6 is the trimming condenser contained in the wavetrap can secured to the side of the cabinet near the aerial and earth panel.

## Fixing Electrolytics

I HAVE found Chatterton's Compound one of the most useful things to have about the service shop.

I have found it particularly useful in the following connection: One is often called upon to replace a condenser pack in a crowded chassis with a replacement having either no fixing flaps or unsuitable ones.

In a case like this, the original pack is taken out and the rear section complete with fixing flaps carefully cut away and then fixed with Chatterton's Compound to the replacement pack. A soldering iron, run at about half normal temperature, will serve to run on the Compound. Any Compound remaining on the bit can be removed easily.

The result is a strong and rapid job.

Other uses for this substance suggest themselves almost daily, and one soon wonders how the service bench got along without it.—L. P. D., Malta.

\* \* \*

A PHILIPS receiver came in the other day and was giving only about half normal volume. Even when I located the trouble in the output stage it took some time actually to place it.

Finally I found that the series resistance in the cap of the Pen. 4DD was apparently O.C., and replacing it cured the trouble.

This is one of those "simple" faults that are so baffling until one is aware of the possible cause, which, in this case, was not visible. In future I shall look for resistors in this position.—B. S. S., Southampton.