Amdt 1

MINISTRY OF ~~SUPPLY (R.R.E. (L.S.))~~ AVIATION - DLRD/RRE

VALVE ELECTRONIC **CV 2181**

Amdt 1

Specification ~~MOS~~ MDA/CV2181
Issue 2. Dated 29th October 1954
To be read in conjunction with K1001

SECURITY	
Valve	Specification
Unclassified	Unclassified

TYPE OF VALVE:- Broad Band T.R. Cell
PROTOTYPE:- VX4104

MARKING
As K1001/4 and with Serial No. .....

RATING		Note
Operating frequency (Mc/s)	2750--2860	
Operating peak power (MW)	1.25	
Operating mean power (kW)	1.5	
Minimum primer supply voltage (V)	1000	A
Primer current (mA)	0.1	A

BASE
None

DIMENSIONS AND CONNECTIONS
See drawing page 4

PACKAGING
To the requirements of R.R.E.

REQUIREMENTS
Finish Flange faces to be silver or tin plated.

TOP CAP
As K1001/A1/D5.2

NOTES

A. The power supply for the primer electrode shall have an open circuit voltage of 1000 volts negative with respect to the body of the cell. The current shall be limited by a series resistance of 5.0MΩ A resistance of at least 1 megohm should be adjacent to the valve.

Z.7585.R.

To be carried out in addition to those applicable in K1001

	Test Conditions	Limits Min.	Limits Max.	No. Tested	Note
a	Voltage Standing Wave Ratio The voltage standing wave ratio to be measured with an applied power of less than 10 mW at frequencies of 2750, 2775, 2800, 2830 and 2860 Mc/s using a load behind the cell of V.S.W.R. not greater than 1.02.		1.20	100%	1
b	Low Level Insertion Loss and Primer Interaction (db) The insertion loss between matched impedances (V.S.W.R. < 1.1) to be measured with an applied power of less than 10 mW at a frequency of 2800 Mc/s $\pm$ 1%. The change of attenuation when the primer current is switched off is to be measured.		1.0 0.1	100% T.A.	1
c	Primer Breakdown (secs) With an open circuit voltage of 1000 volts $\pm$ 20 volts applied to the primer electrode, breakdown time to be measured.		5	100%	1,2
d	Primer Operating Current (μA) The primer current to be measured after breakdown has occurred.	90		100% T.A.	1 1,5
e	High Power Leakage (1) Spike energy (ergs/pulse) (2) Flat power (mW peak)		 0.25 75	 100% 100%	3
f	Recovery Time The time to be measured from the trailing edge of the applied pulse for an insertion loss greater than that immediately before the applied pulse by:- (1) 6 db. (μ secs) (2) 2 db. (μ secs)		 15 30	 100% 5%	3
g	Low Power Leakage (mW peak) The total leakage through the cell to be measured as the applied power is varied from 100 mW to 100 watts. Other test conditions as in Note 3		500	T.A.	3

	Test Conditions	Limits Min.	Limits Max.	No. Tested	Note
h	Temperature Cycling The cell is to be stored at 70°C for one hour followed by one hour at room temperature, followed by one hour at -40°C. Tests c and d and e to be applied.			T.A.	

NOTES

1. The primer supply voltage to be 1000 volts ± 20 volts D.C. having a peak-to-peak ripple voltage not exceeding 1% and negative with respect to the body of the cell.
The supply to be connected to the primer electrode through a resistance of 5.0 megohms.

2. Test c to be made after a shelf life of 7 days and followed by tests d, e, f and g.

3. | | | |
|---|---|---|
| Frequency | 2800 Mc/s ± 1% | |
| Peak applied R.F. power | 1.25 MW |) |
| Pulse length | 1.25 µsecs. |) or other approved |
| P.R.F. | 1000 |) rating |
| Primer supply voltage | 1000 volts (see Note 1) | |

Where an alternative pulse length is used, a correction factor to the limits on tests e & f will be agreed with the manufacturer.

4. When life tests are carried out as laid down in Section 13 of K1001, end of life will be indicated by failure to meet tests a, b, d, e, f with the following relaxation of limits:-

(a) V.S.W.R. max. 1.4
(b) Insertion loss max. 1.5 dbs.
(d) Primer operating current min. 75 µA.
(e) Separate spike and flat measurements using a flat cancellation method are not reliable. End of life will in this case be indicated by the total leakage (spike and flat) exceeding that allowable for a new valve e.g. 95 mW for a 1.25 µS pulse length.
(f) Recovery time 6 db. max. 22 µsec.
2 db. max. 45 µsec.

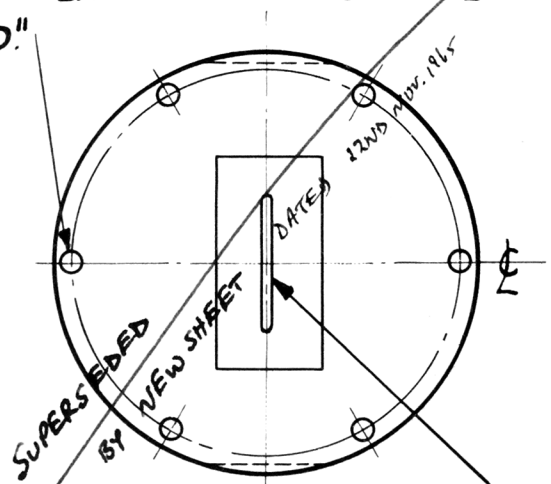
5. It shall be a condition of Type Approval that at the operating current

(1) there are no primer oscillations.
(2) the noise produced by the primer will not impair the performance of a receiver of 10 db noise factor by more than 0.2 db.

CV. 2181.

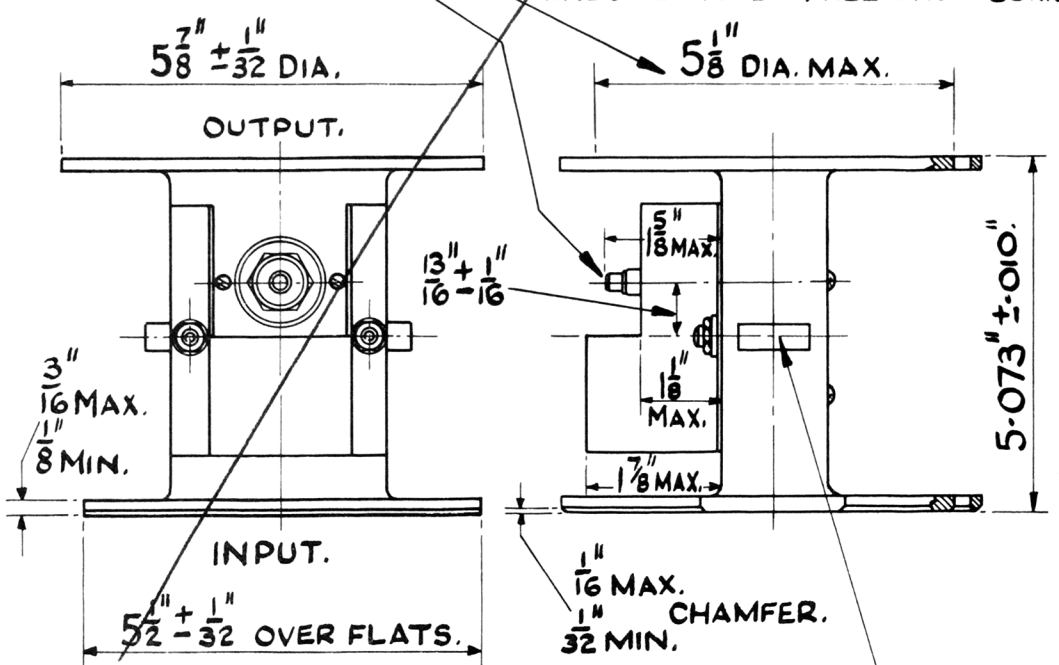
HOLES $\frac{.263"}{.257"}$ DIA. IN EACH FLANGE. HOLES MUST FIT OVER 6 PARALLEL PEGS EACH .250" DIA. EQUALLY SPACED IN A GAUGE ON 5.375" P.C. DIA. CORRESPONDING PEGS OF SUCH A GAUGE WHERE APPLIED TO EITHER FLANGE SHALL BE IN ALIGNMENT WITHIN .020".

2 FACES FLAT AND PARALLEL WITHIN .005" OVER THIS AREA. NO PORTION OF THE REMAINDER OF THE FLANGE SHALL PROJECT ABOVE THIS SURFACE.



EDGES OF INPUT AND OUTPUT WINDOWS TO BE FREE FROM BURRS.

TOP CAP. SEE K1001/A1/D5. 2.



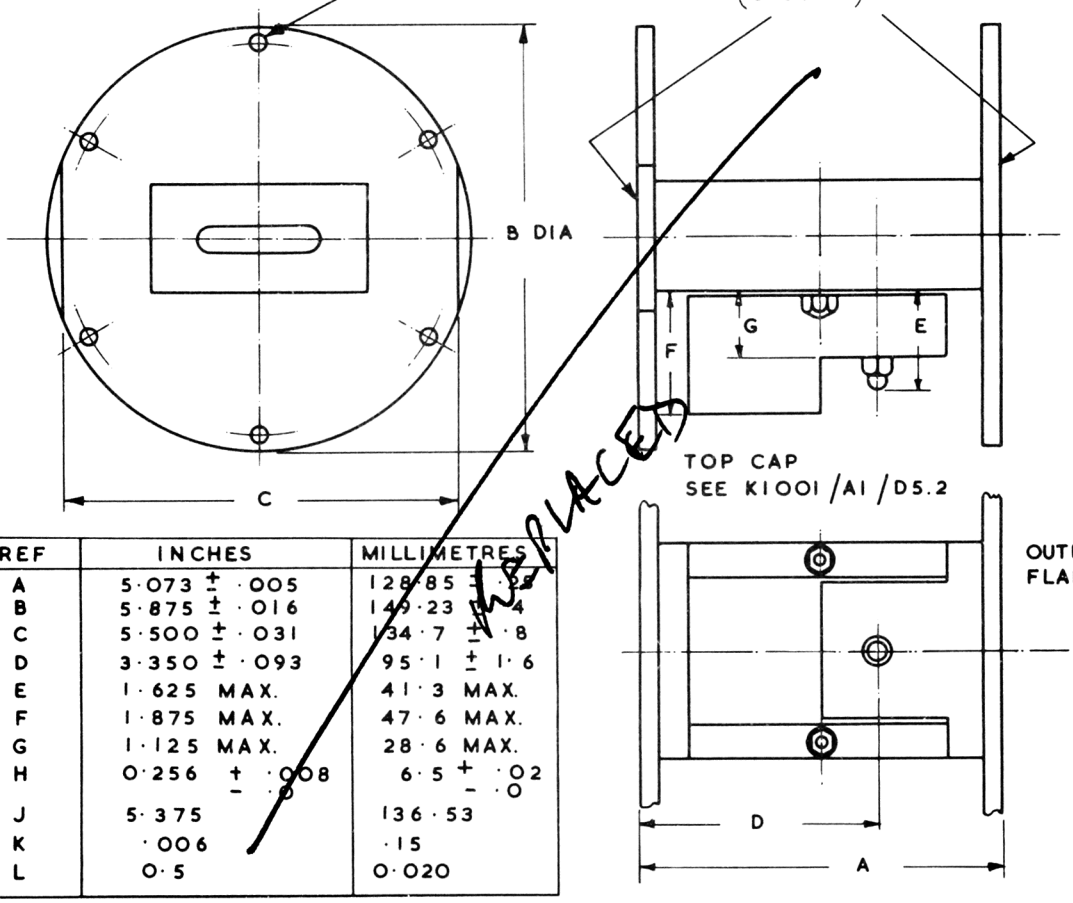
THIRD ANGLE PROJECTION.

OUTLINE DRAWING
(THIRD ANGLE PROJECTION)

6 HOLES H DIA EQUALLY SPACED ON J PC DIA WITHIN K POSITIONAL TOLERANCE ZONE DIA WITH RESPECT TO EACH OTHER

THE HOLES IN EACH COUPLING FLANGE TO BE TRUE TO WITHIN 1° OF TWIST AND L OF LATERAL DISPLACEMENT

FLAT TOLERANCE 0·1mm (0·004") WIDE



REF	INCHES	MILLIMETRES
A	5·073 ± ·005	128·85 ± [illegible]
B	5·875 ± ·016	149·23 ± [illegible]
C	5·500 ± ·031	134·7 ± ·8
D	3·350 ± ·093	95·1 ± 1·6
E	1·625 MAX.	41·3 MAX.
F	1·875 MAX.	47·6 MAX.
G	1·125 MAX.	28·6 MAX.
H	0·256 + ·008 − ·0	6·5 + ·02 − ·0
J	5·375	136·53
K	·006	·15
L	0·5	0·020

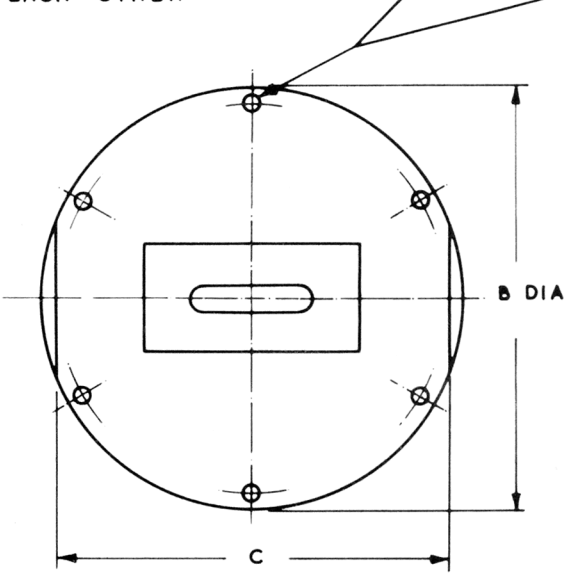
REPLACED

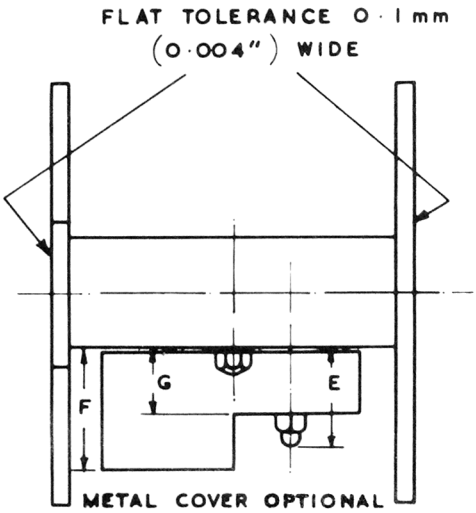
THE CELL FLANGES MATE WITH
J. S. CAT. 5985-99-083-1560

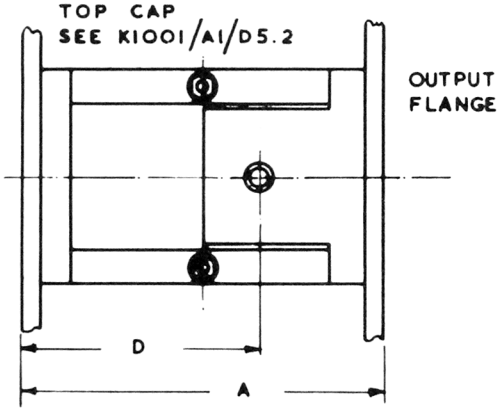
OUTLINE DRAWING
(THIRD ANGLE PROJECTION)

6 HOLES H DIA EQUALLY SPACED ON J PC DIA WITHIN K POSITIONAL TOLERANCE ZONE DIA WITH RESPECT TO EACH OTHER

THE HOLES IN EACH COUPLING FLANGE TO BE TRUE TO WITHIN 1° OF TWIST AND L OF LATERAL DISPLACEMENT







REF	INCHES	MILLIMETRES
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B	5·875 ± ·016	149·23 ± ·4
C	5·500 ± ·031	134·7 ± ·8
D	3·350 ± ·093	95·1 ± 1·6
E	1·625 MAX.	41·3 MAX.
F	1·875 MAX.	47·6 MAX.
G	1·125 MAX.	28·6 MAX.
H	0·256 + ·008 − ·0	6·5 + ·02 − ·0
J	5·375	136·53
K	·006	·15
L	0·020	0·5

THE CELL FLANGES MATE WITH
J. S. CAT. 5985-99-083-1560

ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION MOS/CU2181, ISSUE 2, DATED 29TH OCTOBER 1954
AMENDMENT NO. 1.

1. Page 1.

(i) Amend, "MINISTRY OF SUPPLY (RRE(LS) to read "MINISTRY OF AVIATION - "DLRD/RRE"

(ii) Amend, "Specification MOS/CV2181" to read "Specification MOA/CV2181"

2. Page 4. Outline

Cross out but do not remove existing outline drawing and substitute new outline drawing dated 22nd November 1965, attached hereto.

February 1966 T.V.C. for R.R.E. JRAS 6/7/66

N.230066

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOA/CV2181, ISSUE 2 DATED 29th OCTOBER 1954

AMENDMENT NO.2

Page 4 Outline Drawing

Remove and destroy existing Outline Drawing, dated 22nd November 1965 (inserted by Amendment No.1) and substitute new Outline Drawing, dated 30th June 1966, attached hereto.

July 1966

T.V.C. for R.R.E.

25/7/66