ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION AD/CV.5125 ISSUE 1. DATED 1.10.63
AMENDMENT NO.1

Page B. TESTS Insert the following additional paragraph:-

"The maximum limit for "Deflection factor (P2, P7) 1D2" under Acceptance inspection, part 2 (design) is to be disregarded and a limit of 67 Vdc/in. applied in lieu."

T.V.C. for A.S.W.E.

November, 1964

(222413)

VALVE ELECTRONIC

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT

CV5125

Specification AD/CV5125 incorporating MIL- Issue 1 Dated 1.10.63 E-1/689C To be read in conjunction with BS448 K1001 and K1006	SECURITY SPECIFICATION: Unclassified VALVE: Unclassified

TYPE OF VALVE - Cathode ray tube
DEFLECTION - Electrostatic, symmetrical
FOCUS - Electrostatic
ENVELOPE - Glass
SCREEN - BY8
PROTOTYPE - 5ADP7

MARKING

See K1001/4
Add:- 5ADP7 Serial No. .....

BASE

BS448 - B14A

RATINGS

			Note
Heater Voltage	(V)	6.3	
Heater Current	(A)	0.6	
Anodes 1 and 3 Voltage Max.	(kV)	2.85	
Anode 2 Voltage Max.	(kV)	1.1	
Anode 4 Voltage Max.	(kV)	6.6	

SIDE CONTACT

BS448 - CT7

TYPICAL OPERATING CONDITIONS

Anodes 1 and 3 Voltage	(kV)	2.0
Anode 2 Voltage	(kV)	0.45
Anode 4 Voltage	(kV)	4.0
Sensitivity, x plates	(mm/V)	0.4
Sensitivity, y plates	(mm/V)	0.55

CONNECTIONS

Pin	Electrode	
1	Heater	h
2	Cathode	K
3	Grid	g
4	Internal connection	-
5	Anode 2	a2
6	No pin	-
7	y1 Plate	y1
8	y2 Plate	y2
9	Anodes 1 and 3	a1, a3
10	x2 Plate	x2
11	x1 Plate	x1
12	No connection	-
13	No pin	-
14	Heater	h
Side Contact	Anode 4	a4

DIMENSIONS

See pages 5 and 6

NOTES

A. The Joint Services Catalogue Number is 5960-99-000-5125

TESTS

The tests included in Specification MIL-E-1/689C for 5ADP7 shall apply with the exception of the "Persistence" and "Screen" tests.

The following Persistence test shall be added under the heading "Qualification inspection":-

With a raster of convenient size adjust Vg for a screen brightness of 10 foot-lamberts when measured through a Wratten 15 colour filter. After an excitation time of 60 seconds the time to decay to 0.05 foot-lamberts shall not be less then 10 seconds or more than 30 seconds.

CV5125

MIL-E-1/689C
25 August 1960
SUPERSEDING
MIL-E-1/689B
23 June 1955

MILITARY SPECIFICATION SHEET

ELECTRON TUBE, CATHODE-RAY, ELECTROSTATIC DEFLECTION AND FOCUS

JAN-5ADP1, 5ADP2, 5ADP7

This specification sheet forms a part of the latest issue of Military Specification MIL-E-1.

DESCRIPTION: With post accelerator

ABSOLUTE-MAXIMUM RATINGS:

Parameter:		Ef	Ec1	ed	Eb1	Eb2	Eb3	Rg	Zd	Eb3/Eb2	Ehk	Alt
Unit:		V	Vdc	Vdc	Vdc	Vdc	Vdc	Meg	Meg	Ratio	Vdc	ft
Maximum:		6.3±10%	0	550	1,100	2,850	6,600	1.5	1.0	2.3	±180	50,000
Minimum:	P1	---	-200	---	---	1,500	1,500	---	---	---	---	---
	P2, P7	---	-200	---	---	1,500	3,000	---	---	---	---	---
TEST CONDITIONS:	P1	6.3	Adjust	---	Focus	1,500	3,000	---	---	---	---	---
	P2, P7	6.3	Adjust	---	Focus	2,000	4,000	---	---	---	---	---

PAR. NO.	TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL	SYMBOL	LIMITS		UNIT
						Min	Max	
	General							
3.1	Qualification	Required for JAN marking	---	---	---	---	---	---
3.6	Performance	(See note 1)	---	---	---	---	---	---
4.5	Holding period		---	---	---	---	---	---
4.6.1	Cathode-ray tubes (preheating)		---	---	---	---	---	---
4.9.18 and 4.9.18.1.2	Container drop	Required (see note 2)	---	---	---	---	---	---
	Qualification inspection (see note 2)							
4.9.11	Pressure	45 lb/sq in.	---	---	---	---	---	---
4.9.12.1	Low-pressure voltage breakdown	87±4 mm Hg (see note 3)	---	---	---	---	---	---
4.9.19.8	Cathode-ray vibration		---	---	width	---	1	mm
4.10.14	Direct inter-electrode capacitance	g1 to all	---	---	C	---	7.9	uuf
		k to all	---	---	C	---	5.8	uuf
		D1 to D2	---	---	C	---	3.1	uuf
		D3 to D4	---	---	C	---	1.3	uuf
		D1 to all except D2	---	---	C	---	6.1	uuf
		D2 to all except D1	---	---	C	---	6.1	uuf
		D3 to all except D4	---	---	C	---	5.0	uuf
		D4 to all except D3	---	---	C	---	5.0	uuf
4.12.3.4	Neck and bulb (electrostatic types)		---	---	dia	---	2.25	in.
4.12.4.1	Cathode illumination		---	---	---	---	---	---
4.12.10.2	Focusing voltage, zero-bias (P1)		---	---	Eb1	300	515	Vdc
	(P2, P7)		---	---	Eb1	400	690	Vdc

FSC 5960

CV5125

PAR. NO.	TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL	SYMBOL	LIMITS		UNIT
						Min	Max	
	Qualification inspection (see note 2) - (Contd)							
4.12.11	Deflection factor (P1)	1D2; Eb2 = Eb3 = 1,500 Vdc	---	---	DF	32.5	39.5	Vdc/in.
	(P2, P7)	1D2; Eb2 = Eb3 = 2,000 Vdc	---	---	DF	43	53	Vdc/in.
4.12.11	Deflection factor (P1)	3D4; Eb2 = Eb3 = 1,500 Vdc	---	---	DF	24.5	30.5	Vdc/in.
	(P2, P7)	3D4; Eb2 = Eb3 = 2,000 Vdc	---	---	DF	32.5	40.5	Vdc/in.
4.12.12	Deflection-factor uniformity		---	---	---	---	2.0	%
---	Persistence	(See note 4)	---	---	---	---	---	---
	Acceptance inspection part 1 (production)							
4.12.1.2	Voltage breakdown				---	---	---	---
4.12.1.3	Voltage breakdown (electrostatic types)				---	---	---	---
4.12.2.1	†Gas "cross" (P1)	Light = 15 ftL			---	---	---	---
	(P2, P7)	Ib3 = 50 uAdc			---	---	---	---
4.12.5.1	Blemishes				---	---	---	---
4.12.5.2	†Light output (P1)				light	15	---	ftL
4.12.5.3	Modulation (P2, P7)	Ib3 = 50 uAdc			ΔEc	---	55	Vdc
4.12.7.2	Spot position (electrostatic deflection)		(See note 5)	II	---	---	18	mm
4.12.7.3	Spot displacement (leakage)				displ	---	10	mm
4.12.9	Grid cutoff voltage (P1)				Eco	-34	-56	Vdc
	(P2, P7)				Eco	-45	-75	Vdc
4.12.13.2	Grid No. 1 leakage				---	---	---	---
4.12.13.5	Grid No. 2 leakage				---	---	---	---
---	Total scan (P1)	Focused trace; light = 15 ftL (see note 6)			---	4-1/4	---	in.
	(P2, P7)	Focused trace; Ib3 = 50 uAdc (see note 6)			---	4-1/4	---	in.
---	Pattern distortion	(See note 7)			---	---	---	---
	Acceptance inspection part 2 (design)							
4.9.5.1	Base pin solder depth (rigid leads) (torque)		6.5	L6	---	---	---	---
4.10.8	Heater current		6.5	L6	If	540	660	mA

PAR. NO.	TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL	SYMBOL	LIMITS		UNIT
						Min	Max	
	Acceptance inspection, part 2 (design) - (Contd)							
4.12.1.1	Electrode currents (anode No. 1)	Ec1 = 0	6.5	L6	Ib1	-15	10	uAdc
4.12.1.1	Electrode currents (cathode) (P1)	Light = 15 ftL	6.5	L6	Ik	---	1,000	uAdc
	(P2, P7)	Ib3 = 50 uAdc	6.5	L6	Ik	---	1,000	uAdc
4.12.3.1	Base (electrostatic types)	1D2; pin No. 5	6.5	L6	---	---	---	---
4.12.3.2	Side terminal (electrostatic types)	1D2	6.5	L6	---	---	---	---
4.12.3.5	Neck and base (electrostatic types)		6.5	L6	---	---	---	---
4.12.3.7	Angle between traces		6.5	L6	---	89	91	degrees
4.12.4.2	Stray emission (conventional types)	Eb2 = 2,850 Vdc; Eb3 = 6,600 Vdc	6.5	L6	---	---	---	---
4.12.5.3	Modulation (P1)	Light = 15 ftL	6.5	L6	ΔEc	---	45	Vdc
4.12.5.4	Screen (P7 types)		6.5	L6	---	---	---	---
4.12.6.1	Line width A (P1) (electrostatic deflection)	Light = 15 ftL	6.5	L6	width	---	0.75	mm
	(P2, P7)	Ib3 = 50 uAdc	6.5	L6	width	---	0.8	mm
4.12.6.1	Line width B (P1) (electrostatic deflection)	Light = 15 ftL (see note 8)	6.5	L6	width	---	0.80	mm
	(P2, P7)	Ib3 = 50 uAdc	6.5	L6	width	---	0.90	mm
4.12.10.1	Focusing voltage at cutoff (P1)		6.5	L6	Eb1	345	515	Vdc
	(P2, P7)		6.5	L6	Eb1	460	690	Vdc
4.12.11	Deflection factor (P1)	1D2	6.5	L6	DF	40	50	Vdc/in.
	(P2, P7)	1D2	6.5	L6	DF	54	56	Vdc/in.
4.12.11	Deflection factor (P1)	3D4	6.5	L6	DF	30.5	37.5	Vdc/in.
	(P2, P7)	3D4	6.5	L6	DF	40.5	50	Vdc/in.
4.12.13.1	Heater-cathode leakage		6.5	L6	---	---	---	---
	Acceptance inspection, part 3 (life)							
4.11	Life test		---	---	---	---	---	---
4.11.1.2	Cathode-ray tubes	Group C; Eb2 = 2,850 Vdc; Eb3 = 6,600 Vdc; t = 500 hr	---	---	---	---	---	---
	(P1)	Light = 15 ftL	---	---	---	---	---	---
	(P2, P7)	Ib3 = 30 uAdc	---	---	---	---	---	---
4.11.4	Life-test end points (P1)	Light = 11 ftL	---	---	---	---	---	---
		Line width A	---	---	width	---	0.75	mm
		Line width B	---	---	width	---	0.85	mm
		Modulation	---	---	ΔEc	---	45	Vdc
	(P2, P7)	Ib3 = 37.5 uAdc	---	---	---	---	---	---
		Line width A	---	---	width	---	0.8	mm
		Line width B	---	---	width	---	0.9	mm
		Modulation	---	---	ΔEc	---	55	Vdc

CV5125

PAR. NO.	TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL	SYMBOL	LIMITS		UNIT
						Min	Max	
5.	Preparation for delivery	(See note 9)						

NOTES:

1. All tests listed in 3.6 are applicable except 4.8, 4.9.1.1, 4.9.8, 4.9.20.1, 4.9.20.2, and 60.1 of Appendix B.
2. All tests listed hereon except container drop shall be performed during qualification inspection; however, the 10 tests listed under qualification are normally performed during qualification inspection only.
3. This test is made with maximum rated voltage (Eg1 maximum negative voltage) applied to the base pins.
4. Persistence is specified as the cb1 value as measured for P7 screens (Radiation Laboratory Report No. 62-7, pages 24 and 25, dated 14 May 1943) at a Q of 20, corrected for an area of 50 sq cm to make the readings obtained comparable with the cb1 value for P7 screens under the standard reference conditions. The cb1 value shall be not less than 370 cb.
5. The AQL for the combined defectives for attributes in acceptance inspection, part 1 (production), excluding inoperatives, mechanical, and blemishes, shall be 1 percent.
6. The scan from the tube face centers to the extinction points of focused trace shall ≯2-1/8 inches.
7. A raster pattern shall be adjusted so its widest points just touch the sides of a 3.075-inch square. No point on the pattern sides shall be within an inscribed 2.925-inch square.
8. Measure line width B at a distance from the center of the screen equal to 1/3 of the maximum bulb diameter. The applied astigmatism voltage shall be equal to zero volt.
9. Tubes shall be prepared for domestic or overseas shipment, as specified in the contract or order, in accordance with Specification MIL-E-75 and appendix thereto.
10. Production lots shall be suitably identified.
11. Referenced documents shall be of the issue in effect on the date of invitation for bids.

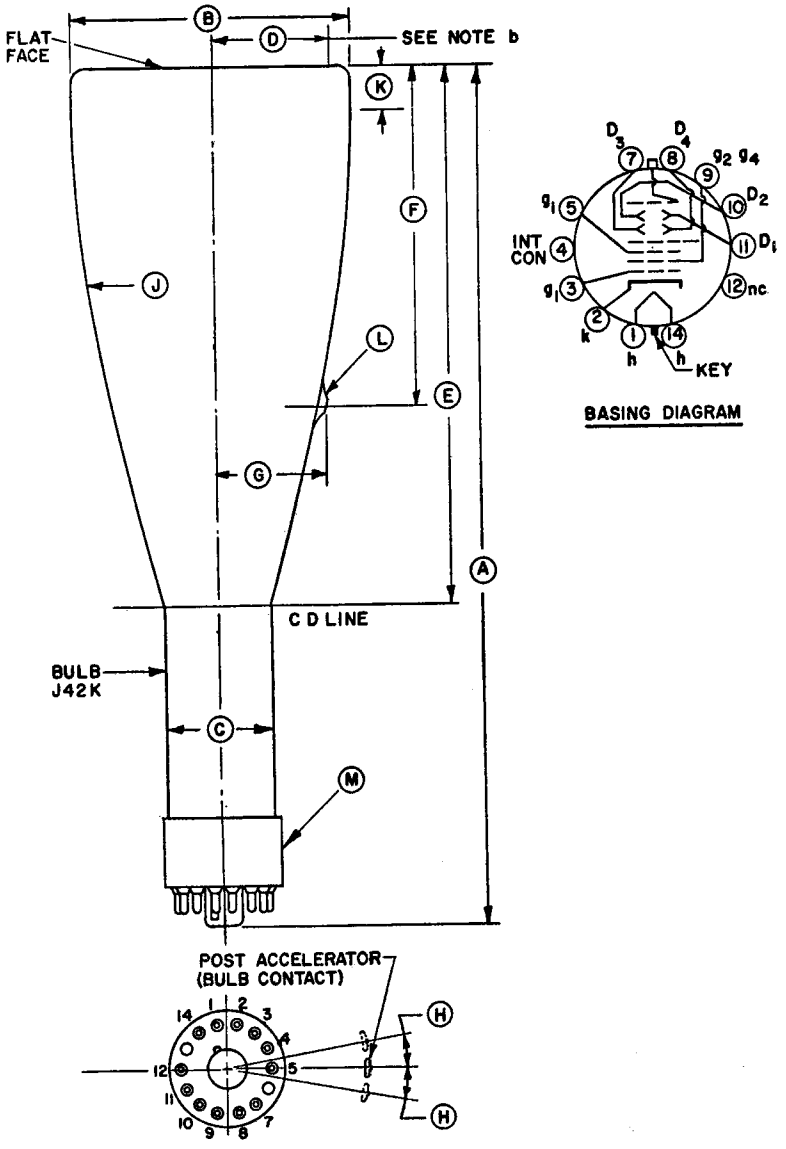

Figure 1. Outline drawing.

CV5125

DIM.	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL	LIMITS	
			Min	Max
QUALIFICATION INSPECTION				
E	---	---	10.281 nom	
J	---	---	27.813 R nom	
K	---	---	0.875 nom	
L	Bulb contact: J1-22			
M	Base: B12-37			
ACCEPTANCE INSPECTION, PART 2 (DESIGN)				
A	6.5	L6	16.563	16.938
B	6.5	L6	5.156 dia	5.344 dia
C	6.5	L6	1.938 dia	2.063 dia
D	6.5	L6	2.250 R	---
F	6.5	L6	6.000	6.500
G	6.5	L6	2.063	2.563
H	6.5	L6	---	10°

NOTES:
a. All dimensions in inches, unless otherwise specified.
b. Useful screen radius.

Figure 1. Outline drawing. -- Continued