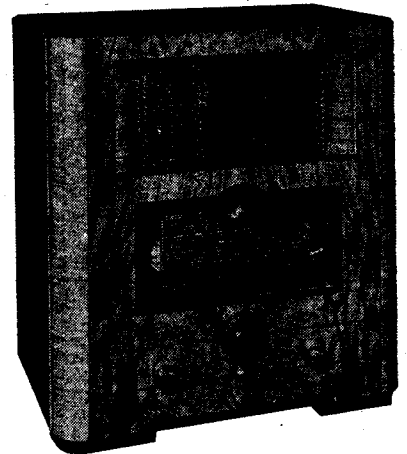


# MARCONIPHONE 858

## A.C. FOUR-BAND



A quality five valve plus rectifier receiver, the Marconiphone 858 covers four wavebands and include a visual tuning indicator.

**CIRCUIT.**—The H.F. amplifying valve, V1, is fed via a series aerial condenser coupled to single-tuned circuits on all wavebands. The A.V.C. potentials are fed direct to the grid, instead of via the tuning coils, and a grid blocking condenser is used.

V1 is tuned anode coupled to the triode hexode frequency changer, V2. In the oscillator section regeneration modifying resistances are included on all wavebands and the trimmers for the shortest wavebands are of special non-drift construction. On the shortest waveband the anode of V1 is extra-decoupled by R27 and C40.

An I.F. transformer of iron-core construction, tuned to 465 kcs., effects the intervalve coupling between V2 and the I.F. amplifying valve, V3.

A further I.F. transformer couples V3 to the demodulating diode of V4, a double diode triode, the secondary of the transformer also being connected to the demodulating diode load. The potentials derived from the demodulating section are

led to a manual volume control via an H.F. filter network and thence to the grid of the triode, V4.

The other diode of V4, fed by a coupling condenser from the anode of V3, operates the automatic volume control network and also the visual tuning indicator.

V4 is resistance capacity coupled to the output valve, V5, between the anode and grid of which is connected a variable condenser operating as a negative feed back tone control. A tone modifier condenser is connected between the anode and cathode of the valve.

A potentiometer connected between H.T. negative and chassis provides grid bias for V5 and also a delay voltage for A.V.C. purposes.

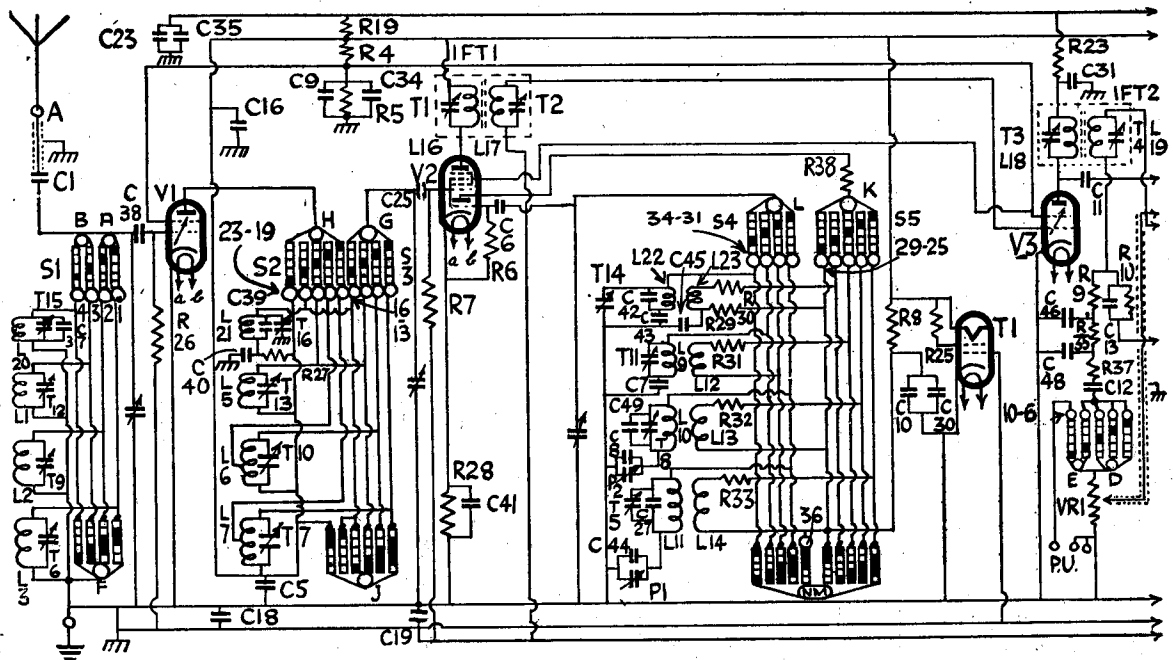
Mains equipment consists of a mains

VALVE READINGS				
No signal.		Volume maximum.		M.W. band.
220 volts A.C. mains.				
V.	Type.	Electrode.	Volts.	Ma.
<i>All Marconi.</i>				
1	KTW 63	Anode ..	210	7
		Screen ..	95	1.5
2	X65 ..	Anode ..	210	1.7
		Screen ..	95	4
3	KTW63	Osc. anode ..	103	3
		Anode ..	150	8.5
4	DH63 ..	Screen ..	95	1.7
		Anode ..	103	1.1
5	KT 63	Anode ..	230	23
		Screen ..	210	4.5
	U50 ..	Cathode ..	245	—

### CONDENSERS

C.	Purpose.	Mfds.	C.	Purpose.	Mfds.
1	Series aerial ..	.0000075	29	Compensator ..	.0023
5	V1 anode decoupling ..	.1	30	Osc. anode decoupling (part)	4
6	Osc. grid ..	.0001	31	V3 anode decoupling ..	.05
7	B1 osc. fixed padder ..	.0023	34	V1, V2 and V3 screens de-coupling (part) ..	4
8	M.W. osc. fixed padder ..	.00035	35	H.T. line bypass ..	.015
9	V1, V2 and V3 screens de-coupling (part) ..	.1	36	Field bypass condenser ..	.95
10	Osc. anode decoupling (part) ..	.005	37	B2 aerial fixed trimmer ..	.000035
11	A.V.C. diode coupling ..	.000075	38	V1 grid isolating ..	.000035
12	L.F. coupling ..	.01	39	B2 anode fixed trimmer ..	.000015
13	H.F. bypass ..	.00005	40	V1 anode decoupling B2 ..	.01
14	V4 anode shunt ..	.00005	41	V2 cathode bias shunt ..	.1
15	V4 cathode bias shunt ..	.25	42	B2 osc. fixed trimmer ..	.000005
16	H.T. line decoupling ..	4	43	B2 osc. fixed trimmer ..	.0035
17	L.F. coupling ..	.05	44	L.W. osc. fixed padder ..	.00015
18	V1 A.V.C. decoupling ..	.05	45	B2 regeneration shunt ..	.0023
19	V.2 A.V.C. decoupling ..	.23	46	H.F. bypass ..	.00005
20	V5 grid decoupling ..	.23	47	V4 anode decoupling ..	2
23	H.T. smoothing ..	4	48	H.F. bypass ..	.00005
24	H.T. smoothing ..	8	49	M.W. osc. fixed trimmer ..	.000015
25	V2 grid decoupling ..	.000035	51	A.V.C. shunt ..	.23
27	L.W. osc. fixed trimmer ..	.000035			

The black and white squares indicate the switch positions, black showing contacts are closed for the band concerned. Top to bottom the order of bands is: LW, MW, SW1, SW2 and Gram. The diagram is divided only for presentation reasons.



transformer, a full-wave rectifying valve, V6, electrolytic smoothing condensers and smoothing choke (the speaker field coil).

**Chassis Inspection.**—The cabinet has a false bottom, removal of which enables access to the underside of the chassis to be obtained.

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

Uncleat the mains lead from the floor of the cabinet and the speaker cable from the roof. The chassis may then be completely withdrawn.

**Special Notes.**—The visual tuning indicator is a Marconi Y63 or T165. The anode feed resistance, R25, is connected across the valveholder.

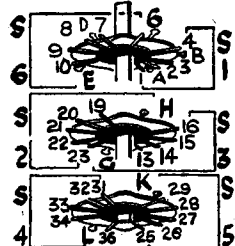
Sockets mounted on a bracket at the rear of the cabinet enable an extension speaker to be connected. This should have an impedance of 2 to 4 ohms. The internal speaker may be silenced by removing the plug from the right-hand socket of the extension L.S. panel.

The four dial lights are rated at 6.5 volts .3 amps., have M.E.S. bases and are of the tubular type.

R10, R13, C11 and C13 are inside I.F. T2 and R31, R32, R33, C27 and C49 are inside the oscillator coils can, R34 is across the extension L.S. socket.

### Alignment Notes

**I.F. Circuits.**—Connect an output meter across the primary of the speaker trans-



The contacts shown in the circuit can be identified with the aid of this diagram of the switch banks.

former. Switch receiver to L.W. band, set gang to maximum, short-circuit oscillator section of gang, turn volume to maximum and tone control to "high" (fully clockwise).

Connect a service oscillator via a .1 mfd. condenser to the top grid cap of V1 and chassis, leaving normal set connection attached.

Tune service oscillator to 465 kcs. (645.2 metres) and adjust T1, T2, T3 and T4 in that order for maximum response. Reduce the input from the service oscillator as the circuits come into line to render the A.V.C. inoperative.

(Continued on page 19.)

### RESISTANCES

R.	Purpose.	Ohms.
4	V1, V2 and V3 screens potr. (part)	10,000
5	V1, V2 and V3 screens potr. (part)	23,000
6	Osc. grid leak	100,000
7	V1 A.V.C. feed	500,000
8	Osc. anode decoupling	35,000
9	H.F. stopper	50,000
10	Demodulating diode load	350,000
11	V4 anode load	50,000
12	V4 cathode bias	750
13	A.V.C. diode load (part)	500,000
14	A.V.C. diode load (part)	500,000
15	A.V.C. diode load (part)	500,000
17	V5 grid decoupling	350,000
18	V5 grid resistance	150,000
19	H.T. line decoupling	1,000
20	Bias potr. (part)	1,000
21	Bias potr. (part)	7,500
22	Bias potr. (part)	50,000
23	V3 anode decoupling	10,000
25	T.I. anode feed	1,000
26	V1 A.V.C. feed	500,000
27	V1 anode decoupling B2	1,000
28	V2 cathode bias	150
29	B2 regeneration modifier	150
30	B2 regeneration modifier	50
31	B1 regeneration modifier	350
32	M.W. regeneration modifier	500
33	L.W. regeneration modifier	1,000
34	External L.S. shunt	50
35	H.F. stopper	50,000
36	V4 anode decoupling	23,000
37	H.F. stopper	50,000
38	Regeneration modifier	75
39	A.V.C. diode load (part)	100,000
VR1	Volume control	1 meg.

## Marconi 858 on Test

**MODEL 858.**—For A.C. mains operation, 195-255 volts, 50-100 cycles. Price, 14 gns.

**DESCRIPTION.**—Five-valve, plus rectifier, superhet table model covering four wavebands.

**FEATURES.**—Full-vision scale, calibrated in metres and station names, traversed by vertical pointer. Short waveband letter-indicated for main stations. Separate vernier scale. Controls for combined volume and master switch, tuning, wave selection and tone. Visual tuning indicator. Elliptical speaker at side of chassis. Sockets for P.U. and L.S. with control of internal speaker.

**LOADING.**—80 watts.

### Sensitivity and Selectivity

**SHORT WAVES (13-30 and 50-90 metres).**—Excellent gain and selectivity with very easy handling. Sensitivity well maintained over both bands.

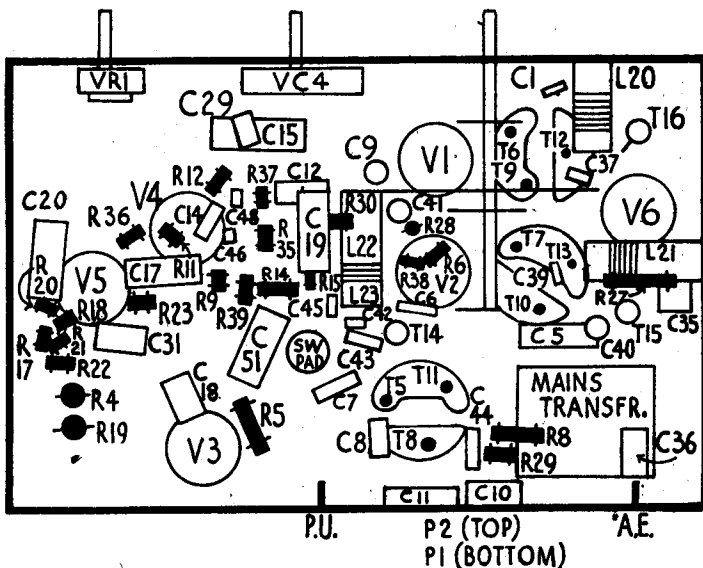
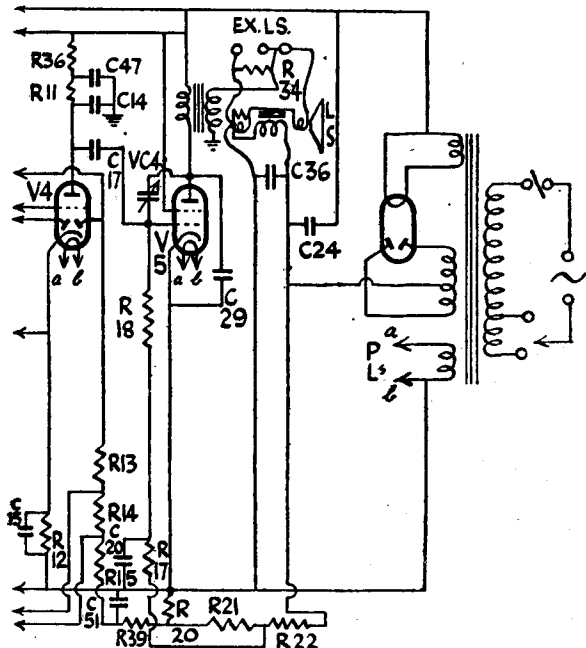
**MEDIUM WAVES (200-550 metres).**—Very good gain and selectivity, with good background and small local station spread.

**LONG WAVES (800-2,000 metres).**—Similar performance to medium waves with substantially no interference on Deutschlandsender.

### Acoustic Output

Ample volume for a large room without overloading, with very good upper registers and excellent middle and low note radiation. Marked freedom from colouration on speech.

**EXACT** replacement condensers available from A. H. Hunt, Ltd., are for C15, 2,918, 1s. 9d.; and for the block containing Cs. 24, 23, 31, 30, 16 and 47, unit 4,218, 13s. 6d.



Above, the layout diagram for the underside of the 858 chassis. The top "deck" diagram is on page 19.

# Marconiphone 858 Four-band Six

(Continued from page 15.)

**Signal Circuits.**—With the gang at maximum the pointer should register exactly on the small mark just below the L.W. calibration on the right-hand end of the scale.

Connect the service oscillator to the A.

## WINDINGS (D.C. Resistances)

L.	Ohms.	Range.	Where measured.
1 .. ..	0.1	S.W.1	Aerial gang and chassis.
2 .. ..	5.5	M.W.	Aerial gang and chassis.
3 .. ..	16	L.W.	Aerial gang and chassis.
20 .. ..	Very low	S.W.2	Aerial gang and chassis.
5 .. ..	0.1	S.W.1	Fixed vane H.F. gang and V.T. target.
6 .. ..	5.5	M.W.	Fixed vane H.F. gang and V.T. target.
7 .. ..	16	L.W.	Fixed vane H.F. gang and V.T. target.
21 + R27 ..	1,000	S.W.2	Fixed vane H.F. gang and V.T. target.
9 .. ..	Very low.	—	Across ends.
10 .. ..	5.2	—	Across ends.
11 .. ..	5.5	—	Across ends.
22 .. ..	Very low.	—	Across ends.
12 .. ..	1.4	S.W.1	Across ends.
13 .. ..	1.8	M.W.	Across ends.
14 .. ..	4.5	L.W.	Across ends.
23 .. ..	0.2	S.W.2	Across ends.
16 .. ..	4	—	Anode V2 and V.T. target.
17 + R7 ..	4	—	Across ends.
18 .. ..	4	—	Across ends.
O.T. prim.	450	—	Across ends.
Field	1,600	—	Across ends.

and E. sockets. Only feed sufficient input to obtain reliable peaks in the output meter and progressively reduce the input as the circuits come into line. Remove short circuit from oscillator section gang.

**Long Waves.**—Turn gang to maximum,

(Continued from page 13.)

adjust the trimmers of the second I.F. transformer and then the first I.F. transformer for maximum response, reducing the input from the service oscillator as the circuits come into line.

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

**Medium Waves.**—With gang at minimum, tune service oscillator to 200 metres (1,500 kcs.) and adjust T1 for maximum.

Tune set and oscillator to 228 metres (1,315 kcs.) and adjust T2 for maximum.

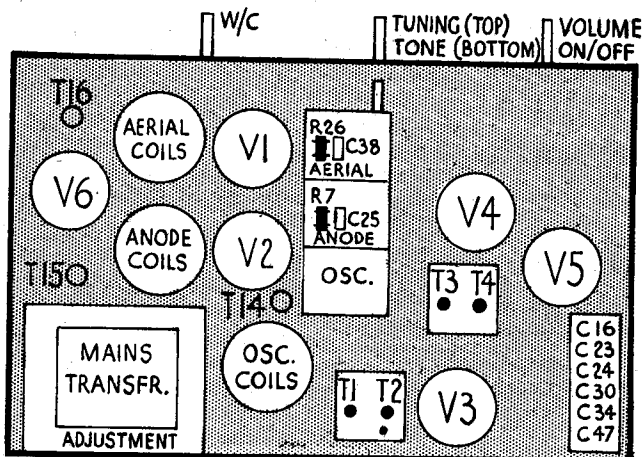
Tune set and oscillator to 500 metres (600 kcs.) and adjust P1 for maximum, simultaneously rocking the gang for maximum output.

With gang at maximum, tune service oscillator to 450 kcs. and adjust T3 for minimum response.

Now repeat the complete M.W. alignment at 200, 228 and 500 metres and then finish at 200 metres.

**Long Waves.**—Tune set and oscillator to

The top-of-chassis layout diagram for the Model 858 identifying valves and other components. Some trimmers have to be adjusted from above and some from below.



tune service oscillator to 725 metres (13.8 kcs.) and adjust T5 for maximum response.

Set service oscillator to 850 metres (352.9 kcs.), tune in on receiver and adjust T6 and T7 for maximum response.

Set oscillator to 1,900 metres (157.9 kcs.), tune in on receiver and adjust P1 for maximum, simultaneously rocking the gang.

Return to 725 metres and check setting of T5.

**Medium Waves.**—With gang at maximum and service oscillator tuned to 195 metres (1,538.5 kcs.) adjust T8 for maximum response.

Set service oscillator to 210 metres (1,428.6 kcs.), tune in on receiver and adjust T9 then T10 for maximum response.

Set oscillator to 530 metres (566 kcs.), tune in on receiver and adjust P2 for maximum, simultaneously rocking the gang.

Return to 195 metres and check setting of T8.

**Short Wave 1 (30-90 metres).**—With gang at maximum and service oscillator tuned to 30 metres (10 mcs.), adjust T11 for maximum.

Set oscillator to 32 metres (9.38 mcs.), tune in on receiver and adjust T12 and then T13 for maximum.

If L9 has been replaced, tune service oscillator to 86 metres (3.88 mcs.), tune in on receiver and adjust loop of wire joining C7 to coil tag for maximum output at the same time rocking the gang.

Return to 30 metres and check setting of T11.

**Short Wave 2 (13-30 metres).**—The trimmers of this band are adjusted from the top of the chassis by slackening the hexagonal lock-nut sufficiently for the rod to be moved up or down with a piece of bent wire. After adjustment the hexagonal nuts should be tightened.

With gang at maximum and service oscillator tuned to 13 metres (23.08 mcs.), adjust T14 for maximum.

Set oscillator to 14 metres (21.43 mcs.), tune in on receiver, and adjust T15 and then T16 for maximum, simultaneously rocking the gang.

If L22 has been replaced, set oscillator to 30 metres (10 mcs.), tune in on receiver and adjust loop of L22 for maximum, simultaneously rocking the gang.

## Ferranti Push-button Alignment

1,128 metres (266 kcs.) and adjust T4 and T5 for maximum.

Tune set and oscillator to 1,807 metres (166 kcs.) and adjust P2 for maximum simultaneously rocking the gang for maximum output.

Tune set and oscillator to 1,200 metres, inject a 261-metre (1,149 kcs.) signal and adjust T6 for minimum response.

Then repeat 1,128 and 1,807 metres alignment

**Short Waves.**—With gang at maximum, tune service oscillator to 18 mcs. (approx. 16.6 metres), screw T7 right up and then unscrew until the second peak (lowest capacity) is heard.

Tune set and oscillator to 20 metres (15 mcs.) and adjust T8 for maximum.

The short-wave padding is fixed, but check calibration throughout the range covered.

### Push-button Alignment

To re-align the push buttons, connect an aerial and earth system to the receiver, turn the wave-selection switch

to press-button tuning. The press-button panel will then be illuminated.

Press a button and adjust the oscillator trimmer to tune in the station spot on. Then adjust the corresponding aerial trimmer for maximum sensitivity and volume. The chassis must be removed from the cabinet for adjustment of the aerial trimmers.

The chassis may then be replaced in the cabinet and, if necessary, the oscillator trimmers, which, accessible underneath the chassis from the rear of the cabinet, may be readjusted in case they have moved whilst replacing the chassis.

It will not always be found necessary to adjust the aerial trimmers as the oscillator trimmers are the most likely to drift.

To change the stations of the push-buttons it will be necessary sometimes to change the fixed condensers connected across the oscillator and aerial trimmers. If a press-button will not tune in the new station required, replace the condensers according to the wavelength required (see table).