VALVE ELECTRONIC **CV6072**

Specification MOA/CV 6072
Issue 2 Dated 24th Feb. 1965
To be read in conjunction with K1001

SECURITY	
Specification	Valve
Unclassified	Unclassified

← Indicates change

TYPE OF VALVE: Packaged Magnetron
CATHODE: Unipotential, indirectly heated
PROTOTYPE: VX8241C

MARKING
See K1001/4
Additional marking:-
Factory assembly number

RATINGS AND CHARACTERISTICS

Not for Inspection Purposes.
All limiting Values are absolute and non-simultaneous.

			NOTE
Heater voltage start	(Vrms.)	6.3±7%	D
Heater current at Vh=6.3Vrms	(Arms.)	1.2	
Max. peak anode current	(mA)	180	
Min. peak anode current	mA	110	
Max. peak input power	(W)	160	
Max. mean anode input power	(W)	60	
Max. duty cycle	(Ratio)	0.5	
Max. pulse duration	(µSec)	6	
Max. rate of rise of voltage	(kV/µSec)	5	C
Max. anode temperature	(°C)	140	A
Min. cathode heating time	(Secs)	150	B
Nominal operating frequency	(Mc/s)	8800	
Nominal pulse voltage	(V)	800	
Min rate of rise of voltage	(kV/µs)	2·5	

Amdt 1

CONNECTIONS & DIMENSIONS

See drawing on Page 6
WG16. Bolted Flange (DEF 5362)

MOUNTING SUPPORT

By means of studs in the output flange, see Page 6

MOUNTING POSITION

Any

WEIGHT

Approximately 1.1 lbs

JOINT SERVICE CAT. NO.

5960-99-037-2300

NOTES

A. Measured at the point specified on the outline drawing on page 6

B. The cathode heating time should be greater than 150 seconds for ambient temperatures above 0°C and greater than 180 seconds for ambient temperatures between -55°C and 0°C.

C. For rating purposes only, the rate of rise of pulse voltage, is defined as the steepest tangent to the leading edge of the voltage pulse, measured for voltages which are in excess of 80% of the running voltage of the magnetron.

D. The heater voltage should be reduced when the valve is running, otherwise life may be impaired. The value may be obtained from the table below. For intermediate anode current obtain the heater voltage by linear interpolation.

Vh, volts rms	Ia, mA mean
6.3 ± 7%	0
5.5 ± 7%	30
4.5 ± 7%	60

TESTS

To be performed in addition to those applicable in K1001, and with particular reference to section 5F. See also Note 14.

Conditions for oscillating tests. Test condition P or Q as required except where otherwise stated for individual tests. These shall be at the discretion of the manufacturer where limits are given, provided they satisfy these limits.

Test Cond.	Vh	Ia mA, mean	PRF pps	tp μsecs	rrv kV/μs	VSWR ratio	du ratio
P	-	60	100 kc/s	4	2.5 min	1.05 max	0.4 ± 5%
Q	-	30	50 kc/s	4	2.5 min	1.05 max	0.2 ± 5%
Notes	2	-	-	-	1 Amdt 1	15	-

Test	Test Conditions	Limits Min.	Limits Max.	Units	Notes
Group A	All tests in this group to be carried out at 100% inspection level				
(a) Heater current	No pulse voltages, Vh = 6.3 volts rms for 2 minutes min.	1.1	1.3	Amps rms	
(b) Peak anode voltage	P	750	850	Volts	
(c) Mean power output	P	7.5	-	Watts	
(d) Frequency	P	8770	8830	Mc/s	
(e) Pulling factor	P, Load VSWR = 1.5 min.	-	15	Mc/s	
(f) Bandwidth (1)	P, Ia pk = 110 and 180 mA, VSWR = 1.3 min, all phases	-	2.5/tp	Mc/s	3
(g) Sidelobes (1)	P, Ia pk = 110 and 180 mA, VSWR = 1.3 min, all phases	6	-	db	3,4
(h) Missing pulses (1)	P, Ia pk = 110 and 180 mA VSWR = 1.3 min, all phases	-	1	%	9
Group B and C	No tests.				
Group D	See note 10 for inspection levels				10
(j) Bandwidth (2)	Q		2.5/tp	Mc/s	3
(k) Sidelobes (2)	Q	6	-	dB	3,4
(m) Missing pulses (2)	Q Ia pk = 110 and 180 mA		1	%	9
(n) Pushing factor	Q	Record		Mc/s/mA	5

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Test	Test Conditions	Limits Min.	Limits Max.	Units	Notes
Group E	See note 11 for inspection levels.				11
(p) Microphony	P, with vibration		120	Kc/s	6
(q) Temperature coefficient	P, with anode block temperature = 100°C		-0.25	Mc/s/°C	7
(r) Shock	No voltage, hammer angle = 15°		-	-	
(s) Post shock	Valve must pass all tests in Group A				
Group F	See note 12 for inspection levels				12
(t) Life	P	500	-	hrs	
(u) Life end point	Valve must pass all tests in Group A				
(v) Shelf Life	No voltages	1	-	Year	13
Group G	All tests in this group to be carried out at 100% inspection level.				
(w) Holding period	No voltages	14	-	days	
(x) Missing pulses (3)	P, Ia pk = 180 mA	-	1	%	8,9

NOTES

1. K1001 5F 2.5.5 is waived, and instead the manufacturer shall comply with the following:-

   "The rate of rise of pulse voltage, is the value of dV/dt at the onset of RF oscillations and shall not be less than that specified."

   The rrv shall be measured with a suitable differentiator.

2. The heater starting voltage shall be 6.3 volts rms and shall be reduced within five seconds of applying E.H.T. For Ia = 30mA mean, Vh = 5.5 volts rms; for Ia = 60mA mean, Vh = 4.5 volts rms.

3. To be measured with an RF spectrometer. The main lobe shall be such that the sign of the slope between the 6 dB levels changes once only.

4. The ratio of the maximum power in the main lobe to the maximum power in any of the sidelobes shall be greater than 6 dB.

5. The pushing factor may be measured by modulating the anode current by ± 10% with a 50 c/s waveform.

6. The vibration shall be separately applied in each of three mutually perpendicular directions, one of which shall be perpendicular to the plane of the flange. The vibration shall have accelerations of 2g for 25 c/s to 150 c/s, and ½g for 150 c/s to 500 c/s.

7. To be measured with the anode temperature at 100°C.

8. Immediately following the holding period, 6.3 volts shall be applied to the heater for 2 minutes maximum, then the EHT shall be applied to give 180 mA peak anode current. The valve shall meet the requirement by the end of the fifth minute of running. After the shelf storage, similar conditions apply except that the valve shall meet the requirement after the 15th minute of running.

9. A missing pulse is defined as an RF pulse which has less than 70% of the average energy of a normal pulse in the band 8720 - 8880 Mc/s.

10. Ten percent of the production to be inspected at regular intervals during production to be agreed with the inspector. The manufacturer may use each sample for any of the tests in this group at his discretion. If a failure occurs on any test, 100% inspection shall be carried out for that test only until the inspector decides that sample testing can be resumed. Failure will not be shipped.

11. For any level of production, one sample initially and then one every 50th valve shall be tested. The same valve may be used for each test at the discretion of the manufacturer. If any failures 100% inspection will be carried out on the test for which the failure occurred until the inspector is satisfied that normal sample inspection can be resumed. Failures will not be shipped.

12. The scale of life testing shall be related to the production. For production orders of less than 51, one valve shall be life-tested. For production orders of greater than 50, the production shall be divided into batches of 50 and one valve from each shall be life-tested. The batch corresponding to the valve undergoing the life test shall not be released until the life test has completed 80% of the required life. At the option of the manufacturer and at his expense any number of additional valves may be life tested, in which case the average of the lives of these valves shall exceed 80% of the required life before the batch can be released.

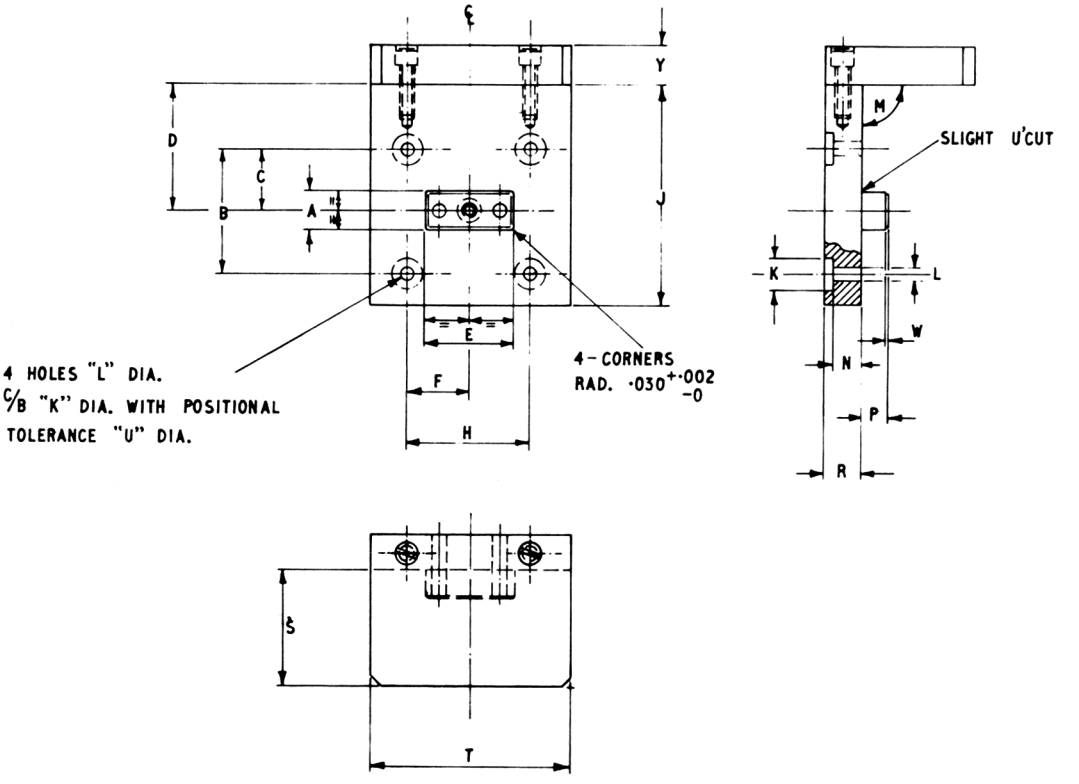
13. Five percent of the production shall be stored for one year. The valves shall pass all Group A tests after this period, and test (h) shall be the first to be carried out. Failures shall be reported to the Approving Authority.

14. The valve shall be inspected against the outline drawing on page 6 , and the gauge on page 5 .

15. This is the VSWR presented to the output of the magnetron by the waveguide bench. ←

The input flange of the bench shall be a WG 16 bolted flange as specified in DEF 5352.

GAUGE

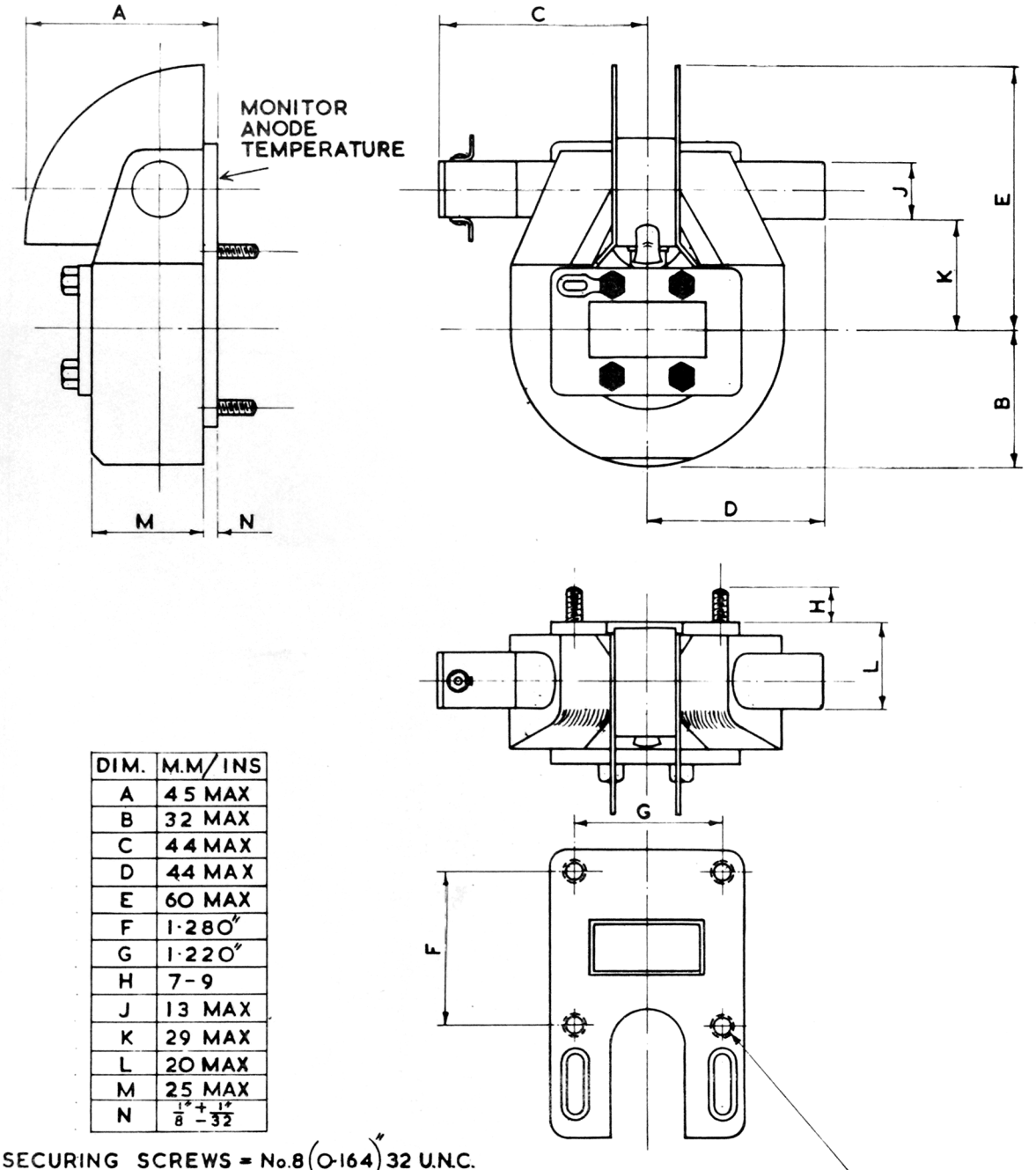


INDEX	INCHES		METRIC	
	MAX.	MIN.	MAX.	MIN.
A	0·398	0·397	10·11	10·084
B	1·280	BAS.	32·51	BAS.
C	0·64	BAS.	16·255	BAS.
D	1·260	1·256	32·00	31·90
E	0·898	0·897	22·81	22·786
F	0·61	BAS.	15·49	BAS.
H	1·220	BAS.	30·98	BAS.
J	2·26	2·24	57·4	56·9
K	0·38	0·36	9·65	9·15
L	0·170	0·1695	4·318	4·305
M	90° ± 5'		—	
N	0·280	0·276	7·1	7·0
P	0·26	0·24	6·6	6·1
R	0·354	0·350	9·0	8·9
S	1·27	1·23	32·25	31·25
T	2·02	1·98	51·3	50·3
U	0·0005	—	0·0127	—
W	0·04	0·03	1·0	0·75
Y	0·38	0·36	9·65	9·15

NOTE

1. GAUGE TO CHECK THE STUD LENGTH, POSITION OF STUDS, AND HEIGHT OF MAGNET.
2. GAUGING FACES OF RECT. BLOCK TO BE SQUARE & PARALLEL, AND IN CORRECT RELATIONSHIP TO HOLES "L".

OUTLINE DRAWING
(FIRST ANGLE PROJECTION)



DIM.	M.M/INS
A	45 MAX
B	32 MAX
C	44 MAX
D	44 MAX
E	60 MAX
F	1·280″
G	1·220″
H	7-9
J	13 MAX
K	29 MAX
L	20 MAX
M	25 MAX
N	$\frac{1}{8}^{+\frac{1}{32}}_{-}$

SECURING SCREWS = No.8 (0·164)″ 32 U.N.C.

DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

ELECTRONIC VALVE SPECIFICATION

SPECIFICATION MOA/CV6072, ISSUE 2, DATED 24.2.65

AMENDMENT NO 1

i PAGE 1 RATINGS AND CHARACTERISTICS

Between "Max rate of rise of voltage" and "Max anode temperature"
Insert "Min rate of rise of voltage (kV/μs) 2.5".

ii PAGE 2 CONDITIONS FOR OSCILLATING TESTS

In the sub-column headed "rrv" delete "5 min" and substitute "2.5 min".

JAAS 29 MAY 77

D737161

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOA/CV 6072, ISSUE 2 DATED FEBRUARY 1965
AMENDMENT NO 2

1 Page 1

(a) Specification Authority: (top left hand corner)

Delete "Ministry of Aviation - RRE"
Insert "MOD(PE) - Royal Radar Establishment"

(b) Specification Title

Delete: "Specification MOA/CV6072"
Insert: "Specification MOD(PE)/CV6072"

(c) Ratings and Characteristics

Between "Max rate of rise of voltage" and "Max anode temperature"
Insert in the appropriate columns:- "Min rate of rise of voltage (kV/μs) 2.5 C"

(d) Note C

Delete the first four words ie "For rating purposes only"

2 Page 3

(a) Note 1

Delete entirely
Insert "The rate of rise of pulse voltage shall be the maximum value measured above the 80% level of the magnetron pulse voltage (as in BS9030)"

3 Page 4

(a) Note 9

Delete entirely
Insert "A pulse is defined as missing when the rf energy is less than 70% of the average energy of a pulse in the normal spectrum envelope, ie between the first spectrum zeros."