

WATER-COOLED R.F. TRIODE

High-power water-cooled triode, intended for R.F. heating applications.

TX12-12W

This data should be read in conjunction with "Operating Notes, Part 1—Power Valves" included in this volume of the Handbook.

FILAMENT

Pure Tungsten, suitable for a.c. or d.c. operation.

Marked V_f	19 ± 1.0	V
I_f (approx.)	72	A

(Marked volts give 10 amps emission for 90% saturation.)

CAPACITANCES (Measured without water jacket)

C_{g-f}	25	$\mu\mu\text{F}$
C_{a-f}	2.2	$\mu\mu\text{F}$
C_{a-g}	30	$\mu\mu\text{F}$

CHARACTERISTICS (At $V_a = 10 \text{ kV}$, $V_g = 0\text{V}$)

g_m	9.0	mA/V
μ	45	
r_a	5.0	$\text{k}\Omega$

LIMITING VALUES

* $V_a \text{ max.}$ ($f = 15 \text{ Mc/s}$)	12	kV
$P_a \text{ max.}$	12	kW
$P_g \text{ max.}$	350	W
$I_g \text{ (d.f.) max.}$	30	A
Min. rate of flow of water	3.0	gal/min
Max. water outlet temperature	65	$^{\circ}\text{C}$

*At higher frequencies the permissible anode voltage is reduced to the following percentages of the maximum:

f	20	25	40	Mc/s
% of $V_a \text{ max.}$	85	65	35	%

MAXIMUM OPERATING CONDITIONS AS SINGLE VALVE R.F. POWER OSCILLATOR

V_a	8.0	10	12	kV
V_g	-290	-460	-375	V
I_a	2.4	2.5	2.6	A
I_g (approx.)	250	130	140	mA
$V_{in} \text{ (pk)}$	1.3	1.5	1.4	kV
P_{drive} (approx.)	320	200	200	W
R_a	1.6	1.9	2.3	$\text{k}\Omega$
P_{out}	13	16.7	21.5	kW
P_a	6.2	8.3	9.7	kW



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R.F. HEATING APPLICATIONS

For these applications, individual requirements should be discussed with Industrial Technical Service Department, Mullard Limited.

OPERATING NOTES

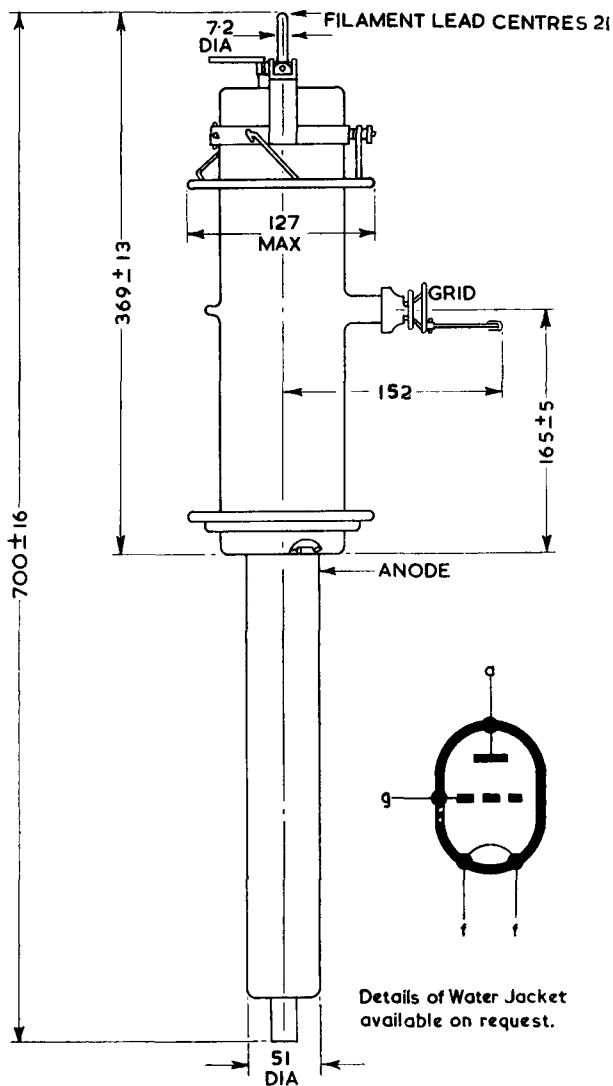
- (a) It is essential that the filament seal be cooled with a blast of air. All cooling supplies should commence before the application of any voltage.
- (b) The resistance of the filament when cold is 0.021Ω . The filament current must never be allowed to exceed 105 amps.
If the valve is operated for periods greater than 15 minutes without the applied anode voltage, the filament voltage must be reduced to one half its normal value during the stand-by period.



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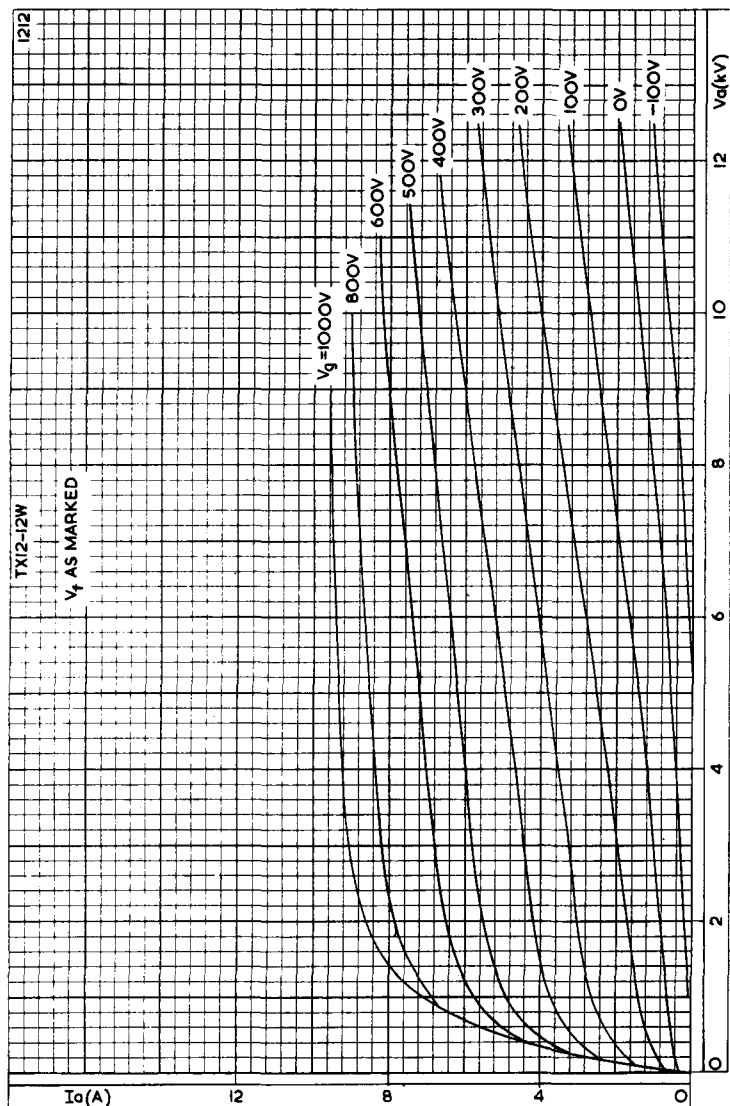


All dimensions in mm.

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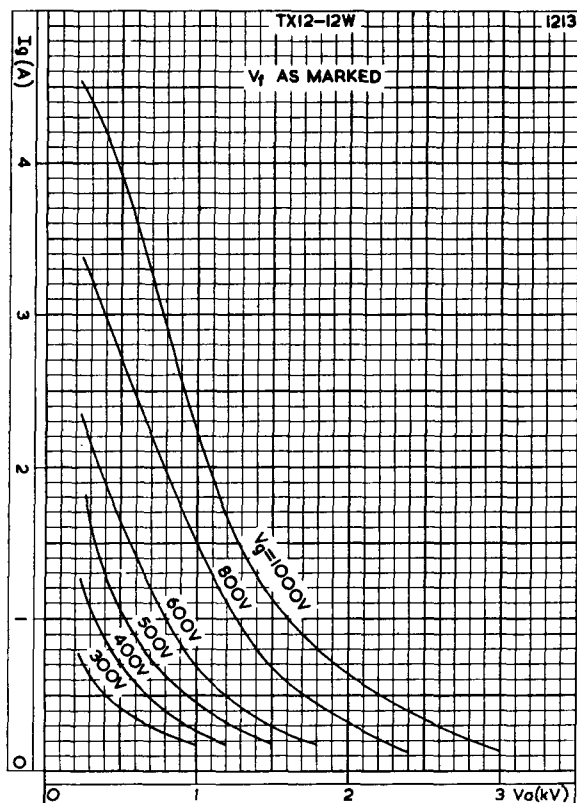


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH GRID
VOLTAGE AS PARAMETER

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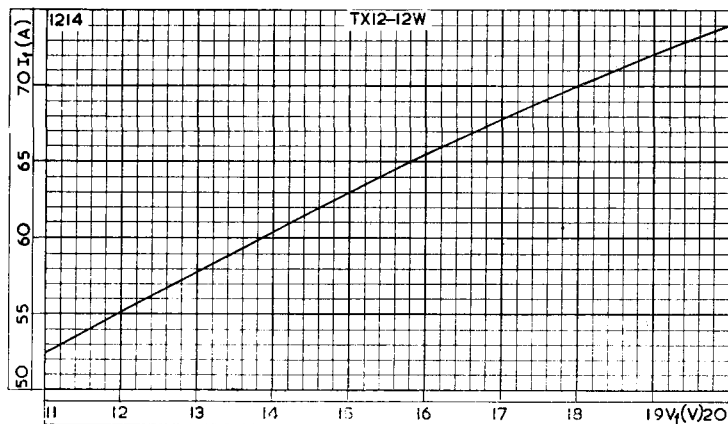


GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH GRID VOLTAGE AS PARAMETER

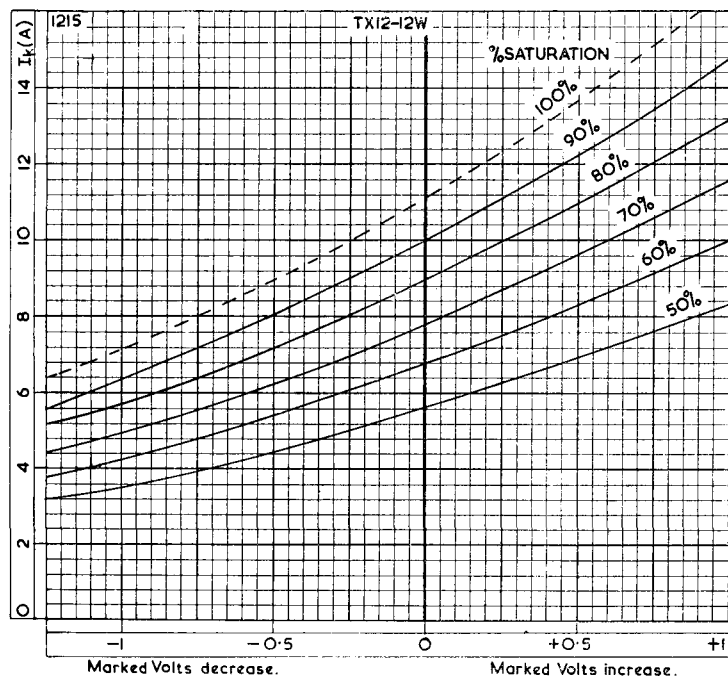
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VARIATION OF FILAMENT CURRENT WITH FILAMENT VOLTAGE



VARIATION OF CATHODE EMISSION WITH DEVIATION OF FILAMENT VOLTAGE FROM MARKED VALUE SHOWING VARIOUS DEGREES OF SATURATION