

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION CV7181-83

ISSUE NO.1 DATED 1.7.61

AMENDMENT NO. 1

Page 2 Group C, RF Admittance

Column headed TEST CONDITIONS, amend

f = 9375Mcs \pm 10Mcs to read

f = 9375Mcs \pm 2.5Mcs

Page 4 Note 3

Line 3, amend the frequency to 9375Mcs \pm 2.5Mcs

2nd paragraph, amend the reference plane position to 0.247 \pm 0.001 ins.

3rd paragraph, amend "The normal crystal admittances" to "The nominal crystal admittances".

December, 1961
(7162)

Ministry of Aviation/RAE

ELECTRONIC VALVE SPECIFICATIONS.

SPECIFICATION CV.7181-82-83.

ISSUE 1 DATED 1st JULY 1961.

AMENDMENT NO.3

Page 2 - Test Group C. Forward current.

Delete 5 m.A. Min.

Insert 4 m A Min

Page 2 - Test Group B. Tangential Sensitivity:- after note 1. under Test Conditions add "and 7".

Test Group C. R.F. Admittance:- after 5 μ W max. under Test Conditions, add "Note 7".

Video Resistance:- after 50 μ A \pm 1 μ A, add "Note 7".

Page 4 - Notes add new Note:-

"7. Minimum Bias Supply Impedance 50 K.ohms."

August 1963

Ministry of Aviation/R.A.E.
(39966)

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION CV7181-3.

ISSUE NO. 1 DATED 1.7.1961.

AMENDMENT NO. 4

PAGE 2 GROUP E CLIMATIC CYCLING

COLUMN HEADED TEST CONDITIONS

AMEND TO READ:-

DURATION 7 CYCLES TEMP. 35 $^{\circ}$ \pm 2 $^{\circ}$ C

NO VOLTAGES NOTE 4

Specification M.O.A./CV. 7181-85 Issue 1. Dated 1.7.61. To be read in conjunction with K.1007	<u>SECURITY</u>	
	<u>Specification</u>	<u>Valve</u>
	Unclassified	Unclassified

TYPE OF VALVE:- Silicon, Coaxial Detector Crystal FREQUENCY RANGE:- Up to 12,000 Mc/s. CONSTRUCTION:- Coaxial Shielded. PROTOTYPE:- VX.4185, VX.4186, VX.4187 POLARITY:- The pin is equivalent to the cathode of a thermionic diode.	<u>MARKING</u>	
	See K.1007/4 CV. No. and if possible the factory and date code.	
	<u>DIMENSIONS</u>	
	K.1007/A1/D12A and D12B (See Note B)	

<u>RATING AND CHARACTERISTICS</u> (Not for Inspection Purposes)				Notes	<u>PACKAGING</u> See K.1007/14 No lead shield required.
Max. Temperature Range	°C	-40 to +150	+70°C		
Forward Bias	µA	50			
Max. Forward Resistance (Vf = 0.5 v.)	Ω	200	A		
Min. Reverse Resistance (Vr = 0.5 v.)	kΩ	10	A		

<u>NOTES</u>	
A. It is recommended that the valve should be replaced in service when the d.c. characteristics fall outside these values.	
B. When plugged into a holder, contact shall be made to the open face of the outer. The length of the centre conductor of the holder must not exceed 0.247 in. from the open end of the valve.	
C. These valves supersede Valves Type CV2355, CV.2356 and CV.2357 and are identical with each other except that each type has a different nominal R.F. admittance. See Note 3.	
D. These valves shall only be used where the tight tolerances for R.F. Admittance are required otherwise CV.7180 shall be used.	
E. The Joint Services Catalogue numbers are:-	
CV.71	:- 5960-99-037- 2472
CV.71	:- 5960-99-037- 2473
CV.71	:- 5960-99-037- 2474

TESTS

To be performed in addition to those applicable in K.1007

Test Conditions:- Unless otherwise stated:- Tamb = 20 ± 5°C. Source Impedance: V.S.W.R. = 1.05 max. Test Holder as in Note 3.								
K.1007 REF.	TEST	TEST CONDITIONS	AQL %	INSP. LEVEL	SYMBOL	LIMITS		UNITS
						MIN.	MAX.	
	<u>Group A omitted</u>							
	<u>Group B</u> Tangential Sensitivity	f = 9375 Mc/s. ± 25 Mc/s. forward bias current = 50µA ± 1µA Note 1.	0.65	II	S _t	51	-	-dbm
	Reverse Current	V _r = -0.5 v.	0.65	II	I _r	-	25	µA
5A.3	<u>Group C</u> R.F. Admittance	f = 9375 Mc/s. ± 10 Mc/s. Forward bias current 50µA ± 1µA C.W. input power = 5µW. max.	2.5	I	V.S.W.R.	-	1.33	ratio to 1.
5A.6	Video Resistance	Input = 1mV max. (d.c. or a.c. r.m.s.) forward bias current 50µA ± 1µA.	2.5	I	R _v	600	800	Ω
	Forward Current	V _f = 0.5 v.	2.5	I	I _f	5	-	mA
8	<u>Group D</u> Resistance to Voltage Break down (Burn-out)	R.F. peak power = 100 mW min. f = 9375 ± 100 Mc/s. p.r.f. = 1000 p.p.s. ± 100 p.p.s. tp = 1µSec. ± 0.1µSec. Duration = 60 mins. min. Notes 2 and 4.	-	1B	-	-	-	-
	<u>Post Burn-out Tests</u>	Combined AQL	6.5	-	-	-	-	-
	Inoperatives	No voltages	6.5	-	-	-	-	-
	Reverse Current	As in Group B	6.5	-	I _r	-	40	µA
	Tangential Sensitivity	As in Group B Note	6.5	-	S _t	51	-	-dbm
10.2	<u>Group E</u> Temperature Cycling	6 cycles -40°C to ⁷⁰ +150°C No voltages Note 6.	-	TA	-	-	-	-
10.3	Climatic Cycling	Duration 7 cycles. No voltages Note 4.	-	1B	-	-	-	-

TESTS (Continued)

7181
CV7182
7183

K.1007 REF.	TEST	TEST CONDITIONS	AQL %	INSP. LEVEL	SYMBOL	LIMITS		UNITS
						MIN.	MAX.	
8	Tensional Stability	Apply an axial tension of 5 lb. to the centre pin for a minimum period of 10 secs. Note 5.	-	IB	-	-	-	-
	Vibrational Stability	The valves shall be vibra- ted sinusoidally in two mutually perpendicular planes, one of which shall be along the major axis. f = 50 c/s. peak acceleration = 12 g. min. Duration = 10 mins. in each plane. Note 4.	-	1B	-	-	-	-
	<u>Post Climatic Cycling, Ten- sional Stabi- lity and Vibra- tional Stability Tests.</u>	Combined AQL	6.5					
	Inoperatives Reverse Current Tangential Sensitivity	No voltages As in Group B As in Group B Note 1.	6.5 6.5 6.5	- - -	- I _r S _t	- - 51	- 40 -	- μA -dbm
13.4 13.5	<u>Group F</u>							
	Storage Life(1)	No voltages t = 150 hours T = -40°C.	-	I	-	-	-	-
	Storage Life(2)	No voltages t = 150 hours T = +150°C. 70	-	I	-	-	-	-
	<u>Post Storage Life Tests</u>							
	Repeat Group B Tests	Combined AQL for Storage Life (1) Combined AQL for Storage Life (2)	2.5 4.0	- -	- -	- -	- -	- -
5.3.2. 11	<u>Group G</u> Retest after 28 days holding period.		-	100%	-	-	-	-

7181
CV 7182
7183

TESTS (Continued)

K.1007 REF.	TEST	TEST CONDITIONS	AQL %	INSP. LEVEL	SYMBOL	LIMITS		UNITS
						MIN.	MAX.	
8	Inoperatives	No voltages	0.5	-	-	-	-	-
	Tangential Sensitivity	As in Group B	2.0	-	S_t	-51	-	dbm

NOTES

- The value of tangential sensitivity shall be recorded and for the Group D and E tests, the minimum limit shall be -51 dbm except where the value recorded during Group B testing is between -51 and -52 dbm when the value may fall by not more than 1 dbm.
- The input power shall be derived from a source matched better than 0.5 V.S.W.R.
- There shall be three test holders, different for each of the types CV.7181, CV.7182 and CV.7183. The holders shall be such that the normalised admittances at 9375 Mc/s. $\pm 10\%$ at a reference plane in the measuring line and with the valve replaced by a 66 ohm coaxial line with matched termination, shall be within $\pm 5\%$ of the following values.

<u>Type</u>	<u>g</u>	<u>jb.</u>
CV.7181	1.1	+ 0.80
CV.7182	0.75	+ 0.75
CV.7183	1.57	+ 0.81

The reference plane is the position of voltage minimum in the measuring line corresponding to a short circuit at a plane within the crystal body 0.247 in. from the open end.

The normal crystal admittances, measured in each case at a plane 0.247 in. back from the open end of the crystal, (inside the body) are as follows:-

<u>Type</u>	<u>g</u>	<u>jb.</u>
CV.7181	0.0138	-0.0110 mhos
CV.7182	0.0202	-0.0152 mhos
CV.7183	0.0097	-0.0078 mhos

- Valves subjected to these tests shall not be accepted for delivery unless they still meet the full requirements of the specification.
- Valves subjected to this test shall not be accepted for delivery.
- The Post Temperature Cycling tests and limits to be applied shall be agreed with the Specification Authority.