DECCA MLD3, MLD5

Four-valve portable superhet receiver with self-contained loop aerial, covering two wavebands and operated from all-dry batteries. Made by Decca Radio and Television, Ltd., 1-3, Brixton Road, London, S.W.9.

Circuit.—The frame aerial forms the grid circuit of V1, the frequency-changer. A section is shorted out for M.W. reception, and both parts of the loop have parallel trimmers. AVC is applied to V1 via R1 and C2 prevents the loop shorting the control voltage to chassis.

The oscillator section is tuned grid, the two coils having parallel trimmers and fixed padders (C6 and C7). There are straightforward anode reaction windings.

The I.F. transformer in the signal anode circuit of V1 has iron-dust cores. A similar transformer, but with both primary and secondary tuned, couples V2, the I.F. amplifier, to V3, the single-diode triode.

R6 and R7 are the diode load, the R6 portion, in conjunction with C11 and C12, acting as an I.F. filter. R7 is the volume control and the demodulated L.F. is passed on by C13 to the top of the grid leak, R9, of the triode section.

The "steady" voltage provided by rectification of the carrier is tapped off between R4 and R5 and fed back to V2 and V1.

The triode section of V3 biases itself by grid current through R9. A high value anode load develops the amplified signal which is passed on by C14 and R10 to V4, the output pentode.

V4 is biased by the voltage drop of the negative H.T. current flowing from L.T.– through R11 to H.T.–. This makes the filament of V4 positive with respect to its grid circuit.

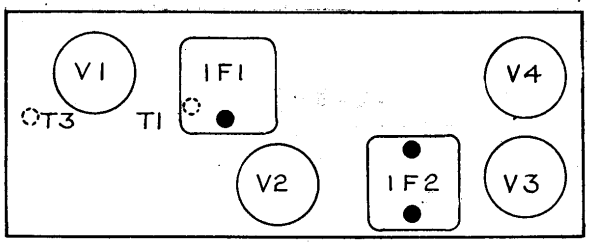
C16 is a fixed tone shunt and C8 is an electrolytic decoupling the H.T. battery.

NOTES.—The MLD3 may be fitted with a combined 90-v. H.T. and 1.5-v. L.T. battery. The MLD5 have a separate 1.5-v. cell and a 100-v. H.T. battery.

Mazda valves, with the special Mazda base, were used in the MLD3, but the MLD5 has valves with the standard octal base. The readings in the Valve Table are a rough guide only.

A number of components may have values different from those shown in the table.

The main characteristics of the compact Decca chassis and the trimmer positions are shown on this layout.



GANGING

The chassis need not be removed from the cabinet. The back and the batteries should be kept as nearly as possible in their normal positions.

I.F. Circuits.—Inject 370 kc. to V1 signal grid, and adjust I.F. trimmers for maximum on output meter. Keep input as low as possible.

M.W. Band.—See that pointer is vertical with gang at maximum.

Tune to 215.4 m., inject 215.4 m. by connecting signal generator to a short length of wire placed a few inches from the loop aerial. Adjust T1 and T2 for maximum.

There is no padding.

L.W. Band.—Tune to 1,293 m., inject this wavelength by means of wire loosely coupled to aerial, and adjust T3 and T4 for maximum.

RESISTANCES

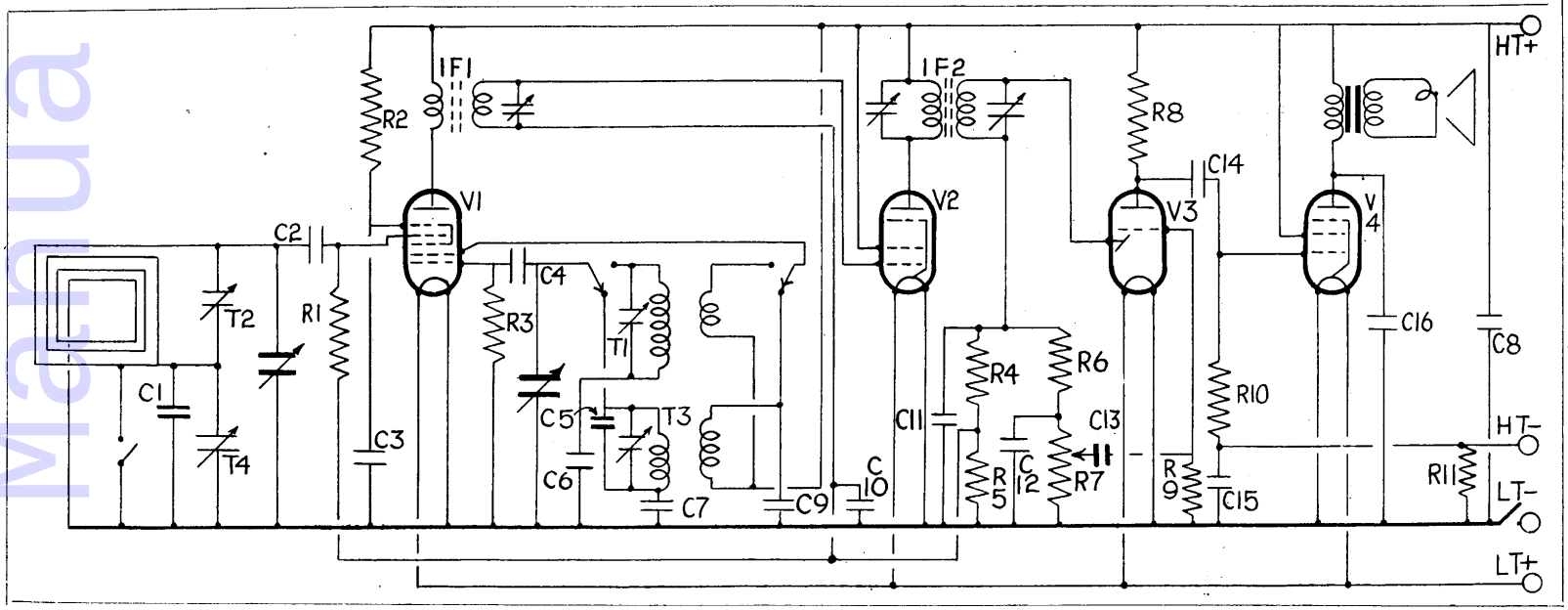
R.		Ohms.	R.		Ohms.
1	..	.5 meg.	6	..	100,000
2	..	75,000	7	..	.5 meg.
3	..	100,000	8	..	1 meg.
4	..	8 meg.	9	..	8 meg.
5	..	3 meg.	10	..	2 meg.
			11	..	850

CONDENSERS

C.		Mfds.	C.		Mfds.
1	..	.000025	9	..	.0002
2	..	.0001	10	..	.00005
3	..	.1	12	..	.00005
4	..	.0002	13	..	.001
5	..	.0002	14	..	.006
6	..	.00065	15	..	50
7	..	.00045	16	..	.001
8	..	8			

VALVE READINGS

V.	Type	Electrode	Volts	Ma.
1	1A7G or FC141	Anode	90	.5
		Osc. anode	90	1.5
		Screen	40	.5
2	1N5G or SP141	Anode	90	1.25
3	1H5G or H141D	Anode	—	—
4	1C5G or Pen.141	Anode	85	.5
		Screen	90	.5



Coupling Condenser Faults

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L.F. variations as A.C. imposed upon it. Since the average value varies with the strength of the signal over a period, it is often called the "steady component due to the carrier wave."

We have shown how the condenser (1) transfers the I.F. to the valve (2) accumulates an "average" charge and (3) smoothes out the I.F. pulses occurring during a single rapid audio-frequency pulse. It is understandable, therefore, that the component is variously referred to as a coupling condenser, a reservoir and an H.F. (I.F.) filter.

In practice, the basic arrangement is modified in various ways. Generally, the load resistance is split into two parts and an extra condenser is connected from the junction to cathode. This improves the I.F. filtering or smoothing, whichever one wishes to call it, although at the expense of some loss of L.F. signal.

Often the coupling condenser is not returned direct to cathode, but to chassis. This is of no importance since the chassis is separated from cathode only by the bias resistance and its low-reactance condenser by-pass.

Incidentally, the grid leak and condenser of a triode detector valve operate in much the same way as the diode arrangement just described. The grid and cathode operate as a diode. The carrier and demodulation voltages across the leak, however, give the grid a steady negative bias plus the L.F. signal. As a triode, therefore, the valve operates as an L.F. amplifier.

L.F. Coupling

The next coupler is found between the signal diode load and the volume control (C 8, Fig. 1), or, alternatively, when the volume control itself forms the diode load, between the control and the grid leak of the following triode.

This condenser has the job of passing on the L.F. to the amplifier while isolating the grid of the latter from the carrier-wave voltage across the diode load. As we have stated, the demodulated carrier voltage varies with signal strength and it is not, therefore, suitable for biasing the L.F. amplifier, which should be steadily biased at the centre of the straight portion of its anode

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