

# MARCONIPHONE 557 ALL-WAVE FIVE

**CIRCUIT.**—The aerial is coupled to V1, an H.F. pentode, through a single-tuned circuit. Coupling to V2, the heptode frequency changer, is through a tuned anode coil.

The frequency changer is coupled to V3, another H.F. pentode, through an I.F. transformer, tuned to 465 kc. A second I.F. transformer feeds the signals to V4, a double diode triode for rectification and amplification.

One diode is used for rectification of the signal and the other for providing A.V.C. bias to the preceding valves in the orthodox manner.

The rectified signal is fed to the grid of the triode through a resistance-capacity network incorporating the volume control. The volume control varies the I.F. input to the grid. A further resistance-capacity network feeds the signals to V5, an output pentode.

The amplified output of this valve is fed to the moving-coil speaker through a matching transformer. Tone control is effected by switching different condensers across the primary of this transformer.

The power pack consists of mains transformer, rectifier, smoothing condensers and the speaker field.

**Special Notes.**—The external speaker connections are on the secondary of the matching transformer, and the external speaker need not have a transformer. Its impedance should not be less than 5 ohms.

The gramophone pick-up connections are connected across the volume control.

The dial light is of the bayonet type, and is easily accessible. It is made by Osram and is rated at 230 volts 15 watts.

The resistance-capacity strip on the left side of the set (from front) has been shown horizontal for the sake of simplicity.

To measure the screen and anode cur-

rents of V1, V2 and V3 and V4, it is necessary to unsolder the connections to the valve holders.

R1 and R3, although present in the set examined, are not drawn in the circuit; also C4, C28 and C32 are missing.

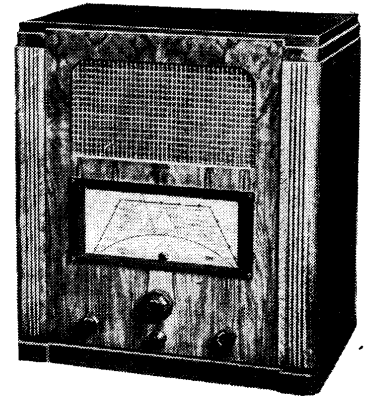
C1 is in the aerial coil can; C26, C7, C27, and R16 are in the oscillator coil can, R24 is in the first I.F. transformer can, and R10, C11 and C13 are in the second transformer can.

R25 was not to be found in the model tested.

All electrolytic decoupling condensers are shunted by non-inductive paper condensers.

**Removing Chassis.**—Remove the tuning, volume, and wave-change switch knobs, all of which are fixed by grub screws. The tone control knob is spring connected. A firm pull will move it from its mounting.

The back is fixed with five screws. Remove the four bolts in the base holding the



The Marconiphone 557 is a five-valve plus rectifier three-waveband superhet. The same chassis is used in the model 567 radiogram.

chassis to the cabinet, and the chassis is free except for the speaker leads.

For partial removal the bracket fixing the speaker leads to the speaker baffle must be unscrewed. Then the chassis is free to the extent of the speaker leads. This position is adequate for most, if not all, service work.

Should it be found necessary completely to remove the chassis, the tags to the speaker must be unsoldered. For the reverse process it may be noted that the yellow speaker lead goes to No. 2, the yellow and black to No. 7, and the black to No. 6 on the speaker panel.

## VALVE READINGS

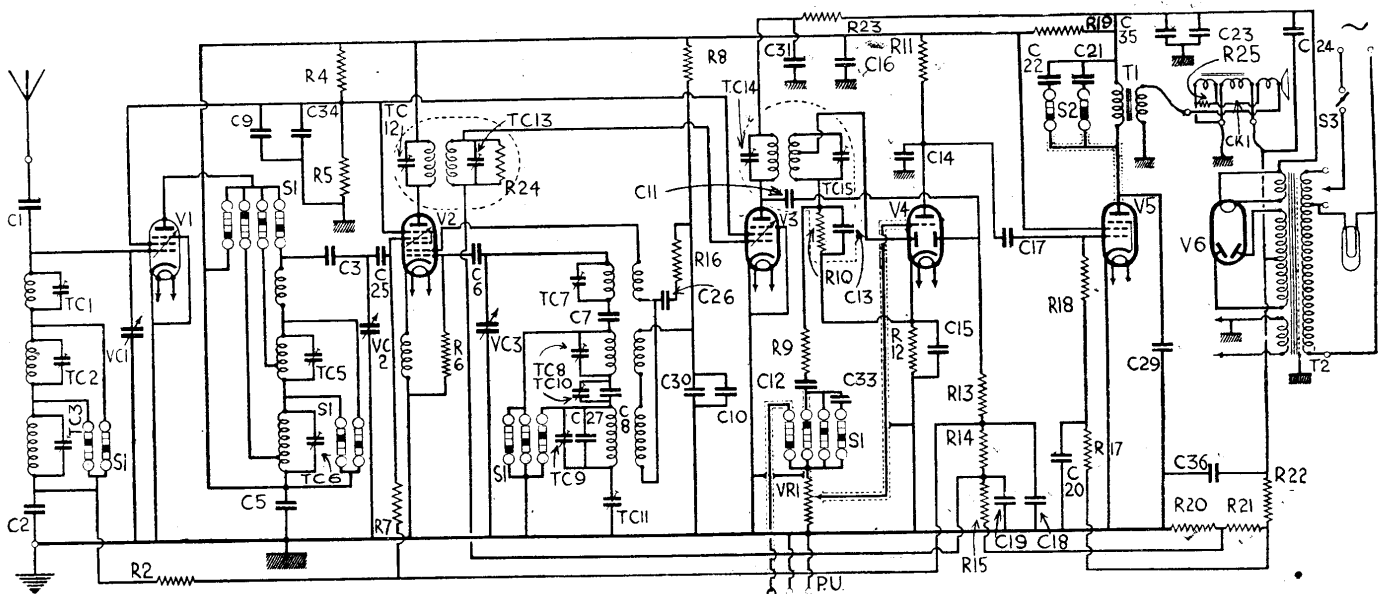
No signal. Maximum volume. 200-volt A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	All Marconi. W42 (7)	Anode ..	210	5.6
		Screen ..	70	1.4
2	X42 (7)	Anode ..	213	3.2
		Screen ..	70	2.3
		Osc. anode ..	147	3.3
3	W42 (7)	Anode ..	185	5.2
		Screen ..	70	1.4
4	DH42 (7)	Anode ..	133	1.8
5	N42 (7)	Anode ..	220	28
		Screen ..	210	5
6	U12 (4)	Filament ..	235	—

## QUICK TESTS

Quick tests are available on this receiver at the speaker transformer. Between this and the rectifier filament volts should read:—

- Tag 6, 240 volts, smoothed H.T.
- Tag 7, 335 volts, unsmoothed H.T.



A radio frequency amplifier precedes the frequency changer in the Marconiphone 557. I.F., detector and output valves follow. The circuit is perfectly conventional.

### Circuit Alignment Notes

For aligning this receiver a modulated oscillator covering from 16-2,000 metres is necessary. An output meter is also required. This should be connected across the speech coil (tags 2 and 5).

**I.F. Circuits.**—Tune the receiver to top of the long-wave band, with the same volume control at maximum. Tune the oscillator to 465 kc. and connect this to the top cap (grid) of V2, via a .1 mfd. condenser, leaving the receiver grid connection.

Adjust TC12, 13, 14 and 15 for maximum output. Re-check.

**Short Waves.**—Tune the receiver and the oscillator to 18 metres (16.7 mc.), and couple to aerial socket. Tune in the signal and adjust TC7 and TC1, for maximum output, at the same time rocking the gang condenser.

Tune the receiver to 50 metres (6 mc.), and adjust the inductance of L1 by moving the loop of wire. It may be necessary to remove the coil can to find the loop, but it should be adjusted with a strip of insulating material with the can in position.

### RESISTANCES

R.	Purpose.	Ohms.
VR1	Volume control	2 meg.
2	V1 A.V.C. bias decoupling	75,000
4	V1, V2 and V3 screen decoupling pot. (part).	23,000
5	V1 and V3 screen potentiometer (part).	35,000
6	Osc. grid leak	50,000
7	V2 grid leak	500,000
8	Osc. anode decoupling	23,000
9	V4 grid stopper	100,000
10	Demodulator diode load	500,000
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	V1 and V3 A.V.C. diode load (part).	500,000
16	Regeneration modifier	100
17	V5 bias decoupling	100,000
18	V5 grid leak	150,000
19	V1, 2, 3, 4 and 5 screen decoupling.	1,000
20	Series bias pot.	1,000
21	Series bias pot.	7,500
22	Series bias pot.	50,000
23	V3 anode decoupling	10,000
24	1st I.F. shunt	750,000

Adjust for maximum output. Return to 18 metres for check.  
**Medium Waves.**—Set the pointer to the 195 metre calibration, and set oscillator to 195 metres (1,540 kc.). Trim TC8 for maximum output.

Set the oscillator to 225 metres (1,330 kc.) and tune in the signal on the set. Adjust TC2 and TC5 for maximum output.

Repeat with TC10 at 530 metres (566 kc.), at the same time rocking the gang condenser.

Return to 195 metres and check TC8.

**Long Waves.**—Set the pointer to the 725 metres (414 kc.) and tune the oscillator to the same wavelength.

Adjust TC9 for maximum output.

Repeat with TC3 and TC6 at 800 metres (375 kc.). Tune the oscillator and set to 1,900 metres (158 kc.), and trim TC11 for maximum output, while rocking the gang

### CONDENSERS

C.	Purpose.	Mfd.
1	Aerial series	.0000075
2	V1 A.V.C. decoupling	.05
3	Isolator	.1
5	V1 anode decoupling	.1
6	Oscillator grid	.00005
7	S.W. padder	.0035
8	M.W. padder	.00035
9	V1, V2 and V3 screen decoupling	.1
10	Osc. anode decoupling	.005
11	A.V.C. diode coupling	.000075
12	L.F. coupling	.01
13	H.F. by-pass	.0001
14	H.F. by-pass	.00035
15	V4 cathode bias shunt	.25
16	V1, V2, V3 and V4 decoupling	.4
17	L.F. coupling	.05
18	V1 and V2 A.V.C. bias decoupling.	.05
19	V3 A.V.C. bias decoupling	.23
20	V5 bias decoupling	.23
21	Tone control	.01
22	Tone control	.023
23	Smoothing	.4
24	Smoothing	.8
25	V2 grid	.000035
26	Regeneration modifier	.00015
27	L.W. osc. shunt	.000023
29	Pentode compensator	.0023
30	Osc. anode decoupling	.4
31	V3 anode decoupling	.05
33	L.F. coupling	.001
34	V1, V2 and V3 screen decoupling	.4
35	Smoothing shunt	.015
36	Series bias shunt	.05

## Marconi 557 on Test

**MODEL 557.**—Standard model for 200-250 volt, 40-100 cycle A.C. mains. Price 12 gns.

**DESCRIPTION.**—Three-waveband, five-valve plus rectifier table type superhet.

**FEATURES.**—Oval-type diaphragm speaker. Full-vision scale calibrated in names and wavelengths. Pivoted type pointer. Controls for volume, tuning, wave selection and three-position tone.

Pick-up sockets. Extra speaker connection made direct to tags on internal speaker transformer.

**LOADING.**—84 watts.

### Sensitivity and Selectivity

**SHORT WAVES (16.5-52 metres).**—Sensitivity and selectivity are representative for the valve combination. Tuning is easy, there is no appreciable drift and everything is stable.

**MEDIUM WAVES (195-580 metres).**—Average sensitivity and selectivity. Spread only to adjacent channels on local stations.

**LONG WAVES (725-2,000 metres).**—Sensitivity very good. Selectivity well up to standard. Slight overlap on Deutschlandsender.

### Acoustic Output

Quality is very good with excellent low and high-note radiation. Good forward tone and excellent attack. Sufficient volume for large room.

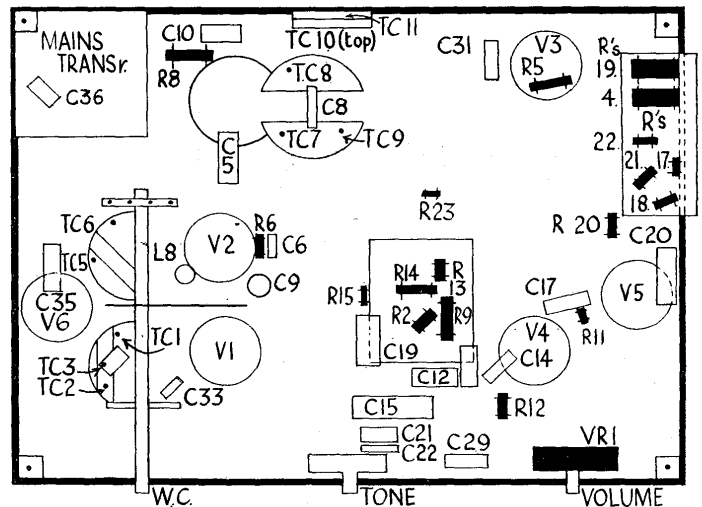
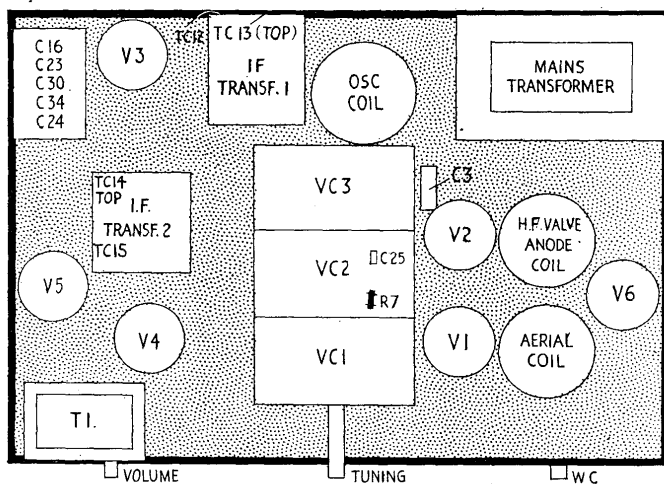
condenser. Check TC9 at 725 metres (414 kc.).

Return to medium waves and go through the entire medium and long wave alignment again.

### Replacement Condensers

Replacement parts are available for this receiver from E.M.I. Service, Ltd.

Exact replacement condensers are made by A. H. Hunt, Ltd., of Garratt Lane, Wandsworth, London, S.W.18. These are: block containing C.s 24, 16, 23, 30 and 34, list 3,543, 13s. 6d.; C 15, list 2,984, 1s. 6d.



Practical details of the Marconiphone 557 chassis are shown in these two layouts showing (left) the top and (right) the underside. Certain variations are mentioned under Special Notes.