



VARIABLE-MU R.F. PENTODE

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

PHYSICAL DETAILS.

Base	...	...	B9A—All Glass.
Max. Overall Length	...	...	61.7 mm. (2 $\frac{1}{2}$ 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 Current	...	...	0.1 amp.
Heater Voltage	...	...	12.6 volts.

RATINGS.

Max. H.T. Supply Voltage	...	...	550 volts
Max. Anode Voltage	...	...	250 volts.
Max. Screen Voltage	...	...	250 volts.
Max. Anode Dissipation	...	...	2.25 watts.
Max. Screen Dissipation	...	...	0.45 watts.
Max. Cathode Current	...	...	16.5 mA.
Max. V_{h-k}	...	...	150 volts.
*Max. R_{g_1-k}	...	...	3 M Ω
Max. R_{g_2-k}	...	...	10 k Ω
Max. R_{h-k}	...	...	20 k Ω

CHARACTERISTICS.

Anode Voltage	...	...	170	170	volts.
Screen Voltage	...	...	100	110	volts.
Suppressor Grid Voltage	...	...	0	0	volts.
Grid Voltage	...	...	-1.2†	-2.0	volts.
Anode Current	...	...	12	12	mA.
Screen Current	...	...	4.4	3.9	mA.
Mutual Conductance	...	...	4.4	3.8	mA/V.
Anode Impedance	...	...	0.4	0.5	k Ω
Inner μ	...	...	21	—	—

TYPICAL OPERATION.

As R.F. or I.F. Amplifier with Cathode bias.

$V_a = V_b$	...	...	100	170	200	volts.
V_{g_3}	...	...	0	0	0	volts.
R_{g_2}	...	...	15	15	24	k Ω
R_k	...	...	130	130	130	ohms.
V_{g_1}	...	...	-1.05	-2	-2	volts.
I_a	...	...	6	11	11.1	mA.
I_{g_2}	...	...	2.1	3.9	3.8	mA.
g_m	...	...	3.2	3.8	3.85	mA/V.
r_a	...	...	475	450	550	k Ω
R_{eq}	...	...	3.5	4.5	4.2	k Ω
$g_m (V_{g_1} = -20)$	...	...	150	110	160	μ A/V.

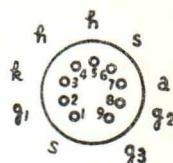
As R.F. or I.F. Amplifier with Grid current bias.

$V_a = V_b$	...	...	100	170	200	volts.
V_{g_3}	...	...	0	0	0	volts.
R_{g_2}	...	...	22	22	33	k Ω
R_k	...	...	0	0	0	Ω
R_{g_1}	...	...	10	10	10	M Ω
I_a	...	...	6.1	11.8	11.3	mA.
I_{g_2}	...	...	2.3	4.3	3.9	mA.
g_m	...	...	5	5.2	5.2	mA/V.
r_a	...	...	450	400	475	k Ω
R_{eq}	...	...	2.5	2.6	2.5	k Ω
$g_m (V_{g_1} = -20)$	...	...	—	110	150	μ A/V.

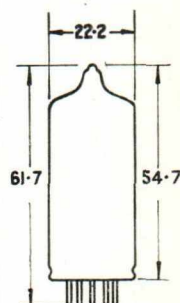
*With grid current bias, this resistance may be increased up to 22 M Ω max.

†Grid current may occur at this voltage. If this condition is not acceptable the negative grid bias should be increased to -2 volts.

UF89



Base
Connections
Underside View
of Base

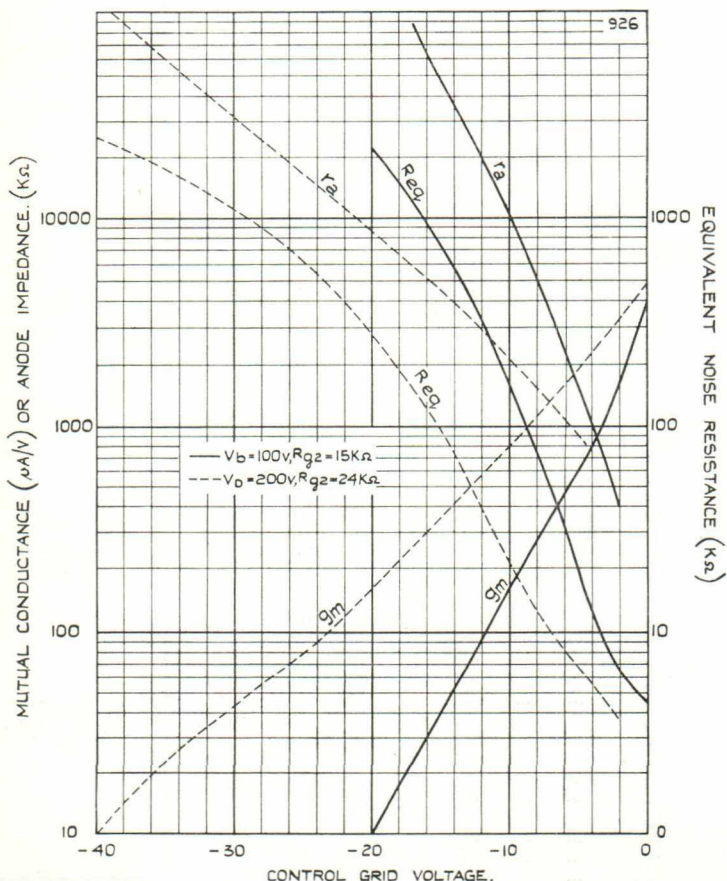


All dimensions
shown are in
millimetres
(max.).

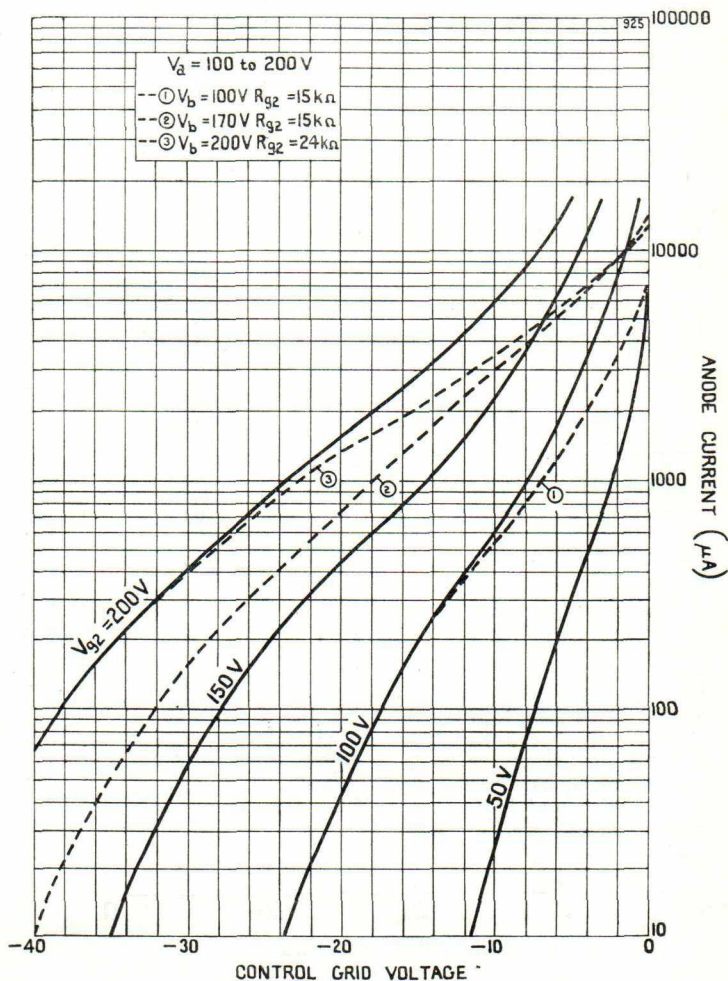


CAPACITANCES

C_{in}	...	...	...	...	...	5.5 pF.
C_{out}	...	...	...	...	...	5.1 pF.
C_{a-g1}	...	...	...	...	...	0.002 pF. (max.).
C_{g1-h}	...	...	...	...	...	0.05 pF.
C_{g1-g2}	...	...	...	...	...	2.1 pF.



TYPICAL ANODE CURRENT/GRID VOLTAGE CHARACTERISTICS



TYPICAL MUTUAL CONDUCTANCE/GRID VOLTAGE CHARACTERISTICS

