

MARCONIPHONE 880, 881

H.M.V. 1200, 1600

Six-valve, plus rectifier and tuning indicator, three band A.C. superhet with motor push-button tuning and automatic frequency control. Marketed by Marconiphone Co., Ltd., and "His Master's Voice."

Circuit.—This receiver incorporates automatic push-button tuning and wave-change switching operated by two motors. Automatic frequency control compensates for motor tuning errors.

Transformers for each band couple the aerial to V1, a radio-frequency amplifier. Tapped tuned anode coils feed V2, the frequency-changer. This has straightforward tuned grid oscillator circuits, with adjustable permeability-tuned coils on M.W. and L.W. Iron-cored I.F. coils link V3, the I.F. amplifier, and V5, a conventional double-diode triode for demodulation, A.V.C., and L.F. amplification.

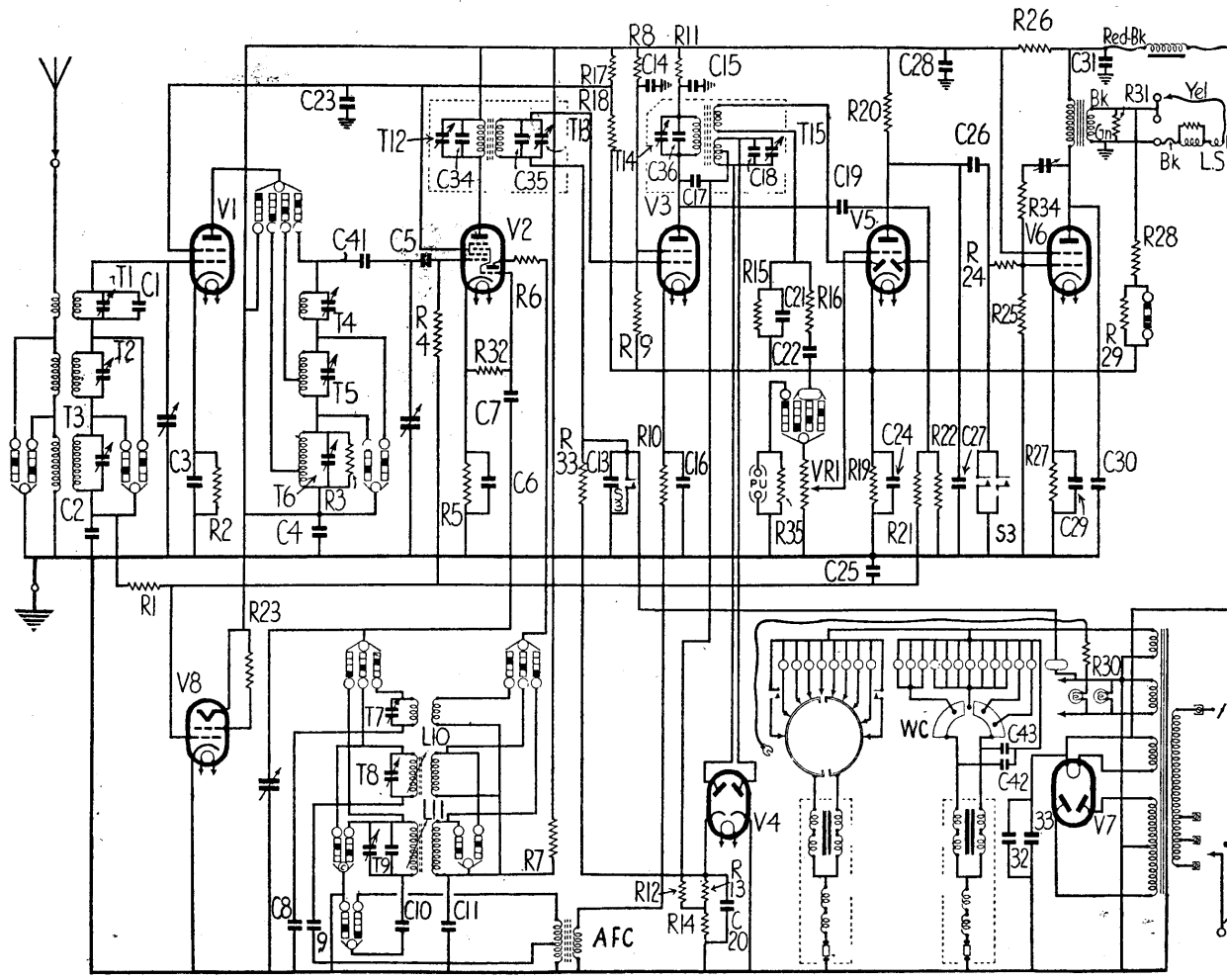
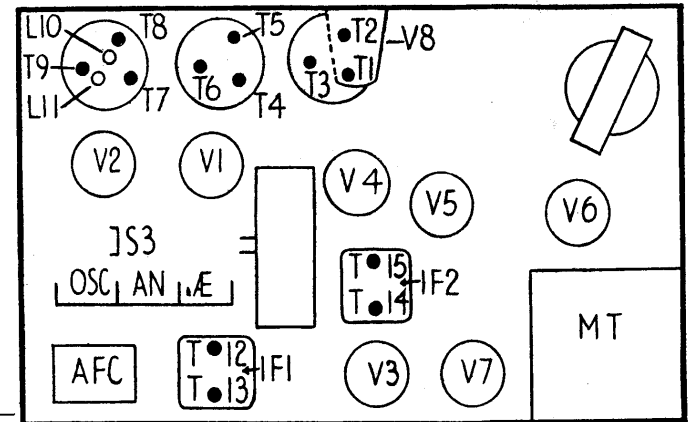
A third, centre-tapped winding on the second I.F. transformer energises V4, a double-diode

"discriminator" which produces a voltage across R13-14, this being positive or negative according to whether an "off-tune" signal is above or below true I.F.

The voltage is applied as bias to V3 and controls its anode current. This passes through the polarising winding of the A.F.C. unit, which is designed so that a change in current alters the inductance of the tapped winding. This is included in the M.W. and L.W. oscillator tuned circuits, and its change in value alters the oscillator frequency so that the I.F. is put "on tune." A contact S.M.L. in the circuit, shorts out the A.F.C. on manual. S3, on the end of the tuning motor, mutes the set and also shorts the A.F.C. during motor dialling.

V6 is an output tetrode with negative feedback tone control by variable condenser and V7 a full-wave rectifier. V8 is a tuning indicator controlled from the A.V.C. line.

WAVEBANDS: 16.5-51, 195-560, 750-2,000 metres. Pilot lamps, 6.3v., .25 amp. Provision for P.U. and 5-ohm extension speaker.



A motor-tuned receiver, this model includes automatic frequency correction provided by V4, a discriminator valve. By shifting the oscillator frequency, this puts the I.F. in tune.

CONDENSERS

C	Mfds.
1	10 mmfds.
2	.023
3	.05
4	.05
5	50 mmfds.
6	.05
7	75 mmfds.
8	.0035
9	455 mmfds.
10	195 mmfds.
11	.023
12	50 mmfds.
13	.05
14	.8
15	.05
16	.05
17	.0001
18	150 mmfds.
19	50 mmfds.
20	.001
21	75 mmfds.
22	.0035
23	.05
24	.23
25	.05
26	.023
27	150 mmfds.
28	.8
29	.25
30	.005
31	.8
32	.023
33	.12
34	.75 mmfds.
35	.75 mmfds.
36	120 mmfds.
41	.05
42	.1
43	.1

MODELS 881 (MARCONIPHONE) AND 1,600 (H.M.V.) radiogram models.—In these, the I.F. amplifier (V3) is used as a first amplifying stage for the pick-up. The gramophone push-button has extra wired contacts to effect this change.

The L.F. load resistance is R11. Decoupling is by a further resistance of 7,000 ohms, and the coupling condenser, .0015 mfd.

A revised hum neutralised light weight pick-up (28800A) is fitted, working in conjunction with a special matching unit.

MOTOR TUNING

Two reversible-type 20-volt motors are used. Buttons 1-6 are for M.W., and 7 and 8 are L.W. Both motors have thermal overload switches (S4 and 6) and muting switches (S3 and 5) operated by the end thrust. S7 is the cruiser control, and the contactors must be kept at the ends of the slides.

To change a button setting, the set is tuned manually to the required station and a suitable M. or L.W. button and contactor selected. The contactor is then moved to the centre of the insulated section on the disc.

If push-button stations sound off-tune (the A.F.C. is not "pulling" stations in tune), tune manually to station about 300 m., touch another button so that M.W. button is released and all buttons are up, adjust T15 with non-metallic screwdriver for minimum shadow in tuning indicator. A.F.C. should then hold over 4 vernier degrees on M.W. and 8 on L.W. If not, realign whole set.

GANGING

I.F. AND DISCRIMINATOR CIRCUITS.—Tune to L.W. max., volume max. Release all buttons. Inject at V3 grid, with grid lead removed.

Fully unscrew T15, inject 465 kc., adjust T14 for max.

Measure volts between V3 cathode and chassis. Inject I.F. to green-yellow on S3 (motor muting) and adjust T15 for same volt reading.

Replace V3 grid lead, inject at V2 grid, switch to L.W., adjust T12, 13 and 14. Check T15 by releasing L.W. button and noting output does not change.

M.W. BAND.—With gang at max., pointer must be $\frac{1}{8}$ in. beyond 560 m.

Adjust T8 at 195 m., T2 and T5 at 225 m. Pad with L10 at 530 m., rocking gang.

L.W. BAND.—Trim with T9 at 750 m., and T3 and T6 at 850 m. Pad with L11 at 1,900 m. Readjust T3 and T6 at 1,400 m., and finally repeat M.W. padding.

S.W. BAND.—Trim with T7 at 16.5 m., and T1 and T4 at 18 m.

Valve Readings and Resistances Tables, Col. 5, opposite page

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VALVE READINGS

V.	Type.	Electrode.	Volts.	Ma.
1	.. KTW63	Anode ..	230 ..	4.6
		Screen ..	80 ..	2
		Cathode ..	2.2 ..	6.6
2	.. X65 ..	Anode ..	230 ..	1.2
		Osc. anode ..	105 ..	5
		Screen ..	80 ..	2.6
		Cathode ..	2.2 ..	8.8
3	.. KTW63	Anode ..	195 ..	5.5
		Screen ..	80 ..	1
		Cathode ..	2.2 ..	6.5
4	.. D63 ..	Diodes only		
5	.. DH63 ..	Anode ..	80 ..	.6
6	.. KT66 ..	Anode ..	253 ..	75
		Screen ..	230 ..	4.1
		Cathode ..	16 ..	79.
	.. U50 ..	Anodes ..	365 A.C.	—
		Cathode ..	355 ..	102.1
8	.. Y63 ..	Target ..	230 ..	.5

RESISTANCES

R	Ohms.	R	Ohms.
1	.. .1 meg.	19	.. 100
2	.. 350	20	.. .23 meg.
3	.. .23 meg.	21	.. 1.5 meg.
4	.. .35 meg.	22	.. 1.5 meg.
5	.. 230	23	.. .5 meg.
6	.. 150	24	.. 50,000
7	.. 35,000	25	.. .5 meg.
8	.. 35,000	26	.. 1,000
9	.. 23,000	27	.. 200
10	.. 350	28	.. 1,500
11	.. 5,000	29	.. 3,500
12	.. .5 meg.	30	.. 15
13	.. 2.3 meg.	31	.. 50
14	.. 2.3 meg.	32	.. 50,000
15	.. .5 meg.	34	.. 1,000
16	.. .23 meg.	35	.. 10,000
17	.. 15,000	VR1	.. 2 meg.
18	.. 15,000	Field	.. 670