

Specification MOA/CV2203	<u>SECURITY</u>
Issue 6 Reprint B 16.2.61.	<u>Specification</u> <u>Valve</u>
To be read in conjunction with BS1409 and K1001	Unclassified Unclassified

—————> Indicates a change

TYPE OF VALVE - Hydrogen Filled Triode Modulator CATHODE - Indirectly Heated ENVELOPE - Glass PROTOTYPE - FX215			<u>MARKING</u> See K1001/4 Additional Marking:- Serial Number
<u>RATING</u> Heater Voltage (V) 2.5 Heater Current (A) 27.5 Max. Peak Anode Voltage (kV) 16.0 Max. Peak Anode Current (A) 200 Max. Negative D.C. Grid Voltage (V) -70 Min. Trigger Pulse Voltage (V) 190 Min. Trigger Pulse Length (u sec) 4 Max. Source Impedance (ohms) 500 Max. Pulse Length (u sec) 5 Max. Duty Cycle .001 Max. Rate of Rise of Current (A/ u sec) 750 Min. Cathode Heating Time (Mins) 2 Max. De-ionisation Time (u sec) 75 Ambient Temperature Range (°C) -50 to +90		Note A A B	<u>BASE</u> See Drawing Page 4 <u>DIMENSIONS and CONNECTIONS</u> See drawings on Pages 4, 5.

NOTES

A. Under the following conditions:-

P.R.F. = 500 per sec.; $T_p = 0.6, 1.4$ or 2.0 u sec; sensibly square pulse shape;
 R load = 37.5 ohms; approx rate of rise of pulse from 10% of max. value to 90% of max. value = 600 A / u sec.

B. Measured from the end of the pulse, at 160 A amplitude. Trigger source impedance = 500 ohms, and bias greater than -50V.

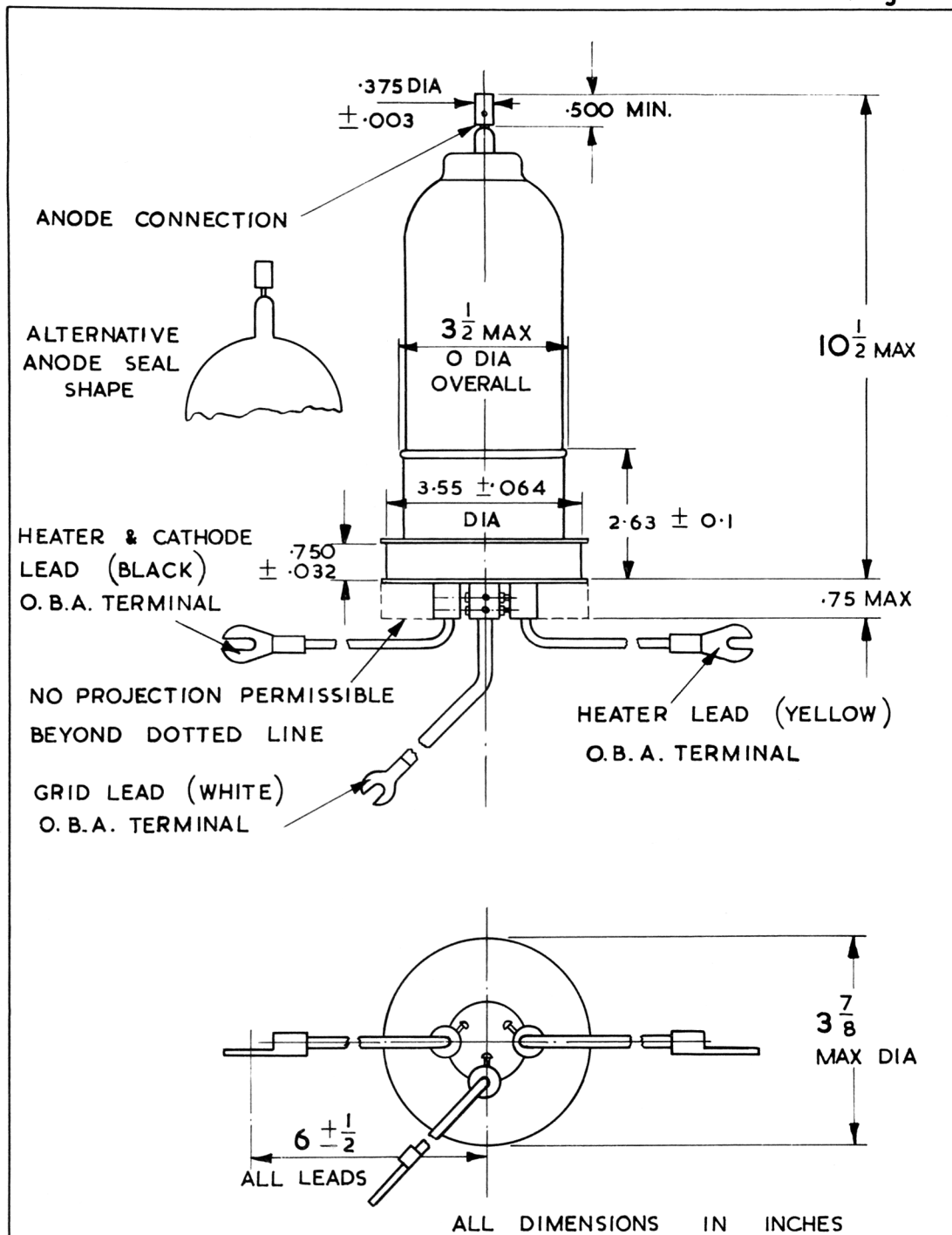
TESTS

To be performed in addition to those applicable in K1001

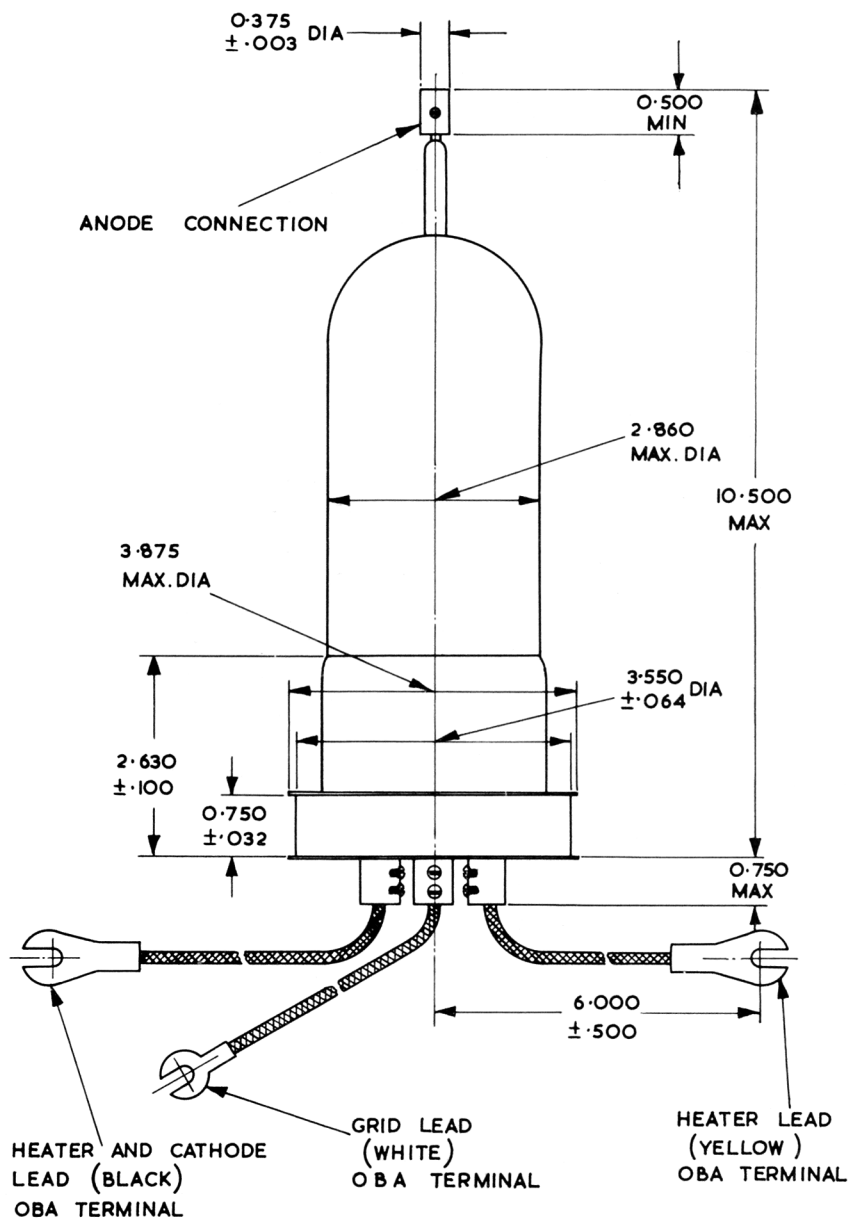
Test Conditions				Test	Limits		No. Tested	NOTE
					Min	Max		
Vh(V)		Va(kV)	Vg(v)					
a	2.5	-	-	Ih (A)	24.8	30.2	100%	1
b	2.5	16.5	-70	The valve shall operate satisfactorily in a line discharger modulator under the specified conditions. Duration of tests = 10 mins.	-	-	100%	2,3
Anode circuit constants to give Peak Ia = 200 A with average valve Tp = 2 usec. P.R.F. = 500 per sec. The circuit shall incorporate D.C. charging of the main pulse forming network. Grid Pulse: Tp = 5 usec. Amplitude = 190V.								
c	2.5	-	-	Arc drop (V) Grid Cathode	-	175	100%	4
Tk = 325A (min) Tp = 5 usec. $\pm 10\%$ P.R.F. = 50 cycles $\pm 10\%$ Rise time = 0.5 usec. max.								
d	<u>LIFE TEST</u> The valves shall be submitted for life test in batches which shall consist of not more than four weeks production and which will only be released when the 500 hour life conditions are satisfied. Samples consisting of a minimum of two valves or 2 per cent of the batch (whichever is the greater) shall be run in Modulator Type 277 (or an approved equivalent apparatus) at 13.5 kV Hold Off. Tp = 1.9 usec; P.R.F. = 500 per sec. into an essentially matched load which may consist of a pulse transformer and magnetron or non-inductive resistance. The valves shall be tested at intervals of not greater than 100 hours. A valve failing to pass any one of the tests, a, b or c shall be deemed a failure at a life mid-way between the failure test time and the previous test time. The average life is defined as the arithmetic average of all lives up to 500 hours. For the purpose of computing average life no valve shall be deemed to have a life of more than 500 hours. A batch will be accepted if the samples from it have an average life of at least 400 hours. Should the average life be less than 400 hours, a second sample may be taken. The batch will be accepted if the average life for the combined samples is at least 400 hours. Two valves in every two months production shall be life tested under the above conditions to at least 1,000 hours and the results recorded.							

NOTES

1. The heater voltage should be measured at the tags at the end of the lead.
2. After heating time of 2 minutes, the valve shall not require more than 2 minutes for the anode voltage to be gradually raised to 13.5 kV, and not more than 5 minutes (inclusive of the 2 minutes) to be raised to 16.5 kV.
3. This test shall be performed in Air Ministry Modulator, Type 1, or approved equivalent apparatus.
4. A positive pulse shall be applied to the grid of the tube. Measure the voltage between grid and cathode, 2.5usec.(max) after the beginning of the current pulse. The average voltage shall not rise during the last four microseconds. Anode floating.



ALTERNATIVE CONSTRUCTION



ALL DIMENSIONS IN INCHES