

TRIODE

TY6-I2A

Application: V.H.F. power amplifier

Power output: 17kW continuous rating

Frequency: 110Mc/s at full ratings, 220Mc/s at reduced ratings

Construction: External anode, forced-air cooled

PRELIMINARY DATA

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

FILAMENT Directly heated, thoriated tungsten

V_f	6.3	V
* I_f	154	A
r_f (cold)	0.0054	Ω

*The filament current must never exceed a surge value of 500A at any time during the warming-up period.

MOUNTING POSITION

Vertical only, base up or down

CAPACITANCES

C_a g	29	pF
C_g f	65	pF
C_a f	600	mpF

CHARACTERISTICS

V_{ib}	4.0	kV
I_{ib}	1.0	A
g_m	60	mA/V
μ	60	

COOLING

Forced air

Maximum temperature of anode and grid seals 180 °C

In order to keep below the specified temperature limit, it may be necessary to direct an air flow on the seals as indicated on page D5. At 220Mc/s, for example, an air flow of 21ft.³ (0.6m³) per minute should be directed on each seal.

The amount of forced-air cooling required for this valve depends upon the anode dissipation and the height above sea level.

Typical values of inlet temperature, rate of air flow and pressure difference between the inlet and outlet of the housing are given in the following table:—

Anode dissipation	Height above sea-level	Max. inlet temperature	Min. rate of air flow (per min.)	Pressure difference between inlet and outlet
P_a (kW)	h (km) (ft)	T_{in} (°C)	(m ³) (ft ³)	(mm of water)
5.5	0	35	5.0 177	16
5.5	1.5 4900	35	5.9 208	16
5.5	3.0 9800	25	5.7 201	16
8.0	0	35	7.7 272	35
8.0	1.5 4900	35	9.0 318	40
8.0	3.0 9800	25	9.0 318	36
10	0	35	11 388	65
10	1.5 4900	35	13 459	75
10	3.0 9800	25	13 459	66

CLASS 'C' TELEGRAPHY OR F.M. TELEPHONY

Limiting values (absolute ratings)

f max.	110	Mc/s
V_a max.	5.5	kV
P_a max.	10	kW
$-V_g$ max.	500	V
I_g max.	1.5	A
I_k max.	7.5	A
$i_{k(pk)}$ max.	40	A
P_{in} max.	30	kW

Typical operation

f	110	Mc/s
V_a	5.0	kV
V_g	-300	V
I_a	4.8	A
I_g	1.2	A
$V_{in(pk)}$	520	V
$P_{load(driver)}$	2.75	kW
P_a	9.0	kW
η_a	62.5	%
$*P_{out}$	15 + 2	kW
$P_{load} (\eta \text{ transfer} = 85\%)$	14.5	kW

*Includes power transferred from driver stage.

LINEAR GROUNDED GRID POWER AMPLIFIER FOR TELEVISION SERVICE (with positive modulation and negative synchronisation)**Limiting values**

f max.	88	220	Mc/s
V _a max.	5.5	4.5	kV
p _a (peak white) max.	10	10	kW
I _a (peak white) max.	6.0	6.0	A
I _g (peak white) max.	1.2	1.2	A
P _{in} (peak white) max.	25	22	kW

Typical operation (at centre frequency of the resonance curve)

f	40 to 88	170 to 220	Mc/s
Bandwidth (-3.0dB)	6.0	12	Mc/s
V _a	5.0	4.0	kV
V _g	-90	-75	V
V _{in(pk)}			
peak white	270	255	V
black	110	95	V
I _a			
peak white	4.8	4.8	A
black	1.45	1.45	A
I _g			
peak white	1.0	1.0	A
black	200	200	mA
P _{load(driver)}			
peak white	1.4	1.3	kW
*P _{out}			
peak white	17	12	kW
black	1.7	1.2	kW
P _{load}			
peak white (η transfer = 70%)	11.9	8.4	kW

*Includes power transferred from driver stage.

CLASS 'B' LINEAR GROUNDED GRID POWER AMPLIFIER FOR TELEVISION SERVICE (with negative modulation and positive synchronisation)**Limiting values** (absolute ratings)

f max.	88	220	Mc/s
V _a max.	5.5	4.5	kV
p _a (sync.) max.	10	10	kW
I _a (sync.) max.	6.0	6.0	A
I _g (sync.) max.	1.2	1.2	A
P _{in} (sync.) max.	25	22	kW

Typical operation (at centre frequency of the resonance curve)

f	40 to 88	170 to 220	Mc/s
Bandwidth (-1.5dB)	—	7.0	Mc/s
Bandwidth (-3.0dB)	6.0	12	Mc/s
V _a	5.0	4.0	kV
V _g	-90	-75	V
V _{in(pk)} sync.	270	255	V
black	200	180	V
I _a sync.	4.8	4.8	A
black	3.6	3.6	A
I _g sync.	1.0	1.0	A
black	350	350	mA
P _{load(driver)} sync.	1.4	1.3	kW
*P _{out} sync.	17	12	kW
black	9.6	6.75	kW
P _{load} sync. ($\eta_{transfer}=70\%$)	11.9	8.4	kW

*Includes power transferred from driver stage.

WEIGHT

Valve only	20 lb	15oz
		9.5kg

ACCESSORIES

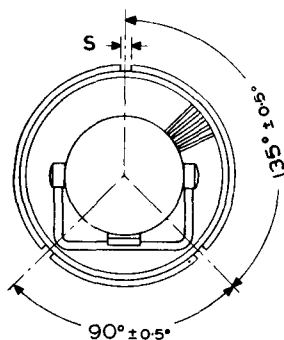
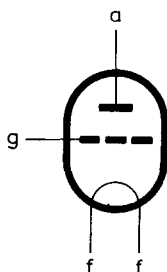
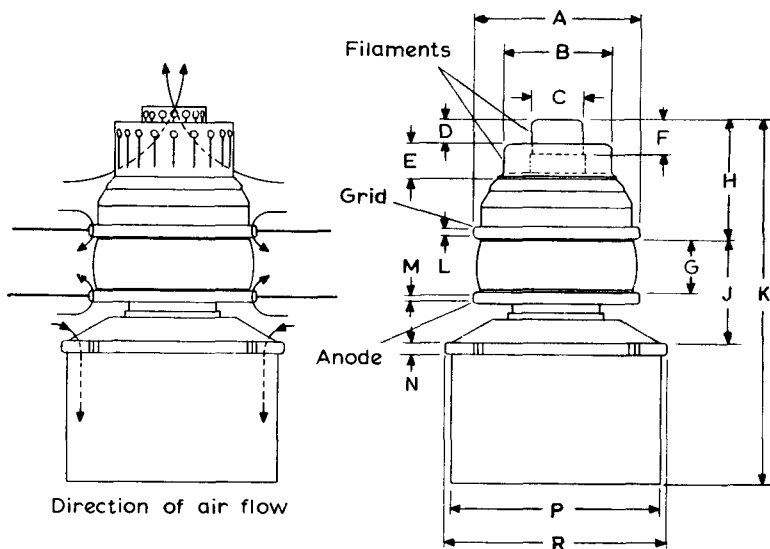
Insulating pedestal	40654
Anode connector	40651
Grid connector	40651
Inner filament connector	40652
Outer filament connector	40653

DIMENSIONS

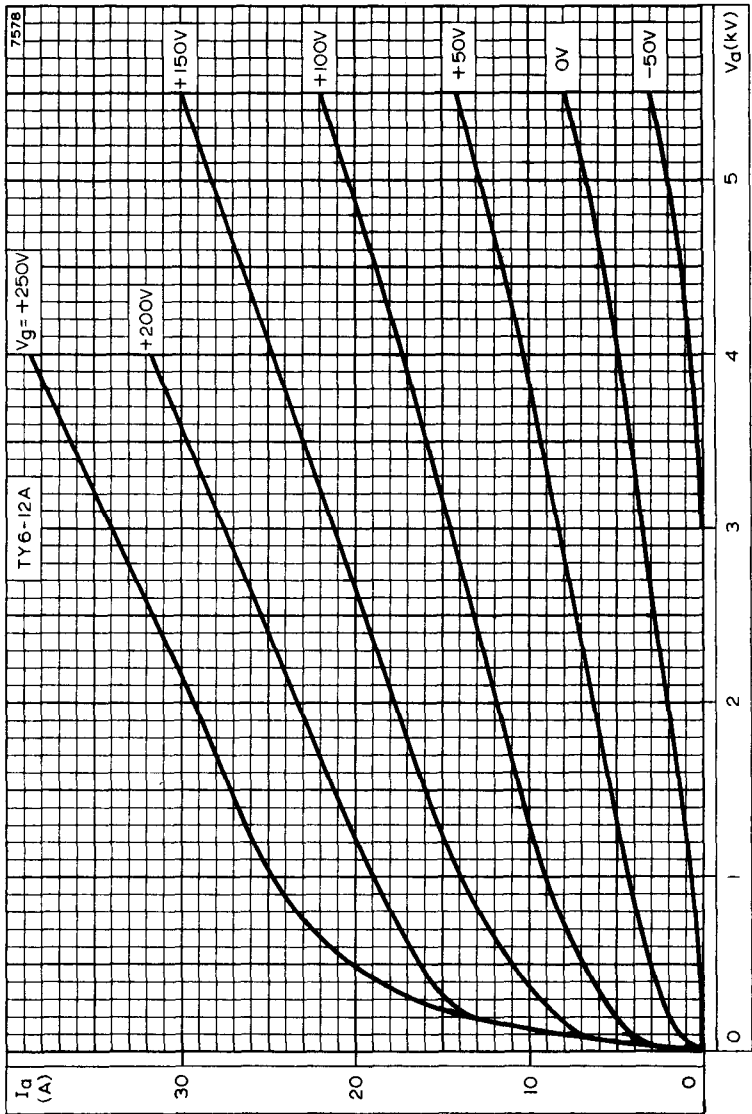
	Inches	Millimetres		Inches	Millimetres
A	5.000-0.039	127-1.0	J	3.051±0.039	77.5±1.0
B	3.228+0.019	82+0.5	K	10.847±0.059	275.5±1.5
C	1.595+0.019	40.5+0.5	L	0.217	5.5
D	0.709±0.039	18±1.0	M	0.217	5.5
E	0.984±0.039	25±1.0	N	0.315±0.012	8.0±0.3
F	1.024±0.039	26±1.0	P	6.260±0.028	159±0.7
G	1.595±0.039	40.5±1.0	R	6.654±0.019	169±0.5
H	3.543±0.039	90±1.0	S	0.354+0.019	9.0+0.5

TRIODE

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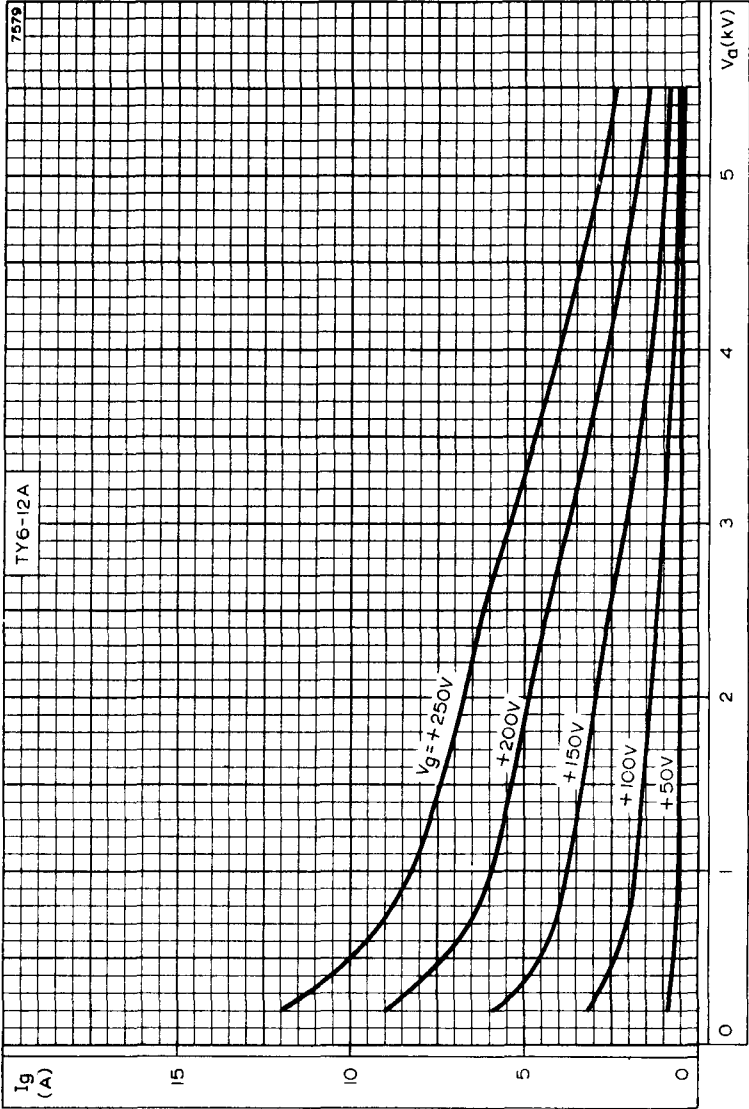


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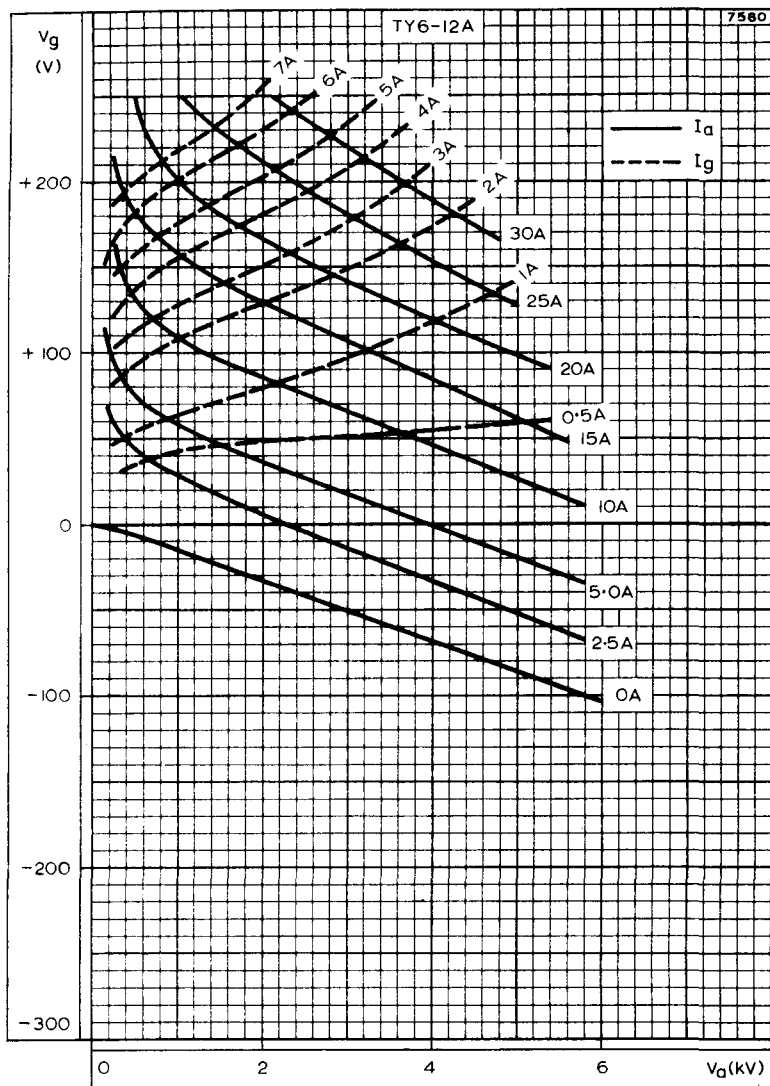


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH GRID VOLTAGE AS PARAMETER

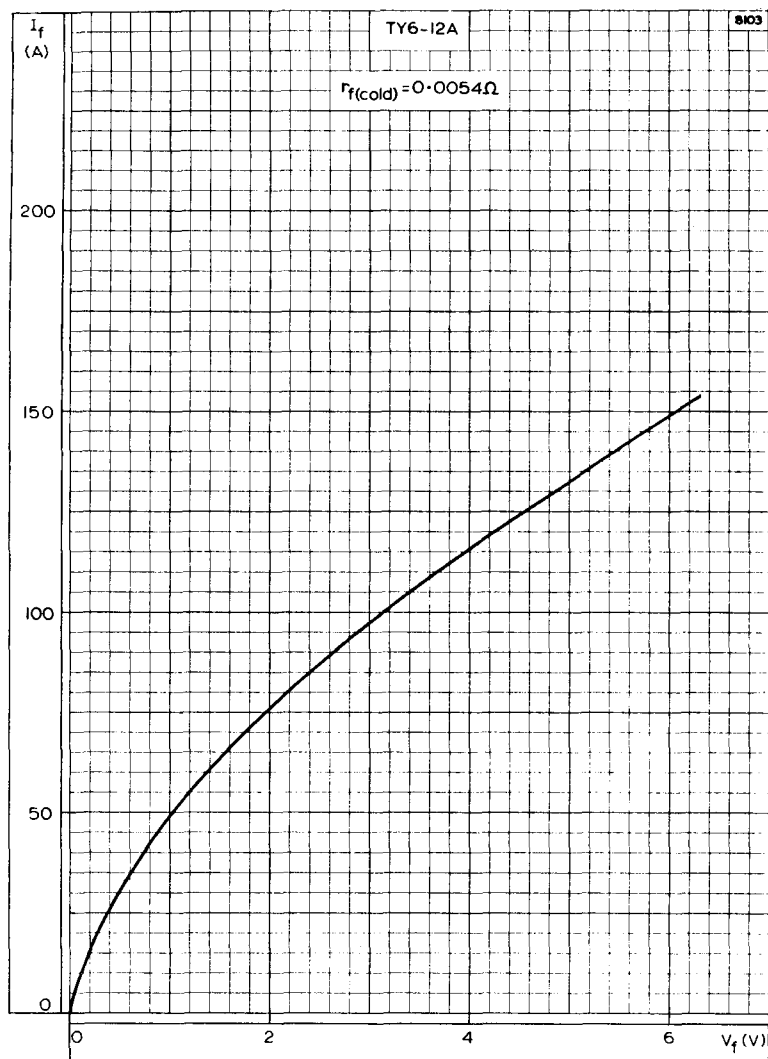




GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH GRID VOLTAGE AS PARAMETER



CONSTANT CURRENT CURVES



FILAMENT CURRENT PLOTTED AGAINST FILAMENT VOLTAGE