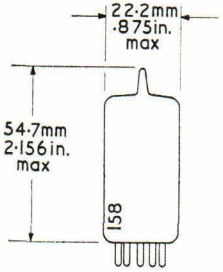
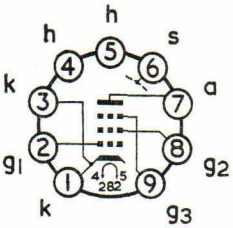


HIGH SLOPE R.F. PENTODE



B9A Base

GENERAL

This valve is a sharp cut-off frame grid R.F. Pentode for use as an I.F. amplifier in A.C. or A.C./D.C. television receivers.

Heater Voltage	V_h	6·3	V
Heater Current	I_h	0·3	A

RATINGS

Maximum Anode Dissipation	$P_{a(max)}$	2·5	W
Maximum Screen Grid Dissipation	$P_{g2(max)}$	0·9	W
Maximum Anode Supply Voltage	$V_{a(b)max}$	550	V
Maximum Anode Voltage	$V_{a(max)}$	250	V
Maximum Screen Grid Supply Voltage	$V_{g2(b)max}$	550	V
Maximum Screen Grid Voltage	$V_{g2(max)}$	250	V
Maximum Peak Negative Grid Voltage	$-v_{g1(pk)max}$	50	V
Maximum Heater to Cathode Voltage (R.M.S.)	$V_{h-k(max)r.m.s.}$	150	V
Maximum Cathode Current	$I_{k(max)}$	25	mA
Maximum Control Grid to Cathode Resistance	$R_{g-k(max)}$	1·0	MΩ
Maximum Heater to Cathode Resistance	$R_{h-k(max)}$	20	kΩ
Maximum Bulb Temperature	$T_{bulb(max)}$	180	°C

INTER-ELECTRODE CAPACITANCES

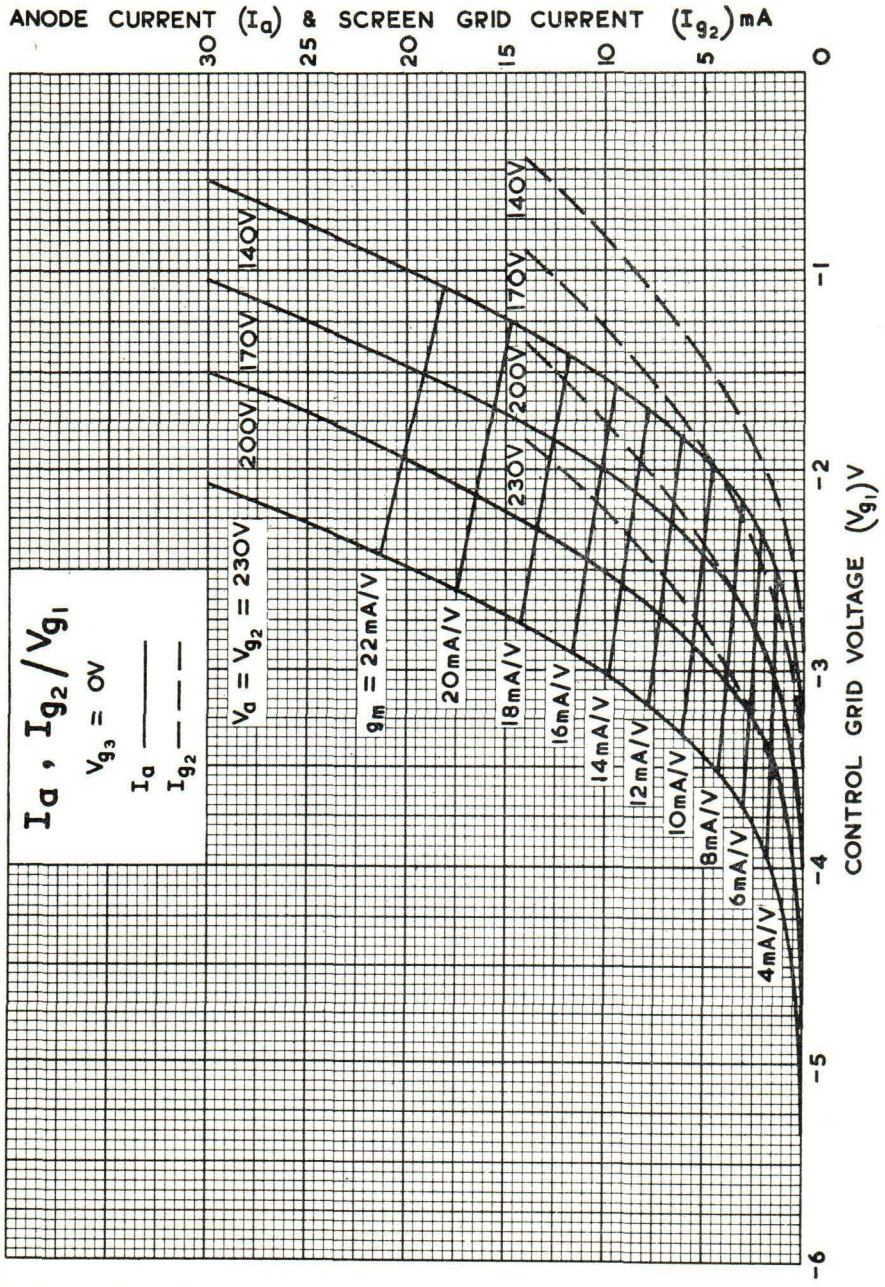
		*	†	‡	
Input	c_{in}	10	10·4	11·5	pF
Output	c_{out}	3·0	3·4	4·5	pF
Anode to Grid 1	c_{a-g1}	<0·0055	<0·0065	<0·0075	pF
Grid 1 to Grid 2	c_{g1-g2}	2·8	2·8	2·8	pF

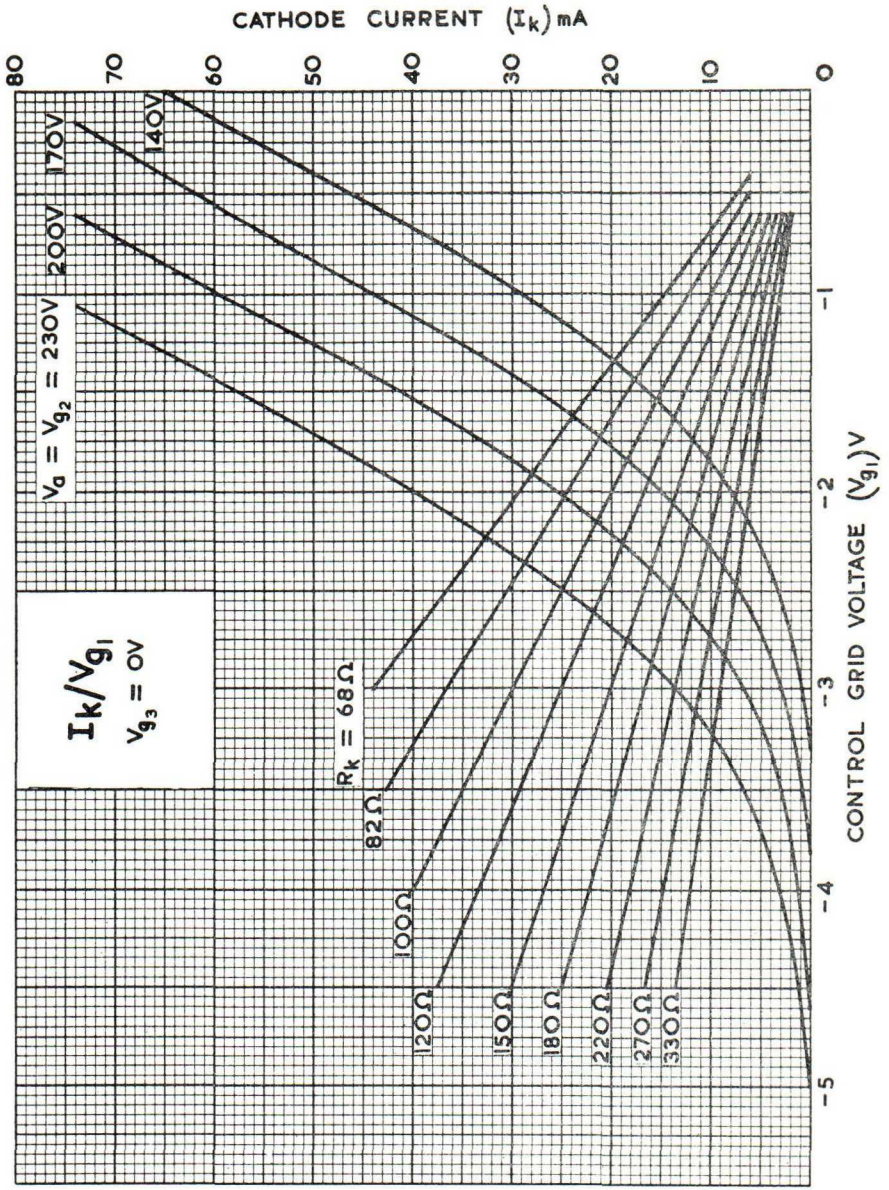
* In fully shielded socket without can (I.E.C. Publication 100).
† With holder capacitance balanced out (Holder as below).
‡ Total capacitance including B9A ceramic holder without skirt or radial shield (Plessey holder type CP180900/1).

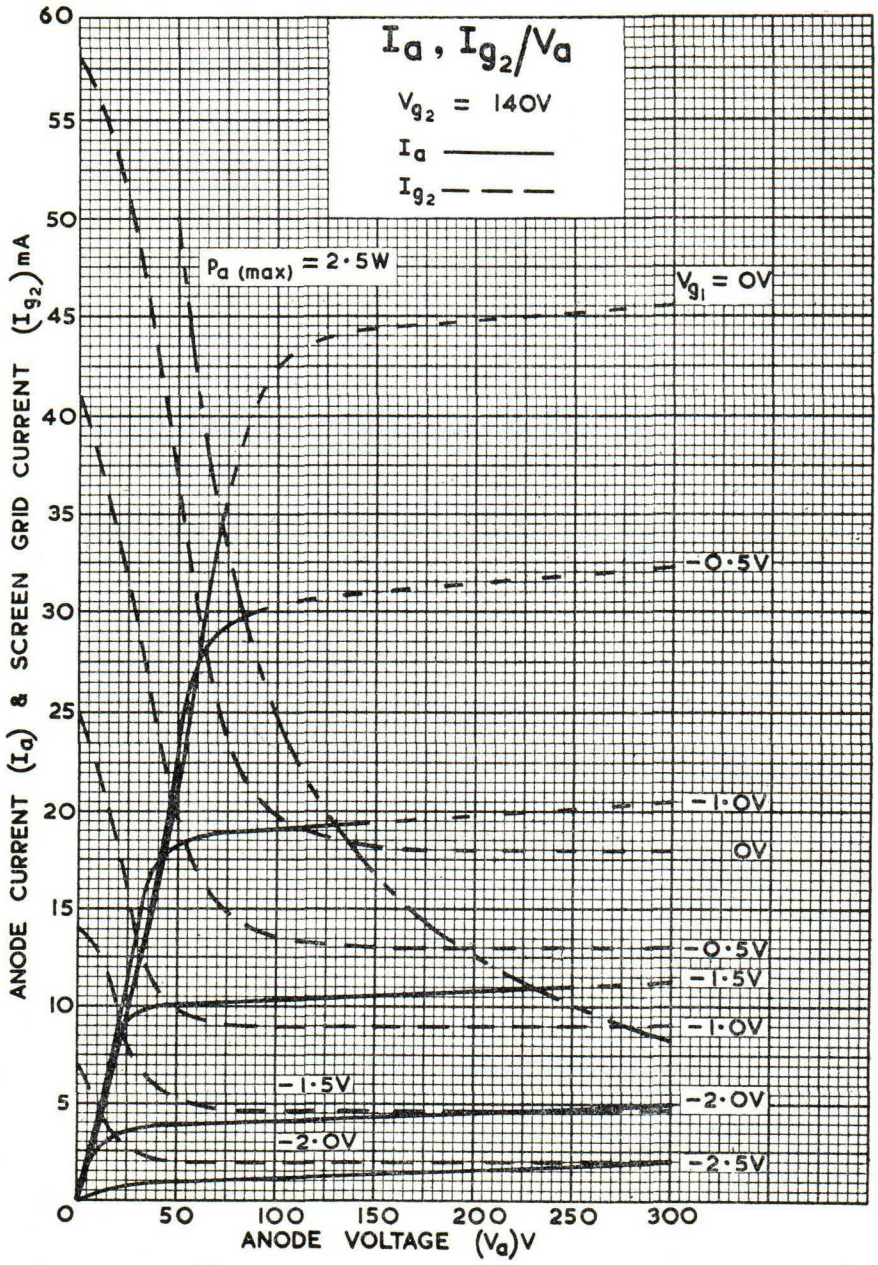
TYPICAL OPERATION

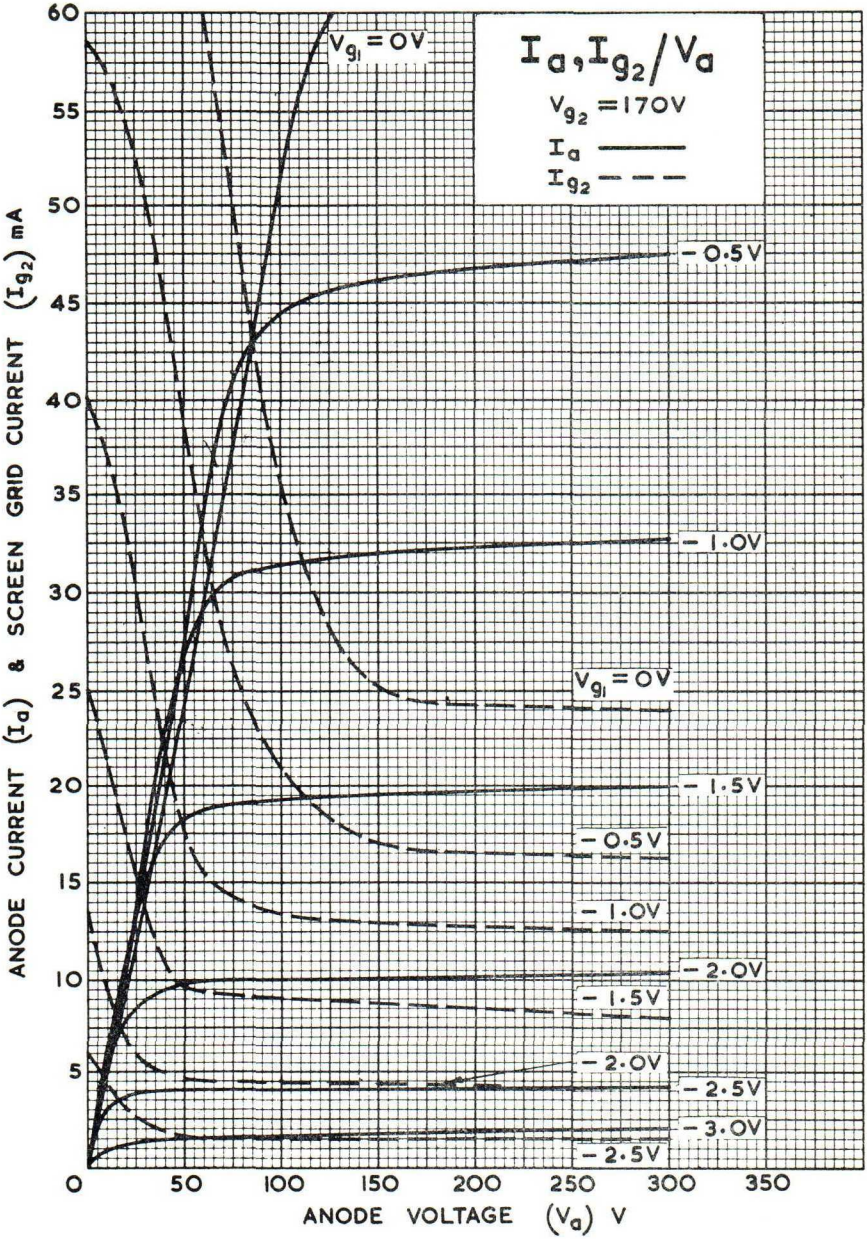
Anode Supply Voltage	$V_{a(b)}$	170	200	230	200	V
Screen Grid Supply Voltage	$V_{g2(b)}$	170	200	230	200	V
Suppressor Grid Supply Voltage	$V_{g3(b)}$	0	0	0	0	V
Control Grid Voltage	V_{g1}	—	—	—	−2·5	V
Anode Current	I_a	10	10	10	10	mA
Screen Grid Current	I_{g2}	4·1	4·1	4·1	4·1	mA
Screen Grid Resistance	R_{g2}	0	7·5	15	—	kΩ
Cathode Bias Resistance	R_k	140	140	140	—	Ω
Mutual Conductance	g_m	15·6	15·6	15·6	15	mA/V
Inner Amplification Factor	μ_{g1-g2}	—	—	—	60	
Valve Anode Resistance ($\delta v_a/\delta i_a$)	r_a	330	510	680	380	kΩ
Valve Input Resistance at 38 Mc/s	r_{g1}	11	11	11	12	kΩ
Equivalent Grid Noise Resistance at 38 Mc/s	R_{eq}	300	300	300	330	Ω
Working Input Capacitance	$c_{in(w)}$	—	—	—	15*	pF

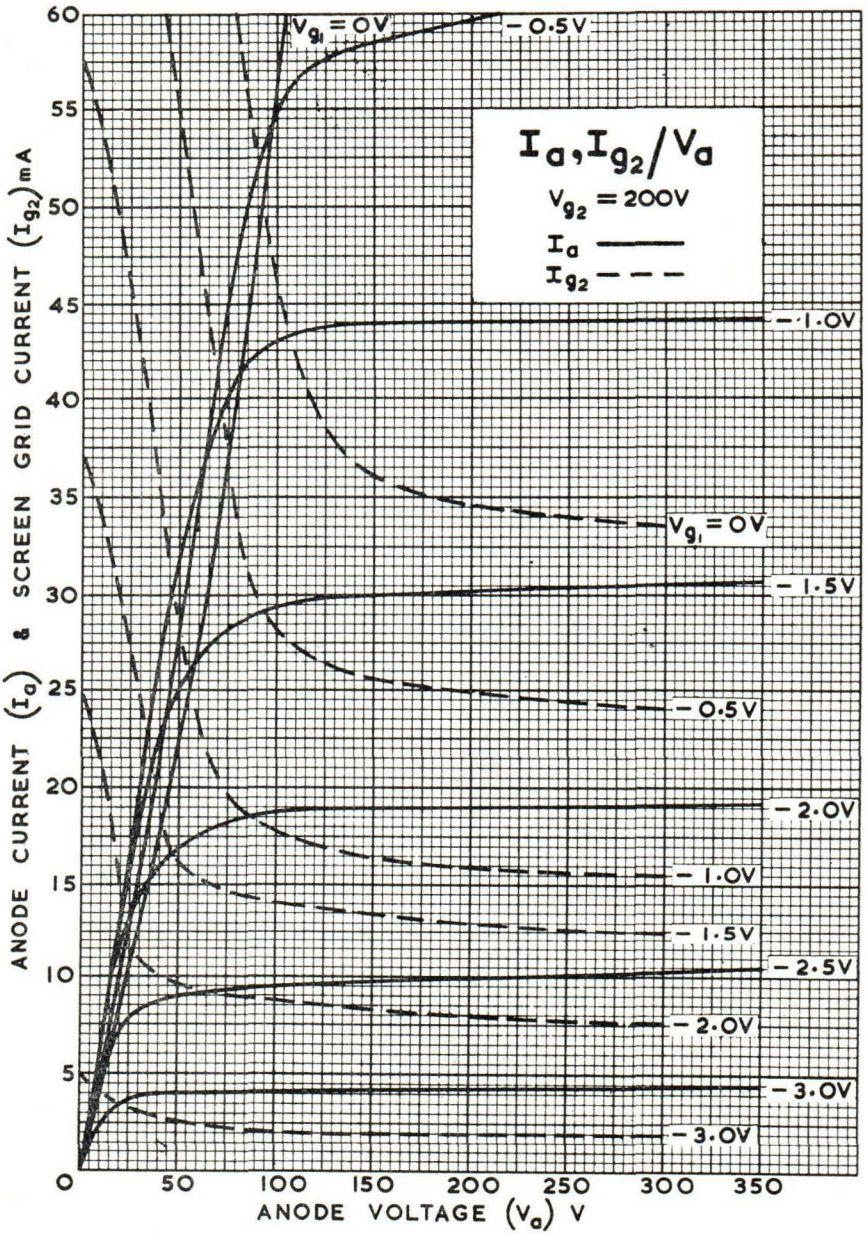
THORN—AEI RADIO VALVES & TUBES LTD.


ANODE CURRENT (I_a) & SCREEN GRID CURRENT (I_{g_2}) mA
30
25
20
15
10
5
0
-1
-2
-3
-4
-5
-6
CONTROL GRID VOLTAGE (V_{g_1}) V
I_a , I_{g_2} / V_{g_1}
V_{g_3} = 0V
I_a ———
I_{g_2} — — —
$V_a = V_{g_2}$ = 230V
200V
170V
140V
g_m = 22mA/V
20mA/V
18mA/V
16mA/V
14mA/V
12mA/V
10mA/V
8mA/V
6mA/V
4mA/V


CATHODE CURRENT (I_k) mA
80
70
60
50
40
30
20
10
0
$V_a = V_{g_2}$ = 230V
200V
170V
140V
I_k/V_{g_1}
V_{g_3} = 0V
R_k = 68Ω
82Ω
100Ω
120Ω
150Ω
180Ω
220Ω
270Ω
330Ω
-1
-2
-3
-4
-5
CONTROL GRID VOLTAGE (V_{g_1}) V


I_a , I_{g_2}/V_a
V_{g_2} = 140V
I_a
I_{g_2}
P_a (max) = 2·5W
V_{g_1} = 0V
-0·5V
-1·0V
0V
-0·5V
-1·5V
-1·0V
-1·5V
-2·0V
-2·0V
-2·5V
ANODE CURRENT (I_a) & SCREEN GRID CURRENT (I_{g_2}) mA
ANODE VOLTAGE (V_a) V
0
5
10
15
20
25
30
35
40
45
50
55
60
50
100
150
200
250
300


$I_a, I_{g_2} / V_a$
V_{g_2} = 170V
I_a
I_{g_2}
V_{g_1} = 0V
− 0·5V
− 1·0V
V_{g_1} = 0V
− 1·5V
− 0·5V
− 1·0V
− 2·0V
− 1·5V
− 2·0V
− 2·5V
− 3·0V
− 2·5V
ANODE CURRENT (I_a) & SCREEN GRID CURRENT (I_{g_2}) mA
ANODE VOLTAGE (V_a) V
0
5
10
15
20
25
30
35
40
45
50
55
60
50
100
150
200
250
300
350


$I_a, I_{g_2} / V_a$
$V_{g_2} = 200V$
I_a
I_{g_2}
$V_{g_1} = 0V$
-0.5V
-1.0V
$V_{g_1} = 0V$
-1.5V
-0.5V
-2.0V
-1.0V
-1.5V
-2.5V
-2.0V
-3.0V
-3.0V
ANODE CURRENT (I_a) & SCREEN GRID CURRENT (I_{g_2}) mA
ANODE VOLTAGE (V_a) V
0
5
10
15
20
25
30
35
40
45
50
55
60
50
100
150
200
250
300
350