BR1182
BW1182J1

R.F. POWER TRIODES

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

ABRIDGED DATA

Two r.f. power triodes with ceramic/metal envelopes, intended primarily for industrial service. They differ only in the method of anode cooling.

Anode cooling:		
BR1182		forced-air
BW1182J1		water; integral jacket
Anode dissipation	15	kW max
Anode voltage	10	kV max
Frequency for full ratings	50	MHz max
Output power (class C unmodulated conditions)	50	kW

GENERAL

Electrical

Filament		thoriated tungsten
Filament voltage (see note 1)	6.6	V
Filament current	230	A
Filament starting current (peak) (see note 2)	600	A max
Filament cold resistance	3.5	mΩ
Peak usable cathode current	45	A
Perveance	2.3	$mA/V^{3/2}$
Amplification factor (V_a = 6.0kV, I_a = 3.0A)	38	
Mutual conductance (V_a = 7.0kV, I_a = 3.0A)	45	mA/V
Inter-electrode capacitances:		
grid to anode	50	pF
grid to filament	82	pF
anode to filament	1.5	pF

Mechanical

Overall dimensions	see outline drawings
Net weight:	
BR1182	16kg (35 pounds) approx
BW1182J1	4.5kg (10 pounds) approx
Mounting position	vertical, either way up

Accessories

Smaller filament terminal connector	MA291C
Larger filament terminal connector	MA291D

COOLING

Anode

The BR1182 air cooling requirements are shown on pages 7 and 8. The required air flow should be delivered by a blower through the radiator immediately before and during the application of any voltages. Filament power, anode power and air flow may be removed simultaneously.

Type BW1182J1 has an integral water jacket (see outline drawing). Minimum water cooling requirements are shown on page 9; higher rates of flow should be used where possible.

Filament and Grid Seals

The temperature of the filament and grid seals must not exceed 140°C. A flow of air of 20 to 30ft^3/min (0.57 to 0.85m^3/min) directed onto the filament terminals via a 1-inch (25mm approx) diameter nozzle before and during the application of any voltages is usually adequate for limiting the temperatures of the seals.

Anode Seal and Envelope

The anode seal and envelope temperatures must not exceed 180°C.

R.F. POWER AMPLIFIER AND OSCILLATOR
(Class C unmodulated conditions, one valve)

MAXIMUM RATINGS (Absolute values)

Anode voltage (see note 3)	10	kV max
Anode current	7.0	A max
Anode dissipation (see note 4)	15	kW max
Grid dissipation	1.0	kW max
Operating frequency (for full ratings)	50	MHz max

TYPICAL OPERATING CONDITIONS

Anode voltage	8.0	10	kV
Grid voltage	−420	−470	V
from grid resistor	350	410	Ω
Peak r.f. grid drive voltage	870	920	V
Anode current	6.6	6.6	A
Grid current (approx)	1.2	1.14	A
Anode dissipation	11	12.8	kW
Grid dissipation	540	510	W
Driving power	1040	1050	W
Output power	40	52	kW
Efficiency	77	79	%
Load resistance	640	810	Ω

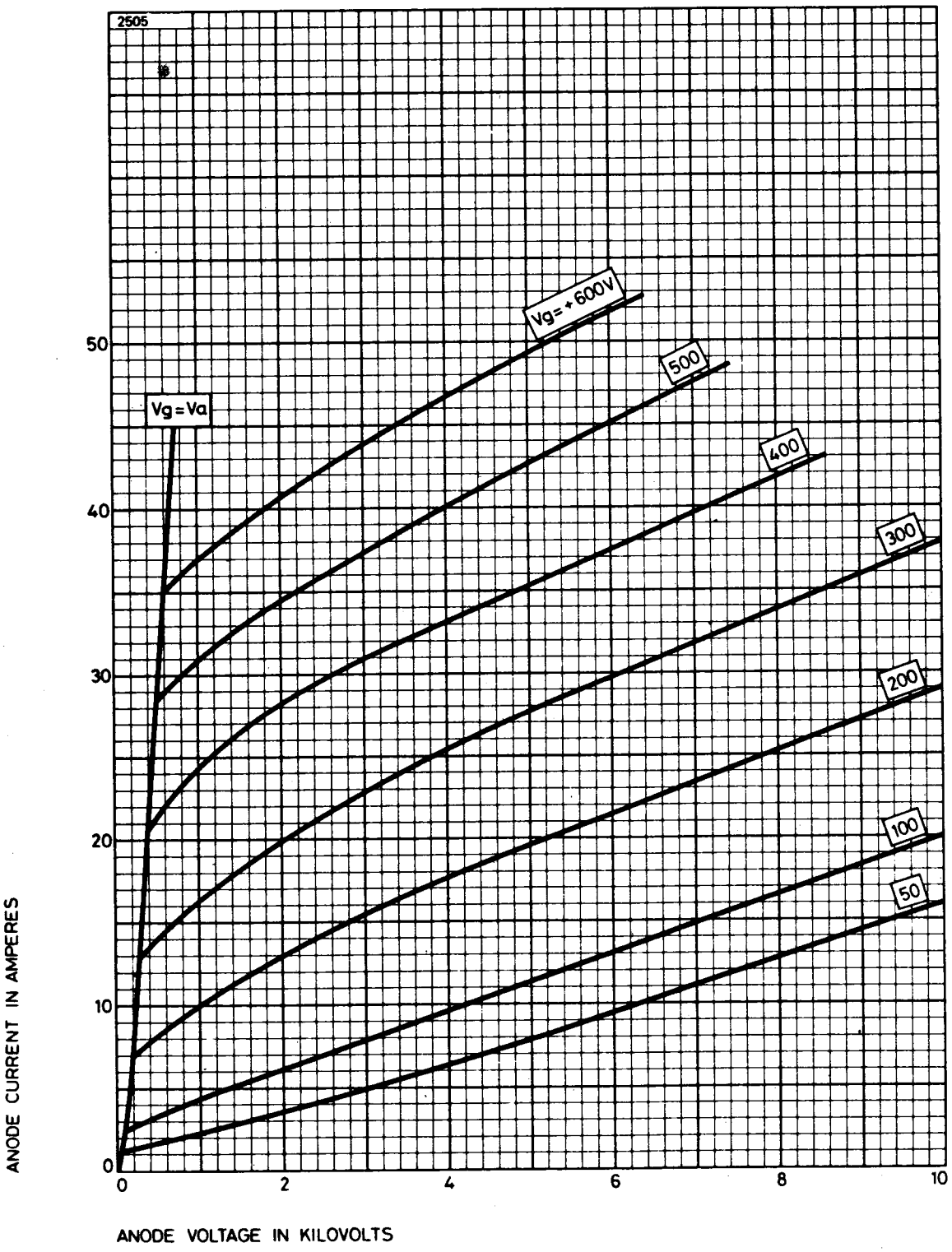
RANGE OF CHARACTERISTICS FOR EQUIPMENT DESIGN

	Min	Max	
Filament current at filament voltage 6.6V	216	244	A
Amplification factor (V_a = 6.0kV, I_a = 3.0A)	33	45	
Mutual conductance (V_a = 7.0kV, I_a = 3.0A)	40	50	mA/V
Anode current (V_a = 1.5kV, V_g = +600V)	33	42	A
Grid current (V_a = 1.5kV, V_g = +600V)	8.0	11	A
Grid voltage (negative) (V_a = 6.0kV, I_a = 0.1A)	—	200	V

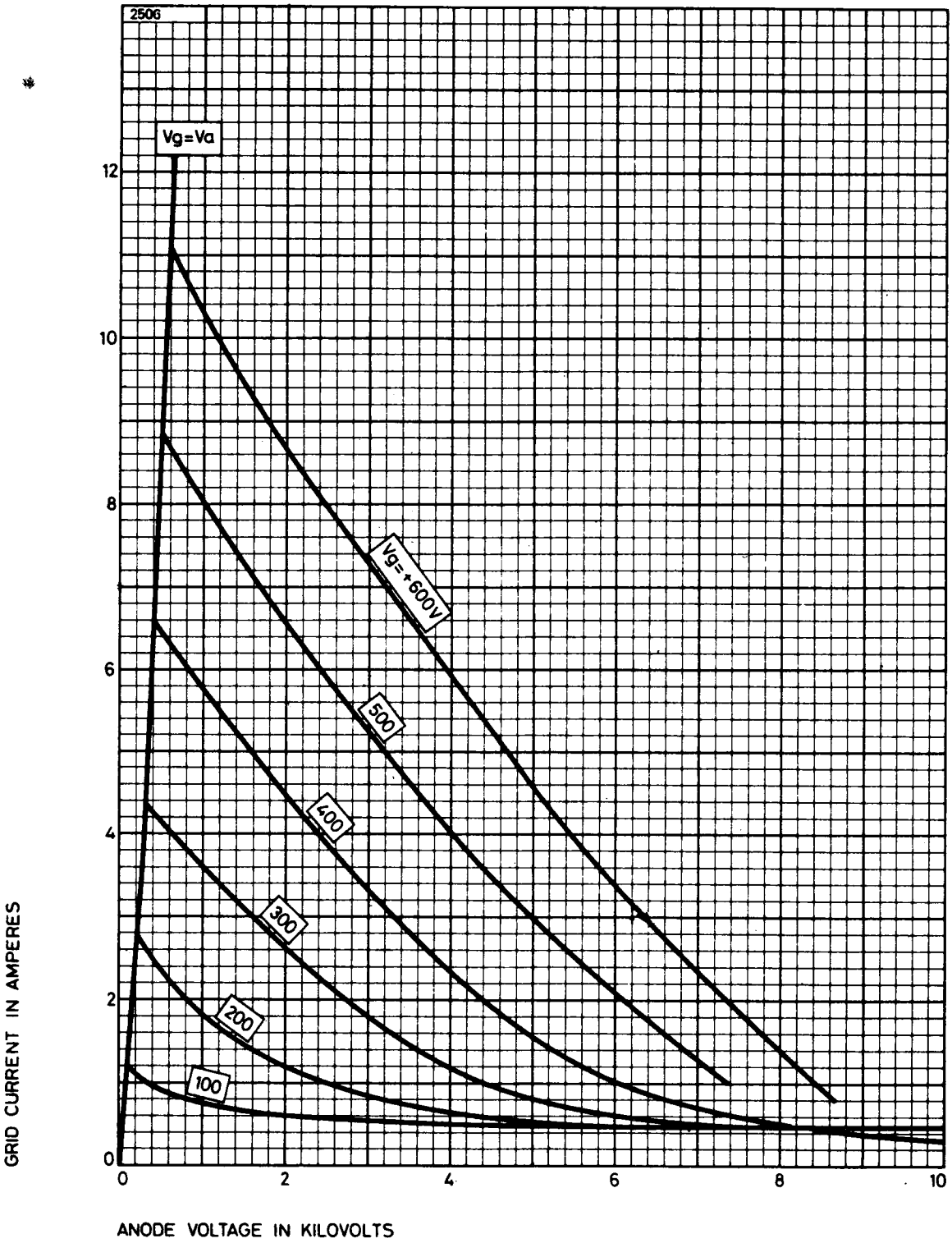
NOTES

1. The valve must be operated at the stated filament voltage. Fluctuation in filament voltage must not exceed ±5%.
2. The filament current must not exceed 600A, even momentarily, at any time.
3. This is the highest nominal operating voltage to be used. It makes allowance for the normal mains voltage fluctuations as well as tolerances in the equipment.
4. The valve can dissipate higher powers for periods up to 15 seconds provided that the average over a long period does not exceed the maximum stated.

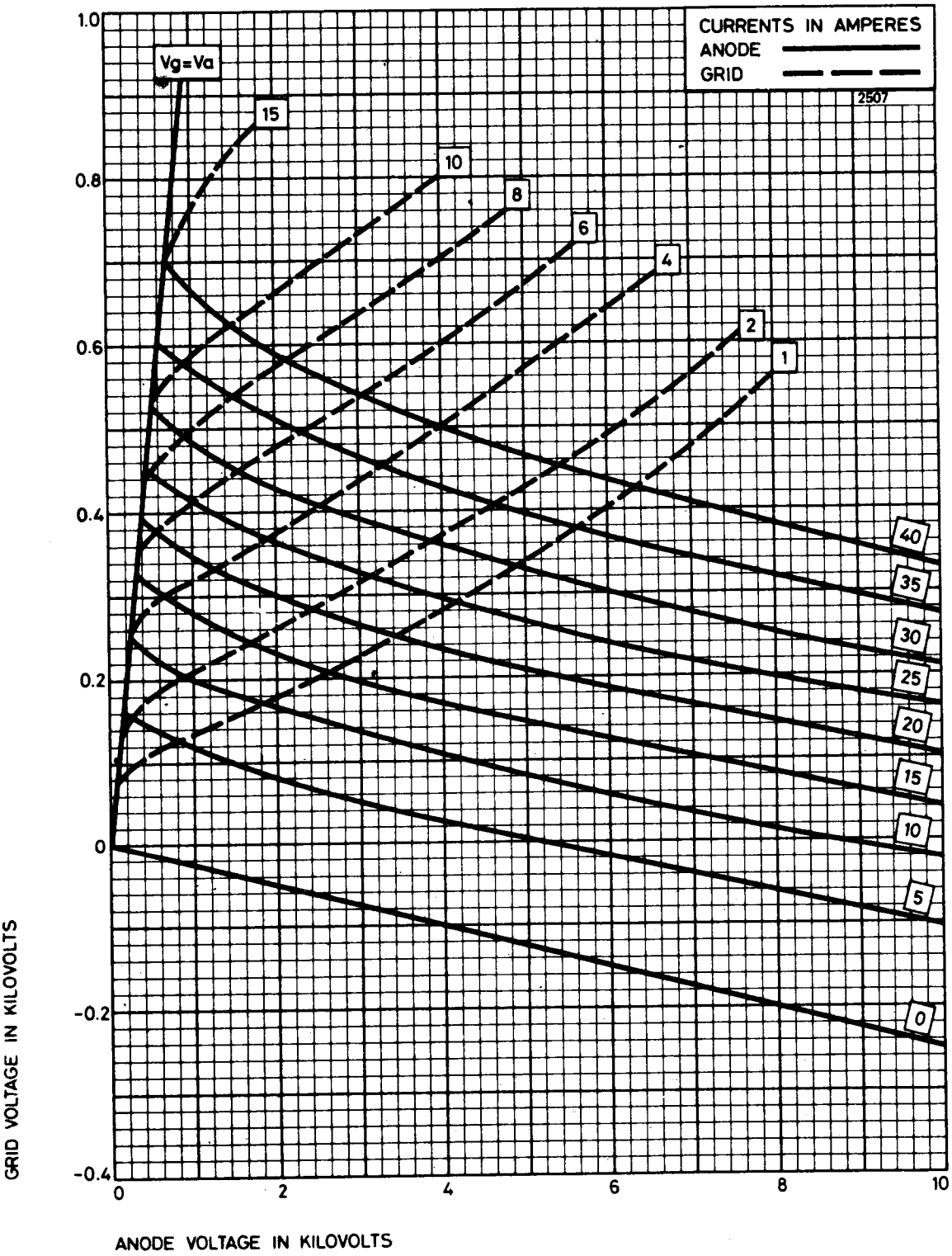
TYPICAL ANODE CHARACTERISTICS



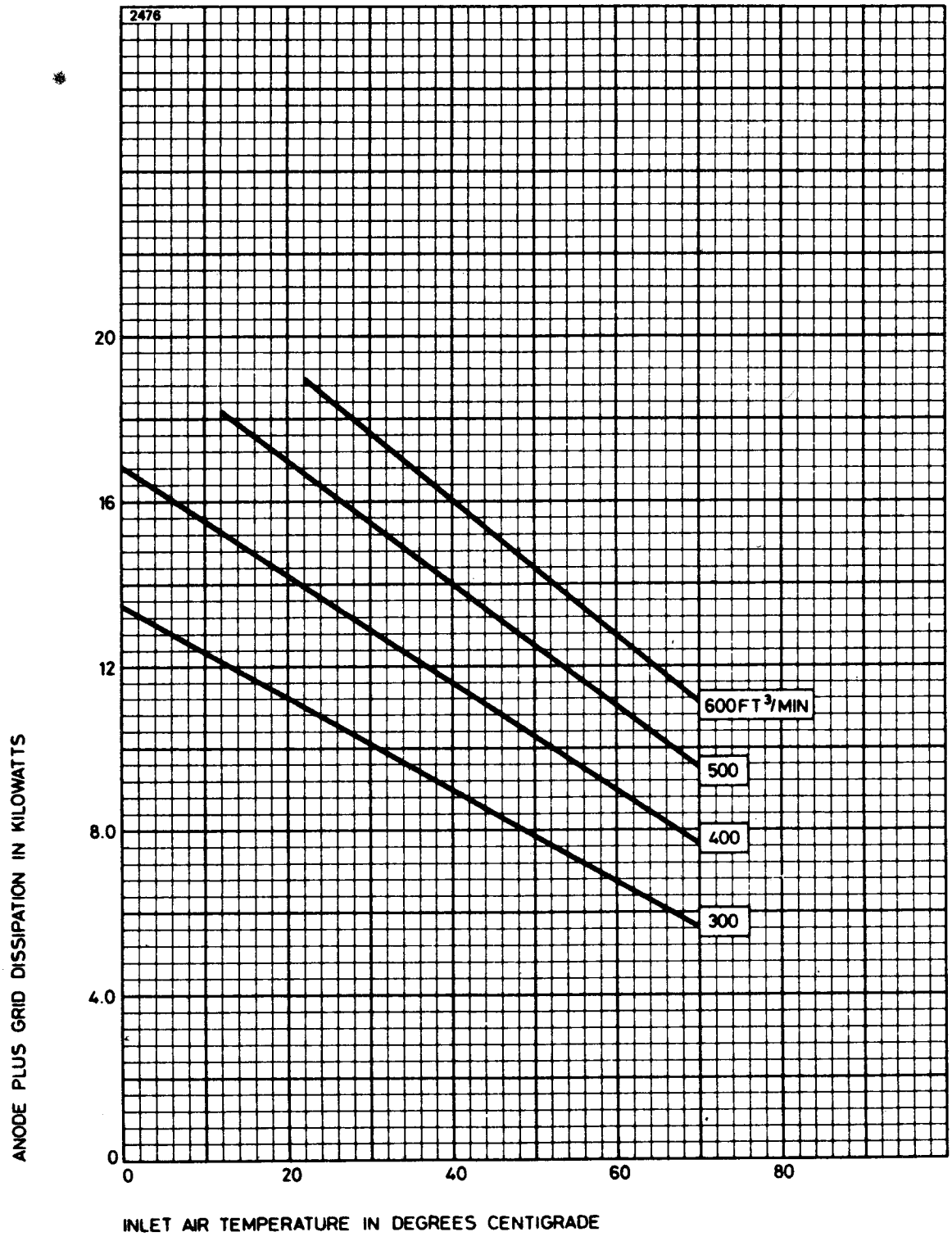
TYPICAL GRID CHARACTERISTICS



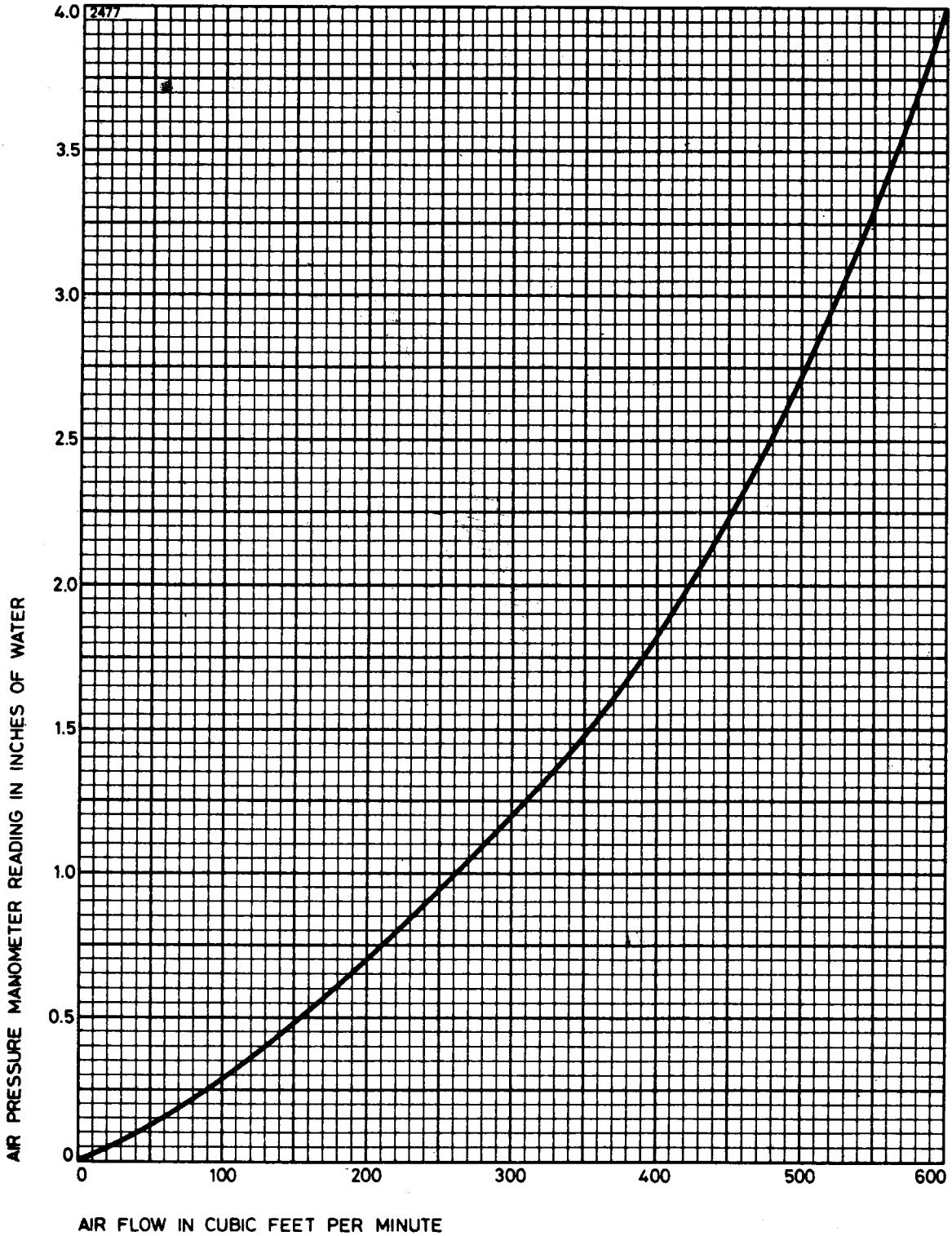
TYPICAL CONSTANT CURRENT CHARACTERISTICS



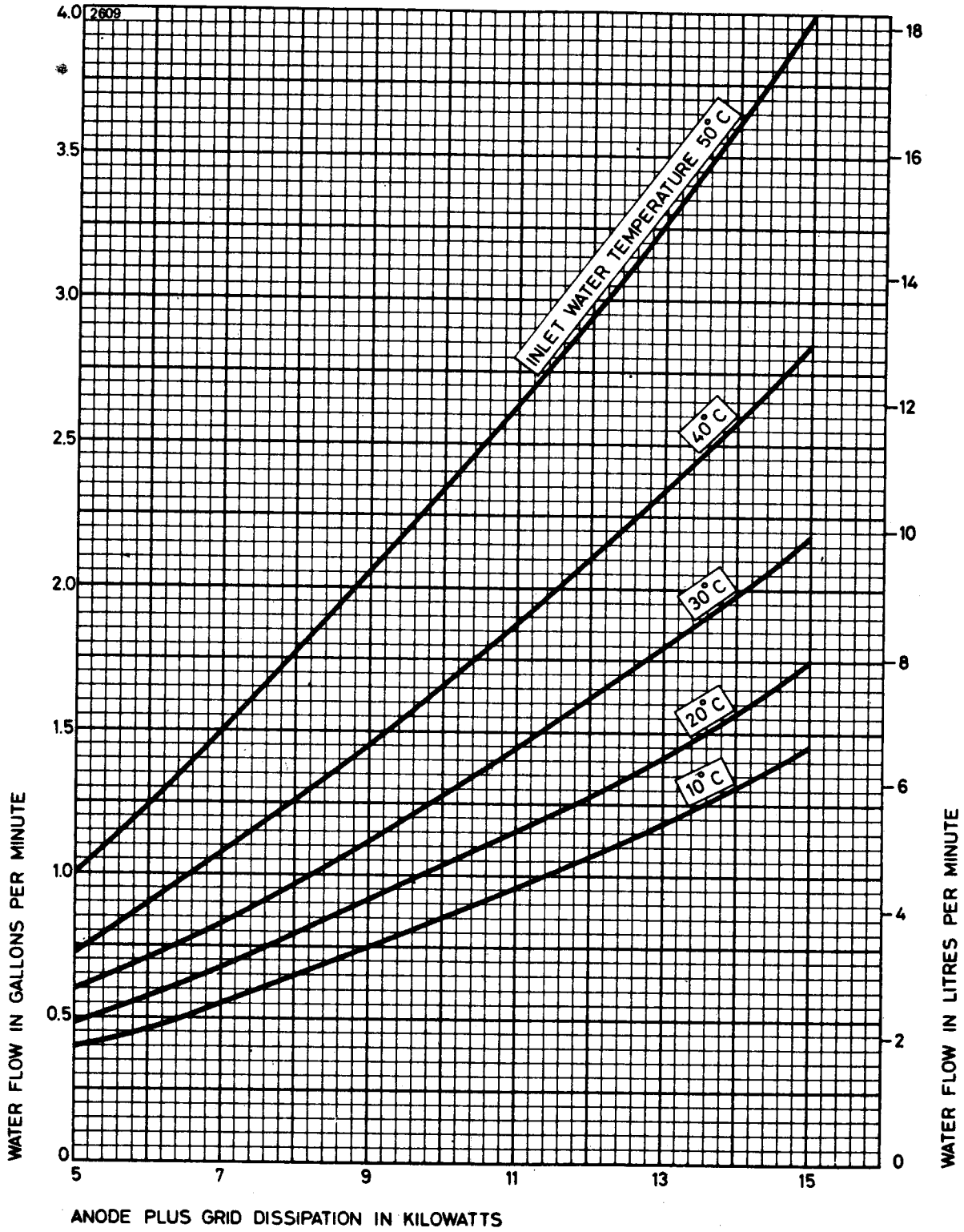
AIR COOLING REQUIREMENTS FOR BR1182



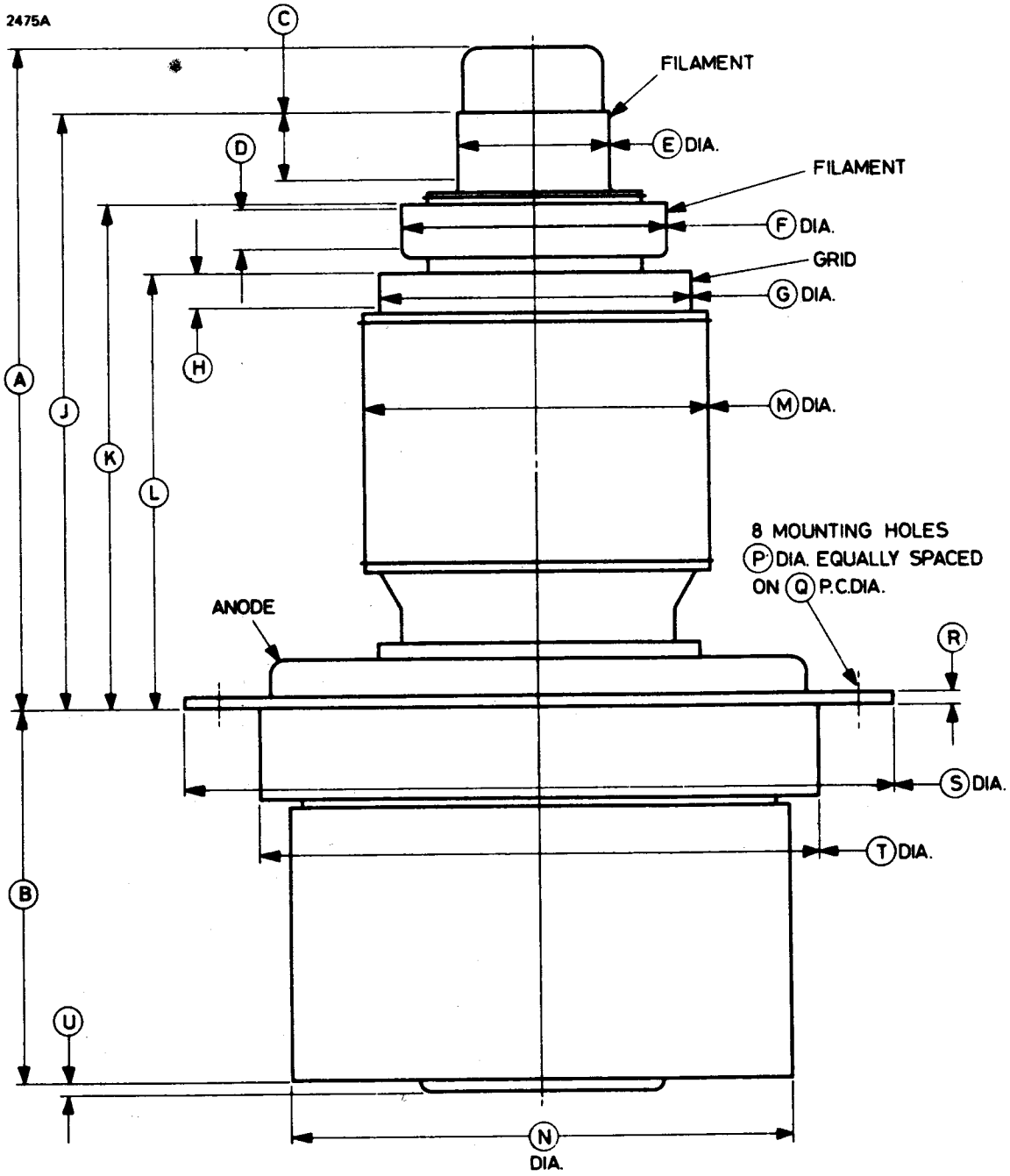
TYPICAL AIR FLOW CHARACTERISTIC FOR BR1182



MINIMUM WATER COOLING REQUIREMENTS FOR BW1182J1



OUTLINE FOR BR1182

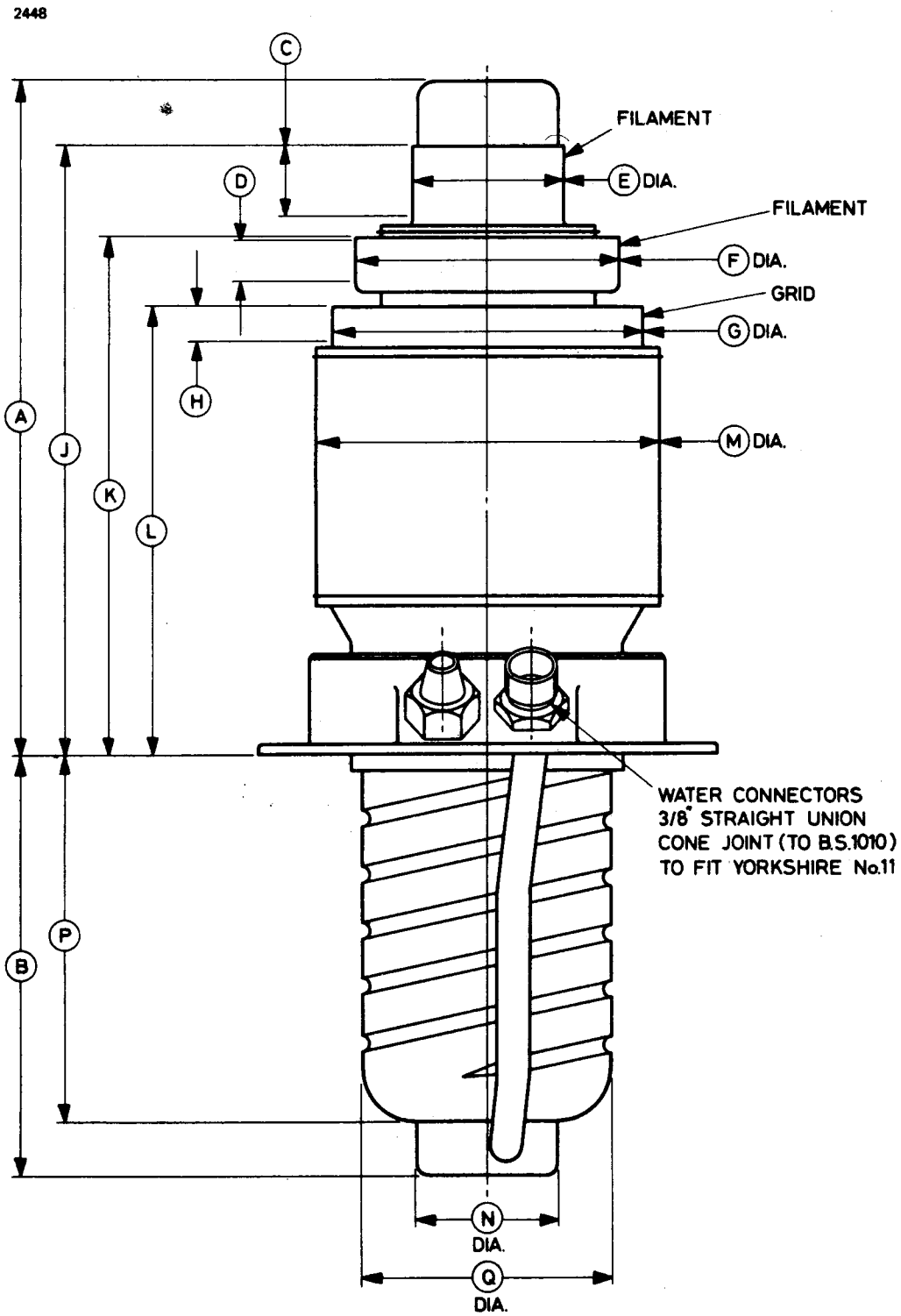


Outline Dimensions for BR1182 (All dimensions without limits are nominal)

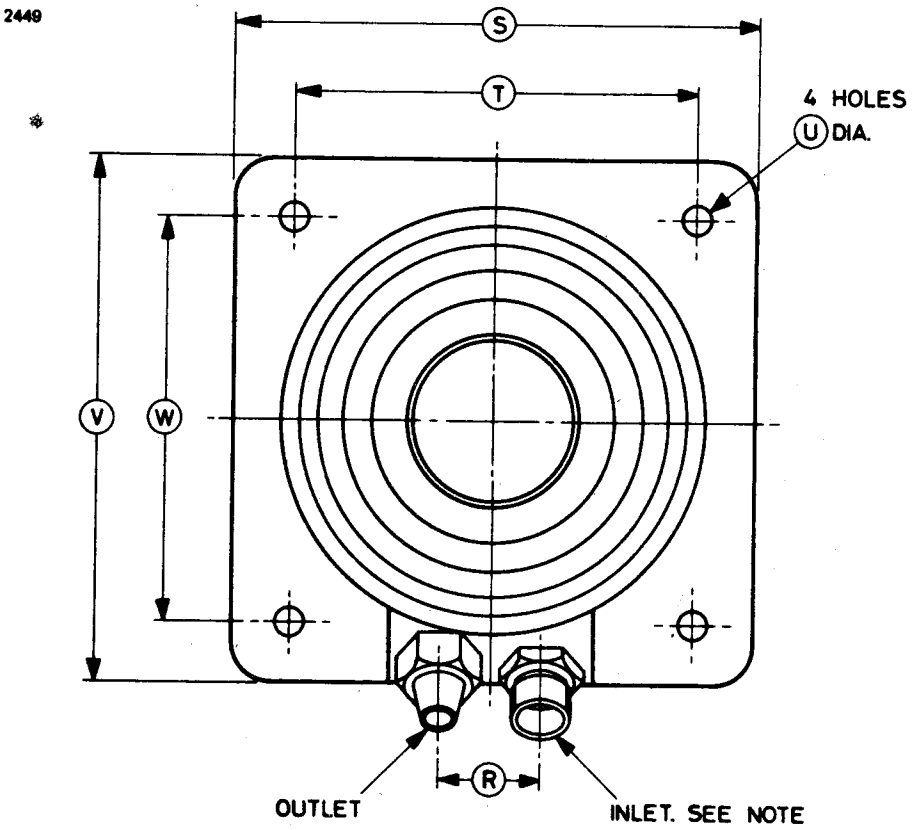
Ref	Millimetres	Inches
A *	232.0 max	9.134 max
B	132.0	5.197
C	25.0	0.984
D	15.0	0.591
E	54.0 ± 0.2	2.126 ± 0.079
F	96.0 ± 0.3	3.780 ± 0.118
G	112.0 ± 0.3	4.409 ± 0.118
H	14.0	0.551
J	212.0	8.346
K	179.0	7.047
L	155.0	6.102
M	127.0 max	5.000 max
N	179.5 max	7.067 max
P*	9.53	0.375
Q*	228.6	9.000
R	4.76	0.187
S	256.0 max	10.079 max
T	202.0 max	7.953 max
U	4.0	0.157

Inch dimensions have been derived from millimetres except where marked *.

OUTLINE FOR BW1182J1 (All dimensions without limits are nominal)



Outline Detail for BW1182J1



Ref	Millimetres	Inches	Ref	Millimetres	Inches
A	237.0 max	9.331 max	M	127.0 max	5.000 max
B	150.0	5.906	N	51.0 ± 1.5	2.008 ± 0.059
C	25.0	0.984	P	131.0	5.157
D	15.0	0.591	Q	90.0 ± 1.5	3.543 ± 0.059
E	54.0 ± 0.2	2.126 ± 0.079	R	31.75	1.250
F	96.0 ± 0.3	3.780 ± 0.118	S	165.0 ± 3.0	6.496 ± 0.118
G	112.0 ± 0.3	4.409 ± 0.118	T	127.0 ± 1.5	5.000 ± 0.059
H	14.0	0.551	U	9.5	0.374
J	217.0	8.543	V	165.0 ± 3.0	6.496 ± 0.118
K	184.0	7.244	W	127.0 ± 1.5	5.000 ± 0.059
L	160.0	6.299			

Inch dimensions have been derived from millimetres.

Note If the valve is mounted filament terminals down, the water flow must be opposite to the direction shown.