

R.F. POWER TRIODES

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

ABRIDGED DATA

Two r.f. power triodes intended primarily for industrial service. They differ only in the method of anode cooling.

Anode cooling:

| | |
|--|------------------------|
| BR1126 | forced-air |
| BW1126 | water; separate jacket |
| Anode dissipation | 3.0 kW max |
| Anode voltage | 6.0 kV max |
| Frequency for full ratings | 30 MHz max |
| Frequency at reduced ratings | 110 MHz max |
| Output power (class C unmodulated) | 7.0 kW |

GENERAL

Electrical

| | |
|--|-------------------------|
| Filament | thoriated tungsten |
| Filament voltage (see note 1) | 15 V |
| Filament current | 39 A |
| Surge filament current (peak) (see note 2) | 230 A max |
| Filament cold resistance | 42 mΩ |
| Peak usable cathode current | 14 A |
| Perveance | 2.0 mA/V ^{3/2} |
| Amplification factor ($V_g = -25V, I_a = 0.75A$) | 30 |
| Mutual conductance ($V_a = 2.5kV, I_a = 0.9A$) | 20 mA/V |
| Inter-electrode capacitances: | |
| grid to anode | 23 pF |
| grid to filament | 22.5 pF |
| anode to filament | 0.5 pF |

Mechanical

| | |
|------------------------------|-----------------------------|
| Overall dimensions | see outline drawings |
| Net weight: | |
| BR1126 | 9¾ pounds (4.45kg) approx |
| BW1126 | 4¼ pounds (2.0kg) approx |
| Mounting position | vertical, filament leads up |

Accessories

| | |
|---|--------|
| Grid connector | MA66A |
| Water jacket for BW1126 | BW4123 |
| Sealing ring (supplied with BW1126) | MA315 |

COOLING

Anode

The BR1126 air cooling requirements are shown on pages 9 and 10. 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 incoming air temperature must not exceed 45°C and the radiator temperature (measured on the core at the end away from the incoming air) must not exceed 180°C.

The anode of the BW1126 must be fitted into a water jacket for cooling, the recommended jacket being type BW4123. A flow of water of 1.5 to 2.0 imp. gal/min (6.8 to 9.1 l./min) is required; the temperature of the cooling water at the outlet must not exceed 65°C, nor should the temperature rise across the jacket exceed 15°C.

Filament and Grid Seals

The temperature of the filament and grid seals must not exceed 175°C and 150°C respectively. A flow of air of 10 to 15ft³/min (0.28 to 0.43m³/min) directed into the filament header 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 Bulb

The anode seal and bulb temperatures must not exceed 150°C.

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

MAXIMUM RATINGS (Absolute values)

| | | |
|--|------|---------|
| Anode voltage (see note 3) | 6.0 | kV max |
| Anode current | 1.75 | A max |
| Anode dissipation (see note 4) | 3.0 | kW max |
| Grid voltage | -1.0 | kV max |
| Grid current (see note 5) | 0.35 | A max |
| Operating frequency (for full ratings) | 30 | MHz max |
| Anode voltage for operation up to 110MHz | 5.0 | kV max |

TYPICAL OPERATING CONDITIONS (For amplifier)

| | | | |
|------------------------------|-------|-------|----------|
| Anode voltage | 4.0 | 6.0 | kV |
| Grid voltage | -280 | -350 | V |
| Grid resistor | 835 | 1130 | Ω |
| Peak r.f. grid drive voltage | 525 | 600 | V |
| Anode current | 1.54 | 1.63 | A |
| Grid current (approx) | 0.336 | 0.310 | A |
| Anode dissipation | 2.0 | 2.7 | kW |
| Grid dissipation | 69 | 66 | W |
| Driving power | 163 | 174 | W |
| Output power | 4.1 | 7.1 | kW |
| Efficiency | 66.5 | 72.5 | % |
| Load resistance | 1100 | 1750 | Ω |

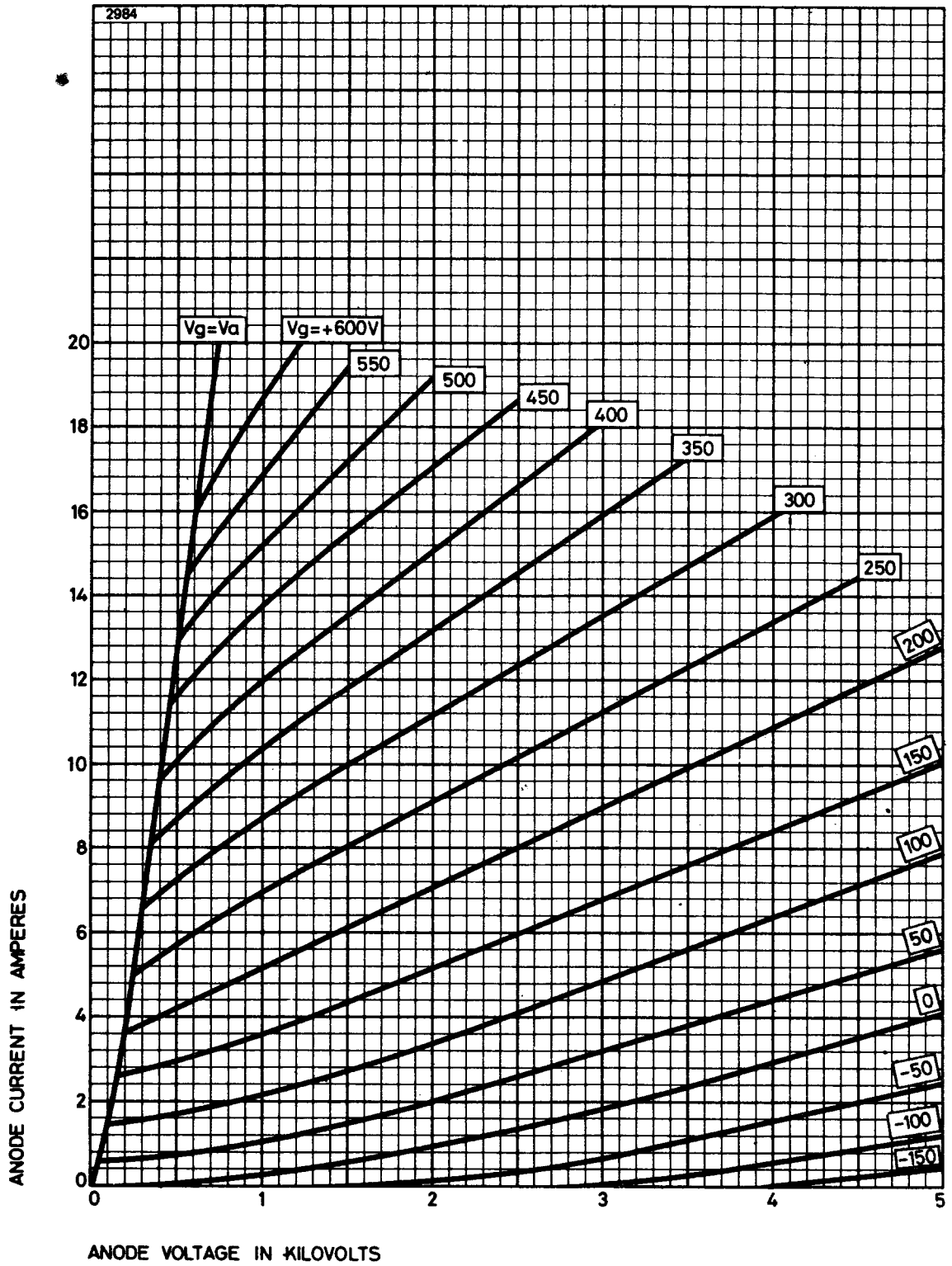
RANGE OF CHARACTERISTICS FOR EQUIPMENT DESIGN

| | Min | Max | |
|---|------|------|------|
| Filament current at filament voltage 15V | 36.6 | 41.3 | A |
| Amplification factor ($V_g = -25V, I_a = 0.75A$) | 25 | 35 | |
| Mutual conductance ($V_a = 2.5kV, I_a = 0.9A$) | 18 | 24 | mA/V |
| Grid voltage (negative value) ($V_a = 6.0kV, I_a = 50mA$) | 140 | 280 | V |
| Grid voltage (negative value) ($V_a = 6.0kV, I_a = 0.55A$) | 120 | 240 | V |
| Anode current ($V_a = 0.3kV, V_g = +150V$) | 2.13 | 3.24 | A |
| Grid current ($V_a = 0.3kV, V_g = +150V$) | - | 1.44 | A |
| Inter-electrode capacitances: | | | |
| grid to anode | 19.5 | 26.5 | pF |
| grid to filament | 18 | 27 | pF |
| anode to filament | 0.25 | 0.75 | pF |

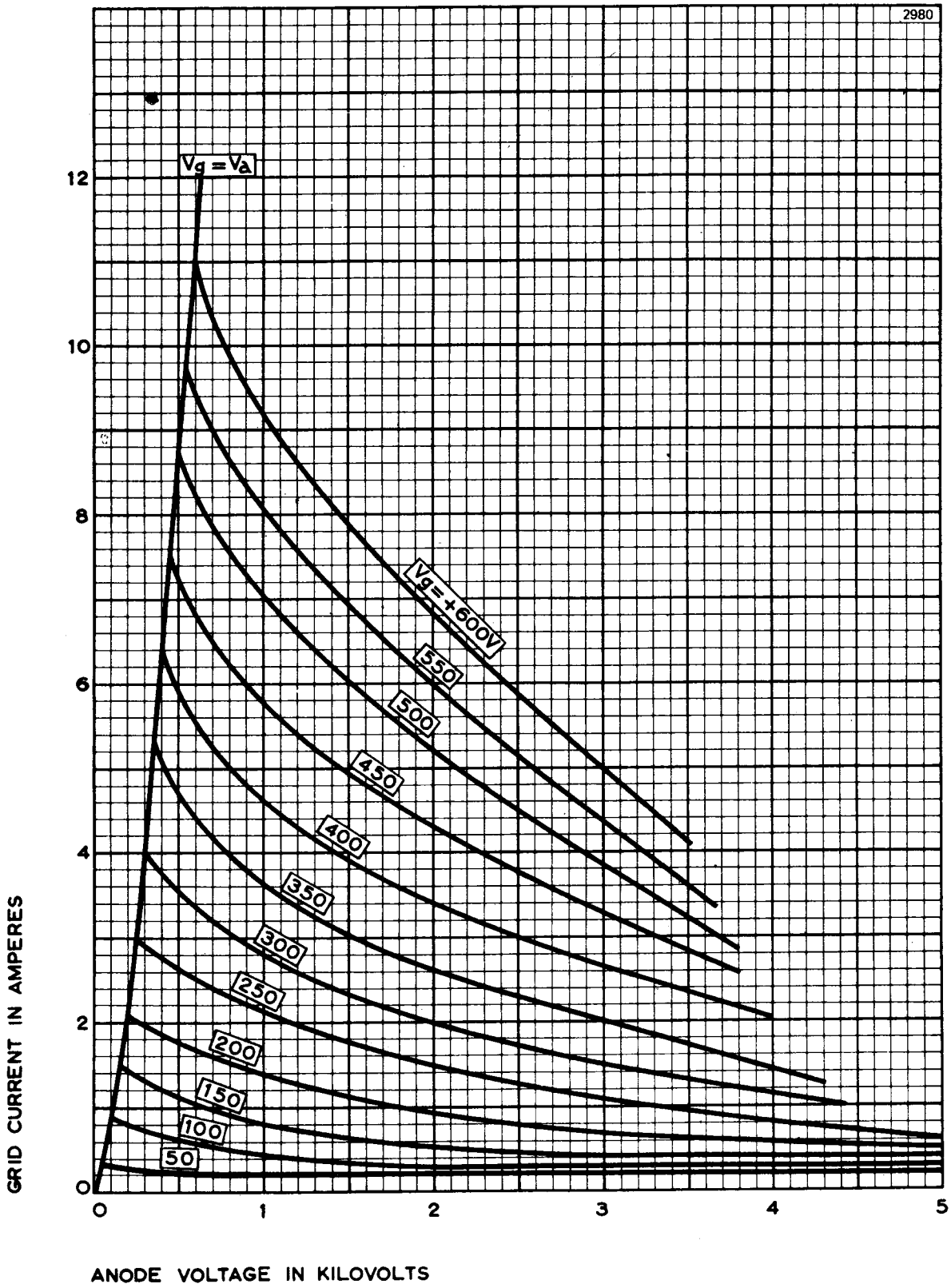
NOTES

1. The valve must be operated at the stated filament voltage. Fluctuation in filament voltage must not exceed $\pm 5\%$. The centre-tap lead may be used for the anode current return but must not be used for the filament current supply.
2. The filament current must not exceed 230A, 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.
5. The customer should consult English Electric Valve Company Ltd. if the valve is to be used in r.f. oscillators operating at frequencies of 30MHz or more and where the direct grid current is likely to exceed 250mA.

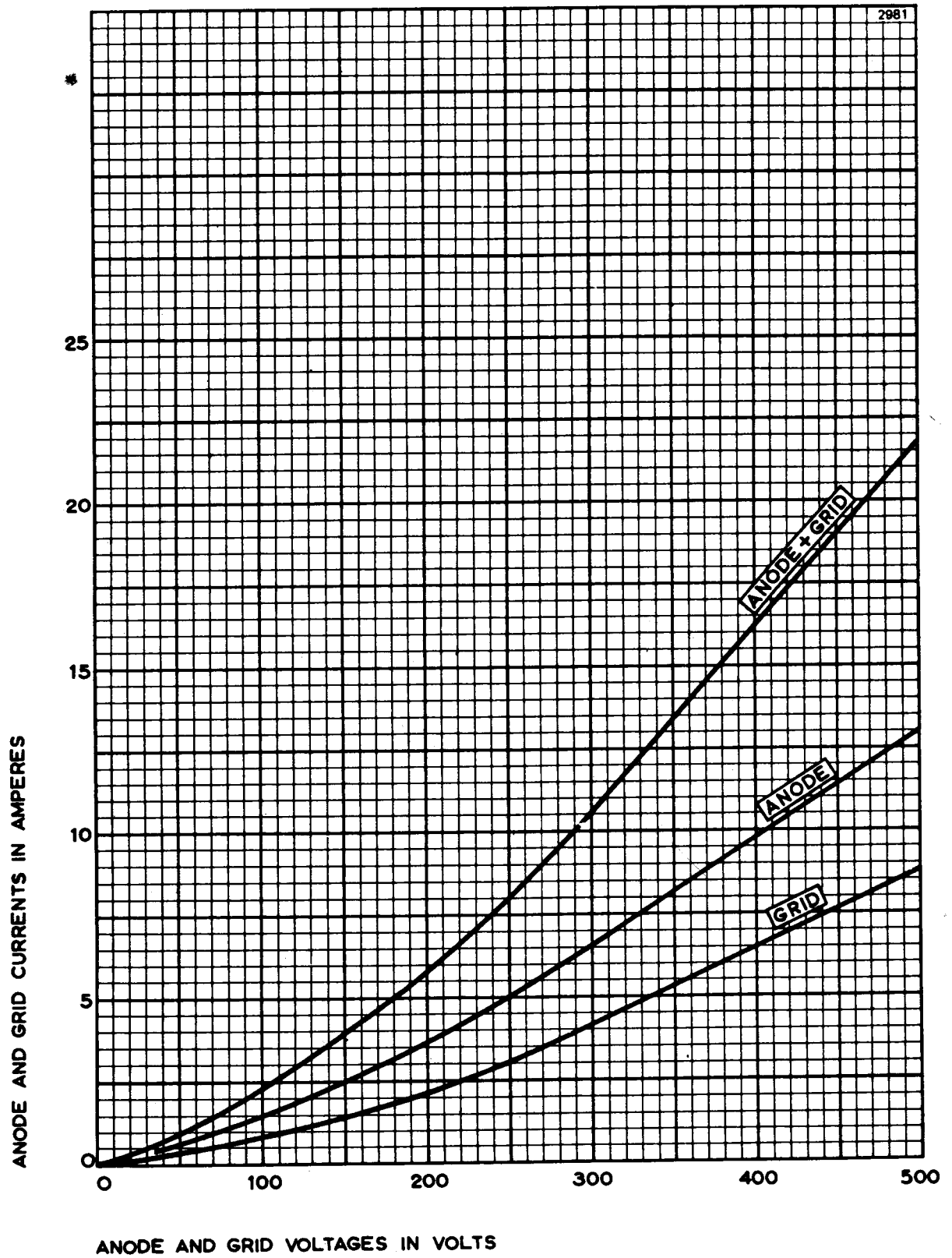
TYPICAL ANODE CHARACTERISTICS



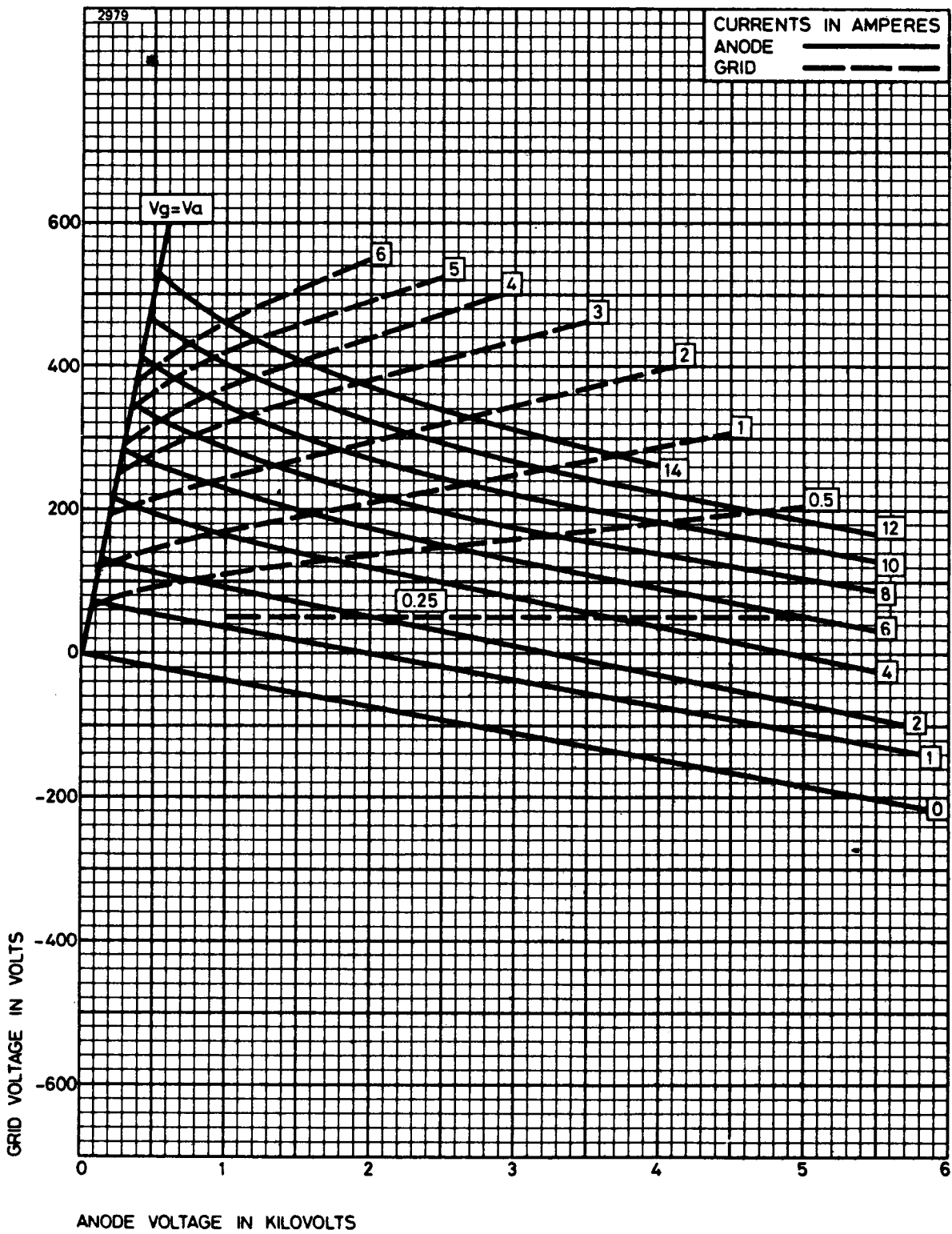
TYPICAL GRID CHARACTERISTICS



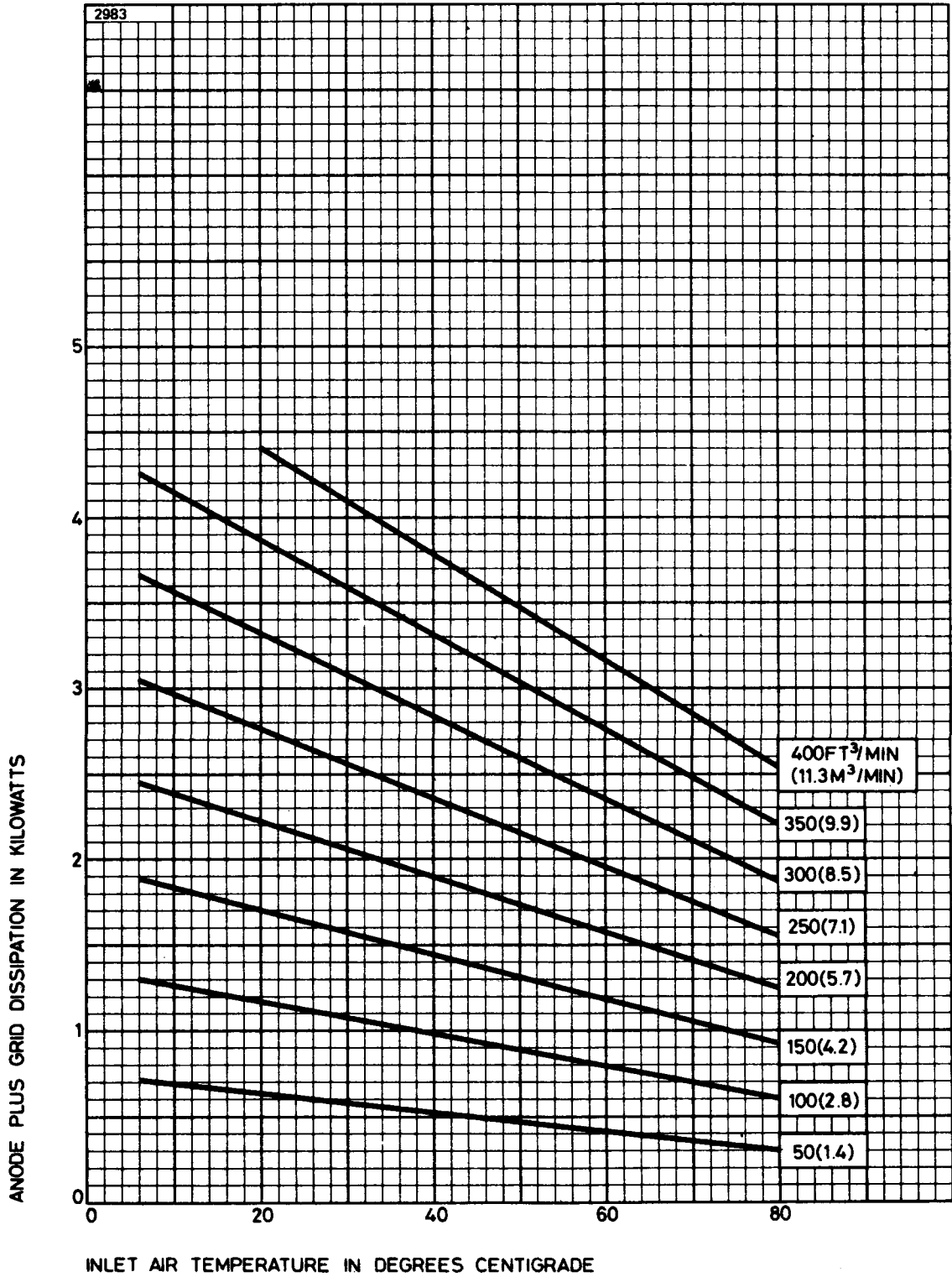
TYPICAL STRAPPED CHARACTERISTICS



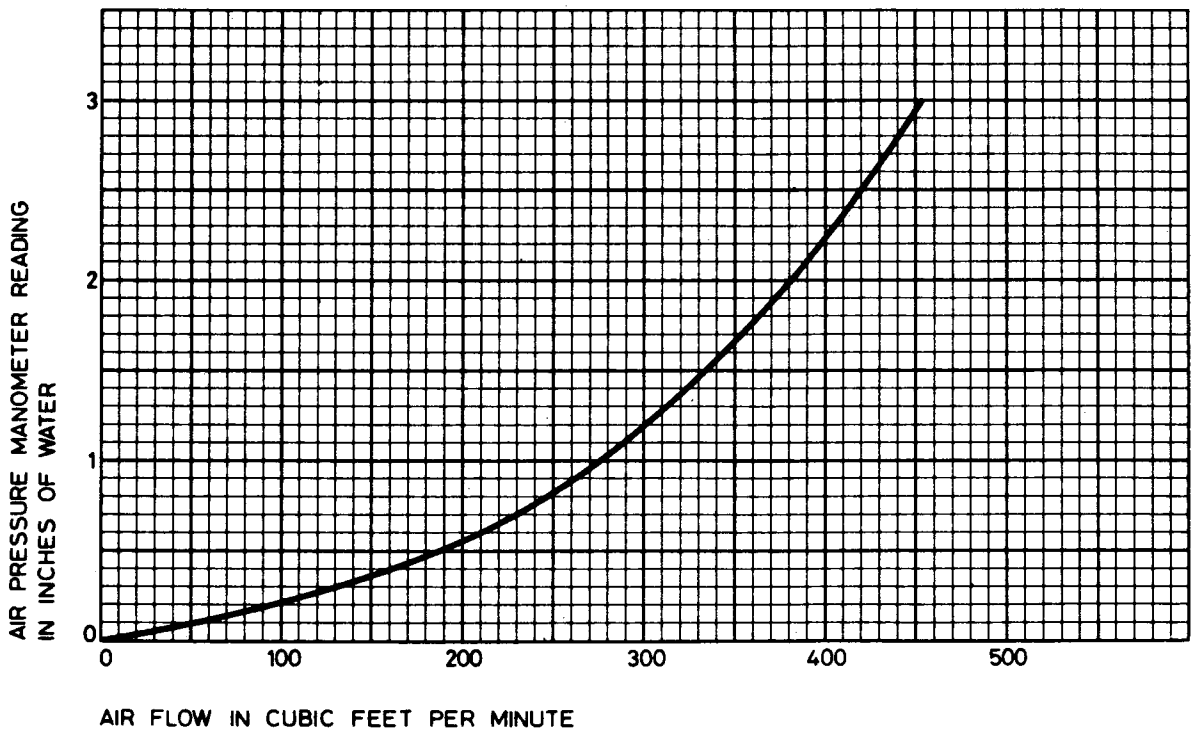
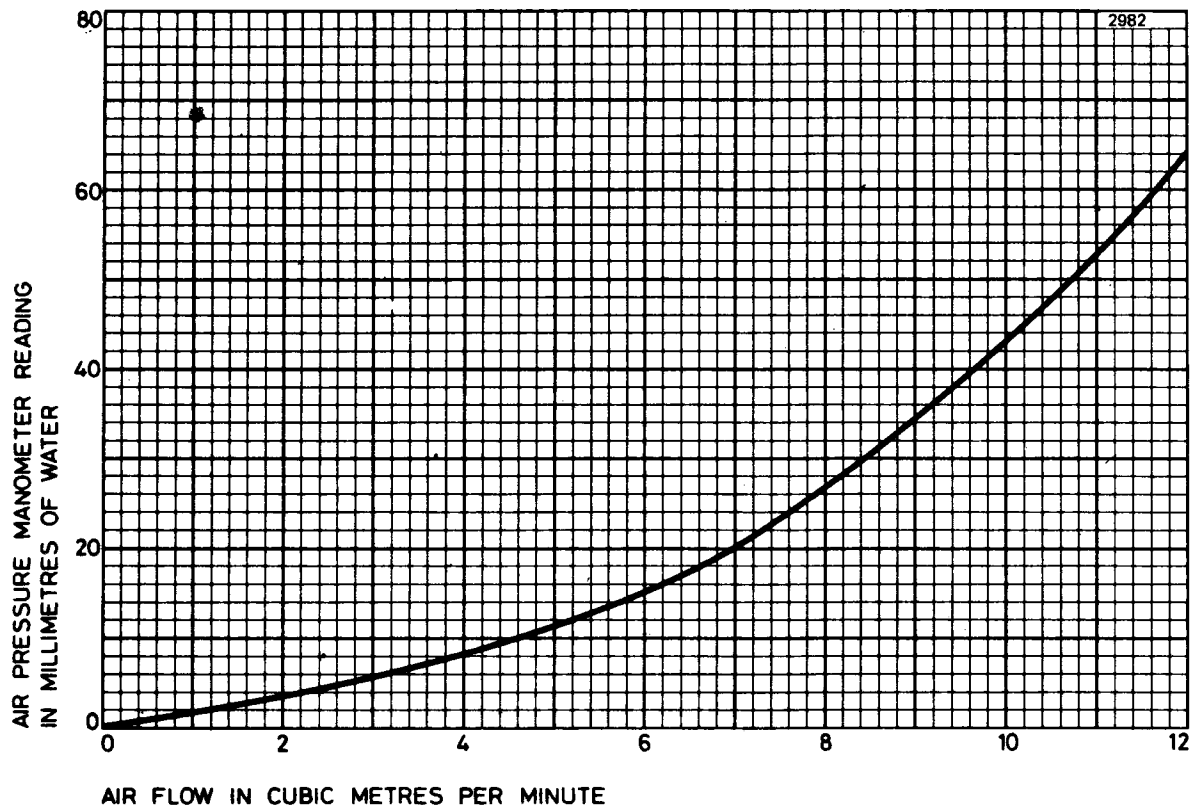
TYPICAL CONSTANT CURRENT CHARACTERISTICS



AIR COOLING REQUIREMENTS FOR BR1126

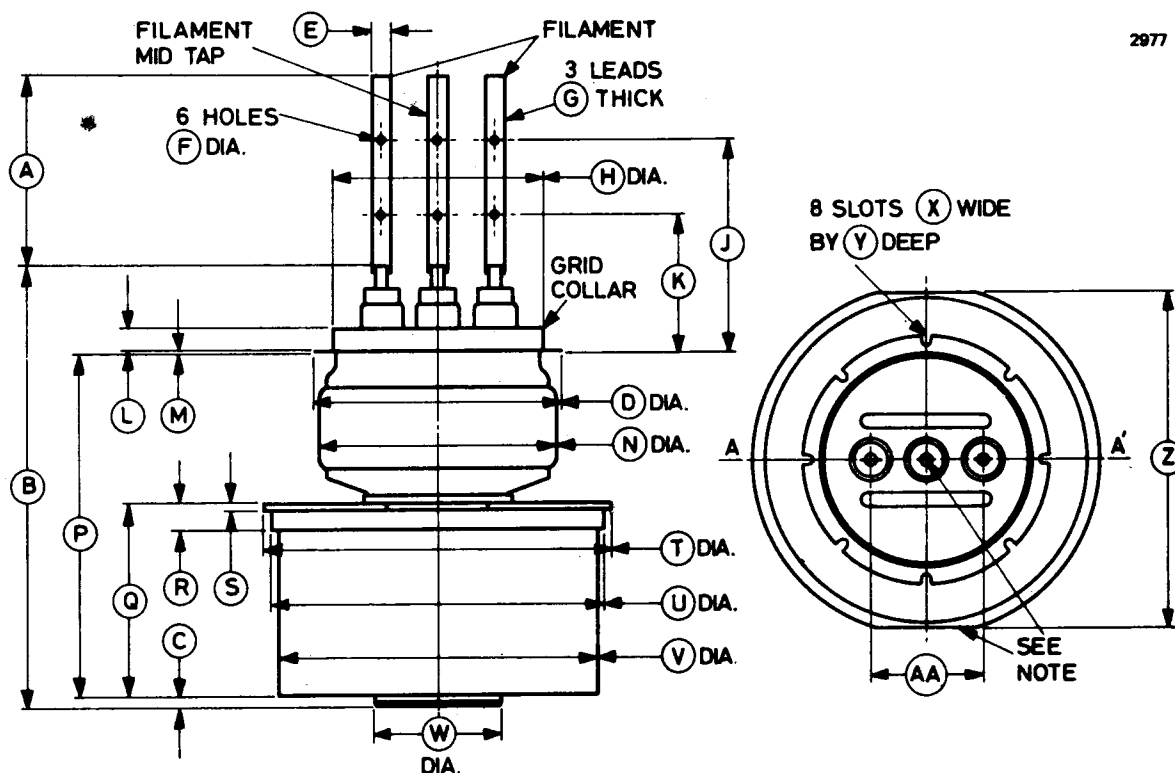


TYPICAL AIR FLOW CHARACTERISTIC FOR BR1126



OUTLINE FOR BR1126

2977



| Ref | Millimetres | Inches | Ref | Millimetres | Inches |
|-----|-------------|---------------|-----|---------------|---------------|
| A | 89.0 ± 2.0 | 3.504 ± 0.079 | P | 153.5 ± 3.5 | 6.043 ± 0.138 |
| B | 200.0 max | 7.874 max | Q | 90.0 max | 3.543 max |
| C | 4.75 max | 0.187 max | R | 12.5 ± 0.5 | 0.492 ± 0.020 |
| D | 116.0 ± 0.5 | 4.567 ± 0.020 | S | 3.25 ± 0.25 | 0.128 ± 0.010 |
| E | 8.0 ± 0.5 | 0.315 ± 0.020 | T | 165.0 ± 0.5 | 6.496 ± 0.020 |
| F | 3.6 ± 0.1 | 0.142 ± 0.004 | U | 158.75 ± 0.25 | 6.250 ± 0.010 |
| G | 4 x 0.25 | 4 x 0.010 | V | 152.5 max | 6.004 max |
| H | 100.0 max | 3.937 max | W | 60.0 max | 2.362 max |
| J | 100.0 ± 8.0 | 3.937 ± 0.315 | X | 4.62 ± 0.1 | 0.182 ± 0.004 |
| K | 65.0 ± 8.0 | 2.559 ± 0.315 | Y | 5.2 ± 0.2 | 0.205 ± 0.008 |
| L | 9.5 | 0.375 | Z | 158.75 ± 0.25 | 6.250 ± 0.010 |
| M | 1.5 ± 0.2 | 0.059 ± 0.008 | AA | 54.0 ± 2.5 | 2.126 ± 0.098 |
| N | 116.0 max | 4.567 max | | | |

Inch dimensions have been derived from millimetres.

Note The plane of the filament leads will be parallel to the flats to within 5° and to plane A-A' to within 3½°.

