Decca AW8 Push**button Five**

Four valve, plus rectifier, three waveband table model, superhet with mechanically operated push-button and manual tuning. For 200-250 volt, 50-100 cycle AC supplies, price 10 gns.

under

chassis

mechanical.

CIRCUIT OUTLINE

THE aerial input circuit contains a wave-trap, and the actual input to the grid of V1, a triode-hexode, is by means of coupled circuits selected by an unusual form of switching, referred to in special notes below. There is AVC on all bands.

For the oscillator circuit a conventional network is used, and the anode circuit contains the first IF transformer, which is trimmer tuned. This works into is trimmer tuned. This works into the grid circuit of V2, an HF pentode, again provided with AVC.

A further IFT couples V2 to V3, a double-diode-triode, one diode being used for signal demodulation and the other for AVC. In the signal diode circuit there is a resistance-capacity IF filter. The AF potentials are applied to the grid of the triode section through a coupling condenser and volume control.

Normal resistance-capacity coupling is used between the triode section and the grid of V4, the output valve. Tone control is effected on the anode circuit.

The press-button unit is fitted with a special switch which partially mutes the speaker output and also operates a magnetic clutch, thereby releasing the slow-The clutch winding is in motion drive. the main HT feed.

The HT is derived from V5, a full-wave rectifier, and smoothed by condensers of the dry type.

SPECIAL NOTES

THERE are several unusual features. In the first place, the medium- and long-wave coils are shunted across the tuned short-wave windings. In the medium-wave position long-wave the

coil is shorted out. When working on the long band the medium and long-wave coils are in series.

To release the slow-motion device when using the push-button control there is a magnetic clutch, the winding of which is in the negative HT feed. This is connected in what is in effect the unsmoothed part of the circuit, and accordingly three condensers are used.

The extra condenser would be necessary to limit ripple, which would otherwise tend to cause a chatter on the clutch, and presumably this arrangement is adopted with the main object of introducing more general smoothing.

In certain models, the AVC decoupling for V1 may be found returned to the decoupling network of the second valve instead of the top of the diode load, as in the present chassis.

Wavechange Switches.

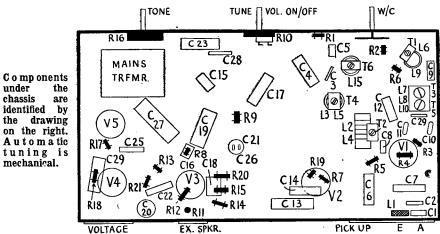
 $\mathbf{A}\mathbf{s}$ the input circuit arrangement utilises the MW and LW coils in shunt with the SW coils, the switching is very simple, two wipes being used. These are W1 and W2, which respectively control the tuned windings and earthing arrange-

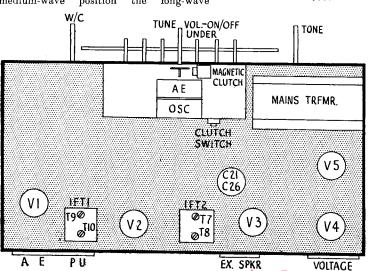
There are two further wipes, W3 and W4, which control the untuned and tuned windings of the oscillator circuits.

All the contacts are carried on a single wafer and identification is very easy with the aid of the diagram.

Chassis Removal.

First remove all the push-button knobs by unscrewing them, and then remove Continued on page 12





Left, top of chassis layout diagram. Note the magnetic clutch which disengages the manual drive during pushbutton tuning.

V		Type.	Ano	de.	Screen.	Cathode.
1	••	TH62 (Mullard).			120	2.7
2		6U7G (Brimar).	275		120	3.2
3	••		175	••	-	2.2
4		6V6G (Mullard.)	240		275	14
5	• •	5Z4G (Brimar.)	_	••		360

W	WINDINGS							
L.		Ohn	ıs.	Range.	Where measured.			
1 2 3 4 5 6 7 8 9 +	R6	9 2.7 14.3 Low 3 Low - 3 75	::	SW MW SW MW SW	On tags. C1 and chassis. On tags. C5 and chassis. C5 and chassis. C5 and C9. Inaccessible. C8 and C11. C12 and C9.			

For ormation remember

10-MINUTE FAULT-FINDER

Power Test

Voltages: V5 cathode, 360; HT line,

Resistance: L17, 1,250 ohms.

Total feed = 360 - 275 ÷ 1,250 = 68 ma.

Mains loading: 68 watts.

Output Stage, V4
Inject 2 volts AF at V4 grid. If defective, check :-

Voltages: Anode, 240; screen, 275; cathode, 14.

Resistances: Anode-HT, 440; gridchassis, 250,000; cathode—chassis, 250 ohms.

AF Stage, V3
Inject .5 volt AF at grid. If defective, check :-

Voltages: Anode, 175; cathode, 2.2. Resistances: Anode—HT, 125,000; grid—chassis, 500,000; cathode—chassis, 3,000 ohms.

Demodulation, V3
Inject modulated 465-kc. signal at V2
anode. If defective, check:—
Resistances: L12, 6; L14, 4; diode—

chassis, 373,000 ohms.

IF Stage, V2

Inject modulated 465-kc. signal at V2 grid. If defective, check:—

Voltages: Anode, 275; screen, 120; cathode, 3.2.

Resistances: Screen—HT, 35,000 ohms; grid—chassis, 1 megohm; cathode—chassis. 250 ohms.

DECCA AW8

Mixer Stage, V1
Inject modulated 465-kc signal at V1.

grid. If defective, check:— Voltages: Anode, 275; screen, 120; Voltages: cathode, 2.7.

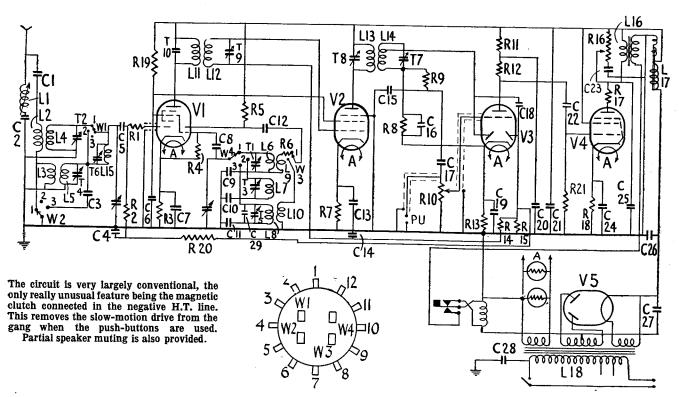
Resistances: Screen-HT, 35,000 ohms; grid-chassis, 1.5 meghoms; cathodechassis, 250 ohms.

Oscillator Test

Tune to local station and inject that frequency plus 465 kc. at oscillator grid. If no signals, check:— Voltages: Osc. anode, 110.

Resistances: Osc. anode-HT, 35,000; osc. grid-chassis, 50,250 ohms.

If signals are still absent, check input coils and switches.



Wit	nding	gs (cont	inue	d)	
10 11 12 13 14 15 16 17	::	1 6 6 6 4 20 340 1,250		LW LW 	C12 and chassis. V1 anode and HT. V2 grid and C14. V2 anode and HT. Diode and R9. C5 and L5. On leads. C21 and C26.
18		24		– ::	Mains plug.

R	ES	ISTANCES			Ohms.
1	••	V1 grid stopper V1 grid return	• •		40
3	• •	V1 grid return V1 cathode bias	• •		500,000
2 3 4 5 6 7 8 9	• •	Osc. grid leak	• •	• •	$\frac{250}{50,000}$
5		Osc. anode load	• •		35,000
6	• •	Heterodyne volt cor	ntrol		75
4	• •	V2 cathode bias	• •		250
å	• •	Signal diode load IF filter	• •	• •	300,000
ιŏ	• •	Volume control	• •	• •	70,000 500,000
11		V3 anode decouple	• •		25,000
12	• •	V3 anode load			100,000
		F	\cap		more

13	 V3 cathode bias	3,000
14	 V2 AVC decouple	50 0,000
15	 AVC diode load	500,000
16	 Tone control	50,000
17	 V4 anode stabiliser	100
18	 V4 cathode bias	250
19	 V1 and V2 screen decouple	35,000
20	 V1 AVC decouple	500,000
21	 V4 grid leak	250,000

_(O /	NDENSERS			Mfds.
1		Aerial coupling			.004
3		Aerial filter			.00006
3		LW input tune			.00125
4 5	• •	V1 AVC decouple			.02
5		V1 grid couple			.0001
6 7 8 9	• •	V1 screen decouple			.1
7		V1 cathode shunt			.1
8	• •	Osc. grid			.0001
	• •	SW padder			.003
10	• •	MW padder			.000385
11	• •	LW padder	٠.		.00018
12	•	Osc. anode	.,	1	.0002
	7.1	ntorma	1	1 Or	ו די

Coi	nden	sers (continued)			
13		V2 cathode shunt			.1
14		V2 AVC decouple			.02
15		IF filter		• •	.0001
16		IF filter	••	• •	.0001
17		AF couple	• •	• •	.0001
18	::	AVC couple	• •	• •	
19	• •	V3 cathode shunt	• •	• •	.0001
20	• •	V3 anode decouple	• •	• •	50
21	• •	True anoue decouple	• •		4
	• •	HT smoothing			. 10
22	• •	V4 grid couple			.02
23		Tone control			.04
24		V4 cathode shunt			50
25		V4 anode shunt			.006
26		HT smoothing			10
27		HT smoothing		• •	8
28		Mains filter	• •	• •	.008
29		LW osc, trimmer	• •	• •	
	••	obe. driminer	٠.	• •	.000045

Replacement Condensers.—Exact replacement electrolytic condensers are available from A. H. Hunt, Ltd., Garratt Lane, Wadnsworth, London, S.W.18, who make some of the units in the original set. For either Cl9 or C24 there is unit 3531, 1s. 10d.; for C27, unit 3625 3s. 6d. and for the C21 + C26 unit, Minipack type 440, 7s. 6d.

Ultra Model 500

Continued from page 4

tive groups of coils. The first wafer

tive groups of coils. The first water carries WI and W2, controlling the tuned and untuned aerial circuits. In addition, there is an earthing wipe, W3.

The second wafer is similar to the first, carrying W4, W5 and W6, and controls the HF coils. The third wafer, carrying W7, W8 and W9, controls the tuned and untuned oscillator coils as well as switching untuned oscillator coils as well as switching the oscillator anode and grid circuits for the pick-up amplifier.

The fourth wafer, mounted behind the tuning pack, has a single wipe which changes over the audio valve grid from the diode load to the pick-up amplifier, and a further wipe which controls the four pilot lamps.

Special Notes

THERE are several modifications compared with some early models. Certain decoupling condensers of 01 are now increased to .035. This is the case with C9 and C19, the object of the alteration being to change the time constant of the AVC network.

In our chassis C18 was found to be .004 and not .003 and the resistance R13 was 20,000 ohms instead of 10,000 ohms. Some early models had a muting switch associated with the PB mechanism.

It is important to note that separate trimmers are not used on aerial and HF circuits, and, accordingly, it is essential to gang the SW band first. When this is correct the MW and LW circuits are automatically adjusted to the correct values. Chassis Removal

First of all remove the control knobs which are of the spring pull-off type. Next remove the screws which hold the

top of the tuning scale against the inside of the cabinet. Remove the pilot lamp which illuminates the push-botton scale. Release the speaker by unscrewing the holding nuts and take off the clips and remove the speaker from the cabinet. The speaker will still be attached to the chassis by the multiple cable. remove the chassis retaining bolts. Finally.

Alignment

IF Circuits (470 kc.).

Gonect output meter to receiver and generator to V2 grid.

Tune generator to 470 kc. and adjust the cores of the second IFT and then the first IFT for maximum output.

Use a small input below the AVC value.

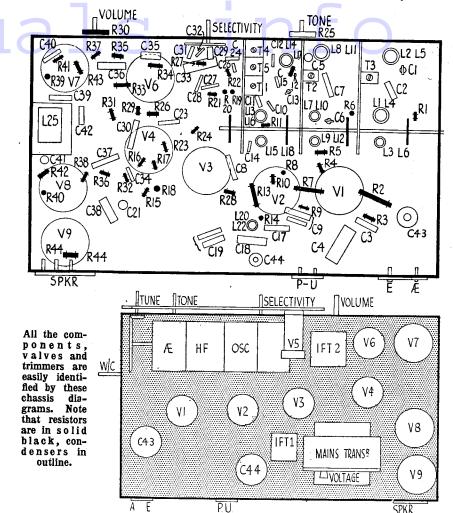
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the control knobs, which are all held by grub-screws.

Slip the two pilot-lamps off the holders and take out the chassis retaining bolts from the bottom of the cabinet. chassis can then be pulled out of the

For complete removal, disconnection of the speaker is necessary. There are two sets of leads. The first has two cores with a red and black wire which go to the muting switch on the back of the press-button unit.

The other leads are on the speaker strip, and the connections, reading from strip, and the connections, reading the top downwards, are as follows: Blue black, vacant, red, vacant.



Short Waves (16.5 to 51 metres)

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Connect the generator through dummy aerial to the aerial and earth terminals, and tune set and generator to 15.8 megacycles (19 metres) and adjust T1, T2 and T3 for maximum. Check the calibration at 50 metres.

This operation must be carried out in the third selectivity position and also before the other bands are trimmed.

Medium Waves (200 to 550 metres)

Tune set and generator to 200 metres (1,500 kc.) and adjust T4 for maximum.

There is no padding operation, but the calibration should be checked at 500 metres.

Long Waves (900 to 2,000 metres)

Tune set and generator to 1,000 metres

(300 kc.) and adjust T5 for maximum and check the calibration at 1,750 metres.

Press-button Adjustment
Tune in a desired station accurately by hand.
Unscrew the knob of the button.

Depress the button fully and tighten the

Manually detune the station and there is a check retune by depressing the button.

Exact replacement condensers are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18. For C43 there is unit 3058, 98, 6d.; for C44, unit 3056, 78, 6d.; C38, 2964, 1s. 10d., and C4, 2546, 2s. 3d.

Alignment

IF Circuits (465 kc.)

Connect the output meter to the set and the generator to the grid of V1.

Tune the generator to 465 kc. and adjust

T7, T8, T9 and T10 for maximum.

Úse a low input below the AVC level. Short Waves (16 to 50 metres)

Connect the generator to the aerial and earth through a dummy aerial.

Tune set and generator to 17 metres (17.65 mc.) and adjust T1 and T2 for maximum.

Medium Waves (200 to 550 metres)

Tune set and generator to 220 metres (1,362 kc.) and adjust T3 and T4 for maximum.

Long Waves (1,000 to 2,300 metres) Tune set and generator to 1,200 metres Condon Regional and Droitwich.

(250 kc.) and adjust T5 and T6 for maxi-

Press-Button Adiustment

Tune in manually a desired station and then select the button on which it is to appear.

Slacken the knob and depress the button fully. Then retighten the knob, while still depressed, and check the accuracy of the adjustment.

It should be noted that if the set has been correctly aligned, Midland Regional and Luxembourg will appear on the same button simply by changing the wave switch.

A similar adjustment is possible with