

MARCONIPHONE 556 SUPERHET

CIRCUIT.—A bandpass filter couples the aerial to V1, the frequency changer, on medium and long waves, and on short waves a single tuned circuit is used. Provision is made for the use of a doublet aerial.

Coupling to V2, an H.F. pentode, is through an I.F. transformer tuned to 465 kc. and through a second I.F. transformer to V3, a double diode.

Both I.F. transformers have iron cores, the second one having a tapped secondary.

One diode of V3 is used for demodulation and the other to provide A.V.C. bias which is fed to the preceding valves in the orthodox manner.

The L.F. output of V3 is fed to V4, a triode, through a resistance and capacity stage which incorporates the volume control. A further resistance and capacity stage is employed to couple the output of V4 to the output pentode V5.

Tone is controlled in the grid circuit of V5 by switching condensers of different sizes in circuit.

H.T. smoothing is in the negative lead, and a potentiometer connected across the smoothing choke, *i.e.*, the speaker field, consisting of two resistances in series, provides grid bias for the output pentode, the cathode being earthed.

The tuned circuit in the grid lead of V5, and consisting of CK1 and C16, is a heterodyne filter tuned to 5,000 cycles.

Mains equipment consists of transformer, full-wave rectifier, electrolytic condensers, and the speaker field which, as stated above, is in the negative H.T. lead.

Special Notes.—Connections are taken from the secondary of the output transformer for an extension speaker, which should have a speech coil impedance of about 5 ohms.

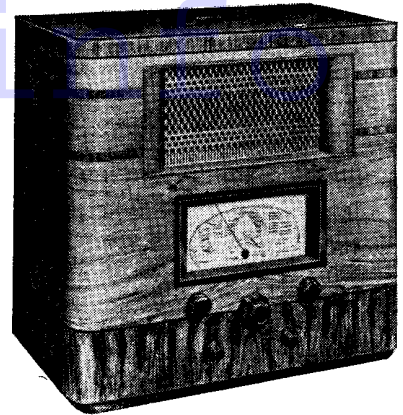
The dial lamps are rated at 6.2 volts,

.3 amp. They are fixed to the dial assembly by spring clips and are easily removed.

With the receiver switched for gramophone reproduction the H.T. feed wire to the anode and V1 and V2 is broken.

Removing Chassis.—Remove the knobs from the front of the cabinet. The two small knobs are fixed by spring clips and the other three by grub screws.

Remove four bolts from underneath. The chassis will now slide out to the extent of the speaker leads, which will be enough for all ordinary purposes.

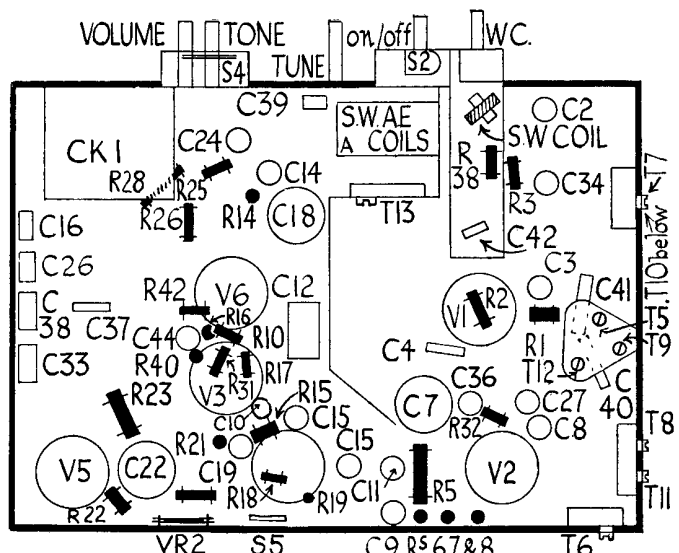
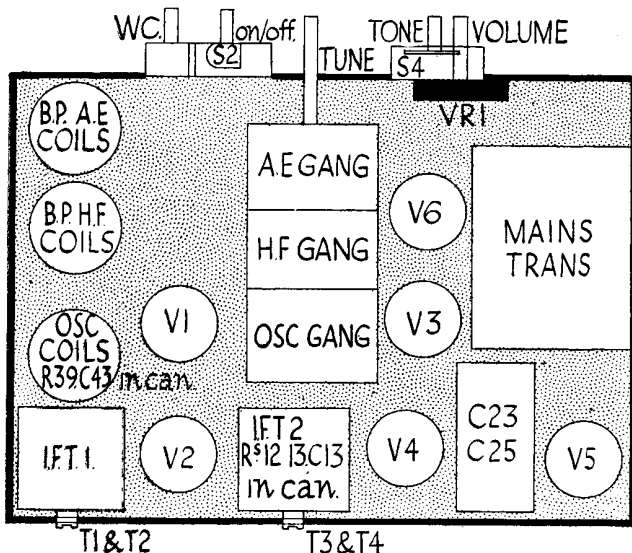


RESISTANCES

R.	Purpose.	Ohms.
1	V1 cathode bias	230
2	V1 osc. grid leak	50,000
3	V1 A.V.C. feed	100,000
5	V1 osc. anode decoupling	23,000
6	V1 and V2 screen decoupling ptr.	23,000
7	V1 and V2 screen decoupling ptr.	23,000
8	V2 cathode bias	230
10	V1 A.V.C. decoupling	500,000
12	Demodulator diode load	230,000
13	H.F. filter	50,000
14	V4 anode decoupling	35,000
15	V4 anode load	35,000
16	V4 cathode bias (part)	350
19	V4 grid stopper	150,000
21	V5 grid leak	100,000
22	V5 grid stopper	50,000
23	V5 screen decoupling	5,000
25	V5 grid bias decoupling	350,000
26	V5 grid bias network (part)	500,000
28	V5 grid bias network (part)	50,000
31	V2 A.V.C. decoupling	500,000
32	V2 anode decoupling	10,000
37	V1 and V2 anode decoupling	3,500
38	V1 grid shunt	3.5. meg.
39	S.W. osc. regeneration modifier	100
40	A.V.C. diode load	500,000
42	V4 cathode bias (part)	350
VR1	Volume control	500,000
VR2	Hum control	48

CONDENSERS

C.	Purpose.	Mfds.
2	Band-pass coupling	.023
3	V1 cathode bias shunt	.1
4	V1 osc. grid.	.00005
7	V1 osc. anode decoupling	1
8	V2 anode decoupling	.1
9	V1 and V2 screen decoupling	.1
10	V1 A.V.C. decoupling	.1
11	V2 cathode bias shunt	.1
12	A.V.C. diode coupling	.0001
13	H.F. filter	.0001
14	V4 cathode bias shunt	25
15	L.F. coupling	.1
16	Heterodyne filter	.0023
18	V4 anode decoupling	1
19	L.F. coupling	.1
22	V5 screen decoupling	1
23	H.T. decoupling	1
24	V5 bias decoupling	.1
25	H.T. smoothing	8
26	Mains aerial	.00035
27	V2 A.V.C. decoupling	.1
33	Pentode compensating	.001
34	Band-pass coupling	.0075
36	V1 anode decoupling	.1
37	Tone control	.0015
38	Tone control	.005
39	Long-wave aerial circuit (part)	.000035
40	S.W. padding	.00285
41	M.W. padding	.00035
42	L.W. parallel padding	.000023
43	Regeneration modifier	.00015
44	V3 cathode bias shunt	.1
45	Speaker field shunt	.1



The tinted diagram, left, shows the arrangement of components and valves on top of the 556 chassis. Right is the underneath chassis diagram.

For more information remember
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Circuit Alignment Notes

I.F. Circuits.—Turn the tone control fully clockwise, the wavechange switch to long waves, the tuning condenser to maximum capacity and the volume control to maximum.

Connect a modulated oscillator to the grid cap of V1, through a .1 mfd. condenser, and to the chassis, and a 100,000 ohm resistance between the grid and earth. Connect an output meter to read about 1.5 volts across the external speaker terminals.

Inject a signal of 465 kc., such that a reading of .5 volt is obtained on the output meter. Adjust T1, T2, T3 and T4 for maximum output.

Calibration.—With the scale level and square in its frame, and the gang condenser at maximum capacity, the pointer should read exactly 2,000 metres. If this is not so then the pointer must be moved to agree before the H.F. ganging is proceeded with.

Medium Waves.—Inject a signal of 200 metres to the aerial and earth terminals through a dummy aerial and set the pointer to the 200 metre mark on the scale. Adjust T6 and T5 for maximum output.

Inject a signal of 220 metres and tune it in. Adjust T7 for maximum output.

Inject and tune in a signal of 550 metres and while rocking the gang condenser adjust T8 for maximum.

Repeat the above until no further improvement results.

Long Waves.—Set the pointer to the 200 metre mark, with receiver switched to long waves, and inject a signal of 750 metres. Adjust T9 for maximum output.

Inject and tune in a signal of 850 metres and trim T10 for maximum deflection.

Inject and tune in a signal of 1,900 metres and adjust T11 for maximum output while rocking the gang condenser.

Now return to the medium wave-band, set the pointer to 200 metres and repeat the adjustment of T5, T6, T7 and T8 as described above.

Short Waves.—Connect the oscillator leads to the aerial and earth terminals through a 400-ohm resistance.

Set the pointer to 200 metres, inject a signal of 16.9 metres and adjust T12 and T13 for maximum output. If two peaks are found while trimming T12 the correct one is that nearer minimum capacity.

Inject and tune in a signal of 50 metres and alter the position of the loose loop of wire in the aerial coil ("A" in under chassis diagram) until maximum is obtained.

Return to 16.9 metres and readjust T13 for maximum output.

Marconi 556 on Test

MODEL 556.—Standard model for 200-250 volt, 50-100 cycle A.C. mains; 13½ gns.

DESCRIPTION.—A three-waveband, five-valve, plus rectifier, A.C. superhet table receiver. Modern design, well built wood cabinet.

FEATURES.—Station calibration on large translucent scale illuminated from rear. Concentric slow-motion tuning. Pick-up connection operated by switch at rear of chassis. Extra speakers should have 5 ohms impedance. Two may be connected at same time.

LOADING.—78 watts.

Sensitivity and Selectivity

SHORT WAVES (16-55 metres.)—Particularly good, giving entertainment on many stations. Tuning easy. No frequency drift.

MEDIUM WAVES (180-590 metres.)—Good reception obtainable of practically every channel of interest. Sensitivity up to standard; selectivity high.

LONG WAVES (725-2,100 metres.)—Comparable to M.W., only slight overlap on Deutschland sender with Droitwich and Radio Paris both working.

Acoustic Output

Tone very good; brilliant, crisp and well balanced. Tone control satisfactory.

Background reasonable; hum low.

VALVE READINGS

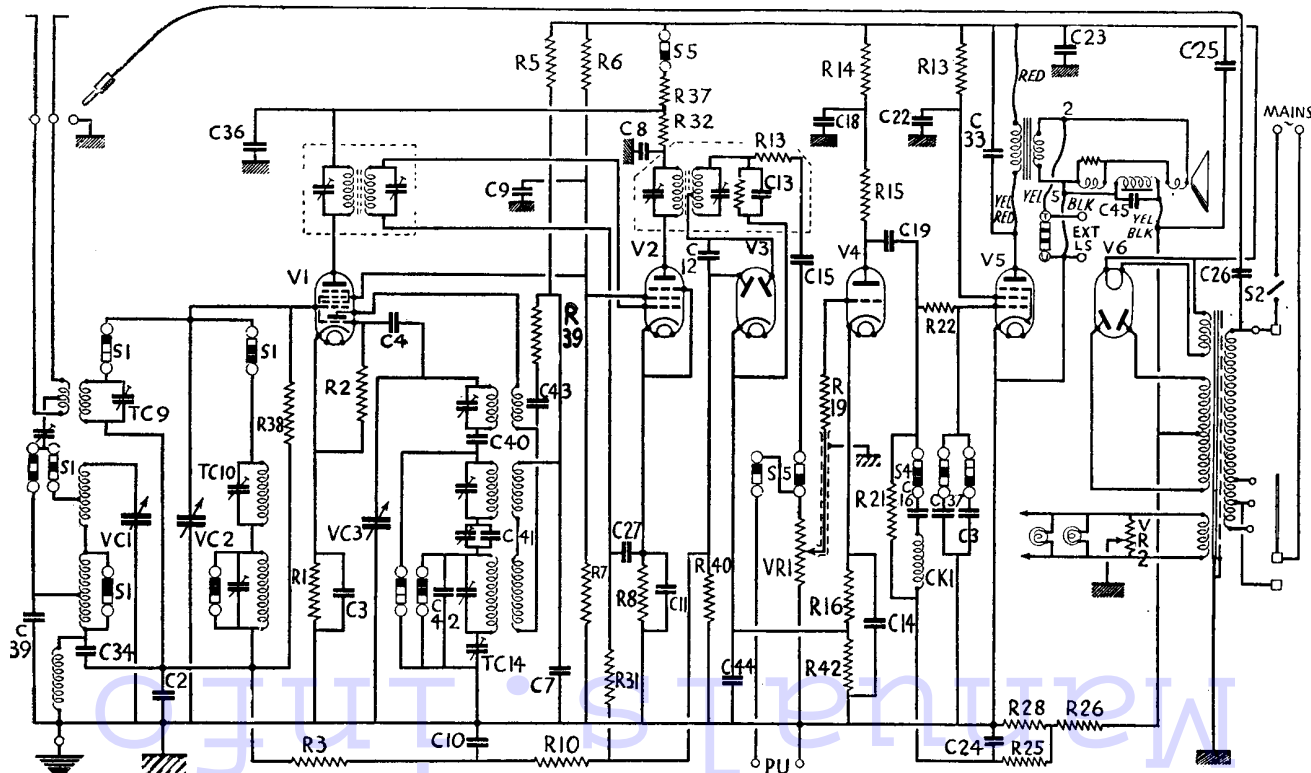
No signal. Volume maximum. 200 volt A.C. mains.

V.	Type.	Electrode.	Volts.	M.A.
1	All Marconi. X41 met. (7)	Anode ..	210	.8
		Screen ..	70	1.75
		Osc.anode ..	115	4.3
2	VMP4G met. (7)	Anode ..	180	3.3
		Screen ..	70	2.1
3	D41 met. (5).	Diode ..	—	—
4	MH4 met. (5).	Anode ..	95	2.1
5	MPT4 (7)	Anode ..	220	26.5
		Screen ..	210	4.7
6	U12 (4)	Filament	250	—

QUICK TESTS

Quick tests are available on the terminal strip on the back flange of the chassis. Volts measured between this and the chassis should be:—

- Yellow lead, 0 volts.
- Yellow-black, 160 volts (chassis positive).
- Black lead, 0 volts.
- Red-yellow lead, 220 volts.
- Red lead, 240 volts.



The 556 circuit. In the switch diagrams the black squares indicate closed positions. Top to bottom in the wavechange diagrams the positions are: short, medium and long waves.