

Specification <b>MDS/CV 4007</b>  <b>Issue 3 Dated 21.9.56.</b> To be read in conjunction with K1001 and BS.448 Nearest Equivalent American Specification - MIL-D-1/235	<u>SECURITY</u>	
	<u>Specification</u>	<u>Valve</u>
	UNCLASSIFIED	UNCLASSIFIED

→ Indicates a change

TYPE OF VALVE - Reliable Double Diode  CATHODE - Indirectly-heated (Separate cathodes)  ENVELOPE - Glass  PROTOTYPE - CV283; VX7129  RETMA DESIGNATION - 572616AL5H/6097		<u>MARKING</u>	
		See K1001/4	
		<u>Additional Marking</u>	
		572616AL5H/6097	
<u>RATING</u>		<u>BASE</u>	
		B7G	
		See BS.448 : B7G/1.1	
		<u>CONNECTIONS</u>	
		Pin	Electrode
		1	Cathode k'
		2	Anode a"
		3	Heater h
		4	Heater h
		5	Cathode k"
		6	Internal Shield s
		7	Anode a'
		<u>DIMENSIONS</u>	
		See BS 448 : B 7G/2.1	
		Size Ref No 1.	
		Dimension(mm)	Min. Max.
		A. Seated height	- 38
		C. Diameter	16 19
		D. Overall length	- 45
<u>CAPACITANCES (pF)</u>		<u>MOUNTING POSITION</u>	
		Any	
		Ca', a" (max)	0.026 E
		Ca, (h+k+s) (nom)	3.2 B.E
		Ck, (h+a+s) (nom)	3.9 B.E
<u>NOTES</u>			
A. All limiting values are absolute.			
B. Each diode			
C. Breakdown value with cathode positive to heater.			
D. <u>Caution to Electronic Equipment Design Engineers:</u> Special attention should be given to the temperature of valves to be operated in aircraft. Reliability will be seriously impaired if the maximum bulb temperature is exceeded. The life expectancy may be reduced if conditions other than those specified for life test are imposed on the valve and will be reduced appreciably if absolute maximum ratings are exceeded. Both reliability and performance will be jeopardised if heater voltage ratings are exceeded; life and reliability performance are directly related to the degree that regulation of the heater voltage is maintained at its centre-rated value.			
E. Measured with a closely fitting metal can.			

To be performed in addition to those applicable in K1001

Test shall be performed in the specified order unless otherwise agreed with the Inspecting Authority.

Test Conditions - unless otherwise specified											
			Vh (V)	Va (Vrms)	RL (ohms)	C (uF)					
			6.3	165	11,000	8.0					
K1001	Test	Test Conditions	AQL %	Insp. Level	Sym- bol	Limits					Units
						Min	LAL	Bogey	UAL	Max	
7.1	Glass Strain	No voltages	6.5	I							
5.2	GROUP A Insulation	Va, all = -300V		100%	R	100				-	M
		Vs, all = -300V				100				-	M
	GROUP B Heater Current Heater-cathode Leakage Current Output Current Emission (1)	Combined AQL	1.0								
		Vhk = ±100V; Note 1	0.65	II	Ih	0.275	0.30	0.325			A
		Note 2	0.65	II	Ihk	-	-	5.0			uA
		Va = 10.0V; Note 1	0.65	II	I out	16	18	-			mA
			0.65	II	Ia	40	-	-			mA
	GROUP C Emission (2)	Combined AQL	6.5								
		Vh = 5.7V; Va = 7.0 V rms Notes 1, 3	2.5	I	ΔIa	-		15			%
		Va = 0; RL = 40k; Note 1	2.5	I	Ia	2.0		20			uA
		Va = 0; RL = 40k Note 1	2.5	I	Ia	-		5.0			uA
		Vh = 7.0V; Note 4	2.5	I	Va AC	-		10.0			mV rms
7.2	GROUP D Base Strain Capacitance	Measured on a 1 Mc/s bridge with the valve mounted in a fully screened socket. With shield.	6.5	IA							
		Ca', a' + b's	6.5	IC					0.026		PF
		External Screen				2.4			4.0		PF
		Ca', b' + b's				2.4			4.0		PF
		External screen							5.0		PF
		Ck', a' + b's				2.5			5.0		PF
		External Screen				2.5			5.0		PF
11.3	GROUP E Fatigue	Combined AQL	6.5		IA						
		Vh = 6.5V switched 1 min on and 3 mins off; Va = 0; f = 170 c/s; Min pk accel = 5g; Duration = 30, 30, 30 hrs.									
		Post Fatigue Tests									
		Heater-cathode Leakage Current	Vhk = ±100V; Note 1	2.5	Ihk	-		15			uA
		Output Current	Note 2	2.5	Iout	14		-			mA
11.4	Shock	No voltages Hammer angle = 30°			IA						
		Post Shock Tests									
		Heater-cathode Leakage Current	Vhk = ±100V; Note 1	2.5	Ihk	-		15			uA
	Output Current	Note 2	2.5	Iout	14		-			mA	

K1101	Test	Test Conditions	AQL	Insp. Level	Sym- bol	Limits						Units	
						Min	LAL	Bogey	UAL	Max	ALD		
AVI/5	<u>GROUP F</u> Life	Note 2											
	<u>Life Test End-point</u> (500 hrs)	<b>Combined AQL</b>	6.5	IA									
AVI/5,6	Inoperatives		2,5										
	Heater Current		2,5		Ih	0,275			0,325			A	
	Heater-cathode Leakage Current	Vhk = ±100V; Note 1	2,5		Ihk	-			10,0			uA	
	Emission (1)	Va = 10,0V; Note 1	2,5		Ia	35			-			mA	
	Anode Current	<b>Va=0; RL=OK; Note 1</b>	4,0		Ia	1,0			20			uA	
	Insulation		4,0		R							M	
		Va, all = -300V				50			-			M	
		Vs, all = -300V				50			-			M	
	Emission (2)	Vh = 5,7V; Va = 7,0Vrms; Notes 1, 3	4,0		ΔIa	-			20			μ	
	<u>Life Test End-point</u> (1000 hrs.)	<b>Combined AQL</b>	10,0	IA									
AVI/5,6	Inoperatives		4,0										
	Heater Current		4,0		Ih	0,275			0,325			A	
	Heater-cathode Leakage Current	Vhk = ±100V; Note 1	4,0		Ihk	-			10,0			uA	
	Emission (1)	Va = 10,0V; Note 1	6,5		Ia	30			-			mA	
	Insulation		6,5		R							M	
		Va, all = -300V				50			-			M	
		Vs, all = -300V				50			-			M	
AIX/2,5	<u>GROUP G</u> Electrical re-test after 28-day holding period			100%									
AVI/5,6	Inoperatives		0,5										

NOTES

1. Test each section separately.
2. Measured in a dull wave circuit with the supply impedance (including transformer) initially adjusted so that a specially selected valve shall give an output of 18 mA. The selected valve shall be any valve in which the anode current is not less than 60 mA when 10 volts is applied. The anode voltage shall be measured between anode and earth by means of a rectifier type meter.
3. The value of emission shall apply to individual valves and is expressed as

$$\frac{(I_a \text{ at } V_h = 6,3V) - (I_a \text{ at } V_h = 5,7V)}{(I_a \text{ at } V_h = 6,3V)} \times 100\%$$

Readings at Vh = 6,3V and Vh = 5,7V shall be made with Va = 7,0V rms.

4. The valve shall be tested in the circuit shown in Fig. 1. Pin numbers are indicated for the electrode connections.
5. Breakdown voltage is defined as the voltage at which arcing occurs between anode base pin the adjacent pins. Other test conditions required shall be

Va = 500V rms, 50 c/s sinusoidal waveform;  
 Ambient pressure = 55 ± 5 mm mercury;  
 Ambient temperature = 25 ± 5°C;  
 Relative humidity = zero %

Fig. 1

