BR/BW140

R.F. POWER TRIODES

Service Type CV2871 (BW140)

The data should be read in conjunction with the Power Triode Preamble.

ABRIDGED DATA

Two r.f. transmitting triodes differing only in anode dissipation and the method of anode cooling.

Anode cooling:		
BR140	forced-air	
BW140	water; separate jacket	
Anode dissipation:		
BR140	8.0	kW max
BW140	12	kW max
Anode voltage	12	kV max
Frequency for full ratings	15	MHz max
Frequency at reduced ratings	40	MHz max

GENERAL

Electrical

Filament	tungsten	
Filament voltage (see note 1)	19	V
Filament current	75	A
Surge filament current (peak) (see note 2)	113	A max
Filament cold resistance	22.5	mΩ
Peak usable cathode current	see note 1 and page 7	
Amplification factor (V_a = 9.0kV, I_a = 1.0A)	45	
Mutual conductance (V_a = 8.0kV, I_a = 1.5A)	9.0	mA/V
Inter-electrode capacitances:		
grid to anode	30	pF
grid to filament	27	pF
anode to filament	2.5	pF

Mechanical

Overall dimensions	see outline drawings	
Net weight:		
BR140	46 pounds (21kg) approx	
BW140	6 pounds (2.7kg) approx	
Mounting position	vertical, filament end up	

Accessories

Filament leads MA135
Sealing ring (supplied with BW140) MA248

COOLING

Anode

The BR140 air cooling requirements are shown on pages 8 and 9. The required air flow should be delivered through the radiator immediately before and during the application of any voltages. Filament power, anode power and air flow may be removed simultaneously. The anode temperature must not exceed 180°C.

The anode of the BW140 must be fitted into a water jacket for cooling, the flow necessary being 3 to 4 imp.gal/min (13.5 to 18 l./min). The temperature of the cooling water at the outlet must not exceed 65°C nor must the temperature rise across the jacket exceed 15°C. The anode temperature must not exceed 140°C.

Filament and Grid Seals

The temperature of the filament and grid seals must not exceed 140°C. In some cases it may be necessary to blow air on to the header to maintain the seal temperatures within this limit. A suitable arrangement is to blow 10 to 30ft^3/min (0.3 to 0.9m^3/min approx) of air through a 1-inch (25mm) diameter nozzle directed on to the header before and during the application of any voltages.

MAXIMUM RATINGS (Absolute values)

Anode voltage	see table below	
Anode dissipation:		
BR140	8.0	kW max
BW140	12	kW max
Grid dissipation	0.8	kW max

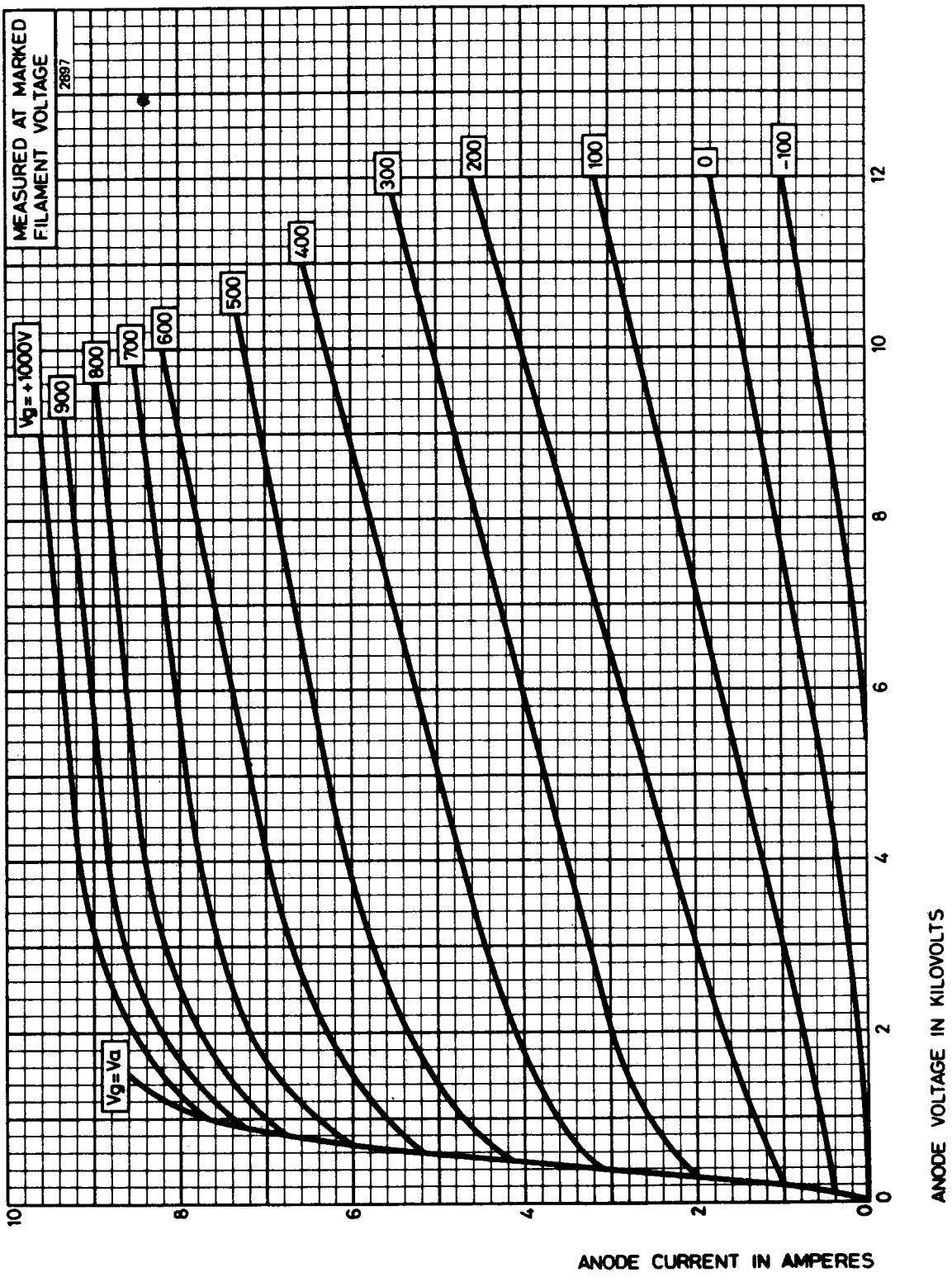
Maximum Anode Voltage against Frequency

Operating frequency (MHz)	Max anode voltage c.w. (kV)	Max anode voltage with anode modulation (kV)
15	12.0	10.0
20	10.2	8.5
25	7.8	6.5
40	4.2	3.5

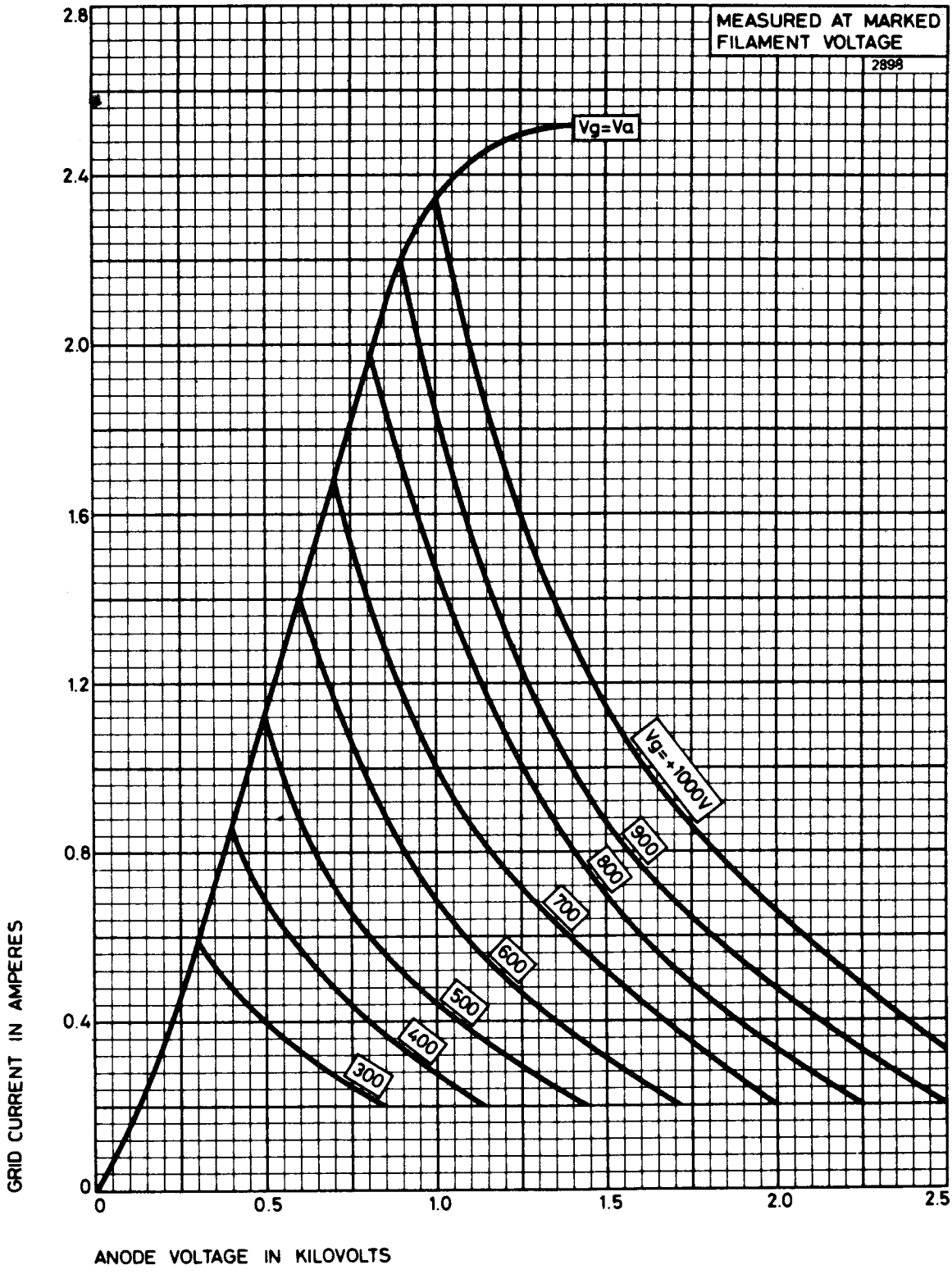
NOTES

1. Marked filament voltage. Each valve is marked with the filament voltage required to give 10A peak emission at 90% saturation. Longer filament life may be obtained if the filament is operated at a reduced temperature and a correspondingly reduced anode current (see Emission Characteristic on page 7) but care must be taken to keep the anode dissipation within the maximum rating.
2. The filament current must not exceed 113A, even momentarily, at any time.

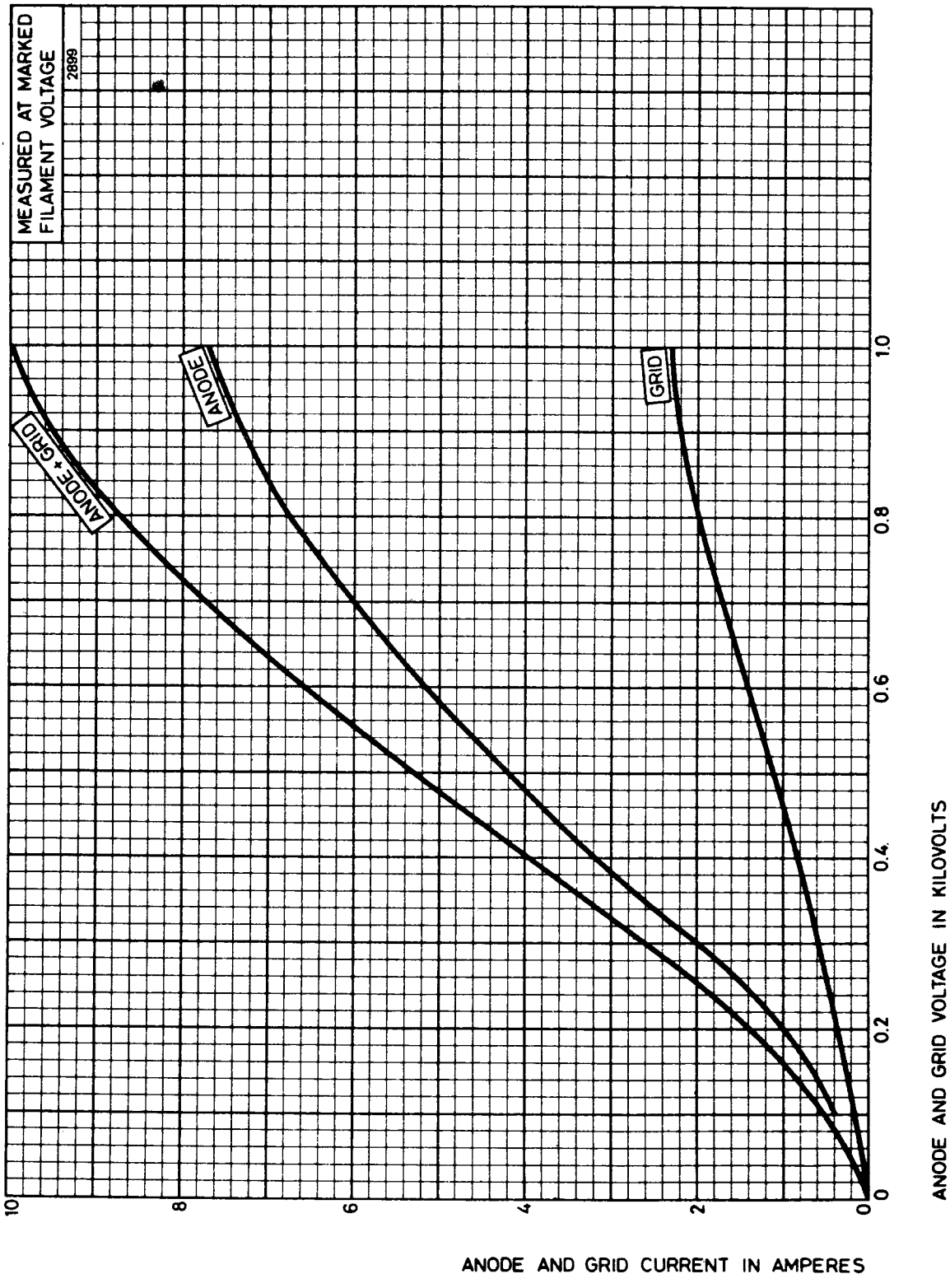
TYPICAL ANODE CHARACTERISTICS



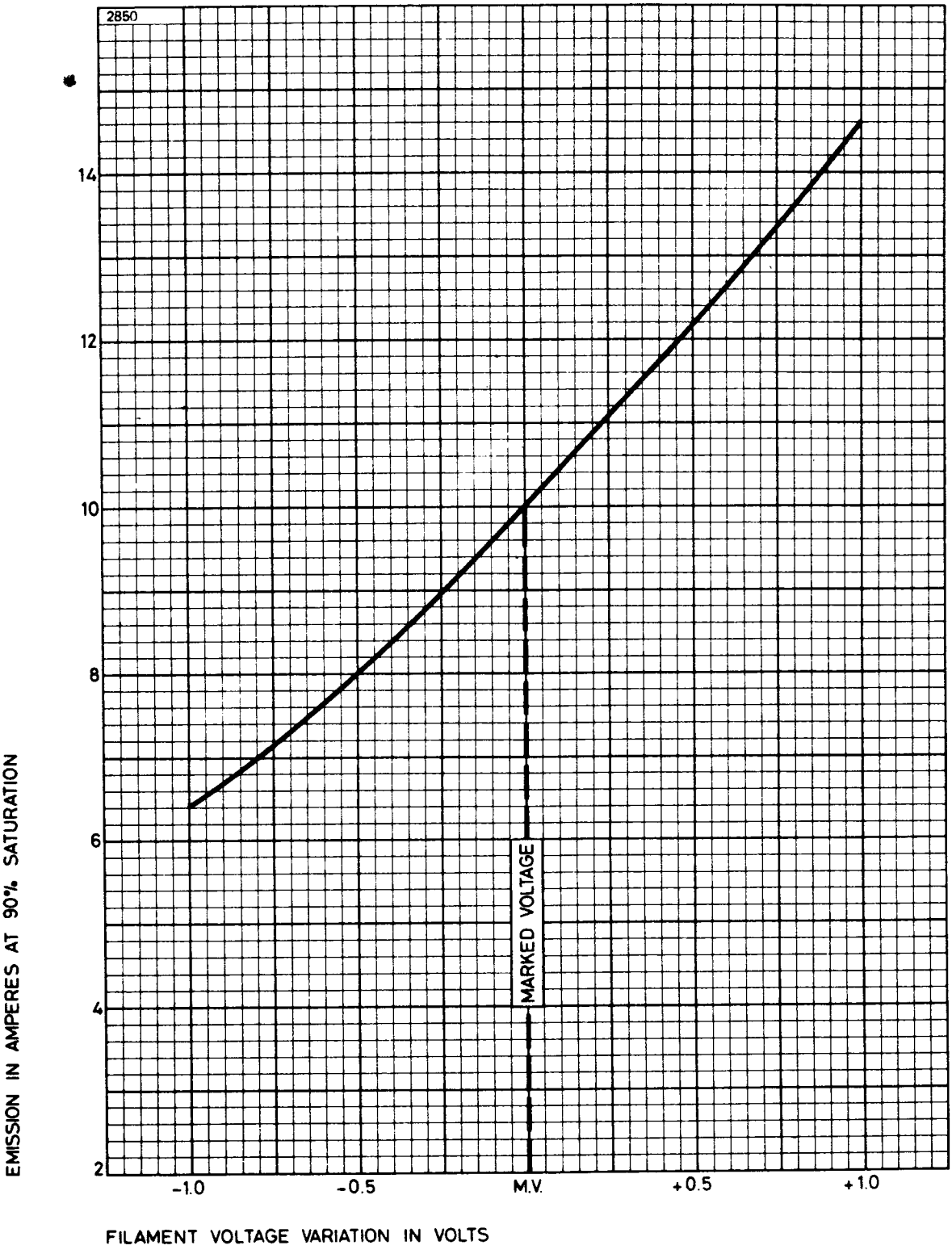
TYPICAL GRID CHARACTERISTICS



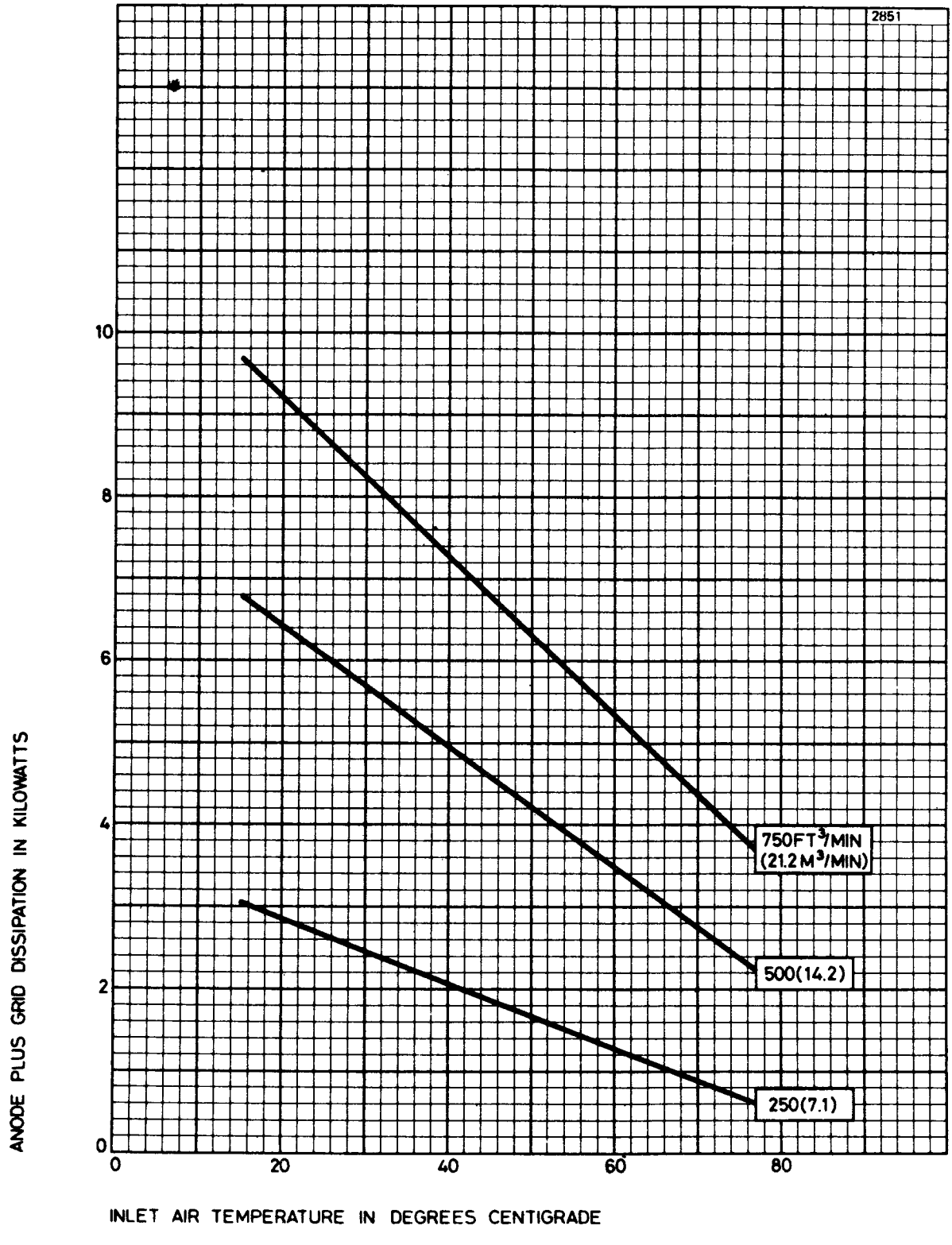
TYPICAL STRAPPED CHARACTERISTICS



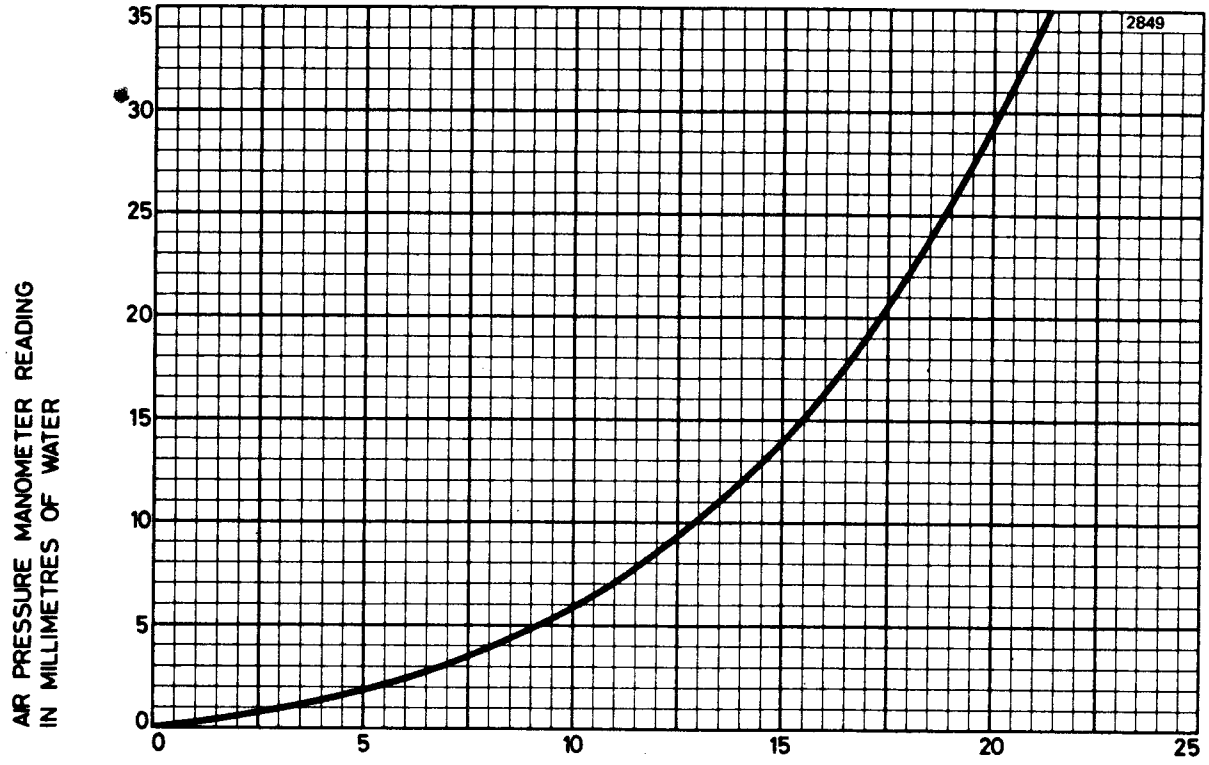
TYPICAL EMISSION CHARACTERISTIC

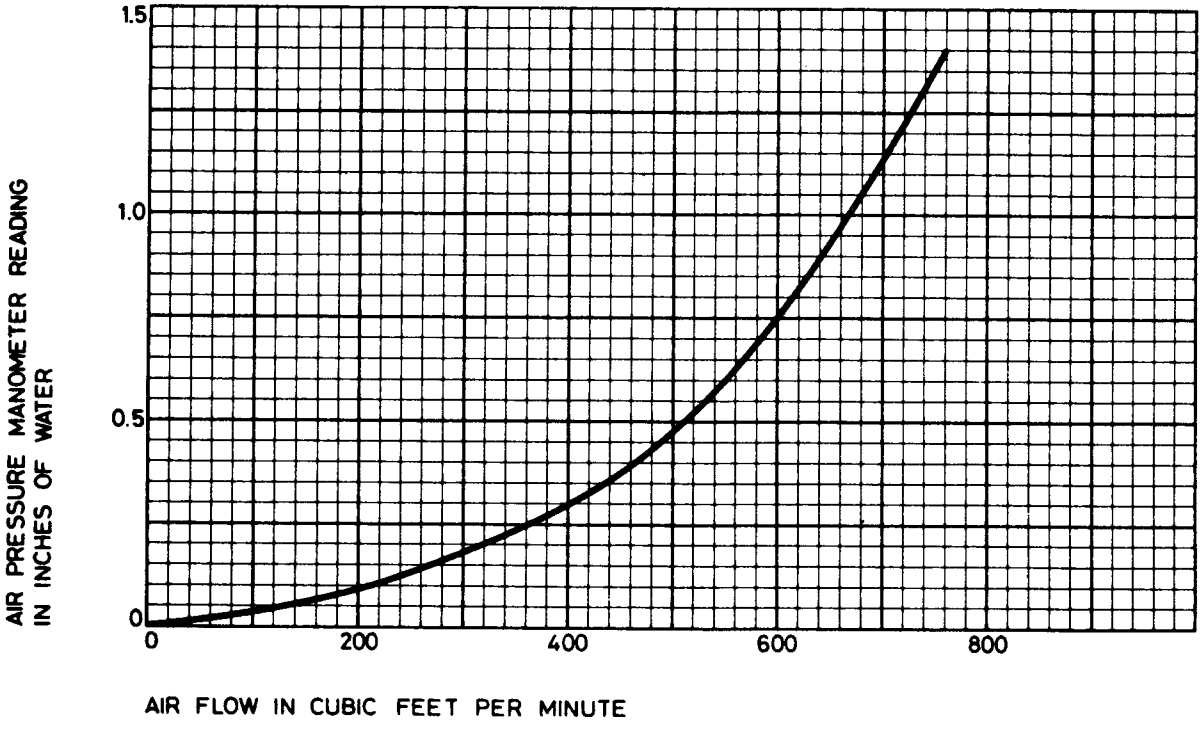


AIR COOLING REQUIREMENTS FOR BR140

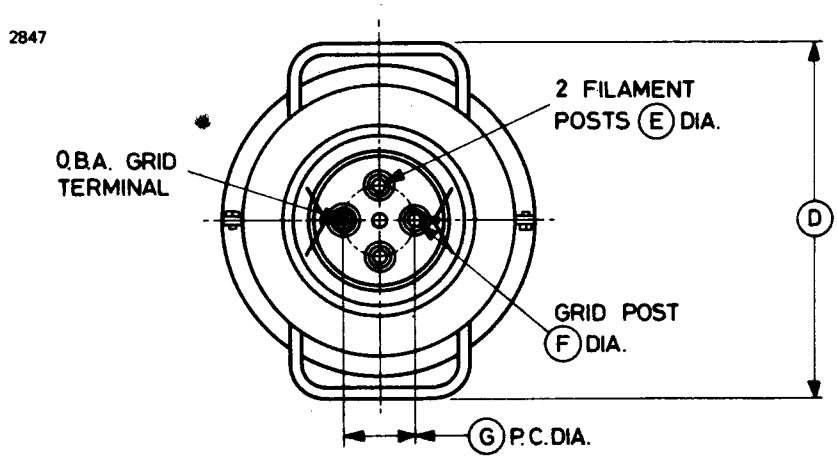


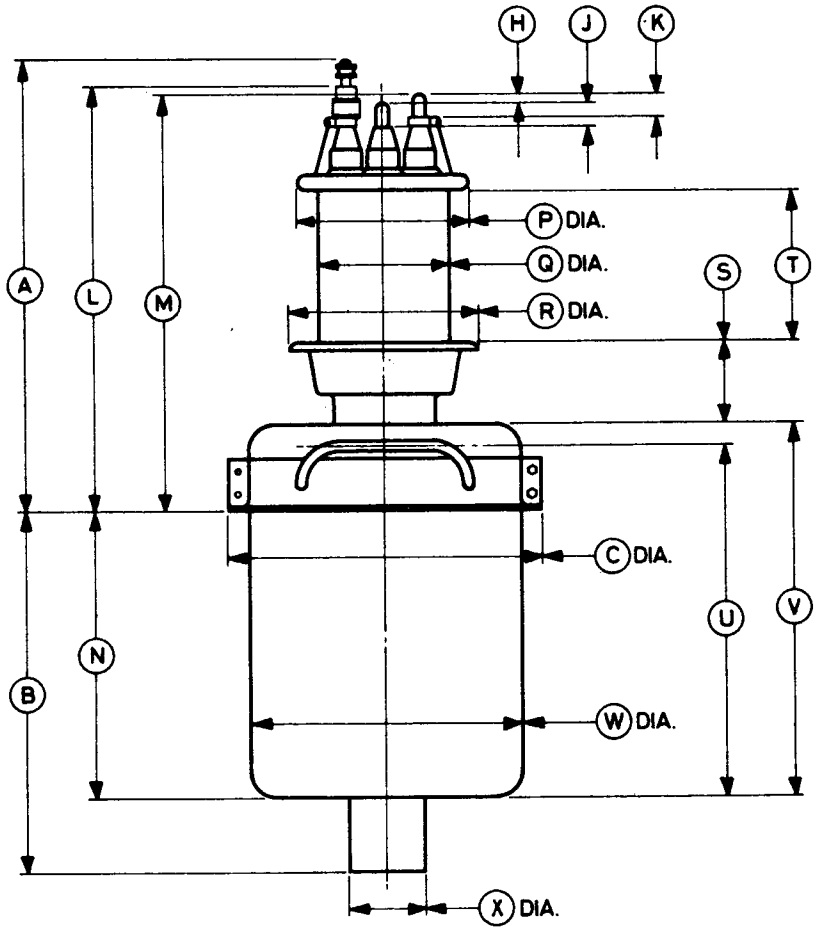
TYPICAL AIR FLOW CHARACTERISTIC FOR BR140





OUTLINE FOR BR140



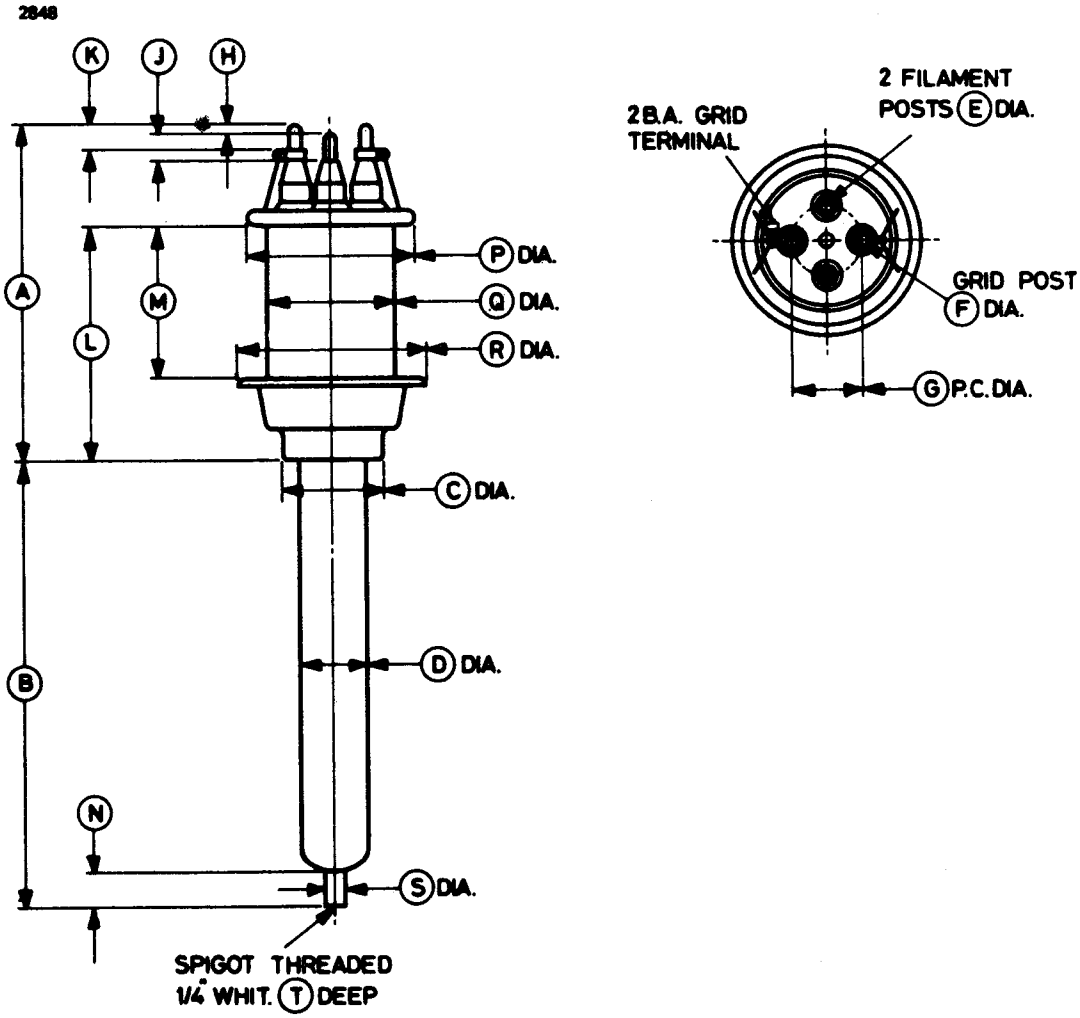


Dimensions for BR140 (All dimensions without limits are nominal)

Ref	Inches	Millimetres
A	13.625 max	346.1 max
B	10.750	273.1
C	9.250 max	235.0 max
D	11.625 max	295.3 max
E	0.437	11.10
F	0.437	11.10
G	2.125	53.98
H	0.250	6.35
J	0.875	22.23
K	0.687	17.45
L	13.000 max	330.2 max
M	12.500 max	317.5 max
N	8.500	215.9
P	5.000	127.0
Q	3.600	91.44
R	5.500	139.7
S	2.375	60.33
T	4.563 ± 0.063	115.9 ± 1.6
U	10.750 max	273.1 max
V	11.000	279.4
W	8.125 max	206.4 max
X	2.250	57.15

Millimetre dimensions have been derived from inches.

OUTLINE FOR BW140 (All dimensions without limits are nominal)



Ref	Inches	Millimetres	Ref	Inches	Millimetres
A	9.625 ± 0.125	244.5 ± 3.2	K	0.687	17.45
B	13.000	330.2	L	6.813 ± 0.063	173.1 ± 1.6
C	3.000 max	76.20 max	M	4.437 ± 0.063	112.7 ± 1.6
D	2.000	50.80	N	1.000	25.40
E	0.437	11.10	P	5.000	127.0
F	0.437	11.10	Q	3.600	91.44
G	2.125	53.98	R	5.500	139.7
H	0.250	6.35	S	0.625	15.88
J	0.875	22.23	T	0.875	22.23

Millimetre dimensions have been derived from inches.