

The 3R/222S has an integral water jacket and is intended primarily for r.f. heating applications.

MAXIMUM RATINGS

Anode voltage (peak value of direct voltage plus ripple)	7,0	kV
Direct anode current	6,0	A
Anode dissipation, continuous	10	kW
Grid dissipation, continuous	500	W
Grid current (Note 1)	1,4	A
Direct negative grid voltage	-1 500	V
Maximum frequency for above ratings	30	MHz

Note 1. This figure is given for guidance. Grid dissipation is absolute rating.

TYPICAL OPERATING CONDITIONS

Class C. Industrial Heating R.F. Oscillator

Filament voltage	8,0V $\pm$ 5%	
Filament current, nominal	125	A
Direct anode voltage	6,0	kV
Direct grid voltage	-660	V
Direct anode current	5,6	A
Peak r.f. grid voltage	930	V
Direct grid current (Note 2)	750 (1 200)	mA
Anode dissipation	7,6	kW
Grid dissipation (Note 2)	260	W
Grid resistor	900	$\Omega$
Power output	26	kW
Power output, less drive	25	kW
Power into load at 85% transfer efficiency	21	kW

Note 2. Subject to wide variation dependent upon the impedance of the load circuit. The value of current shown in brackets is typical of off-load conditions and is given for guidance only: a practical figure is dependent upon compensatory devices in the grid circuit.

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## CATHODE

Thoriated tungsten filament		
Maximum usable emission	36	A
Cold filament resistance	0,0045	$\Omega$

It is recommended that some resistance or reactance be introduced into the filament supply to limit the surge current to about two and a half times the normal r.m.s. working value. This impedance may be short-circuited as soon as the surge has decayed.

For tube operation at frequencies above 30MHz, it is recommended that the r.f. path to the cathode makes connection to the large filament terminal.

## CHARACTERISTICS

Amplification factor (at $V_a = 2kV : I_a = 0,5A$ )	12	
Mutual conductance (at $V_a = 2kV : V_g = -87V$ )	60	mA/V

## DIRECT INTERELECTRODE CAPACITANCES

Grid to anode	56	pF
Grid to filament	100	pF
Anode to filament	3,0	pF

## COOLING

The anode must be cooled by an adequate water flow (see Figures 3 and 4). It is essential that the water enters the water jacket at its lowest point in relation to the attitude of the tube when mounted. Forced-air cooling of the grid and filament seals is required to limit their temperature to below the maximum permissible value of 180°C. An air flow of 50 ft<sup>3</sup>/min (1,42 m<sup>3</sup>/min) directed vertically downwards on to the seals from a 4 inch (10 cm) diameter orifice is sufficient for operation at frequencies up to 30MHz. At higher frequencies, additional cooling of the grid seal may be required.

## MECHANICAL DATA

Dimensions	As shown in outline drawing included
Mounting position	Vertical, anode upwards or downwards
Weight of tube	7,5 lb (3,4 kg)
Accessories	Filament and grid connectors, which are supplied as separate items, are available under following codes: CN-1A Filament connector, small CN-1B Filament connector, large CN-1C Grid connector

Fig. 1. Constant Voltage Characteristic

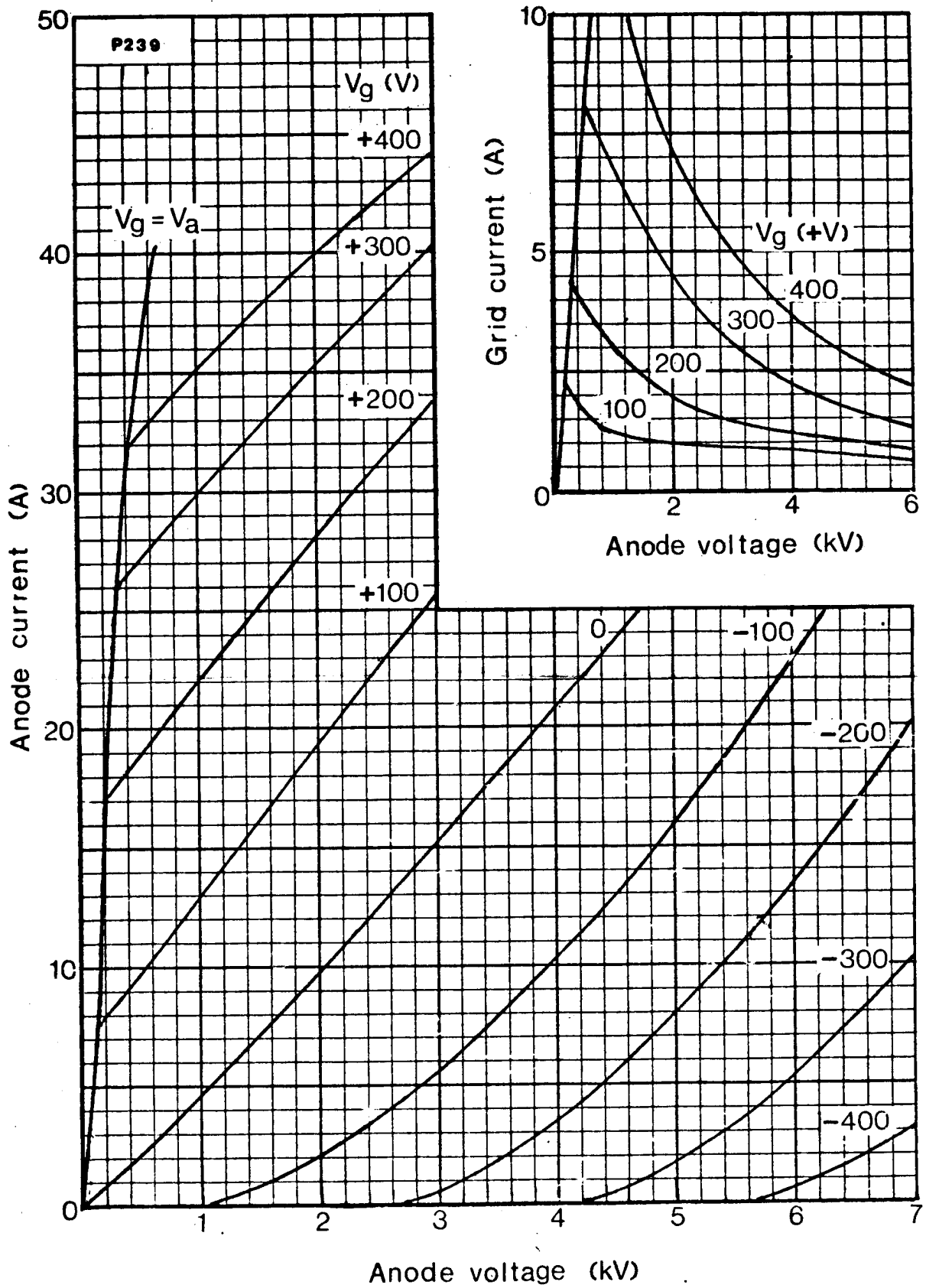


Fig. 2. Constant Current Characteristic

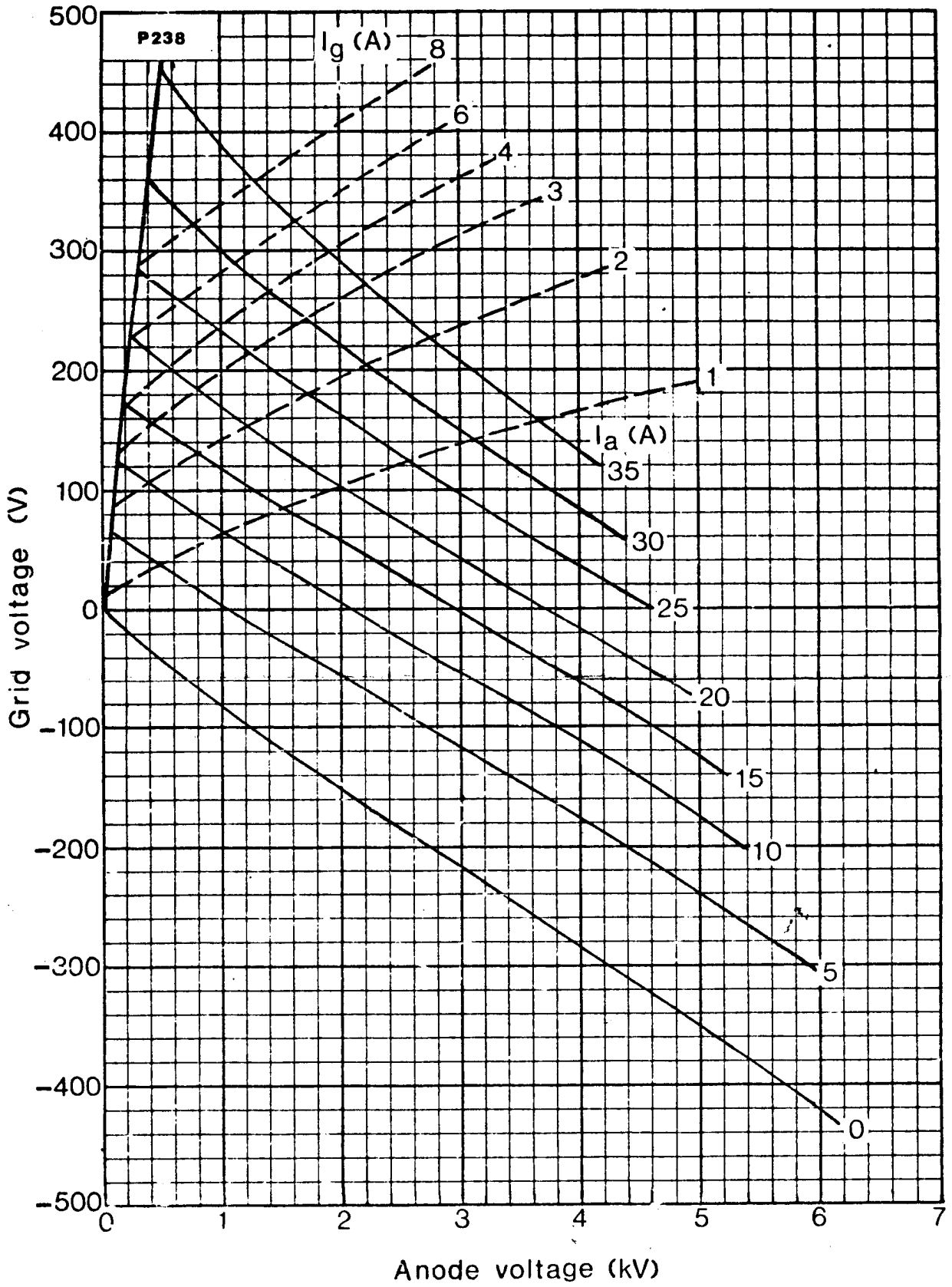


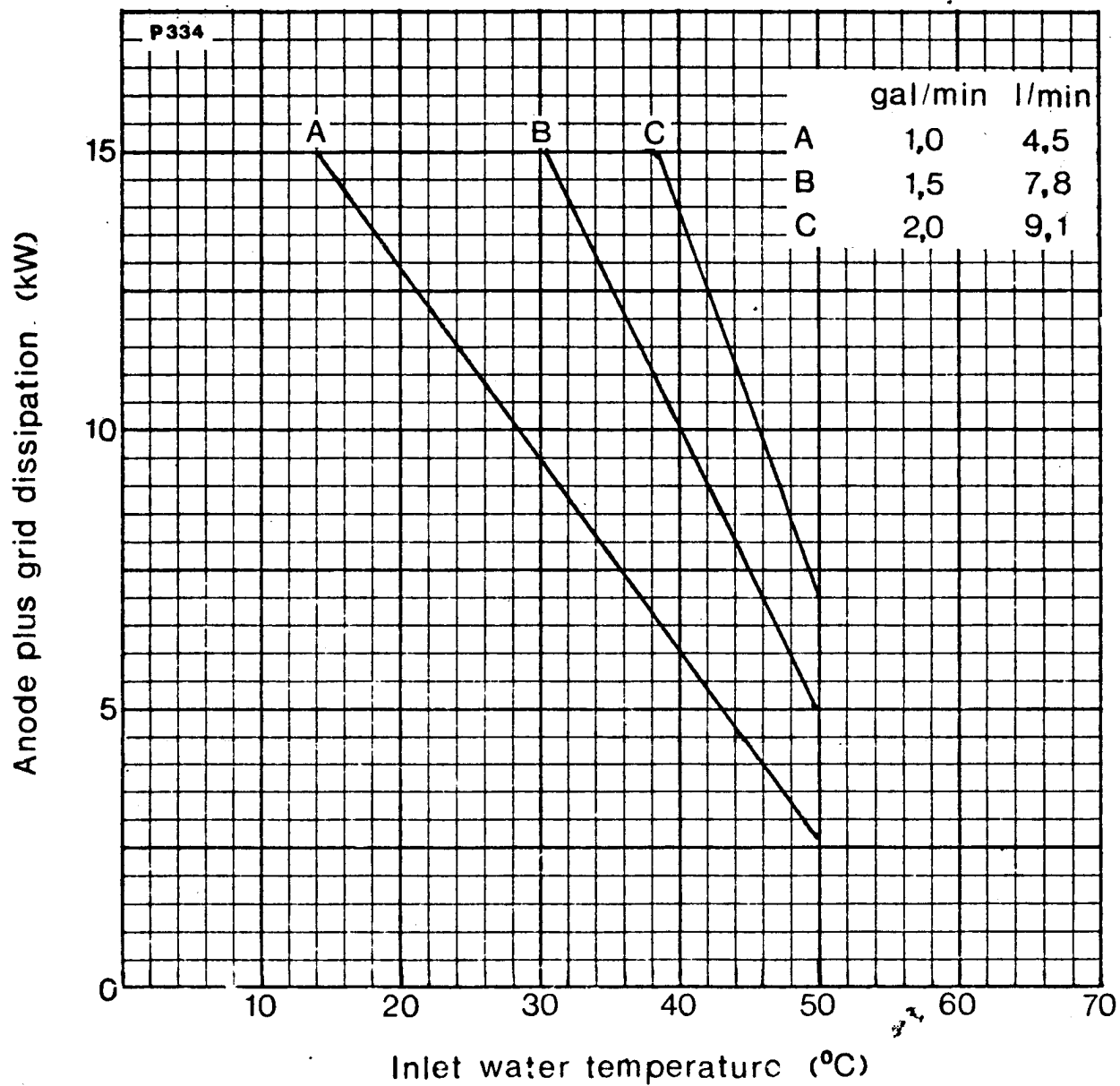
Fig. 3. Cooling Water Requirement for Outlet  
Water Temperature of 60°C

Fig. 4. Water Coil Characteristic

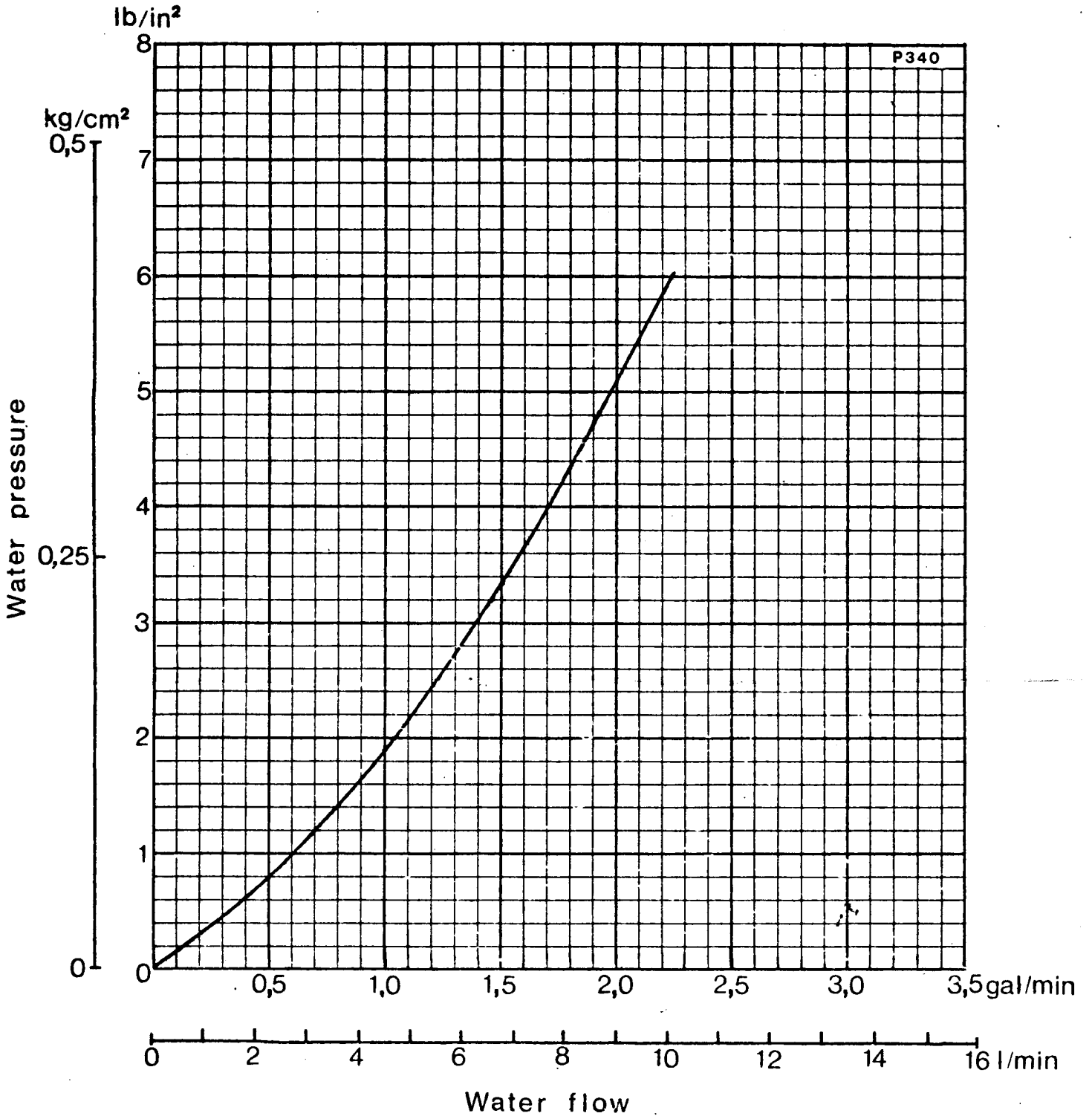
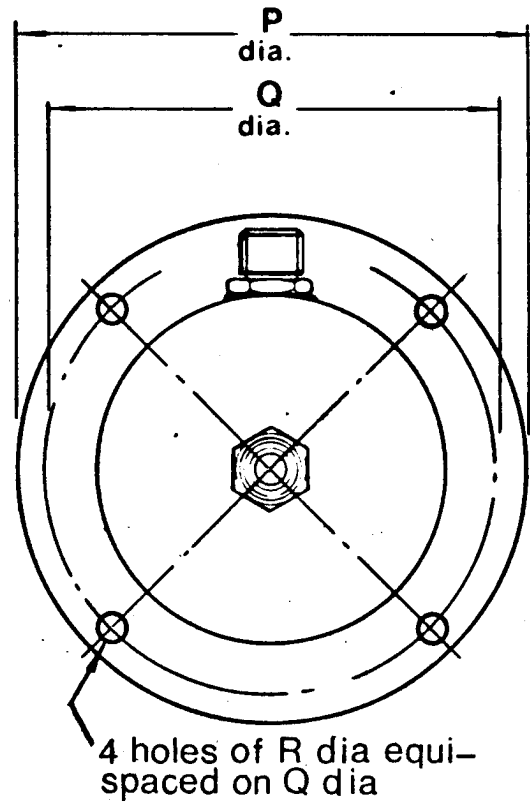
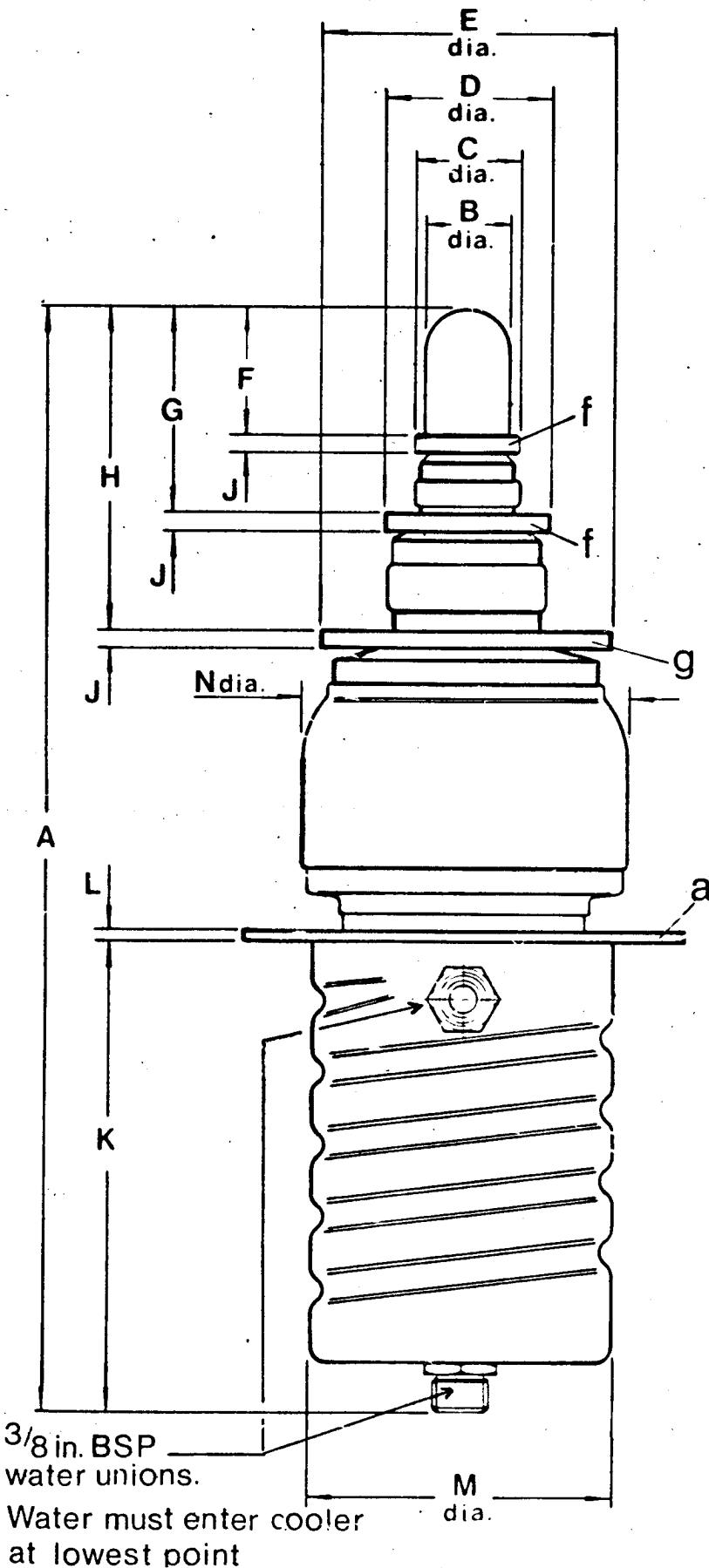


Fig. 5. 3R/2225 Outline



DIM.	MILLIMETRES.	INCHES.
A	343,00 max.	13,500 max.
B	25,4 max.	1,000 max.
C	31,7 ± 0,4	1,250 ± ,015
D	50,8 ± 0,4	2,000 ± ,015
E	88,9 ± 0,4	3,500 ± ,015
F	38,1 ± 1,6	1,500 ± ,062
G	60,3 ± 4,8	2,375 ± ,187
H	95,3 ± 4,8	3,750 ± ,187
J	6,4 max.	0,250 max.
K	146,05 max.	5,750 max.
L	3,2 ± 0,13	0,125 ± ,005
M	93,65 max.	3,687 max.
N	101,6 max.	4,000 max.
P	133,3 ± 0,8	5,250 ± ,031
Q	119,05 ± 0,13	4,687 ± ,005
R	6,75 ± 0,13	0,266 ± ,005

metric dimensions are derived from original inch dimensions