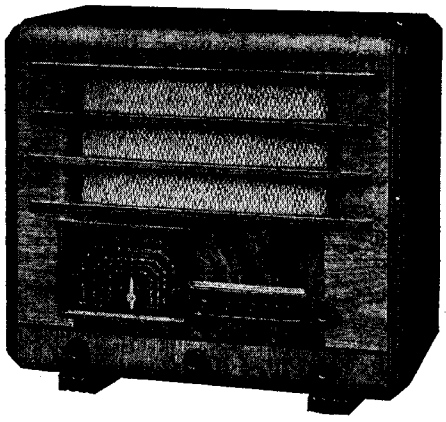
Alba 98 Four-band Presto-tune

Seven valve, plus rectifier, four waveband mechanical push-button and manually tuned table superhet for 200-250 volt, 50-60 cycle AC supplies, price 15 gns. Similar chassis in models 698 and 798.



CIRCUIT OUTLINE

A LOW noise pentode is used for V1, an RF amplifier, the input being obtained from coupled aerial circuits selected by a switch. There is AVC on all bands. Further similar coupled circuits are used between V1 and V2. In this case, however, the two short-wave coils are returned to earth and not the AVC line.

V2 is a triode-hexode with conventional oscillator circuits and a trimmer-tuned IF transformer in the anode circuit. This transformer works into the grid circuit of V3, a "sliding screen" pentode controlled by AVC.

A further trimmer-tuned IF transformer couples V3 to V4, a double diode with separate cathodes. The diode load is tapped down the coil, one diode being used for signal demodulation and the other for AVC. The delay voltage is obtained from the cathodes of the output stage.

For audio frequency amplification there is a triode V5, which derives its input from a volume control fed from the top of the diode load through a filter. Coupling between V5 and the output stage is by a resistance-fed transformer. The secondaries are shunted and work into the grid circuits of V6 and V7, two output pentodes connected in push pull.

The speaker field is used for smoothing in conjunction with two electrolytic condensers and the H.T. is derived from a full-wave rectifier, V8.

CONSTRUCTIONAL FEATURES

THE chassis which we examined was found to differ considerably from the circuit supplied by the manufacturers. It appears that considerable modifications have been made. Among these the following points should be particularly observed.

The audio frequency amplifier, V5, is now decoupled by a 5,000 ohms resistor and a 2 mfd. condenser. Similarly, decoupling is now used on the first valve, the components in this case being a 1,000 ohms resistor and a .1 mfd. condenser.

The circuit shows a small shunt condenser, C26, across the HT line. It should be observed that this may not be found in all chassis.

In our particular chassis C20 was found to be .000025.

The diode load and filter resistances R10 and R11 are inside the IFT can. Certain others may be a little difficult to locate as free use is made of sleeving over the resistances.

The circuit as published shows the return lead of L14 connected to earth. Actually, in the chassis examined, the AVC is applied to the second short-wave range and accordingly the return of L14 goes to C5.

The screen of V2 may be fed either from a series resistance, R4, of 20,000 ohms, or from a potentiometer consisting of two such resistances.

Wavechange Switches

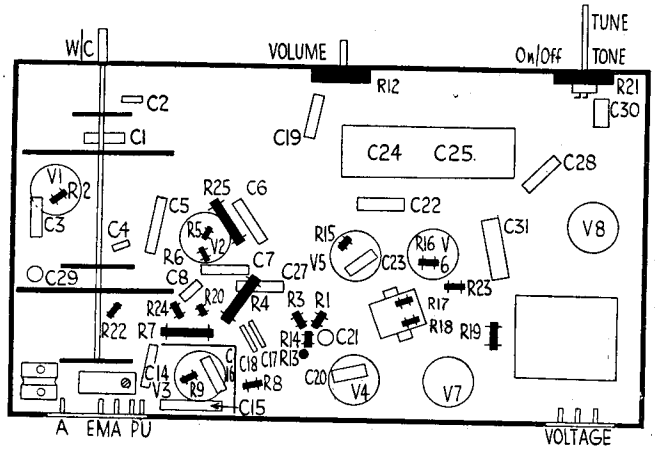
The entire switching of the four wavebands and the pick-up is carried out by three wafers. The first one nearest the

(*Continued on page 23.*)

VALVE READINGS

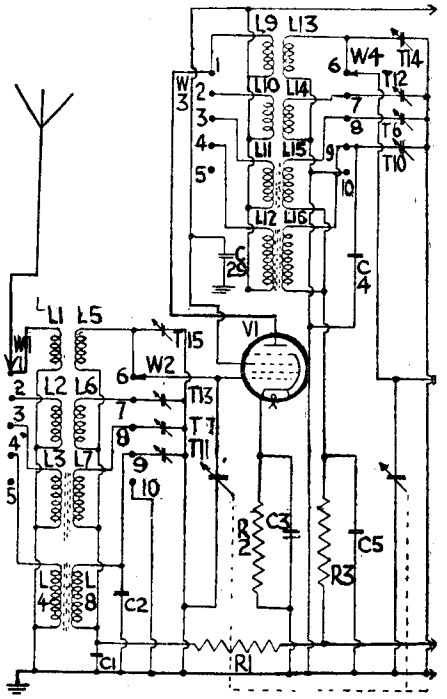
Valve.	Type.	Voltages Anode.	Screen.	Cathode.
	All Mullard.			
1	EF8	240	240	3
2	ECH2	240	90	3.5
		115(osc.)		
3	EF9	240	87	2.5
4	EB4	Diodes only.		
5	EBC3	143		3.2
6	EL3	232	240	5.8
7	EL3	232	240	5.8
8	AZ3			330

Pilot lamps, Osram, MES round, 6.2 volts, .3 amp.



Left, underside layout of the chassis. Surface view, showing trimmers, is with alignment notes on page 23.

Replacement electrolytics available from A. H. Hunt, Ltd., are: for C24+25, unit 3846A, 10s. 6d.; C22, 2915, 1s. 9d., and C31, 2964, 1s. 10d.



CONDENSERS

		Mfds.
1	V1 AVC decouple	.1
2	LW input shunt	.00006
3	V1 cathode bias shunt	.1
4	LW HF shunt	.00006
5	V2 AVC decouple	.1
6	V2 screen decouple	.1
7	V2 cathode shunt	.1
8	Osc. grid	.00005
10	SW1 fixed padder	.00475
11	SW2 fixed padder	.002
14	Osc. anode decouple	.1
15	V3 screen decouple	.1
16	V3 cathode shunt	.1
17	IF filter	.0003
18	IF filter	.0003
19	AF coupling	.1
20	AVC coupling	.00002
21	V3 AVC decouple	.1
22	V5 cathode shunt	50
23	V5 anode coupling	.1
24	HT smoothing	24
25	HT smoothing	8
26	HT line bypass	.1
27	V2 anode decouple	.1
28	Tone control	.05
29	V1 screen decouple	.1
30	Mains aerial	.0001
31	V5 anode decouple	2

10-MINUTE FAULT-FINDER — ALBA 98

Power Test.

Voltages : V5 cathode (white lead), 330; HT line (red lead), 240.

Resistance : L32, 900 ohms.

Feed current = 330 − 240 ÷ 900 = 100 ma.

Output stage, V6 and V7.

Inject 2 volts AF V6 grid and then V7 grid. If defective, check :—

Voltages : Anodes, 232; screens, 240; cathodes, 5.8. Resistances : Anodes-HT, 290; grids-chassis, 1,650 ohms.

AF Stage, V5.

Inject .5 volt AF V5 grid. If defective, check :—

Voltages : Anode, 143; cathode, 3.2. Resistances : Anode-HT, 30,000; grid-chassis, 500,000 ohms.

Demodulation.

Inject modulated 365 kc. signal V4 anode. If defective, check :—

Resistances : L27, 7.7; L28, 7.7 ohms; diode-chassis, 1.05 megohms.

IF Stage, V3.

Inject modulated 365 kc. signal V3 grid. If defective, check :—

Voltages : Anode, 240; screen, 87. Resistances : Screen-HT, 90,000 ohms; grid-chassis, 2 megohms.

Mixer Stage, V2.

Inject modulated 365 kc. V2 grid.

Voltages : Anode, 240; screen, 90. Resistances : Anode-HT, 500; screen-HT, 20,000 ohms; grid-chassis, 2.25 megohms.

Oscillator Test.

Tune set to local station and connect aerial through 10 mmfds. to V2 grid and inject local frequency plus 365 kc. at oscillator grid. If defective, check :—

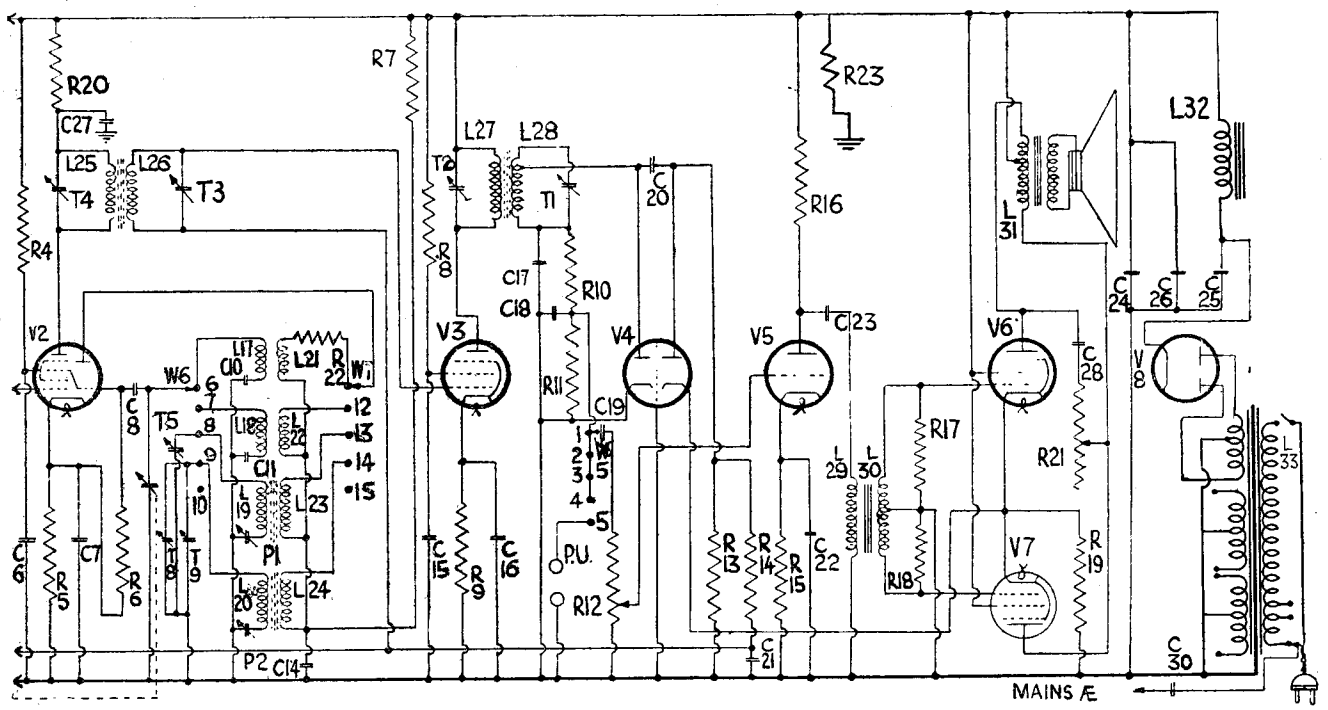
Voltages : Osc. anode, 115; cathode, 3.5. Resistances : Osc. anode-HT, 20,000; osc. grid-chassis, 50,250 ohms.

Signal Stage, V1

Tune receiver to 300 metres and inject that frequency at V1 grid. If defective, check :—

Voltages : Anode, 240; screen, 240. Resistances : Grid-chassis, 2.25 megohms.

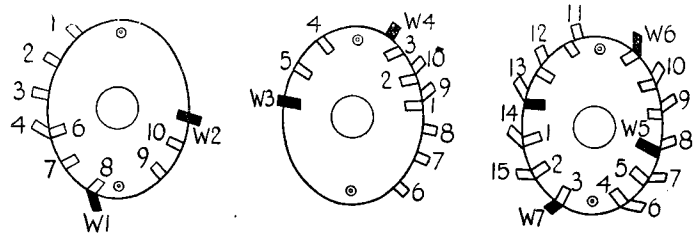
If still no signals, check coils and switching.



RESISTANCES

		Ohms.
1	V1 AVC decouple	250,000
2	V1 cathode bias	300
3	V2 AVC decouple	250,000
4	V2 screen potr. (part)	20,000
5	V2 cathode bias	250
6	Osc. grid leak	50,000
7	Osc. anode decouple	20,000
8	V3 screen feed	90,000
9	V3 cathode bias	325
10	HF filter	50,000
11	Signal diode load	1 meg.
12	Volume control	500,000
13	AVC diode load	1 meg.
14	V3 AVC decouple	1 meg.
15	V5 cathode bias	1,000
16	V5 anode load	30,000
17	V6 input shunt	20,000
18	V7 input shunt	20,000
19	V6 and V7 cathode bias	65
20	V2 anode decouple	500
21	Tone control	50,000
22	Het. volt control	75
23	V5 anode decouple	5,000
24	V1 anode decouple	1,000
25	V2 screen pot. (part)	20,000

Above, the circuit, shown divided for presentation reasons. Right, the switches with bank nearest "click" plate on left.



WINDINGS (D.C. Resistances)

L.	Ohms.	Range.	Where measured.
1	V. low	SW1	Aerial and chassis.
2	1.2	SW2	Aerial and chassis.
3	18	MW	Aerial and chassis.
4	42	LW	Aerial and chassis.
5	V. low	SW1	V1 grid and C1
6	.2	SW2	V1 grid and C1.
7	1.3	MW	V1 grid and C1.
8	17	LW	V1 grid and C1.
9	.2	SW1	V1 anode and R24.
10	.6	SW2	V1 anode and R24.
11	13.3	MW	V1 anode and R24.
12	48	LW	V1 anode and R24.
13	.4	SW1	V2 grid and chassis.
14	.6	SW2	V2 grid and C5.

Windings (continued)

15	1.7	MW	V2 grid and C5.
16	18	LW	V2 grid and C5.
19	.8	MW	Osc. gang and P1.
20	7	LW	Osc. gang and P2.
21	75	SW1	Osc. anode and C14.
22	.4	SW2	Osc. anode and C14.
23	2	MW	Osc. anode and C14.
24	2.4	LW	Osc. anode and C14.
25	7.7	—	V2 anode and C 27.
26	7.7	—	V3 grid and C21.
27	7.7	—	V3 anode and HT positive.
29	550	—	C23 and chassis.
30	3,300	—	V6 grid and V7 grid.
31	580	—	Blue leads on tag strip.
32	900	—	White and red leads on tag strip.
33	9	—	Mains plug.

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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 wipes W5, W6 and W7. The last one changes over the AF coupling condenser from the diode load to the pick-up sockets. The remaining wipes 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.

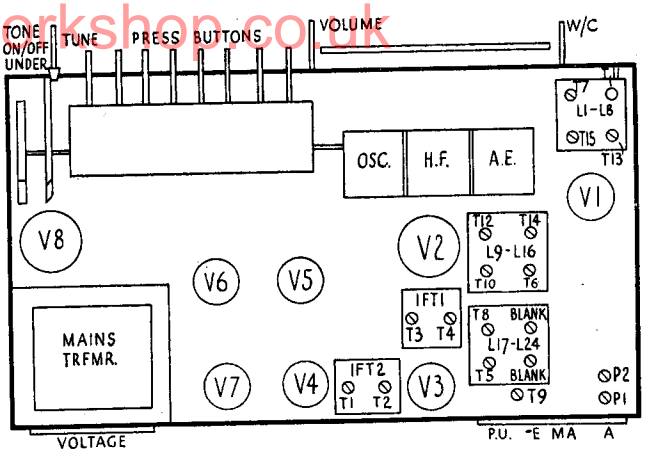
Alignment

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.

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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

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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	333-454
2	259-359	6	389-555
3	259-359	7	1176-1428
4	333-454	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 1,559, 10s.; for C. 15, unit 2,918, 1s. 9d., and for C.18, 2,964, 1s. 10d.