

PRELIMINARY DATA

QUICK REFERENCE DATA

External anode forced-air cooled tetrode. Intended for use as r.f. power amplifier.

Performance

f	800	Mc/s
P _{out}	2.5	kW
f max.	900	Mc/s
V _a max.	4.5	kV
p _a max.	1.5	kW

These data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS - TRANSMITTING VALVES which precede this section of the handbook.

CLASS 'C' TELEGRAPHY, CATHODE MODULATED

Absolute maximum ratings

f max.	900	Mc/s
V _a max.	4.5	kV
V _{g2} max.	600	V
-V _{g1} max.	300	V
I _a max.	900	mA
I _{g2} max.	75	mA
I _{g1} max.	100	mA
p _a max.	1.5	kW
p _{g2} max.	50	W

Typical operating conditions

f	800	Mc/s
V _a	4.2	kV
V _{g2}	450	V
-V _{g1}	110	V
I _a	850	mA
I _{g2}	28	mA
I _{g1}	50	mA
P _{load} (driver)	180	W
P _{out}	2.5	kW
P _{load}	2.1	kW
Power gain	12	

CLASS 'C' AMPLIFIER, CATHODE MODULATED FOR TELEVISION SERVICE
(negative modulation, positive synchronisation)

Absolute maximum ratings

f max.	900	Mc/s
Va max.	4.5	kV
Vg2 max. (sync)	600	V
-Vg1 max.	500	V
Ia max. (sync)	950	mA
Ig2 max. (sync)	75	mA
Ig1 max. (sync)	100	mA
pa max.	1.5	kW
pg2 max.	50	W

Typical operating conditions

f	800	Mc/s
Bandwidth (-3.0dB)	6.0	Mc/s
Va	4.2	kV
Vg2	400	V
-Vg1		
Sync	120	V
Black	175	V
White	345	V
Ia		
Sync	900	mA
Black	680	mA
Ig2		
Sync	15	mA
Black	5.0	mA
Ig1		
Sync	50	mA
Black	35	mA
Pload (driver) sync	220	W
Pout		
Sync	2.7	kW
Black	1.5	kW
Pload		
Sync	2.2	kW
Black	1.3	kW
Power gain	10	

CATHODE

Directly heated, thoriated tungsten.

*Vf	4.0	V
If	60	A
If (surge) max.	150	A

*It may be necessary to adjust the filament voltage for optimum performance depending upon the operating condition and frequency. The filament connection must be carefully screened from high frequency sources.

CAPACITANCES

ca-g1	150	mpF
ca-f	6.0	pF
cg1-f	46	pF

With g1 and g2 earthed

ca-g2	7.0	pF
ca-f	20	mpF
cg1-f	20	pF

CHARACTERISTICS (measured at $V_a = 3.0\text{ kV}$, $V_{g2} = 500\text{ V}$, $I_a = 480\text{ mA}$)

gm	20	mA/V
μ_{g1-g2}	9.0	

COOLING

Forced-air cooled

Tanode max. (measured at point indicated on page D5)	180	$^{\circ}\text{C}$
Tseals max.	220	$^{\circ}\text{C}$

The amount of forced-air cooling required for this valve depends upon the anode dissipation and the height above sea level. The airflow should be directed on the valve as shown on page D6. Typical values of inlet temperature, rate of airflow and pressure difference between the inlet and outlet of the radiator are given in the following table

Anode dissipation pa (kW)	Height above sea level h (km) (ft)	Max. inlet temperature T in max ($^{\circ}\text{C}$)	Min. rate of airflow per min. (m^3) (ft ^{3})	Pressure difference between inlet and outlet of radiator (mm H $_2$ O)
1.5	0 0	45	3.2 113	75

MOUNTING POSITION

Vertical

PHYSICAL DATA

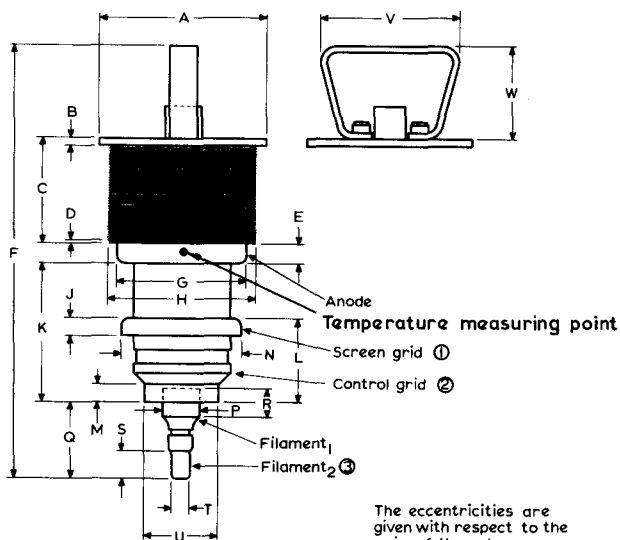
Weight of valve only	4 lb	3oz
	1.9	kg

OPERATING NOTE

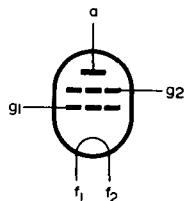
In a cathode driven v.h.f. amplifier circuit, a tunable coaxial circuit is incorporated between g1 and g2 which introduces a variable capacitive reactance between the grids. This results in increased efficiency and negligible feedback from anode to cathode in the amplifier circuit.

DIMENSIONS

	Inches	Millimetres	
A	3.504	89	dia
B	0.118	3.0	
C	2.165	55	
D	0.079	2.0	
E	0.374	9.5	min
F	8.465	215	
G	2.756 $\pm$ 0.012	70 $\pm$ 0.3	dia
H	3.228 $\pm$ 0.012	82 $\pm$ 0.3	dia
J	0.354	9.0	min
K	2.913 $\pm$ 0.039	74 $\pm$ 1	
L	1.811 $\pm$ 0.039	46 $\pm$ 1	
M	0.374	9.5	min
N	2.520 $\pm$ 0.012	64 $\pm$ 0.3	dia
P	0.661 $\pm$ 0.008	16.8 $\pm$ 0.2	
Q	1.299 $\pm$ 0.039	33 $\pm$ 1	
R	0.374	9.5	min
S	0.512	13	min
T	0.358 $\pm$ 0.008	9.1 $\pm$ 0.2	dia
U	1.535 $\pm$ 0.012	39 $\pm$ 0.3	dia
V	2.480	63	
W	1.575	40	
AA	3.327	84.5	
BB	1.969	50	



- The eccentricities are given with respect to the axis of the valve.
- ① Maximum eccentricity of screen grid = 0.3 mm
 - ② Maximum eccentricity of control grid = 0.4 mm
 - ③ Maximum eccentricity of filament connections = 0.8 mm



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Fig 1

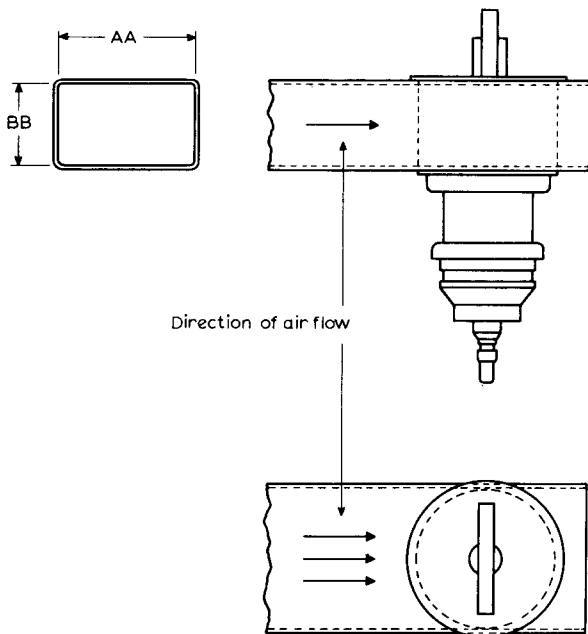
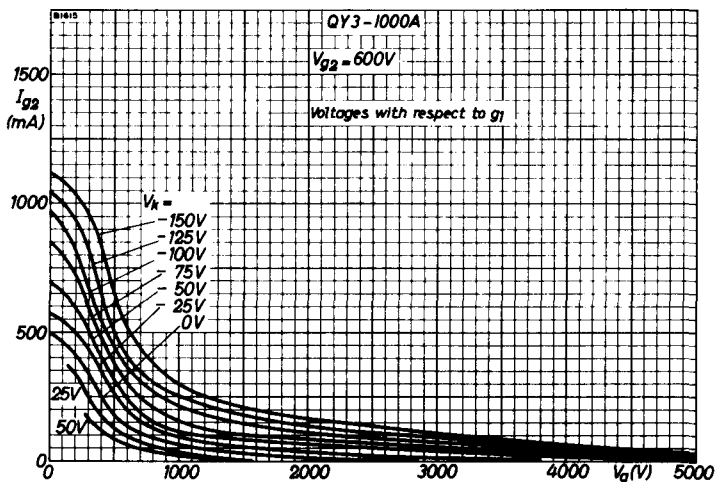
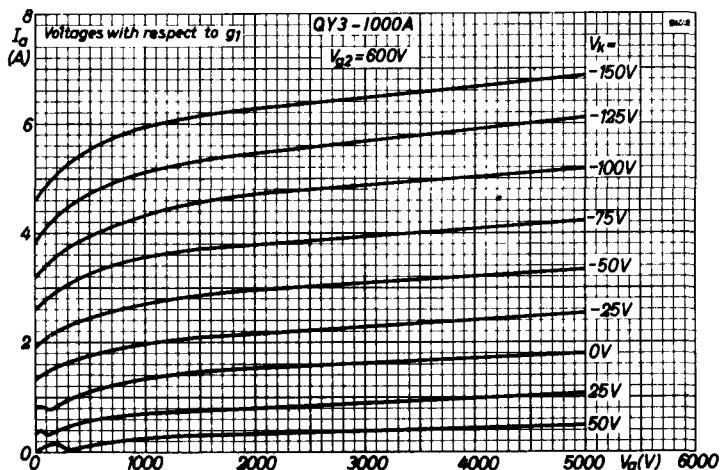
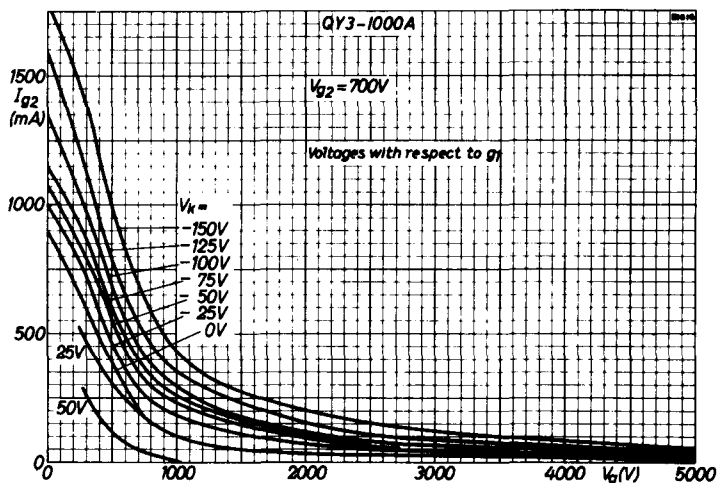
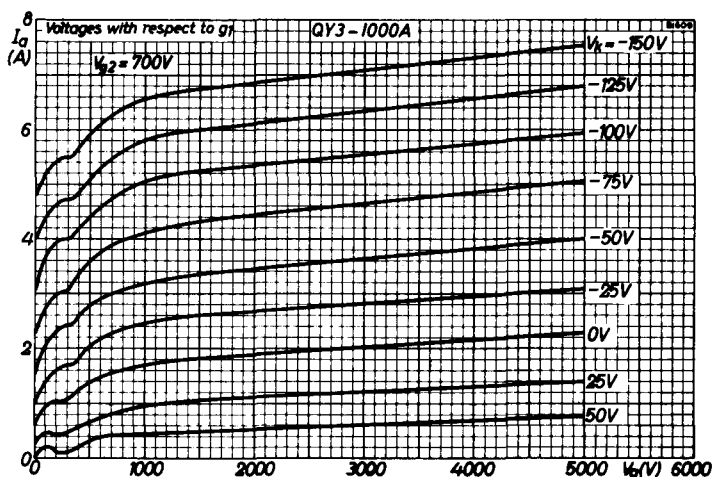


Fig 2

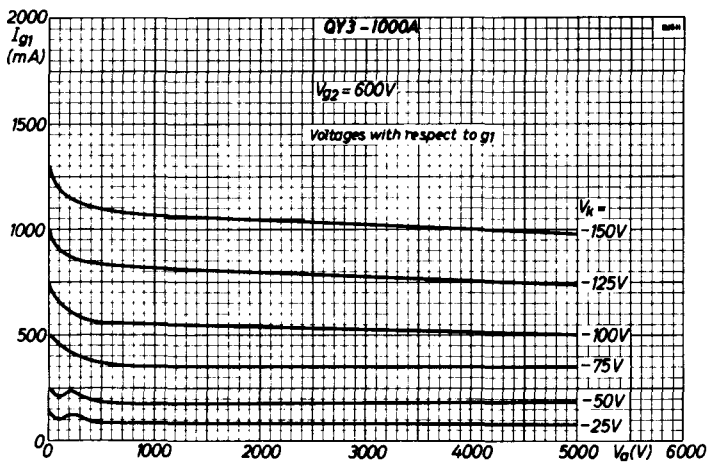
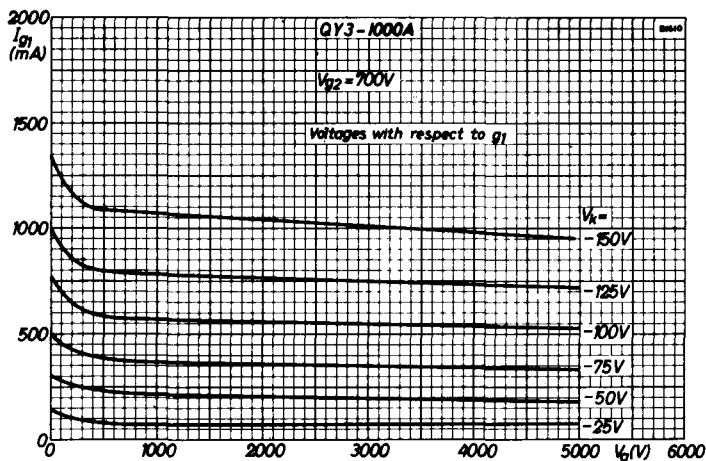
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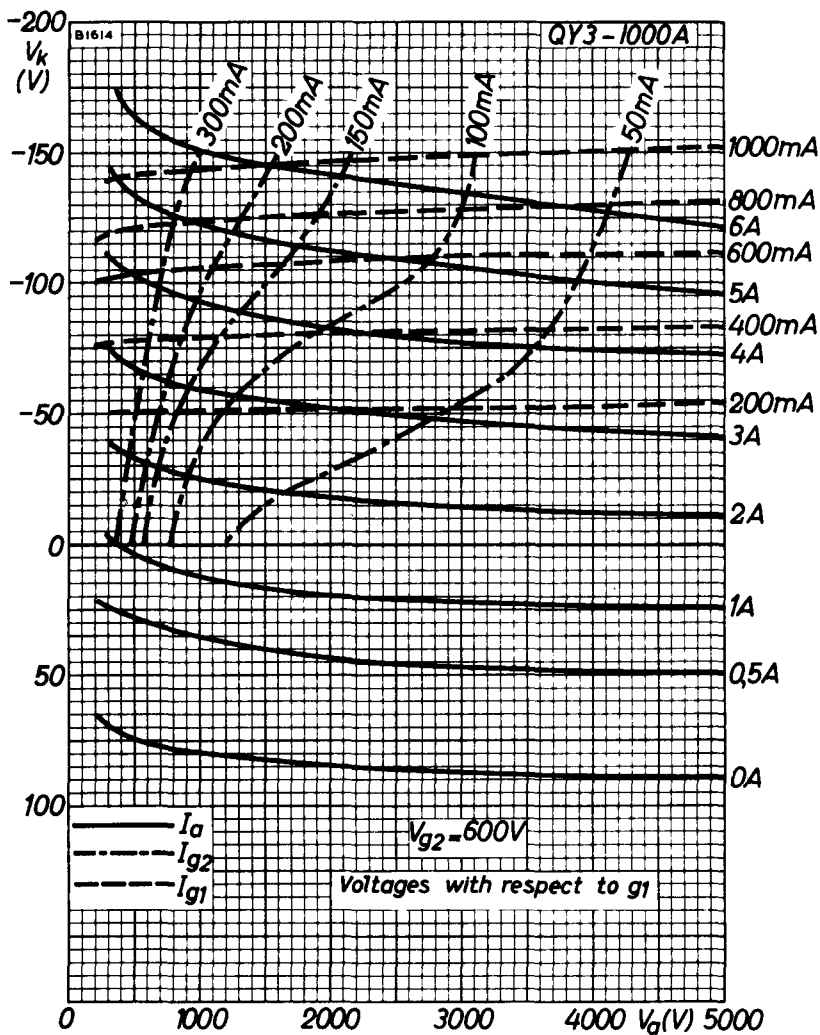
ANODE AND SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CATHODE VOLTAGE AS PARAMETER $V_{g2} = 600V$



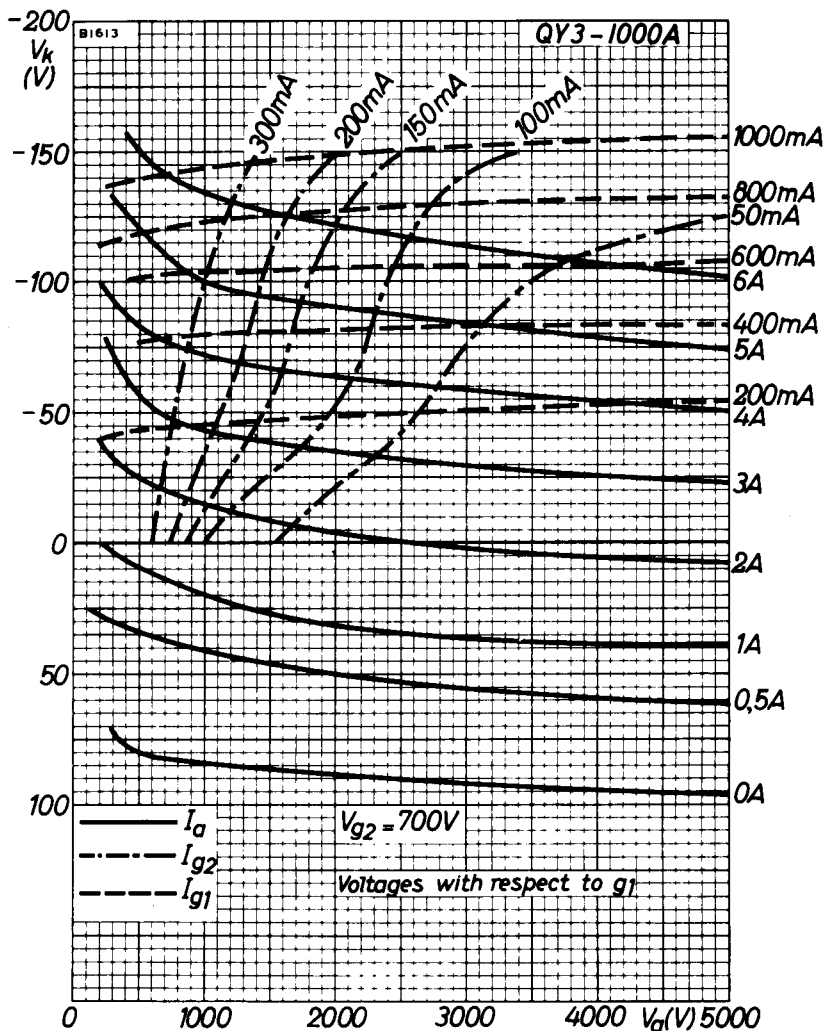
ANODE AND SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CATHODE VOLTAGE AS PARAMETER $V_{g2} = 700V$



CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CATHODE VOLTAGE AS PARAMETER $V_{g2} = 600V$ AND $V_{g2} = 700V$



CONSTANT CURRENT CURVES $V_{g2} = 600V$



CONSTANT CURRENT CURVES $V_{g2} = 700V$