SUBMINIATURE TUNING INDICATOR

DM70

Directly heated subminiature tuning indicator suitable for use in mains or battery-operated receivers.

FILAMENT

V_f	1.4	V
I_f	25	mA

Notes on filament voltage supplies :—

Battery-operated receivers

The filament may be fed from a 1.4V battery or it may be connected in series with the filaments of other valves in the receiver, provision being made for a suitable shunting resistor if necessary. The operating conditions indicate which filament pin should be connected to the earthed side of the demodulator circuit.

Mains-operated receivers (V_f=1.3V)

The filament may be fed from a 6.3V heater transformer provided it is connected in series with a 220Ω, 1W, 5% resistor. If the heater transformer has a centre-tap giving 3.15V, a series resistor of 82Ω, 0.5W, 10% may be used.

If desired, the filament, shunted by a suitable resistor, may be included in a series heater chain provided it also includes a current limiting device.

With either form of connection in mains-operated receivers, pin 5 must be connected to the earth side of the demodulation circuit for satisfactory operation.

VALVE CONSTRUCTION AND MOUNTING POSITION

This valve is a triode in which the grid is in the form of a plate containing a tapered aperture. The anode is coated with fluorescent material which is viewed through the grid aperture. The length, L, of the fluorescent " column " observed through the grid aperture decreases as the grid potential goes negative.

The valve may be mounted in any position, the direction of viewing being indicated on the diagram of pin connections.

Direct soldered connections to the leads of this valve must be at least 5 mm. from the seal and any bending of the valve leads must be at least 1.5 mm. from the seal.

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OPERATING CONDITIONS

Battery-operated receivers

	Pin 4 earthed	Pin 5 earthed	
V_b	90	67.5	V
V_a	85	60	V
V_g	0	0	V
I_a	170	105	μA
*L	11	10	mm
V_g (for complete extinction)	−10	−7	V

Mains-operated receivers (Pin 5 earthed)

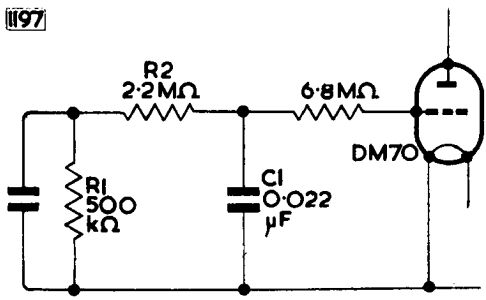
V_b	110	170	250	V
R_a	0.47	1.0	1.8	MΩ
V_g	0	0	0	V
I_a	105	110	105	μA
*L	10	10	10	mm
V_g (for complete extinction)	−15	−23	−34	V

*Length of fluorescent column observed, measured from the top of the aperture. The maximum value is approximately 14 mm.

Notes on operation in mains receivers

(a) In order to reduce the possibility of hum it is recommended that the anode be fed from the H.T. line by a series resistor, R_a, as indicated in the operating conditions and not direct to the screen grid of other valves in the receiver.

(b) The following filter is recommended for inclusion in the grid circuit.



R_1 is the load of the demodulator or the A.G.C. diode of the receiver. In addition, in receivers having normal undelayed A.G.C. the decoupling network R_2, C_1 already exists and the only additional component is the 6.8 MΩ resistor. In receivers having delayed A.G.C. it is necessary to control the DM70 from the demodulator circuit. The decoupling network R_2, C_1 is then added to the 6.8 MΩ resistor.

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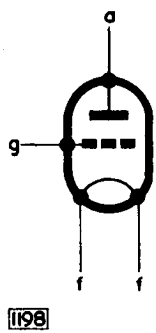
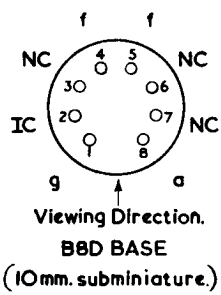
LIMITING VALUES

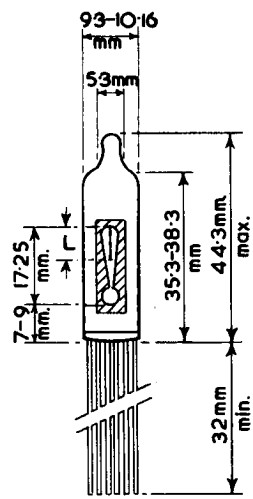
$V_{b(o)}$ max.	450	V
V_b max.	300	V
*V_a max.	90	V
V_a min.	45	V
**p_a max. ($V_a \leq 90$ V)	25	mW
**p_a max. ($V_a = 200$ V)	10	mW
I_k max.	300	μA
R_{g-f} max.	10	MΩ

*In circuits without anode series resistor.

**Values of p_a max. for intermediate values of V_a may be determined by linear interpolation.







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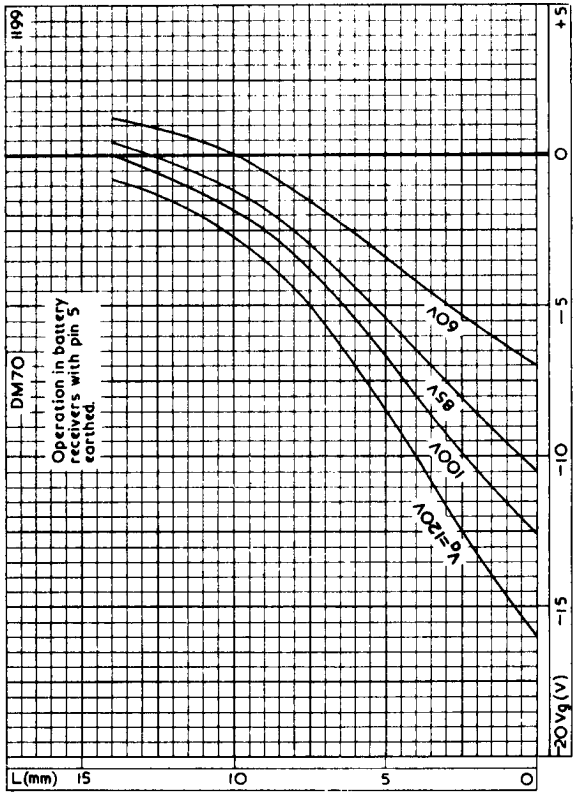

LENGTH OF FLUORESCENT COLUMN PLOTTED AGAINST GRID VOLTAGE AT VARIOUS VALUES OF ANODE VOLTAGE WHEN CONNECTED IN BATTERY-OPERATED RECEIVERS (PIN 5 EARTHED.)