



VARIABLE-MU R.F. PENTODE

A variable-mu Pentode designed for use in F.M./A.M. Receivers as R.F. or I.F. Amplifier.

PHYSICAL DETAILS.

Base	...	...	B9A—All Glass.
Max. Overall Length	...	...	61.7 mm. ($2\frac{7}{8}$ in.).
Max. Seated Height	...	...	54.7 mm. ($2\frac{1}{8}$ in.).
Max. Diameter	...	...	22.2 mm. ($\frac{7}{8}$ in.).
Mounting Position	...	...	Any.

BASE CONNECTIONS.

Pin 1—Shield.	Pin 5—Heater.
Pin 2—Control Grid (g_1).	Pin 6—Shield.
Pin 3—Cathode.	Pin 7—Anode.
Pin 4—Heater.	Pin 8—Screen Grid (g_2).
Pin 9—Suppressor Grid (g_3).	

HEATER.

Heater Voltage	...	...	6.3 volts.
Heater Current	...	...	0.2 amp.

RATINGS.

Max. H.T. Supply Voltage	...	...	550 volts.
Max. Anode Voltage	...	...	300 volts.
Max. Screen Voltage	...	...	300 volts.
Max. Anode Dissipation	...	...	2.25 watts.
Max. Screen Dissipation	...	...	0.45 watts.
Max. Cathode Current	...	...	16.5 mA.
Max. V_{h-k}	...	...	100 volts.
Max. R_{g_1-k}	...	...	3 M Ω
Max. R_{g_3-k}	...	...	10 k Ω
Max. R_{h-k}	...	...	20 k Ω .

CHARACTERISTICS.

Anode Voltage	...	250	250	250	250	volts.
Suppressor Grid Voltage	...	0	0	0	0	volts.
Screen Grid Voltage	...	85	100	100	100	volts.
Anode Current	...	9	9	9	9	mA.
Screen Grid Current	...	3.2	3.0	3.0	3.0	mA.
Control Grid Voltage	...	-1	-2	-2	-2	volts.
Mutual Conductance	...	4.0	3.6	3.6	3.6	A/V.
Inner μ ($\mu_{g_1-g_2}$)	...	19	—	—	—	
Anode Impedance	...	> 0.8	1.0	1.0	1.0	M Ω

$V_a = V_b$	...	200	250	250	250	volts.
V_{g_3}	...	0	0	0	0	volts.
R_{g_2}	...	24	51	*18	*22	k Ω
V_{g_1}	...	-2.0	-2.0	-0.5	-2.0	volts.
R_k	...	160	160	—	—	ohms
I_a	...	11.0	9.0	8.0	8.7	mA.
I_{g_2}	...	3.8	3.0	2.6	2.9	mA.
g_m	...	3.8	3.5	4.2	3.5	mA/V.
r_a	...	0.6	1.0	1.05	1.0	M Ω
R_{eq}	...	4.2	4.2	2.3	4.2	k Ω
g_m at $V_{g_1} = -20$	...	0.16	0.24	0.23	0.23	mA/V.

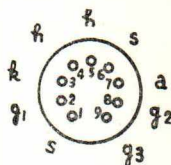
CAPACITANCES.

C_{in}	...	...	...	...	5.5 pF.
C_{out}	...	...	...	...	5.1 pF.
C_{a-g_1}	...	...	...	...	0.002 pF. (max.).
$C_{g_1-g_2}$	...	...	...	...	2.1 pF.
C_{g_1-h}	...	...	...	...	0.05 pF. (max.).

*Common screen resistor with ECH81 used as a frequency changer. Total current through resistor is 8.6 mA. at $V_{g_1} = -20$ and 9.3 mA. at $V_{g_1} = -0.5$.

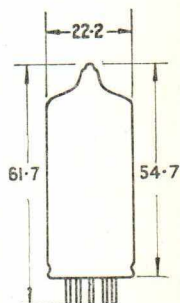
†For grid current bias operation with $R_{g_1} = 10M\Omega$. If this condition is not acceptable the negative grid bias should be increased to -2 volts.

EF89



Base Connections

Underside View of Base



All dimensions shown are in millimetres (max.).



TYPICAL CHARACTERISTICS

