

# Kolster-Brandes 740P Push-button Five

Four valve, plus rectifier and tuning indicator, three waveband, permeability push-button and manually tuned superhet for 200-250 volt, 40-60 cycle AC supplies, price 12½ gns.

## CIRCUIT OUTLINE

As the input on the SW band coupled circuits are used on the MW and LW a single tuned circuit is employed with split condenser coupling. Ordinary switching connects this to the grid circuit of V1, a triode hexode.

The oscillator section of V1 is similar in the circuit arrangement to the input, single coils again being used for MW and LW.

For automatic tuning permeability adjusted preset coils are switched into the aerial and oscillator circuits.

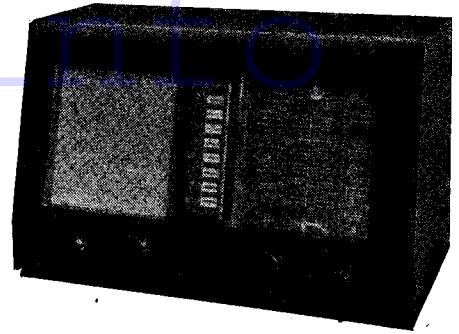
Coupling to V2 is by a trimmer-tuned IF transformer and a similar transformer links V2 to V3, the double diode triode. Here one diode is used for signal demodulation and the other for AVC which is

forms a similar function with the grid circuit, and also W1, which changes over the input of V1.

The remaining wafer carries W2 and W4 which respectively select the input and oscillator tuned input circuits.

## VALVE READINGS

V.	Type.	Electrode.	Volts.	Ma.
<i>All Brimar.</i>				
1	20A1	Anode	280	1.6
		Screen	70	1
		Osc. anode	100	3.4
2	9D2	Anode	280	4
		Screen	70	1
3	11D3	Anode	150	.32
4	7D5	Anode	265	.37
		Screen	380	6.5
5	R2	Heater	360	—
	Pilot lamps		12-15v.	800
	Tuning indicator, Mullard TV4.			

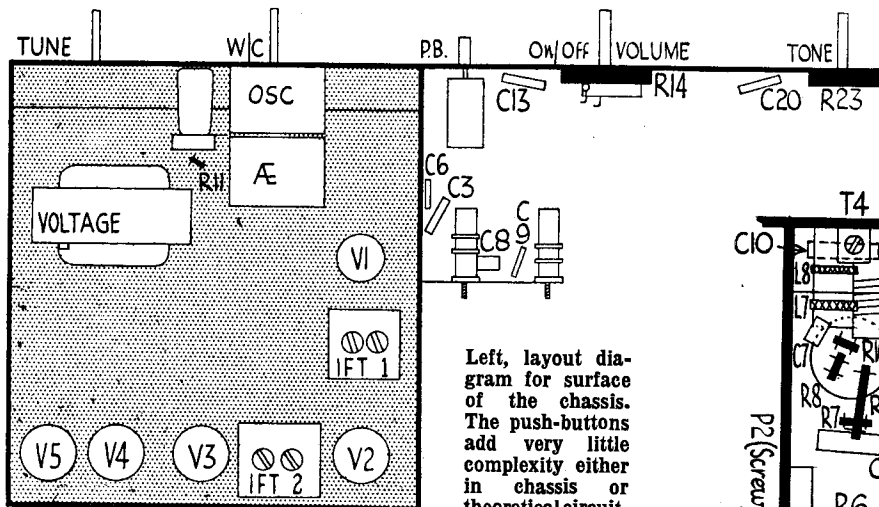


The only point to watch is the padding adjustment. As the MW and LW padders are in series the MW padder must be adjusted first. If this is at any time altered a readjustment must be made to the LW padder.

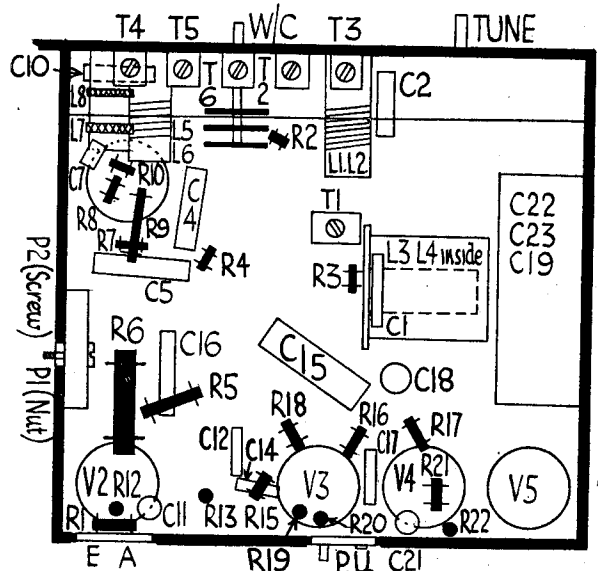
## Chassis Removal

Chassis removal is very simple. For many purposes it is only necessary to remove the inspection cover at the bottom of the cabinet.

For complete removal, unscrew the four control knobs. Then remove the screws at the top of the dial frame, and the chassis retaining bolts from the bottom. The cable to the speaker is long enough for most adjustments. If the speaker is to be removed, it is released by unscrewing the four nuts.



Left, layout diagram for surface of the chassis. The push-buttons add very little complexity either in chassis or theoretical circuit.



Right, the underside of chassis layout. Switches, coils and trimmers are well-grouped. Most components are suspended in the wiring.

applied to the first two valves and also operates a tuning indicator.

Between V3 and V4 there is a conventional resistance-capacity coupling network, the grid circuit of V3 being fed direct from the volume control.

The output valve, V4, works the speaker through the usual transformer and tone is controlled on the anode in the normal manner.

Power supply is through V5, a full-wave rectifier, in conjunction with the speaker field and electrolytic condensers for smoothing.

## Wavechange Switches

The switching is carried out by three wafers. That nearest to the chassis side carries only one wipe, W5, and four contacts, its function being to change the oscillator anode from manual to a preset position.

The next wafer carries W3, which per-

## CONSTRUCTIONAL FEATURES

The engineer should be careful to distinguish between the model, No. 740P, and the type 740 which had trimmer-adjusted push-button circuits. Although basically the two chassis are identical there are many small differences.

We found no departure from the manufacturer's specification, and everything is very straightforward.

Alternatively, the leads can be unsoldered. These are a black lead to the chassis and three on a tag strip. Reading from the top to the bottom they are red, blue and brown.

The middle tag is also joined to the tone control condenser on the chassis extension which carries that control.

(For Alignment and Push-button Adjustment Notes, see page 23.)

# 10-MINUTE FAULT-FINDER

# KB 740P

**Power Tests.**—The object of this test is to check the main H.T. circuits.

Voltage V5 cathode, 360; HT line, 280 (red and brown leads on speaker strip).

Field Resistance, L14 : 1,200 ohms.  
 Total feed = 360 - 280 ÷ 1,200 = 66 ma.

As each of the following injection tests proves satisfactory, proceed at once to the injection test on the following stage.

**Output Stage, V4.**

Inject 2 volts AF V4 grid. If defective, check :—

Voltages : V4 anode, 265; screen, 280.  
 Resistances : Anode-HT, 420; grid-chassis, 250,000 ohms.

**AF Stage, V3.**

Inject 0.5 volt AF V3 grid. If defective, check :—

Voltage : Anode, 150.  
 Resistances : Anode-HT, 350,000; grid-chassis, 500,000 ohms.

**Demodulation, V3.**

Inject 464 kc. modulated signal V2 anode. Trim T11 and T12. If defective, check :—

Resistances : L11, 9; L12, 6 ohms.

**IF Stage, V2.**

Inject 464 kc. modulated signal V2 grid. If defective, check :—

Voltages : Anode, 280; screen, 70.  
 Resistances : Screen-HT, 20,000; grid-chassis, 1 megohm.

**Mixer, V1.**

Inject 464 kc. modulated signal V1 grid. Trim T9 and T10. If defective, check :—

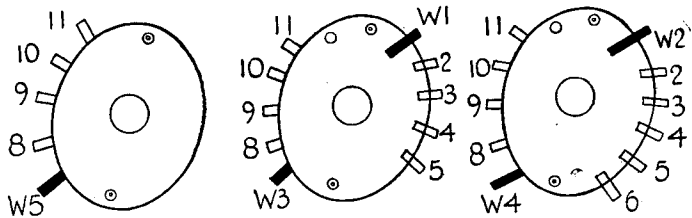
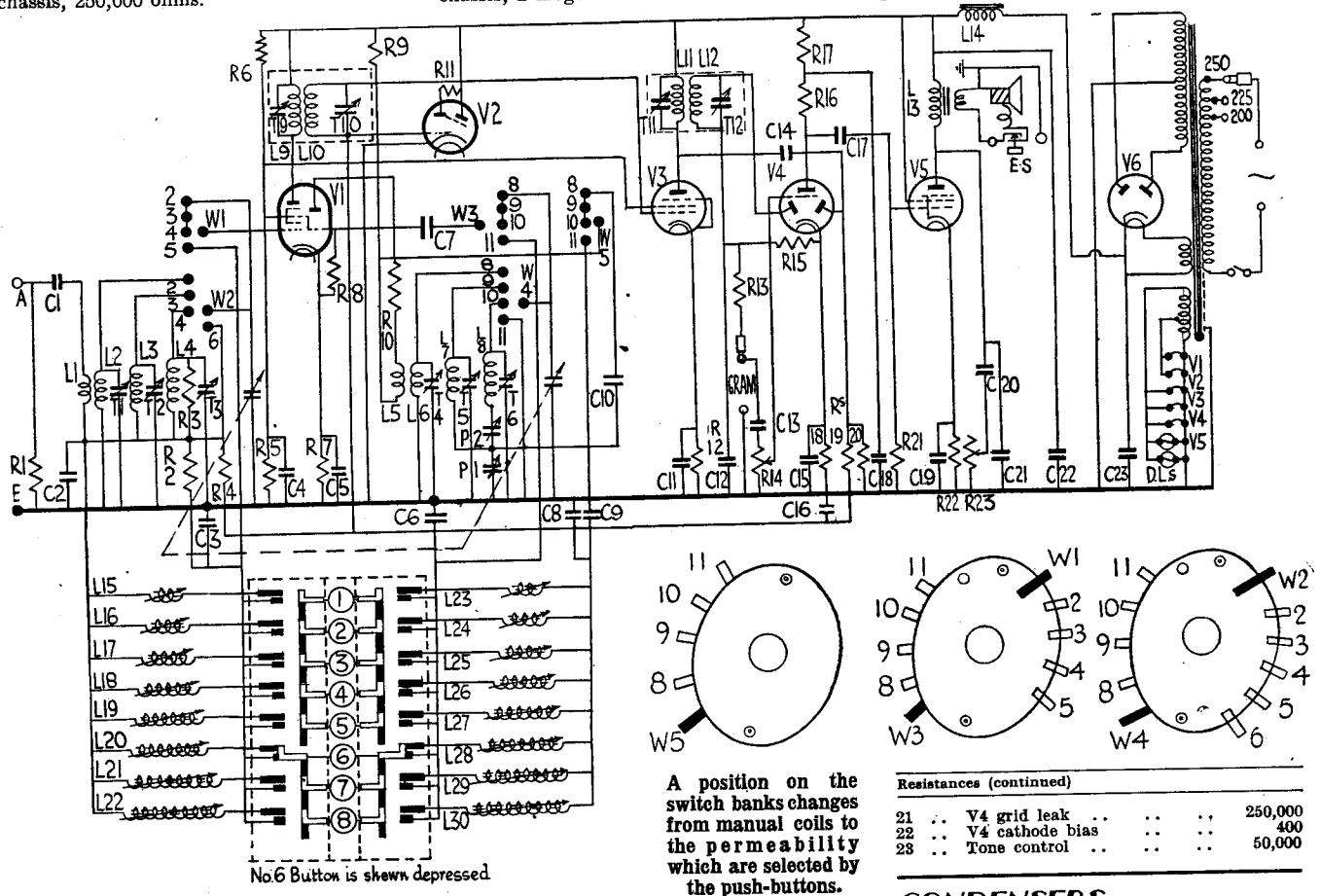
Voltages : Anode, 280; screen, 70.  
 Resistances : L9, 6 ohms; L10, 9 ohms; screen-HT, 20,000 ohms.

**Oscillator Test.**

Tune receiver to local station and inject that frequency plus 464 kc. at oscillator grid. If defective, check :—

Voltage : Oscillator anode, 100.  
 Resistances : Oscillator anode-HT, 50,100; oscillator grid-chassis, 50,200 ohms.

If still no signals, check oscillator and pre-selector coils and switching.



A position on the switch banks changes from manual coils to the permeability which are selected by the push-buttons.

Resistances (continued)		
21	V4 grid leak	250,000
22	V4 cathode bias	400
23	Tone control	50,000

**WINDINGS**

L.	Ohms.	Range.	Where measured.
1	V low	—	C1 and C2.
2	V low	SW	W2 and earth.
3	3	MW	W2 and C2.
4	15	LW	W2 and C2.
5	V low	—	W5 and R10.
6	V low	SW	W4 and earth.
7	4	MW	W4 and P1.
8	10	LW	W4 and P2.
9	6	—	V1 anode and HT positive.
10	9	—	V2 grid and R4.
11	9	—	V2 anode and HT positive.
12	6	—	V3 signal diode and C12.
13	420	—	V4 anode and HT positive.
14	1,200	—	Red and brown on speaker strip.
15	24	—	Mains plug.

**RESISTANCES**

	Ohms.	
1	Aerial shunt	10,000
2	Push button shunt	2 meg.
3	Long wave aerial shunt	250,000
4	V1 AVC decoupling	500,000
5	V1 screen pot. (part)	15,000
6	V1 screen pot. (part)	20,000
7	V1 cathode bias	200
8	Osc. grid leak	50,000
9	Osc. anode load	50,000
10	Het. volt control	100
11	TI feed	2 meg.
12	V2 cathode bias	500
13	HF filter	100,000
14	Volume control	500,000
15	V3 signal diode load	500,000
16	V3 anode load	250,000
17	V3 anode decoupling	100,000
18	V3 cathode bias	5,000
19	AVC decouple	500,000
20	AVC diode load	500,000

**CONDENSERS**

	Mfd.	
1	Aerial coupling	.0005
2	Aerial input	.005
3	Push button fixed tune	.0002
4	V1 screen decouple	.1
5	V1 cathode bias shunt	.1
6	Push button osc. fixed tune	.0004
7	Osc. grid	.0005
8	Push button osc. fixed tune	.0004
9	Push button osc. coupling	.0001
10	Osc. anode coupling	.005
11	V2 cathode bias shunt	.1
12	HF filter	.0005
13	LF coupling	.02
14	AVC coupling	.00025
15	V3 cathode bias shunt	.25
16	AVC decouple	.1
17	V4 grid coupling	.02
18	V3 anode decouple	.2
19	V4 cathode bias shunt	.25
20	Tone control	.02
21	V4 anode shunt	.001
22	HT smoothing	.16
23	HT smoothing	.8

For more information remember WWW.SAVOY-HILL.CO.UK

# Alba 98 Presto-tune

(Continued from page 26.)

click plate carries W1 and W2 which control the aerial circuits.

The second wafer is similar to the first carrying W3 and W4 which similarly control the HF circuits. The last wafer has three wiper W5, W6 and W7. The last one changes over the AF coupling condenser from the diode load to the pick-up sockets. The remaining wiper W6 and W7 control the two oscillator windings on the four wavebands.

## Chassis Removal

There are three knobs on the front of the cabinet which are released by large grub screws and these must be removed before the chassis can be withdrawn. The chassis itself is held by four bolts with rubber washers on each side.

Before the chassis can be pulled back, however, the eight push button knobs must be pulled off. These are simply held by the usual spring clip inside a slot in the bakelite moulding.

## Alignment

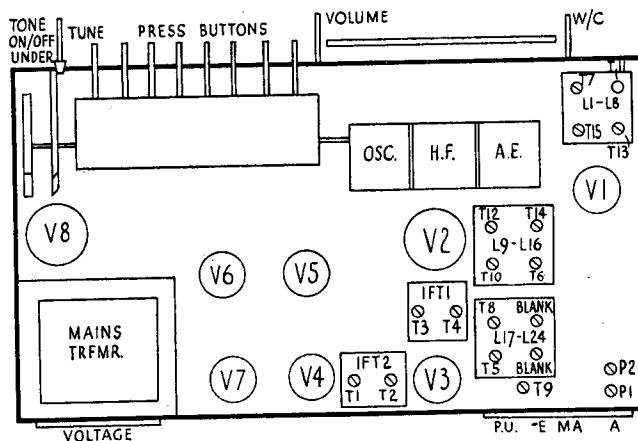
### IF Circuits (365 kcs.)

Connect an output meter to the set and a signal generator to the grid of V2, and preferably short out the oscillator section. Adjust the generator to 365 kcs. and adjust T1, T2, T3 and T4 for maximum, using a low input below the AVC value.

### Medium Waves (200 to 560 metres)

Connect the generator to the aerial and earth through a dummy aerial and tune set and generator to 200 metres.

**Surface layout diagram of the Alba 98. Trimmers are all accessible from above and adjustment notes are given on this page. Push-button tuning is mechanical.**



Adjust T5, T6 and T7 in that order for maximum.

Tune set and generator to 450 metres and adjust P1 for maximum, checking the scale calibration by slight adjustment of the stator if necessary.

Repeat the operations until no improvement results.

### Long Waves (1,000 to 2,000 metres)

Tune set and generator to 1,100 metres and adjust T8, T10 and T11 in that order for maximum output.

If sufficient adjustment cannot be obtained with T8 adjust T9. T8 and T9 are in parallel.

Tune set and generator to 1,875 metres and adjust P2, rocking the gang if necessary. Repeat the operations until no improvement results.

### Short Waves 1 (13.5 to 43 metres).

Tune set and generator to 17 metres and adjust T14 and T15 for maximum. There is no padding operation.

### Short Waves 2 (43 to 135 metres).

Tune set and generator to 49 metres and adjust T2 and T3 for maximum output. There is no padding operation.

## Push-buttons

THE push-button mechanism is of the well-known mechanical type and is adjusted as follows. First slacken the shaft locking screw at the side of the cabinet.

Then tune in manually each desired station and press to the fullest extent the button on which it is to appear. Then lock the shaft.

# Cossor Model 32

(Continued from page 28.)

ever, the four control knobs must be taken off. These are held with large grub screws.

There is a master switch at the side of the cabinet and the control knob for this must be released. The locking screw is inside the cabinet and a long screwdriver is necessary to release it. The knob is slightly tight on the shaft.

## Alignment

### IF Circuits (465 kcs.)

The transformers are permeability tuned and should rarely require attention.

Connect an output meter to the set and the generator to the grid of V1, and adjust it to 465 kcs. First trim the secondary core of IFT2, and then the primary for maximum output. Next trim the first IFT in the same manner.

During both operations the injected voltage should be below the A.V.C. value, and should be reduced as the circuits come into line.

### Medium Waves (190 to 590 metres)

Connect the generator to the aerial and earth through a dummy aerial, and tune generator and receiver to 1,400 kcs. (214 metres). Adjust T1 and T2 for maximum.

There is no padding operation, but if the tracking does not agree with the scale at the upper end, carefully check the pointer position, which should be in line with the end of the scale at maximum position.

### Long Waves (815 to 2,180 metres)

Tune generator and receiver to 1,200 metres

(Continued in next column.)

# Kolster-Brandes 740P

(Continued from page 24.)

## Alignment

### I.F. Circuits (464 kc.).

Connect an output meter to the set and a signal generator to the grid and chassis at V1 and adjust to 464 kc.

Trim T9, T10, T11 and T12 in that order for maximum output using a low input below the AVC value.

### Medium Waves (197-550 metres).

Check alignment of the pointer with the top horizontal lines on the scale with the condenser vanes fully meshed.

Connect generator to the aerial and earth of set and tune set and generator to 1,400 kc. (214 metres), indicated by a small dot on the scale. Adjust T5 and T2 for resonance.

Tune set and generator to 600 kc. (500 metres) and adjust P1. Recheck the trimming at 1,400 kc.

### Long Waves (740-2,000 metres).

Tune set and generator to 300 kc. (1,000 metres) and adjust T6 and T3 for resonance.

(Continued from previous column.)

(250 kcs.). Adjust T3 and T4 for maximum. Tune generator and receiver to 160 kcs. and adjust P1, simultaneously rocking the gang.

Repeat the sequence of operations until the best results are obtained.

### Short Waves (16.35 to 51.5 metres)

Tune set and generator to 18 mcs., and adjust T5 and T6 for maximum output, simultaneously rocking the gang for best results.

It is essential to use the minimum setting of the oscillator condenser which gives the tune point.

Tune set and generator to 175 kc. (1,714 metres), as shown by a dot on the scale, and adjust P2.

Repeat the sequence of operations until the alignment is correct over the entire scale.

### Short Waves (16.5-52 metres).

Tune set and generator to 17 mc. (17.6 metres), as shown by a dot on the scale, and adjust T4 and T1 for maximum. Use the minimum setting of T4 which gives a signal, as two positions will be found.

In adjusting T1, a minute rocking action of the tuning control will be helpful.

## Push-buttons

REFER to the table to show which button will provide for the desired station and depress that button, having turned the range switch to the Auto position.

Inject a strong signal of the desired frequency from the generator and adjust the trimmer of the coil behind the selected button on the outer row (oscillator coil) and then the adjacent aerial coil trimmer.

Finally, check on the actual transmission. Note that clockwise rotation of the trimmers reduces the wavelength.

Button.	Metres.	Button.	Metres.
1	200-280	5	333-464
2	259-359	6	389-556
3	259-359	7	1176-1428
4	333-464	8	1428-1875

**Replacement Condensers.**—Exact electrolytic replacements are available from A. H. Hunt, Ltd. For the C.22, 23 and 19 block there is unit 1,569, 10s.; for C. 15, unit 2,918, 1s. 9d., and for C.18, 2,964, 1s. 10d.