

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_a	4.0	kV
I_a	1.0	A
g_m	60	mA/V
μ	60	

COOLING

Forced air		
Maximum temperature of anode and grid seals	180	$^{\circ}\text{C}$

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 P_a (kW)	Height above sea-level h		Max. inlet temperature T_{in} (°C)	Min. rate of air flow (per min.)		Pressure difference between inlet and outlet (mm of water)
	(km)	(ft)		(m ³)	(ft ³)	
5.5	0	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	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	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)

	40 to 88	170 to 220	Mc/s
f			
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

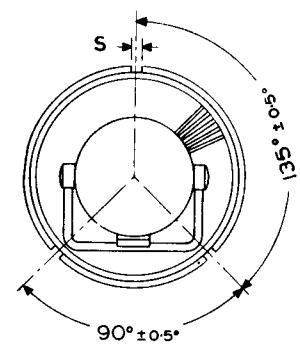
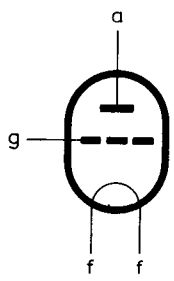
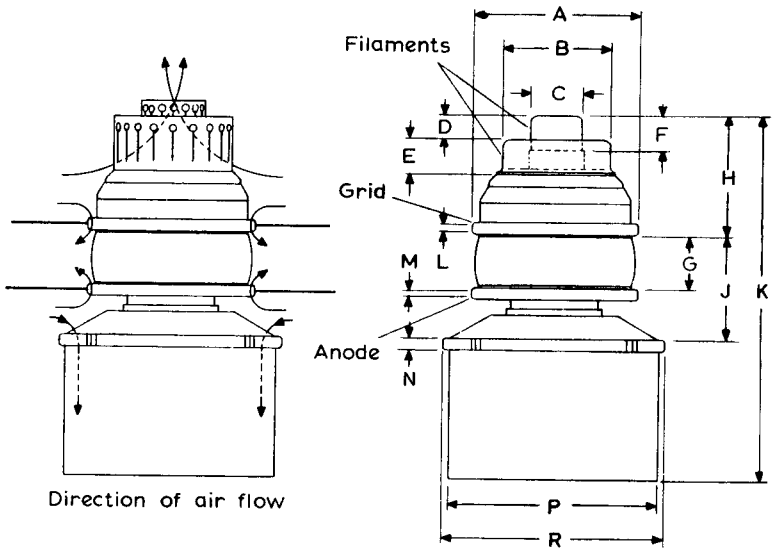
ACCESSORIES

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

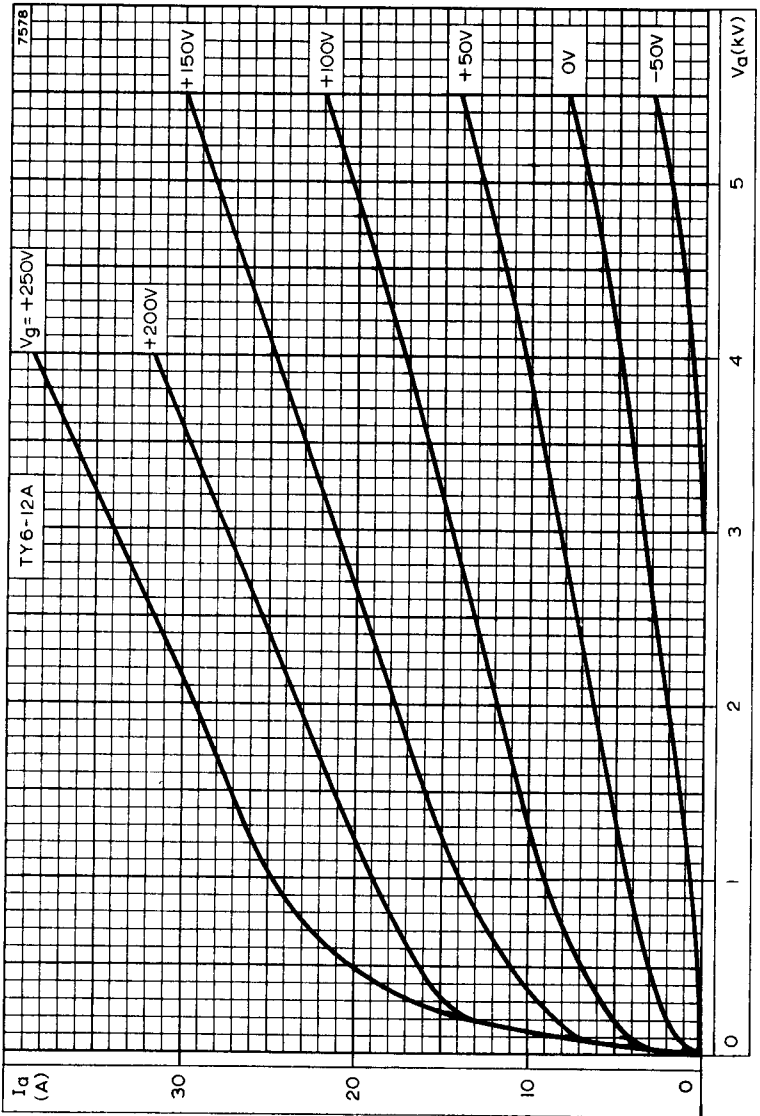
DIMENSIONS

	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





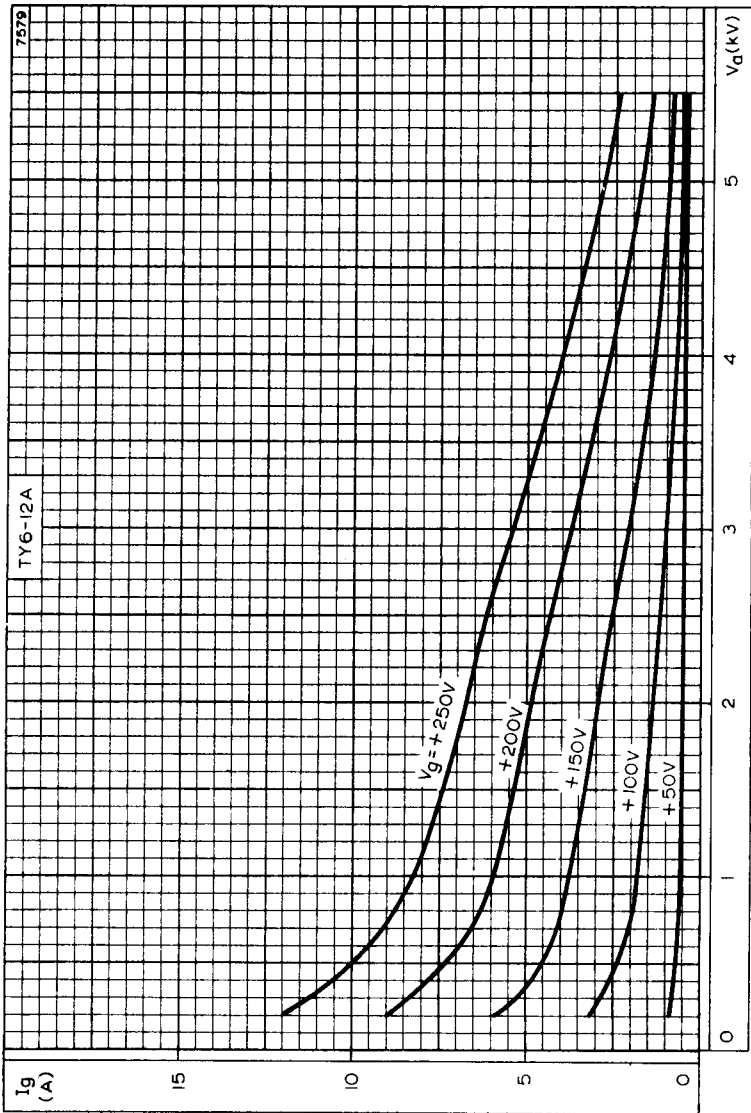
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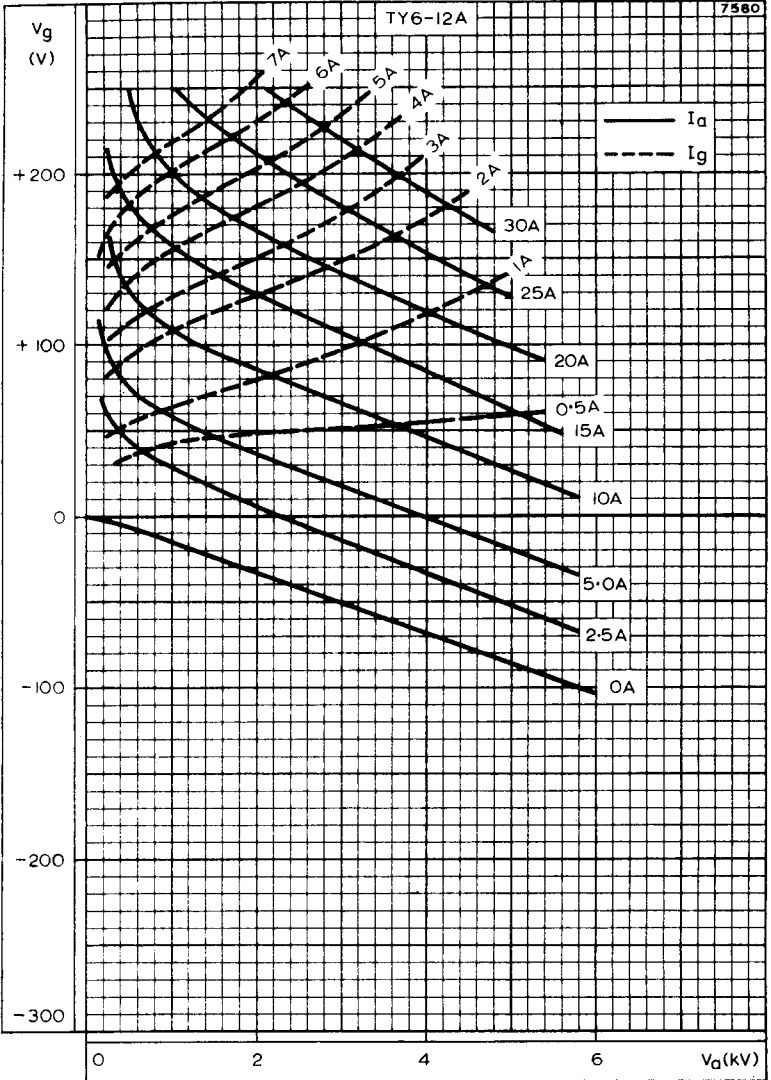
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH GRID VOLTAGE AS PARAMETER

TY6-12A

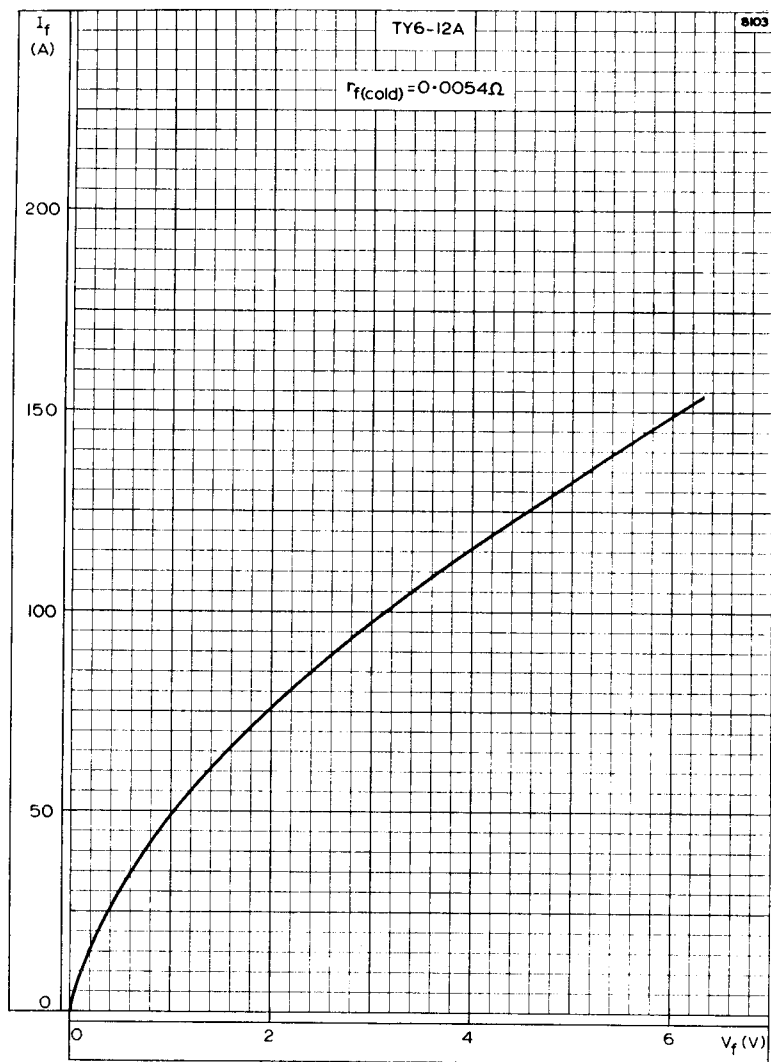
TRIODE



GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH GRID VOLTAGE AS PARAMETER



CONSTANT CURRENT CURVES



FILAMENT CURRENT PLOTTED AGAINST FILAMENT VOLTAGE