V.H.F. INDUSTRIAL TRIODES

YD1150
YD1151
YD1152

QUICK REFERENCE DATA

External anode triodes of ceramic-metal construction, intended for use as industrial oscillators.

The YD1150 is forced-air cooled.
The YD1151 is water-cooled by means of a separate jacket.
The YD1152 has an integral helical water cooler.

f	160	27.12	MHz
P_{out} (less P_{drive})	3.55	4.57	kW
f max.	160		MHz
V_a max.	7.2		kV
p_a max.	2.5		kW

Unless otherwise shown, data is applicable to all types

To be read in conjunction with
GENERAL OPERATIONAL RECOMMENDATIONS - TRANSMITTING VALVES

INDUSTRIAL OSCILLATOR, CLASS 'C'

OPERATING CONDITIONS

f	160	27.12	27.12	MHz
P_{out}	3.9	4.9	4.0	kW
P_{out} (less P_{drive})	3.55	4.57	3.75	kW
P_{load}	3.1	3.7	3.3	kW
Duty factor	1.0	1.0	1.0	
η_a	78	82	80	%
V_a	5.0	6.0	5.0	kV
I_a	1.0	1.0	1.0	A
$-V_g$	520	625	520	V
I_g	260	250	260	mA
R_{g-f}	2.0	2.5	2.0	kΩ
Feedback ratio $v_{in(pk)}/v_{a(pk)}$	0.17	0.17	0.17	
P_{drive}	350	330	250	W
p_a	1.1	1.1	1.0	kW
p_g	120	110	100	W
V_f	6.0	6.3	6.3	V

RATINGS (ABSOLUTE MAXIMUM SYSTEM)

f max.	85	160	MHz
V_a max.	7.2	6.0	kV
$-V_g$ max.	1.0	1.0	kV
I_g max. on load	280	280	mA
off load	400	400	mA
I_k max.	1.4	1.4	A
$i_{k(pk)}$ max.	7.5	7.5	A
P_{in} max.	6.5	6.0	kW
p_a max.	2.5	2.5	kW
p_g max.	150	150	W
R_{g-f} max.	20	20	kΩ

CATHODE

Directly heated, thoriated tungsten

V_f (≤120MHz)	6.3	V
(>120MHz)	6.0	V
I_f (measured at 6.3V)	33	A

The filament has been designed to accept temporary fluctuations of supply voltage of +5 to -10%.

CAPACITANCES

c_{a-g}	14	pF
c_{a-f}	400	mpF
c_{g-f}	17	pF

CHARACTERISTICS (measured at $V_a = 2.0$kV, $I_a = 0.5$A)

g_m	10	mA/V
μ	20	

MOUNTING POSITION - YD1150, YD1152 Vertical, anode up or down
- YD1151 Vertical, anode down

COOLING

Maximum temperature of ceramic-metal seals 220 °C

YD1150 - Forced-air cooled. See curves on page C4

YD1151 - Anode water cooled using jacket type K713

Seals - low velocity air flow may be required

See curves on page C5

YD1152 - Anode water cooled with integral helical cooler

Seals - low velocity air flow may be required

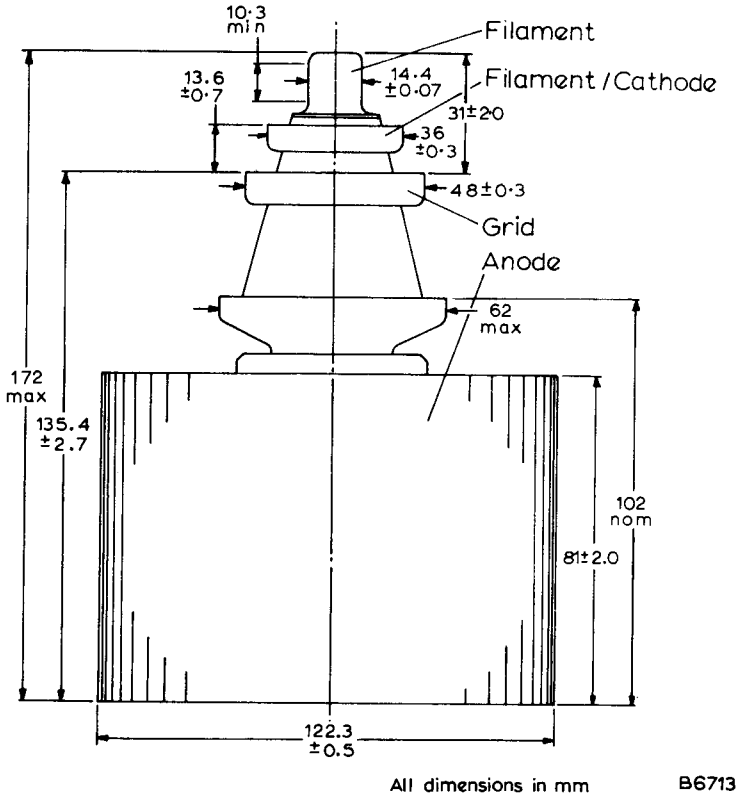
See curves on page C6

PHYSICAL DATA

	YD1150	YD1151	YD1152	
Weight of valve	6.6	1.4	1.9	lb
	3.0	0.65	0.85	kg

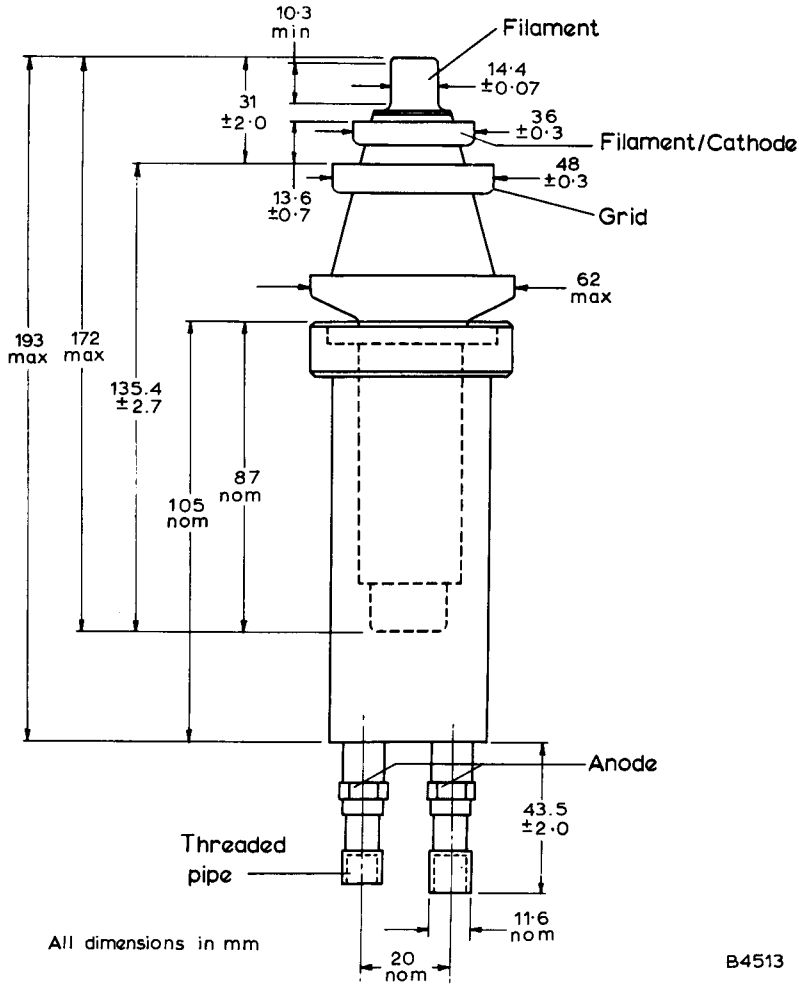
ACCESSORIES

Filament clip	40688
Filament/cathode clip	40689
Grid connector (f < 30MHz)	40686
Insulating pedestal (YD1150)	40630
Water jacket (YD1151)	K713

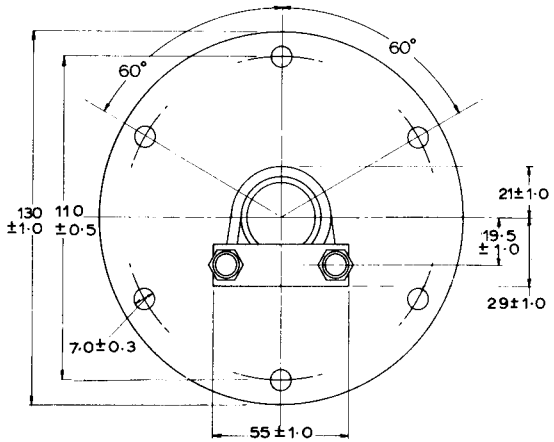


OUTLINE DRAWING OF YD1150

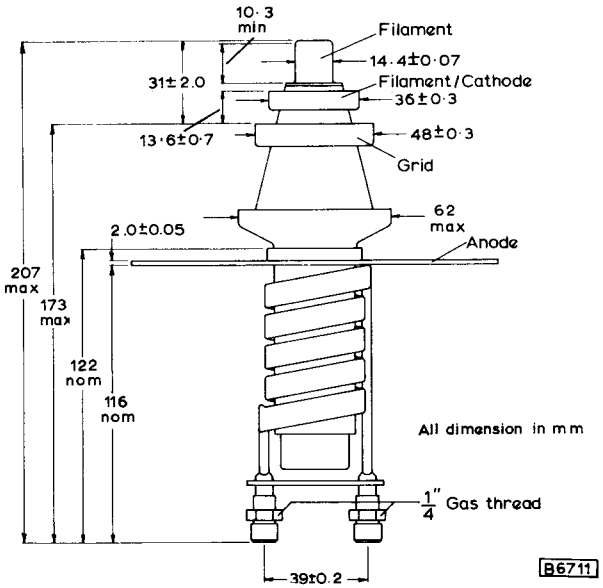
OUTLINE DRAWING OF YD1151 MOUNTED IN WATER JACKET K713

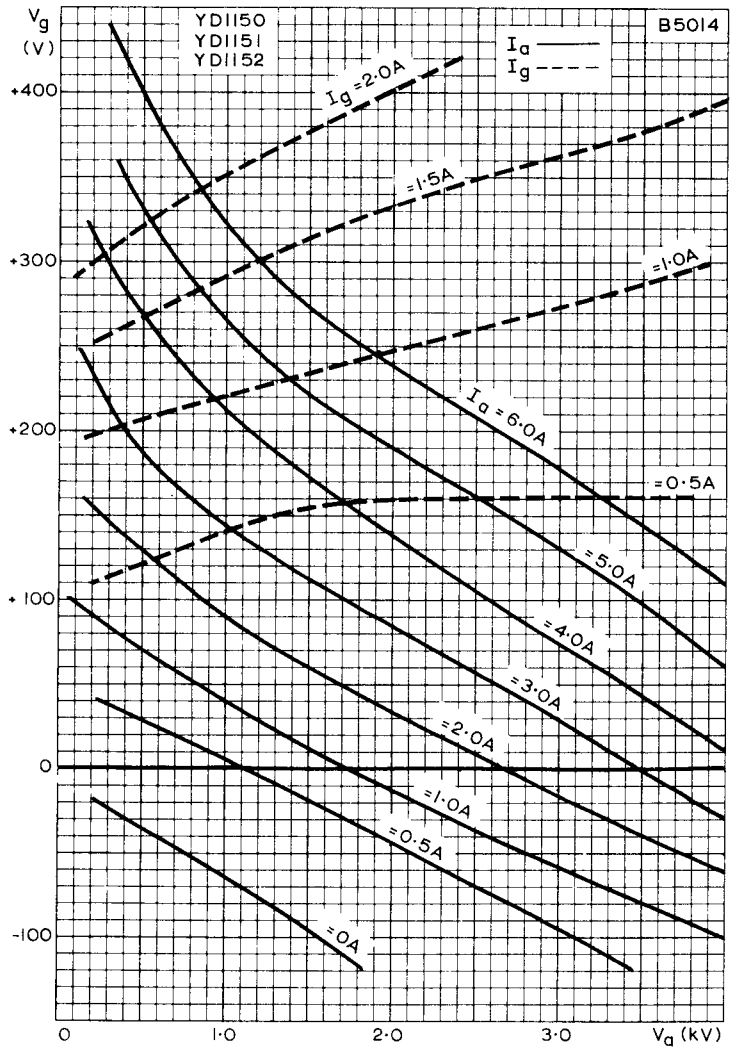


OUTLINE DRAWING OF YD1152

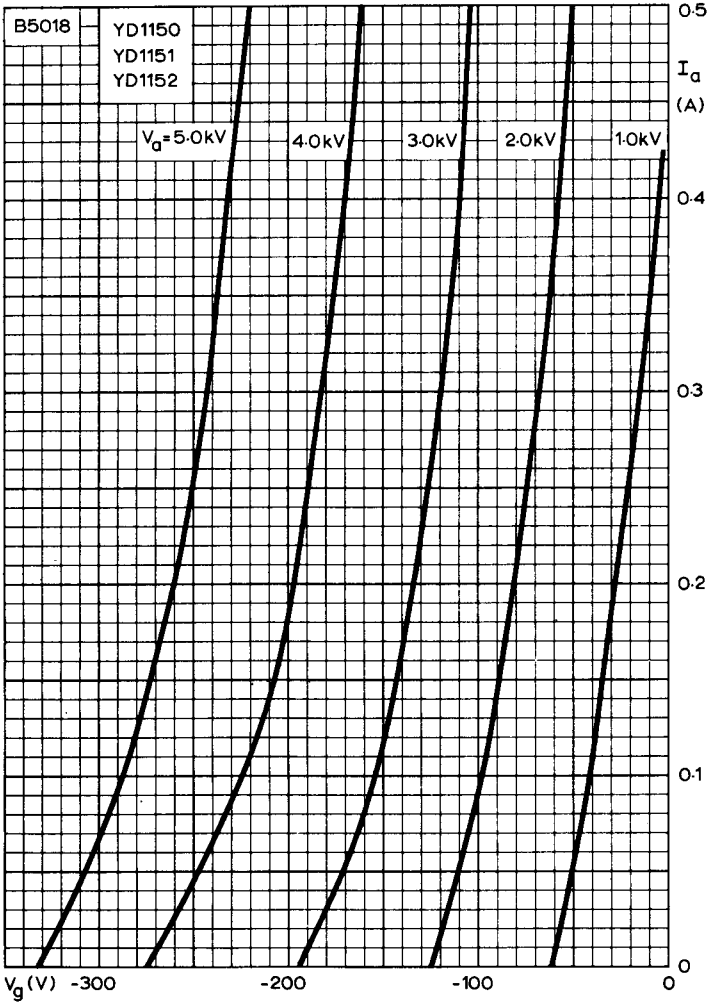


The use of wing nuts should be avoided

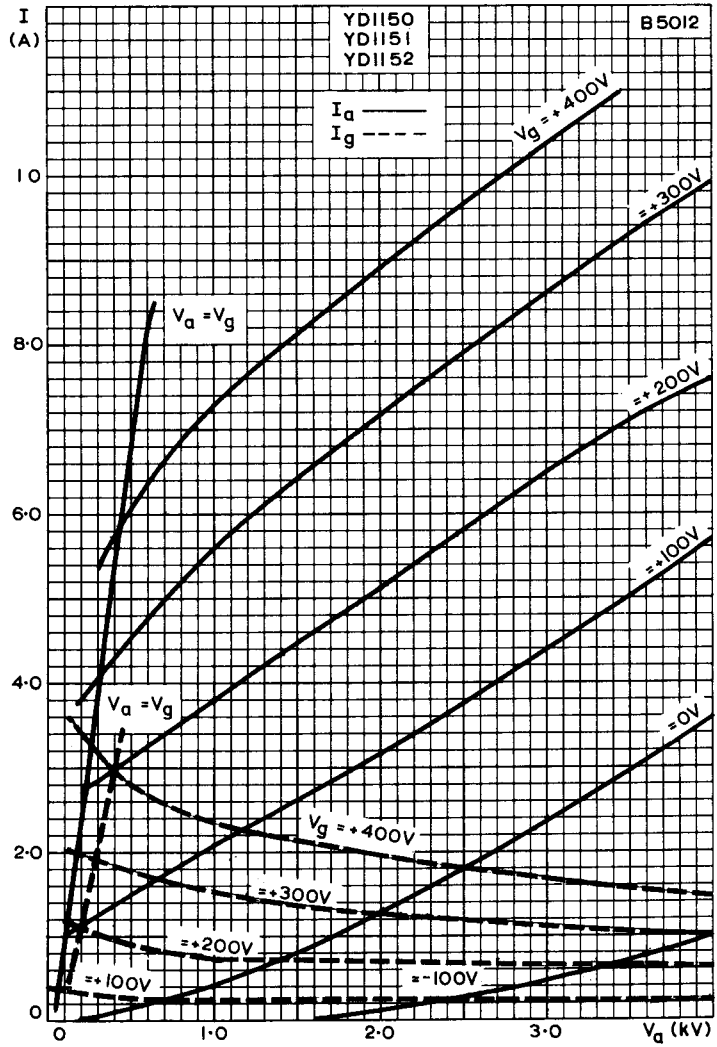




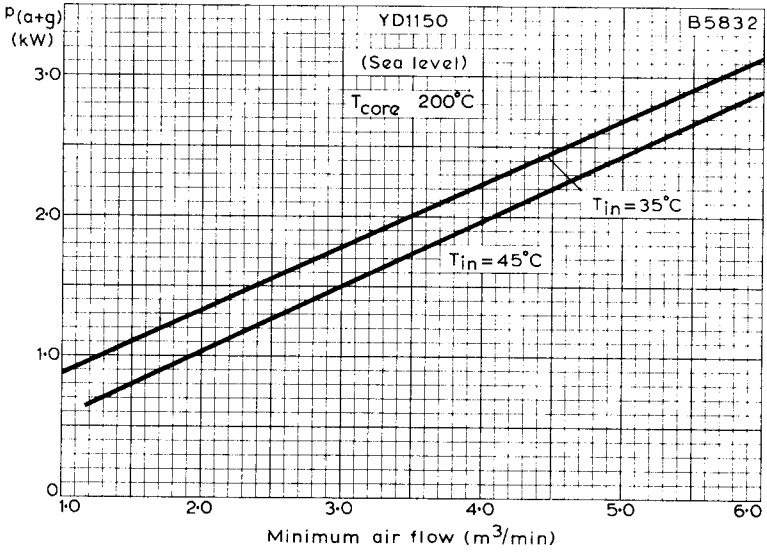
CONSTANT CURRENT CHARACTERISTICS

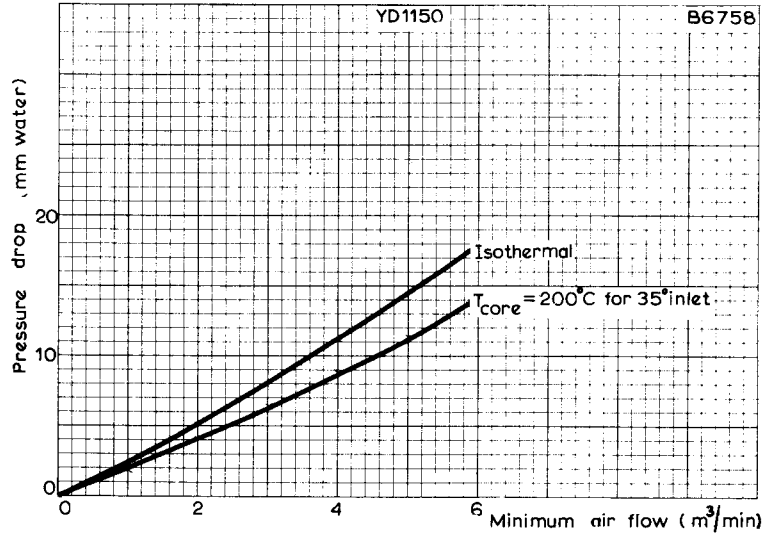


ANODE CURRENT PLOTTED AGAINST GRID VOLTAGE WITH ANODE VOLTAGE AS PARAMETER



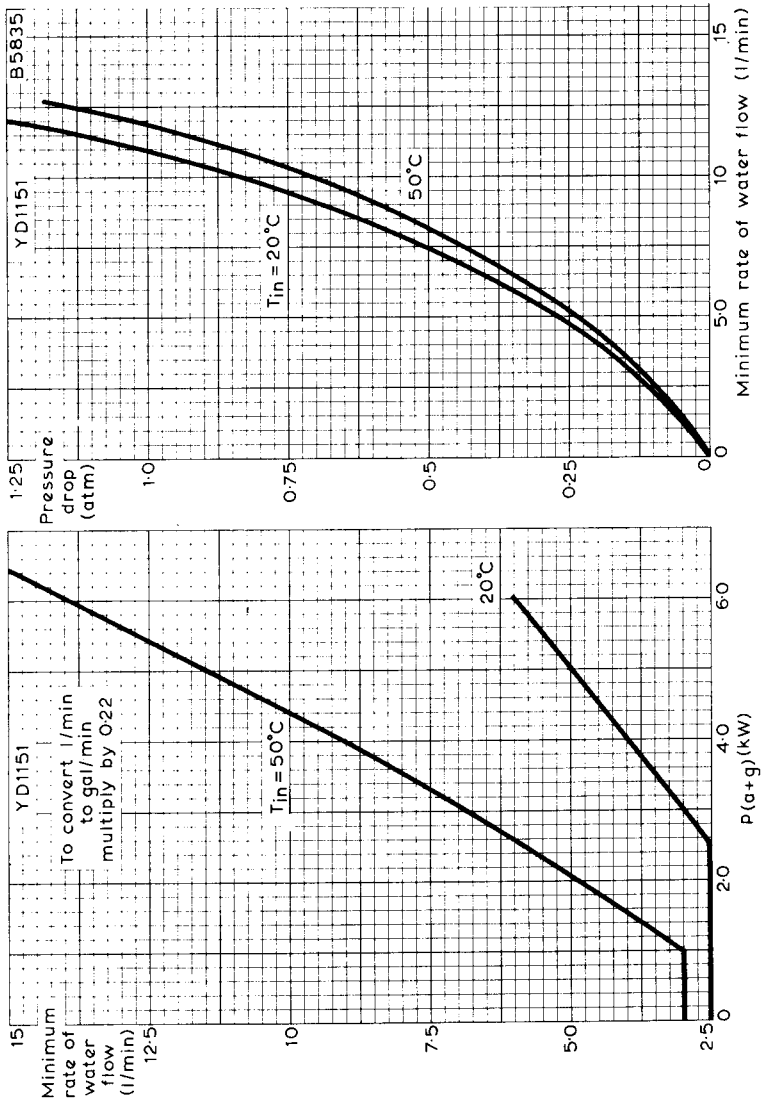
ANODE AND GRID CURRENTS PLOTTED AGAINST ANODE VOLTAGE WITH GRID VOLTAGE AS PARAMETER



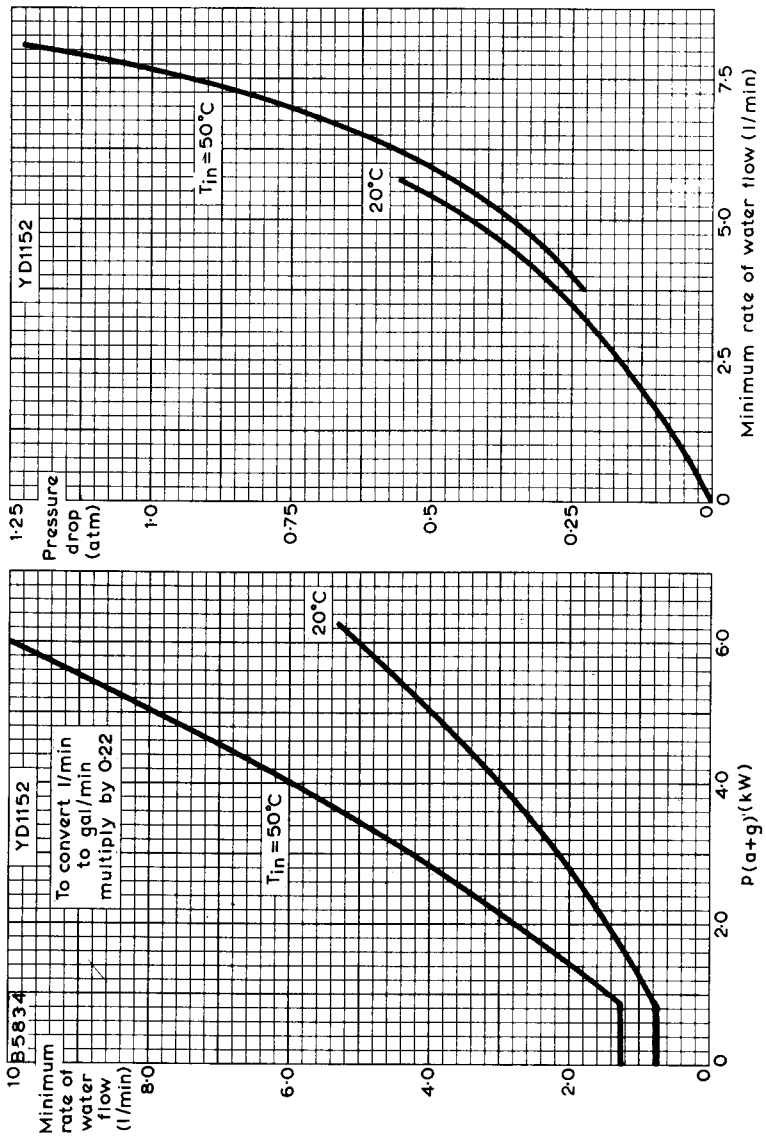


MINIMUM COOLING REQUIREMENTS AT SEA LEVEL WITH AIR INLET TEMPERATURES OF 35 AND 45°C AND A CORE TEMPERATURE OF 200°C

PRESSURE DROP PLOTTED AGAINST MINIMUM AIR FLOW FOR AN ISOTHERMAL CONDITION AND FOR A RISE IN CORE TEMPERATURE OVER INCOMING AIR OF 165°C



MINIMUM RATE OF WATER FLOW PLOTTED AGAINST ANODE AND GRID DISSIPATION FOR T_{in} = 20 AND 50°C
PRESSURE DROP PLOTTED AGAINST MINIMUM RATE OF WATER FLOW FOR T_{in} = 20 AND 50°C



MINIMUM RATE OF WATER FLOW PLOTTED AGAINST ANODE AND GRID DISSIPATION FOR T_{in} = 20 AND 50°C

PRESSURE DROP PLOTTED AGAINST MINIMUM RATE OF WATER FLOW FOR T_{in} = 20 AND 50°C