

"Mullard" Battery-Operated Broadcast

Model 41 (Circuit Diagram of this model appears on page 294)

Mullard model "41" is a four-valve receiver designed for broadcast coverage and operation from battery power supplies. This receiver is housed in a moulded cabinet of the mantel type, is fitted with a horizontal "straight-line" dial, and has four controls. These controls are for dial-lamp switching, volume and battery control (2-circuit battery switch on back of V.C.), tone control (3 position), and tuning. The loudspeaker is a 6-inch unit of the permanent-magnet type.

The power supply required for operation of this receiver consists of a 2-volt accumulator for "A" supply, and three series-connected 45 volts dry batteries for "B" supply. Grid bias voltages are obtained from a pair of resistors (R15, R16) connected in series with the negative "B" lead. Degeneration due to the presence of these resistors in the common negative lead is prevented by a

decoupling network (C15, R17) in the output valve grid circuit.

The remainder of the circuit is fairly straightforward. The presence of a damping resistor (R1) in shunt with the aerial coupling coil should be noted, as also should be the unusual oscillator circuit arrangement. This last is in some respects similar to that employed in Mullard model "40," but differs in that a grid condenser and leak of the normal

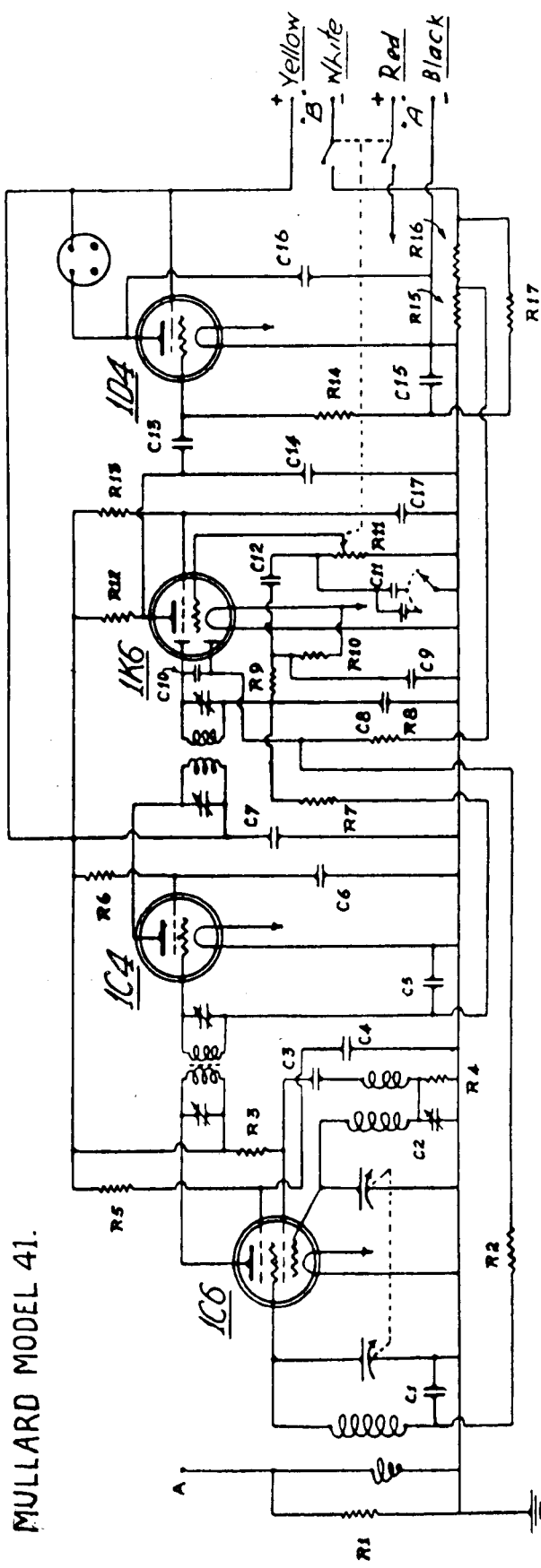
type are not employed; instead the padder (C2) serves as grid blocking condenser and the necessary leakage down to earth is provided by shunting this with a resistor (R4) of normal value.

The A.V.C. system is also of interest in that A.V.C. voltage for the I.F. amplifier is obtained from the detector diode load, while delayed A.V.C. and "standing" bias for the frequency converter is obtained from the second (positive) diode of the 1K6; the load resistor for this last being returned to the R15, R16 junction.

Finally, it should be noted that the "tone control" condenser (C11), which is a twin unit, also completes the R.F. by-passing. Should it be found that a high-pitched whistle is heard when the tone control switch is in the "open" position, C11 should be supplemented by a 0.0001 mfd. (100 mmfd.) condenser connected between the sliding contact of the volume control and earth (chassis).

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MULLARD MODEL 41.



- C1 - .05 μ f 400V. Paper
- C2 - Adj. padder 5Plate
- C3 - 1000 μ f mica
- C4 - .1 μ f 400V. Paper
- C5 - .05 μ f 400V. Paper
- C6 - .1 μ f 400V. Paper
- C7 - .1 μ f 400V. Paper
- C8 - 100 μ f mica
- C9 - 100 μ f mica
- C10 - 50 μ f mica
- C11 - .001 + .004 μ f 400V. Paper
- C12 - .01 μ f 400V. Paper
- C13 - .01 μ f 400V. Paper
- C14 - 250 μ f mica
- C15 - .25 μ f 400V. Paper
- C16 - 5000 μ f mica
- C17 - .1 μ f 400V. Paper
- C18 - 10K Ω $\frac{1}{2}$ W.
- C19 - 1M Ω $\frac{1}{2}$ W.
- R1 - 10K Ω $\frac{1}{2}$ W.
- R2 - 1M Ω $\frac{1}{2}$ W.
- R3 - 50K Ω $\frac{1}{2}$ W.
- R4 - 50K Ω $\frac{1}{2}$ W.
- R5 - 30K Ω $\frac{1}{2}$ W.
- R6 - .1M Ω $\frac{1}{2}$ W.
- R7 - 1M Ω $\frac{1}{2}$ W.
- R8 - 1M Ω $\frac{1}{2}$ W.
- R9 - 50K Ω $\frac{1}{2}$ W.
- R10 - 10K Ω $\frac{1}{2}$ W.
- R11 - 1M Ω $\frac{1}{2}$ W.
- R12 - 50K Ω $\frac{1}{2}$ W.
- R13 - 50K Ω $\frac{1}{2}$ W.
- R14 - 1M Ω $\frac{1}{2}$ W.
- R15 - 5M Ω $\frac{1}{2}$ W.
- R16 - 180 Ω Wound
- R17 - 250 Ω Wound
- R18 - .25 M Ω $\frac{1}{2}$ W.
- R19 - 1 M Ω $\frac{1}{2}$ W.
- R20 - .5 M Ω $\frac{1}{2}$ W.
- R21 - .5 M Ω V.C.
- R22 - .25 M Ω $\frac{1}{2}$ W.
- R23 - 1 M Ω $\frac{1}{2}$ W.
- R24 - .5 M Ω $\frac{1}{2}$ W.
- R25 - 180 Ω Wire
- R26 - 250 Ω Wound
- R27 - .25 M Ω $\frac{1}{2}$ W.

I.F. 456 K.C.

VOLTAGE AND CURRENT ANALYSIS

All voltages measured to chassis with 1,000 O.P.V. meter; no signal tuned in.

Valve	Plate volts	Plate mA	Screen volts	Screen mA	Osc. anode volts	Grid bias
1C6	130	1.2	50	2.3	3.3	0
1C4	130	2.0	42	0.6	0	0
1K6	30	0.26	18	0.1	0	5.25
1D4	127	3.6	130	0.8	---	---

Total "B" current no signal 12 mA; average signal 9-10 mA.

"A" battery 2 volts; "B" battery 135 volts; no "C" battery.

A general description of this Mullard receiver will be found on Page 293