SPECIAL VALVES

Forced-Air-Cooled Industrial Triode

Code: ESA1500

This valve is designed for induction and dielectric heating applications and is capable of operation at frequencies up to 40 MHz.

CATHODE

Directly heated thoriated tungsten		
Filament voltage	8	V
Filament current (Note 1)	26	A
Maximum usable emission	6	A

Note 1.—The filament is suitable for direct switching without additional current limitation to the circuit.

CHARACTERISTICS

Amplification factor	at V_a = 5kV, I_a = 400mA	24	
Mutual conductance		7·5	mA/V
Perveance		0·56	$mA/V^{3/2}$
Anode impedance		3·2	kΩ

DIRECT INTERELECTRODE CAPACITANCES

Grid to anode	11·5	pF
Grid to filament	14·5	pF
Anode to filament	0·8	pF

MECHANICAL DATA

Dimensions	As shown in outline drawing
Mounting position	Vertical, anode downwards (Note 2)

Note 2.—Special glass support tubes, details of which are given on pages 6, 7 and 8, can be supplied under codes GC1, GC2 and GC7 as separate accessories.

COOLING

This is by forced-air blast, and should be employed for all conditions of valve service, including filament dissipation only.

It is recommended that a minimum air flow of 300 ft^3/min (85 m^3/min) at maximum power output be used. Direction of flow is through the anode cooler and over the glass bulb.

At the higher frequencies grid connectors should be designed to assist cooling, and both connections should be made to reduce the current taken by each pin.

Care should be taken to ensure all connections to the valve make good electrical contact to avoid overheating pins and seals.

Standard Telephones and Cables Limited
Valve Division, Brixham Road, Paignton, Devon
Telephone: Paignton 50762 Telex: 4230
London Sales Office, Telephone: 01-300 3333 Telex: 21836
C O M P O N E N T S G R O U P

STC

Code: ESA1500

CONTINUED

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

Class C. Industrial Heating R.F. Oscillator

MAXIMUM RATINGS

Maximum direct anode voltage (peak value of direct voltage plus ripple)	6	kV
Maximum direct anode current	1·5	A
Maximum direct anode dissipation (continuous)	3	kW
Maximum direct grid dissipation (continuous)	200	W
Maximum direct grid current (Note 3)	330	mA
Maximum negative grid bias	−1 000	V
Maximum frequency for above ratings	40	MHz

Note 3.—This figure is given for guidance. Grid dissipation is absolute figure.

TYPICAL OPERATING CONDITIONS

Direct anode voltage	4	5	6	kV
Direct grid voltage	−275	−250	−350	V
Direct anode current	1·25	1·55	1·5	A
Peak r.f. grid voltage	730	710	810	V
Direct grid current (Note 4)	200 (300)	145 (250)	135 (230)	mA
Grid dissipation (Note 4)	65	70	65	W
Grid resistor	1·4	1·75	2·6	kΩ
Power input	7·5	7·75	9	kW
Power output (oscillator)	3·5	5·3	6·3	kW
Power into load at 85% transfer efficiency	3	4·5	5·35	kW

Note 4.—Subject to wide variation dependent upon the impedance of the load circuit. The values of current shown in brackets are typical of off-load conditions but are given for guidance only: practical figures are dependent upon compensatory devices in the grid circuit.

NOTES

The typical operating conditions given are for valve service at a class C self-oscillator and are calculated assuming a d.c. or three-phase full-wave rectified anode voltage. Where conditions of service make the valve liable to excessive mains variation, poor regulation of supplies, or power supplies with a high peak to mean ratio, care should be taken to see that the limiting values are not exceeded.

It is recommended that a protective resistance of 10 Ω/kV be connected between the h.t. supply and the valve anode to avoid damage to the valve in the event of intermittent flash-over.

Code: ESA1500

CONTINUED

Class B. A.F. Power Amplifier or Modulator
(For balanced 2-valve operation)

MAXIMUM RATINGS

Maximum direct anode voltage	6	kV
Maximum direct anode current	1·5	A
Maximum direct anode dissipation	3	kW
Maximum direct grid voltage	—1	kV
Maximum direct grid dissipation	200	W

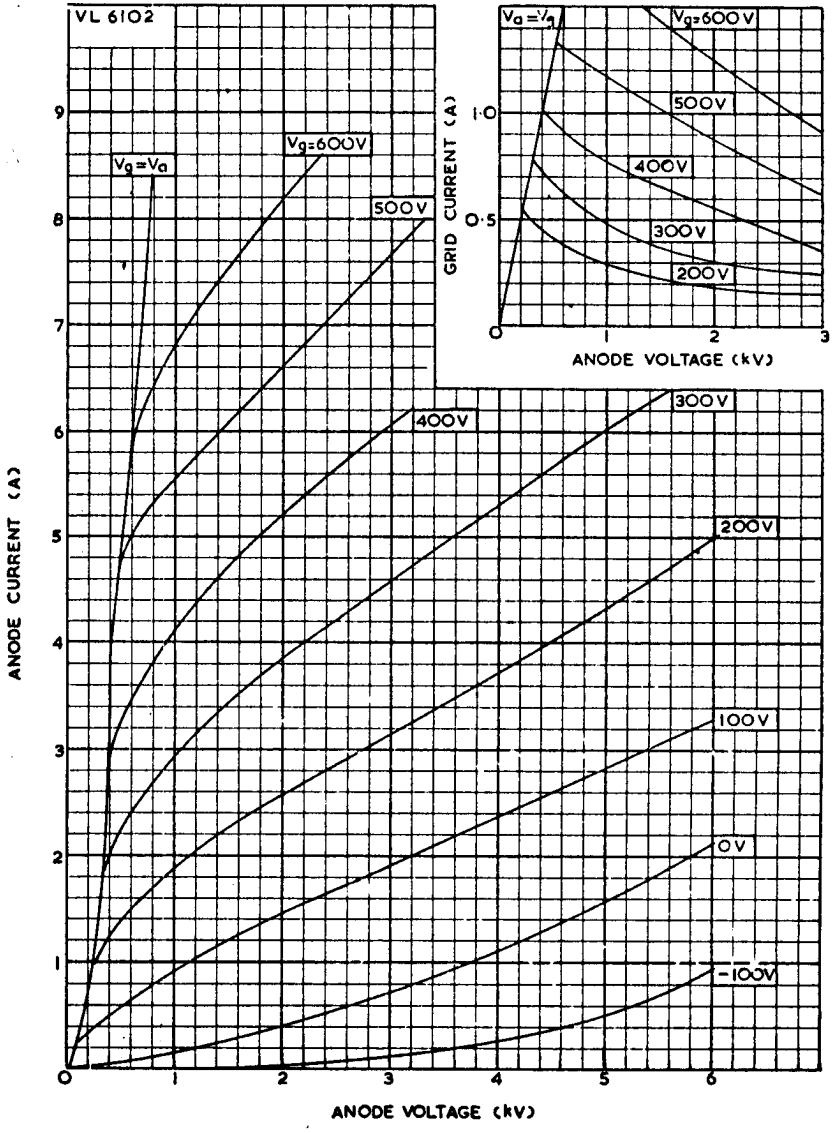
TYPICAL OPERATING CONDITIONS

Direct anode voltage	5	kV
Direct grid voltage	—200	V
Direct anode current (maximum drive), per valve	1	A
Direct anode current (zero drive), per valve	0·1	A
Load resistor, anode-to-anode	5·1	kΩ
Peak a.f. grid to grid voltage	1 040	V
Grid drive power, approximately 2 valves	75	W
Direct grid current, per valve	76	mA
Direct grid dissipation, per valve	22	W
Direct anode dissipation, per valve	2	kW
Power output (2 valves)	6	kW

STC

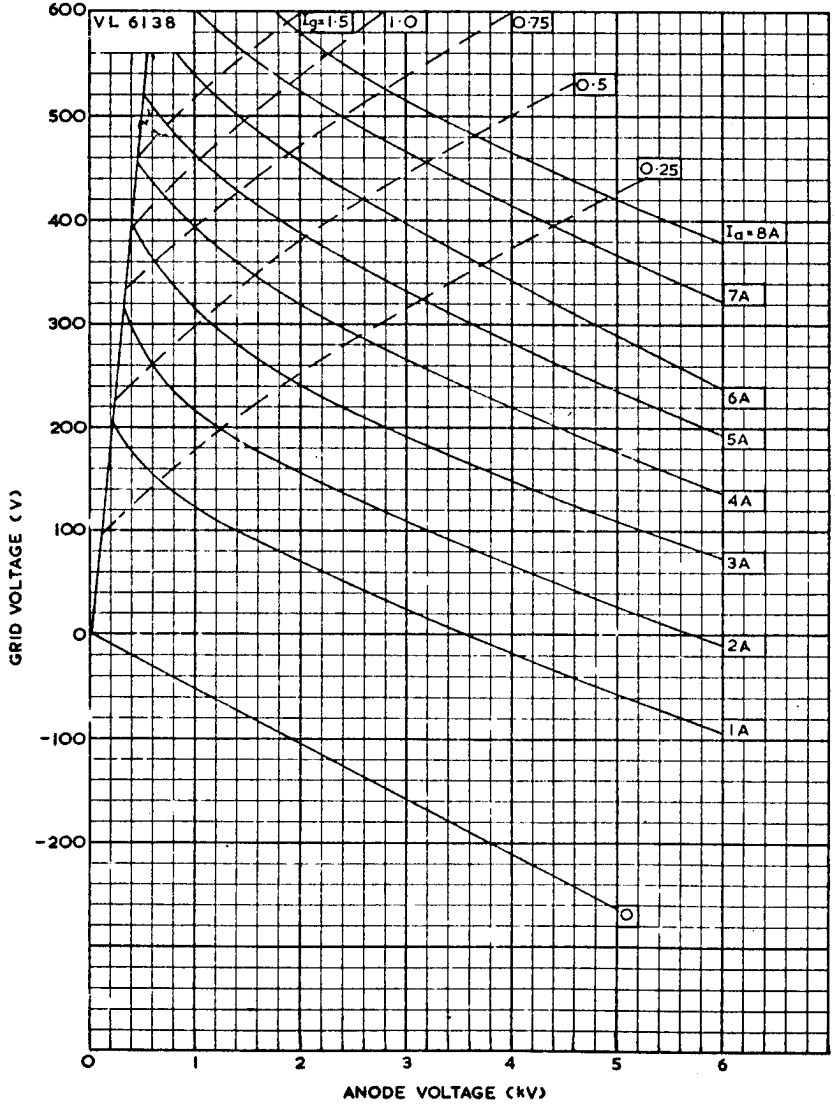
Code: ESA1500

CONTINUED



Code: ESA1500

CONTINUED

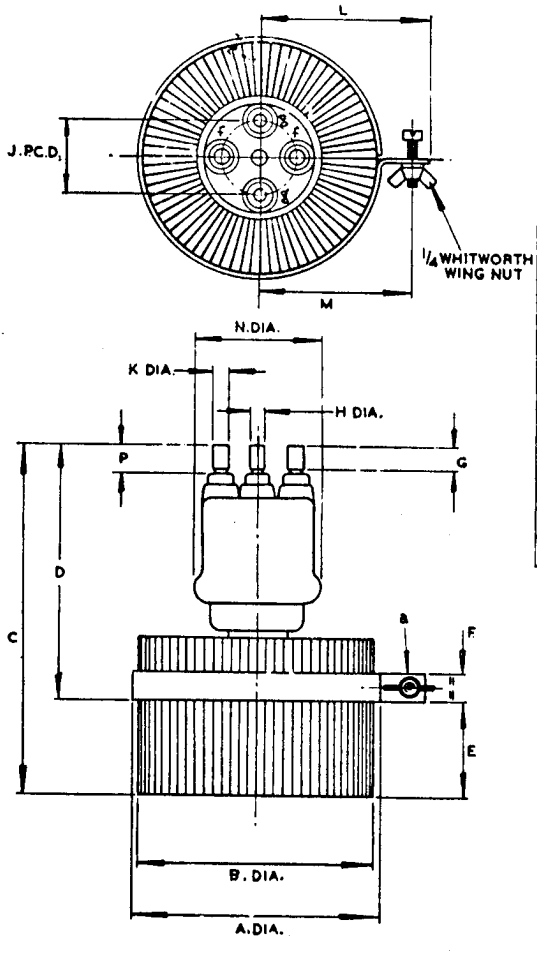


STC

Code: ESA1500

CONTINUED

ESA1500 Outline



DIM.	INCHES	MILLIMETRES
A	$6\frac{3}{8}$ MAX.	161,9 MAX.
B	6 MAX.	152,4 MAX.
C	$8\frac{3}{4}$ MAX.	222,3 MAX.
D	$5\frac{15}{16} \pm \frac{1}{4}$	150,8 ± 6,4
E	$2\frac{7}{16} \pm \frac{1}{8}$	61,9 ± 3,2
F	$\frac{3}{4} \pm \frac{1}{32}$	19,1 ± 0,8
G	$\frac{19}{32}$ MIN.	15,0 MIN.
H	0·312 ± 0·005	7,94 ± 0,13
J	1·890 ± 0·010	48,00 ± 0,25
K	0·375 ± 0·005	9,53 ± 0,13
L	$4\frac{3}{8}$ MAX.	111,1 MAX.
M	$3\frac{29}{32} \pm \frac{1}{16}$	99,2 ± 1,6
N	3·150 MAX.	80,00 MAX.
P	$\frac{3}{4}$ MAX.	19,0 MAX.

BASIC DIMENSIONS ARE INCHES