MARCONIPHONE 283

COLUMBIA 1005

Three-valve, two-waveband TRF battery receiver. Pickup sockets are provided and terminals for a high impedance extra loudspeaker. A two-position tone adjustment is provided. Marketed by the Marconiphone and Columbia Companies, Ltd., Hayes, Middlesex.

COUPLING coils L1 (MW), L4 (LW) transfer the signals to the primary windings L2, L5 of a coupling transformer in which L3, L6 are the secondaries. Primary and secondary windings are tuned and signals are fed to the grid of the screened grid HF amplifier V1.

A sensitivity control VR1 comprises a variable resistance in the filament circuit of V1 which has negative bias applied to the grid.

An HF transformer in the anode circuit of V1 employs untuned primary windings L7 (MW) L10 (LW) with tuned secondaries L9 and L12. Reaction windings L8 and L11 are coupled to the transformer and fed from the anode of the detector valve V2 by means of the HF choke L13 and reaction condenser (volume control) VC4.

Signals from the secondary windings are fed via the grid condenser C2 to the grid of the triode V2, which operates as a leaky grid condenser, R2 being the grid leak.

Pickup sockets are provided between the grid of V2 and the negative bias 1.5 volt lead so that V2 operates as an LF amplifier on gram. The receiver should be tuned to a silent point to prevent interference from radio programmes when reproducing gramophone records.

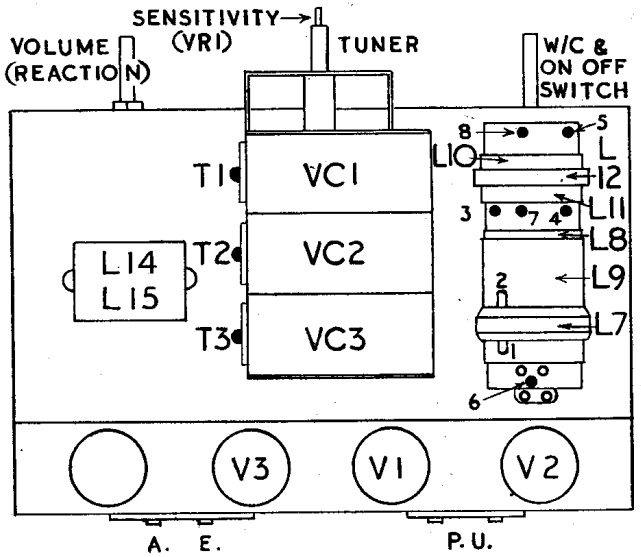
Anode HF filtering is effected by C3 and a certain amount of LF correction by C4. LF signals are resistance capacity coupled by R1 and C5 to the intervalve transformer L14, L15. Bias of about three volts negative is applied via the windings to the grid of the pentode output valve V3.

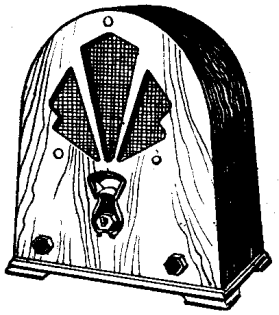
The anode circuit of V3 is broken and taken to terminals to which the matching transformer L16, L17 on the loudspeaker assembly is connected.

VALVE READINGS

V	Type	Electrode	Volts	Ma.
1	S21 (Met) ..	Anode	112	.9
		Screen	60	.5
2	HL2 (Met) ..	Anode	60	.9
3	PT2	Anode	105	5
		Screen	114	1.2

If the LT leads are connected the wrong way round, HT battery consumption will be increased by approximately 100 per cent., due to reduction of grid bias.





Above, the cabinet of the old but popular Marconi 283 is still familiar. Released in 1933, it is a three-valve type for battery operation and using a moving-coil speaker. Left, the top-deck layout showing gang, coils and valves.

Tone correction is effected by C7 across the primary winding and the secondary is connected to the speech coil L18 of the permanent magnet loudspeaker. A high impedance loudspeaker may be connected across the terminals on the chassis to which the internal speaker is connected. Tone

Continued overleaf.

RESISTANCES

R	Ohms
1	50,000
2	2 meg
VR1	40

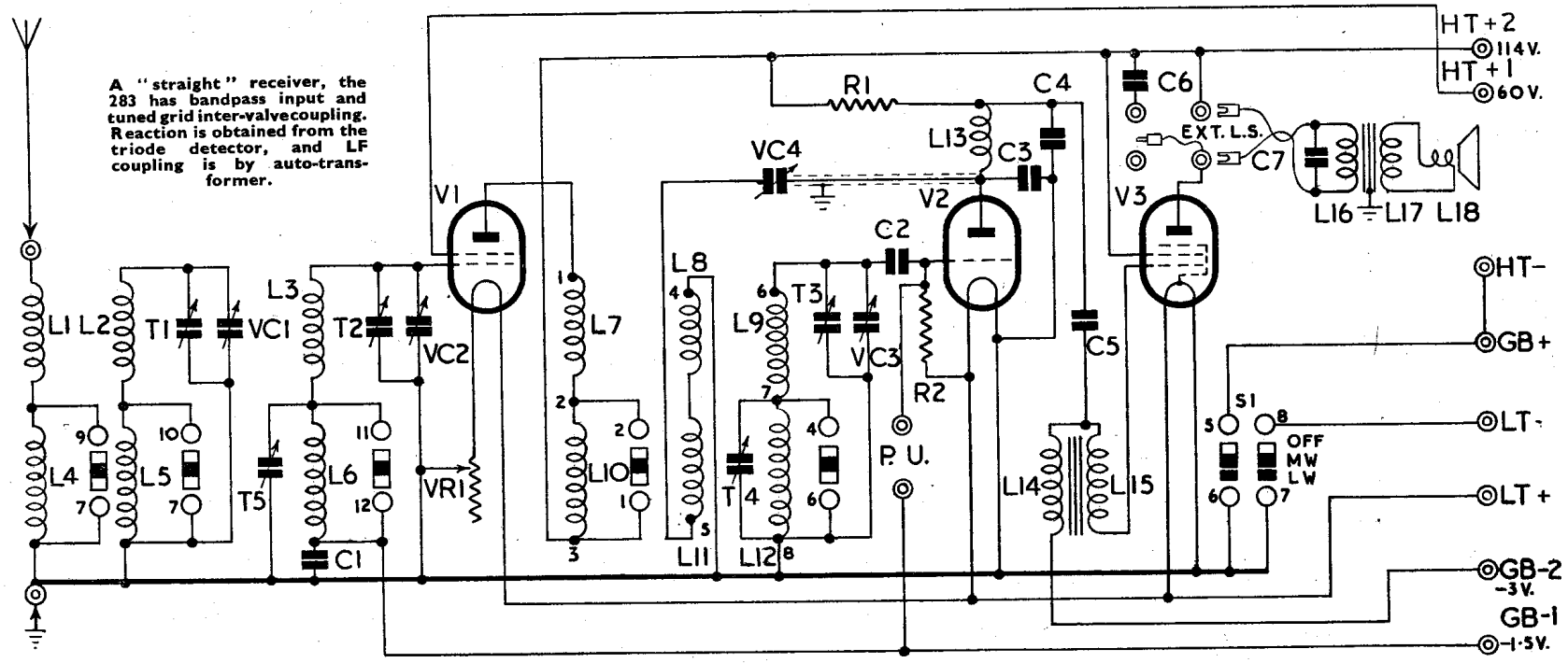
CONDENSERS

C	Mfd
1	.1
2	.0002
3	.0005
4	.001
5	.1
6	.005
7	.002

WINDINGS

L	Ohms
1	2
2	2.5
3	2.5
4	10
5	14
6	13.5
7	6.5
8 & 11 ..	4.5
9	2.5
10	9
11 & 8	4.5
12	14
13	95
14	350
15	3,000
16	900
17	1
18	4.5

A "straight" receiver, the 283 has bandpass input and tuned grid inter-valve coupling. Reaction is obtained from the triode detector, and LF coupling is by auto-transformer.



MARCONI 283

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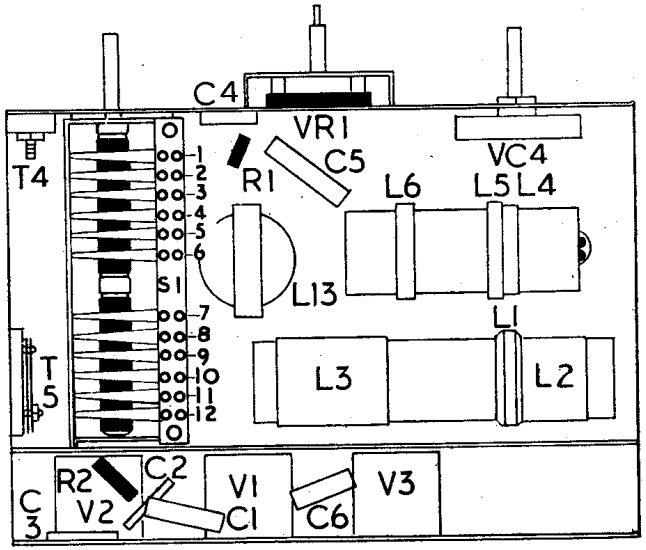
adjustment is made available by means of two sockets and a plug by means of which C6 may be put in parallel with C7 when required.

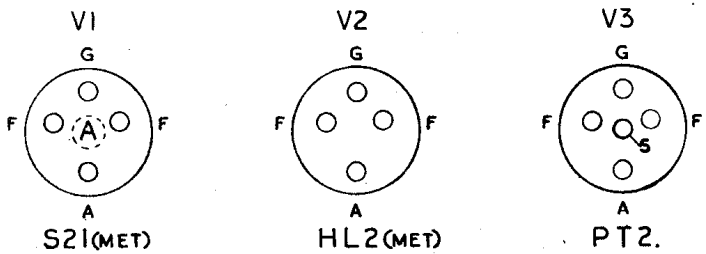
GANGING

MW Band.—Switch receiver to MW and inject a signal of 220 m. into the aerial and earth sockets *via* a dummy aerial. The reaction control must be adjusted to a point where the receiver is on the verge of oscillation.

Tune the receiver to the incoming signal and adjust T1 and T2 for maximum output. T3, if fitted, should be left fully unscrewed.

LW Band.—Switch receiver to LW ; inject and tune in a signal of 1,200 m. and adjust T4 and T5 for maximum output.





This under-chassis diagram identifies the switch positions with numbers corresponding to those on the circuit. Left, are the valve bases as seen with chassis inverted.

Infinite Impedance Adaptor

CONSTRUCTIONAL details of a form of valve voltmeter and notes on its use for radio testing are contained in a publication issued by VES, of 4, Melthorne Drive, Ruislip, Middlesex. The publication consists of 14 pages of duplicated typescript, and is 7s. 6d. post free. Five shillings is refunded to persons buying the kit of parts to make up the instrument.

The " Infinite Impedance Adaptor," as described by Mr. J. Bull, consists of a triode valve provided with current by a power pack comprising transformer, valve rectifier and smoothing choke and condenser. There are two test prods and a change-over switch for DC or AC " measurements."

The adaptor is connected to any suitable multi-range meter. The power to actuate the meter is provided by the triode circuit, and only the high impedance of the valve's grid circuit is imposed on any circuit under test.

The arrangement means, however, that direct readings are not obtained on the meter unless it is calibrated against known DC and AC voltages. For general purposes it is quite sufficient to use the meter as an indicator of whether voltages are present and of relative strengths.

As virtually no energy is taken from the circuit under test, the adaptor can be applied to very high resistance circuits. Its uses are tabulated as follows by Mr. Bull, who says it will check :—

1. Voltages which pass through high resistors—i.e., AVC voltage, oscillator autobias voltage, demodulator voltage, bias at valve grid.
2. LF voltages from demodulator to output, including indication of stage gain.
3. Electrolytic condensers.
4. AC voltages.
5. High resistors.

The manuscript goes into the various tests in some detail. The text contains numerous practical points which will be of help to the less experienced engineer.

Circuit diagrams are included and, in our copy, are duplicated clearly.

A complete fault tracing system is explained, beginning with a test of resistance between rectifier cathode and chassis. Ability to check AVC and demodulator voltage spermits testing in HF to LF sequence instead of the output to aerial order usually necessary.

It is told how superhets can be aligned without use of an oscillator providing some of the trimmers are still correctly set.

Finally, valve base diagrams are given for all the common frequency-changers and demodulators so that the right pins can be located for the various tests outlined.

The complete kit of parts costs £2 19s., less 5s., and valves are extra.