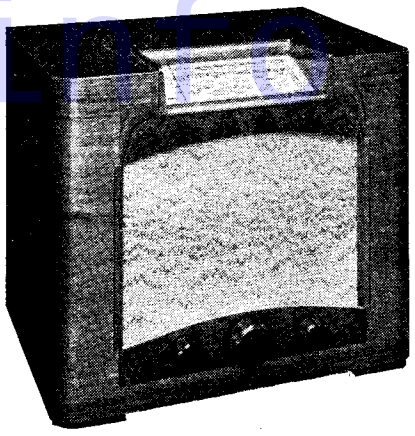
K-B 652 THREE-BAND TABLE FOUR



An attractive cabinet layout has been chosen for the Kolster-Brandes Model 652, an all-wave A.C. - D.C. mains model.

CIRCUIT.—The aerial coupling to the grid of V1, a triode-hexode frequency changer, is by a series aerial condenser to a set of inductively coupled coils on the short-wave range and bottom capacity coupled on the medium- and long-wave bands. The "output" anode of V1 is decoupled, whilst the screens of V1 and V2 are fed from a common H.T. potentiometer.

An I.F. transformer, tuned to 464 kcs., provides the coupling between V1 and the amplifier V2, an H.F. pentode. Both V1 and V2 are A.V.C. controlled.

Another I.F. transformer effects the coupling to the demodulating diode of V3, a double diode triode, and the demodulating diode load R11. The other diode of V3, fed by a coupling condenser C15 from the anode of V2, provides a D.C. potential that is fed back to the grids of V1 and V2 for automatic volume control.

Coupling arrangements to the grid of the triode section of V3 include a manual volume control.

V3 is resistance capacity coupled to the output valve V4, a pentode. A pentode compensator condenser C18, connected between anode and cathode, modifies the tone.

Mains equipment consists of an adjustment resistance, a half-wave rectifying valve V5, electrolytic smoothing condensers, and a smoothing choke (the speaker field).

Chassis Removal.—A false bottom is fitted to the cabinet and removal of this exposes the underside of the chassis for small repairs.

Remove back of cabinet and the three grub-screw fixed control knobs. The safety device should be taken from the back of the cabinet and plugged into the sockets on the side if operation of the chassis with the back removed is desired. Remove the master switch from the side.

Remove the false bottom and the four chassis securing bolts exposed thereby.

VALVE READINGS

No signal. Volume maximum, 320 metres. 225 volt A.C. mains.

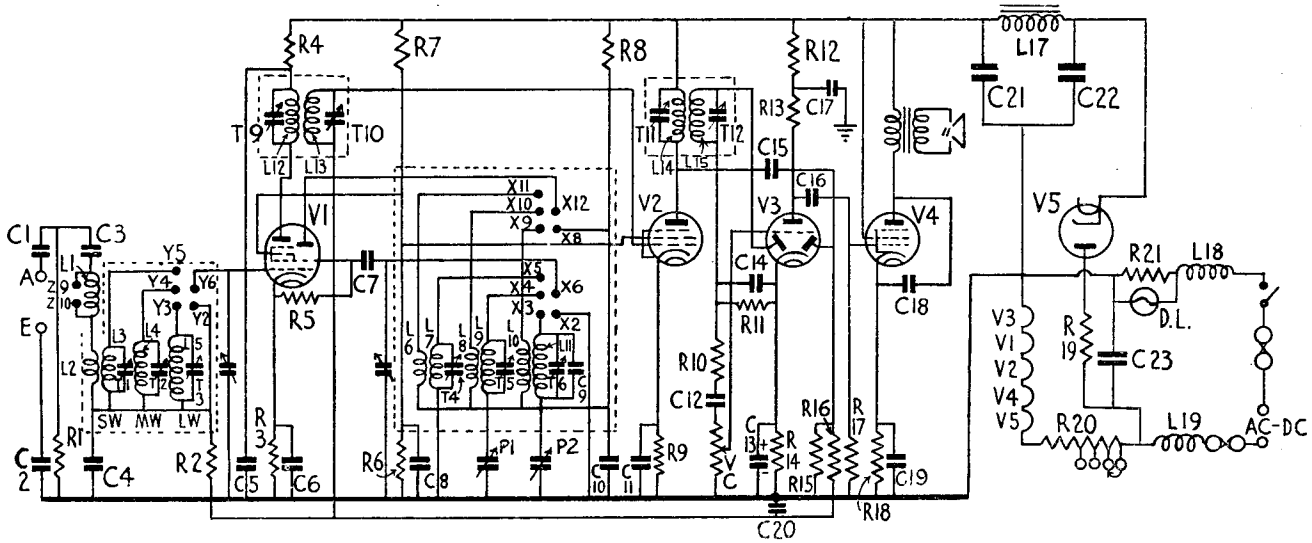
V.	Type.	Electrode.	Volts.	Ma.
	Mullard.			
1	TH22C ..	Anode ..	170	1.1
		Screen ..	60	3.5
		Osc. anode	80	5.5
	Rest are Brimar			
2	9D2	Anode ..	175	3.5
		Screen ..	60	1
3	11D3	Anode ..	85	15
		Anode ..	170	22
4	7DC	Screen ..	180	4
5	1D5	Cathode	240	

CONDENSERS

C.	Purpose.	Mfds.
1	Series aerial	.01
2	Chassis isolating	.01
3	Aerial coupling	.0005
4	Bottom coupling	.005
5	V1 anode decoupling	.1
6	V1 cathode bias shunt ..	.1
7	Osc. grid	.0001
8	V1 and V2 screens decoupling	.1
9	L.W. osc. fixed trimmer ..	.00007
10	Osc. anode decoupling ..	.1
11	V2 cathode bias shunt ..	.1
12	L.F. coupling	.02
13	V3 cathode bias shunt ..	25
14	H.F. by-pass	.0005
15	A.V.C. diode coupling ..	.00005
16	L.F. coupling	.02
17	V3 anode decoupling	2
18	Pentode compensator ..	.005
19	V4 cathode bias shunt ..	25
20	V2 A.V.C. decoupling ..	.1
21	H.T. smoothing	16
22	H.T. smoothing	8
23	Mains suppressor	.1

RESISTANCES

R.	Purpose.	Ohms.
1	Aerial shunt	5,000
2	V1 A.V.C. decoupling ..	100,000
3	V1 cathode bias .. .	70
4	V1 anode decoupling	5,000
5	Osc. grid leak	50,000
6	V1 and V2 screens decoupling (part)	50,000
7	V1 and V2 screens decoupling (part)	20,000
8	Osc. anode decoupling ..	20,000
9	V2 cathode bias	250
10	H.F. stopper	1 meg.
11	Demodulating diode load ..	500,000
12	V3 anode decoupling	50,000
13	V3 anode load	250,000
14	V3 cathode bias	10,000
15	A.V.C. diode load	500,000
16	V2 A.V.C.	500,000
17	V4 grid leak	100,000
18	V4 cathode bias	150
19	Rectifier	75
20	Mains adjustment resistance	
21	Dial lamps shunt	75
VC	Volume control	500,000



A conventional circuit arrangement is employed for the K-B 652 A.C.-D.C. superhet, the valve arrangement incorporating a triode hexode, an H.F. pentode, a D.D.T., R.C. coupled to a pentode, and finally the rectifier.

Remove the dial light and holder from the speaker support.

To remove the chassis, either the leads to the speaker panel must be unsoldered or the speaker removed. The chassis may then be withdrawn to the extent of the mains leads which can be unsoldered from the safety device. When replacing the speaker leads connect the black to the frame, brown to the first tag, and the red and blue leads to tags 4 and 5 respectively.

Special Notes.—The mains adjustment resistance, located at the rear of the chassis, has a flying lead that is secured to one of four terminals marked with the respective voltage tapping.

Two metal contact pieces on the back of the cabinet prevent operation of the receiver when the back is removed.

The electrolytic condenser block C13, C19, C21 and C22 is mounted on the wavelength dial structure near the speaker.

The single-dial light is mounted in a screw-in holder clamped to an insulating bracket on the speaker. The bulb is rated at 6.2 volts .3 amp., and has an M.E.S. base.

Sockets are not provided for connecting an extension speaker, but one having an impedance of some 2 to 5 ohms may be connected to the speech coil of the internal speaker. Looking from the back of the cabinet there are eight tags on the speaker panel. Counting from left to right, the speech coil of the extension speaker should be connected to tags 3 and 7.

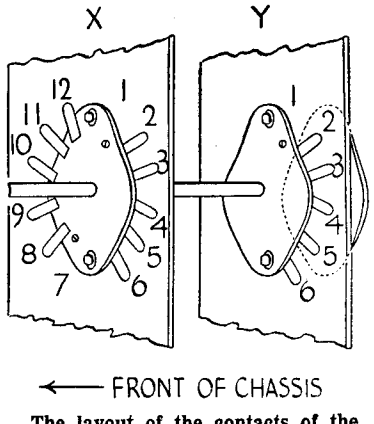
The earth lead (black) connected to the frame of the speaker should be disconnected and a .01 mfd. condenser (450 volts working) connected between the frame and earth wire. Then by breaking the connection between tags 6 and 7 and connecting a Q.M.B. switch in its place control of the internal speaker can be obtained.

It will be noticed from the circuit diagram that an I.F. filter trap operating on the long-wave band is cut out of cir-

(*Continued on page* 42)

WINDINGS (D.C. Resistances)

Winding	Ohms.	Range.	Where measured.
L1	16.3	SW	Across tags switch Z
L2	.1	SW	L1 and C4
L3	Below .1	SW	Top grid VI and C4
L4	3.2	MW	,, ,,
L5	13.1	LW	,, ,,
L6	Below .1	SW	Osc. anode V1 and C10
L8	1.8	MW	,, ,,
L10	2.2	LW	,, ,,
L7	Below .1	SW	Top osc. gang and chassis
L9	3.6	MW	Top osc. gang and P1
L11	6.4	LW	Top osc. gang and P2
L12	8.3	Any	Anode V1 and R4 and C5
L13	7.5	,,	Top grid V2 and C20
L14	7.3	,,	Anode V2 and HT line
L15	7.6	,,	Demod. diode V3 and C14
L16	430	,,	Tags 4 and 5 spkr. panel
L17	1,170	,,	Tags 1 and 4 spkr. panel
L18	3.8	,,	Across leads.
L19	3.8	,,	,,



The layout of the contacts of the ganged wavechange switches of the K-B 652. Their position on the chassis is indicated on the layout below.

K-B 652 on Test

MODEL 652.—Standard model for universal operation, 195-270 volts, 40-60 cycles. Price 11½ gns.

DESCRIPTION. — Four-valve, plus rectifier, three-band table model superhet.

FEATURES. — Full-vision scale traversed by vertical pointer, with stations alphabetically classified and also calibrated in metres. Concentric tuning control, volume, wave selection switch and separate master switch at side of cabinet. Extension L.S. can be fitted.

LOADING.—50 watts.

Sensitivity and Selectivity

SHORT WAVES (16.5-50 metres).—Reasonable sensitivity and adequate selectivity. Handling easy.

MEDIUM WAVES (195-550 metres).—Representative gain and selectivity. Local stations spread on adjacent channels, and a good background.

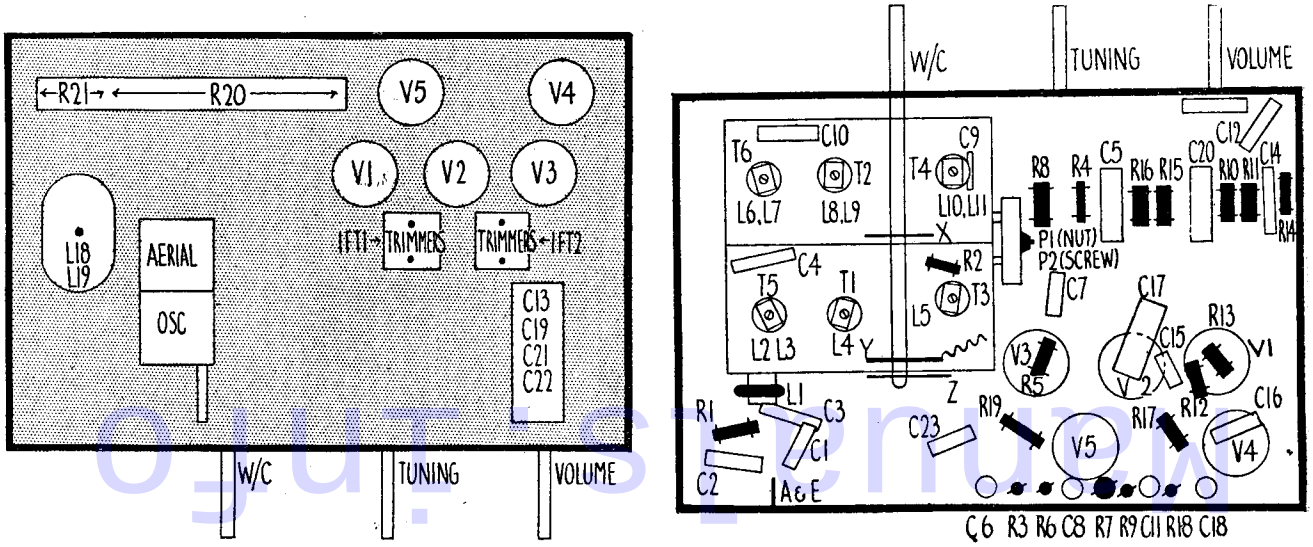
LONG WAVES (970-2,300 metres).—Very good selectivity and representative gain. Slight interference on Deutschlandsender. All main stations easily received.

Acoustic Output

Well-balanced tone, with crisp, clean attack and only very slight colouration. Pleasing balance on both speech and music.

Replacement Condensers

REPLACEMENT condensers for the K-B 652 can be obtained from A. H. Hunt, Ltd., of Garratt Lane, Wandsworth, London, S.W.18. These are: for C17, type No. 3479 at 1s. 9d.; and for C's 13, 19, 21 and 22, type No. 3692 at 11s. 6d.



The neat disposition of the components in the K-B 652 chassis is shown in these two drawings. Left, indicates the appearance of the upper side of the chassis and, right, the underneath view.

DECCA MODEL PT/ML PRESTOMATIC

(*Continued from page 41.*)

Although T1 and T3, the medium- and long-wave oscillator trimmers, are shown for the sake of clarity directly across the oscillator coils in the circuit, they are actually on the trimmer assembly strip.

Alignment Notes

Alignment operations should be carried out with the chassis in the cabinet where access may be obtained to all trimmers.

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer. Turn gang to maximum capacity and press the medium-wave manual knob fully in. Turn volume control to maximum and tone control to high position. Connect a service oscillator between the top grid cap of V1 and chassis.

Tune the service oscillator to 456 kcs. and adjust first the trimmers of I.F.T.2 and then I.F.T.1 for maximum, reducing the input from the oscillator as the circuits come into line. This must be done to prevent the A.V.C. action giving misleading results.

Signal Circuits.—Connect the service oscillator to the A and E sockets via a dummy aerial. Only feed sufficient input to obtain reliable peaks in the output meter, and reduce the input as the circuits come into line.

Medium Waves.—Press medium-wave manual button fully in. Tune set and oscillator to 200 metres (1,500 kc.) and adjust T1 and then T2 for maximum.

The padding is fixed, but check at 550 metres.

Long Waves.—Press long-wave manual button fully in. Tune set and oscillator to 1,000 metres (300 kc.), and adjust T3 and then T4 for maximum.

The long-wave padding is fixed, but check at 2,000 metres.

Press-button Alignment

Remove service oscillator and output meter, and connect an external aerial and earth, placing the cabinet on its side so as to obtain access to the trimmer panel through the false bottom.

Each button should be calibrated on the station it is to receive. For example, press the button inscribed London Regional, adjust the oscillator trimmer (see sketch) to bring in the station, and then adjust the aerial trimmer to obtain maximum volume.

If desired, the station may be tuned in with the oscillator trimmer, the aerial and earth system removed, and a service oscillator, tuned to the frequency of the station concerned, connected in its place, and the aerial trimmer adjusted to give maximum volume. This prevents operation of the A.V.C. if the input is kept down. However, for all practical purposes, it will be found satisfactory to adjust the trimmers on the stations themselves.

ULTRA MODEL 202

(*Continued from page* 39.)

Tune service oscillator to 470 kc. and adjust the trimmers of I.F.T.2 and then I.F.T.1 for maximum response, reducing the input from the oscillator as the circuits come into line to keep the A.V.C. inoperative.

Signal Circuits.—Adjust the tuning pointer to lay between the two cream horizontal dial lines when the gang is fully closed.

Connect the service oscillator to the A and E sockets *via* a dummy aerial. To prevent operation of the A.V.C., only feed sufficient input to obtain reliable peaks in the output meter.

Medium Waves.—Tune set and oscillator to 200 metres (1,500 kc.), and adjust T1 and then T2 for maximum.

Tune set and oscillator to 500 metres (600 kc.), and adjust P1 for maximum, at the same time rocking the gang.

Repeat both operations until no further improvement results.

Long Waves.—Tune set and oscillator to 1,300 metres (230 kc.), and adjust T3 and then T4 for maximum response.

Tune set and oscillator to 1,700 metres (176.5 kc.), and adjust P2 for maximum simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Short Waves.—Tune set and oscillator to 17 metres, screw T5 right up, unscrew until the second peak is heard, then adjust T6 for maximum response.

The short-wave padding is fixed, but check calibration at 30 and 51 metres.

I.F. Wavetrap.—Inject a strong signal of 470 kc., tune set to 950 metres and adjust W.T. trimmer for minimum response in the output meter.

Marconiphone 851

(*Continued from page 35.*)

be found running across the coil former, and this loop must be bent up or down until maximum output is obtained.

It may be necessary to remove the coil can to identify the loop, but final adjustments must be made with the can in position and properly secured. Then recheck at 18 metres.

Medium Waves.—Tune oscillator to 195 metres (1,538.5 kc.), set gang to minimum capacity and adjust T3 for maximum response.

Tune service oscillator to 225 metres (1,333 kc.), tune in on receiver and adjust T4 and then T5 for maximum.

Tune service oscillator to 530 metres (566 kc.) and adjust P1 for maximum, at the same time rocking the gang.

Return to 195 metres and check setting of T3.

Long Waves.—Tune oscillator to 725 metres (413.8 kc.), set gang to minimum and adjust T6 for maximum.

Tune oscillator to 800 metres (375 kc.), tune in on receiver and adjust T7 and T8 for maximum.

Tune oscillator to 1,900 metres (158 kc.), tune in on receiver and adjust P2 for maximum, simultaneously rocking the gang.

Check setting to T6 at 725 metres and then return to medium waves and go through entire M.W. and L.W. alignment again.

WINDINGS (D.C. Resistances)

Windings.	Ohms.	Range.	Measured between.
L1	.1	SW	Top grid V1 and tag 1 S1.
L1+L2 . .	6	MW	Top grid V1 and tag 1 S1.
L1+L2+L3	20	LW	Top grid V1 and tag 1 S1.
L5	.1	SW	Anode V1 and tag 23 S1.
L6	5.5	MW	Tag 25 and tag 23 S1.
L7	14	LW	Tag 23 and tag 24 S1.
L8	.1	—	Cathode V1 and chassis.
L9	.1	—	Across T1.
L10 . .	5.5	—	Across T3.
L11 . .	4.2	—	Across T6.
L12+L13+L14	6	—	Osc. anode V2 and R8.
L16 . .	5	—	Anode V2 and screen V5.
L17 R24 . .	5	—	Top grid V3 and yellow / black lead IFT1.
L18 . .	5	—	Anode V3 and red lead IFT2
L19 R10 . .	500,000	—	Diode and cathode V4.
CK1 . .	1,600	—	Tags 5 and 6 L.S.
O.T. prim.	400	—	Red and yellow leads from transformer.
M.T. prim.	26	—	Terminals M and 195/223 volts.
Total HT sec.	630	—	Anode pins V6.

KOLSTER-BRANDES 652

(*Continued from page* 45.)

cuit on the medium- and short-wave bands.

As the chassis is of the universal type, under certain conditions the chassis is "live" and should not be connected to earth.

Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the output transformer, taking the precaution of inserting a 2-mfd. condenser in series with one of the meter leads. Switch set to M.W. band, turn gang to maximum and volume to maximum. Connect a service oscillator between the top grid cap of V1 and chassis, leaving set connection made.

Tune service oscillator to 464 kcs., and adjust the trimmers of I.F.T.2 and then I.F.T.1 for maximum, reducing the input from the service oscillator as the circuits come into line to keep below the point at which the A.V.C. begins to operate.

Signal Circuits.—The wavelength pointer should coincide with the right-hand vertical line on the dial when the gang is fully closed.

Connect the service oscillator to the A and E sockets *via* a dummy aerial, only feeding sufficient input to obtain reliable peaks in the output meter.

Medium Waves.—Tune set and oscillator to 214 metres (1,400 kcs.), this is marked with a small dot on the M.W. scale, and adjust T1 and then T2 for maximum response.

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

Repeat both operations until no further improvement results.

Long Waves.—Tune set and oscillator to 1,200 metres (250 kcs.) and adjust T3 and then T4 for maximum.

Tune set and oscillator to 1,714 metres (175 kcs.), also marked with a dot, and adjust P2 for maximum, simultaneously rocking the gang.

Repeat both operations.

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

The short-wave padding is fixed, but check at 50 metres (6 mcs.), and if any appreciable error is found then compensate with T5 to halve the error.